

Space Activities in 2020

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Preface

In this paper I present some statistics characterizing astronomical activity in calendar year 2020. In the 2014 edition of this review, I described my methodological approach and some issues of definitional ambiguity; that discussion is not repeated here, and it is assumed that the reader has consulted the earlier document, available at <https://planet4589.org/space/papers/space14.pdf> (The present work may be found as [space20.pdf](https://planet4589.org/space/space20.pdf) at the same location).

Special note: GCAT

In 2020 I published the first edition of the General Catalog of Artificial Space Objects (GCAT), with details of orbital and suborbital launches, and of orbital and deep space objects. The catalog is at <https://planet4589.org/space/gcat> and this report is largely based on the data in it.

1 Orbital Launch Attempts

1.1 Launch statistics by country

During 2020 there were 114 orbital launch attempts from Earth, with 104 reaching orbit. There was one additional orbital launch from the Moon, not included in the table below.

Table 1: : Orbital Launch Attempts

	2009-2013 Average	2014	2015	2016	2017	2018	2019	2020
USA	19.0	24	20	22	29	31	21	37
Russia	30.2	32	26	17	19	17	22	12
China	14.8	16	19	22	18	39	34	39
Europe		11	12	11	11	11	9	10
<i>Japan</i>		4	4	4	7	6	2	4
<i>India</i>		4	5	7	5	7	6	2
<i>Israel</i>		1	0	1	0	0	0	1
<i>N Korea</i>		0	0	1	0	0	0	0
<i>S Korea</i>		0	0	0	0	0	0	0
<i>Iran</i>		0	1	0	1	0	2	2
<i>New Zealand</i>		0	0	0	1	3	6	7
Other		9	10	13	14	16	16	16
Total	79.0	92	87	85	91	114	102	114

The Arianespace-managed Soyuz launches from French Guiana and the Starsem-managed Soyuz launches from Russia are counted as European.

Electron is licensed in the USA but launched from New Zealand territory by the New Zealand subsidiary of the US-headquartered Rocket Lab. I go back and forth on this, but for now I consider Electron to be a New Zealand launch of a US-manufactured rocket.

1.2 Launch failures and uncataloged orbital launches

During the year there were 10 orbital launch failures. In general I award partial success scores to launches which reach orbit but do not successfully deploy their payloads in the targeted orbit; there were no such cases in 2020.

Launches that are marginally orbital or fall just short of orbital are given 'U' designations. This year, the Vega failure had a perigee estimated at around -500 km and is given designation 2020-U01.

'U' designations are also given to launches from other worlds; the Chang'e-5 launch from Oceanus Procellarum on the Moon is given the designation 2020-U02.

Table 2: F and U launches in 2020
Table 2 (a): 2020 orbital launch failures and partial failures

Designation	Date	LV State	LV	Payload	Type of failure	Launch Score
2020-F01	Feb 9	Iran	Simorgh	Zafar	Stage 2 underburn?	0.00
2020-F02	Mar 16	China	CZ-7A	XJY-6	Stage 2 failure	0.00
2020-F03	Apr 9	China	CZ-3B	Palapa N1	Stage 3 failure	0.00
2020-F04	May 25	US	Launcher One	INTERNSAT	Stage 1 shutdown	0.00
2020-F05	Jul 4	US/NZ	Electron	CESAT-1B/Flock4e	Stage 2 underburn	0.00
2020-F06	Jul 10	China	KZ-11	Jilin-1 GF02E	Stage 3 failure	0.00
2020-F07	Sep 12	US	Astra Rocket	Rocket 3.1	Stage 1 failure	0.00
2020-F08	Sep 12	China	KZ-1A	Jilin-1 GF02C	Unknown	0.00
2020-U01	Nov 17	Arianespace	Vega	SEOSAT-Ingenio	Stage 4 first burn	0.00
2020-F09	Dec 15	US	Astra Rocket	Rocket 3.2	Stage 2 underburn	0.00
Table 2(b): 2020 additional launch designations						
Designation	Date	LV State	LV	Payload	Type of launch	Launch Score
2020-U02	Dec 3	China	CE-5 SSQ	CE-5 SSQ	Lunar launch	1.00

1.3 Commercial Launches

Of the 114 orbital launch attempts: 51 were carried out by governments; 22 by commercial companies under contract to their host governments, and 41 by commercial companies for commercial customers, including foreign governments.

I count US Commercial Cargo and Crew flights as 'under contract to host government'; although the launch contract is through a commercial intermediary, the choice of vehicle is negotiated as part of a government contract.

Table 3: Commercial vs. government launches

Launch provider	Launches	Type	Customers
US Launch providers			
ULA/Boeing Delta 4	1	CSP	1 US Gov
ULA/LM Atlas 5	5	CSP	4 US Gov, 1 foreign (ESA)
SpaceX Falcon 9	25	FCS	7 US Gov, 2 foreign, 16 Comm
NG Antares	2	FCS	2 US Gov
NG Minotaur IV	1	CSP	1 US Gov
Astra Rocket	2	FCS	2 test flights
VO Launcher One	1	FCS	1 test flights
European Launch providers			
Arianespace Vega	2	FC?	1 Eur gov, 1 comm.
Arianespace Ariane 5	3	FC	3 comm/for.
Arianespace Soyuz	2	FC	1 Eur gov, 1 foreign
Starsem Soyuz	3	FC	3 comm.
Russian Launch providers			
Khrunichev Proton	1	GOV	1 Ru gov
Khrunichev Angara	1	GOV	1 Ru gov
Roskosmos Soyuz	4	GOV	4 Ru gov (civil)
VVKO Soyuz	6	GOV	6 Ru gov
Chinese Launch providers			
CALT CZ-2C	3	GOV	2 Chinese gov, 1 commercial
CALT CZ-2F	1	GOV	1 Chinese gov
CALT CZ-3B	8	GOV	6 Chinese gov, 2 commercial
CALT CZ-5/5B	3	GOV	3 Chinese gov
CALT CZ-6/7/8	3	GOV	2 Chinese gov, 1 commercial
CALT CZ-11	3	GOV	2 Chinese gov, 1 commercial
SBA CZ-2D	7	GOV	5 Chinese gov, 1 commercial
SBA CZ-4B/4C	6	GOV	6 Chinese gov
EXPACE KZ-1A	3	CO	3 Comm
EXPACE KZ-11	1	CO	1 Comm
XIDO Gushenxing 1	1	CO	1 Comm
Other Launch providers			
Rocket Lab Electron	7	FC	5 Comm, 2 US Gov
MHI H-IIA/B	4	CSP	3 Japan gov, 1 foreign
ISRO/Antrix PSLV/GSLV	2	GOV	2 Indian gov
IRGC Qased	1	GOV	1 Iranian gov
IRSA Simorgh	1	GOV	1 Iranian gov
ISA Shaviyt	1	GOV	1 Israeli gov
NADA Kwangmyongsong	0	GOV	0 North Korean gov

Here GOV = Government; CO = Commercial operation of government developed rocket; CSP = Commercial service provision to government; FCS = Fully commercial service (but customers may include gov); FC = Fully commercial (no gov involved); A = Amateur, academic, non-profit. See the 2014 document for full discussion.

2 Satellite Launch Statistics

2.1 Satellites of the major space powers, past 9 years

Here I give total payloads (1) launched (Table 4) and (2) deployed (Table 5). The 100+ Sprite satellites launched in 2018 but deployed in 2019 make a big difference between the two tables. These satellites remained in orbit for several days, but were not tracked or cataloged by the US.

The 1261 satellites listed here and in Appendix 2a as payloads launched in 2019 include 8 ANDESITE Node satellites attached to the ANDESITE satellite for later deployment.

Not included are satellites which did not reach orbit due to launch failures.

Also not included in the count, but listed at the end of Appendix 2c, are several objects which are marginal cases: the Kosmos-2543 projectile, which may or may not be considered as a payload, the FCC camera subsatellite ejected from Tianwen-1, the SSMS deployer system from Vega, the Gnome Chompski inert figurine attached to an Electron kick stage, and the Lander, ascender and return capsule from Change'-5.

Note that the correlation of specific satellites from a multi-satellite launch with specific catalog numbers (and thus, tracked objects) is uncertain in some case. This is indicated in the appendices with a question mark following the piece (international) designation.

Table 4: : Payloads launched per year

	2012	2013	2014	2015	2016	2017	2018	2019	2020
USA	35	85	111	112	95	282	311	308	979
Russia	22	29	34	27	15	24	23	31	22
China	25	18	26	44	40	36	98	73	74
Europe	22	34	29	22	22	42	52	45	129
Other	28	41	58	31	50	60	86	65	57
Total	132	207	258	236	222	444	570	522	1261

The 576 satellites listed here and in Appendix 2b as having been deployed during 2019 include many small satellites that were launched in 2018 and deployed in 2019, including the Sprite chipsats deployed from Kicksat-2 and the Thinsat satellites ejected from an Antares second stage. Neither Sprites nor Thinsats were cataloged in the US satellite catalog.

Table 5: : Payloads deployed per year

	2012	2013	2014	2015	2016	2017	2018	2019	2020
USA	35	84	96	106	105	288	195	369	991
Russia	23	29	33	27	14	25	23	29	21
China	25	17	24	44	38	35	95	74	72
Europe	22	34	29	22	20	43	48	45	130
Other	28	41	56	31	43	65	81	61	57
Total	133	205	238	230	220	456	442	578	1271

2.2 Satellite ownership by country

I now break this down by class for 2020 (first the launch powers, then other countries).

In 2020 the satellites deployed were owned by 28 countries and two European organizations: ESA and the European Union.

In general I consider western Europe, loosely defined, as a single 'space power' because of the tight integration of its aerospace industry. Within this view, the four leading space powers are USA, China, Russia and (W) Europe. The second tier of space powers is comprised of Japan and India; all others are lumped as 'Other', further broken down regionally (and arbitrarily) for convenience. The 'Other' powers have limited or no launch capability of their own. (South Korea and Canada have space industries that make them candidates for the second tier in the near future). Countries which owned satellites covered in previous editions of the report are included in the table even if they had no new satellites this year.

Table 6: 2020 payloads launched, by owner country and class

	A Academic/ NonProfit	B Business/ Commercial	C Civil	D Defense	SS Spaceship	Total Number	Total Mass (tonne)
USA	15	935	2	20	7	979	341
China	8	23	22	20	1	74	106
Russia	4	2	7	5	4	22	46
ESA/EU/EUM	0	0	2	0	0	2	3
B Belgium	0	0	2	0	0	2	0
D Germany	1	4	0	0	0	5	0
E Spain	3	0	0	0	0	3	0
F France	1	3	0	1	0	5	7
FI Finland	0	2	0	0	0	2	0
I Italy	0	1	0	0	0	1	0
L Luxembourg	0	4	0	0	0	4	0
UK	0	105	0	0	0	105	15
Europe (W)	5	119	4	1	0	129	25
Japan	1	4	0	2	1	8	31
India	0	0	3	0	0	3	5
EE Estonia	1	0	0	0	0	1	0
LT Lithuania	0	1	0	0	0	1	0
SI Slovenia	1	1	0	0	0	2	0
<i>Subtotal OTHER: Europe (E)</i>	2	2	0	0	0	4	0
ET Ethiopia	0	0	1	0	0	1	0
<i>Subtotal OTHER: Africa</i>	0	0	1	0	0	1	0
AR Argentina	0	0	1	0	0	1	0
GT Guatemala	1	0	0	0	0	1	0
UY Uruguay	0	13	0	0	0	13	0
<i>Subtotal OTHER: Latin America</i>	1	13	1	0	0	15	0
IL Israel	1	1	0	1	0	3	0
IR Iran	0	0	0	1	0	1	0
UAE United Arab Em.	1	0	1	1	0	3	2
<i>Subtotal OTHER: Mideast</i>	2	1	1	3	0	7	2
(continued)							

Table 6: (continued)							
	A Academic/ NonProfit	B Business/ Commercial	C Civil	D Defense	SS Spaceship	Total Number	Total Mass (tonne)
KR S Korea	0	0	1	1	0	2	9
T Thailand	0	0	0	1	0	1	0
<i>Subtotal OTHER:</i>							
<i>Asia (other)</i>	0	0	1	2	0	3	9
CA Canada	1	5	0	0	0	6	0
AU Australia	1	0	0	1	0	2	0
NZ New Zealand	1	7	0	0	0	8	0
<i>Subtotal OTHER:</i>							
<i>Can/Australasia</i>	3	12	0	1	0	16	0
Other	8	28	4	6	0	46	11
Total	41	1111	42	54	13	1261	565

2.3 Satellite manufacture by country

Most countries build only very small (cubesat) satellites, purchasing their larger satellites from one of the main space powers. Here I tabulate the manufacturers of the 1049 satellites launched in 2020 with estimated launch masses of 100 kg or more.

HSF is 'Human spaceflight', including related robotic missions such as cargo ships to support ISS. 'Surv.' is surveillance, including early warning and space debris surveillance; visible and radar imaging recon satellites and weather sats are under 'Imaging'. Microgravity research, geodesy and planetary probes are included under Sci (Science). Satellites built in the UK, France, Germany, Italy, Spain and the Netherlands are lumped together as 'Europe' to reflect the integration of the western European aerospace industry.

Table 7: 2020 payloads by manufacturer country - 100 kg and up only

	HSF	Comms	Imaging	Nav	SIGINT	Surv.	Sci	Tech	Total
USA	7	839	9	2	6	0	2	4	869
China	1	3	14	2	6	1	7	7	41
Europe	0	107	2	0	0	0	2	1	112
Russia	4	9	0	2	0	1	0	1	17
India	0	2	1	0	0	0	0	0	3
Japan	1	1	2	0	0	0	0	0	4
Israel	0	0	1	0	0	0	0	0	1
Argentina	0	0	1	0	0	0	0	0	1
S Korea	0	0	1	0	0	0	0	0	1
Total	13	961	31	6	12	2	11	13	1049

3 Scientific Space Programs

Major scientific satellites launched this year were

- Hai Yang 2-03, a Chinese oceanographic satellite.
- Sentinel-6 Michael Freilich, a European-American collaboration for oceanography
- GECAM A and B, a pair of Chinese satellites studying astronomical gamma ray bursts

In deep space:

- Three spacecraft were launched towards Mars: the NASA Perseverance Rover, China's Tianwen-1 orbiter/lander/rover, and the UAE's Al'Amal (Hope) orbiter. They will arrive at Mars in Feb 2021.
- ESA's Solar Orbiter was launched to begin a series of Venus flybys to lower its perihelion for close-up imaging of the Sun.
- The Chang'e-5 mission returned the first lunar samples since 1976 (see special topic).
- Hayabusa-2, launched in 2014, returned a capsule to Earth with samples of the asteroid Ryugu. The main spacecraft did an Earth flyby to send it to survey two other asteroids.
- Osiris-Rex completed sampling asteroid Bennu and began its return journey to Earth.
- BepiColombo made a Venus flyby on its way to Mercury.
- Parker Solar Probe made a Venus flyby and lowered its perihelion to only 0.095 AU.

4 Military Space Activities

Military satellites include navigation, communications, and technology development missions in addition to the intelligence gathering activities that I report here.

4.1 Space Surveillance

China launched the TJS 5 geostationary satellite on Jan 7. It is thought to be Huoyan-2, an early warning payload. Russia launched the 4th Kupol payload (Kosmos-2546) on May 22, a Molniya orbit system superseding the Oko satellites.

4.2 Optical Imaging

Israel launched its first imaging satellite in 4 years, Ofeq-16. The IRGC Noor-1 satellite is discussed under Special Topics. France launched its second large, high resolution spy satellite in the CSO (Composant Spatial Optique) series. The UAE armed forces launched a high resolution French-built imaging satellite, FalconEye 2. The Thai armed forces launched a cubesat with limited imaging capability.

China launched 6 imaging satellites in the civilian Gao Fen series: Gao Fen 9-02, 9-03, 9-04, 9-05, 11-02 and Gao Fen Duomo Weixing. It seems likely that these are also used for intelligence purposes. No dedicated Chinese military optical imaging satellites seem to have been launched in 2020.

4.3 Radar Imaging

China launched Yaogan 33, which appears to be the first of a new SAST/Shanghai radar satellite series.

India launched EOS-1 (formerly RISAT-2BR2), a mostly civilian radar imaging satellite.

4.4 Signals Intelligence

On Dec 11 the US NRO launched USA 311, a large geostationary signals intelligence satellite thought to be in the ORION series.

China launched nine Chuanxing-5 satellites in three launches, with the cover names Yaogan 30 group 5, 6 and 7. The satellites are in 600 km, 35 deg orbit.s

4.5 NRO satellites with unknown missions

This year saw the launch of a number of NRO satellites whose missions are not yet clear. Another large NRO satellite, USA 310, was launched on Nov 13 to an unusual 11000 km, 58 degree orbit. Mission of this satellite is unknown.

A much smaller satellite, USA 294, was launched to 585 km orbit at 70 deg inclination on a RocketLab Electron flight on Jan 31. Three more smal satellites, USA 301 to USA 303, were launched to 600 km sun-synchronous orbit with 1730 local time descending node in June on another Electron. A further four small satellites, USA 305 to 308, were launched to 575 km orbit at 54 degrees inclination on a Minotaur IV on Jul 15. The mission of these satellites is unknown but may be signals intelligence or communications.

On Dec 19 the US NRO launched a pair of satellites, USA 312 and USA 313, to a 530 km, 51.4 deg orbit. Mission of these satellites is also unknown.

4.6 USA satellite designations in 2020

The USA satellite designations were introduced in 1984 for US military satellites, to obscure the missions of the secret ones. Here is an index of USA names assigned in 2018-2020. Note that USA 295 to 297 were deployed from the OTV-5 mission in 2017 but not acknowledged until 2020.

The agency abbreviations are:

2SWS	2nd Space Warning Squadron
2SOPS	2nd Space Ops Squadron
4SOPS	4th Space Ops Squadron
AFRL	Air Force Research Lab, Kirtland AFB, NM
Del 4	Delta 4, US Space Force
Del 8	Delta 8, US Space Force
NRO	US National Reconnaissance Office
RCO	USAF Rapid Capabilities Office, Wright-Pat. AFB, OH
SMC	Space and Missile Center, LAAFB, US Space Force

Table 8: : USA satellite designations 2017-2020

Cover name	Other name	Piece name	Agency	Orbit	Notes
USA 273	SBIRS GEO 4	2017-004A	SMC/Del 4 2SWS	35780 x 35796 x 3.4 GEO 159W	Early warn
USA 274 P/L1	INTRUDER 15	2017-011A	NRO	1099 x 1114 x 63.5	Naval sigint
USA 274 P/L2	INTRUDER 16	2017-11B	NRO	1097 x 1115 x 63.4	Naval sigint
USA 275	WGS SV-9	2017-016A	SMC/Del 8 4SOPS	35785 x 35788 x 0.0 GEO 56.7E	Comms
USA 276	[Unk LEO Sat 1]	2017-022A	NRO	384 x 392 x 50.0	NROL-76
USA 277	OTV 5	2017-052A	USAF RCO	314 x 320 x 54.5	Landed 2019 Oct
USA 278	RAVEN 7?/HEO-4	2017-056A	NRO	1119 x 39235 x 63.6	Sigint/Early Warn
USA 279	QUASAR 20	2017-066A	NRO	35770 x 35804 x 3.3 GEO 92.1E	Data relay
USA 280	ZUMA	2018-001A	NRO?	995 x 1005? x 50.0	Accidental deorbit day 1
USA 281	TOPAZ 5?	2018-005A	NRO	1078 x 1080 x 106.0	Radar satellite
USA 282	SBIRS GEO-3	2018-009A	SMC/Del 4 2SWS	35777 x 35796 x 4.6 GEO 138.9E	Early warn
USA 283	CBAS SATCOM	2018-036A	SMC?/Del 8 4SOPS?	35785 x 35791 x 0.0 GEO 134.1E	Comms
USA 284	EAGLE	2018-036B	AFRL	36083 x 36106 x 1.1	Experiments
USA 285	ESPASat-1	2018-036E	AFRL	35247 x 35308 x 2.3	Unknown
USA 286	ESPASat-2	2018-036F	AFRL	35246 x 35305 x 2.3	Unknown
USA 287	MYCROFT	2018-036G	AFRL	36094 x 36099 x 0.6	Inspector
USA 288	AEHF 4	2018-079A	SMC/Del 8 4SOPS	35774 x 35800 x 3.5 GEO 150.1W	Comms
USA 289	GPS SVN 74	2018-109A	SMC/Del 8 2SOPS	20153 x 20210 x 55.0	Nav
USA 290	CRYSTAL 5F1?	2019-004A	NRO	400 x 413 x 73.6	Imaging
USA 291	WGS SV-10	2019-014A	SMC/Del 8 4SOPS	35785 x 35790 x 0.1 GEO 60.3E	Comms
USA 292	AEHF 5	2019-051A	SMC/Del 8 4SOPS	35769 x 35806 x 5.6 GEO 54.5E	Comms
USA 293	GPS SVN 75	2019-056A	SMC/Del 8 2SOPS	20151 x 20214 x 55.4	Nav
USA 294	[Unk Smallsat 1]	2020-007A	NRO	577 x 592 x 70.0	NROL-101/RASR-1
USA 295	[Secret Sat 1]	2017-052C	Unknown	350? x 350? x 54.5	Reentered 2019?
USA 296	[Secret Sat 2]	2017-052D	Unknown	350? x 350? x 54.5	Reentered 2019?
USA 297	[Secret Sat 3]	2017-052E	Unknown	350? x 350? x 54.5	Reentered 2019?
USA 298	AEHF 6	2020-022B	SMC/Del 8 4SOPS	35770 x 35804 x 7.1 GEO 94.3W	Comms
USA 299	X-37B OTV-6	2020-029A	USAF RCO/Del 9 Det1	386 x 389 x 45.0	Spaceplane
USA 300	Falconsat 8?	2020-029B	USAF	380? x 380 ? x 45.0	Tech expts.
USA 301	[Unk Smallsat 2]	2020-037A	NRO	585 x 600 x 97.7	RASR-2
USA 302	[Unk Smallsat 3]	2020-037B	NRO	585 x 600 x 97.7	RASR-2
USA 303	[Unk Smallsat 4]	2020-037C	NRO	585 x 600 x 97.7	RASR-2
USA 304	GPS SVN 76	2020-41A	SMC/Del 8 2SOPS	20157 x 20206 x 55.2	Nav
USA 305	[Unk Smallsat 5]	2020-046A	NRO	568 x 577 x 54.0	NROL-129
USA 306	[Unk Smallsat 6]	2020-046B	NRO	569 x 576 x 54.0	NROL-129
USA 307	[Unk Smallsat 7]	2020-046C	NRO	569 x 577 x 54.0	NROL-129
USA 308	[Unk Smallsat 8]	2020-046D	NRO	571 x 577 x 54.0	NROL-129
USA 309	GPS SVN 77	2020-078A	SMC/Del 8 2SOPS	20181 x 20185 x 55.0	Nav
USA 310	[Unk MEO Sat 1]	2020-083A	NRO	11072 x 11100 x 58.5	NROL-101
USA 311	ORION 10?	2020-095A	NRO	35780? x 35800? x 0?	Sigint
USA 312	[Unk LEO Sat 2]	2020-101A	NRO	517 x 539 x 52.9	NROL-108
USA 313	[Unk LEO Sat 3]	2020-101B	NRO	526 x 532 x 51.4?	NROL-108

5 Special Topics

5.1 IRGC satellite launch

In April 2020 the Sepah-e Pasdaran-e Enghelab-e Eslami (انقلاب پاسداران سپاه اسلامی, Islamic Revolutionary Guard Corps), hereafter the IRGC, carried out its first satellite launch, with the new Qased launch vehicle. Previous Iranian launches were carried out by the civilian Sazman Fizaii Iran (ایران فضایی سازمان, Iranian Space Agency).

Iran has developed three satellite launch vehicles:

- Safir (IRSA); based on the Shahab-3 missile with a liquid second stage. Launched from Khomeini Space Centre.
- Simorgh (IRSA); based on a larger first stage similar to the North Korean Unha, with a liquid second stage and probably a solid propellant third stage. Launched from Khomeini Space Centre.
- Qased (IRGC); based on the Shahab-3 missile, probably with a Salman-1 solid second stage and a small solid propellant third stage, possibly the Arash-24. Launched from Shahroud missile base.

The Shahroud base in the Dasht-e Kavir desert of northeastern Iran had previously been used for missile tests but this was the first orbital launch from the site. The pad is at 55.3340E 36.2006N.

Launch was at 0358:59 UTC on Apr 24. The first stage made a 117s burn and impacted in southern Iran, in Baluchistan. The second stage ignited at T+2m39s for about 65s and reached a -4121 x 447 km x 58.6 deg orbit with impact in the Indian Ocean southwest of Sri Lanka at about 75E 2N. The third stage ignited at T+7m04s for a 25s burn, placing the Noor 1 (نور ۱, 'Light') satellite in a 426 x 444 km x 59.8 deg orbit. Based on a graphic on the side of the fairing, I believe Noor 1 to be a 6U cubesat, probably with a mass in the 10 to 15 kg range. The IRGC states it was intended for reconnaissance, and it probably has a camera in the 5-metre resolution class. Amateur radio operators in the West picked up signals from the satellite soon after launch, confirming that it was alive after launch. IRGC announced that attitude stabilization would take several days before the payload would begin operations. As of mid-May, it was unclear whether or not the satellite was fully operational.

The satellite and third stage were cataloged by the US 18SPCS with international designations 2020-024A and B.



Figure 1: Qased groundtrack. Credit: author.



Figure 2: Qased stage 2 trajectory (l); Estimated Qased stage trajectories (r). Credit: author.



Figure 3: Image of Noor-1 on Qased fairing. Credit: IRGC video on youtube.

5.2 Starlink



Figure 4: Starlink Launch 7 satellites beginning to deploy. Credit: SpaceX (webcast).

Deployment of the Starlink constellation accelerated during 2020. 422 satellites had been launched by late April and 955 by the end of the year, although only 892 remained in orbit. Starting with the 9th launch visors were added to the satellites to reduce the brightness of the satellites and begin addressing the concerns of astronomers.

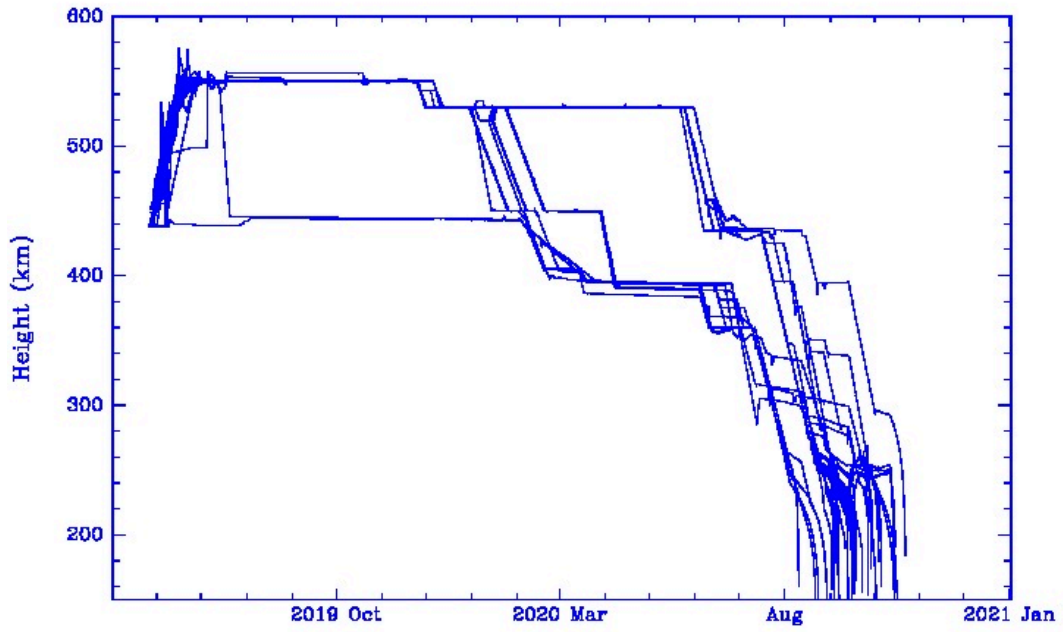
Status of the constellation on 2020 Dec 31 was:

Launch	Sats Launched	Deorbited	Reentered after fail	Still in orbit	Not maneuvering	Deorbit in process?	Working?
Launch 0 (Tintin)	2	2	0	0	0	0	0
Launch 1 (V0.9)	60	46	1	13	7	0	6
Launches 2-8 (V1.0/1-7)	420	7	3	410	10	0	400
Launches 9-16 (V1.0/8-15)	473	0	4	469	0	1	468
Total	955	55	8	892	17	1	874

Some Starlink launches have carried ‘rideshare’ secondary payloads. Starlink launch 10 carried two BlackSky satellites, Global-7 and Global-8; launches 9 and 11 carried Planet Skysats C14-C16 and C17-C19.

The following diagrams show the orbital altitude versus time for each group of satellites.

Starlink Launch 1 - 'Good' Sats



Starlink Launch 1 - bad sats

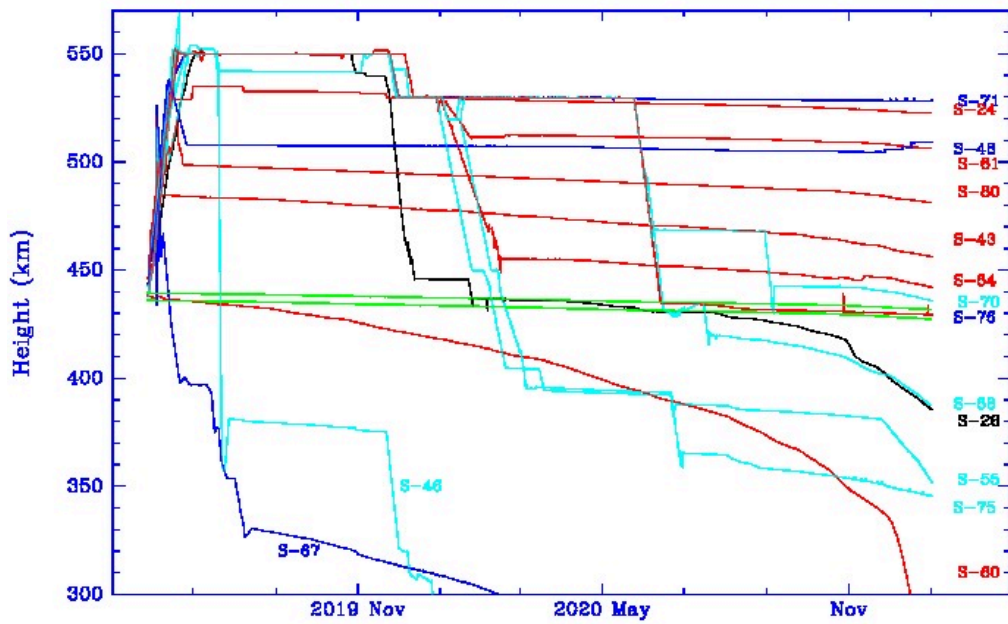


Figure 5: Starlink Launch 1. Credit: author.

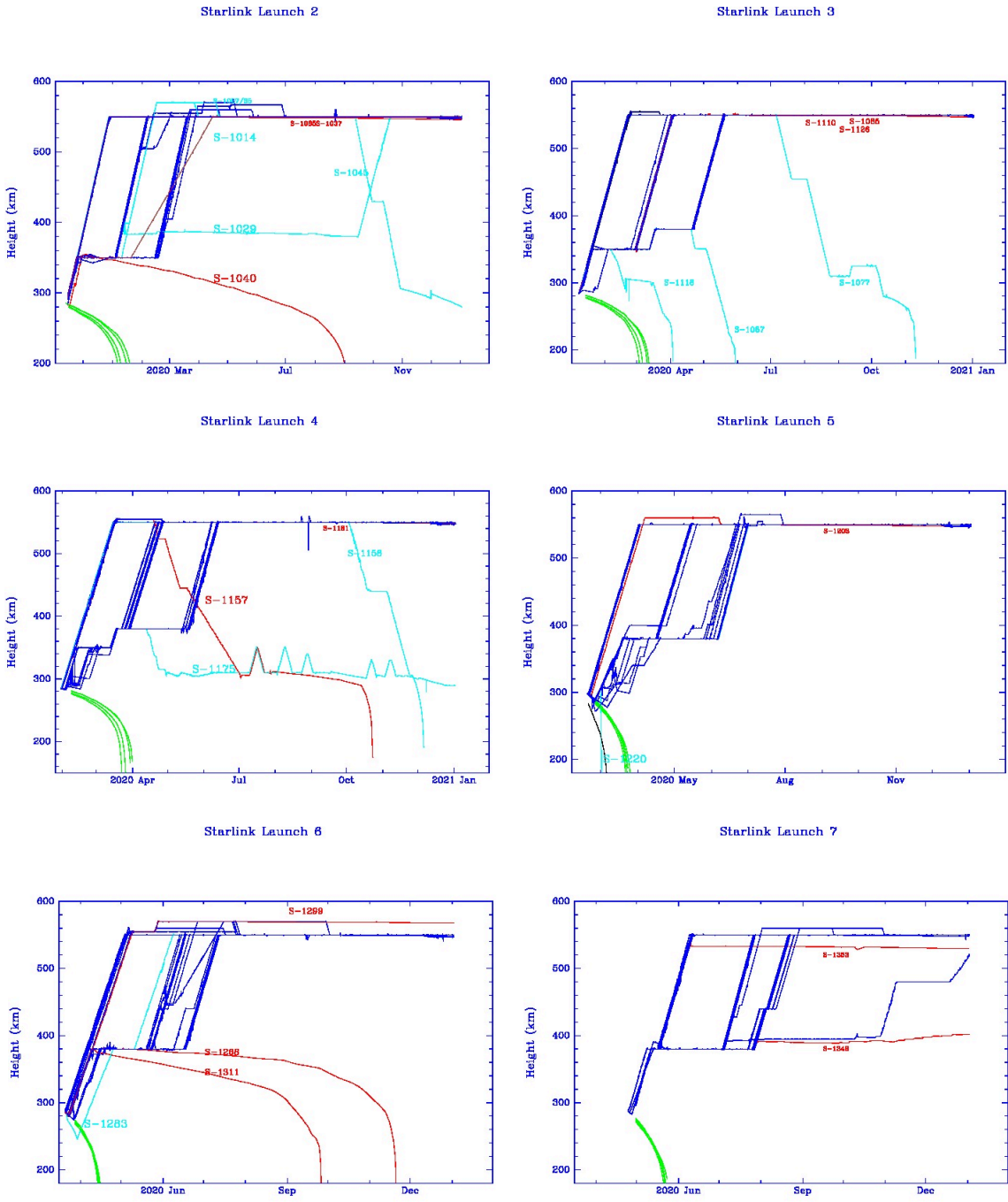


Figure 6: Starlink Launches 2 to 7. Credit: author.

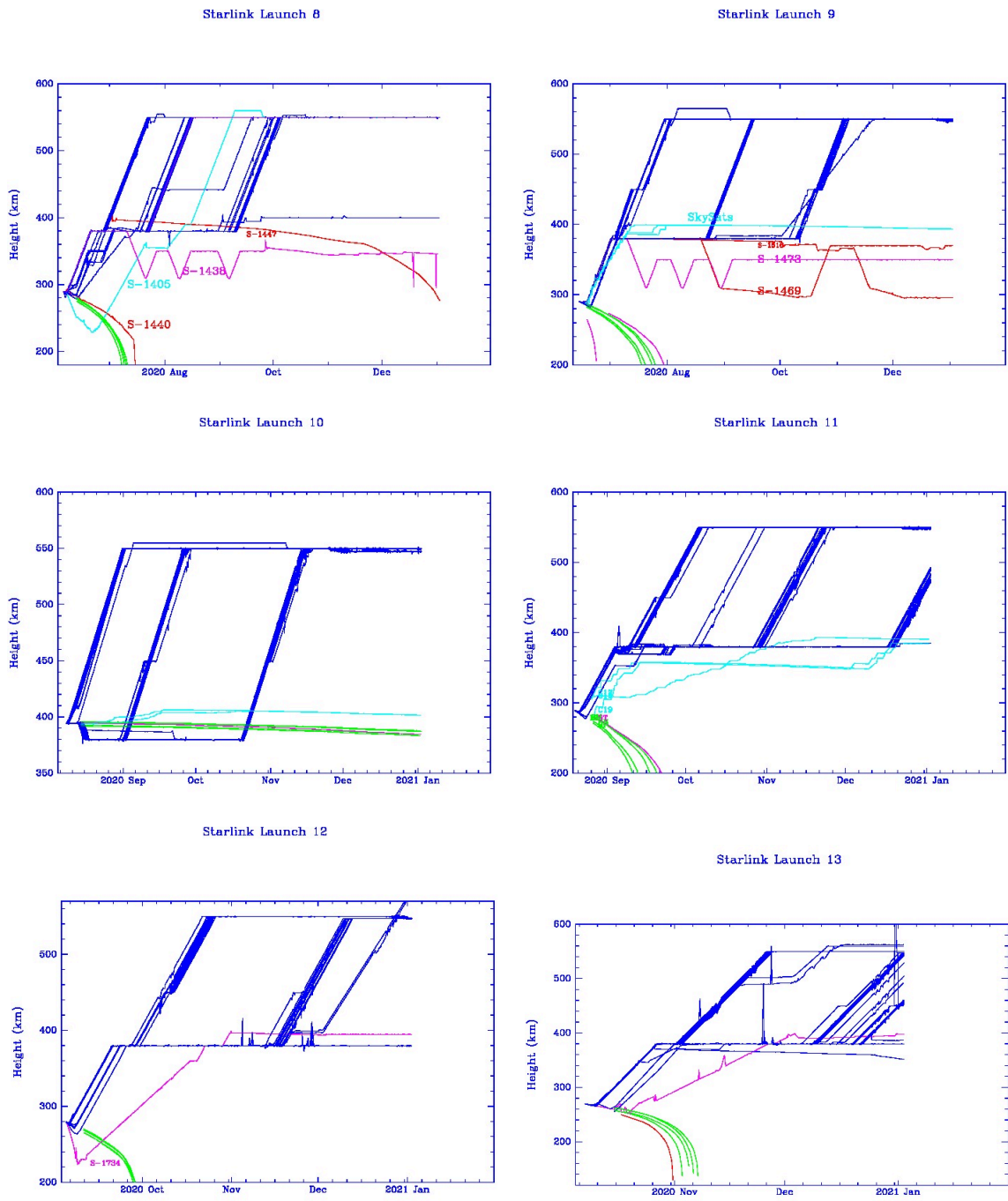


Figure 7: Starlink Launches 8 to 13. Credit: author.

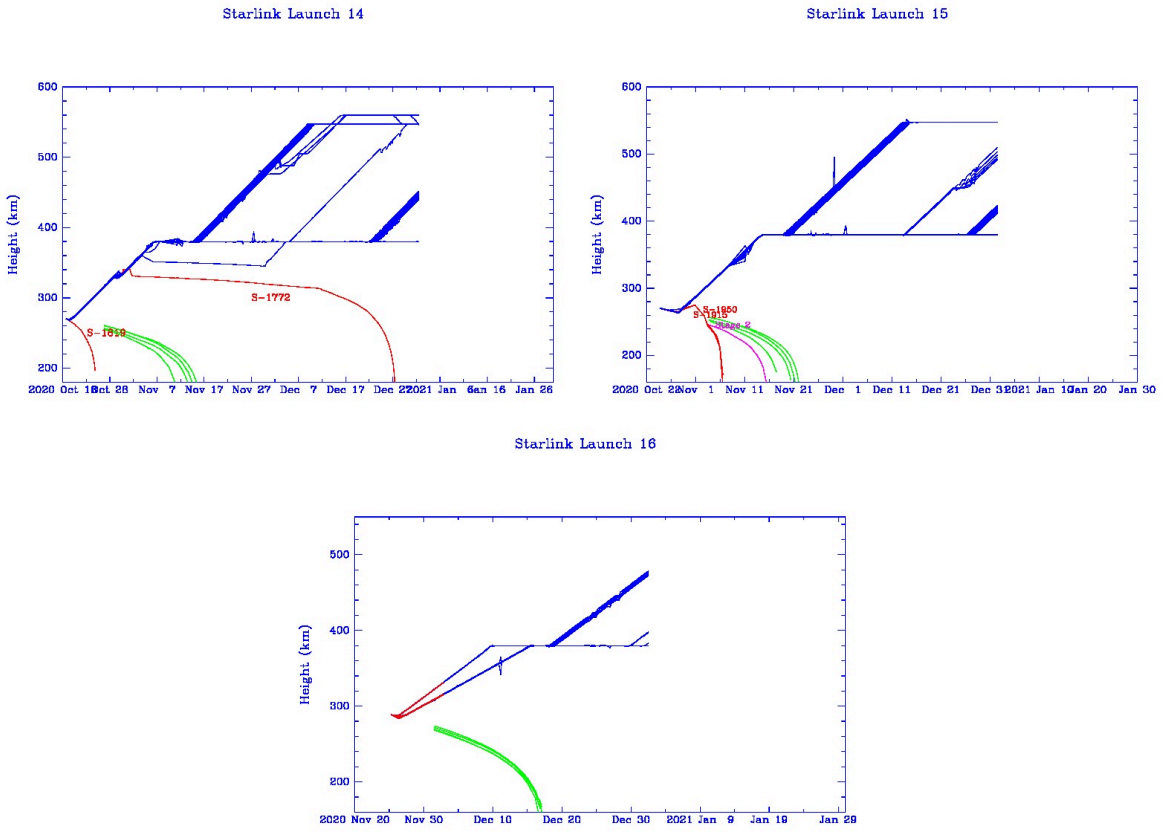


Figure 8: Starlink Launches 14 to 16. Credit: author.

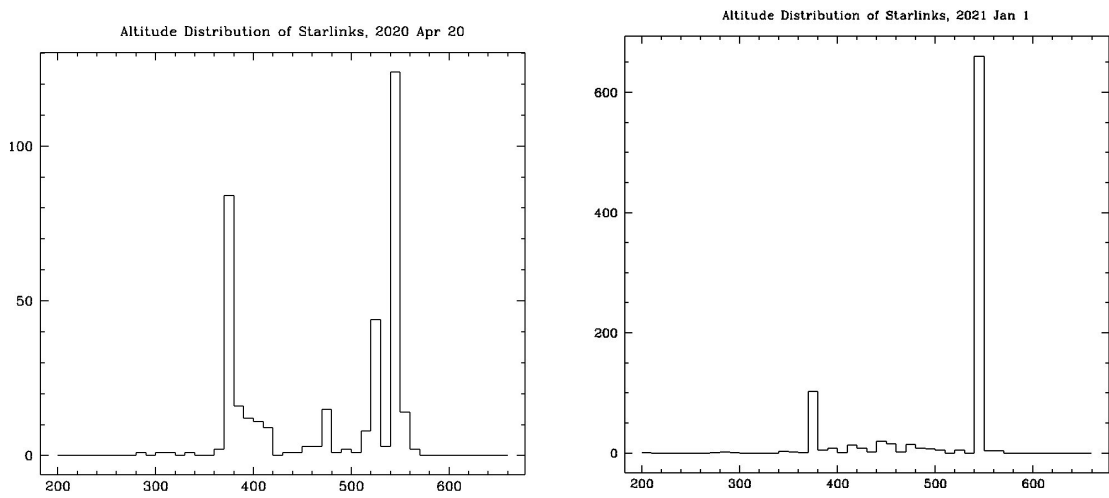


Figure 9: Starlink satellite altitudes.

On Apr 13 the ISS crew took a picture of a string of passing Starlinks. Below I show the positions of all the Starlinks at that moment.

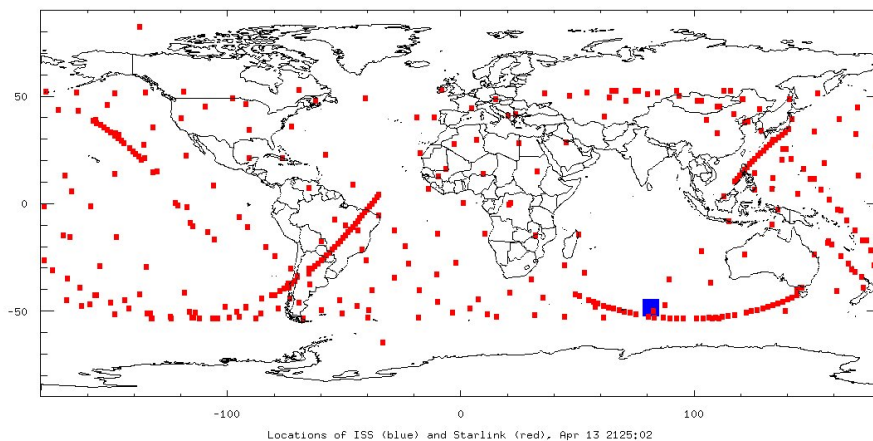


Figure 10: Starlink positions at 2125 UTC Apr 13

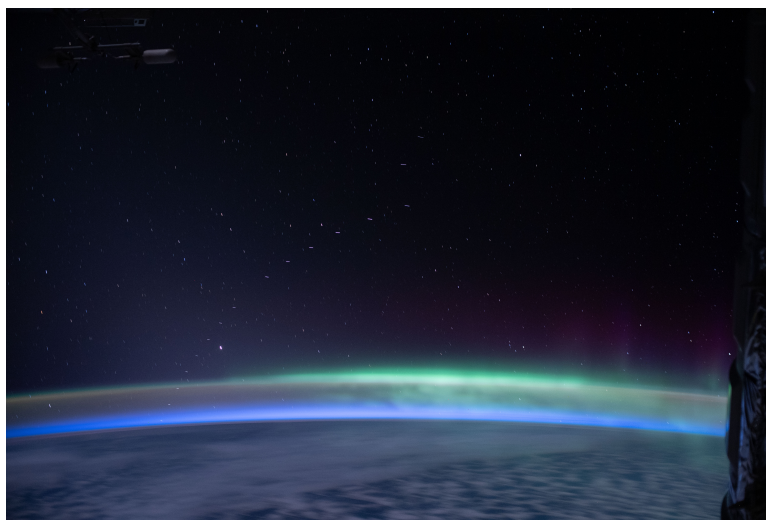


Figure 11: ISS image Expedition 62 E-148365

5.3 OneWeb

OneWeb declared bankruptcy in April 2020. Orbit raising of the Launch 2 satellites was interrupted and they were kept at 600 km to maximize constellation safety and flexibility. The company was bought by a collaboration of the UK government and the Indian company Bharti Global and launches resumed in Dec 2020.

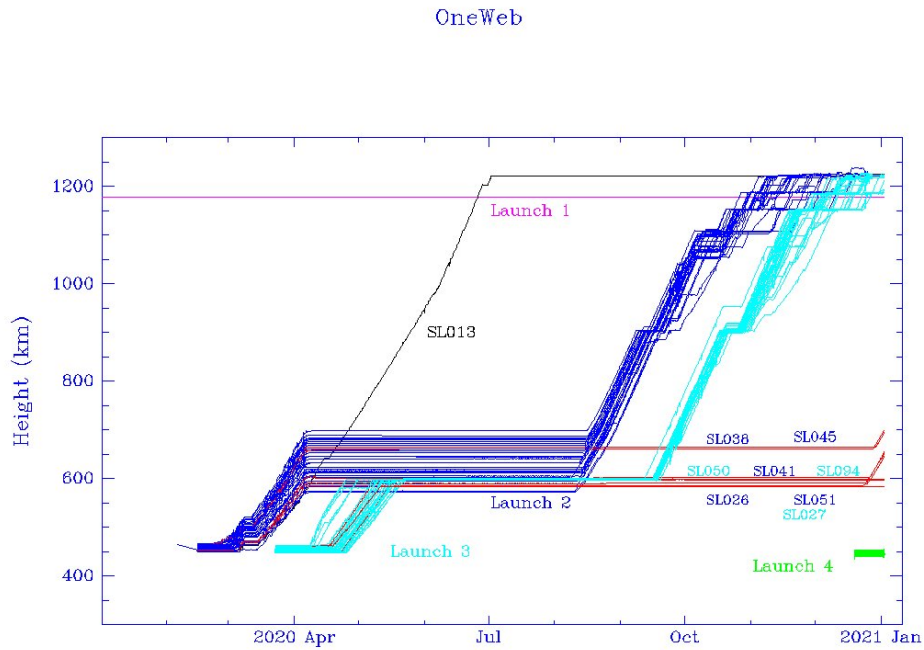


Figure 12: OneWeb satellite heights.

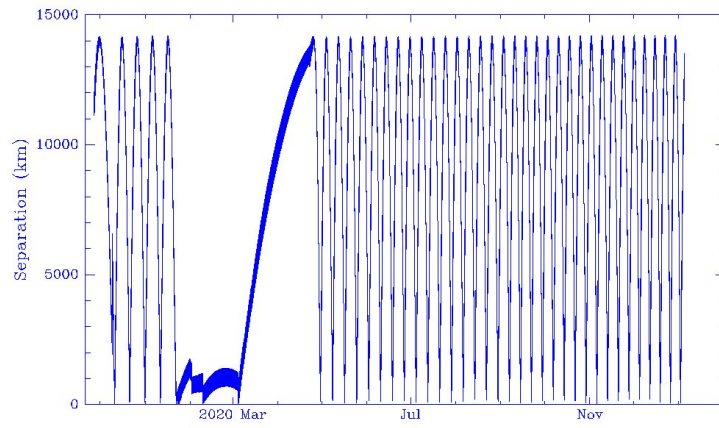
5.4 Kosmos-2542, Kosmos-2543, Kosmos-2535 and USA 245

During 2020 the inspector satellites Kosmos-2542, Kosmos-2543 and Kosmos-2536 carried out related proximity operations exercises. From 2019 Dec to 2020 Feb, Kosmos-2536 remained close to Kosmos-2535. Then from 2020 Feb to 2020 Mar, the Kosmos-2542 and possibly Kosmos-2543 satellites appear to have carried out an unprecedented experiment in shadowing another nation's military satellite in LEO. Kosmos-2542 adjusted its orbit to synchronize with USA 245, making approaches to within 500 km.

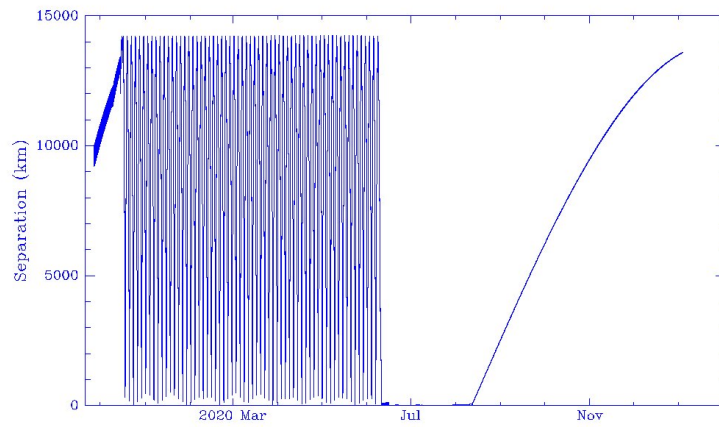
Kosmos-2543 may also have been involved in the exercise; it made several fast passes near USA 245 in the 20-30 km distance range during 2020 Jan-Feb, but it's not entirely clear whether this was just a coincidence.

Next, from 2020 June to 2020 Aug, Kosmos-2543 moved close to Kosmos-2535. Finally, since 2020 Aug, Kosmos-2536 moved back to the vicinity of Kosmos-2535 and has remained there. The phasing of these four operations may suggest that the Russian controllers are limited in their resources to carrying out only one such exercise at a time.

Kosmos-2542/USA 245 separation



Kosmos-2543/Kosmos-2535 (44835/44421) separation



Kosmos-2536/Kosmos-2535 (44424/44421) separation

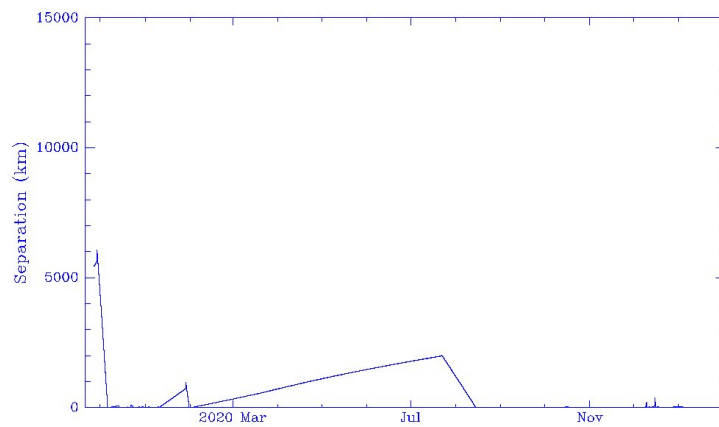


Figure 13: Distance between Kosmos-2542 and USA 245; Kosmos-2543 and Kosmos-2535, and Kosmos-2536 and Kosmos-2535 during 2020.

5.4.1 Kosmos-2542 and USA 245

The figures show the relative height and separation distance of Kosmos-2543 and the US satellite USA 245.

Kosmos-2542/USA 245 orbital height

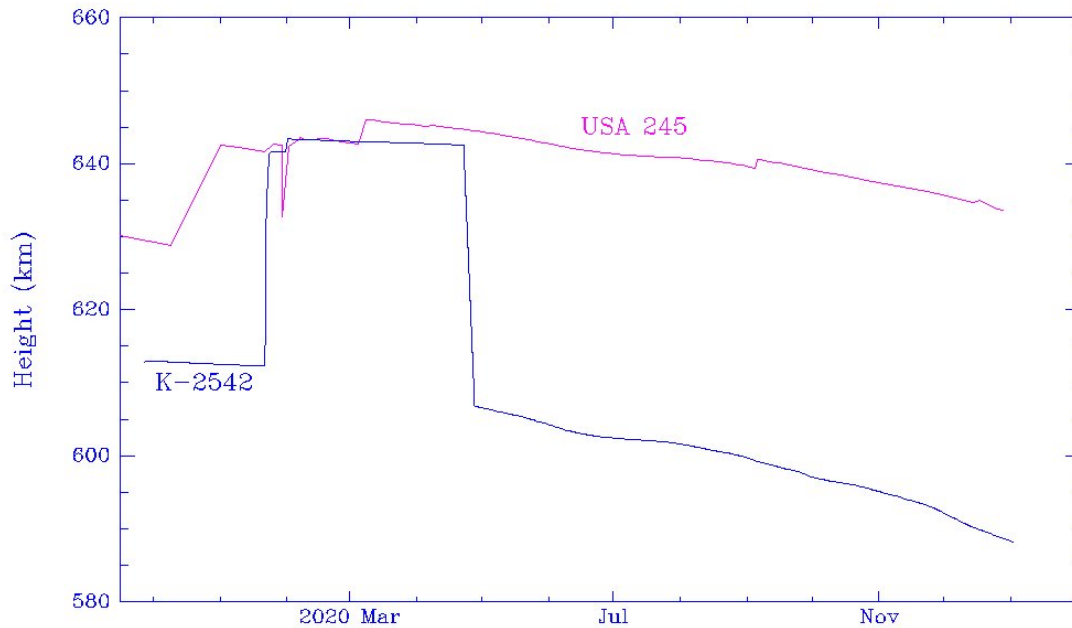


Figure 14: Kosmos-2542 and USA 245 orbital heights.

5.4.2 Kosmos-2543 and Kosmos-2535

In 2020 Jun Kosmos-2543 made a loose rendezvous with the Kosmos-2535 satellite, passing within a few km and remaining within 100 km for a few weeks. It then spent a month making close approaches before departing on Jul 20. On 2020 Jul 15 Kosmos-2543 ejected a high velocity (of order 150 m/s) projectile while close to Kosmos-2535, cataloged as 45915/2019-079E. It has been suggested that this was a test of an antisatellite weapon, or of sensors on the target satellite to detect such a weapon.

I will also note the appearance of an unidentified object in orbit with the latest Gonets launch (2020-091E). It's probably just a debris object but past Gonets/Strela-3 launches have sometimes been accompanied by small satellites that are apparently related to the Kosmos-2535 series.

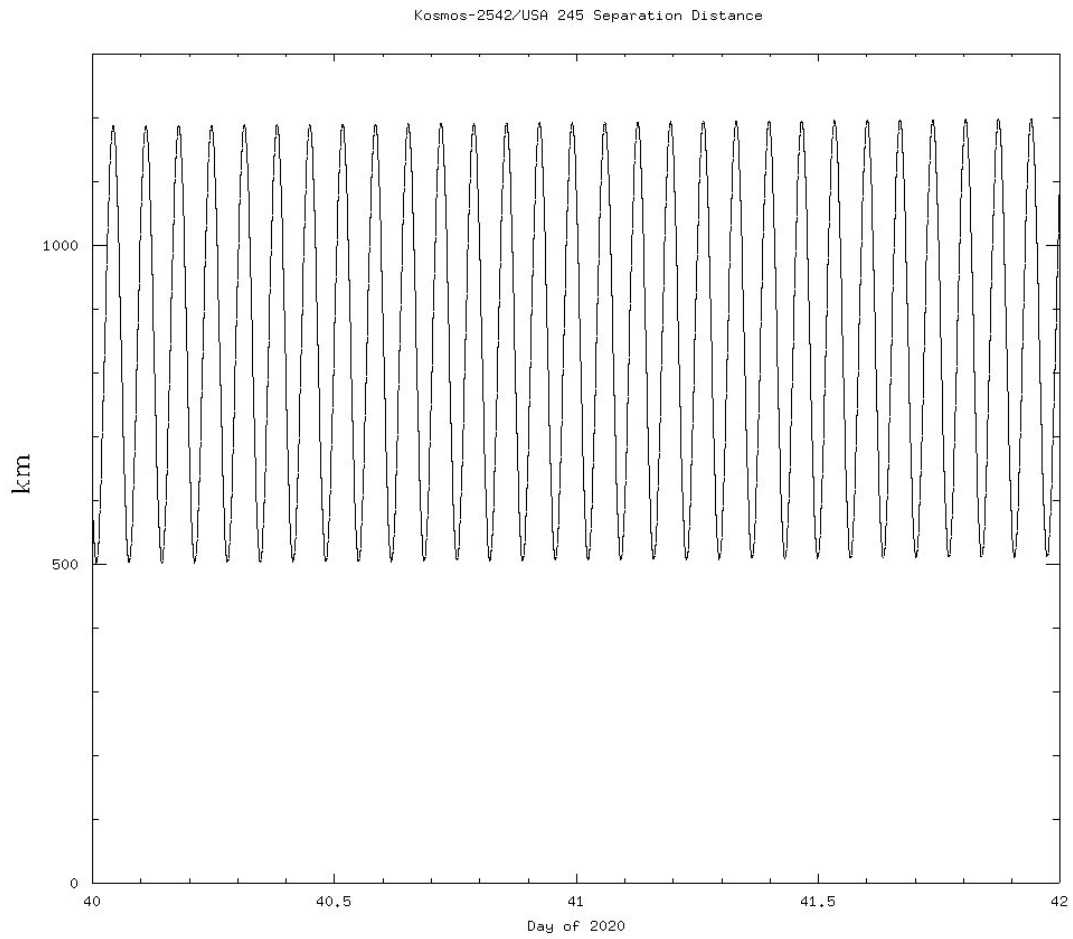


Figure 15: Distance between Kosmos-2542 and USA 245 for two days during Feb 2020.

Kosmos-2543/Kosmos-2535 (44835/44421) separation

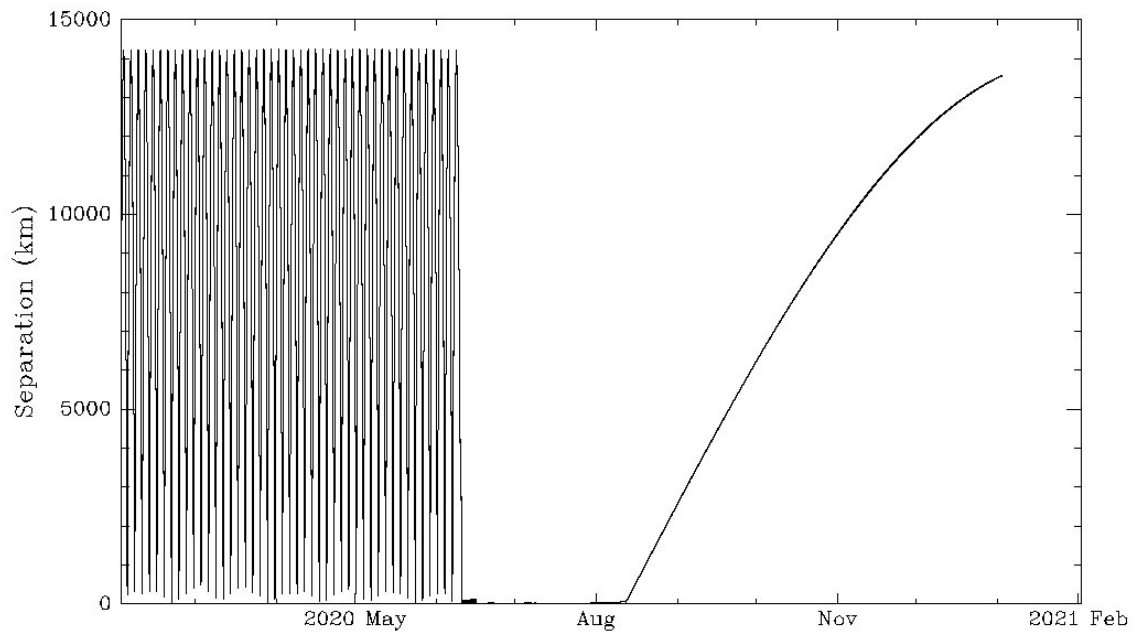


Figure 16: Kosmos-2543 and Kosmos-2535 were close during 2020 Jun-Jul.

Kosmos-2543/Kosmos-2535 (44835/44421) separation

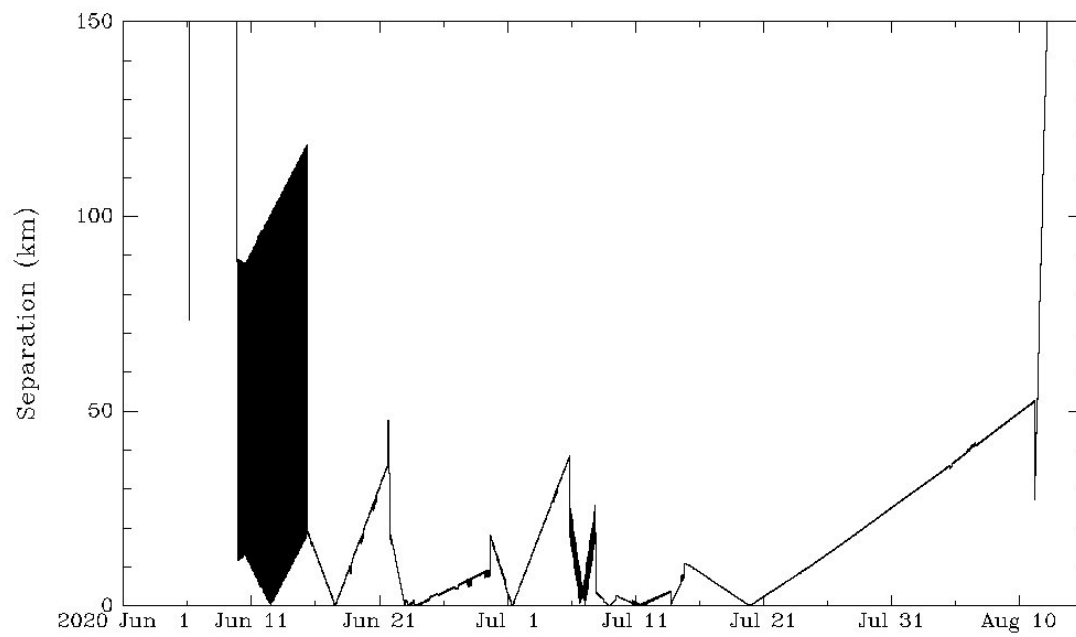


Figure 17: Details of Kosmos-2543 and Kosmos-2535 close approaches during 2020 Jun-Jul.

5.4.3 Kosmos-2536 and Kosmos-2535

Kosmos-2535 and Kosmos-2536 performed rendezvous and possibly docking operations for an extended period starting on 2020 Aug 18. The satellites had carried out a previous set of exercises during Jul-Dec 2019.

Kosmos-2535/Kosmos-2536 orbital height

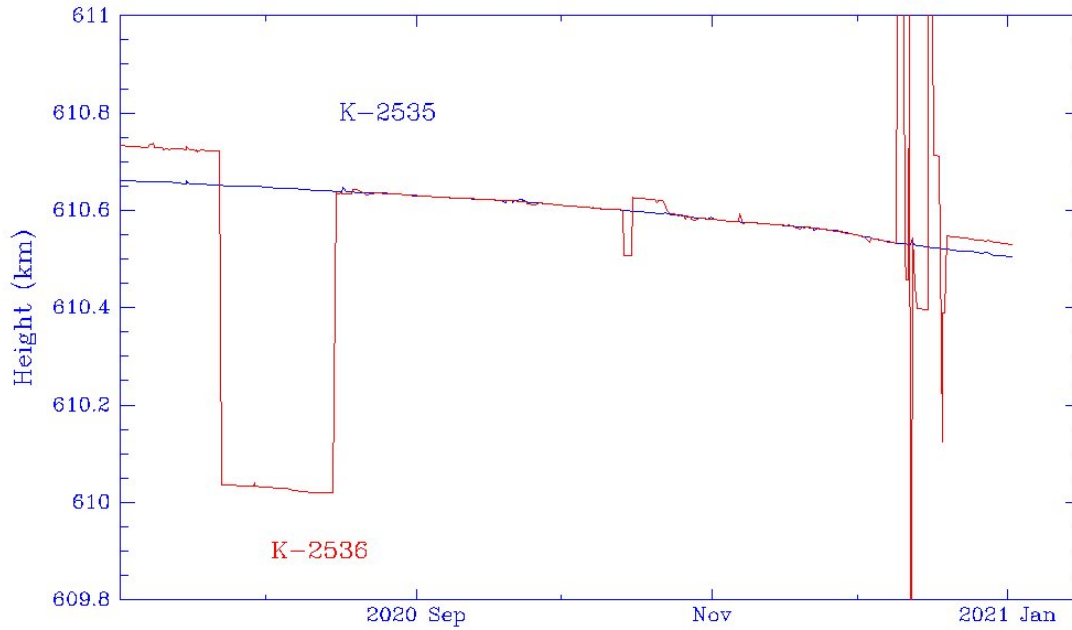


Figure 18: Kosmos-2536 height adjustments during exercise with Kosmos-2535.

Kosmos-2536/Kosmos-2535 (44424/44421) separation

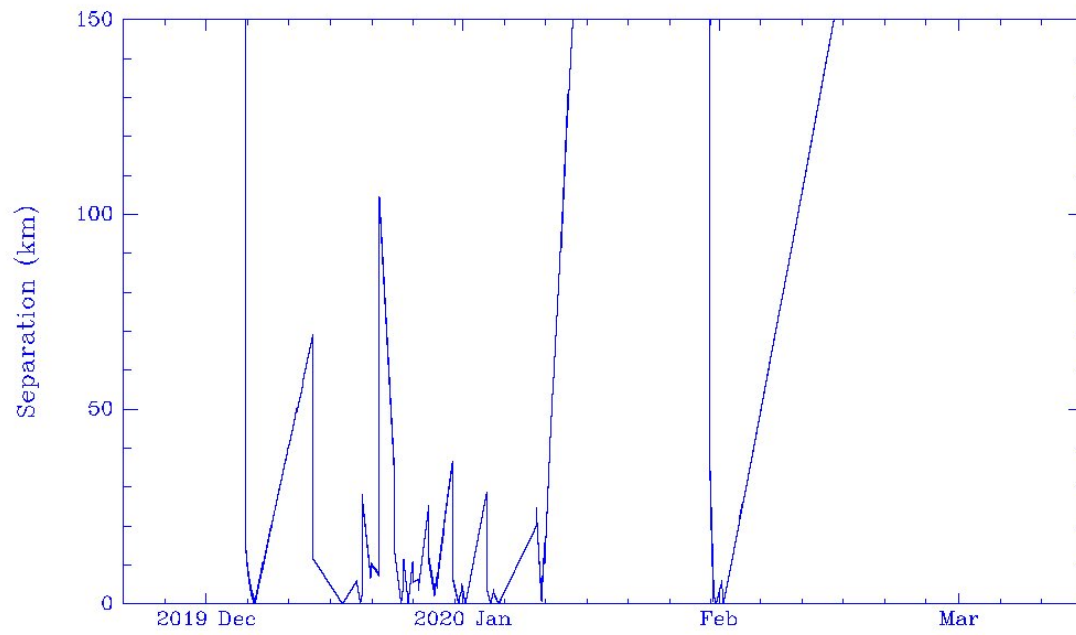


Figure 19: Details of Kosmos-2536 close approaches to Kosmos-2535, first exercise.

Kosmos-2535/Kosmos-2536 separation

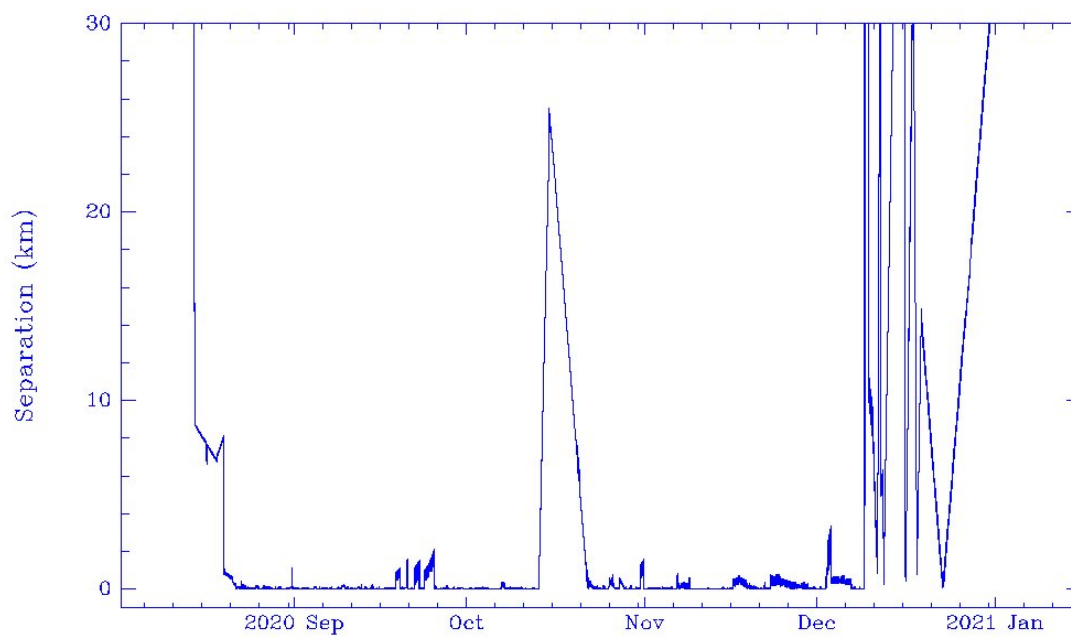


Figure 20: Details of Kosmos-2536 close approaches to Kosmos-2535, second exercise.

5.5 Indian ASAT

The Indian ASAT test was discussed last year. By end 2020 most of the debris had reentered, as shown here. With the decay of object DM (magenta) on Dec 28, only 4 objects (red) remained tracked in orbit.

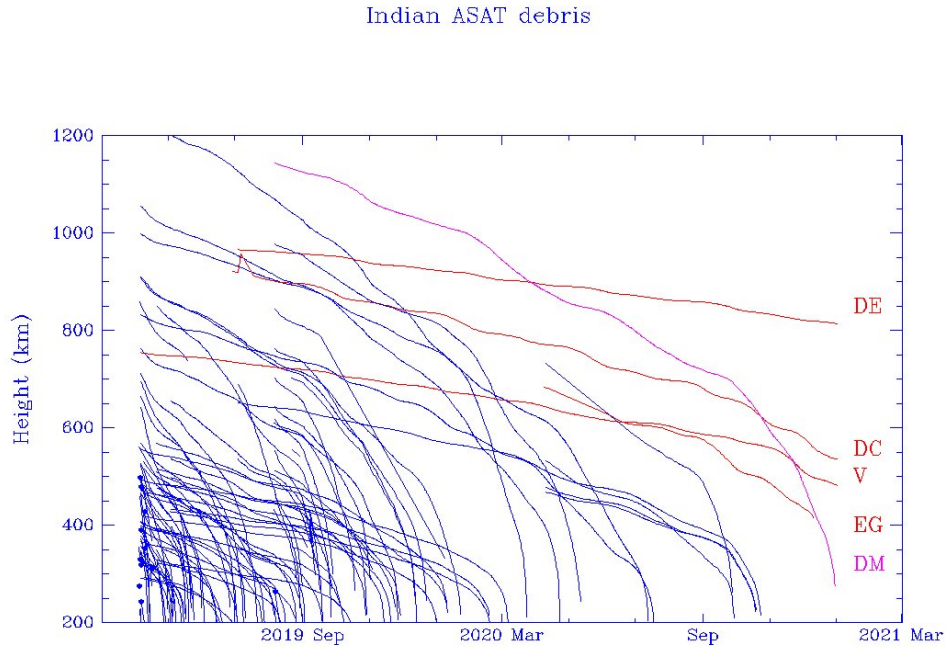


Figure 21: ASAT debris orbital average height vs time

5.6 CZ-5B-Y1 launch

China's most powerful rocket is the Chang Zheng 5 (Long March 5, CZ-5). It has four liquid side boosters (stage 0) a central core (stage 1), and an optional upper stage (stage 2). After three launches of the standard variant in 2016, 2017 (failure), and 2019, the fourth launch, CZ-5B s/n Y1, was the first use of the CZ-5B version which omits the upper stage and is used for heavy low orbit payloads.

The vehicle was launched on May 5 and placed a 21.6 tonne prototype spaceship in a 162 x 377 km x 41.1 deg low orbit. The ship has a 3.3m dia 3.0m long conical crew module ('Return cabin', fanhui cang 返回舱) and a 3.3m dia 5.8m long service module (fuwu cang, 服务舱). The spacecraft was developed by CAST/Beijing, and is referred to in Chinese announcements as 新一代载人飞船试验船, Xinyidai Zairen Feichuan - Shiyan Chuan (New Generation Crewed Spaceship - Test Ship). I will abbreviate it as XZF-SC or just XZF. XZF raised its orbit to 299 x 719 km x 41 deg on the first day in space and by May 7 had reached 523 x 6278 km x 42.9 deg. On May 7, possibly about 1130 UTC, a final orbit raising burn put the apogee at around 8000 km, but no TLEs are available for this phase. At about 0415 UTC the ship began a deorbit burn of about 120 m/s which was concluded at 0421 UTC. This lowered perigee into the atmosphere. The return cabin (fanhui cang) separated from the service module (fuwu cang) at 0533 UTC. Entry interface was at 0538 UTC with a 9.0 km/s entry speed, followed by parachute descent and an airbag-assisted landing near Jiuquan Space Centre at 0549 UTC. Total delta-V of the XZF mission was around 2.0 km/s, implying a propellant load of over 10.3 tonnes and a dry mass of at most 11.3 tonnes. (Most likely there was a propellant reserve and the spacecraft dry mass is around 10 tonnes, divided in an unknown ratio between the cabin and the service module).

A second payload was referred to as Rouxing Chongqi Shihuowu Fanhui Cang - Shiyang Cang, (Flexible Inflatable Cargo Return Module - Test Module, 柔性充气式货物返回舱试验舱). It is a recovery test of a capsule with an inflatable heat shield, and was developed by the CASIC organization. The 1.0 x 1.5m experiment was ejected from the rear of the XZF service module and inflated a 3-metre conical heat shield. The vehicle was deorbited on May 6 for a landing east of Jiquan at around 0515 UTC. However the recovery was reported to be unsuccessful.

The 21.6 tonne CZ-5B core stage was left in a 157 x 372 km orbit, which decayed by May 11 to 124 x 153 km. During its last orbit it flew directly over Los Angeles and New York City. The core stage began an uncontrolled reentry at 1534 UTC May 11 over 20W 20N, as it flew over the Atlantic heading towards Nouakchott, Mauritania. Some of the denser debris impacted the ground 2200 km further downtrack, in the Bocanda region of Cote d'Ivoire. 10-metre-long metal rods fell from the sky in several villages, causing minor damage to houses and equipment but no reported casualties. CZ-5B-Y1 was the 5th most massive object ever to make an uncontrolled reentry, after OV-102 Columbia (2003), Skylab (1979), Skylab S-II rocket (1975), and Salyut-7 (1991).



Figure 22: CZ-5B reentry track

5.7 Chang'e-5 mission

China's CALT launched a Chang Zheng 5 (serial Y5) from Wenchang at 2030 UTC on Nov 23 carrying Chang'e-5.

The 8200 kg Chang'e-5, developed by CAST/Beijing and the Chinese Lunar Exploration Program, is a robotic sample return mission - the first such to the Moon since Luna-24 in 1976. The mission successfully landed on the Moon and returned its samples to Earth after a 23 day mission. It included the first automatic rendezvous, docking and sample transfer in deep space.

Chang'e-5 consists of a number of components (abbreviations are mine):

- SM, Service module, which will perform lunar orbit insertion and transearth insertion burns. Chinese name: Guidaο Qi (orbiter vehicle, 嫦娥五号轨道器)
- DS, descent stage (Lander), which will separate in lunar orbit, land near Mons Rumker, and obtain a surface sample. Chinese name: Zhuolu Qi (lander vehicle, 嫦娥五号着陆器)
- AS, Ascent stage, which will take off from the lunar surface carrying the sample and dock with the service module's docking adapter in lunar orbit. Chinese name: Shangsheng Qi (ascent vehicle, 嫦娥五号上升器)
- AD, Adapter, which joins the service module to the lander at launch and contains the return capsule and docking adapter. Chinese name: Lianje Zhijia (connecting frame, adapter, 轨道器与着陆器连接支架). Left in lunar orbit.
- DA, Docking adapter, mounted on top of the return capsule. Contains a mechanism to transfer the sample from the ascent stage to the return capsule. Chinese name: Jiaohui duijie jigou (rendezvous/docking mechanism, 交会对接机构)
- RV, Return capsule, which separates from the service module and lands in China. Chinese name: Fanhui Qi (return vehicle, 嫦娥五号返回器)

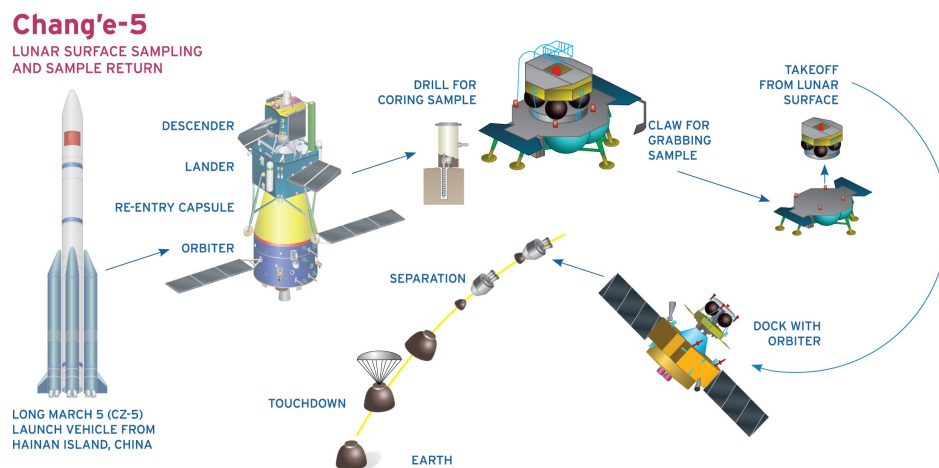


Figure 23: Change'e-5 mission components: graphic from The Planetary Society

The mission was pretty complicated; here I list the various stages of it (all times UTC):

Nov 23 2030	Launch
Nov 23 2042	Earth parking orbit, attached to CZ-5 stage 2
Nov 23 2058	7 minute translunar injection burn by CZ-5 stage 2, cutoff at 2105
Nov 23 2106	CE-5 separates from stage 2, stage 2 propellant dump to 22 x 291690 km orbit
Nov 23 2107	Translunar coast, 201 x 392980 km x 21.3 deg
Nov 24 1406	TCM-1 trajectory correction maneuver
Nov 25 1406	TCM-2 trajectory correction maneuver
Nov 27 0800	CZ-5 second stage reaches apogee at 291690 km
Nov 27 1840	CE-5 enters lunar gravitational sphere of influence
Nov 28 1258	Lunar orbit insertion burn to 216 x 5585 km x 42.4 deg elliptical orbit, burn completed 1315 UTC
Nov 29 1223	Lunar orbit maneuver to 217 x 217 km x 42.4 deg circular orbit
Nov 29 2040	DS+AS separate from SM+AD (with DA+RV inside AD), in lunar orbit
Nov 30 1423	DS+AS move to low perilune orbit, 19 x 217 km
Nov 30 1541	CZ-5 second stage reenters over 136W 4N
Nov 30 1822	DS+AS move to pre-descent orbit, about 19 x 67 km?
Nov 30 2345?	SM+AD move to low perilune orbit (77? x 217? km)
Dec 1 1458	DS begins powered descent burn
Dec 1 1511	DS+AS land on the Moon at about 51.9W 43.1N, in northeast Oceanus Procellarum, north of the Louville Omega hills.
Dec 2 1946?	AD is ejected from SM+RV+DA, in lunar orbit, Dec 2
Dec 2 2053	DS+AS sample collection complete
Dec 3 1510:21	AS takes off, leaving DS on the Moon
Dec 3 1527	AS enters lunar orbit and begins rendezvous with SM+RV+DA.
Dec 4?	AS rendezvous burns 2 and 3
Dec 5 2142	AS docks with DA;
Dec 5 2212	DA transfers sample from AS to RV.
Dec 6 0335	AS+DA ejected from SM+RV.
Dec 7 2259	AS+DA deorbit burn
Dec 7 2330	AS+DA impact lunar surface near 0E 30S
Dec 12 0154	SM+RV move to elliptical lunar orbit, about 215 x 5680 km x 42 deg
Dec 13 0151	SM+RV perform transearth insertion burn, 22 min duration
Dec 13 0213	SM+RV TEI burn shutdown, on lunar escape hyperbola
Dec 13 1700?	SM+RV leave Lunar gravitational sphere of influence, begin trans-earth coast
Dec 14 0313	SM course correction
Dec 16 0115	SM course correction
Dec 16 1712?	RV separates from SM, 5000 km altitude
Dec 16 1715?	SM avoidance maneuver (to entry or to escape?)
Dec 16 1733	RV Earth atmosphere entry 120 km, 11.2 km/s
Dec 16 1733?	SM performs avoidance burn and inserted on trans-L1 trajectory
Dec 16 1735?	RV skip perigee at 60 km
Dec 16 1740?	RV skip apogee at 120 km
Dec 16 1749	RV second atmosphere entry over China
Dec 16?	RV jettisons aeroshell, deploys parachute
Dec 16 1759	RV lands in Siziwang Banner, Inner Mongolia, 111 26 20E 42 20 19 N
Early 2021	SM reaches Sun-Earth L1 region to begin new mission?
2021?	AD in lunar orbit perturbed by mascons and impacts lunar surface (probably within 1 year)

I have updated GCAT to include the Chang'e-5 ascent stage ('Shangsheng Qi') launch as follows:

- The engine is for now designated as SSQ Engine until we get a real designation for it.
- The launch vehicle is designated CE-5 SSQ (short for Chang'e-5 Shangsheng Qi)

- The launch vehicle is part of the new launch family CE5SSQ
- I am calling the launch site Louville Omega North, and giving it the site code LOMN.
- The launch ‘pad’ is CE-5 ZQ (short for Chang’e 5 Zhoulu Qi, CE-5 lander).
- The launch from the lunar surface is given the launch designation 2020-U02
- The ascent stage is GCAT deep space catalog number D01048. It has launch code 2020-087 until lunar landing, and 2020-U02 afterwards.

5.8 ISS traffic in 2020

Table 9 lists arrivals, departures, deployments and spacewalks at ISS during 2020.

Table 9: ISS event log, 2020

Date	Piece	Name	Operator	Event	Loc	Crew
2020 Jan 7 0841	2019-083A	Dragon CRS-19	SpaceX	Depart	Harmony N	
2020 Jan 15 1130		EVA-62 EMU 3004, 3008	NASA	EVA	Quest	Meir, Koch
2020 Jan 20 1127		EVA-63 EMU 3004, 3008	NASA	EVA	Quest	Meir, Koch
2020 Jan 25 1158		EVA-64 EMU 3008, 3004	NASA	EVA	Quest	Morgan, Parmitano
2020 Jan 29 0720	1998-067QY	STPSat-4	USAF	Deploy	Kibo RMS/Cyclops	
2020 Jan 31 1115?	2019-071A	SS Alan Bean	NG	Depart	Unity N	
2020 Feb 6 0550	2019-041A	Soyuz MS-13	Roskosmos	Depart	Poisk	
2020 Feb 18 1116	2020-011A	SS Robert Lawrence	NG	Arrive	Unity N	Skvortsov, Parmitano, Koch
2020 Feb 19 0710	1998-067RD	RadSat-U	Montana State	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 0935	1998-067RB	Phoenix	Arizona State	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1120	1998-067RG	QARMAN	Von Karman Inst.	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1255	1998-067RD	CryoCube-1	NASA KSC	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1255	1998-067RE	AztechSat-1	UPA Est. de Puebla	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1430	1998-067RA?	SOCRATES	U Minnesota	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1600	1998-067QZ	HARP	UMBC	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1600	1998-067RC?	ARGUS-02	St Louis U.	Deploy	Kibo RMS/NRCSD	
2020 Feb 19 1740	1998-067RH	SORTIE	Astra LLC	Deploy	Kibo RMS/NRCSD	
2020 Feb 21 1850	1998-067RJ	IOCS	JAXA	Release	Kibo EF/Canadarm-2	
2020 Mar 9 1218	2020-016A	Dragon CRS-20	SpaceX	Arrive	Harmony N	
2020 Apr 7 1030?	2020-016A	Dragon CRS-20	SpaceX	Depart	Harmony N	
2020 Apr 9 1413	2020-023A	Soyuz MS-16	Roskosmos	Arrive	Poisk	
2020 Apr 17 0153	2019-064A	Soyuz MS-15	Roskosmos	Depart	Zvezda aft	Ivanishin, Vagner, Cassidy
2020 Apr 25 0512	2020-026A	Progress MS-14	Roskosmos	Arrive	Zvezda aft	Skripochka, Meir, Morgan
2020 Apr 28 1520	1998-067RL	Quetzal 1	UV Guatemala	Deploy	Kibo RMS/J-SSOD	
2020 Apr 28 1700?	1998-067RK	G-SATELLITE	U Tokyo	Deploy	Kibo RMS/J-SSOD	
2020 May 11 1300?	2020-011A	SS Robert Lawrence	NG	Depart	Unity N	
2020 May 25 1446	2020-030A	Kounotori 9	JAXA	Arrive	Harmony N	
2020 May 31 1416	2020-033A	Dragon Demo-2 'Endeavour'	SpaceX	Arrive	IDA-2	Hurley, Behnken
2020 Jun 17 1800?	1998-067RM	MERLOT (REDEYE 2)	DARPA	Deploy	Kibo/Dextre/Kaber	
2020 Jun 23 2110?	1998-067RN	CABERNET (REDEYE 3)	DARPA	Deploy	Kibo/Dextre/Kaber	
2020 Jun 26 1128		EVA-65 EMU 3006, 3004	NASA	EVA	Quest	Cassidy, Behnken
2020 Jul 1 1108		EVA-66 EMU 3006, 3004	NASA	EVA	Quest	Cassidy, Behnken
2020 Jul 8 1822	2019-085A	Progress MS-13	Roskosmos	Depart	Pirs	
2020 Jul 13 1340	1998-067RP	DeMi	DARPA/Aurora	Deploy	Kibo RMS/NRCSD	
2020 Jul 13 1655	1998-067RQ	TechEdSat-10	NASA-Ames/SJSU	Deploy	Kibo RMS/NRCSD	
2020 Jul 16 1107		EVA-67 EMU 3004, 3006	NASA	EVA	Quest	Behnken, Cassidy
2020 Jul 21 1108		EVA-68 EMU 3004, 3006	NASA	EVA	Quest	Behnken, Cassidy
2020 Jul 23 1745	2020-050A	Progress MS-15	Roskosmos	Arrive	Pirs	
2020 Aug 1 2335	2020-033A	Dragon Demo-2 'Endeavour'	SpaceX	Depart	IDA-2	Hurley, Behnken
2020 Aug 18 1351	2020-030A	Kounotori 9	JAXA	Depart	Harmony N	

Table 9: ISS event log, 2020 (cont.)

Date	Piece	Name	Operator	Event	Loc	Crew
2020 Oct 5 1201	2020-069A	SS Kalpana Chawla	NG	Arrive	Unity N	
2020 Oct 14 0848	2020-072A	Soyuz MS-17	Roskosmos	Arrive	Rassvet	Ryzhikov, Kud-Sverchikov, Rubins
2020 Oct 21 2332	2020-023A	Soyuz MS-16	Roskosmos	Depart	Poisk	Ivanishin, Vagner, Cassidy
2020 Nov 5 0905	1998-067RR	SPOC	U. Georgia	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 0905	1998-067RS	Bobcat 1	Ohio U.	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 1040	1998-067RT?	NEUTRON 1	U. Hawaii	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 1315	1998-067RU?	SATTLA-1	Ariel U.	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 1315	1998-067RV	Lemur-2-Baxter-Oliver	Spire	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 1215	1998-067RW	Djara	ONI, Australia	Deploy	Kibo RMS/NRCSD	
2020 Nov 5 1315	1998-067RX	DESCENT	York U.	Deploy	Kibo RMS/NRCSD	
2020 Nov 17 0401	2020-084A	Dragon USCV-1 'Resilience'	SpaceX	Arrive	IDA-2	Hopkins, Glover, Noguchi, Walker
2020 Nov 18 1453		VKD-47 Orlan-MKS 4,5	Roskosmos	EVA	Poisk	Kud'-Sverchikov, Rhyzhikov
2020 Dec 7 1840	2020-093A	Dragon CRS-21	SpaceX	Arrive	IDA-3	
2020 Dec 20 0330?		Bishop Airlock (NRAL)	Nanoracks	Arrive	Tranquility P	[From CRS-21]

ISS traffic 2020

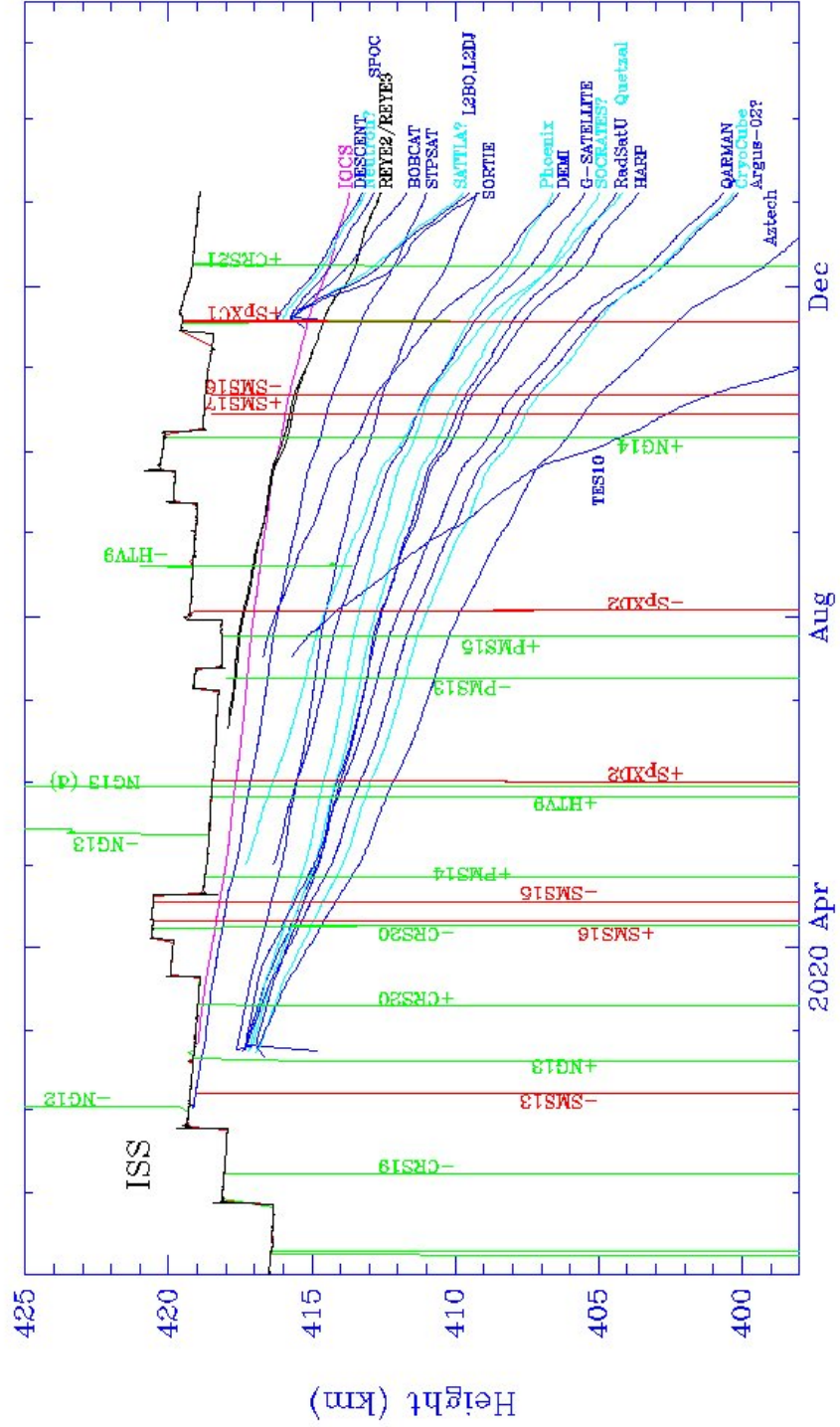


Figure 24: ISS traffic in 2020: Height vs Time plot

5.9 New geosynchronous satellites in 2020

Table 10 lists geosynchronous satellites launched in 2020 and gives their positions at the end of the year.

The Angara-A5 test flight on Dec 14 flew a Briz-M stage with a dummy payload to GEO, and then on the same day moved to a graveyard orbit.

Table 10: Geostationary satellites launched in 2020, ordered by longitude

Piece	Name	Operator	Location	Mission
2020-056C	Galaxy 30	Intelsat	171W relocating	Comms
2020-022B	AEHF 6	USSF	94.4W	Comms
2020-005B	Eutelsat Konnect	Eutelsat	7.2E	Comms
2020-099A	CMS-1	ISRO	77.7E	Comms
2002-017A	Beidou-3 G2	CASC	80.0E	Nav
2020-053B	Ekspress-80	Kos. Svyaz	80.1E	Comms
2020-005A	GSAT 30	ISRO	83.0E	Comms
2020-089A	DRS-1	CSICE	90.8E	Comms
2020-053A	Ekspress-103	Kos. Svyaz	102.8E	Comms
2020-056A	BSAT 4b	BSAT	109.8E	Comms
2020-040A	Beidou-3 G3	CASC	110.5E	Nav
2020-048A	ANASIS II	ADD	116.2E	Comms
2020-071A	Gao Fen 13	CASC	117.8E	Imaging
2020-082A	Tiantong 1-02	CASC	125.1E	Comms
2020-013B	Cheollian 2B	KARI	128.3E	Weather
2020-045A	Apstar 6D	APT	134.0E	Comms
2020-013A	JCSAT 17	JCSAT	136.0E	Comms
2020-002A	Huoyan 2 (TJS 5)	CASC/PLA?	178.5E	Early warning?
2020-095A	USA 311 (ORION 10)	NRO	UNKNOWN	Sigint
2020-056B	MEV-2	Space Logistics	Orbit raising	Servicing
2020-096A	SXM-7	Sirius XM	Orbit raising	Digital radio
2020-097A	GVM/Briz-M 88802	Khrunichev	Moved to graveyard	Test flight

5.10 New sun-synchronous satellites in 2020

Table 11 lists satellites launched to sun-synchronous orbit in 2020, ordered by the local time of their orbit's descending node (LTDN, format hhmm or hhmm:ss).

Table 11: SSO satellites launched in 2020, ordered by local time of descending node

Piece	Name	Operator	Mission	Orbit	LTDN
2020-068X	NetSat 2	Zentrum fur Telematik	Tech	555 x 567 x 97.7	0114:08
2020-068W	NetSat 1	Zentrum fur Telematik	Tech	555 x 567 x 97.7	0114:09
2020-068V	NetSat 3	Zentrum fur Telematik	Tech	555 x 567 x 97.7	0114:12
2020-068U	NetSat 4	Zentrum fur Telematik	Tech	555 x 567 x 97.7	0114:15
2020-068T	Lemur-2-Slicers	Spire	GNSS-RO/AIS/ADS-B	553 x 567 x 97.7	0114:25
2020-068S	Lemur-2-Slicers	Spire	GNSS-RO/AIS/ADS-B	552 x 567 x 97.7	0114:29
2020-068R	Lemur-2-Slicers	Spire	GNSS-RO/AIS/ADS-B	551 x 568 x 97.7	0114:32
2020-068Q	Lemur-2-Slicers	Spire	GNSS-RO/AIS/ADS-B	550 x 568 x 97.7	0114:34
2020-068P	Kepler-4 (Antilles)	Kepler Comms	IoT	550 x 569 x 97.7	0114:35
2020-068N	Kepler-5 (Amidala)	Kepler Comms	IoT	550 x 569 x 97.7	0114:37
2020-068L	ICEYE-X7	ICEYE	Radar	548 x 568 x 97.7	0114:56
2020-068M	ICEYE-X6	ICEYE	Radar	548 x 568 x 97.7	0115:01
2020-068K	SALSAT	TU Berlin	RF monitoring	545 x 568 x 97.7	0115:12
2020-068J	Norbi	Novosibirsk SU	Space physics	544 x 568 x 97.7	0115:17
2020-068H	Dekart	MGU	Space physics	544 x 568 x 97.7	0115:19
2020-068F	Yarilo 2	Bauman	Solar physics	543 x 568 x 97.7	0115:22
2020-068G	Lacunasat 3	Lacuna	IoT	544 x 568 x 97.7	0115:22
2020-068D	MeznSat	AURAK/MASDAR, UAE	Student sat	543 x 568 x 97.7	0115:24
2020-068E	Yarilo 1	Bauman	Solar physics	543 x 568 x 97.7	0115:24
2020-104A	CSO 2	DGA/CNES	Imagign	470 x 473 x 97.4	0130?
2020-036A	Hai Yang 1D	CASC	Oceanography	769 x 786 x 98.5	0131
2020-043A	Shiyan 6-02	CASC	Tech?	656 x 670 x 98.2	0607
2020-028A	Xingyun-2 01	Hangtian Xingyun Keji	IoT	559 x 571 x 97.3	0722
2020-028B	Xingyun-2 02	Hangtian Xingyun Keji	IoT	555 x 574 x 97.5	0722
2020-058A	Gao Fen 9-05	CASC	Imaging	485 x 506 x 97.5	0854
2020-058B?	Tiantuo-5	NUDT	AIS/IoT	482 x 504 x 97.5	0854
2020-058C?	DGSW	Beijing Military Acad.	Tech	482 x 505 x 97.5	0854
2020-065B	Jilin-1 GF03B-2?	Chang Guang	Imaging	531 x 547 x 97.5	09:18:54
2020-065A	Jilin-1 GF03B-1?	Chang Guang	Imaging	528 x 547 x 97.5	09:18:59
2020-065E	Jilin-1 GF03B-5?	Chang Guang	Imaging	529 x 546 x 97.5	09:18:59
2020-065G	Jilin-1 GF03C-1?	Chang Guang	Imaging	529 x 546 x 97.5	09:19:08
2020-065D	Jilin-1 GF03B-4?	Chang Guang	Imaging	531 x 547 x 97.5	09:19:13
2020-065C	Jilin-1 GF03B-3?	Chang Guang	Imaging	531 x 546 x 97.5	09:19:29
2020-065J	Jilin-1 GF03C-3?	Chang Guang	Imaging	527 x 545 x 97.5	09:19:30
2020-065F	Jilin-1 GF03B-6?	Chang Guang	Imaging	529 x 547 x 97.5	09:19:40
2020-065H	Jilin-1 GF03C-2?	Chang Guang	Imaging	528 x 545 x 97.5	09:19:43
2020-077A	Flock 4e'-1	Planet	Imaging	509 x 529 x 97.5	0942:58
2020-077C	Flock 4e'-9	Planet	Imaging	508 x 527 x 97.5	0943:00
2020-077B	Flock 4e'-7	Planet	Imaging	507 x 528 x 97.5	0943:04
2020-077D	Flock 4e'-8	Planet	Imaging	504 x 525 x 97.5	0943:18
2020-077K	Flock 4e'-6	Planet	Imaging	505 x 524 x 97.5	0943:18
2020-077F	CESAT-IIB	Canon	Imaging	502 x 526 x 97.5	0943:28

Table 11: SSO satellites launched in 2020, ordered by local time of descending node (cont.)

Piece	Name	Operator	Mission	Orbit	LTDN
2020-077E	Flock 4e'-5	Planet	Imaging	505 x 527 x 97.5	0943:30
2020-077G	Flock 4e'-3	Planet	Imaging	502 x 526 x 97.5	0943:31
2020-077H	Flock 4e'-2	Planet	Imaging	503 x 525 x 97.5	0943:50
2020-003A	Jilin-1 Kuanfu-1	Chang Guang	Imaging	473 x 493 x 97.3	0952
2020-003C	Nusat-8 (Marie))	Satelloptic	Imaging	473 x 491 x 97.3	0953
2020-003D	Tianqi-5	Guodian Gaokeji	IoT	471 x 492 x 97.3	0953
2020-003B	Nusat-7 (Sophie)	Satelloptic	Imaging	466 x 488 x 97.3	0954
2020-054A	Gao Fen 9-04	CASC	Imaging	484 x 506 x 97.5	1027:22
2020-061H	SIMBA	RMI Belgium	Solar physics	531 x 536 x 97.5	1027:34
2020-061J	TRISAT	U. Maribor	Tech/imager	535 x 538 x 97.5	1027:34
2020-061K	PICASSO	IASB	Ionosphere	534 x 537 x 97.5	1027:38
2020-061L	Flock 4v-9	Planet	Imaging	534 x 537 x 97.5	1027:38
2020-061M	Flock 4v-12	Planet	Imaging	534 x 537 x 97.5	1027:40
2020-061N	Dido-3	SpacePharma	Micrograv	534 x 538 x 97.5	1027:41
2020-061P	Flock 4v-11	Planet	Imaging	534 x 537 x 97.5	1027:41
2020-061Q	Flock 4v-14	Planet	Imaging	534 x 537 x 97.5	1027:41
2020-061R	AMICal-Sat	U Grenoble Alpes	Auroral	535 x 537 x 97.5	1027:43
2020-061S	Flock 4v-8	Planet	Imaging	534 x 537 x 97.5	1027:43
2020-061T	Flock 4v-6	Planet	Imaging	534 x 537 x 97.5	1027:45
2020-061U	Flock 4v-5	Planet	Imaging	534 x 537 x 97.5	1027:45
2020-061V	Flock 4v-7	Planet	Imaging	534 x 537 x 97.5	1027:46
2020-061BK	Flock 4v-22	Planet	Imaging	515 x 524 x 97.5	1027:48
2020-061W	FSSCAT A	UP Catalonia	Rem.sensing	534 x 537 x 97.5	1027:52
2020-061X	FSSCAT B	UP Catalonia	Rem.sensing	534 x 537 x 97.5	1027:54
2020-054B	Zhongyi yi Daqi Kexue	Tsinghua	Science	480 x 506 x 97.5	1027:55
2020-061BD	Flock 4v-16	Planet	Imaging	515 x 528 x 97.5	1027:55
2020-061Y	OSM-1 Cicero	OS Monaco	GNSS-RO	530 x 534 x 97.5	1027:58
2020-061Z	Tyvak-0171	Tyvak	UNKNOWN	533 x 536 x 97.5	1028:02
2020-061AA	Flock 4v-10	Planet	Imaging	534 x 535 x 97.5	1028:05
2020-061AB	Flock 4v-13	Planet	Imaging	534 x 535 x 97.5	1028:06
2020-061B	ESAIL	exactEarth	AIS	515 x 525 x 97.5	1028:07
2020-061C	ION-SVC Lucas	DORbit	Dispenser	515 x 525 x 97.5	1028:09
2020-061BK	Flock 4v-21	Planet	Imaging	515 x 522 x 97.5	1028:09
2020-061BJ	Flock 4v-20	Planet	Imaging	515 x 527 x 97.5	1028:09
2020-061BM	Flock 4v-23	Planet	Imaging	515 x 522 x 97.5	1028:12
2020-061BQ	Flock 4v-26	Planet	Imaging	516 x 525 x 97.5	1028:12
2020-061A	Nusat-6 (Hypatia)	Satelloptic	Imaging	495 x 507 x 97.3	1028:12
2020-061BN	Flock 4v-24	Planet	Imaging	515 x 526 x 97.5	1028:13
2020-061BP	Flock 4v-25	Planet	Imaging	513 x 522 x 97.5	1028:14
2020-061BH	Flock 4v-19	Planet	Imaging	515 x 521 x 97.5	1028:15
2020-061BG	Flock 4v-18	Planet	Imaging	515 x 526 x 97.5	1028:16
2020-061AC	Lemur-2-EthanOakes	Spire	GNSS-RO/AIS/ADS-B	532 x 534 x 97.5	1028:16
2020-061AD	Lemur-2-Oscarlator	Spire	GNSS-RO/AIS/ADS-B	533 x 534 x 97.5	1028:17
2020-061AE	SpaceBEE 21	Swarm	IoT	532 x 533 x 97.5	1028:22
2020-061BF	Flock 4v-17	Planet	Imaging	515 x 520 x 97.5	1028:22
2020-061AT	Flock 4v-1	Planet	Imaging	531 x 535 x 97.5	1028:22
2020-061BB	Flock 4v-2	Planet	Imaging	531 x 535 x 97.5	1028:22
2020-061BC	Flock 4v-3	Planet	Imaging	531 x 535 x 97.5	1028:23

Table 11: SSO satellites launched in 2020, ordered by local time of descending node (cont.)

Piece	Name	Operator	Mission	Orbit	LTDN
2020-061AF	SpaceBEE 20	Swarm	IoT	532 x 533 x 97.5	1028:23
2020-061AG	SpaceBEE 15	Swarm	IoT	532 x 533 x 97.5	1028:23
2020-061AH	SpaceBEE 19	Swarm	IoT	532 x 533 x 97.5	1028:23
2020-061AJ	SpaceBEE 18	Swarm	IoT	532 x 533 x 97.5	1028:23
2020-061AL	SpaceBEE 17	Swarm	IoT	532 x 533 x 97.5	1028:24
2020-061AN	SpaceBEE 16	Swarm	IoT	532 x 533 x 97.5	1028:24
2020-061AS	TTU100	Tallinn Tech	Student sat	531 x 535 x 97.5	1028:24
2020-061AU	Flock 4v-4	Planet	Imaging	531 x 535 x 97.5	1028:24
2020-061AK	SpaceBEE 10	Swarm	IoT	532 x 533 x 97.5	1028:25
2020-061AM	SpaceBEE 11	Swarm	IoT	532 x 533 x 97.5	1028:25
2020-061AP	SpaceBEE 12	Swarm	IoT	532 x 533 x 97.5	1028:25
2020-061AQ	SpaceBEE 13	Swarm	IoT	532 x 533 x 97.5	1028:25
2020-061AR	SpaceBEE 14	Swarm	IoT	532 x 533 x 97.5	1028:25
2020-061D	Athena	PointView	Comms	516 x 519 x 97.5	1028:26
2020-061AZ	TARS	Kepler Comms	IoT	531 x 535 x 97.5	1028:29
2020-061BA	NAPA-1	Royal Thai AF	Imaging	530 x 535 x 97.5	1028:31
2020-061E	UPMSat-2	UP Madrid	Student sat	516 x 518 x 97.5	1028:31
2020-061F	NEMO-HD	Space-SI	Imaging	534 x 538 x 97.5	1028:31
2020-061AW	Lemur-2-DJUProEra	Spire	GNSS-RO/AIS/ADS-B	531 x 534 x 97.5	1028:33
2020-061AV	Lemur-2-SchmidtFall	Spire	GNSS-RO/AIS/ADS-B	531 x 534 x 97.5	1028:34
2020-061AX	Lemur-2-SquareJaws	Spire	GNSS-RO/AIS/ADS-B	531 x 534 x 97.5	1028:34
2020-061AY	Lemur-2-Ursa Avion	Spire	GNSS-RO/AIS/ADS-B	531 x 534 x 97.5	1028:35
2020-061BE	Flock 4v-15	Planet	Imaging	515 x 519 x 97.5	1028:37
2020-079A	Nusat-12 (Dorothy)	Satellogic	Imaging	465 x 480 x 97.3	1028:37
2020-079C	Nusat-11 (Cora)	Satellogic	Imaging	465 x 479 x 97.3	1028:41
2020-061G	IRIS	GHGSat	Rem.Sensing	516 x 517 x 97.5	1028:43
2020-079F	Nusat-10 (Caroline)	Satellogic	Imaging	464 x 478 x 97.3	1028:44
2020-079B	Nusat-9 (Alice)	Satellogic	Imaging	466 x 479 x 97.3	1028:46
2020-079E	Nusat-14 (Hedy)	Satellogic	Imaging	465 x 481 x 97.3	1028:50
2020-079G	Nusat-13 (Emmy)	Satellogic	Imaging	464 x 478 x 97.3	1028:52
2020-079J	Nusat-17 (Mary)	Satellogic	Imaging	464 x 479 x 97.3	1028:54
2020-079P	Nusat-16 (Lise)	Satellogic	Imaging	463 x 477 x 97.3	1028:59
2020-079L	Tianyi-20	BUAA/Tianyi	Comms/Tech	462 x 476 x 97.3	1029:04
2020-079K	Nusat-18 (Vera)	Satellogic	Imaging	462 x 477 x 97.3	1029:05
2020-079N	BY70-03	CASC	Amateur radio?	462 x 476 x 97.3	1029:06
2020-079M	Tianyan-05	Guoxing	Amateur radio?	462 x 476 x 97.3	1029:08
2020-079D	Nusat-15 (Katherine)	Satellogic	Imaging	463 x 471 x 97.3	1029:08
2020-090A	Falcon Eye 2	UAE AF	Imaging	613 x 615 x 97.9	1029:56
2020-009A	JSE Kougaku 7	CSICE	Imaging	478 x 488 x 97.3	1029:58
2020-042B	Bayi 02	Bayi/CASC	Amateur radio	632 x 648 x 98.0	1030:19
2020-042A	Gao Fen Duomo	CASC	Imaging	629 x 651 x 98.9	1030:55
2020-092A	Gao Fen 14	CASC	Imaging	481 x 497 x 97.4	1031:11
2020-051A	Zi Yuan 3-03	CASC	Imaging	492 x 512 x 97.5	1036
2020-051B	Tianqi-10	Guodian Gaokeji	IoT	480 x 498 x 97.5	1039
2020-051C	Longxia yan 01	NJU/KHU	Astronomy	480 x 499 x 97.5	1039
2020-067A	Huanjing Jianzai 02A	CASC	Imaging	627 x 653 x 98.0	1044:00
2020-067B	Huanjing Jianzai 02B	CASC	Imaging	623 x 658 x 98.0	1044:22
2020-102A	Tianqi-08	Guodian Gaokeji	IoT	504 x 516 x 97.4	1201:25
2020-102B	Yuanguang	Hubei U. Tech	Tech/GNSS-RO	504 x 516 x 97.4	1201:26
2020-102D	Haisi-1	China Electric 38	Radar	502 x 511 x 97.4	1201:29

Table 11: SSO satellites launched in 2020, ordered by local time of descending node (cont.)

Piece	Name	Operator	Mission	Orbit	LTDN
2020-102C	XJY-7	CASC	Radar?	497 x 538 x 97.4	1201:30
2020-102E	ET-SMART-RSS	ESSTI/Zhixing	Imaging	500 x 509 x 97.4	1201:33
2020-064A	Gao Fen 11-02	CASC	Imaging	249 x 624 x 97.3	1315:19
2020-080A	Tianqi-11	Guodian Gaokeji	IoT	482 x 502 x 97.4	1332:00
2020-039A	Gao Fen 9-03	CASC	Imaging	488 x 503 x 97.3	1332:56
2020-039B	Zheda Pixing 3A	Zhejiang U.	Tech?	485 x 502 x 97.3	1333:13
2020-039C	HEAD-5	Hede Yuhang Jishu	IoT	483 x 500 x 97.3	1333:37
2020-085Q?	BRO-3	Unseen Labs	RF monitoring	490 x 514 x 97.4	1439:02
2020-085AC	DRAGRACER B	TriSept	Tech	492 x 515 x 97.4	1439:06
2020-085X	SpaceBee 27	Swarm	IoT	492 x 514 x 97.4	1439:18
2020-085T	SpaceBee 30	Swarm	IoT	492 x 514 x 97.4	1439:18
2020-085R	SpaceBee 33	Swarm	IoT	492 x 514 x 97.4	1439:18
2020-085AD	SpaceBee 26	Swarm	IoT	492 x 515 x 97.4	1439:19
2020-085AH	SpaceBee 23	Swarm	IoT	492 x 515 x 97.4	1439:19
2020-085D?	APSS-1	Auckland APSS	Earthquakes	490 x 514 x 97.4	1439:19
2020-085S	SpaceBee 32	Swarm	IoT	492 x 514 x 97.4	1439:19
2020-085U	SpaceBee 31	Swarm	IoT	492 x 514 x 97.4	1439:19
2020-085V	SpaceBee 28	Swarm	IoT	492 x 514 x 97.4	1439:19
2020-085W	SpaceBee 29	Swarm	IoT	492 x 514 x 97.4	1439:19
2020-085Z	SpaceBee 24	Swarm	IoT	492 x 514 x 97.4	1439:19
2020-085Y	SpaceBee 25	Swarm	IoT	492 x 514 x 97.4	1439:20
2020-085AA	SpaceBee 22	Swarm	IoT	492 x 514 x 97.4	1439:20
2020-085M?	BRO-2	Unseen Labs	RF monitoring	490 x 514 x 97.4	1439:26
2020-085N	SpaceBee NZ-5	Swarm NZ	IoT	490 x 514 x 97.4	1439:29
2020-085P	SpaceBee NZ-6	Swarm NZ	IoT	490 x 514 x 97.4	1439:29
2020-085K	SpaceBee NZ-3	Swarm NZ	IoT	490 x 514 x 97.4	1439:29
2020-085L	SpaceBee NZ-4	Swarm NZ	IoT	490 x 514 x 97.4	1439:29
2020-085AE	SpaceBee NZ-2	Swarm	IoT	490 x 514 x 97.4	1439:30
2020-085AF	SpaceBee 39	Swarm	IoT	490 x 513 x 97.4	1439:30
2020-085AG	SpaceBee NZ-1	Swarm	IoT	490 x 514 x 97.4	1439:31
2020-085H	SpaceBee 37	Swarm	IoT	489 x 513 x 97.4	1439:31
2020-085J	SpaceBee 38	Swarm	IoT	489 x 513 x 97.4	1439:31
2020-085E	SpaceBee 34	Swarm	IoT	489 x 512 x 97.4	1439:32
2020-085F	SpaceBee 35	Swarm	IoT	489 x 512 x 97.4	1439:32
2020-085G	SpaceBee 36	Swarm	IoT	489 x 512 x 97.4	1439:32
2020-085C	CORVUS BC-5	Astro Digital	Imaging?	490 x 512 x 97.4	1439:37
2020-085AB	DRAGRACER A	TriSept	Tech	481 x 496 x 97.4	1439:45
2020-034B	Gao Fen 9-02	CASC	Imaging	487 x 503 x 97.3	1503
2020-034A	HEAD-4	Hede Yuhang Jishu	IoT	483 x 500 x 97.3	1504
2020-037E	RAAF M2	RAAF/UNSW	AIS	585 x 603 x 97.7	1726
2020-037A	USA 301	NRO	UNKNOWN	585? x 600? x 97.7	1726
2020-037B	USA 302	NRO	UNKNOWN	585? x 600? x 97.7	1726
2020-037C	USA 303	NRO	UNKNOWN	585? x 600? x 97.7	1726
2020-037D	ANDESITE	Boston U.	Tech	582 x 601 x 97.7	1728
2020-059A	SAOCOM 1B	CONAE	Radar	621 x 624 x 97.9	1754
2020-059B	GNOMES-1	PlanetIQ	GNSS-RO	600 x 609 x 97.9	1754
2020-059C	Tyvak-0172	Tyvak	UNKNOWN	598 x 609 x 97.9	1754
2020-103A	Yaogan 33	ZZB	Radar	696 x 697 x 98.3	2200:18
2020-103B	Weina Jishu Shiyan	Unknown	Tech	683 x 692 x 98.3	2200:26
2020-098A	StriX-Alpha	Synspective	Radar	495 x 512 x 97.4	2229:25

The Sep 3 and Sep 28 Soyuz launches released a large number of satellites into similar orbits. The following series of height-vs-time figures identifies the various satellites from the launches.

2020-061 Soyuz cluster

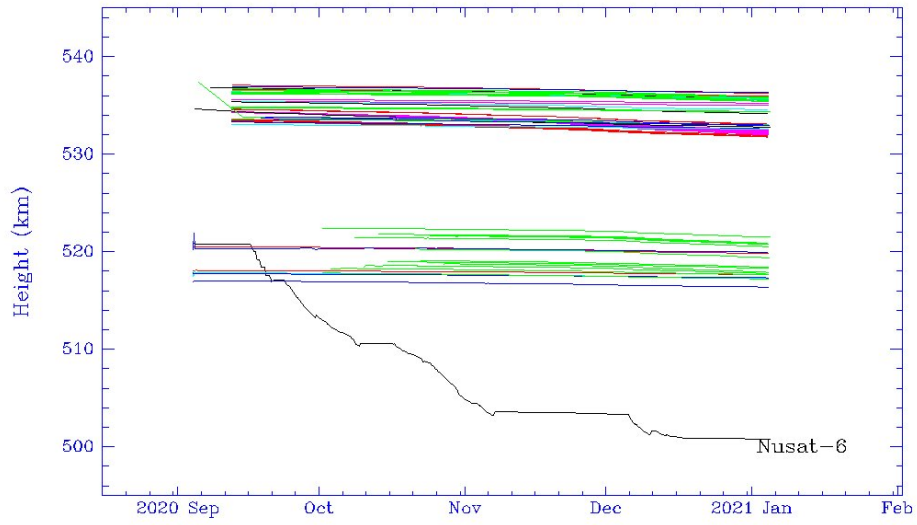


Figure 25: 2020-061 launch objects: overview

2020-061 Soyuz cluster: 535.5 to 537.2 km

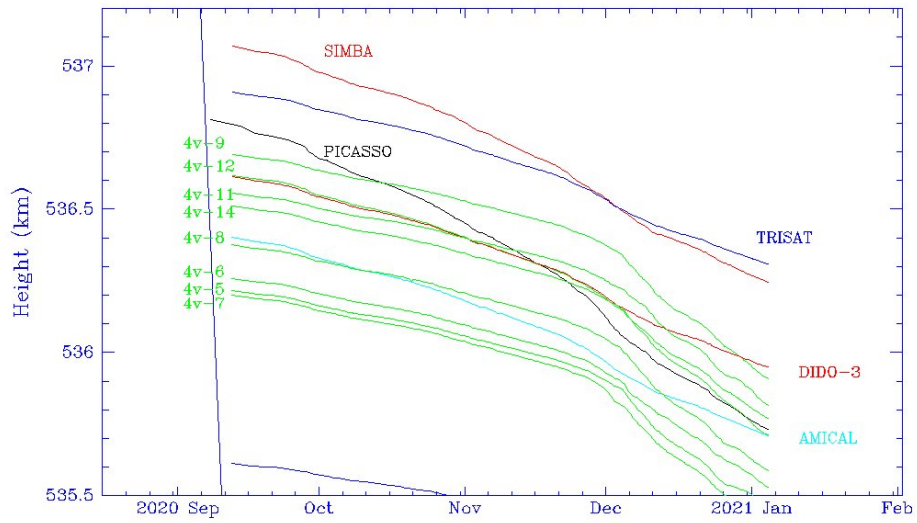
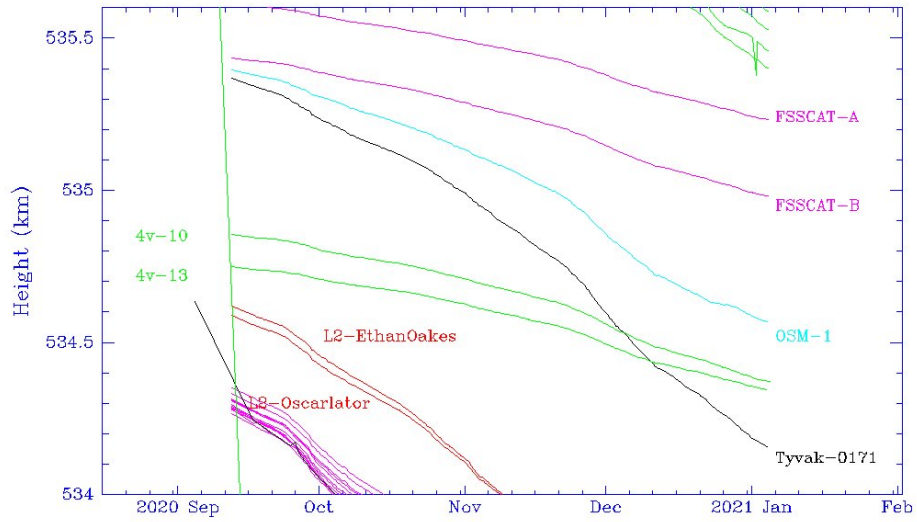


Figure 26: 2020-061 launch objects: upper height ranges

2020-061 Soyuz cluster: 534 to 535.5 km



2020-061 Soyuz cluster: 532 to 534 km

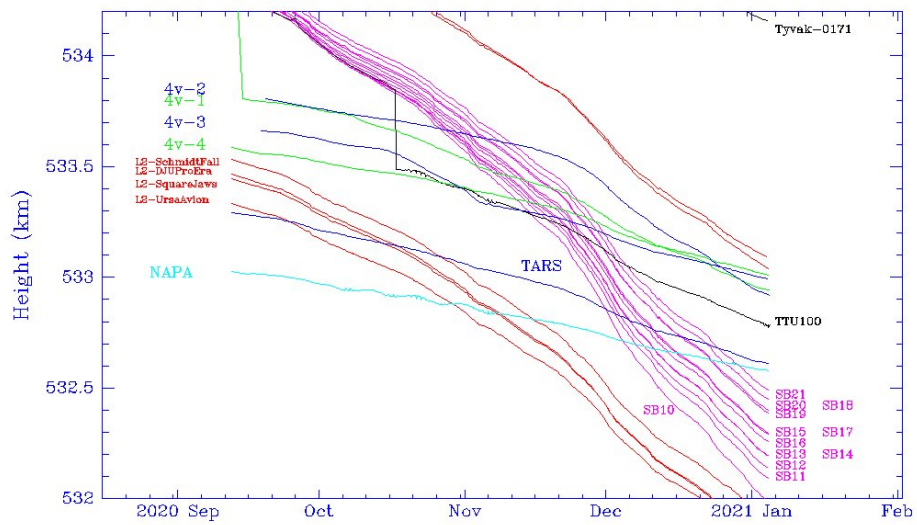


Figure 27: 2020-061 launch objects: middle height ranges

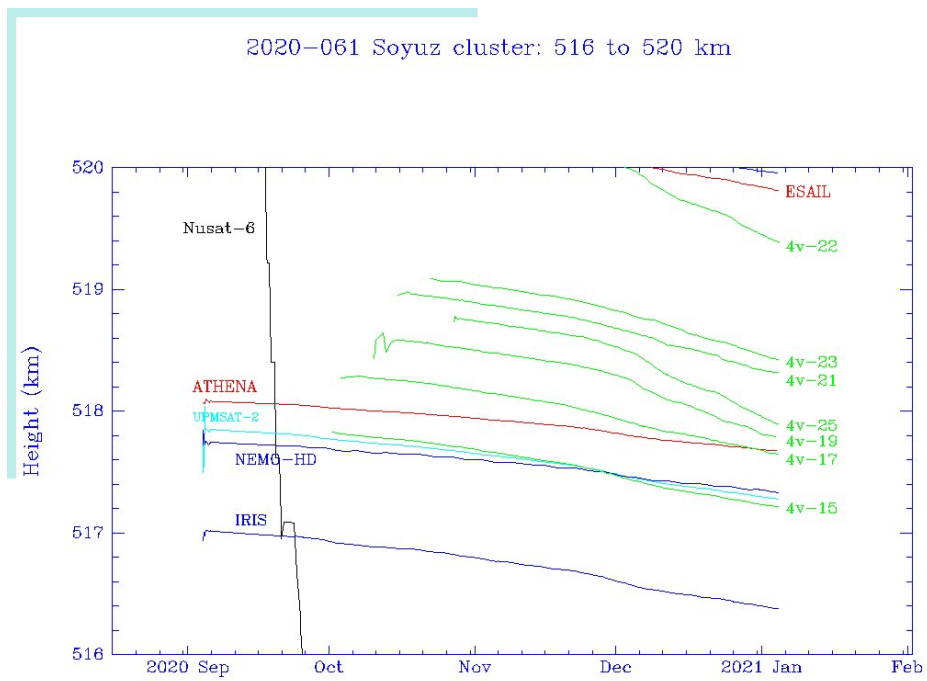
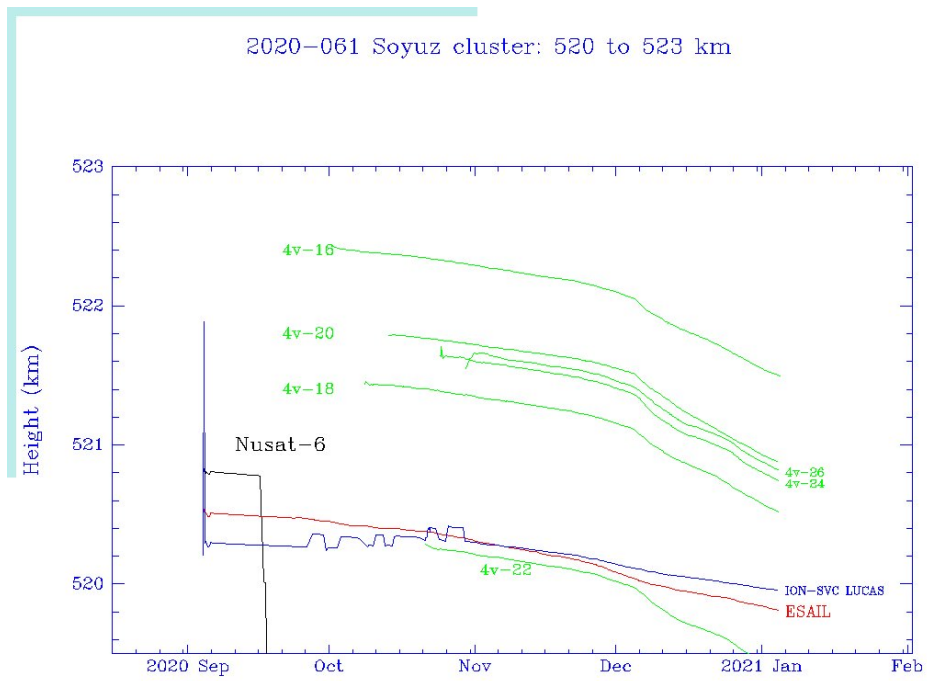
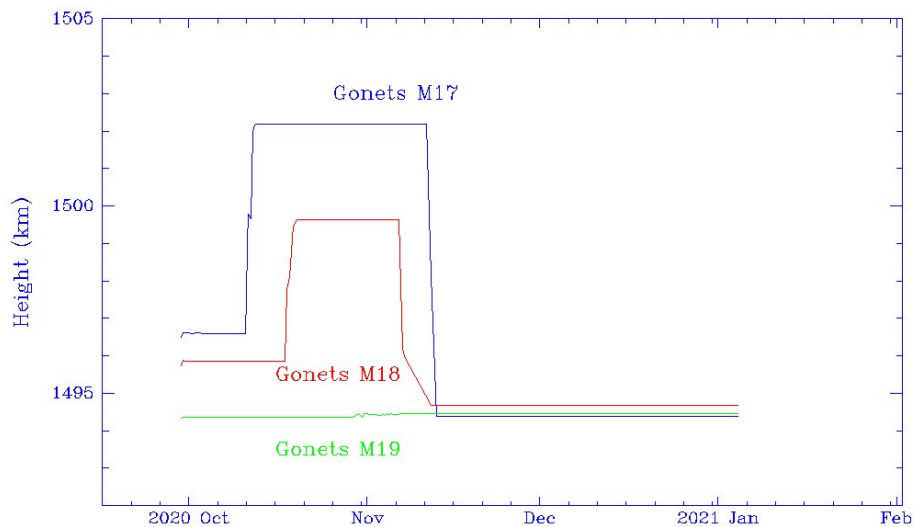


Figure 28: 2020-061 launch objects: lower height ranges

2020-068 Sep 28 Soyuz cluster - High orbit group



2020-068 Sep 28 Soyuz cluster - Low orbit group

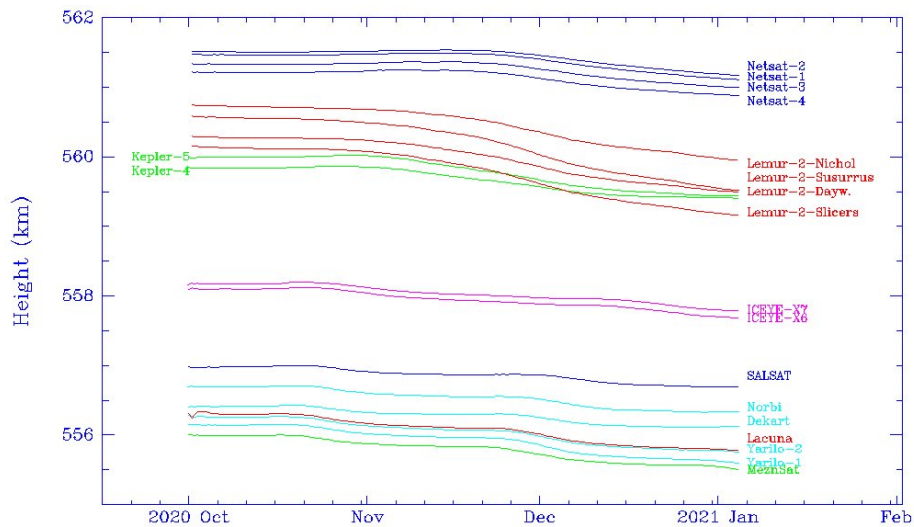


Figure 29: 2020-068 launch objects: upper ($i=82.5$) and lower ($i=97.7$) height ranges

5.11 Special Topics followup

- The illegal secret satellite deployments from OTV-5 have now been acknowledged. As I guessed, there were 3 satellites deployed and they have been given catalog numbers 45169 to 45171, and international designations 2017-052C to E. No orbital data were released, but it was announced that they were no longer in orbit as of 2020. OTV-6 was launched on 2020 May 17 and deployed the Falconsat-8 satellite on about May 28. At the end of the year it remained in a 386 x 389 km x 45.0 deg orbit.
- TJS-3 remained at 173E until 2020 Aug 4; it moved to 110.7E, where it stayed from Sep 22 to Dec 18 and then began to move again. The TJS-3 subsatellite remained on station at 59E.

6 Orbital Debris and Orbital Decay

At the end of 2020 there were 21593 cataloged objects in orbit or beyond and the total known mass in orbit increased to 9367 tonnes. The breakdown for number of objects is listed in table 12 and for the mass in orbit in table 13. Note that the sum of the individual mass figures falls short of the mass totals by a few tonnes due to complications with spurious catalog entries; but the uncertainties on those totals are probably in any case probably of the order of ten percent due to the uncertainty on masses of individual objects.

I include as active payloads any satellite thought to be still transmitting even occasionally, while other sources may only include those thought to be in full operational service. In either case, distinguishing active from dead payloads is often partly guesswork for those satellites which do not perform regular orbital maintenance maneuvers, and the uncertainty in the total number of active satellites is probably of order 10%.

Estimates of total debris masses have been updated, and are somewhat lower than in previous editions of this report. A new category ‘Alt.Pay.’ (alternative payloads) has been added as a bookkeeping convenience to account for objects that are in a marginal category - could arguably be considered payloads but are not counted as such in most lists. They are mostly short lived and so make only a small contribution here.

Figure 30 shows the evolution of the debris population versus time; this year I mark Starlink satellites as a separate category. In Figure 31 to 34 I show subsets of this data for small and large objects (below/above 100 kg) and for the lower and upper parts of LEO (below/above 600 km), showing the dramatic difference in the population and its evolution for LLEO (Lower LEO, below 600 km) and ULEO (Upper LEO, 600-2000 km).

Table 12: Debris objects in orbit at end of year, 2014-2020

Dec 31	Active Payloads	Dead Payloads	Alt Pay	Rocket Bodies	Op'l Debris	PRC FY1C debris	Strela Iridium deb	Other debris	Spurious	Total
2014	1260	2557	10	1682	1537	3023	1661	5826	6	17562
2015	1363	2598	11	1719	1539	2951	1550	6454	6	18191
2016	1465	2647	10	1752	1552	2927	1505	6512	6	18376
2017	1787	2720	10	1783	1586	2912	1483	6497	6	18784
2018	2043	2782	10	1844	1636	2899	1462	6631	6	19313
2019	2298	2899	10	1872	1662	2888	1453	6941	9	20032
2020	3368	2987	11	1891	1674	2879	1441	7333	9	21593

Table 13: Debris objects in orbit at end of year, 2014-2020

	Active Payloads	Dead Payloads	Alt Pay.	Rocket Bodies	Op'l Debris	PRC FY1C debris	Strela Iridium deb	Other debris	Spurious	Total
	(tonnes)									
2014	2565	1798	3	2917	151	-	-	-	-	7435
2015	2721	1828	3	3020	158	-	-	-	-	7732
2016	2856	1877	3	3103	162	-	-	-	-	8002
2017	3015	1915	3	3205	167	-	-	-	-	8306
2018	3212	1925	3	3374	166	-	-	-	-	8682
2019	3379	1954	3	3428	169	-	-	-	-	8934
2020	3733	1986	3	3474	168	-	-	-	-	9367

Orbital Population

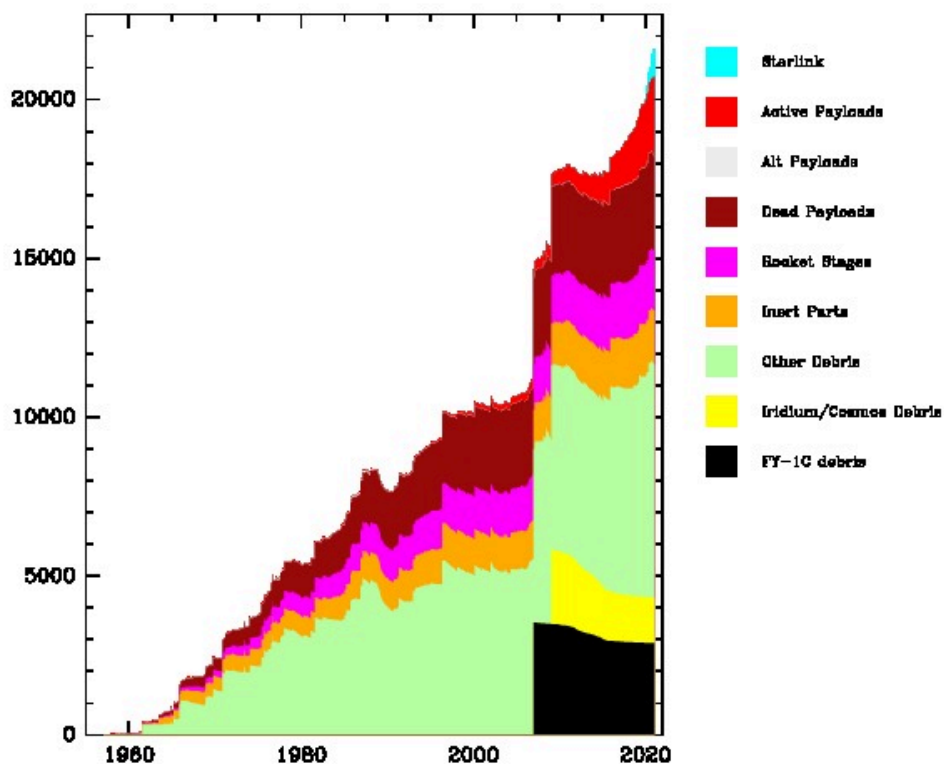


Figure 30: Orbital object population 1957-2020

Objects < 100 kg in LLEO

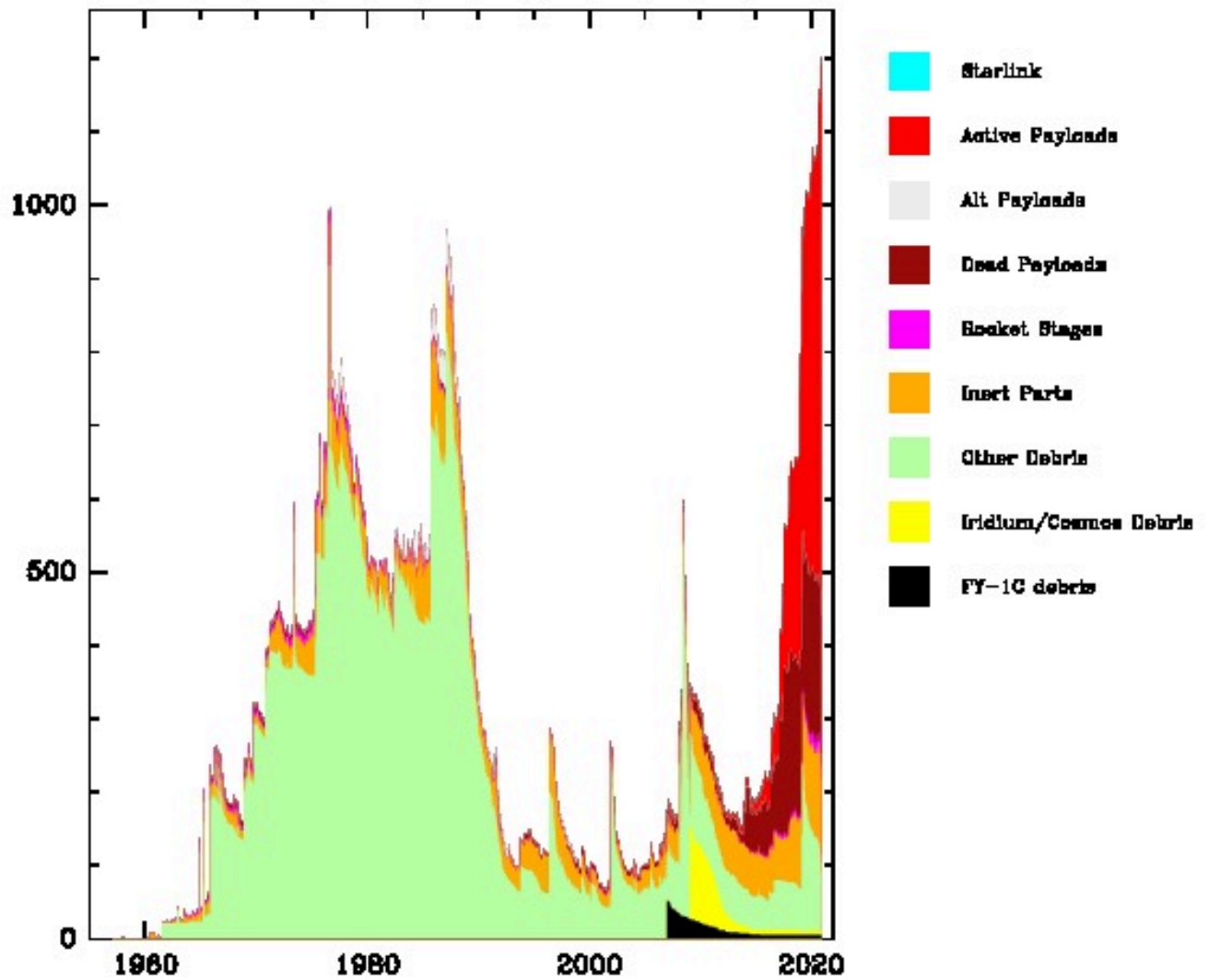


Figure 31: Time evolution of LEO debris and active satellite population (a): Small (<100 kg) objects in lower (< 600 km) LEO

Objects > 100 kg in LLEO

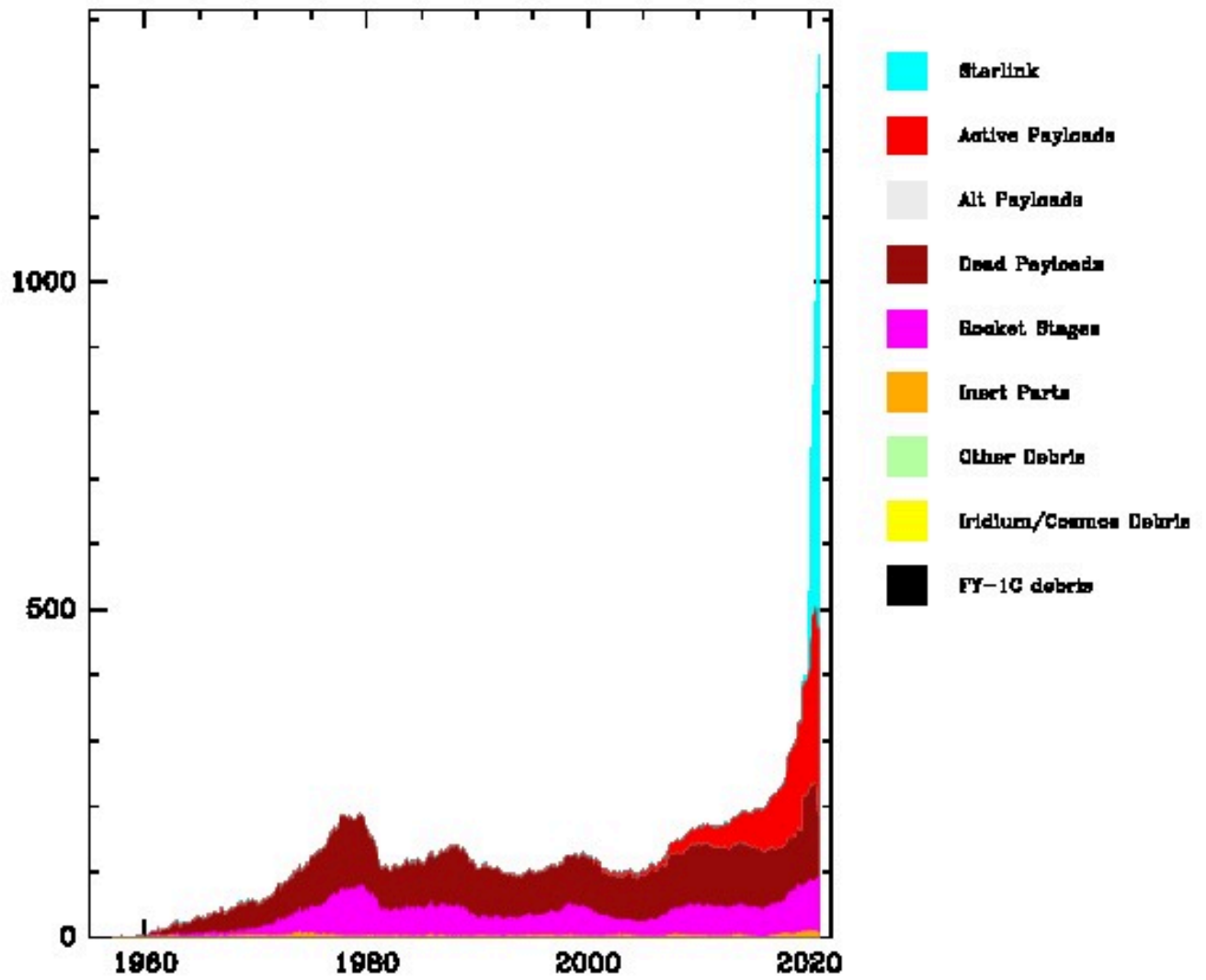


Figure 32: Time evolution of LEO debris and active satellite population (b): Big (>100 kg) objects in lower (< 600 km) LEO

Objects < 100 kg in Upper LEO

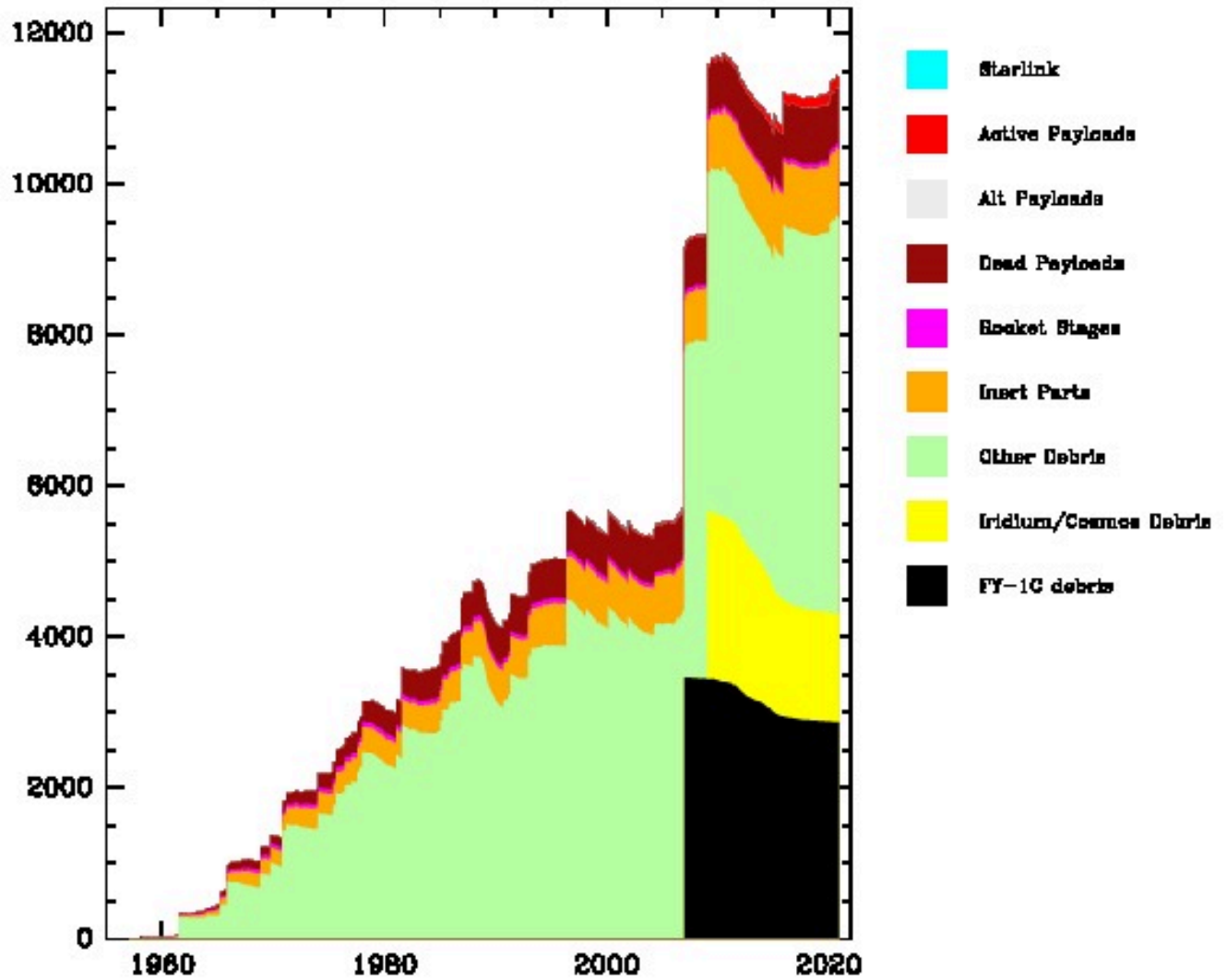


Figure 33: Time evolution of LEO debris and active satellite population (c): Small (<100 kg) objects in upper (> 600 km) LEO

Objects > 100 kg in Upper LEO

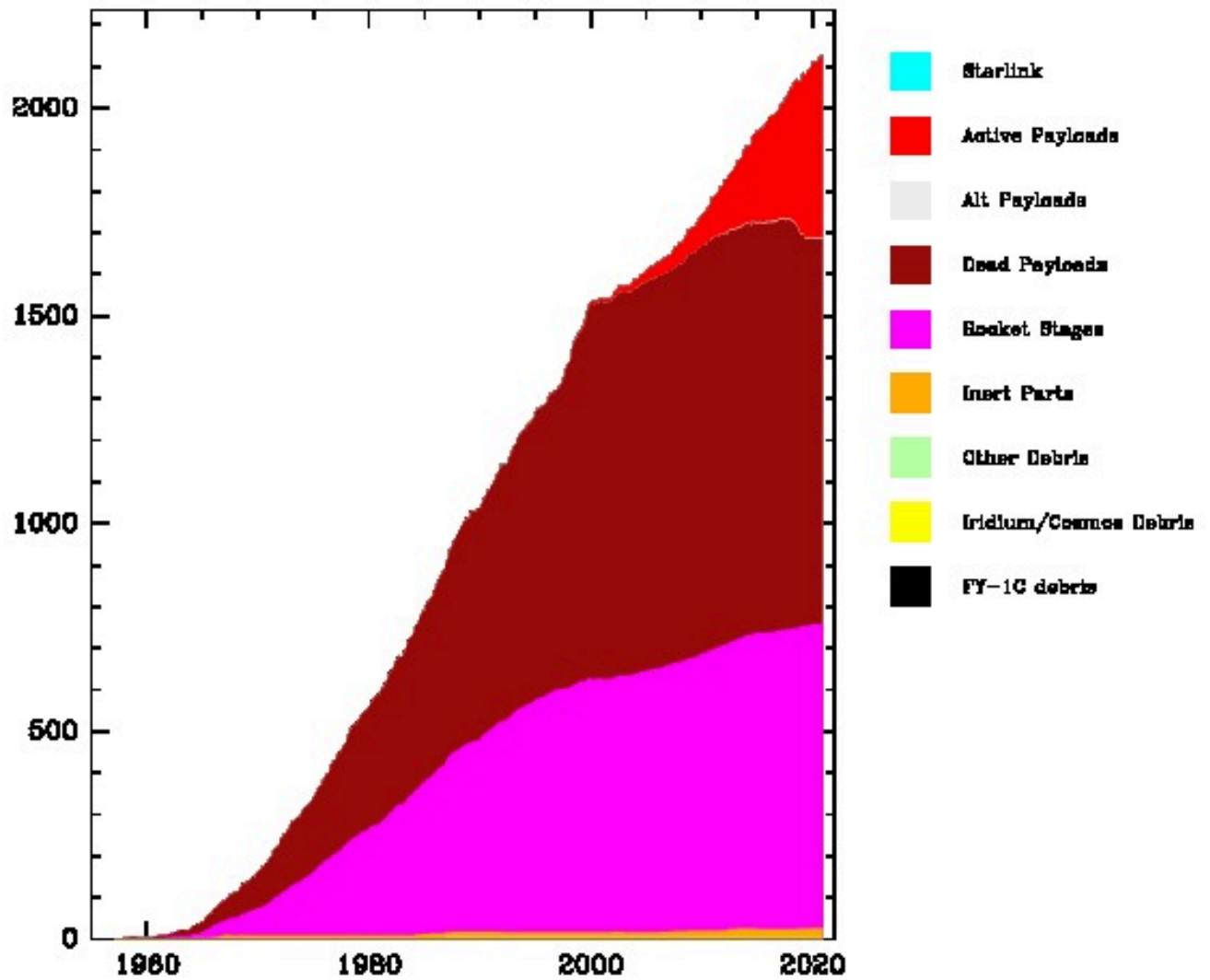


Figure 34: Time evolution of LEO debris and active satellite population (d): Big (>100 kg) objects in upper (> 600 km) LEO

6.1 Disposal of launch vehicle upper stages

For the 104 successful orbital launches I look at which launches went to which type of orbit, and whether rockets disposed of their upper stages in a controlled deorbit or whether they left one or more stages (and possibly associated debris) in orbit to decay naturally. Upper stages that achieve Earth escape are also counted as a controlled disposal.

The orbit categories are SSO (Sun-synchronous low Earth orbit), ISS (International Space Station launches), Other LEO (Low Earth orbit except for SSO and ISS); GTO (Geotransfer orbit), GEO direct (where launch vehicle upper stage deploys payload directly in geostationary orbit), 12-hour circular MEO orbits (as used by GPS), deep space (beyond about 150,000 km) and 'other high orbit'.

I will note that some SSO/other LEO launches perform a perigee lowering disposal burn to ensure stage reentry within a few weeks. However, the reentry location is still uncontrolled in these cases. Cases where SSO/LEO perigee lowering is to below 180 km are noted with an asterisk in the table.

Table 14: Launches by orbit and launch-associated Earth orbit debris, 2020

Launch vehicle	Total launches	Launches with up- per stage disposal	Stages left in Earth orbit	Other LV debris
(a) SSO				
EXPACE KZ-1A	1	0	1*	0
XIDO Gushenxing 1	1	1	0	0
CALT CZ-11	1	0	1	0
CALT CZ-2C	1	0	1	0
SAST CZ-2D	6	6	0	0
SAST CZ-4B/4C	5	0	5	0
SAST CZ-6	1	0	1	0
CALT CZ-3B	1	0	1	0
Rocket Lab Electron	4	0	8 (4*)	0
SpaceX Falcon 9	1	1	0	0
MHI H-2A	1	1	0	0
Arianespace Soyuz-ST	2	2	0	0
Arianespace Vega	1	1	0	0
Total SSO	26	12	18	0
(b) ISS				
SpaceX Falcon 9	4	4	0	0
MHI H-IIB	1	1	0	0
Roskosmos Soyuz	4	0	4	0
NG Antares	2	0	2	0
Total ISS	11	5	6	0
(c) Other LEO				
ULA/LM Atlas V	1	1	0	0
CALT CZ-5B	1	0	1*	0
EXPACE KZ-1A	1	0	1*	0
CALT CZ-11	2	0	2 (1*)	0
CALT CZ-2C	2	0	2	0
CALT CZ-2F	1	0	1	0
SAST CZ-2D	1	1	0	0
SAST CZ-4B/4C	1	0	1	0
CALT CZ-8	1	0	1	0
NG Minotaur IV	1	0	1	0
IRGC Qased	1	0	1	0
ISRO PSLV	1	0	1	0
Rocket Lab Electron	2	0	4 (2*)	0
SpaceX Falcon 9	16	13	3	56
IAI Shavit-1	1	0	1	0
Starsem Soyuz-2	3	3	0	0
VVKO Soyuz-2	2	2	0	0
Total Other LEO	38	20	20	56

Table 14 (cont):				
Launch vehicle	Total launches	Launches with up- per stage disposal	Stages left in space	Other LV debris
(d) GTO / 12h MEO transfer				
Arianespace Ariane 5	3	0	3	3
ULA/LM Atlas V	1	0	1	0
CALT CZ-3B	6	0	6	0
SpaceX Falcon 9	4	2	2	0
MHI H-2A	1	0	1	0
ISRO PSLV	1	0	1	0
Krunichev Proton	1	0	1	1
VVKO Soyuz	2	0	2	0
Total GTO	19	2	17	4
(e) GEO Direct				
ULA/B Delta 4H	1	0	1	0
Khrunichev Angara	1	0	1	1
Total GEO direct	2	0	2	1
(f) 12-hour MEO direct				
VVKO Soyuz	2	0	2	0
Total 12-hour MEO	2	0	2	0
(g) Deep space and escape				
ULA/LM Atlas 5	2	0	2	0
CALT CZ-5B	2	0	2	0
MHI H-2A	1	0	1	0
Total Deep	5	0	5	0
(h) Other high orbit				
ULA/LM Atlas V	1	0	1	0
Total Other High	1	0	1	0
Total Overall	104	39	71	61

6.2 Orbituaries

Table 15 gives statistics on reentries in 2020, not including deliberate deorbit and landing.
(Acknowledgements to Collin Krum for the revised section name).

Table 15: Uncontrolled Reentries 2020

	Number	Mass (t)
Active Payloads	84	14.4
Dead Payloads	19	4.0
Rocket bodies	48	100.7
Operational debris	87	7.4
PRC ASAT/FY-1C debris	9	-
Strela/Iridium debris	12	-
Other fragment debris	132	-

In this table, ‘active payloads’ represents payloads which were thought to be active at the beginning of the year.

Controlled deorbits and landings

116 Starlink satellites, mostly the V0.9 prototypes, reentered during 2020. The satellites orbits were lowered using thrusters but final reentry was uncontrolled.

The largest reentry was that of the CZ-5B Y1 first stage discussed earlier in this report.

In addition to uncontrolled reentries, there were 11 controlled landings and 4 controlled deorbitings of spacecraft during 2019, representing the safe removal of around 54 tonnes from the orbital environment. 3 Russian Soyuz ships landed in Kazakhstan one Crew Dragon ship splashed down in the Atlantic and two Cargo Dragon spacecraft splashed down in the Pacific near California. A test flight of a new Chinese spaceplane landed at Nop Nor and an experimental Chinese capsule landed in Inner Mongolia. A small reentry experiment also attempted a landing there but crashed. Two sample return capsules, from Hayabusa-2 and Chang'e-5, returned to Earth from deep space.

Four ISS cargo ships (two Cygnus, one HTV and one Progress) were deorbited, all over the southern Pacific Ocean.

Eight objects reentered and burned up on controlled trajectories associated with landings of spacecraft (Soyuz orbital and propulsion module and two Dragon trunks).

In addition, 37 rocket stages were deorbited after only one or two Earth orbits. Only one of these was assigned a US Space Command catalog number.

A further 16 rocket stages were inserted into slightly suborbital trajectories that ensured controlled disposal without the need for a deorbit burn (3 Ariane EPC, 1 Vega Z9A, 1 Proton stage 3, 1 Angara URM-2, 10 Soyuz-2 stage 3).

Table 16: Most massive uncontrolled reentries, 2020

COSPAR	Spacecraft	Date	Mass/kg	Location	Coords	Type
2020-070BS	Falcon 9-082 Stage 2	2020 Mar 5 1344	3000	Pacific	137W 46N	Reentry
2016-081E	CZ-2D Y33 Stage 2	2020 Mar 21 1200	4000			Reentry
2020-027C	CZ-5B-Y1 Stage 1	2020 May 11 1534	21600	W Africa	20W 20N	Reentry
2018-023C	Falcon 9-051 Stage 2	2020 Oct 16 0910	3000			Reentry
2002-012BS	Falcon 9-095 Stage 2	2020 Oct 30 1401	3000	Nei Moggol	111E 42N	Reentry
2020-074BS	Falcon 9-097 Stage 2	2020 Nov 16	3000	E Pac./Bolivia	79W 14S?	Reentry
2020-087B	CZ-5 Y5 Stage 2	2020 Nov 30 1541	5100	Pacific	135W 4N	Reentry from deep space
2020-033B	Crew Dragon DM-2 Trunk	2020 Dec 11 1359	3000?	Pacific	161W 26S	Reentry
2018-064B	Falcon 9-061 Stage 2	2020 Dec 26 2229	3000	Phillippine Sea	138E 16N	Reentry

For rocket upper stages deorbited soon after launch, the target impact zones are often many degrees in length along the orbit track, so the locations given below should not be taken too seriously. There is some question about the Falcon 9 stage from Sentinel-6, flown on Nov 21. The NOTAM implies a deorbit soon after launch at about 1930 UTC Nov 21 near 112W 41S. but Space-Track cataloged the object, and provided 3 TLE sets with latest epoch Nov 21 2208 UTC and a decay date of Nov 22. This could imply that the deorbit was delayed and occurred with impact possibly near 180E 57S around 0115 UTC Nov 22, or 92W 59S at 0130 UTC. The deorbit of Fregat 112-501 on Sep 28 is also unclear; to match the NOTAMs we must assume the deorbit time was eight hours after the end of satellite deployments.

Table 17: Landings and deorbits, 2020

COSPAR	Spacecraft	Date	Mass/kg	Location	Coords	Type
2019-083A	Dragon CRS-19	2020 Jan 7 1542?	9000?	Pacific	121.0W 31.2N	Splashdown
2019-041A	Soyuz MS-13	2020 Feb 6 0912?	2900?	Kazakhstan	69.6E 47.4N	Landing
2020-016A	Dragon CRS-20	2020 Apr 7 1850?	9000?	Pacific	117.5W 26.5N	Splashdown
2019-064A	Soyuz MS-15	2020 Apr 17 0516?	2900?	Kazakhstan	69.5E 47.4N	Landing
2020-027B	RCS-FC-SC	2020 May 7 0520	200	Nei Monggol		Deorbit, failed landing
2020-027A	XZF-SC	2020 May 8 0549	7000?	Nei Monggol	102E 40.5N	Landing
2020-033A	Dragon 'Endeavour'	2020 Aug 2 1847	11500?	Atlantic	87.6W 29.8N	Splashdown
2020-063A	Chonfu Shiyong SHQ	2020 Sep 6 0200	8000?	Lop Nor	89.3E 40.8N	Landing
2020-023A	Soyuz MS-16	2020 Oct 22 0254?	2900?	Kazakhstan	69.5E 47.4N?	Landing
2014-076	Hayabusa-2 SRC	2020 Dec 5 1747	16	Woomera	136.1E 30.4S	Landing from deep space
2020-087	Chang'e-5 FQ	2020 Dec 16 1759	335	Nei Monggol	111.4E 42.3N	Landing from deep space
2019-071A	SS Alan Bean	2020 Mar 17 2316	7200?	Pacific	150E 45S?	Deorbit
2020-011A	SS Robert Lawrence	2020 May 29 1930	7500?	Pacific	152E 50S?	Deorbit
2019-085A	Progress MS-13	2020 Jul 8 2205	5300?	Pacific	177E 18S?	Deorbit
2020-030A	Konoutouri 9	2020 Aug 20 0707	15000?	Pacific	174E 38S?	Deorbit

Table 18: Vehicles deorbited soon after launch, 2020

COSPAR	Spacecraft	Date	Mass/kg	Location	Coords	Type
2020-001	Falcon 9-079 Stage 2	2020 Jan 7 0448	3000?	S Ocean	90E 51S?	Deorbit
2020-003	CZ-2D Y58 Stage 2	2020 Jan 15 0345?	4000?	E Pacific?	82W 30S?	Deorbit
2020-006	Falcon 9-081 Stage 2	2020 Jan 29 1808?	3000?	S Ocean	90E 51S?	Deorbit
2020-008	Fregat No. 123-01	2020 Feb 6 0334	1460?	S Atlantic	29W 58S?	Deorbit
2020-016	Falcon 9-083 Stage 2	2020 Mar 7 0600?	3000?	W Pacific	152W 35S?	Deorbit
2020-019	Falcon 9-084 Stage 2	2020 Mar 18 1345	3000?	E Pacific	123W 0N?	Deorbit
2020-020	Fregat No. 123-02	2020 Mar 21 2258	1460?	S Atlantic	29W 45S?	Deorbit
2020-025	Falcon 9-085 Stage 2	2020 Apr 22 2058	3000?	E Pacific	123W 0N?	Deorbit
2020-029	Centaur AV-081	2020 May 17 1419	2020?	Ind. Ocean	102E 36S?	Deorbit
2020-030	H-2B-F9 Stage 2	2020 May 20 1806?	3400	S Pacific	125W 51S?	Deorbit
2020-033	Falcon 9-086 Stage 2	2020 May 30 2024	3000?	S Ocean	140E 51S?	Deorbit
2020-034	CZ-2D Y51 Stage 2	2020 May 31 0951	4000?	Ind. Ocean	98E 10S?	Deorbit
2020-035	Falcon 9-087 Stage 2	2020 Jun 4 0250	3000?	E Pacific	123W 0N?	Deorbit
2020-038	Falcon 9-088 Stage 2	2020 Jun 13 1048	3000?	E Pacific	123W 0N?	Deorbit
2020-039	CZ-2D Y52 Stage 2	2020 Jun 17 0800	4000?	E Pacific?	90W 46S?	Deorbit
2020-041	Falcon 9-089 Stage 2	2020 Jul 1 0240	3000?	Indian Ocean	18E 46S?	Deorbit
2020-043	CZ-2D Y29 Stage 2	2020 Jul 5 0032	4000?	E Pacific?	90W 46S?	Deorbit
2020-054	CZ-2D Y56 Stage 2	2020 Aug 6 0455	4000?	E Pacific?	90W 46S?	Deorbit
2020-055	Falcon 9-091 Stage 2	2020 Aug 7 0745	3000?	Indian Ocean	100E 50S?	Deorbit
2020-057	Falcon 9-092 Stage 2	2020 Aug 18 1555	3000?	E Pacific	124W 0N?	Deorbit
2020-058	CZ-2D Y57 Stage 2	2020 Aug 23 0318	4000?	E Pacific?	90W 58S?	Deorbit
2020-059	Falcon 9-093 Stage 2	2020 Aug 31 0120	3000?	S Ocean	120W 45S?	Deorbit
2020-061	Vega AVUM VV16	2020 Sep 3 0425?	1200	Ind. Ocean	85E 39S?	Deorbit
2020-062	Falcon 9-094 Stage 2	2020 Sep 3 1412?	3000?	E Pacific	124W 0N?	Deorbit
2020-068	Fregat No. 112-501	2020 Sep 29 0003?	1500?	W Pacific?	153W 50?	Deorbit
2020-073	Falcon 9-096 Stage 2	2020 Oct 18 1455?	3000?	S Ocean	98E 50S?	Deorbit
2020-078	Falcon 9-097 Stage 2	2020 Nov 6 0610?	3000?	Indian O	20E 46S?	Deorbit
2020-080	Gushenxing-1 Stage 4	2020 Nov 7 0805?	150?	E Pacific?	92W 40S?	Deorbit
2020-084	Falcon 9-099 Stage 2	2020 Nov 16 0110	3000?	Indian O.	98E 37S?	Deorbit
2020-086B	Falcon 9-100 Stage 2	2020 Nov 22 0115?	3000?	S Pacific	180E 57S?	Deorbit
2020-088	Falcon 9-101 Stage 2	2020 Nov 24 0302?	3000?	S Ocean	107W 38S?	Deorbit
2020-090	Fregat-M No. 133-18	2020 Dec 2 0408?	1000?	Indian O.	90E 34S?	Deorbit
2020-091	Fregat No. 112-502	2020 Dec 3 1215?	1000?	E Pacific	143W 49S?	Deorbit
2020-093	Falcon 9-102 Stage 2	2020 Dec 6 1715	3000?	Indian O.	98E 37S?	Deorbit
2020-100	Fregat No. 123-08	2020 Dec 18 1737	1460	S Atlantic	29W 45S	Deorbit
2020-101	Falcon 9-104 Stage 2	2020 Dec 19 1530?	3000?	E Pacific	127W 0N?	Deorbit

6.3 Retirements in the GEO belt

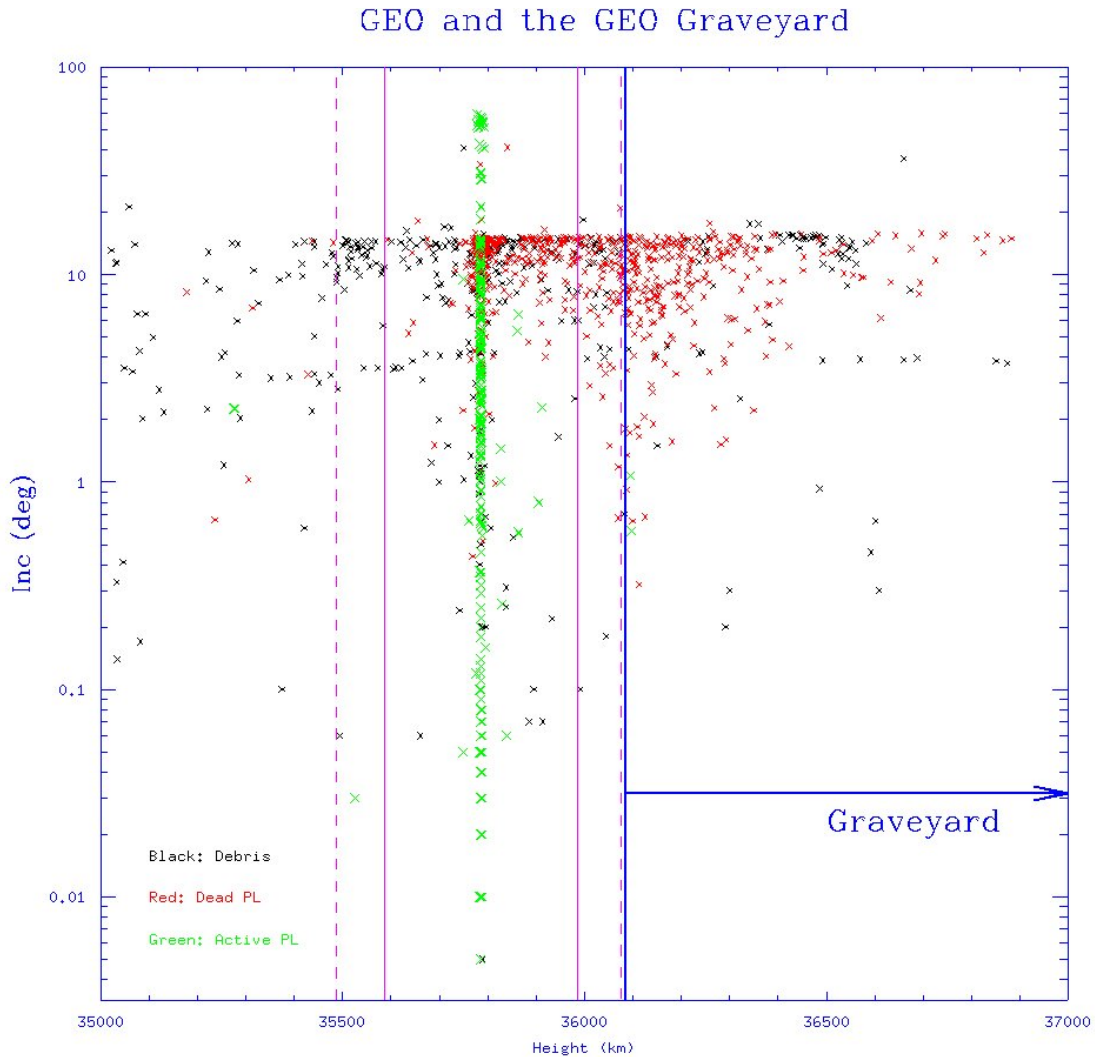


Figure 35: The figure shows log of orbital inclination vs orbital height for objects in the GEO region as of Jan 2021. Eccentricities are neglected. Active satellites (green), dead payloads (red) and debris (black) are indicated. The solid magenta lines are the GEO Protected Zone (GPZ = GEO+/-200 km). Dashed magenta lines are GPZ +/- 100 km (GEO +/- 300 km) used in the results table. Blue line (GEO+300 km) indicates start of the GEO graveyard.

The GEO graveyard is taken to be 300 km or more above GEO (GEO is at 35786 km height.) Counts of objects in various regimes are shown below. The category ‘Below GPZ’ is actually defined to be objects 300 km or more below GEO.

During 2020, 18 satellites were retired from GEO, 1 satellite failed in or near GEO, two debris objects were placed in the graveyard, and two previously existing debris objects were cataloged in the GEO region. The recommended graveyard orbit begins at an altitude of 36086 km, 300 km above GEO.

The table gives perigee and apogee altitude minus the GEO height of 35786 km, and is ordered by

Table 19: GEO Population

	Debris	Dead payloads	Active payloads
Total	429	668	580
Graveyard	92	288	10
GPZ+-100	258	365	566
Below GPZ	79	15	4

perigee. Of the 17 retirements, 12 were raised to orbits fully in the graveyard. The Venezuelan (Chinese-manufactured) Simon Bolivar satellite had its apogee raised to the graveyard but the perigee remained in the GEO belt.

In addition to these, Inmarsat IIF1 was confirmed as of June 2020 to be in active reserve while drifting since Dec 2019, and Ekspress AM-03 raised its orbit somewhat in late 2020 and may be relocating or retired.

In addition, a test flight of the Angara A5 rocket on Dec 14 saw a Briz-M stage with an attached dummy payload enter GEO at 1500 UTC; the Briz-M then restarted two hours later and made two burns to a graveyard orbit.

Table 20: GEO retirements

ID	Satellite	Retired	Height above GEO in Jan 2021 km x km	Notes
2011-048A	Garpun 11L (Kosmos-2473)	2020 Jun 20	-6 x 12	Failed
2008-055A	Simon Bolivar	2020 Mar 20	30 x 536	Still active? Status uncertain
1996-020A	Inmarsat 3F1	2020 Mar 18	60 x 96	
2005-023A	Ekspress AM-3	2020 Dec 4	116 x 138	
1998-037A	Intelsat 805	2020 Jan 16	179 x 271	
1997-002A	AMC 2	2020 Dec 15	221 x 232	
2006-020B	Thaicom 5	2020 Feb 27	292 x 311	
2007-037A	INSAT 4CR	2020 Nov 27	294 x 304	
2002-029A	Ekspress A1R	2020 Mar 30	298 x 313	
2003-007A	Intelsat 907	2020 May 29	311 x 317	
1996-002A	Astra 1F	2020 Oct 23	318 x 337	
2000-054B	AMC 7	2020 Jan 25	319 x 327	
2006-004A	Himawari 7	2020 May 16	326 x 353	
2002-035B	N-Star c	2020 May 12	334 x 415	
2002-016A	Intelsat 903	2020 Apr 29	336 x 374	
1996-022A	M-SAT 1	2020 Nov 19	395 x 529	
2005-012A	Apstar 6	2020 Dec 5	436 x 531	
1999-059A	Telstar 12	2020 Dec 26	439 x 570	
2001-042A	EUTELSAT 12 WEST B	2020 Oct 13	466 x 527	
2005-015A	Spaceway 1	2020 Feb 10	499 x 515	
2020-097A	GVM/Briz-M 88802	2020 Dec 14	1113 x 1822	Dummy payload
Table 20(b): Near-GEO debris				
2016-004B	IS-29e debris	2019 Apr 7	-1585 x 1380	Note 1
2019-095E	deb Blok DM-03	2019 Dec 24	-971 x -660	Note 1
2020-095B	Delta 385 rocket	2020 Dec 11	Unknown	Secret

Note 1: Cataloged in 2020.

6.4 Debris events

There were 4 significant breakups during 2020. The table indicates the number of objects cataloged so far from each, but note that often more objects are cataloged in later years following an event.

Table 21: Breakups and debris events 2020

Date	Object	N cataloged	Orbit km x km x deg	Notes
2020 Jan 9	44421 Kosmos-2535	26	604 x 618 x 97.9	Weapons test?
2020 Feb 12	21656 S5M rocket	111	1187 x 1206 x 82.6	Upper stage
2020 May 8	37756 Fregat SBB	316	422 x 3606 x 51.5	Upper stage tank
2020 Aug 27	23342 Resurs-O1	65	622 x 630 x 97.9	Battery explosion?

In addition, more fragments were cataloged from the earlier breakups of the Kosmos/Iridium collision and the 2007 Chinese ASAT test, as well as from Centaur AV-073 and AV-049 and H-2A F40.

7 Acknowledgements

The data presented here are extracted from my satellite and launch database, generated from open source media reports combined with analysis of US Space-Track orbital elements. The analysis has benefited from the opinions of many colleagues, notably Dwayne Day, Brian Weeden, Laura Grego, David Todd, Igor Lissov, Chris Kundstadter, and posters on the forums at nasa.spaceflight.com.

The author is an employee of the Smithsonian Institution, but the work reported here was performed independently and does not represent the views of the Smithsonian.

Appendix 1: 2020 Orbital Launch Attempts

LAUNCH ID	Launch date UTC	Launch vehicle	LV Flight ID	Site	Agency
2020-001	2020 Jan 7 0219:21	Falcon 9	079/B1049.4	CC LC40	SPX
2020-002	2020 Jan 7 1520	Chang Zheng 3B	Y64	XSC LC2	CALT
2020-003	2020 Jan 15 0253:04	Chang Zheng 2D	Y58	TYSC	SAST
2020-004	2020 Jan 16 0302	Kuaizhou-1A	Y9	JQ LC43/95	EXPACE
2020-005	2020 Jan 16 2105	Ariane 5ECA+	VA251 (5110)	CSG ELA3	AE
2020-006	2020 Jan 29 1406	Falcon 9	081/B1051.3	CC LC40	SPX
2020-007	2020 Jan 31 0256	Electron	11	MAHIA LC1A	RLABN
2020-008	2020 Feb 6 2142:41	Soyuz-2-1B	U 15000-048/123-01	GIK-5 LC31	STSM
2020-009	2020 Feb 9 0134	H-IIA 202	H-IIA-41	TNSC Y	MHI
2020-F01	2020 Feb 9 1548:14	Simorgh	4 MRS.C001	SEM	IRSA
2020-010	2020 Feb 10 0403	Atlas V 411	AV-087	CC SLC41	ULAL
2020-011	2020 Feb 15 2021:04	Antares 230+	2TRS2S1.12 (12)	MARS Pad 0A	NGIS
2020-012	2020 Feb 17 1505:55	Falcon 9	082/B1056.4	CC LC40	SPX
2020-013	2020 Feb 18 2218:07	Ariane 5ECA+	VA252 (5111)	CSG ELA3	AE
2020-014	2020 Feb 19 2107:41	Chang Zheng 2D	Y61	XSC LC3	SAST
2020-015	2020 Feb 20 0824:54	Soyuz-2-1A	780-21- 118/111-303	GIK-1 LC43/3	VVKO
2020-016	2020 Mar 7 0450:31	Falcon 9	083/B1059.2	CC LC40	SPX
2020-017	2020 Mar 9 1155	Chang Zheng 3B	Y69	XSC	CALT
2020-F02	2020 Mar 16 1334	Chang Zheng 7A	Y1	WEN LC201	CALT
2020-018	2020 Mar 16 1828:10	Soyuz-2-1B	760-58- 145/112-11	GIK-1 LC43/4	VVKO
2020-019	2020 Mar 18 1216:39	Falcon 9	084/B1048.5	KSC LC39A	SPX
2020-020	2020 Mar 21 1706:58	Soyuz-2-1B	N 15000-049/123-02	GIK-5 LC31	STSM
2020-021	2020 Mar 24 0343:05	Chang Zheng 2C	Y42	XSC	CALT
2020-022	2020 Mar 26 2018:00	Atlas V 551	AV-086	CC SLC41	ULAL
2020-023	2020 Apr 9 0805:06	Soyuz-2-1A	V 15000-042	GIK-5 LC31	FKA
2020-F03	2020 Apr 9 1146	Chang Zheng 3B	Y71	XSC	CALT
2020-024	2020 Apr 22 0358:59	Qased	-	SHHR LP1	IRGC
2020-025	2020 Apr 22 1930	Falcon 9	085/B1051.4	KSC LC39A	SPX
2020-026	2020 Apr 25 0151:41	Soyuz-2-1A	Ya15000-038	GIK-5 LC31	FKA
2020-027	2020 May 5 1000:27	Chang Zheng 5B	Y1	WEN LC101	CALT
2020-028	2020 May 12 0016	Kuaizhou-1A	Y6	JQ LC43/95	EXPACE
2020-029	2020 May 17 1314:00	Atlas V 501	AV-081	CC SLC41	ULAL
2020-030	2020 May 20 1731:00	H-IIB	H-IIB-F9	TNSC Y2	MHI
2020-031	2020 May 22 0731:17	Soyuz-2-1B	- /?	GIK-1 LC43/4	VVKO
2020-F04	2020 May 25 1950	LauncherOne	001	B747-744 MHV RW12/30	VORB
2020-032	2020 May 29 2013	Chang Zheng 11	Y8	XSC LC4	CALT
2020-033	2020 May 30 1922:45	Falcon 9	086/B1058.1	KSC LC39A	SPX
2020-034	2020 May 31 0853	Chang Zheng 2D	Y51	JQ	SAST
2020-035	2020 Jun 4 0125:33	Falcon 9	087/B1049.5	CC LC40	SPX
2020-036	2020 Jun 10 1831:24	Chang Zheng 2C	Y40?	TYSC LC9	CALT
2020-037	2020 Jun 13 0512:12	Electron	12	MAHIA LC1A	RLABN
2020-038	2020 Jun 13 0921:18	Falcon 9	088/B1059.3	CC LC40	SPX
2020-039	2020 Jun 17 0719:04	Chang Zheng 2D	Y52	JQ LC43/94	SAST
2020-040	2020 Jun 23 0143:04	Chang Zheng 3B	Y68	XSC	CALT
2020-041	2020 Jun 30 2010:46	Falcon 9	089/B1060.1	CC LC40	SPX
2020-042	2020 Jul 3 0310	Chang Zheng 4B	Y43	TYSC LC9	SAST
2020-F05	2020 Jul 4 2119:36	Electron	13	MAHIA LC1A	RLABN
2020-043	2020 Jul 4 2344:04	Chang Zheng 2D	Y29	JQ	SAST
2020-044	2020 Jul 6 0100	Shavit 2	11	PALB	ISA
2020-045	2020 Jul 9 1211:04	Chang Zheng 3B	Y64	XSC LC3	CALT
2020-F06	2020 Jul 10 0417	Kuaizhou 11	Y1	JQ LC43/95	EXPACE

2020-046	2020 Jul 15 1346:00	Minotaur IV	7	MARS Pad 0B	NGIS
2020-047	2020 Jul 19 2158:14	H-IIA 202	H-IIA-42	TNSC Y	MHI
2020-048	2020 Jul 20 2130	Falcon 9	090/B1058.2	CC LC40	SPX
2020-049	2020 Jul 23 0441:12	Chang Zheng 5	Y4	WEN LC101	CALT
2020-050	2020 Jul 23 1426:22	Soyuz-2-1A	Ya15000-040	GIK-5 LC31	FKA
2020-051	2020 Jul 25 0313	Chang Zheng 4B	Y45	TYSC LC9	SAST
2020-052	2020 Jul 30 1150:00	Atlas V 541	AV-088	CC SLC41	ULAL
2020-053	2020 Jul 30 2125:19	Proton-M/Briz-M	935-67/99568	GIK-5 LC200/39	KHRU
2020-054	2020 Aug 6 0401	Chang Zheng 2D	Y56	JQ LC43/94	SAST
2020-055	2020 Aug 7 0512:05	Falcon 9	091/B1051.5	KSC LC39A	SPX
2020-056	2020 Aug 15 2204:00	Ariane 5ECA+	VA253 (5112)	CSG ELA3	AE
2020-057	2020 Aug 18 1431:00	Falcon 9	092/B1049.6	CC LC40	SPX
2020-058	2020 Aug 23 0227:04	Chang Zheng 2D	Y57	JQ LC43/94	SAST
2020-059	2020 Aug 30 2318:00	Falcon 9	093/B1059.4	CC LC40	SPX
2020-060	2020 Aug 31 0305:47	Electron	14	MAHIA LC1A	RLABN
2020-061	2020 Sep 3 0151:10	Vega	VV16	CSG ZLV	AE
2020-062	2020 Sep 3 1246:14	Falcon 9	094/B1060.2	KSC LC39A	SPX
2020-063	2020 Sep 4 0730?	Chang Zheng 2F	T3	JQ LC43/91	CALT
2020-064	2020 Sep 7 0557:05	Chang Zheng 4B	Y46	TYSC LC9	SAST
2020-F07	2020 Sep 12 0319	Astra Rocket 3.1	3	PSCA LP3B	ASTRV
2020-F08	2020 Sep 12 0502	Kuaizhou-1A	Y3	JQ LC43/95	EXPACE
2020-065	2020 Sep 15 0123	Chang Zheng 11	Y2	DEBO3 HHAI LP2	CALT
2020-066	2020 Sep 21 0540:04	Chang Zheng 4B	Y41	JQ LC43/94	SAST
2020-067	2020 Sep 27 0323:04	Chang Zheng 4B	Y42	TYSC LC9	SAST
2020-068	2020 Sep 28 1120:33	Soyuz-2-1B	T 15000-025/112-501	GIK-1 LC43/4	VVKO
2020-069	2020 Oct 3 0116	Antares 230+	2TRS2S1.13? (13)	MARS Pad 0A	NGIS
2020-070	2020 Oct 6 1129:34	Falcon 9	095/B1058.3	KSC LC39A	SPX
2020-071	2020 Oct 11 1657:04	Chang Zheng 3B	Y63	XSC LC2	CALT
2020-072	2020 Oct 14 0545:04	Soyuz-2-1A	Kh15000-045	GIK-5 LC31	FKA
2020-073	2020 Oct 18 1225:57	Falcon 9	096/B1051.6	KSC LC39A	SPX
2020-074	2020 Oct 24 1531:34	Falcon 9	097/B1050.3	CC LC40	SPX
2020-075	2020 Oct 25 1908	Soyuz-2-1B	G 15000-031/112-12	GIK-1 LC43/4	VVKO
2020-076	2020 Oct 26 1519:05	Chang Zheng 2C	Y43	XSC LC3	CALT
2020-077	2020 Oct 28 2121:27	Electron	15	MAHIA LC1A	RLABN
2020-078	2020 Nov 5 2324:23	Falcon 9	098/B1062.1	CC LC40	SPX
2020-079	2020 Nov 6 0319:15	Chang Zheng 6	Y3	TYSC LC16	SAST
2020-080	2020 Nov 7 0712	Gushenxing 1	1	JQ	XIDO
2020-081	2020 Nov 7 0941	PSLV-DL	PSLV-C49	SHAR FLP	ISRO
2020-082	2020 Nov 12 1559	Chang Zheng 3B	Y73	XSC	CALT
2020-083	2020 Nov 13 2232:00	Atlas V 531	AV-090	CC SLC41	ULAL
2020-084	2020 Nov 16 0027:17	Falcon 9	099/B1061.1	KSC LC39A	SPX
2020-U01	2020 Nov 17 0152:20	Vega	VV17	CSG ZLV	AE
2020-085	2020 Nov 20 0220:01	Electron	16	MAHIA LC1A	RLABN
2020-086	2020 Nov 21 1717:08	Falcon 9	100/B1063.1	VS SLC4E	SPX
2020-087	2020 Nov 23 2030:22	Chang Zheng 5	Y5	WEN LC101	CALT
2020-088	2020 Nov 25 0213:12	Falcon 9	101/B1049.7	CC LC40	SPX
2020-089	2020 Nov 29 0725	H-IIA 202	H-IIA-43	TNSC Y	MHI
2020-090	2020 Dec 2 0133:28	Soyuz-ST-A	N 15000-010/133-18	CSG ELS	AE
2020-091	2020 Dec 3 0114	Soyuz-2-1B	N 15000-045/112-502	GIK-1 LC43/4	VVKO
2020-U02	2020 Dec 3 1510:21	CE-5 SSQ	-	LOMN CE-5 ZQ	CAST
2020-092	2020 Dec 6 0358	Chang Zheng 3B	Y70	XSC	CALT
2020-093	2020 Dec 6 1617:08	Falcon 9	102/B1058.4	KSC LC39A	SPX
2020-094	2020 Dec 9 2014	Chang Zheng 11	Y9	XSC LC4	CALT
2020-095	2020 Dec 11 0109	Delta 4H	D4-41/D385	CC SLC37B	ULAB
2020-096	2020 Dec 13 1730	Falcon 9	103/B1051.7	CC LC40	SPX

2020-097	2020 Dec 14 0550:00	Angara A5	71752 (2LM)/88802	GIK-1 LC35/1	KHRU
2020-098	2020 Dec 15 1009:27	Electron	17	MAHIA LC1A	RLABN
2020-F09	2020 Dec 15 2055	Astra Rocket 3.2	4	PSCA LP3B	ASTRV
2020-099	2020 Dec 17 1009	PSLV-XL	PSLV-C50	SHAR SLP	ISRO
2020-100	2020 Dec 18 1227	Soyuz-2-1B	V 15000-004/123-08	VOST PU1S	STSM
2020-101	2020 Dec 19 1400	Falcon 9	104/B1059.5	KSC LC39A	SPX
2020-102	2020 Dec 22 0437:37	Chang Zheng 8	Y1	WEN LC201	CALT
2020-103	2020 Dec 27 1544	Chang Zheng 4C	Y35	JQ LC43/94	SAST
2020-104	2020 Dec 29 1642:07	Soyuz-ST-A	R 15000-006/133-11?	CSG ELS	AE

Note: Owner, Agency and Country codes in the tables are defined in <http://planet4589.org/space/lvdb/sdb/Orgs>.
Launch Sites are defined in <http://planet4589.org/space/lvdb/sdb/Sites>.

Appendix 2a: Satellite payloads launched in 2020

CATID	LAUNCH ID	Name	Owner	Country	Perigee	Apogee	Inc	Status
S44914	2020-001A	Starlink 1073	SPXS	US	292	297	53.00	In Earth orbit
S44915	2020-001B	Starlink 1084	SPXS	US	293	297	53.00	In Earth orbit
S44916	2020-001C	Starlink 1097	SPXS	US	293	297	53.00	In Earth orbit
S44917	2020-001D	Starlink 1098	SPXS	US	294	299	53.00	In Earth orbit
S44918	2020-001E	Starlink 1099	SPXS	US	295	297	53.00	In Earth orbit
S44919	2020-001F	Starlink 1101	SPXS	US	305	306	53.00	In Earth orbit
S44920	2020-001G	Starlink 1102	SPXS	US	292	298	53.00	In Earth orbit
S44921	2020-001H	Starlink 1103	SPXS	US	293	297	53.00	In Earth orbit
S44922	2020-001J	Starlink 1104	SPXS	US	292	298	53.00	In Earth orbit
S44923	2020-001K	Starlink 1106	SPXS	US	292	300	53.00	In Earth orbit
S44924	2020-001L	Starlink 1111	SPXS	US	292	300	53.00	In Earth orbit
S44925	2020-001M	Starlink 1112	SPXS	US	295	297	53.00	In Earth orbit
S44926	2020-001N	Starlink 1113	SPXS	US	292	299	53.00	In Earth orbit
S44927	2020-001P	Starlink 1114	SPXS	US	292	298	53.00	In Earth orbit
S44928	2020-001Q	Starlink 1119	SPXS	US	294	299	53.00	In Earth orbit
S44929	2020-001R	Starlink 1121	SPXS	US	294	300	53.00	In Earth orbit
S44930	2020-001S	Starlink 1123	SPXS	US	301	303	53.00	In Earth orbit
S44931	2020-001T	Starlink 1128	SPXS	US	293	297	53.00	In Earth orbit
S44932	2020-001U	Starlink 1130/Darksat	SPXS	US	291	299	53.00	In Earth orbit
S44933	2020-001V	Starlink 1144	SPXS	US	292	299	53.00	In Earth orbit
S44934	2020-001W	Starlink 1071	SPXS	US	294	297	53.00	In Earth orbit
S44935	2020-001X	Starlink 1072	SPXS	US	294	298	53.00	In Earth orbit
S44936	2020-001Y	Starlink 1078	SPXS	US	294	298	53.00	In Earth orbit
S44937	2020-001Z	Starlink 1079	SPXS	US	289	302	53.00	In Earth orbit
S44938	2020-001AA	Starlink 1082	SPXS	US	292	299	53.00	In Earth orbit
S44939	2020-001AB	Starlink 1083	SPXS	US	293	298	53.00	In Earth orbit
S44940	2020-001AC	Starlink 1091	SPXS	US	295	297	53.00	In Earth orbit
S44941	2020-001AD	Starlink 1094	SPXS	US	289	301	53.00	In Earth orbit
S44942	2020-001AE	Starlink 1096	SPXS	US	294	298	53.00	In Earth orbit
S44943	2020-001AF	Starlink 1100	SPXS	US	301	304	53.00	In Earth orbit
S44944	2020-001AG	Starlink 1108	SPXS	US	299	305	53.00	In Earth orbit
S44945	2020-001AH	Starlink 1109	SPXS	US	299	307	53.00	In Earth orbit
S44946	2020-001AJ	Starlink 1110	SPXS	US	294	299	53.00	In Earth orbit
S44947	2020-001AK	Starlink 1116	SPXS	US	302	307	53.00	In Earth orbit
S44948	2020-001AL	Starlink 1118	SPXS	US	304	305	53.00	Reentered
S44949	2020-001AM	Starlink 1122	SPXS	US	302	306	53.00	In Earth orbit
S44950	2020-001AN	Starlink 1125	SPXS	US	301	305	53.00	In Earth orbit
S44951	2020-001AP	Starlink 1126	SPXS	US	305	307	53.00	In Earth orbit
S44952	2020-001AQ	Starlink 1117	SPXS	US	292	300	53.00	In Earth orbit
S44953	2020-001AR	Starlink 1124	SPXS	US	294	299	53.00	In Earth orbit
S44954	2020-001AS	Starlink 1066	SPXS	US	294	297	53.00	In Earth orbit
S44955	2020-001AT	Starlink 1069	SPXS	US	296	297	53.00	In Earth orbit
S44956	2020-001AU	Starlink 1070	SPXS	US	304	306	53.00	In Earth orbit
S44957	2020-001AV	Starlink 1074	SPXS	US	306	307	53.00	In Earth orbit
S44958	2020-001AW	Starlink 1075	SPXS	US	298	303	53.00	In Earth orbit
S44959	2020-001AX	Starlink 1076	SPXS	US	300	302	53.00	In Earth orbit
S44960	2020-001AY	Starlink 1077	SPXS	US	288	302	53.00	Reentered
S44961	2020-001AZ	Starlink 1080	SPXS	US	293	299	53.00	In Earth orbit
S44962	2020-001BA	Starlink 1081	SPXS	US	295	297	53.00	In Earth orbit
S44963	2020-001BB	Starlink 1085	SPXS	US	295	298	53.00	In Earth orbit
S44964	2020-001BC	Starlink 1086	SPXS	US	300	301	53.00	In Earth orbit
S44965	2020-001BD	Starlink 1087	SPXS	US	305	306	53.00	Reentered
S44966	2020-001BE	Starlink 1088	SPXS	US	294	299	53.00	In Earth orbit
S44967	2020-001BF	Starlink 1089	SPXS	US	301	304	53.00	In Earth orbit
S44968	2020-001BG	Starlink 1090	SPXS	US	283	294	53.00	In Earth orbit
S44969	2020-001BH	Starlink 1092	SPXS	US	294	300	53.00	In Earth orbit
S44970	2020-001BI	Starlink 1093	SPXS	US	295	299	53.00	In Earth orbit
S44971	2020-001BK	Starlink 1095	SPXS	US	300	301	53.00	In Earth orbit
S44972	2020-001BL	Starlink 1107	SPXS	US	300	303	53.00	In Earth orbit
S44973	2020-001BM	Starlink 1115	SPXS	US	303	305	53.00	In Earth orbit
S44978	2020-002A	Tongxin Jishi Shiyuan 5	CASC	CN	35779	35796	1.00	In Earth orbit

S45016	2020-003A	Jilin-1 Kuamfu-1	CGSTL	CN	477	492	97.34	In Earth orbit
S45017	2020-003B	Sophie	URUGUS	UY	476	491	97.34	In Earth orbit
S45018	2020-003C	Marie	URUGUS	UY	475	492	97.34	In Earth orbit
S45019	2020-003D	Tianqi-5	GUOG	CN	475	491	97.34	In Earth orbit
S45024	2020-004A	Yinhe 1	YINHE	CN	621	637	86.40	In Earth orbit
S45026	2020-005A	GSAT-30	ISRO	IN	35794	35844	0.12	In Earth orbit
S45027	2020-005B	Eutelsat Koonect	EUTSA	F	498	36233	6.01	In Earth orbit
S45044	2020-006A	Starlink 1132	SPXS	US	300	300	53.00	In Earth orbit
S45045	2020-006B	Starlink 1120	SPXS	US	300	300	53.00	In Earth orbit
S45046	2020-006C	Starlink 1129	SPXS	US	300	300	53.00	In Earth orbit
S45047	2020-006D	Starlink 1131	SPXS	US	300	300	53.00	In Earth orbit
S45048	2020-006E	Starlink 1134	SPXS	US	300	300	53.00	In Earth orbit
S45049	2020-006F	Starlink 1135	SPXS	US	300	300	53.00	In Earth orbit
S45050	2020-006G	Starlink 1140	SPXS	US	300	300	53.00	In Earth orbit
S45051	2020-006H	Starlink 1141	SPXS	US	300	300	53.00	In Earth orbit
S45052	2020-006I	Starlink 1148	SPXS	US	300	300	53.00	In Earth orbit
S45053	2020-006K	Starlink 1155	SPXS	US	300	300	53.00	In Earth orbit
S45054	2020-006L	Starlink 1156	SPXS	US	300	300	53.00	In Earth orbit
S45055	2020-006M	Starlink 1157	SPXS	US	300	300	53.00	In Earth orbit
S45056	2020-006N	Starlink 1158	SPXS	US	300	300	53.00	Renentered
S45057	2020-006P	Starlink 1159	SPXS	US	300	300	53.00	In Earth orbit
S45058	2020-006Q	Starlink 1162	SPXS	US	300	300	53.00	In Earth orbit
S45059	2020-006R	Starlink 1165	SPXS	US	300	300	53.00	In Earth orbit
S45060	2020-006S	Starlink 1166	SPXS	US	300	300	53.00	In Earth orbit
S45061	2020-006T	Starlink 1169	SPXS	US	300	300	53.00	In Earth orbit
S45062	2020-006U	Starlink 1171	SPXS	US	300	300	53.00	In Earth orbit
S45063	2020-006V	Starlink 1178	SPXS	US	300	300	53.00	In Earth orbit
S45064	2020-006W	Starlink 1133	SPXS	US	300	300	53.00	In Earth orbit
S45065	2020-006X	Starlink 1139	SPXS	US	300	300	53.00	In Earth orbit
S45066	2020-006Y	Starlink 1145	SPXS	US	300	300	53.00	In Earth orbit
S45067	2020-006Z	Starlink 1150	SPXS	US	300	300	53.00	In Earth orbit
S45068	2020-006AA	Starlink 1161	SPXS	US	300	300	53.00	In Earth orbit
S45069	2020-006AB	Starlink 1163	SPXS	US	300	300	53.00	In Earth orbit
S45070	2020-006AC	Starlink 1164	SPXS	US	300	300	53.00	In Earth orbit
S45071	2020-006AD	Starlink 1167	SPXS	US	300	300	53.00	In Earth orbit
S45072	2020-006AE	Starlink 1168	SPXS	US	300	300	53.00	In Earth orbit
S45073	2020-006AF	Starlink 1170	SPXS	US	300	300	53.00	In Earth orbit
S45074	2020-006AG	Starlink 1172	SPXS	US	300	300	53.00	In Earth orbit
S45075	2020-006AH	Starlink 1174	SPXS	US	300	300	53.00	In Earth orbit
S45076	2020-006AJ	Starlink 1180	SPXS	US	300	300	53.00	In Earth orbit
S45077	2020-006AK	Starlink 1182	SPXS	US	300	300	53.00	In Earth orbit
S45078	2020-006AL	Starlink 1177	SPXS	US	300	300	53.00	In Earth orbit
S45079	2020-006AM	Starlink 1149	SPXS	US	300	300	53.00	In Earth orbit
S45080	2020-006AN	Starlink 1153	SPXS	US	300	300	53.00	In Earth orbit
S45081	2020-006AP	Starlink 1151	SPXS	US	300	300	53.00	In Earth orbit
S45082	2020-006AQ	Starlink 1160	SPXS	US	300	300	53.00	In Earth orbit
S45083	2020-006AR	Starlink 1190	SPXS	US	300	300	53.00	In Earth orbit
S45084	2020-006AS	Starlink 1173	SPXS	US	300	300	53.00	In Earth orbit
S45085	2020-006AT	Starlink 1179	SPXS	US	300	300	53.00	In Earth orbit
S45086	2020-006AU	Starlink 1181	SPXS	US	300	300	53.00	In Earth orbit
S45087	2020-006AV	Starlink 1185	SPXS	US	300	300	53.00	In Earth orbit
S45088	2020-006AW	Starlink 1183	SPXS	US	300	300	53.00	In Earth orbit
S45089	2020-006AX	Starlink 1136	SPXS	US	300	300	53.00	In Earth orbit
S45090	2020-006AY	Starlink 1176	SPXS	US	300	300	53.00	In Earth orbit
S45091	2020-006AZ	Starlink 1127	SPXS	US	300	300	53.00	In Earth orbit
S45092	2020-006BA	Starlink 1137	SPXS	US	300	300	53.00	In Earth orbit
S45093	2020-006BB	Starlink 1142	SPXS	US	300	300	53.00	In Earth orbit
S45094	2020-006BC	Starlink 1146	SPXS	US	300	300	53.00	In Earth orbit
S45095	2020-006BD	Starlink 1147	SPXS	US	300	300	53.00	In Earth orbit
S45096	2020-006BE	Starlink 1152	SPXS	US	300	300	53.00	In Earth orbit
S45097	2020-006BF	Starlink 1175	SPXS	US	300	300	53.00	In Earth orbit
S45098	2020-006BG	Starlink 1184	SPXS	US	300	300	53.00	In Earth orbit
S45099	2020-006BH	Starlink 1186	SPXS	US	300	300	53.00	In Earth orbit
S45100	2020-006BJ	Starlink 1193	SPXS	US	300	300	53.00	In Earth orbit
S45101	2020-006BK	Starlink 1194	SPXS	US	300	300	53.00	In Earth orbit
S45102	2020-006BL	Starlink 1195	SPXS	US	300	300	53.00	In Earth orbit

S45103	2020-006BM	Starlink 1196	2020 Jan 29 14:06:00	SPXS	US	300	300	53.00	In Earth orbit
S45110	2020-007A C	USA 294	2020 Jan 31 02:56:00	NROC	US	586	588	70.00	In Earth orbit
S45131	2020-008A	OneWeb 0013	2020 Feb 6 21:42:41	ONEWEB	UK	439	460	87.40	In Earth orbit
S45132	2020-008B	OneWeb 0017	2020 Feb 6 21:42:41	ONEWEB	UK	448	475	87.40	In Earth orbit
S45133	2020-008C	OneWeb 0020	2020 Feb 6 21:42:41	ONEWEB	UK	439	465	87.40	In Earth orbit
S45134	2020-008D	OneWeb 0021	2020 Feb 6 21:42:41	ONEWEB	UK	439	460	87.40	In Earth orbit
S45135	2020-008E	OneWeb 0022	2020 Feb 6 21:42:41	ONEWEB	UK	445	467	87.40	In Earth orbit
S45136	2020-008F	OneWeb 0023	2020 Feb 6 21:42:41	ONEWEB	UK	448	472	87.40	In Earth orbit
S45137	2020-008G	OneWeb 0024	2020 Feb 6 21:42:41	ONEWEB	UK	446	467	87.40	In Earth orbit
S45138	2020-008H	OneWeb 0025	2020 Feb 6 21:42:41	ONEWEB	UK	450	476	87.40	In Earth orbit
S45139	2020-008I	OneWeb 0026	2020 Feb 6 21:42:41	ONEWEB	UK	439	465	87.40	In Earth orbit
S45140	2020-008K	OneWeb 0028	2020 Feb 6 21:42:41	ONEWEB	UK	439	465	87.40	In Earth orbit
S45141	2020-008L	OneWeb 0032	2020 Feb 6 21:42:41	ONEWEB	UK	443	467	87.40	In Earth orbit
S45142	2020-008M	OneWeb 0033	2020 Feb 6 21:42:41	ONEWEB	UK	453	476	87.40	In Earth orbit
S45143	2020-008N	OneWeb 0035	2020 Feb 6 21:42:41	ONEWEB	UK	448	475	87.40	In Earth orbit
S45144	2020-008P	OneWeb 0036	2020 Feb 6 21:42:41	ONEWEB	UK	442	467	87.40	In Earth orbit
S45145	2020-008Q	OneWeb 0038	2020 Feb 6 21:42:41	ONEWEB	UK	448	473	87.40	In Earth orbit
S45146	2020-008R	OneWeb 0039	2020 Feb 6 21:42:41	ONEWEB	UK	447	468	87.40	In Earth orbit
S45147	2020-008S	OneWeb 0040	2020 Feb 6 21:42:41	ONEWEB	UK	452	476	87.40	In Earth orbit
S45148	2020-008T	OneWeb 0041	2020 Feb 6 21:42:41	ONEWEB	UK	447	467	87.40	In Earth orbit
S45149	2020-008U	OneWeb 0043	2020 Feb 6 21:42:41	ONEWEB	UK	455	476	87.40	In Earth orbit
S45150	2020-008V	OneWeb 0044	2020 Feb 6 21:42:41	ONEWEB	UK	447	467	87.40	In Earth orbit
S45151	2020-008W	OneWeb 0045	2020 Feb 6 21:42:41	ONEWEB	UK	454	476	87.40	In Earth orbit
S45152	2020-008X	OneWeb 0047	2020 Feb 6 21:42:41	ONEWEB	UK	448	468	87.40	In Earth orbit
S45153	2020-008Y	OneWeb 0048	2020 Feb 6 21:42:41	ONEWEB	UK	453	476	87.41	In Earth orbit
S45154	2020-008Z	OneWeb 0049	2020 Feb 6 21:42:41	ONEWEB	UK	448	474	87.40	In Earth orbit
S45155	2020-008AA	OneWeb 0051	2020 Feb 6 21:42:41	ONEWEB	UK	440	466	87.40	In Earth orbit
S45156	2020-008AB	OneWeb 0052	2020 Feb 6 21:42:41	ONEWEB	UK	451	476	87.40	In Earth orbit
S45157	2020-008AC	OneWeb 0053	2020 Feb 6 21:42:41	ONEWEB	UK	451	476	87.40	In Earth orbit
S45158	2020-008AD	OneWeb 0054	2020 Feb 6 21:42:41	ONEWEB	UK	448	473	87.40	In Earth orbit
S45159	2020-008AE	OneWeb 0056	2020 Feb 6 21:42:41	ONEWEB	UK	448	469	87.40	In Earth orbit
S45160	2020-008AF	OneWeb 0057	2020 Feb 6 21:42:41	ONEWEB	UK	448	471	87.40	In Earth orbit
S45161	2020-008AG	OneWeb 0058	2020 Feb 6 21:42:41	ONEWEB	UK	443	467	87.40	In Earth orbit
S45162	2020-008AH	OneWeb 0059	2020 Feb 6 21:42:41	ONEWEB	UK	441	467	87.40	In Earth orbit
S45163	2020-008AJ	OneWeb 0062	2020 Feb 6 21:42:41	ONEWEB	UK	448	469	87.40	In Earth orbit
S45164	2020-008AK	OneWeb 0065	2020 Feb 6 21:42:41	ONEWEB	UK	449	475	87.40	In Earth orbit
S45165	2020-009A C	JSE kougakur 7 gouki	2020 Feb 9 01:34:00	CSICE	J	487	494	97.40	In Earth orbit
S45167	2020-010A	Solar Orbiter	2020 Feb 10 04:03:00	ESA	I-ESA	241	-39858	32.94	Deep Space
S45175	2020-011A	S.S. Robert Lawrence	2020 Feb 15 20:21:04	OSC	US	206	272	51.63	Deorbited
S45800	1998-067RM	MERLOT	2020 Feb 15 20:21:04	DARPA	US	417	419	51.60	In Earth orbit
S45809	1998-067RN	CABERNET	2020 Feb 15 20:21:04	DARPA	US	416	419	51.65	In Earth orbit
S45916	1998-067RP	DeMi	2020 Feb 15 20:21:04	DARPA/AURFS	US	415	418	51.64	In Earth orbit
S45917	1998-067RQ	TechEdSat-10	2020 Feb 15 20:21:04	ARC/SISU	US	412	418	51.64	In Earth orbit
S45178	2020-012A	Starlink 1138	2020 Feb 17 15:05:55	SPXS	US	291	380	53.00	In Earth orbit
S45179	2020-012B	Starlink 1143	2020 Feb 17 15:05:55	SPXS	US	291	380	53.00	In Earth orbit
S45180	2020-012C	Starlink 1192	2020 Feb 17 15:05:55	SPXS	US	290	380	53.00	In Earth orbit
S45181	2020-012D	Starlink 1200	2020 Feb 17 15:05:55	SPXS	US	289	379	53.00	In Earth orbit
S45182	2020-012E	Starlink 1201	2020 Feb 17 15:05:55	SPXS	US	214	370	53.00	In Earth orbit
S45183	2020-012F	Starlink 1202	2020 Feb 17 15:05:55	SPXS	US	284	377	53.00	In Earth orbit
S45184	2020-012G	Starlink 1205	2020 Feb 17 15:05:55	SPXS	US	214	363	53.00	In Earth orbit
S45185	2020-012H	Starlink 1216	2020 Feb 17 15:05:55	SPXS	US	283	378	53.00	In Earth orbit
S45186	2020-012I	Starlink 1224	2020 Feb 17 15:05:55	SPXS	US	286	378	53.00	In Earth orbit
S45187	2020-012K	Starlink 1225	2020 Feb 17 15:05:55	SPXS	US	281	378	53.00	In Earth orbit
S45188	2020-012L	Starlink 1228	2020 Feb 17 15:05:55	SPXS	US	209	368	53.00	In Earth orbit
S45189	2020-012M	Starlink 1230	2020 Feb 17 15:05:55	SPXS	US	287	378	53.00	In Earth orbit
S45190	2020-012N	Starlink 1234	2020 Feb 17 15:05:55	SPXS	US	209	368	53.00	In Earth orbit
S45191	2020-012P	Starlink 1236	2020 Feb 17 15:05:55	SPXS	US	288	379	53.00	In Earth orbit
S45192	2020-012Q	Starlink 1237	2020 Feb 17 15:05:55	SPXS	US	284	377	53.00	In Earth orbit
S45193	2020-012R	Starlink 1239	2020 Feb 17 15:05:55	SPXS	US	281	378	53.00	In Earth orbit
S45194	2020-012S	Starlink 1240	2020 Feb 17 15:05:55	SPXS	US	282	377	53.00	In Earth orbit
S45195	2020-012T	Starlink 1241	2020 Feb 17 15:05:55	SPXS	US	281	377	53.00	In Earth orbit
S45196	2020-012U	Starlink 1244	2020 Feb 17 15:05:55	SPXS	US	290	379	53.00	In Earth orbit
S45197	2020-012V	Starlink 1269	2020 Feb 17 15:05:55	SPXS	US	288	379	53.00	In Earth orbit
S45198	2020-012W	Starlink 1154	2020 Feb 17 15:05:55	SPXS	US	215	367	53.00	In Earth orbit
S45199	2020-012X	Starlink 1197	2020 Feb 17 15:05:55	SPXS	US	215	368	53.00	In Earth orbit
S45200	2020-012Y	Starlink 1198	2020 Feb 17 15:05:55	SPXS	US	216	367	53.00	In Earth orbit

S45201	2020-012Z	Starlink 1199	SPXS	US	213	367	53.00	In Earth orbit
S45202	2020-012AA	Starlink 1203	SPXS	US	261	374	53.00	In Earth orbit
S45203	2020-012AB	Starlink 1206	SPXS	US	213	368	53.00	In Earth orbit
S45204	2020-012AC	Starlink 1204	SPXS	US	213	367	53.00	In Earth orbit
S45205	2020-012AD	Starlink 1208	SPXS	US	216	367	53.00	In Earth orbit
S45206	2020-012AE	Starlink 1209	SPXS	US	219	363	53.00	In Earth orbit
S45207	2020-012AF	Starlink 1210	SPXS	US	213	367	53.00	In Earth orbit
S45208	2020-012AG	Starlink 1211	SPXS	US	213	368	53.00	In Earth orbit
S45209	2020-012AH	Starlink 1218	SPXS	US	213	367	53.00	In Earth orbit
S45210	2020-012AJ	Starlink 1219	SPXS	US	213	368	53.00	In Earth orbit
S45211	2020-012AK	Starlink 1220	SPXS	US	210	368	53.00	Reentered
S45212	2020-012AL	Starlink 1231	SPXS	US	214	368	53.00	In Earth orbit
S45213	2020-012AM	Starlink 1232	SPXS	US	214	368	53.00	In Earth orbit
S45214	2020-012AN	Starlink 1233	SPXS	US	212	369	53.00	In Earth orbit
S45215	2020-012AP	Starlink 1245	SPXS	US	213	368	53.00	In Earth orbit
S45216	2020-012AQ	Starlink 1254	SPXS	US	214	367	53.00	In Earth orbit
S45217	2020-012AR	Starlink 1271	SPXS	US	215	367	53.00	In Earth orbit
S45218	2020-012AS	Starlink 1105	SPXS	US	214	368	53.00	In Earth orbit
S45219	2020-012AT	Starlink 1187	SPXS	US	216	367	53.00	In Earth orbit
S45220	2020-012AU	Starlink 1188	SPXS	US	215	368	53.00	In Earth orbit
S45221	2020-012AV	Starlink 1189	SPXS	US	216	368	53.00	In Earth orbit
S45222	2020-012AW	Starlink 1191	SPXS	US	213	368	53.00	In Earth orbit
S45223	2020-012AX	Starlink 1212	SPXS	US	213	367	53.00	In Earth orbit
S45224	2020-012AY	Starlink 1214	SPXS	US	213	369	53.00	In Earth orbit
S45225	2020-012AZ	Starlink 1215	SPXS	US	214	367	53.00	In Earth orbit
S45226	2020-012BA	Starlink 1217	SPXS	US	215	367	53.00	In Earth orbit
S45227	2020-012BB	Starlink 1221	SPXS	US	216	368	53.00	In Earth orbit
S45228	2020-012BC	Starlink 1222	SPXS	US	213	368	53.01	In Earth orbit
S45229	2020-012BD	Starlink 1226	SPXS	US	214	367	53.00	In Earth orbit
S45230	2020-012BE	Starlink 1227	SPXS	US	214	368	53.00	In Earth orbit
S45231	2020-012BF	Starlink 1229	SPXS	US	215	367	53.00	In Earth orbit
S45232	2020-012BG	Starlink 1235	SPXS	US	205	337	53.00	In Earth orbit
S45233	2020-012BH	Starlink 1238	SPXS	US	214	367	53.00	In Earth orbit
S45234	2020-012BJ	Starlink 1243	SPXS	US	287	379	53.00	In Earth orbit
S45235	2020-012BK	Starlink 1246	SPXS	US	278	376	53.00	In Earth orbit
S45236	2020-012BL	Starlink 1247	SPXS	US	212	368	53.00	In Earth orbit
S45237	2020-012BM	Starlink 1270	SPXS	US	215	367	53.00	In Earth orbit
S45245	2020-013A	JCSAT 17	SKPJ	J	30860	36066	4.41	In Earth orbit
S45246	2020-013B	Cheollian 2B	KARI	KR	35680	35689	0.05	In Earth orbit
S45249	2020-014A	Xin jishu shiyan C xing	SAST	CN	472	483	35.00	In Earth orbit
S45250	2020-014B	Xin jishu shiyan D xing	SAST	CN	474	482	35.01	In Earth orbit
S45251	2020-014C	Xin jishu shiyan E xing	HARB	CN	473	482	35.01	In Earth orbit
S45253	2020-014E	Xin jishu shiyan F xing	DPH	CN	472	482	35.01	In Earth orbit
S45254	2020-015A	Meridian-M No. 19L	KVR	RU	1007	39712	62.86	In Earth orbit
S45341	2020-016A	Dragon CRS-20	SPX	US	375	385	51.64	Landed
S45397	1998-067RK	G-SATELLITE	TOX	J	413	419	51.64	In Earth orbit
S45398	1998-067RL	Quetzal-1	UVG	GT	415	419	51.65	In Earth orbit
S45344	2020-017A	ULTP	LYNK	US	476	486	51.65	In Earth orbit
S45358	2020-018A	Beidou DW 54	CNSA	CN	35776	35796	3.08	In Earth orbit
S45360	2020-019A	Kosmos-2545	KVRIA/CG	RU	19130	19154	64.80	In Earth orbit
S45361	2020-019B	Starlink 1279	SPXS	US	216	338	53.00	In Earth orbit
S45362	2020-019C	Starlink 1301	SPXS	US	212	340	53.00	In Earth orbit
S45363	2020-019D	Starlink 1306	SPXS	US	277	344	53.00	In Earth orbit
S45364	2020-019E	Starlink 1311	SPXS	US	262	344	53.00	Reentered
S45365	2020-019F	Starlink 1313	SPXS	US	214	334	53.00	In Earth orbit
S45366	2020-019G	Starlink 1317	SPXS	US	216	332	53.00	In Earth orbit
S45367	2020-019H	Starlink 1262	SPXS	US	292	357	53.00	In Earth orbit
S45368	2020-019I	Starlink 1273	SPXS	US	295	358	53.00	In Earth orbit
S45369	2020-019K	Starlink 1276	SPXS	US	291	357	53.00	In Earth orbit
S45370	2020-019L	Starlink 1277	SPXS	US	291	357	53.00	In Earth orbit
S45371	2020-019M	Starlink 1281	SPXS	US	299	359	53.00	In Earth orbit
S45372	2020-019N	Starlink 1287	SPXS	US	294	358	53.00	In Earth orbit
S45373	2020-019P	Starlink 1288	SPXS	US	296	359	53.00	In Earth orbit
S45374	2020-019Q	Starlink 1295	SPXS	US	293	358	53.00	In Earth orbit
S45375	2020-019R	Starlink 1300	SPXS	US	289	357	53.00	In Earth orbit
S45375	2020-019R	Starlink 1302	SPXS	US	295	362	53.00	In Earth orbit

S45376	2020-019S	Starlink 1304	2020 Mar 18 12:16:39	SPXS	US	239	358	53.00	In Earth orbit
S45377	2020-019T	Starlink 1305	2020 Mar 18 12:16:39	SPXS	US	288	357	53.01	In Earth orbit
S45378	2020-019U	Starlink 1310	2020 Mar 18 12:16:39	SPXS	US	285	357	53.00	In Earth orbit
S45379	2020-019V	Starlink 1319	2020 Mar 18 12:16:39	SPXS	US	286	357	53.00	In Earth orbit
S45380	2020-019W	Starlink 1207	2020 Mar 18 12:16:39	SPXS	US	254	347	53.00	In Earth orbit
S45381	2020-019X	Starlink 1258	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45382	2020-019Y	Starlink 1264	2020 Mar 18 12:16:39	SPXS	US	253	347	53.00	In Earth orbit
S45383	2020-019Z	Starlink 1266	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45384	2020-019AA	Starlink 1267	2020 Mar 18 12:16:39	SPXS	US	254	347	53.00	In Earth orbit
S45385	2020-019AB	Starlink 1268	2020 Mar 18 12:16:39	SPXS	US	258	348	53.00	Reentered
S45386	2020-019AC	Starlink 1272	2020 Mar 18 12:16:39	SPXS	US	253	348	53.00	In Earth orbit
S45387	2020-019AD	Starlink 1274	2020 Mar 18 12:16:39	SPXS	US	256	348	53.00	In Earth orbit
S45388	2020-019AE	Starlink 1280	2020 Mar 18 12:16:39	SPXS	US	257	348	53.00	In Earth orbit
S45389	2020-019AF	Starlink 1283	2020 Mar 18 12:16:39	SPXS	US	198	313	53.00	In Earth orbit
S45390	2020-019AG	Starlink 1284	2020 Mar 18 12:16:39	SPXS	US	207	359	53.00	In Earth orbit
S45391	2020-019AH	Starlink 1289	2020 Mar 18 12:16:39	SPXS	US	256	348	53.00	In Earth orbit
S45392	2020-019AJ	Starlink 1290	2020 Mar 18 12:16:39	SPXS	US	257	348	53.00	In Earth orbit
S45393	2020-019AK	Starlink 1291	2020 Mar 18 12:16:39	SPXS	US	253	348	53.00	In Earth orbit
S45394	2020-019AL	Starlink 1292	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45395	2020-019AM	Starlink 1297	2020 Mar 18 12:16:39	SPXS	US	253	349	53.00	In Earth orbit
S45396	2020-019AN	Starlink 1303	2020 Mar 18 12:16:39	SPXS	US	252	348	53.00	In Earth orbit
S45397	2020-019AP	Starlink 1307	2020 Mar 18 12:16:39	SPXS	US	257	344	53.00	In Earth orbit
S45398	2020-019AQ	Starlink 1312	2020 Mar 18 12:16:39	SPXS	US	258	344	53.00	In Earth orbit
S45399	2020-019AR	Starlink 1255	2020 Mar 18 12:16:39	SPXS	US	265	352	53.00	In Earth orbit
S45400	2020-019AS	Starlink 1213	2020 Mar 18 12:16:39	SPXS	US	254	347	53.00	In Earth orbit
S45401	2020-019AT	Starlink 1256	2020 Mar 18 12:16:39	SPXS	US	207	359	53.00	In Earth orbit
S45402	2020-019AU	Starlink 1257	2020 Mar 18 12:16:39	SPXS	US	257	360	53.00	In Earth orbit
S45403	2020-019AV	Starlink 1259	2020 Mar 18 12:16:39	SPXS	US	254	348	53.00	In Earth orbit
S45404	2020-019AW	Starlink 1260	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45405	2020-019AX	Starlink 1263	2020 Mar 18 12:16:39	SPXS	US	207	359	53.00	In Earth orbit
S45406	2020-019AY	Starlink 1265	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45407	2020-019AZ	Starlink 1275	2020 Mar 18 12:16:39	SPXS	US	207	360	53.00	In Earth orbit
S45408	2020-019BA	Starlink 1278	2020 Mar 18 12:16:39	SPXS	US	257	348	53.00	In Earth orbit
S45409	2020-019BB	Starlink 1282	2020 Mar 18 12:16:39	SPXS	US	254	348	53.00	In Earth orbit
S45410	2020-019BC	Starlink 1285	2020 Mar 18 12:16:39	SPXS	US	257	349	53.00	In Earth orbit
S45411	2020-019BD	Starlink 1293	2020 Mar 18 12:16:39	SPXS	US	257	349	53.00	In Earth orbit
S45412	2020-019BE	Starlink 1296	2020 Mar 18 12:16:39	SPXS	US	255	348	53.00	In Earth orbit
S45413	2020-019BF	Starlink 1298	2020 Mar 18 12:16:39	SPXS	US	252	349	53.00	In Earth orbit
S45414	2020-019BG	Starlink 1309	2020 Mar 18 12:16:39	SPXS	US	251	349	53.00	In Earth orbit
S45415	2020-019BH	Starlink 1316	2020 Mar 18 12:16:39	SPXS	US	249	347	53.00	In Earth orbit
S45416	2020-019BJ	Starlink 1318	2020 Mar 18 12:16:39	SPXS	US	252	347	53.00	In Earth orbit
S45417	2020-019BK	Starlink 1286	2020 Mar 18 12:16:39	SPXS	US	289	352	53.00	In Earth orbit
S45418	2020-019BL	Starlink 1299	2020 Mar 18 12:16:39	SPXS	US	207	360	53.00	In Earth orbit
S45419	2020-019BM	Starlink 1308	2020 Mar 18 12:16:39	SPXS	US	283	355	53.01	In Earth orbit
S45424	2020-020A	OneWeb 0066	2020 Mar 21 17:06:58	ONEWEB	UK	433	463	87.40	In Earth orbit
S45425	2020-020B	OneWeb 0067	2020 Mar 21 17:06:58	ONEWEB	UK	433	463	87.40	In Earth orbit
S45426	2020-020C	OneWeb 0080	2020 Mar 21 17:06:58	ONEWEB	UK	433	467	87.40	In Earth orbit
S45427	2020-020D	OneWeb 0090	2020 Mar 21 17:06:58	ONEWEB	UK	433	467	87.40	In Earth orbit
S45428	2020-020E	OneWeb 0061	2020 Mar 21 17:06:58	ONEWEB	UK	434	468	87.40	In Earth orbit
S45429	2020-020F	OneWeb 0081	2020 Mar 21 17:06:58	ONEWEB	UK	434	468	87.40	In Earth orbit
S45430	2020-020G	OneWeb 0069	2020 Mar 21 17:06:58	ONEWEB	UK	435	469	87.40	In Earth orbit
S45431	2020-020H	OneWeb 0031	2020 Mar 21 17:06:58	ONEWEB	UK	436	469	87.40	In Earth orbit
S45432	2020-020I	OneWeb 0027	2020 Mar 21 17:06:58	ONEWEB	UK	437	469	87.40	In Earth orbit
S45433	2020-020J	OneWeb 0064	2020 Mar 21 17:06:58	ONEWEB	UK	437	469	87.40	In Earth orbit
S45434	2020-020L	OneWeb 0018	2020 Mar 21 17:06:58	ONEWEB	UK	439	469	87.40	In Earth orbit
S45435	2020-020M	OneWeb 0083	2020 Mar 21 17:06:58	ONEWEB	UK	440	469	87.40	In Earth orbit
S45436	2020-020N	OneWeb 0095	2020 Mar 21 17:06:58	ONEWEB	UK	440	469	87.40	In Earth orbit
S45437	2020-020P	OneWeb 0092	2020 Mar 21 17:06:58	ONEWEB	UK	441	469	87.40	In Earth orbit
S45438	2020-020Q	OneWeb 0085	2020 Mar 21 17:06:58	ONEWEB	UK	441	470	87.40	In Earth orbit
S45439	2020-020R	OneWeb 0096	2020 Mar 21 17:06:58	ONEWEB	UK	441	470	87.40	In Earth orbit
S45440	2020-020S	OneWeb 0037	2020 Mar 21 17:06:58	ONEWEB	UK	441	471	87.40	In Earth orbit
S45441	2020-020T	OneWeb 0042	2020 Mar 21 17:06:58	ONEWEB	UK	442	471	87.40	In Earth orbit
S45442	2020-020U	OneWeb 0098	2020 Mar 21 17:06:58	ONEWEB	UK	441	473	87.40	In Earth orbit
S45443	2020-020V	OneWeb 0055	2020 Mar 21 17:06:58	ONEWEB	UK	441	474	87.40	In Earth orbit
S45444	2020-020W	OneWeb 0093	2020 Mar 21 17:06:58	ONEWEB	UK	441	475	87.40	In Earth orbit
S45445	2020-020X	OneWeb 0029	2020 Mar 21 17:06:58	ONEWEB	UK	441	475	87.40	In Earth orbit

S45446	2020-020Y	OneWeb 0068	2020 Mar 21 1706:58	ONEWEB	UK	441	476	87.40	In Earth orbit
S45447	2020-020Z	OneWeb 0046	2020 Mar 21 1706:58	ONEWEB	UK	442	477	87.40	In Earth orbit
S45448	2020-020AA	OneWeb 0063	2020 Mar 21 1706:58	ONEWEB	UK	442	477	87.40	In Earth orbit
S45449	2020-020AB	OneWeb 0019	2020 Mar 21 1706:58	ONEWEB	UK	442	477	87.40	In Earth orbit
S45450	2020-020AC	OneWeb 0094	2020 Mar 21 1706:58	ONEWEB	UK	443	478	87.40	In Earth orbit
S45451	2020-020AD	OneWeb 0087	2020 Mar 21 1706:58	ONEWEB	UK	444	478	87.40	In Earth orbit
S45452	2020-020AE	OneWeb 0082	2020 Mar 21 1706:58	ONEWEB	UK	445	478	87.40	In Earth orbit
S45453	2020-020AF	OneWeb 0050	2020 Mar 21 1706:58	ONEWEB	UK	446	478	87.40	In Earth orbit
S45454	2020-020AG	OneWeb 0034	2020 Mar 21 1706:58	ONEWEB	UK	446	478	87.40	In Earth orbit
S45455	2020-020AH	OneWeb 0060	2020 Mar 21 1706:58	ONEWEB	UK	447	478	87.40	In Earth orbit
S45456	2020-020AJ	OneWeb 0086	2020 Mar 21 1706:58	ONEWEB	UK	448	478	87.40	In Earth orbit
S45457	2020-020AK	OneWeb 0088	2020 Mar 21 1706:58	ONEWEB	UK	448	478	87.40	In Earth orbit
S45460	2020-021A	Yaogan 30 hao 06 zu 01 xing	2020 Mar 24 0343:05	ZZB	CN	590	602	35.00	In Earth orbit
S45461	2020-021B	Yaogan 30 hao 06 zu 02 xing	2020 Mar 24 0343:05	ZZB	CN	590	602	35.00	In Earth orbit
S45462	2020-021C	Yaogan 30 hao 06 zu 03 xing	2020 Mar 24 0343:05	ZZB	CN	590	602	35.00	In Earth orbit
S45464	2020-022A	TDO 2	2020 Mar 26 2018:00	AFMCSW	US	200	35459	26.50	In Earth orbit
S45465	2020-022B	AEHF SV-6	2020 Mar 26 2018:00	AFMCSW	US	2845	35301	9.56	In Earth orbit
S45476	2020-023A	Soyuz MS-16	2020 Apr 9 0805:06	RKKE	RU	217	389	51.75	Landed
S45529	2020-024A	Noor 1	2020 Apr 22 0358:59	IRCC	IR	426	436	59.81	In Earth orbit
S45531	2020-025A	Starlink 1329	2020 Apr 22 1930:00	SPXS	US	229	354	53.01	In Earth orbit
S45532	2020-025B	Starlink 1338	2020 Apr 22 1930:00	SPXS	US	229	355	53.00	In Earth orbit
S45533	2020-025C	Starlink 1339	2020 Apr 22 1930:00	SPXS	US	230	354	53.01	In Earth orbit
S45534	2020-025D	Starlink 1341	2020 Apr 22 1930:00	SPXS	US	230	354	53.00	In Earth orbit
S45535	2020-025E	Starlink 1350	2020 Apr 22 1930:00	SPXS	US	229	355	53.01	In Earth orbit
S45536	2020-025F	Starlink 1352	2020 Apr 22 1930:00	SPXS	US	229	355	53.00	In Earth orbit
S45537	2020-025G	Starlink 1353	2020 Apr 22 1930:00	SPXS	US	229	355	53.01	In Earth orbit
S45538	2020-025H	Starlink 1362	2020 Apr 22 1930:00	SPXS	US	229	354	53.01	In Earth orbit
S45539	2020-025I	Starlink 1367	2020 Apr 22 1930:00	SPXS	US	228	355	53.00	In Earth orbit
S45540	2020-025K	Starlink 1368	2020 Apr 22 1930:00	SPXS	US	230	355	53.00	In Earth orbit
S45541	2020-025L	Starlink 1369	2020 Apr 22 1930:00	SPXS	US	230	355	53.01	In Earth orbit
S45542	2020-025M	Starlink 1371	2020 Apr 22 1930:00	SPXS	US	229	355	53.00	In Earth orbit
S45543	2020-025N	Starlink 1372	2020 Apr 22 1930:00	SPXS	US	231	355	53.01	In Earth orbit
S45544	2020-025P	Starlink 1373	2020 Apr 22 1930:00	SPXS	US	229	355	53.00	In Earth orbit
S45545	2020-025Q	Starlink 1374	2020 Apr 22 1930:00	SPXS	US	230	354	53.01	In Earth orbit
S45546	2020-025R	Starlink 1375	2020 Apr 22 1930:00	SPXS	US	230	355	53.01	In Earth orbit
S45547	2020-025S	Starlink 1377	2020 Apr 22 1930:00	SPXS	US	230	354	53.01	In Earth orbit
S45548	2020-025T	Starlink 1378	2020 Apr 22 1930:00	SPXS	US	231	355	53.01	In Earth orbit
S45549	2020-025U	Starlink 1379	2020 Apr 22 1930:00	SPXS	US	231	355	53.00	In Earth orbit
S45550	2020-025V	Starlink 1390	2020 Apr 22 1930:00	SPXS	US	229	355	53.01	In Earth orbit
S45551	2020-025W	Starlink 1294	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45552	2020-025X	Starlink 1322	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45553	2020-025Y	Starlink 1323	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45554	2020-025Z	Starlink 1325	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45555	2020-025AA	Starlink 1327	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45556	2020-025AB	Starlink 1334	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45557	2020-025AC	Starlink 1336	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45558	2020-025AD	Starlink 1342	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45559	2020-025AE	Starlink 1344	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45560	2020-025AF	Starlink 1346	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45561	2020-025AG	Starlink 1348	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45562	2020-025AH	Starlink 1354	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45563	2020-025AJ	Starlink 1355	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45564	2020-025AK	Starlink 1356	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45565	2020-025AL	Starlink 1357	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45566	2020-025AM	Starlink 1358	2020 Apr 22 1930:00	SPXS	US	211	359	53.01	In Earth orbit
S45567	2020-025AN	Starlink 1361	2020 Apr 22 1930:00	SPXS	US	211	359	53.01	In Earth orbit
S45568	2020-025AP	Starlink 1363	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45569	2020-025AQ	Starlink 1366	2020 Apr 22 1930:00	SPXS	US	211	359	53.01	In Earth orbit
S45570	2020-025AR	Starlink 1376	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45571	2020-025AS	Starlink 1261	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45572	2020-025AT	Starlink 1320	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45573	2020-025AU	Starlink 1321	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45574	2020-025AV	Starlink 1324	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45575	2020-025AW	Starlink 1326	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45576	2020-025AX	Starlink 1328	2020 Apr 22 1930:00	SPXS	US	211	358	53.01	In Earth orbit
S45577	2020-025AY	Starlink 1330	2020 Apr 22 1930:00	SPXS	US	211	359	53.01	In Earth orbit

S45578	2020-025AZ	Starlink 1331	SPXS	US	211	358	53.01	In Earth orbit
S45579	2020-025BA	Starlink 1332	SPXS	US	211	359	53.01	In Earth orbit
S45580	2020-025BB	Starlink 1333	SPXS	US	211	358	53.01	In Earth orbit
S45581	2020-025BC	Starlink 1335	SPXS	US	211	358	53.01	In Earth orbit
S45582	2020-025BD	Starlink 1337	SPXS	US	211	358	53.01	In Earth orbit
S45583	2020-025BE	Starlink 1340	SPXS	US	211	358	53.01	In Earth orbit
S45584	2020-025BF	Starlink 1343	SPXS	US	211	358	53.01	In Earth orbit
S45585	2020-025BG	Starlink 1345	SPXS	US	211	358	53.01	In Earth orbit
S45586	2020-025BH	Starlink 1347	SPXS	US	211	358	53.01	In Earth orbit
S45587	2020-025BI	Starlink 1349	SPXS	US	211	358	53.01	In Earth orbit
S45588	2020-025BJ	Starlink 1360	SPXS	US	211	359	53.01	In Earth orbit
S45589	2020-025BK	Starlink 1366	SPXS	US	211	358	53.01	In Earth orbit
S45590	2020-025BL	Starlink 1364	SPXS	US	211	359	53.01	In Earth orbit
S45591	2020-025BM	Starlink 1365	SPXS	US	211	359	53.01	In Earth orbit
S45595	2020-026A	Progress MS-14	RKKE	RU	189	227	51.66	Attached to Zvezda
S45599	2020-027A	XZF-SC	CMSEO	CN	162	377	41.09	Landed
S45600	2020-027B	RCS-FC-SC	CASIC	CN	161	372	41.10	Deorbited
S45602	2020-028A	Xingyun-2.01 xing	XYUN	CN	556	572	97.55	In Earth orbit
S45603	2020-028B	Xingyun-2.02 xing	XYUN	CN	556	572	97.55	In Earth orbit
S45606	2020-029A C	X-37B OTV-6	AFRCO	US	379	399	45.08	In Earth orbit
S45610	2020-029B C	USA 300	USAF	US	389	389	45.01	In Earth orbit
S45607	2020-030A	Koumotei 9 gunki	JAXA	J	284	302	51.67	Deorbited
S45608	2020-031A	Kosmos-2546	KYR	RU	1659	63.82	In Earth orbit	
S45611	2020-032A	XJS G	SECM	CN	467	485	35.03	In Earth orbit
S45612	2020-032B	XJS H	NUDITC	CN	466	485	35.03	In Earth orbit
S45623	2020-033A	Endeavour	SIX	US	416	420	51.64	Landed
S45624	2020-034A	HEAD-4	HEAD	CN	487	502	97.29	In Earth orbit
S45625	2020-034B	Gao Fen 9 02 xing	CNSAS	CN	485	501	97.29	In Earth orbit
S45657	2020-035A	Starlink 1440	SPXS	US	217	355	53.00	Reentered
S45658	2020-035B	Starlink 1441	SPXS	US	292	366	53.00	In Earth orbit
S45659	2020-035C	Starlink 1442	SPXS	US	294	364	53.00	In Earth orbit
S45660	2020-035D	Starlink 1443	SPXS	US	294	365	53.00	In Earth orbit
S45661	2020-035E	Starlink 1444	SPXS	US	299	358	53.00	In Earth orbit
S45662	2020-035F	Starlink 1445	SPXS	US	292	364	53.00	In Earth orbit
S45663	2020-035G	Starlink 1446	SPXS	US	293	364	53.00	In Earth orbit
S45664	2020-035H	Starlink 1447	SPXS	US	292	365	53.00	In Earth orbit
S45665	2020-035I	Starlink 1448	SPXS	US	294	365	53.00	In Earth orbit
S45666	2020-035K	Starlink 1449	SPXS	US	295	364	53.00	In Earth orbit
S45667	2020-035L	Starlink 1450	SPXS	US	294	362	53.00	In Earth orbit
S45668	2020-035M	Starlink 1451	SPXS	US	293	365	53.00	In Earth orbit
S45669	2020-035N	Starlink 1452	SPXS	US	298	358	53.00	In Earth orbit
S45670	2020-035P	Starlink 1453	SPXS	US	244	359	53.00	In Earth orbit
S45671	2020-035Q	Starlink 1454	SPXS	US	293	364	53.00	In Earth orbit
S45672	2020-035R	Starlink 1455	SPXS	US	222	348	53.00	In Earth orbit
S45673	2020-035S	Starlink 1456	SPXS	US	293	364	53.00	In Earth orbit
S45674	2020-035T	Starlink 1457	SPXS	US	293	364	53.00	In Earth orbit
S45675	2020-035U	Starlink 1458	SPXS	US	292	365	53.00	In Earth orbit
S45676	2020-035V	Starlink 1460	SPXS	US	292	364	53.00	In Earth orbit
S45677	2020-035W	Starlink 1392	SPXS	US	286	364	53.00	In Earth orbit
S45678	2020-035X	Starlink 1393	SPXS	US	280	362	53.00	In Earth orbit
S45679	2020-035Y	Starlink 1394	SPXS	US	289	364	53.00	In Earth orbit
S45680	2020-035Z	Starlink 1395	SPXS	US	251	356	53.00	In Earth orbit
S45681	2020-035AA	Starlink 1396	SPXS	US	290	363	53.00	In Earth orbit
S45682	2020-035AB	Starlink 1397	SPXS	US	289	364	53.00	In Earth orbit
S45683	2020-035AC	Starlink 1399	SPXS	US	289	364	53.00	In Earth orbit
S45684	2020-035AD	Starlink 1401	SPXS	US	290	364	53.00	In Earth orbit
S45685	2020-035AE	Starlink 1402	SPXS	US	290	365	53.00	In Earth orbit
S45686	2020-035AF	Starlink 1404	SPXS	US	291	364	53.00	In Earth orbit
S45687	2020-035AG	Starlink 1406	SPXS	US	224	352	53.00	In Earth orbit
S45688	2020-035AH	Starlink 1408	SPXS	US	226	352	53.00	In Earth orbit
S45689	2020-035AJ	Starlink 1413	SPXS	US	287	365	53.00	In Earth orbit
S45690	2020-035AK	Starlink 1414	SPXS	US	286	364	53.00	In Earth orbit
S45691	2020-035AL	Starlink 1415	SPXS	US	249	360	53.00	In Earth orbit
S45692	2020-035AM	Starlink 1416	SPXS	US	285	364	53.00	In Earth orbit
S45693	2020-035AN	Starlink 1417	SPXS	US	287	364	53.00	In Earth orbit
S45694	2020-035AP	Starlink 1419	SPXS	US	288	365	53.00	In Earth orbit
S45695	2020-035AQ	Starlink 1420	SPXS	US	288	365	53.00	In Earth orbit

S45696	2020-035AR	Starlink 1422	Starlink 1422	2020 Jun 4 01:25:33	SPXS	US	291	365	53.00	In Earth orbit
S45697	2020-035AS	Starlink 1351	Starlink 1351	2020 Jun 4 01:25:33	SPXS	US	289	366	53.00	In Earth orbit
S45698	2020-035AT	Starlink 1370	Starlink 1370	2020 Jun 4 01:25:33	SPXS	US	288	365	53.00	In Earth orbit
S45699	2020-035AU	Starlink 1398	Starlink 1398	2020 Jun 4 01:25:33	SPXS	US	293	362	53.00	In Earth orbit
S45700	2020-035AV	Starlink 1400	Starlink 1400	2020 Jun 4 01:25:33	SPXS	US	291	365	53.00	In Earth orbit
S45701	2020-035AW	Starlink 1403	Starlink 1403	2020 Jun 4 01:25:33	SPXS	US	291	366	53.00	In Earth orbit
S45702	2020-035AX	Starlink 1405	Starlink 1405	2020 Jun 4 01:25:33	SPXS	US	201	301	53.00	In Earth orbit
S45703	2020-035AY	Starlink 1407	Starlink 1407	2020 Jun 4 01:25:33	SPXS	US	292	365	53.00	In Earth orbit
S45704	2020-035AZ	Starlink 1409	Starlink 1409	2020 Jun 4 01:25:33	SPXS	US	293	365	53.00	In Earth orbit
S45705	2020-035BA	Starlink 1410	Starlink 1410	2020 Jun 4 01:25:33	SPXS	US	290	366	53.00	In Earth orbit
S45706	2020-035BB	Starlink 1411	Starlink 1411	2020 Jun 4 01:25:33	SPXS	US	292	367	53.00	In Earth orbit
S45707	2020-035BC	Starlink 1412	Starlink 1412	2020 Jun 4 01:25:33	SPXS	US	292	366	53.00	In Earth orbit
S45708	2020-035BD	Starlink 1418	Starlink 1418	2020 Jun 4 01:25:33	SPXS	US	292	365	53.00	In Earth orbit
S45709	2020-035BE	Starlink 1421	Starlink 1421	2020 Jun 4 01:25:33	SPXS	US	291	365	53.00	In Earth orbit
S45710	2020-035BF	Starlink 1423	Starlink 1423	2020 Jun 4 01:25:33	SPXS	US	291	365	53.00	In Earth orbit
S45711	2020-035BG	Starlink 1433	Starlink 1433	2020 Jun 4 01:25:33	SPXS	US	293	365	53.00	In Earth orbit
S45712	2020-035BH	Starlink 1434	Starlink 1434	2020 Jun 4 01:25:33	SPXS	US	239	359	53.00	In Earth orbit
S45713	2020-035BI	Starlink 1436 (VisorSat)	Starlink 1436	2020 Jun 4 01:25:33	SPXS	US	296	363	53.00	In Earth orbit
S45714	2020-035BK	Starlink 1437	Starlink 1437	2020 Jun 4 01:25:33	SPXS	US	295	364	53.00	In Earth orbit
S45715	2020-035BL	Starlink 1438	Starlink 1438	2020 Jun 4 01:25:33	SPXS	US	294	365	53.00	In Earth orbit
S45716	2020-035BM	Starlink 1439	Starlink 1439	2020 Jun 4 01:25:33	SPXS	US	210	347	53.00	In Earth orbit
S45721	2020-036A	Hai Yang ID	Hai Yang ID	2020 Jun 10 18:31:24	GYZ/CASC	CN	770	785	98.44	In Earth orbit
S45723	2020-037A C	USA 301	USA 301	2020 Jun 13 05:12:12	NROC	US	585	600	97.70	In Earth orbit
S45724	2020-037B C	USA 302	USA 302	2020 Jun 13 05:12:12	NROC	US	585	600	97.70	In Earth orbit
S45725	2020-037C C	USA 303	USA 303	2020 Jun 13 05:12:12	NROC	US	585	600	97.70	In Earth orbit
S45726	2020-037D	ANDESITE	ANDESITE	2020 Jun 13 05:12:12	BU	US	582	600	97.71	In Earth orbit
S45727	2020-037E	RAAF M2 Pathfinder	RAAF M2 Pathfinder	2020 Jun 13 05:12:12	RAAF/UNSW	AU	586	602	97.70	In Earth orbit
T00009	2020-037H	ANDESITE Node 1	ANDESITE Node 1	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00011	2020-037I	ANDESITE Node 2	ANDESITE Node 2	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00012	2020-037K	ANDESITE Node 3	ANDESITE Node 3	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00013	2020-037L	ANDESITE Node 4	ANDESITE Node 4	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00014	2020-037M	ANDESITE Node 5	ANDESITE Node 5	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00015	2020-037N	ANDESITE Node 6	ANDESITE Node 6	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00016	2020-037P	ANDESITE Node 7	ANDESITE Node 7	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
T00017	2020-037Q	ANDESITE Node 8	ANDESITE Node 8	2020 Jun 13 05:12:12	BU	US	0	0	0.00	Attached to ANDESITE
S45730	2020-038A	Starlink 1461	Starlink 1461	2020 Jun 13 09:21:18	SPXS	US	257	362	53.00	In Earth orbit
S45731	2020-038B	Starlink 1465	Starlink 1465	2020 Jun 13 09:21:18	SPXS	US	257	362	53.00	In Earth orbit
S45732	2020-038C	Starlink 1466	Starlink 1466	2020 Jun 13 09:21:18	SPXS	US	256	362	53.00	In Earth orbit
S45733	2020-038D	Starlink 1467	Starlink 1467	2020 Jun 13 09:21:18	SPXS	US	254	365	53.00	In Earth orbit
S45734	2020-038E	Starlink 1468	Starlink 1468	2020 Jun 13 09:21:18	SPXS	US	257	361	53.00	In Earth orbit
S45735	2020-038F	Starlink 1471	Starlink 1471	2020 Jun 13 09:21:18	SPXS	US	255	362	53.00	In Earth orbit
S45736	2020-038G	Starlink 1472	Starlink 1472	2020 Jun 13 09:21:18	SPXS	US	256	363	53.00	In Earth orbit
S45737	2020-038H	Starlink 1473	Starlink 1473	2020 Jun 13 09:21:18	SPXS	US	256	362	53.00	In Earth orbit
S45738	2020-038I	Starlink 1474	Starlink 1474	2020 Jun 13 09:21:18	SPXS	US	257	362	53.00	In Earth orbit
S45739	2020-038K	Starlink 1475	Starlink 1475	2020 Jun 13 09:21:18	SPXS	US	256	361	53.00	In Earth orbit
S45740	2020-038L	Starlink 1479	Starlink 1479	2020 Jun 13 09:21:18	SPXS	US	255	362	53.00	In Earth orbit
S45741	2020-038M	Starlink 1480	Starlink 1480	2020 Jun 13 09:21:18	SPXS	US	257	361	53.00	In Earth orbit
S45742	2020-038N	Starlink 1481	Starlink 1481	2020 Jun 13 09:21:18	SPXS	US	257	361	53.00	In Earth orbit
S45743	2020-038P	Starlink 1483	Starlink 1483	2020 Jun 13 09:21:18	SPXS	US	257	362	53.00	In Earth orbit
S45744	2020-038Q	Starlink 1500	Starlink 1500	2020 Jun 13 09:21:18	SPXS	US	256	361	53.00	In Earth orbit
S45745	2020-038R	Starlink 1503	Starlink 1503	2020 Jun 13 09:21:18	SPXS	US	255	362	53.00	In Earth orbit
S45746	2020-038S	Starlink 1504	Starlink 1504	2020 Jun 13 09:21:18	SPXS	US	256	362	53.00	In Earth orbit
S45747	2020-038T	Starlink 1506	Starlink 1506	2020 Jun 13 09:21:18	SPXS	US	256	362	53.00	In Earth orbit
S45748	2020-038U	Starlink 1507	Starlink 1507	2020 Jun 13 09:21:18	SPXS	US	256	362	53.00	In Earth orbit
S45749	2020-038V	Starlink 1516	Starlink 1516	2020 Jun 13 09:21:18	SPXS	US	255	362	53.00	In Earth orbit
S45750	2020-038W	Starlink 1391	Starlink 1391	2020 Jun 13 09:21:18	SPXS	US	221	357	53.00	In Earth orbit
S45751	2020-038X	Starlink 1464	Starlink 1464	2020 Jun 13 09:21:18	SPXS	US	221	357	53.00	In Earth orbit
S45752	2020-038Y	Starlink 1469	Starlink 1469	2020 Jun 13 09:21:18	SPXS	US	222	356	53.00	In Earth orbit
S45753	2020-038Z	Starlink 1476	Starlink 1476	2020 Jun 13 09:21:18	SPXS	US	220	357	53.00	In Earth orbit
S45754	2020-038AA	Starlink 1477	Starlink 1477	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45755	2020-038AB	Starlink 1478	Starlink 1478	2020 Jun 13 09:21:18	SPXS	US	218	359	53.00	In Earth orbit
S45756	2020-038AC	Starlink 1484	Starlink 1484	2020 Jun 13 09:21:18	SPXS	US	220	357	53.00	In Earth orbit
S45757	2020-038AD	Starlink 1486	Starlink 1486	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45758	2020-038AE	Starlink 1487	Starlink 1487	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45759	2020-038AF	Starlink 1493	Starlink 1493	2020 Jun 13 09:21:18	SPXS	US	220	357	53.00	In Earth orbit
S45760	2020-038AG	Starlink 1494	Starlink 1494	2020 Jun 13 09:21:18	SPXS	US	221	358	53.00	In Earth orbit

S45761	2020-038AH	Starlink 1495	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45762	2020-038AJ	Starlink 1499	2020 Jun 13 09:21:18	SPXS	US	220	360	53.00	In Earth orbit
S45763	2020-038AK	Starlink 1501	2020 Jun 13 09:21:18	SPXS	US	219	359	53.00	In Earth orbit
S45764	2020-038AL	Starlink 1502	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45765	2020-038AM	Starlink 1508	2020 Jun 13 09:21:18	SPXS	US	219	357	53.00	In Earth orbit
S45766	2020-038AN	Starlink 1509	2020 Jun 13 09:21:18	SPXS	US	219	359	53.00	In Earth orbit
S45767	2020-038AP	Starlink 1511	2020 Jun 13 09:21:18	SPXS	US	217	357	53.00	In Earth orbit
S45768	2020-038AQ	Starlink 1521	2020 Jun 13 09:21:18	SPXS	US	220	358	53.00	In Earth orbit
S45769	2020-038AR	Starlink 1459	2020 Jun 13 09:21:18	SPXS	US	260	361	53.00	In Earth orbit
S45770	2020-038AS	Starlink 1462	2020 Jun 13 09:21:18	SPXS	US	221	359	53.00	In Earth orbit
S45771	2020-038AT	Starlink 1463	2020 Jun 13 09:21:18	SPXS	US	220	357	53.00	In Earth orbit
S45772	2020-038AU	Starlink 1470	2020 Jun 13 09:21:18	SPXS	US	219	358	53.00	In Earth orbit
S45773	2020-038AV	Starlink 1482	2020 Jun 13 09:21:18	SPXS	US	219	357	53.00	In Earth orbit
S45774	2020-038AW	Starlink 1485	2020 Jun 13 09:21:18	SPXS	US	218	359	53.00	In Earth orbit
S45775	2020-038AX	Starlink 1488	2020 Jun 13 09:21:18	SPXS	US	217	357	53.00	In Earth orbit
S45776	2020-038AY	Starlink 1489	2020 Jun 13 09:21:18	SPXS	US	218	357	53.00	In Earth orbit
S45777	2020-038AZ	Starlink 1490	2020 Jun 13 09:21:18	SPXS	US	218	360	53.00	In Earth orbit
S45778	2020-038BA	Starlink 1491	2020 Jun 13 09:21:18	SPXS	US	221	357	53.00	In Earth orbit
S45779	2020-038BB	Starlink 1492	2020 Jun 13 09:21:18	SPXS	US	221	359	53.00	In Earth orbit
S45780	2020-038BC	Starlink 1496	2020 Jun 13 09:21:18	SPXS	US	216	357	53.00	In Earth orbit
S45781	2020-038BD	Starlink 1497	2020 Jun 13 09:21:18	SPXS	US	225	355	53.00	In Earth orbit
S45782	2020-038BE	Starlink 1498	2020 Jun 13 09:21:18	SPXS	US	220	360	53.00	In Earth orbit
S45783	2020-038BF	Starlink 1505	2020 Jun 13 09:21:18	SPXS	US	218	360	53.00	In Earth orbit
S45784	2020-038BG	Starlink 1510	2020 Jun 13 09:21:18	SPXS	US	217	357	53.00	In Earth orbit
S45785	2020-038BH	Starlink 1512	2020 Jun 13 09:21:18	SPXS	US	220	359	53.00	In Earth orbit
S45786	2020-038BJ	Starlink 1513	2020 Jun 13 09:21:18	SPXS	US	218	358	53.00	In Earth orbit
S45787	2020-038BK	Starlink 1517	2020 Jun 13 09:21:18	PLABST	US	219	358	53.00	In Earth orbit
S45788	2020-038BL	SkySat C14	2020 Jun 13 09:21:18	PLABST	US	234	363	53.00	In Earth orbit
S45789	2020-038BM	SkySat C16	2020 Jun 13 09:21:18	PLABST	US	255	368	53.00	In Earth orbit
S45790	2020-038BN	SkySat C15	2020 Jun 13 09:21:18	PLABST	US	253	367	53.00	In Earth orbit
S45794	2020-039A	Gao Fen 9 03 xing	2020 Jun 17 07:19:04	CNSAS	CN	486	503	97.32	In Earth orbit
S45795	2020-039B	Zheda Pixing 3A	2020 Jun 17 07:19:04	ZHEJ	CN	485	502	97.32	In Earth orbit
S45796	2020-039C	HEAD-5	2020 Jun 17 07:19:04	HEAD	CN	484	501	97.32	In Earth orbit
S45807	2020-040A	Beidou DW 55	2020 Jun 23 01:43:04	CNSA	CN	35763	35809	3.08	In Earth orbit
S45854	2020-041A	GPS III SV03	2020 Jun 30 20:10:46	USAF	US	20164	20198	55.06	In Earth orbit
S45856	2020-042A	Gao Fen Duomo Weixing	2020 Jul 3 03:10:00	ZZB	CN	630	648	98.02	In Earth orbit
S45857	2020-042B	Xibaipo hao	2020 Jul 3 03:10:00	BAYU/CASITX	CN	634	648	98.01	In Earth orbit
S45859	2020-043A	Shiyao 6-02	2020 Jul 4 23:44:04	CNSA	CN	686	706	98.20	In Earth orbit
S45860	2020-044A C	Oleq-16	2020 Jul 6 01:00:00	DDRD/U9900	IL	329	602	140.64	In Earth orbit
S45863	2020-045A	Apstar 6D	2020 Jul 9 12:11:04	APTS	CN	35784	35884	0.10	In Earth orbit
S45873	2020-046A C	USA 305	2020 Jul 15 13:46:00	NROC	US	569	580	54.00	In Earth orbit
S45874	2020-046B C	USA 306	2020 Jul 15 13:46:00	NROC	US	569	580	54.00	In Earth orbit
S45875	2020-046C C	USA 307	2020 Jul 15 13:46:00	NROC	US	572	579	54.00	In Earth orbit
S45876	2020-046D C	USA 308	2020 Jul 15 13:46:00	NROC	US	572	579	54.00	In Earth orbit
S45918	2020-047A	Misbar Al'Amal	2020 Jul 19 21:58:14	MBRSC	UAE	181	-72833	30.24	Deep Space
S45920	2020-048A	ANASIS-II	2020 Jul 20 21:30:00	ADD/DAPA	KR	35904	36025	0.02	In Earth orbit
S45935	2020-049A	Tianwen-1 Orbiter	2020 Jul 23 04:41:12	LDSE/CASST	CN	177	-79757	29.42	Deep Space
A09601	2020-049	Tianwen-1 Lander	2020 Jul 23 04:41:12	LDSE/CASST	CN	210	-79759	29.45	Deep Space Att to Tianwen-1 Backshell
A09604	2020-049	Tianwen-1 Rover	2020 Jul 23 04:41:12	LDSE/CASST	CN	210	-79759	29.45	Deep Space Att to Tianwen-1 Lander
S45937	2020-050A	Progress MS-15	2020 Jul 23 14:26:22	RKKE	RU	198	227	51.68	Attached to Pirs
S45939	2020-051A	Zi Yuan 3 03 xing	2020 Jul 25 03:13:00	GCDX/ZZWYZ	CN	485	498	97.50	In Earth orbit
S45940	2020-051B ?	Tianqi-10	2020 Jul 25 03:13:00	GUOG	CN	483	498	97.50	In Earth orbit
S45941	2020-051C ?	Longxia yan 01	2020 Jul 25 03:13:00	NIU/HKU	CN	483	498	97.50	In Earth orbit
S45983	2020-052A	Perseverance	2020 Jul 30 11:50:00	NASA/JPL	US	208	-68003	27.58	Deep Space Att to Mars 2020 Descent stage
A09615	2020-052A	Ingenuity	2020 Jul 30 11:50:00	NASA/JPL	US	208	-68003	27.58	Deep Space Att to Perseverance
S45985	2020-053A	Ekspress-103	2020 Jul 30 21:25:19	KS	RU	16720	54790	0.60	In Earth orbit
S45986	2020-053B	Ekspress-80	2020 Jul 30 21:25:19	KS	RU	16581	54800	0.61	Identified with S45986 Ekspress-80
S46025	2020-054A	Gao Fen 9 04 xing	2020 Aug 6 04:01:00	CNSAS	CN	485	505	97.47	In Earth orbit
S46026	2020-054B	Zhongji yu Daoji Kexue	2020 Aug 6 04:01:00	TSHUA	CN	483	504	97.47	In Earth orbit
S46027	2020-055A	Starlink 1522	2020 Aug 7 05:12:05	SPXS	US	415	422	53.01	In Earth orbit
S46028	2020-055B	Starlink 1523	2020 Aug 7 05:12:05	SPXS	US	404	415	53.01	In Earth orbit
S46029	2020-055C	Starlink 1526	2020 Aug 7 05:12:05	SPXS	US	402	414	53.01	In Earth orbit
S46030	2020-055D	Starlink 1534	2020 Aug 7 05:12:05	SPXS	US	410	411	53.01	In Earth orbit

S46031	2020-055E	Starlink 1544	SPXS	US	412	413	53.01	In Earth orbit
S46032	2020-055F	Starlink 1555	SPXS	US	416	418	53.01	In Earth orbit
S46033	2020-055G	Starlink 1556	SPXS	US	411	416	53.01	In Earth orbit
S46034	2020-055H	Starlink 1557	SPXS	US	414	415	53.01	In Earth orbit
S46035	2020-055I	Starlink 1558	SPXS	US	415	416	53.01	In Earth orbit
S46036	2020-055K	Starlink 1560	SPXS	US	411	413	53.01	In Earth orbit
S46037	2020-055L	Starlink 1565	SPXS	US	411	412	53.01	In Earth orbit
S46038	2020-055M	Starlink 1567	SPXS	US	412	418	53.01	In Earth orbit
S46039	2020-055N	Starlink 1569	SPXS	US	415	417	53.01	In Earth orbit
S46040	2020-055P	Starlink 1576	SPXS	US	408	409	53.01	In Earth orbit
S46041	2020-055Q	Starlink 1580	SPXS	US	408	409	53.01	In Earth orbit
S46042	2020-055R	Starlink 1581	SPXS	US	385	402	53.01	In Earth orbit
S46043	2020-055S	Starlink 1582	SPXS	US	417	419	53.01	In Earth orbit
S46044	2020-055T	Starlink 1584	SPXS	US	403	415	53.01	In Earth orbit
S46045	2020-055U	Starlink 1591	SPXS	US	409	410	53.01	In Earth orbit
S46046	2020-055V	Starlink 1514	SPXS	US	385	402	53.01	In Earth orbit
S46047	2020-055W	Starlink 1524	SPXS	US	385	402	53.01	In Earth orbit
S46048	2020-055X	Starlink 1527	SPXS	US	385	402	53.01	In Earth orbit
S46049	2020-055Y	Starlink 1530	SPXS	US	385	402	53.01	In Earth orbit
S46050	2020-055Z	Starlink 1535	SPXS	US	385	402	53.01	In Earth orbit
S46051	2020-055AA	Starlink 1540	SPXS	US	385	402	53.01	In Earth orbit
S46052	2020-055AB	Starlink 1541	SPXS	US	385	402	53.01	In Earth orbit
S46053	2020-055AC	Starlink 1543	SPXS	US	385	402	53.01	In Earth orbit
S46054	2020-055AD	Starlink 1548	SPXS	US	385	402	53.01	In Earth orbit
S46055	2020-055AE	Starlink 1554	SPXS	US	385	402	53.01	In Earth orbit
S46056	2020-055AF	Starlink 1561	SPXS	US	385	402	53.01	In Earth orbit
S46057	2020-055AG	Starlink 1562	SPXS	US	385	402	53.01	In Earth orbit
S46058	2020-055AH	Starlink 1564	SPXS	US	385	402	53.01	In Earth orbit
S46059	2020-055AJ	Starlink 1570	SPXS	US	385	402	53.01	In Earth orbit
S46060	2020-055AK	Starlink 1572	SPXS	US	385	402	53.01	In Earth orbit
S46061	2020-055AL	Starlink 1573	SPXS	US	385	402	53.01	In Earth orbit
S46062	2020-055AM	Starlink 1574	SPXS	US	385	402	53.01	In Earth orbit
S46063	2020-055AN	Starlink 1577	SPXS	US	385	402	53.01	In Earth orbit
S46064	2020-055AP	Starlink 1583	SPXS	US	385	402	53.01	In Earth orbit
S46065	2020-055AQ	Starlink 1515	SPXS	US	385	402	53.01	In Earth orbit
S46066	2020-055AR	Starlink 1525	SPXS	US	385	402	53.01	In Earth orbit
S46067	2020-055AS	Starlink 1529	SPXS	US	385	402	53.01	In Earth orbit
S46068	2020-055AT	Starlink 1532	SPXS	US	385	402	53.01	In Earth orbit
S46069	2020-055AU	Starlink 1533	SPXS	US	385	402	53.01	In Earth orbit
S46070	2020-055AV	Starlink 1536	SPXS	US	385	402	53.01	In Earth orbit
S46071	2020-055AW	Starlink 1538	SPXS	US	385	402	53.01	In Earth orbit
S46072	2020-055AX	Starlink 1539	SPXS	US	385	402	53.01	In Earth orbit
S46073	2020-055AY	Starlink 1542	SPXS	US	385	402	53.01	In Earth orbit
S46074	2020-055AZ	Starlink 1549	SPXS	US	385	402	53.01	In Earth orbit
S46075	2020-055BA	Starlink 1551	SPXS	US	385	402	53.01	In Earth orbit
S46076	2020-055BB	Starlink 1552	SPXS	US	385	402	53.01	In Earth orbit
S46077	2020-055BC	Starlink 1559	SPXS	US	385	402	53.01	In Earth orbit
S46078	2020-055BD	Starlink 1563	SPXS	US	385	402	53.01	In Earth orbit
S46079	2020-055BE	Starlink 1566	SPXS	US	385	402	53.01	In Earth orbit
S46080	2020-055BF	Starlink 1568	SPXS	US	385	402	53.01	In Earth orbit
S46081	2020-055BG	Starlink 1571	SPXS	US	385	402	53.01	In Earth orbit
S46082	2020-055BH	Starlink 1578	SPXS	US	385	402	53.01	In Earth orbit
S46083	2020-055BJ	Starlink 1579	SPXS	US	385	402	53.01	In Earth orbit
S46088	2020-055BP	BlackSky Global 7	BSKG	US	385	401	53.01	In Earth orbit
S46089	2020-055BQ	BlackSky Global 8	BSKG	US	385	402	53.01	In Earth orbit
S46112	2020-056A	BSAT-4b	BSAT	J	17396	35762	1.12	In Earth orbit
S46113	2020-056B	MEV-2	SPLOG	US	3038	35761	4.37	In Earth orbit
S46114	2020-056C	Galaxy 30	INTELU	US	4561	35740	3.62	In Earth orbit
S46117	2020-057A	Starlink 1585	SPXS	US	279	353	53.00	In Earth orbit
S46118	2020-057B	Starlink 1588	SPXS	US	289	356	53.00	In Earth orbit
S46119	2020-057C	Starlink 1593	SPXS	US	288	356	53.00	In Earth orbit
S46120	2020-057D	Starlink 1601	SPXS	US	288	356	53.00	In Earth orbit
S46121	2020-057E	Starlink 1602	SPXS	US	280	353	53.00	In Earth orbit
S46122	2020-057F	Starlink 1604	SPXS	US	289	357	53.00	In Earth orbit
S46123	2020-057G	Starlink 1605	SPXS	US	289	357	53.00	In Earth orbit
S46124	2020-057H	Starlink 1614	SPXS	US	290	356	53.00	In Earth orbit

S46125	2020-057J	Starlink 1618	2020-Aug-18 14:31:00	SPXS	US	288	356	53.00	In Earth orbit
S46126	2020-057K	Starlink 1619	2020-Aug-18 14:31:00	SPXS	US	289	356	53.00	In Earth orbit
S46127	2020-057L	Starlink 1621	2020-Aug-18 14:31:00	SPXS	US	288	357	53.00	In Earth orbit
S46128	2020-057M	Starlink 1622	2020-Aug-18 14:31:00	SPXS	US	280	353	53.00	In Earth orbit
S46129	2020-057N	Starlink 1623	2020-Aug-18 14:31:00	SPXS	US	290	356	53.00	In Earth orbit
S46130	2020-057P	Starlink 1624	2020-Aug-18 14:31:00	SPXS	US	291	354	53.00	In Earth orbit
S46131	2020-057Q	Starlink 1625	2020-Aug-18 14:31:00	SPXS	US	279	353	53.00	In Earth orbit
S46132	2020-057R	Starlink 1630	2020-Aug-18 14:31:00	SPXS	US	291	353	53.00	In Earth orbit
S46133	2020-057S	Starlink 1637	2020-Aug-18 14:31:00	SPXS	US	277	353	53.00	In Earth orbit
S46134	2020-057T	Starlink 1638	2020-Aug-18 14:31:00	SPXS	US	291	356	53.00	In Earth orbit
S46135	2020-057U	Starlink 1639	2020-Aug-18 14:31:00	SPXS	US	289	357	53.00	In Earth orbit
S46136	2020-057V	Starlink 1643	2020-Aug-18 14:31:00	SPXS	US	289	357	53.00	In Earth orbit
S46137	2020-057W	Starlink 1586	2020-Aug-18 14:31:00	SPXS	US	278	353	53.00	In Earth orbit
S46138	2020-057X	Starlink 1590	2020-Aug-18 14:31:00	SPXS	US	289	356	53.00	In Earth orbit
S46139	2020-057Y	Starlink 1592	2020-Aug-18 14:31:00	SPXS	US	289	355	53.00	In Earth orbit
S46140	2020-057Z	Starlink 1594	2020-Aug-18 14:31:00	SPXS	US	291	356	53.00	In Earth orbit
S46141	2020-057AA	Starlink 1596	2020-Aug-18 14:31:00	SPXS	US	289	357	53.00	In Earth orbit
S46142	2020-057AB	Starlink 1597	2020-Aug-18 14:31:00	SPXS	US	287	355	53.00	In Earth orbit
S46143	2020-057AC	Starlink 1599	2020-Aug-18 14:31:00	SPXS	US	278	353	53.00	In Earth orbit
S46144	2020-057AD	Starlink 1606	2020-Aug-18 14:31:00	SPXS	US	278	353	53.00	In Earth orbit
S46145	2020-057AE	Starlink 1607	2020-Aug-18 14:31:00	SPXS	US	288	355	53.00	In Earth orbit
S46146	2020-057AF	Starlink 1608	2020-Aug-18 14:31:00	SPXS	US	287	355	53.00	In Earth orbit
S46147	2020-057AG	Starlink 1611	2020-Aug-18 14:31:00	SPXS	US	286	355	53.00	In Earth orbit
S46148	2020-057AH	Starlink 1616	2020-Aug-18 14:31:00	SPXS	US	280	353	53.00	In Earth orbit
S46149	2020-057AJ	Starlink 1620	2020-Aug-18 14:31:00	SPXS	US	278	352	53.00	In Earth orbit
S46150	2020-057AK	Starlink 1629	2020-Aug-18 14:31:00	SPXS	US	287	356	53.00	In Earth orbit
S46151	2020-057AL	Starlink 1631	2020-Aug-18 14:31:00	SPXS	US	255	338	53.00	In Earth orbit
S46152	2020-057AM	Starlink 1634	2020-Aug-18 14:31:00	SPXS	US	288	356	53.00	In Earth orbit
S46153	2020-057AN	Starlink 1636	2020-Aug-18 14:31:00	SPXS	US	250	344	53.00	In Earth orbit
S46154	2020-057AO	Starlink 1642	2020-Aug-18 14:31:00	SPXS	US	250	344	53.00	In Earth orbit
S46155	2020-057AQ	Starlink 1667	2020-Aug-18 14:31:00	SPXS	US	277	352	53.00	In Earth orbit
S46156	2020-057AR	Starlink 1545	2020-Aug-18 14:31:00	SPXS	US	279	353	53.00	In Earth orbit
S46157	2020-057AS	Starlink 1587	2020-Aug-18 14:31:00	SPXS	US	277	352	53.00	In Earth orbit
S46158	2020-057AT	Starlink 1589	2020-Aug-18 14:31:00	SPXS	US	291	356	53.00	In Earth orbit
S46159	2020-057AU	Starlink 1595	2020-Aug-18 14:31:00	SPXS	US	289	356	53.00	In Earth orbit
S46160	2020-057AV	Starlink 1598	2020-Aug-18 14:31:00	SPXS	US	278	353	53.00	In Earth orbit
S46161	2020-057AW	Starlink 1600	2020-Aug-18 14:31:00	SPXS	US	279	353	53.00	In Earth orbit
S46162	2020-057AX	Starlink 1603	2020-Aug-18 14:31:00	SPXS	US	278	352	53.00	In Earth orbit
S46163	2020-057AY	Starlink 1610	2020-Aug-18 14:31:00	SPXS	US	279	352	53.00	In Earth orbit
S46164	2020-057AZ	Starlink 1612	2020-Aug-18 14:31:00	SPXS	US	278	352	53.00	In Earth orbit
S46165	2020-057BA	Starlink 1613	2020-Aug-18 14:31:00	SPXS	US	289	356	53.00	In Earth orbit
S46166	2020-057BB	Starlink 1615	2020-Aug-18 14:31:00	SPXS	US	287	356	53.00	In Earth orbit
S46167	2020-057BC	Starlink 1626	2020-Aug-18 14:31:00	SPXS	US	288	356	53.00	In Earth orbit
S46168	2020-057BD	Starlink 1627	2020-Aug-18 14:31:00	SPXS	US	290	356	53.00	In Earth orbit
S46169	2020-057BE	Starlink 1628	2020-Aug-18 14:31:00	SPXS	US	288	355	53.00	In Earth orbit
S46170	2020-057BF	Starlink 1632	2020-Aug-18 14:31:00	SPXS	US	289	356	53.00	In Earth orbit
S46171	2020-057BG	Starlink 1633	2020-Aug-18 14:31:00	SPXS	US	280	353	53.00	In Earth orbit
S46172	2020-057BH	Starlink 1635	2020-Aug-18 14:31:00	SPXS	US	278	353	53.00	In Earth orbit
S46173	2020-057BJ	Starlink 1640	2020-Aug-18 14:31:00	SPXS	US	287	355	53.00	In Earth orbit
S46174	2020-057BK	Starlink 1641	2020-Aug-18 14:31:00	SPXS	US	287	355	53.00	In Earth orbit
S46179	2020-057BQ	SkySat C17	2020-Aug-18 14:31:00	PLABST	US	250	359	53.00	In Earth orbit
S46180	2020-057BR	SkySat C18	2020-Aug-18 14:31:00	PLABST	US	260	357	53.00	In Earth orbit
S46235	2020-057BS	SkySat C19	2020-Aug-18 14:31:00	PLABST	US	211	355	53.00	In Earth orbit
S46232	2020-058A	Gao Fen 9 05 Xing	2020-Aug-23 02:27:04	CNSAS	CN	485	505	97.50	In Earth orbit
S46233	2020-058B ?	Tiantuo-5	2020-Aug-23 02:27:04	NUDTC	CN	484	502	97.50	In Earth orbit
S46234	2020-058C ?	Daogongneng Shiyuan Weixing	2020-Aug-23 02:27:04	JKY	CN	483	503	97.50	In Earth orbit
S46265	2020-059A	SAOCOM TB	2020-Aug-30 23:18:00	CONAE	AR	605	611	97.88	In Earth orbit
S46266	2020-059B	GNOMES-1	2020-Aug-30 23:18:00	PLANO	US	599	609	97.89	In Earth orbit
S46267	2020-059C	Tyvak-0172	2020-Aug-30 23:18:00	TYVAK	US	598	608	97.88	In Earth orbit
S46268	2020-060A	First Light	2020-Aug-31 03:05:47	RLBN	NZ	530	546	45.10	Attached to Electron 14 Kick Stage
S46269	2020-060B	Sequoia	2020-Aug-31 03:05:47	CAPSP	US	528	545	45.10	In Earth orbit
S46272	2020-061A	Hypatia	2020-Sep-3 01:51:10	URUGUS	UY	516	524	97.47	In Earth orbit
S46273	2020-061B	ESAIL	2020-Sep-3 01:51:10	EXEA	CA	517	518	97.46	In Earth orbit
S46274	2020-061C	ION SVC LUCAS	2020-Sep-3 01:51:10	DORBIT	I	517	517	97.46	In Earth orbit
S46275	2020-061D	Athena	2020-Sep-3 01:51:10	PNTV	US	516	516	97.47	In Earth orbit
S46276	2020-061E	UPMSat-2	2020-Sep-3 01:51:10	UPM	E	517	518	97.46	In Earth orbit

S46277	2020-061F	NEMO-HD	2020 Sep 3 01:51:10	SFSI	SI	516	523	97.47	In Earth orbit
S46278	2020-061G	Iris	2020 Sep 3 01:51:10	GHG	CA	515	518	97.46	In Earth orbit
S46279	2020-061H	SIMBA	2020 Sep 3 01:51:10	IRMB	B	534	536	97.52	In Earth orbit
S46280	2020-061J	TRISAT	2020 Sep 3 01:51:10	UMARB	SI	534	535	97.52	In Earth orbit
S46281	2020-061K	PICASSO	2020 Sep 3 01:51:10	IASB	B	536	536	97.52	In Earth orbit
S46282	2020-061L	Flock 4v-9	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46283	2020-061M	Flock 4v-12	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46284	2020-061N	Dido-3	2020 Sep 3 01:51:10	SPHARM	IL	534	536	97.52	In Earth orbit
S46285	2020-061P	Flock 4v-11	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46286	2020-061Q	Flock 4v-14	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46287	2020-061R	AMICal-Sat	2020 Sep 3 01:51:10	CSUG	F	534	535	97.52	In Earth orbit
S46288	2020-061S	Flock 4v-8	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46289	2020-061T	Flock 4v-6	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46290	2020-061U	Flock 4v-5	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46291	2020-061V	Flock 4v-7	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46292	2020-061W	FSSCAT A	2020 Sep 3 01:51:10	UPC	E	534	538	97.52	In Earth orbit
S46293	2020-061X	FSSCAT B	2020 Sep 3 01:51:10	UPC	E	534	537	97.52	In Earth orbit
S46294	2020-061Y	OSM-1 CICERO	2020 Sep 3 01:51:10	GEOOPT/OSM	US	534	537	97.52	In Earth orbit
S46295	2020-061Z	Tyvak-0171	2020 Sep 3 01:51:10	TYVAK	US	534	536	97.52	In Earth orbit
S46296	2020-061AA	Flock 4v-10	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46297	2020-061AB	Flock 4v-13	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46298	2020-061AC	Lemur-2-EthanOakes	2020 Sep 3 01:51:10	SPIRE	US	534	538	97.52	In Earth orbit
S46299	2020-061AD	Lemur-2-OscarIator	2020 Sep 3 01:51:10	SPIRE	US	534	538	97.52	In Earth orbit
S46300	2020-061AE	SpaceBEE 21	2020 Sep 3 01:51:10	SWARM	US	536	538	97.52	In Earth orbit
S46301	2020-061AF	SpaceBEE 20	2020 Sep 3 01:51:10	SWARM	US	531	534	97.52	In Earth orbit
S46302	2020-061AG	SpaceBEE 15	2020 Sep 3 01:51:10	SWARM	US	531	534	97.52	In Earth orbit
S46303	2020-061AH	SpaceBEE 19	2020 Sep 3 01:51:10	SWARM	US	532	535	97.52	In Earth orbit
S46304	2020-061AJ	SpaceBEE 18	2020 Sep 3 01:51:10	SWARM	US	532	535	97.52	In Earth orbit
S46305	2020-061AK	SpaceBEE 10	2020 Sep 3 01:51:10	SWARM	US	533	535	97.52	In Earth orbit
S46306	2020-061AL	SpaceBEE 17	2020 Sep 3 01:51:10	SWARM	US	531	534	97.52	In Earth orbit
S46307	2020-061AM	SpaceBEE 11	2020 Sep 3 01:51:10	SWARM	US	532	535	97.52	In Earth orbit
S46308	2020-061AN	SpaceBEE 16	2020 Sep 3 01:51:10	SWARM	US	531	534	97.52	In Earth orbit
S46309	2020-061AP	SpaceBEE 12	2020 Sep 3 01:51:10	SWARM	US	532	535	97.52	In Earth orbit
S46310	2020-061AQ	SpaceBEE 13	2020 Sep 3 01:51:10	SWARM	US	532	534	97.52	In Earth orbit
S46311	2020-061AR	SpaceBEE 14	2020 Sep 3 01:51:10	SWARM	US	532	534	97.52	In Earth orbit
S46312	2020-061AS	Hamanik	2020 Sep 3 01:51:10	TTU	EE	534	535	97.52	In Earth orbit
S46313	2020-061AT	Flock 4v-1	2020 Sep 3 01:51:10	PLABS	US	534	535	97.52	In Earth orbit
S46314	2020-061AU	Flock 4v-4	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46315	2020-061AV	Lemur-2-SchmidtFall	2020 Sep 3 01:51:10	SPIRE	US	534	538	97.52	In Earth orbit
S46316	2020-061AW	Lemur-2-DIUProEra	2020 Sep 3 01:51:10	SPIRE	US	534	538	97.52	In Earth orbit
S46317	2020-061AX	Lemur-2-SquareJaws	2020 Sep 3 01:51:10	SPIRE	US	534	539	97.52	In Earth orbit
S46318	2020-061AY	Lemur-2-Ursa Avion	2020 Sep 3 01:51:10	SPIRE	US	534	539	97.52	In Earth orbit
S46319	2020-061AZ	TARS	2020 Sep 3 01:51:10	KEPLER	CA	531	535	97.52	In Earth orbit
S46320	2020-061BA	NAPA 1	2020 Sep 3 01:51:10	RTAF	T	531	535	97.52	In Earth orbit
S46321	2020-061BB	Flock 4v-2	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46322	2020-061BC	Flock 4v-3	2020 Sep 3 01:51:10	PLABS	US	533	535	97.52	In Earth orbit
S46323	2020-061BD	Flock 4v-16	2020 Sep 3 01:51:10	PLABS	US	515	529	97.47	In Earth orbit
S46324	2020-061BE	Flock 4v-15	2020 Sep 3 01:51:10	PLABS	US	515	520	97.46	In Earth orbit
S46325	2020-061BF	Flock 4v-17	2020 Sep 3 01:51:10	PLABS	US	516	521	97.46	In Earth orbit
S46326	2020-061BG	Flock 4v-21	2020 Sep 3 01:51:10	PLABS	US	515	523	97.46	In Earth orbit
S46327	2020-061BH	Flock 4v-18	2020 Sep 3 01:51:10	PLABS	US	514	527	97.47	In Earth orbit
S46328	2020-061BI	Flock 4v-19	2020 Sep 3 01:51:10	PLABS	US	513	523	97.45	In Earth orbit
S46329	2020-061BJ	Flock 4v-20	2020 Sep 3 01:51:10	PLABS	US	515	528	97.47	In Earth orbit
S46330	2020-061BK	Flock 4v-22	2020 Sep 3 01:51:10	PLABS	US	514	526	97.45	In Earth orbit
S46331	2020-061BL	Flock 4v-23	2020 Sep 3 01:51:10	PLABS	US	514	523	97.46	In Earth orbit
S46332	2020-061BM	Flock 4v-24	2020 Sep 3 01:51:10	PLABS	US	516	527	97.46	In Earth orbit
S46333	2020-061BN	Flock 4v-25	2020 Sep 3 01:51:10	PLABS	US	514	523	97.46	In Earth orbit
S46334	2020-061BP	Flock 4v-26	2020 Sep 3 01:51:10	PLABS	US	516	526	97.47	In Earth orbit
S46335	2020-061BQ	Lemur-2-Unnamed	2020 Sep 3 01:51:10	SPIRE	US	534	535	97.52	In Earth orbit
A09638	2020-061	Lemur-2-Unnamed	2020 Sep 3 01:51:10	SPIRE	US	534	535	97.52	Reentered Att to SSMS
A09639	2020-061	Lemur-2-Unnamed	2020 Sep 3 01:51:10	SPIRE	US	534	535	97.52	Reentered Att to SSMS
S46325	2020-062A	Starlink 1734	2020 Sep 3 12:46:14	SPXS	US	201	290	53.00	In Earth orbit
S46326	2020-062B	Starlink 1654	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46327	2020-062C	Starlink 1673	2020 Sep 3 12:46:14	SPXS	US	242	335	53.00	In Earth orbit
S46328	2020-062D	Starlink 1686	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46329	2020-062E	Starlink 1695	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46330	2020-062F	Starlink 1710	2020 Sep 3 12:46:14	SPXS	US	237	342	53.00	In Earth orbit

S46331	2020-062G	Starlink 1719	2020 Sep 3 12:46:14	SPXS	US	243	334	53.00	In Earth orbit
S46332	2020-062H	Starlink 1721	2020 Sep 3 12:46:14	SPXS	US	244	334	53.00	In Earth orbit
S46333	2020-062I	Starlink 1723	2020 Sep 3 12:46:14	SPXS	US	244	335	53.00	In Earth orbit
S46334	2020-062J	Starlink 1725	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46335	2020-062K	Starlink 1727	2020 Sep 3 12:46:14	SPXS	US	243	334	53.00	In Earth orbit
S46336	2020-062L	Starlink 1738	2020 Sep 3 12:46:14	SPXS	US	207	322	53.00	In Earth orbit
S46337	2020-062M	Starlink 1750	2020 Sep 3 12:46:14	SPXS	US	214	329	53.00	In Earth orbit
S46338	2020-062P	Starlink 1752	2020 Sep 3 12:46:14	SPXS	US	244	335	53.00	In Earth orbit
S46339	2020-062Q	Starlink 1757	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46340	2020-062R	Starlink 1759	2020 Sep 3 12:46:14	SPXS	US	243	334	53.00	In Earth orbit
S46341	2020-062S	Starlink 1760	2020 Sep 3 12:46:14	SPXS	US	241	334	53.00	In Earth orbit
S46342	2020-062T	Starlink 1762	2020 Sep 3 12:46:14	SPXS	US	243	334	53.00	In Earth orbit
S46343	2020-062U	Starlink 1764	2020 Sep 3 12:46:14	SPXS	US	216	326	53.00	In Earth orbit
S46344	2020-062V	Starlink 1765	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46345	2020-062W	Starlink 1767	2020 Sep 3 12:46:14	SPXS	US	244	335	53.00	In Earth orbit
S46346	2020-062X	Starlink 1546	2020 Sep 3 12:46:14	SPXS	US	194	269	53.00	In Earth orbit
S46347	2020-062Y	Starlink 1547	2020 Sep 3 12:46:14	SPXS	US	240	334	53.00	In Earth orbit
S46348	2020-062Z	Starlink 1553	2020 Sep 3 12:46:14	SPXS	US	241	334	53.00	In Earth orbit
S46349	2020-062AA	Starlink 1575	2020 Sep 3 12:46:14	SPXS	US	239	334	53.00	In Earth orbit
S46350	2020-062AB	Starlink 1617	2020 Sep 3 12:46:14	SPXS	US	243	335	53.00	In Earth orbit
S46351	2020-062AC	Starlink 1646	2020 Sep 3 12:46:14	SPXS	US	213	329	53.00	In Earth orbit
S46352	2020-062AD	Starlink 1653	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46353	2020-062AE	Starlink 1656	2020 Sep 3 12:46:14	SPXS	US	244	335	53.00	In Earth orbit
S46354	2020-062AF	Starlink 1657	2020 Sep 3 12:46:14	SPXS	US	244	335	53.00	In Earth orbit
S46355	2020-062AG	Starlink 1661	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46356	2020-062AH	Starlink 1665	2020 Sep 3 12:46:14	SPXS	US	244	334	53.00	In Earth orbit
S46357	2020-062AI	Starlink 1666	2020 Sep 3 12:46:14	SPXS	US	240	334	53.00	In Earth orbit
S46358	2020-062AJ	Starlink 1690	2020 Sep 3 12:46:14	SPXS	US	243	335	53.00	In Earth orbit
S46359	2020-062AL	Starlink 1707	2020 Sep 3 12:46:14	SPXS	US	240	333	53.00	In Earth orbit
S46360	2020-062AM	Starlink 1713	2020 Sep 3 12:46:14	SPXS	US	213	328	53.00	In Earth orbit
S46361	2020-062AN	Starlink 1722	2020 Sep 3 12:46:14	SPXS	US	240	333	53.00	In Earth orbit
S46362	2020-062AP	Starlink 1726	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46363	2020-062AQ	Starlink 1739	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46364	2020-062AR	Starlink 1763	2020 Sep 3 12:46:14	SPXS	US	214	329	53.00	In Earth orbit
S46365	2020-062AS	Starlink 1550	2020 Sep 3 12:46:14	SPXS	US	241	334	53.00	In Earth orbit
S46366	2020-062AT	Starlink 1651	2020 Sep 3 12:46:14	SPXS	US	241	333	53.00	In Earth orbit
S46367	2020-062AU	Starlink 1652	2020 Sep 3 12:46:14	SPXS	US	244	334	53.00	In Earth orbit
S46368	2020-062AV	Starlink 1658	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46369	2020-062AW	Starlink 1662	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46370	2020-062AX	Starlink 1670	2020 Sep 3 12:46:14	SPXS	US	215	328	53.00	In Earth orbit
S46371	2020-062AY	Starlink 1688	2020 Sep 3 12:46:14	SPXS	US	213	329	53.00	In Earth orbit
S46372	2020-062AZ	Starlink 1689	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46373	2020-062BA	Starlink 1691	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46374	2020-062BB	Starlink 1711	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46375	2020-062BC	Starlink 1724	2020 Sep 3 12:46:14	SPXS	US	241	333	53.00	In Earth orbit
S46376	2020-062BD	Starlink 1742	2020 Sep 3 12:46:14	SPXS	US	241	334	53.00	In Earth orbit
S46377	2020-062BE	Starlink 1745	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46378	2020-062BF	Starlink 1751	2020 Sep 3 12:46:14	SPXS	US	213	328	53.00	In Earth orbit
S46379	2020-062BG	Starlink 1756	2020 Sep 3 12:46:14	SPXS	US	242	333	53.00	In Earth orbit
S46380	2020-062BH	Starlink 1758	2020 Sep 3 12:46:14	SPXS	US	242	334	53.00	In Earth orbit
S46381	2020-062BI	Starlink 1768	2020 Sep 3 12:46:14	SPXS	US	240	333	53.00	In Earth orbit
S46382	2020-062BK	Starlink 1769	2020 Sep 3 12:46:14	SPXS	US	214	328	53.00	In Earth orbit
S46383	2020-062BL	Starlink 1770	2020 Sep 3 12:46:14	SPXS	US	240	337	53.00	In Earth orbit
S46384	2020-062BM	Starlink 1771	2020 Sep 3 12:46:14	SPXS	US	211	340	53.00	In Earth orbit
S46389	2020-063A	Chonfa Shiyong Shiyuan HQ	2020 Sep 4 07:30:00	ZZB	CN	330	346	50.21	Landed
S46396	2020-064A	Gao Fen 11-02	2020 Sep 7 05:57:05	ZZB	CN	247	694	97.33	In Earth orbit
S46454	2020-065A ?	Jilin-1 Gaofen 03B 01 xing	2020 Sep 15 01:23:00	CGSTL	CN	531	547	97.54	In Earth orbit
S46455	2020-065B ?	Jilin-1 Gaofen 03B 02 xing	2020 Sep 15 01:23:00	CGSTL	CN	530	546	97.53	In Earth orbit
S46456	2020-065C ?	Jilin-1 Gaofen 03B 03 xing	2020 Sep 15 01:23:00	CGSTL	CN	530	546	97.54	In Earth orbit
S46457	2020-065D ?	Jilin-1 Gaofen 03B 04 xing	2020 Sep 15 01:23:00	CGSTL	CN	530	545	97.54	In Earth orbit
S46458	2020-065E ?	Jilin-1 Gaofen 03B 05 xing	2020 Sep 15 01:23:00	CGSTL	CN	529	546	97.53	In Earth orbit
S46459	2020-065F ?	Jilin-1 Gaofen 03B 06 xing	2020 Sep 15 01:23:00	CGSTL	CN	529	546	97.54	In Earth orbit
S46460	2020-065G ?	Jilin-1 Gaofen 03C 01 xing	2020 Sep 15 01:23:00	CGSTL	CN	528	546	97.53	In Earth orbit
S46461	2020-065H ?	Jilin-1 Gaofen 03C 02 xing	2020 Sep 15 01:23:00	CGSTL	CN	528	546	97.54	In Earth orbit
S46462	2020-065I ?	Jilin-1 Gaofen 03C 03 xing	2020 Sep 15 01:23:00	CGSTL	CN	528	546	97.54	In Earth orbit
S46469	2020-066A	Hai Yang 2 03 xing	2020 Sep 21 05:40:04	GYZCASC	CN	930	949	66.00	In Earth orbit

S46478	2020-067A	Huanjing Jianzai 02A	2020 Sep 27 03:23:04	ZZWWYZ	CN	602	653	97.98	In Earth orbit
S46479	2020-067B	Huanjing Jianzai 02B	2020 Sep 27 03:23:04	ZZWWYZ	CN	598	654	97.98	In Earth orbit
S46486	2020-068A	Gonets-M No. 27L	2020 Sep 28 11:20:33	KVR	RU	1486	1506	82.50	In Earth orbit
S46487	2020-068B	Gonets-M No. 28L	2020 Sep 28 11:20:33	KVR	RU	1486	1505	82.50	In Earth orbit
S46488	2020-068C	Gonets-M No. 29L	2020 Sep 28 11:20:33	KVR	RU	1484	1504	82.50	In Earth orbit
S46489	2020-068D	MezanSat	2020 Sep 28 11:20:33	AURAK/MASDAR	UAE	544	567	97.67	In Earth orbit
S46490	2020-068E	Yanilo-1	2020 Sep 28 11:20:33	BAUM	RU	552	567	97.67	In Earth orbit
S46491	2020-068F	Yanilo-2	2020 Sep 28 11:20:33	BAUM	RU	552	567	97.67	In Earth orbit
S46492	2020-068G	LacunaSat 3	2020 Sep 28 11:20:33	BAUM	RU	552	567	97.67	In Earth orbit
S46493	2020-068H	Dekart	2020 Sep 28 11:20:33	NOVUS	RU	548	567	97.67	In Earth orbit
S46494	2020-068I	Norbi	2020 Sep 28 11:20:33	NOVUS	RU	552	567	97.67	In Earth orbit
S46495	2020-068K	SALSAT	2020 Sep 28 11:20:33	TUB	D	546	567	97.67	In Earth orbit
S46496	2020-068L	ICEYE-X7	2020 Sep 28 11:20:33	ICEYE	FI	548	567	97.67	In Earth orbit
S46497	2020-068M	ICEYE-X6	2020 Sep 28 11:20:33	ICEYE	FI	545	568	97.67	In Earth orbit
S46498	2020-068N	Amidala	2020 Sep 28 11:20:33	KEPLER	CA	554	568	97.67	In Earth orbit
S46499	2020-068P	Antilles	2020 Sep 28 11:20:33	KEPLER	CA	554	568	97.67	In Earth orbit
S46500	2020-068Q	Lemur-2-Sliceers	2020 Sep 28 11:20:33	SPIRE	US	553	567	97.67	In Earth orbit
S46501	2020-068R	Lemur-2-DayWz@aGoodDay	2020 Sep 28 11:20:33	SPIRE	US	554	568	97.67	In Earth orbit
S46502	2020-068S	Lemur-2-Susurnus	2020 Sep 28 11:20:33	SPIRE	US	554	568	97.67	In Earth orbit
S46503	2020-068T	Lemur-2-Nichol	2020 Sep 28 11:20:33	SPIRE	US	553	568	97.67	In Earth orbit
S46504	2020-068U	NetSat 4	2020 Sep 28 11:20:33	ZFT	D	544	568	97.67	In Earth orbit
S46505	2020-068V	NetSat 3	2020 Sep 28 11:20:33	ZFT	D	544	568	97.67	In Earth orbit
S46506	2020-068W	NetSat 1	2020 Sep 28 11:20:33	ZFT	D	544	567	97.67	In Earth orbit
S46507	2020-068X	NetSat 2	2020 Sep 28 11:20:33	ZFT	D	544	567	97.67	In Earth orbit
S46508	2020-069A	S.S. Kalpana Chawla	2020 Oct 3 01:16:00	NGIS	US	415	418	51.65	In Earth orbit
S46921	1998-067RR	SPOC	2020 Oct 3 01:16:00	UGA	US	412	418	51.65	In Earth orbit
S46922	1998-067RS	Bobcat 1	2020 Oct 3 01:16:00	OHIU	US	414	414	51.65	In Earth orbit
S46923	1998-067RT ?	NEUTRON-1	2020 Oct 3 01:16:00	UHI	US	414	417	51.65	In Earth orbit
S46924	1998-067RU 1 ?	SATLLA-1	2020 Oct 3 01:16:00	ARIU	IL	413	418	51.65	In Earth orbit
S46925	1998-067RV	Lemur-2-Baxter-Oliver	2020 Oct 3 01:16:00	SPIRE	US	414	418	51.65	In Earth orbit
S46926	1998-067RW	Djara	2020 Oct 3 01:16:00	ONI	AU	413	417	51.65	In Earth orbit
S46927	1998-067RX	DESCENT Mother	2020 Oct 3 01:16:00	YORK	CA	411	420	51.66	In Earth orbit
S46532	2020-070A	Starlink 1644	2020 Oct 6 11:29:34	SPXS	US	260	276	52.99	In Earth orbit
S46533	2020-070B	Starlink 1648	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46534	2020-070C	Starlink 1659	2020 Oct 6 11:29:34	SPXS	US	258	275	52.99	In Earth orbit
S46535	2020-070D	Starlink 1663	2020 Oct 6 11:29:34	SPXS	US	258	275	52.99	In Earth orbit
S46536	2020-070E	Starlink 1668	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46537	2020-070F	Starlink 1672	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46538	2020-070G	Starlink 1678	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46539	2020-070H	Starlink 1684	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46540	2020-070I	Starlink 1685	2020 Oct 6 11:29:34	SPXS	US	259	275	52.99	In Earth orbit
S46541	2020-070J	Starlink 1687	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46542	2020-070K	Starlink 1692	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46543	2020-070M	Starlink 1693	2020 Oct 6 11:29:34	SPXS	US	261	276	52.99	In Earth orbit
S46544	2020-070N	Starlink 1694	2020 Oct 6 11:29:34	SPXS	US	262	278	52.99	In Earth orbit
S46545	2020-070P	Starlink 1696	2020 Oct 6 11:29:34	SPXS	US	263	277	52.99	In Earth orbit
S46546	2020-070Q	Starlink 1697	2020 Oct 6 11:29:34	SPXS	US	259	275	52.99	In Earth orbit
S46547	2020-070R	Starlink 1698	2020 Oct 6 11:29:34	SPXS	US	258	275	52.99	In Earth orbit
S46548	2020-070S	Starlink 1699	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46549	2020-070T	Starlink 1700	2020 Oct 6 11:29:34	SPXS	US	258	275	52.99	In Earth orbit
S46550	2020-070U	Starlink 1701	2020 Oct 6 11:29:34	SPXS	US	259	275	52.99	In Earth orbit
S46551	2020-070V	Starlink 1702	2020 Oct 6 11:29:34	SPXS	US	260	275	52.99	In Earth orbit
S46552	2020-070W	Starlink 1649	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46553	2020-070X	Starlink 1664	2020 Oct 6 11:29:34	SPXS	US	259	274	52.99	In Earth orbit
S46554	2020-070Y	Starlink 1671	2020 Oct 6 11:29:34	SPXS	US	259	274	52.99	In Earth orbit
S46555	2020-070Z	Starlink 1674	2020 Oct 6 11:29:34	SPXS	US	258	273	52.99	In Earth orbit
S46556	2020-070AA	Starlink 1676	2020 Oct 6 11:29:34	SPXS	US	298	304	52.99	In Earth orbit
S46557	2020-070AB	Starlink 1679	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46558	2020-070AC	Starlink 1680	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46559	2020-070AD	Starlink 1681	2020 Oct 6 11:29:34	SPXS	US	258	273	52.99	In Earth orbit
S46560	2020-070AE	Starlink 1706	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46561	2020-070AF	Starlink 1709	2020 Oct 6 11:29:34	SPXS	US	261	275	52.99	In Earth orbit
S46562	2020-070AG	Starlink 1714	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46563	2020-070AH	Starlink 1730	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit
S46564	2020-070AJ	Starlink 1733	2020 Oct 6 11:29:34	SPXS	US	257	273	52.99	In Earth orbit
S46565	2020-070AK	Starlink 1735	2020 Oct 6 11:29:34	SPXS	US	258	274	52.99	In Earth orbit

S46566	2020-070AL	Starlink 1740	Starlink 1740	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46567	2020-070AM	Starlink 1741	Starlink 1741	2020 Oct 6 1129:34	SPXS	US	257	272	52.99	In Earth orbit
S46568	2020-070AN	Starlink 1743	Starlink 1743	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46569	2020-070AP	Starlink 1747	Starlink 1747	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46570	2020-070AQ	Starlink 1748	Starlink 1748	2020 Oct 6 1129:34	SPXS	US	248	262	52.99	In Earth orbit
S46571	2020-070AR	Starlink 1753	Starlink 1753	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46572	2020-070AS	Starlink 1531	Starlink 1531	2020 Oct 6 1129:34	SPXS	US	257	272	52.99	In Earth orbit
S46573	2020-070AT	Starlink 1650	Starlink 1650	2020 Oct 6 1129:34	SPXS	US	258	275	52.99	In Earth orbit
S46574	2020-070AU	Starlink 1660	Starlink 1660	2020 Oct 6 1129:34	SPXS	US	259	274	52.99	In Earth orbit
S46575	2020-070AV	Starlink 1675	Starlink 1675	2020 Oct 6 1129:34	SPXS	US	299	300	52.99	In Earth orbit
S46576	2020-070AW	Starlink 1677	Starlink 1677	2020 Oct 6 1129:34	SPXS	US	259	274	52.99	In Earth orbit
S46577	2020-070AX	Starlink 1682	Starlink 1682	2020 Oct 6 1129:34	SPXS	US	261	275	52.99	In Earth orbit
S46578	2020-070AY	Starlink 1683	Starlink 1683	2020 Oct 6 1129:34	SPXS	US	260	275	52.99	In Earth orbit
S46579	2020-070AZ	Starlink 1705	Starlink 1705	2020 Oct 6 1129:34	SPXS	US	257	273	52.99	In Earth orbit
S46580	2020-070BA	Starlink 1708	Starlink 1708	2020 Oct 6 1129:34	SPXS	US	258	274	52.99	In Earth orbit
S46581	2020-070BB	Starlink 1712	Starlink 1712	2020 Oct 6 1129:34	SPXS	US	258	274	52.99	In Earth orbit
S46582	2020-070BC	Starlink 1728	Starlink 1728	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46583	2020-070BD	Starlink 1729	Starlink 1729	2020 Oct 6 1129:34	SPXS	US	259	274	52.99	In Earth orbit
S46584	2020-070BE	Starlink 1732	Starlink 1732	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46585	2020-070BF	Starlink 1736	Starlink 1736	2020 Oct 6 1129:34	SPXS	US	258	274	52.99	In Earth orbit
S46586	2020-070BG	Starlink 1737	Starlink 1737	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46587	2020-070BH	Starlink 1744	Starlink 1744	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46588	2020-070BJ	Starlink 1746	Starlink 1746	2020 Oct 6 1129:34	SPXS	US	258	273	52.99	In Earth orbit
S46589	2020-070BK	Starlink 1749	Starlink 1749	2020 Oct 6 1129:34	SPXS	US	257	272	52.99	In Earth orbit
S46590	2020-070BL	Starlink 1754	Starlink 1754	2020 Oct 6 1129:34	SPXS	US	258	274	52.99	In Earth orbit
S46591	2020-070BM	Starlink 1755	Starlink 1755	2020 Oct 6 1129:34	SPXS	US	257	273	52.99	In Earth orbit
S46610	2020-071A	Gao Fen 13	Gao Fen 13	2020 Oct 11 1657:04	YWZB	CN	35775	35799	1.98	In Earth orbit
S46613	2020-072A	Soyuz MS-17	Soyuz MS-17	2020 Oct 14 0545:04	RRKE	RU	188	210	51.65	Attached to Rassvet
S46670	2020-073A	Starlink 1819	Starlink 1819	2020 Oct 18 1225:57	SPXS	US	253	269	53.05	Reentered
S46671	2020-073B	Starlink 1715	Starlink 1715	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46672	2020-073C	Starlink 1716	Starlink 1716	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46673	2020-073D	Starlink 1717	Starlink 1717	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46674	2020-073E	Starlink 1718	Starlink 1718	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46675	2020-073F	Starlink 1720	Starlink 1720	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46676	2020-073G	Starlink 1731	Starlink 1731	2020 Oct 18 1225:57	SPXS	US	314	315	53.05	In Earth orbit
S46677	2020-073H	Starlink 1766	Starlink 1766	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46678	2020-073I	Starlink 1772	Starlink 1772	2020 Oct 18 1225:57	SPXS	US	313	317	53.05	Reentered
S46679	2020-073K	Starlink 1773	Starlink 1773	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46680	2020-073L	Starlink 1774	Starlink 1774	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46681	2020-073M	Starlink 1775	Starlink 1775	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46682	2020-073N	Starlink 1776	Starlink 1776	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46683	2020-073P	Starlink 1778	Starlink 1778	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46684	2020-073Q	Starlink 1780	Starlink 1780	2020 Oct 18 1225:57	SPXS	US	314	315	53.05	In Earth orbit
S46685	2020-073R	Starlink 1781	Starlink 1781	2020 Oct 18 1225:57	SPXS	US	314	317	53.05	In Earth orbit
S46686	2020-073S	Starlink 1783	Starlink 1783	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46687	2020-073T	Starlink 1784	Starlink 1784	2020 Oct 18 1225:57	SPXS	US	314	315	53.05	In Earth orbit
S46688	2020-073U	Starlink 1786	Starlink 1786	2020 Oct 18 1225:57	SPXS	US	314	315	53.05	In Earth orbit
S46689	2020-073V	Starlink 1788	Starlink 1788	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46690	2020-073W	Starlink 1789	Starlink 1789	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46691	2020-073X	Starlink 1790	Starlink 1790	2020 Oct 18 1225:57	SPXS	US	313	317	53.05	In Earth orbit
S46692	2020-073Y	Starlink 1791	Starlink 1791	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46693	2020-073Z	Starlink 1792	Starlink 1792	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46694	2020-073AA	Starlink 1793	Starlink 1793	2020 Oct 18 1225:57	SPXS	US	315	315	53.05	In Earth orbit
S46695	2020-073AB	Starlink 1794	Starlink 1794	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46696	2020-073AC	Starlink 1795	Starlink 1795	2020 Oct 18 1225:57	SPXS	US	314	315	53.05	In Earth orbit
S46697	2020-073AD	Starlink 1796	Starlink 1796	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46698	2020-073AE	Starlink 1797	Starlink 1797	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46699	2020-073AF	Starlink 1799	Starlink 1799	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46700	2020-073AG	Starlink 1800	Starlink 1800	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46701	2020-073AH	Starlink 1801	Starlink 1801	2020 Oct 18 1225:57	SPXS	US	315	316	53.05	In Earth orbit
S46702	2020-073AJ	Starlink 1802	Starlink 1802	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46703	2020-073AK	Starlink 1803	Starlink 1803	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46704	2020-073AL	Starlink 1804	Starlink 1804	2020 Oct 18 1225:57	SPXS	US	311	319	53.05	In Earth orbit
S46705	2020-073AM	Starlink 1805	Starlink 1805	2020 Oct 18 1225:57	SPXS	US	315	317	53.05	In Earth orbit
S46706	2020-073AN	Starlink 1807	Starlink 1807	2020 Oct 18 1225:57	SPXS	US	314	316	53.05	In Earth orbit
S46707	2020-073AP	Starlink 1808	Starlink 1808	2020 Oct 18 1225:57	SPXS	US	312	317	53.05	In Earth orbit

S46783	2020-074AW	Starlink 1851	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46784	2020-074AX	Starlink 1882	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46785	2020-074AY	Starlink 1883	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46786	2020-074AZ	Starlink 1893	2020 Oct 24 1531:34	SPXS	US	256	270	53.05	In Earth orbit
S46787	2020-074BA	Starlink 1899	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46788	2020-074BB	Starlink 1929	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46789	2020-074BC	Starlink 1930	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46790	2020-074BD	Starlink 1931	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46791	2020-074BE	Starlink 1933	2020 Oct 24 1531:34	SPXS	US	256	270	53.05	In Earth orbit
S46792	2020-074BF	Starlink 1934	2020 Oct 24 1531:34	SPXS	US	256	270	53.05	In Earth orbit
S46793	2020-074BG	Starlink 1941	2020 Oct 24 1531:34	SPXS	US	256	269	53.05	In Earth orbit
S46794	2020-074BH	Starlink 1942	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46795	2020-074BJ	Starlink 1943	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46796	2020-074BK	Starlink 1944	2020 Oct 24 1531:34	SPXS	US	256	270	53.05	In Earth orbit
S46797	2020-074BL	Starlink 1947	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46798	2020-074BM	Starlink 1948	2020 Oct 24 1531:34	SPXS	US	257	270	53.05	In Earth orbit
S46805	2020-075A	Glonass-K No. 15L	2020 Oct 25 1908:00	KVRI/ACG	RU	19103	19146	64.81	In Earth orbit
S46807	2020-076A	Yaogan 30 hao 07 zu 01 xing	2020 Oct 26 1519:05	ZZB	CN	588	604	34.99	In Earth orbit
S46808	2020-076B	Yaogan 30 hao 07 zu 02 xing	2020 Oct 26 1519:05	ZZB	CN	588	604	34.99	In Earth orbit
S46809	2020-076C	Yaogan 30 hao 07 zu 03 xing	2020 Oct 26 1519:05	ZZB	CN	588	604	34.99	In Earth orbit
S46810	2020-076D	Tianqi-6	2020 Oct 26 1519:05	GUOG	CN	583	603	35.00	In Earth orbit
S46813	2020-077A	Flock 4e*-1	2020 Oct 28 2121:27	PLABS	US	511	527	97.50	In Earth orbit
S46814	2020-077B	Flock 4e*-7	2020 Oct 28 2121:27	PLABS	US	510	527	97.50	In Earth orbit
S46815	2020-077C	Flock 4e*-9	2020 Oct 28 2121:27	PLABS	US	510	526	97.50	In Earth orbit
S46816	2020-077D	Flock 4e*-8	2020 Oct 28 2121:27	PLABS	US	511	524	97.50	In Earth orbit
S46817	2020-077E	Flock 4e*-5	2020 Oct 28 2121:27	PLABS	US	506	525	97.50	In Earth orbit
S46818	2020-077F	CE-SAT-11B	2020 Oct 28 2121:27	CANON	J	507	523	97.50	In Earth orbit
S46819	2020-077G	Flock 4e*-3	2020 Oct 28 2121:27	PLABS	US	505	524	97.50	In Earth orbit
S46820	2020-077H	Flock 4e*-2	2020 Oct 28 2121:27	PLABS	US	505	522	97.51	In Earth orbit
S46821	2020-077I	Flock 4e*-4	2020 Oct 28 2121:27	PLABS	US	504	522	97.50	In Earth orbit
S46822	2020-077K	Flock 4e*-6	2020 Oct 28 2121:27	PLABS	US	507	524	97.50	In Earth orbit
S46826	2020-078A	GPS III SV04	2020 Nov 5 2324:23	USAF	US	20178	20186	54.97	In Earth orbit
S46827	2020-079A	Dorothy	2020 Nov 6 0319:15	URUGUS	UY	467	477	97.27	In Earth orbit
S46828	2020-079B	Alice	2020 Nov 6 0319:15	URUGUS	UY	467	479	97.27	In Earth orbit
S46829	2020-079C	Cori	2020 Nov 6 0319:15	URUGUS	UY	467	478	97.26	In Earth orbit
S46830	2020-079D	Katherine	2020 Nov 6 0319:15	URUGUS	UY	467	476	97.27	In Earth orbit
S46831	2020-079E	Hedy	2020 Nov 6 0319:15	URUGUS	UY	467	478	97.27	In Earth orbit
S46832	2020-079F	Caroline	2020 Nov 6 0319:15	URUGUS	UY	468	478	97.27	In Earth orbit
S46833	2020-079G	Emmy	2020 Nov 6 0319:15	URUGUS	UY	467	477	97.27	In Earth orbit
S46835	2020-079J	Mary	2020 Nov 6 0319:15	URUGUS	UY	465	475	97.27	In Earth orbit
S46836	2020-079K	Vera	2020 Nov 6 0319:15	URUGUS	UY	465	474	97.27	In Earth orbit
S46837	2020-079L?	Beihaang kongshi 1	2020 Nov 6 0319:15	BUAA	CN	465	473	97.26	In Earth orbit
S46838	2020-079M?	Dianzi keji daxue	2020 Nov 6 0319:15	GUOX	CN	465	473	97.27	In Earth orbit
S46839	2020-079N?	Taiyuan	2020 Nov 6 0319:15	CAST	CN	465	473	97.27	In Earth orbit
S46840	2020-079P	Lise	2020 Nov 6 0319:15	URUGUS	UY	466	476	97.27	In Earth orbit
S46904	2020-080A	Tianqi-11	2020 Nov 7 0712:00	GUOG	CN	484	500	97.41	In Earth orbit
S46905	2020-081A	EOS-1	2020 Nov 7 0941:00	ISRO	IN	567	577	36.90	In Earth orbit
S46906	2020-081B?	KSM-1A	2020 Nov 7 0941:00	KLEOS	L	564	576	36.91	In Earth orbit
S46907	2020-081C?	KSM-1B	2020 Nov 7 0941:00	KLEOS	L	562	575	36.91	In Earth orbit
S46908	2020-081D	Lemur-2-Ozarak	2020 Nov 7 0941:00	SPRE	US	564	576	36.91	In Earth orbit
S46909	2020-081E	Lemur-2-Jindra	2020 Nov 7 0941:00	SPRE	US	564	576	36.91	In Earth orbit
S46910	2020-081F	Lemur-2-Wallace	2020 Nov 7 0941:00	SPRE	US	563	578	36.89	In Earth orbit
S46911	2020-081G	Lemur-2-Jeremiah	2020 Nov 7 0941:00	SPRE	US	565	577	36.91	In Earth orbit
S46912	2020-081H?	KSM-1C	2020 Nov 7 0941:00	KLEOS	L	561	575	36.90	In Earth orbit
S46913	2020-081J	R2	2020 Nov 7 0941:00	NANAV	LT	564	576	36.91	In Earth orbit
S46914	2020-081K?	KSM-1D	2020 Nov 7 0941:00	KLEOS	L	562	574	36.90	In Earth orbit
S46916	2020-082A	Tiantong-1 02 xing	2020 Nov 12 1559:00	CAST	CN	35773	35800	5.46	In Earth orbit
S46918	2020-083A C	USA 310	2020 Nov 13 2232:00	NROC	US	11032	11067	58.53	In Earth orbit
S46920	2020-084A	Resilience	2020 Nov 16 0027:17	SPX	US	189	208	51.65	Attached to IDA-2
S46931	2020-085C	CORVUS BC5	2020 Nov 20 0220:01	ADIG	US	495	509	97.36	In Earth orbit
S46932	2020-085D?	Te Waka Amiorangi o Aotearoa	2020 Nov 20 0220:01	APSS	NZ	495	509	97.36	In Earth orbit
S46933	2020-085E	SpaceBEE-34	2020 Nov 20 0220:01	SWARM	US	498	511	97.36	In Earth orbit
S46934	2020-085F	SpaceBEE-35	2020 Nov 20 0220:01	SWARM	US	492	513	97.36	In Earth orbit
S46935	2020-085G	SpaceBEE-36	2020 Nov 20 0220:01	SWARM	US	492	513	97.36	In Earth orbit
S46936	2020-085H	SpaceBEE-37	2020 Nov 20 0220:01	SWARM	US	492	513	97.37	In Earth orbit
S46937	2020-085J	SpaceBEE-38	2020 Nov 20 0220:01	SWARM	US	493	512	97.37	In Earth orbit

S46938	2020-085K	SpaceBEE NZ-3	2020 Nov 20 0220:01	SWARNZ	NZ	492	513	97.37	In Earth orbit
S46939	2020-085L	SpaceBEE NZ-4	2020 Nov 20 0220:01	SWARNZ	NZ	492	513	97.37	In Earth orbit
S46940	2020-085M	BRO-2	2020 Nov 20 0220:01	UNSEEN	F	492	512	97.36	In Earth orbit
S46941	2020-085N	SpaceBEE NZ-5	2020 Nov 20 0220:01	SWARNZ	NZ	492	518	97.37	In Earth orbit
S46942	2020-085P	SpaceBEE NZ-6	2020 Nov 20 0220:01	SWARNZ	NZ	494	516	97.38	In Earth orbit
S46943	2020-085Q	BRO-3	2020 Nov 20 0220:01	UNSEEN	F	493	512	97.36	In Earth orbit
S46944	2020-085R	SpaceBEE 33	2020 Nov 20 0220:01	SWARM	US	495	514	97.37	In Earth orbit
S46945	2020-085S	SpaceBEE 32	2020 Nov 20 0220:01	SWARM	US	497	512	97.37	In Earth orbit
S46946	2020-085T	SpaceBEE 30	2020 Nov 20 0220:01	SWARM	US	495	514	97.37	In Earth orbit
S46947	2020-085U	SpaceBEE 31	2020 Nov 20 0220:01	SWARM	US	496	514	97.36	In Earth orbit
S46948	2020-085V	SpaceBEE 28	2020 Nov 20 0220:01	SWARM	US	495	514	97.37	In Earth orbit
S46949	2020-085W	SpaceBEE 29	2020 Nov 20 0220:01	SWARM	US	495	515	97.37	In Earth orbit
S46950	2020-085X	SpaceBEE 27	2020 Nov 20 0220:01	SWARM	US	496	514	97.37	In Earth orbit
S46951	2020-085Y	SpaceBEE 25	2020 Nov 20 0220:01	SWARM	US	496	514	97.36	In Earth orbit
S46952	2020-085Z	SpaceBEE 24	2020 Nov 20 0220:01	SWARM	US	495	515	97.37	In Earth orbit
S46953	2020-085AA	SpaceBEE 22	2020 Nov 20 0220:01	SWARM	US	495	515	97.37	In Earth orbit
S46954	2020-085AB	Alchemy	2020 Nov 20 0220:01	TSEPT	US	490	510	97.35	In Earth orbit
S46955	2020-085AC	August	2020 Nov 20 0220:01	TSEPT	US	497	514	97.37	In Earth orbit
S46956	2020-085AD	SpaceBEE 26	2020 Nov 20 0220:01	SWARM	US	497	514	97.36	In Earth orbit
S46957	2020-085AE	SpaceBEE NZ-2	2020 Nov 20 0220:01	SWARNZ	NZ	497	514	97.36	In Earth orbit
S46958	2020-085AF	SpaceBEE 39	2020 Nov 20 0220:01	SWARM	US	492	513	97.37	In Earth orbit
S46959	2020-085AG	SpaceBEE NZ-1	2020 Nov 20 0220:01	SWARNZ	NZ	492	513	97.37	In Earth orbit
S46960	2020-085AH	SpaceBEE-23	2020 Nov 20 0220:01	SWARM	US	496	511	97.36	In Earth orbit
S46984	2020-086A	Sentinel-6 Michael Freilich	2020 Nov 21 17:08	COPERN/ESA	L-FU	1308	1327	66.06	In Earth orbit
S47097	2020-087A	Chang e-5 Guidao Qi	2020 Nov 23 20:30:22	LDSE/SAST	CN	201	392981	21.32	Deep Space
S47122	2020-088A	Starlink 1777	2020 Nov 25 0213:12	SPXS	US	272	347	53.05	In Earth orbit
S47123	2020-088B	Starlink 1778	2020 Nov 25 0213:12	SPXS	US	291	354	53.05	In Earth orbit
S47124	2020-088C	Starlink 1785	2020 Nov 25 0213:12	SPXS	US	292	353	53.05	In Earth orbit
S47126	2020-088D	Starlink 1787	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47127	2020-088E	Starlink 1812	2020 Nov 25 0213:12	SPXS	US	272	347	53.05	In Earth orbit
S47128	2020-088F	Starlink 1836	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47128	2020-088G	Starlink 1837	2020 Nov 25 0213:12	SPXS	US	277	342	53.05	In Earth orbit
S47129	2020-088H	Starlink 1838	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47130	2020-088I	Starlink 1839	2020 Nov 25 0213:12	SPXS	US	292	354	53.05	In Earth orbit
S47131	2020-088J	Starlink 1840	2020 Nov 25 0213:12	SPXS	US	271	346	53.05	In Earth orbit
S47132	2020-088K	Starlink 1842	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47133	2020-088M	Starlink 1843	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47134	2020-088N	Starlink 1844	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47135	2020-088P	Starlink 1845	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47136	2020-088Q	Starlink 1846	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47137	2020-088R	Starlink 1849	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47138	2020-088S	Starlink 1850	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47139	2020-088T	Starlink 1852	2020 Nov 25 0213:12	SPXS	US	291	354	53.05	In Earth orbit
S47140	2020-088U	Starlink 1853	2020 Nov 25 0213:12	SPXS	US	292	354	53.05	In Earth orbit
S47141	2020-088V	Starlink 1854	2020 Nov 25 0213:12	SPXS	US	292	354	53.05	In Earth orbit
S47142	2020-088W	Starlink 1855	2020 Nov 25 0213:12	SPXS	US	292	354	53.05	In Earth orbit
S47143	2020-088X	Starlink 1856	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47144	2020-088Y	Starlink 1857	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47145	2020-088Z	Starlink 1858	2020 Nov 25 0213:12	SPXS	US	270	347	53.05	In Earth orbit
S47146	2020-088AA	Starlink 1859	2020 Nov 25 0213:12	SPXS	US	291	355	53.05	In Earth orbit
S47147	2020-088AB	Starlink 1860	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47148	2020-088AC	Starlink 1861	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47149	2020-088AD	Starlink 1862	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47150	2020-088AE	Starlink 1863	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47151	2020-088AF	Starlink 1864	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47152	2020-088AG	Starlink 1866	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47153	2020-088AH	Starlink 1867	2020 Nov 25 0213:12	SPXS	US	291	354	53.05	In Earth orbit
S47154	2020-088AJ	Starlink 1868	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47155	2020-088AK	Starlink 1869	2020 Nov 25 0213:12	SPXS	US	294	352	53.05	In Earth orbit
S47156	2020-088AL	Starlink 1870	2020 Nov 25 0213:12	SPXS	US	271	346	53.05	In Earth orbit
S47157	2020-088AM	Starlink 1871	2020 Nov 25 0213:12	SPXS	US	291	354	53.05	In Earth orbit
S47158	2020-088AN	Starlink 1873	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47159	2020-088AP	Starlink 1874	2020 Nov 25 0213:12	SPXS	US	271	348	53.05	In Earth orbit
S47160	2020-088AQ	Starlink 1875	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47161	2020-088AR	Starlink 1876	2020 Nov 25 0213:12	SPXS	US	271	347	53.05	In Earth orbit
S47162	2020-088AS	Starlink 1877	2020 Nov 25 0213:12	SPXS	US	272	348	53.05	In Earth orbit

S47163	2020-088AT	Starlink 1878	SPXS	US	269	348	53.05	In Earth orbit
S47164	2020-088AU	Starlink 1879	SPXS	US	269	348	53.05	In Earth orbit
S47165	2020-088AV	Starlink 1880	SPXS	US	291	354	53.05	In Earth orbit
S47166	2020-088AW	Starlink 1881	SPXS	US	291	354	53.05	In Earth orbit
S47167	2020-088AX	Starlink 1884	SPXS	US	272	347	53.05	In Earth orbit
S47168	2020-088AY	Starlink 1885	SPXS	US	272	347	53.05	In Earth orbit
S47169	2020-088AZ	Starlink 1886	SPXS	US	294	351	53.05	In Earth orbit
S47170	2020-088BA	Starlink 1887	SPXS	US	272	347	53.05	In Earth orbit
S47171	2020-088BB	Starlink 1888	SPXS	US	271	347	53.05	In Earth orbit
S47172	2020-088BC	Starlink 1889	SPXS	US	292	354	53.05	In Earth orbit
S47173	2020-088BD	Starlink 1890	SPXS	US	272	347	53.05	In Earth orbit
S47174	2020-088BE	Starlink 1891	SPXS	US	291	354	53.05	In Earth orbit
S47175	2020-088BF	Starlink 1895	SPXS	US	270	347	53.05	In Earth orbit
S47176	2020-088BG	Starlink 1900	SPXS	US	270	347	53.05	In Earth orbit
S47177	2020-088BH	Starlink 1907	SPXS	US	271	347	53.05	In Earth orbit
S47178	2020-088BJ	Starlink 1912	SPXS	US	271	347	53.05	In Earth orbit
S47179	2020-088BK	Starlink 1913	SPXS	US	290	355	53.05	In Earth orbit
S47180	2020-088BL	Starlink 1914	SPXS	US	292	354	53.05	In Earth orbit
S47181	2020-088BM	Starlink 1927	SPXS	US	270	348	53.05	In Earth orbit
S47202	2020-089A C	Deta chuker etsei 1-goki	CSICE	J	35734	35787	0.04	In Earth orbit
S47226	2020-090A	FalconEye 2	UAEEAF	UAE	597	598	97.87	In Earth orbit
S47227	2020-091A	Gonets-M No. 30L	KVR	RU	1487	1506	82.50	In Earth orbit
S47228	2020-091B	Gonets-M No. 31L	KVR	RU	1486	1505	82.50	In Earth orbit
S47229	2020-091C	Gonets-M No. 32L	KVR	RU	1484	1504	82.49	In Earth orbit
S47230	2020-091D	Kosmos-2548	MORF	RU	1480	1507	82.52	In Earth orbit
S47231	2020-092A	Gao Fen 14	YMWZB	CN	481	495	97.36	In Earth orbit
S47233	2020-093A	Dragon CRS-21	SPX	US	418	420	51.64	Attached to IDA-3
A09666	2020-093	Bishop Airlock	NANR	US	418	421	51.64	Attached to Tranquility
S47234	2020-094A	Xiaojii	CAS	CN	587	604	29.00	In Earth orbit
S47235	2020-094B	Xiaomu	CAS	CN	586	604	29.00	In Earth orbit
S47237	2020-095A C	USA 311	NIROC	US	35780	35800	0.00	In Earth orbit
S47240	2020-096A	SXM-7	SIRX	US	277	22040	26.93	In Earth orbit
S47242	2020-097A	GVM	KHRU	RU	36923	37594	0.08	Attached to Briz-M No. 88802
S47253	2020-098A	StrX-Alpha	SYNSP	J	495	512	97.38	In Earth orbit
S47256	2020-099A	CMS 1	ISRO	IN	35664	35769	0.09	In Earth orbit
S47258	2020-100A	OneWeb SL128	ONEWEB	UK	433	445	87.40	In Earth orbit
S47259	2020-100B	OneWeb SL135	ONEWEB	UK	433	445	87.40	In Earth orbit
S47260	2020-100C	OneWeb SL145	ONEWEB	UK	446	446	87.47	In Earth orbit
S47261	2020-100D	OneWeb SL139	ONEWEB	UK	434	446	87.40	In Earth orbit
S47262	2020-100E	OneWeb SL127	ONEWEB	UK	436	448	87.40	In Earth orbit
S47263	2020-100F	OneWeb SL133	ONEWEB	UK	435	447	87.40	In Earth orbit
S47264	2020-100G	OneWeb SL118	ONEWEB	UK	428	442	87.47	In Earth orbit
S47265	2020-100H	OneWeb SL134	ONEWEB	UK	428	442	87.47	In Earth orbit
S47266	2020-100I	OneWeb SL102	ONEWEB	UK	432	445	87.47	In Earth orbit
S47267	2020-100K	OneWeb SL123	ONEWEB	UK	442	448	87.40	In Earth orbit
S47268	2020-100L	OneWeb SL110	ONEWEB	UK	441	448	87.40	In Earth orbit
S47269	2020-100M	OneWeb SL120	ONEWEB	UK	432	445	87.47	In Earth orbit
S47270	2020-100N	OneWeb SL131	ONEWEB	UK	442	448	87.40	In Earth orbit
S47271	2020-100P	OneWeb SL142	ONEWEB	UK	442	448	87.40	In Earth orbit
S47272	2020-100Q	OneWeb SL130	ONEWEB	UK	445	450	87.47	In Earth orbit
S47273	2020-100R	OneWeb SL136	ONEWEB	UK	445	450	87.47	In Earth orbit
S47274	2020-100S	OneWeb SL137	ONEWEB	UK	417	449	87.47	In Earth orbit
S47275	2020-100T	OneWeb SL147	ONEWEB	UK	442	451	87.40	In Earth orbit
S47276	2020-100U	OneWeb SL124	ONEWEB	UK	442	450	87.40	In Earth orbit
S47277	2020-100V	OneWeb SL126	ONEWEB	UK	417	449	87.47	In Earth orbit
S47278	2020-100W	OneWeb SL119	ONEWEB	UK	443	454	87.40	In Earth orbit
S47279	2020-100X	OneWeb SL138	ONEWEB	UK	443	455	87.40	In Earth orbit
S47280	2020-100Y	OneWeb SL146	ONEWEB	UK	443	455	87.40	In Earth orbit
S47281	2020-100Z	OneWeb SL141	ONEWEB	UK	442	454	87.40	In Earth orbit
S47282	2020-100AA	OneWeb SL143	ONEWEB	UK	445	456	87.40	In Earth orbit
S47283	2020-100AB	OneWeb SL121	ONEWEB	UK	431	447	87.47	In Earth orbit
S47284	2020-100AC	OneWeb SL129	ONEWEB	UK	444	456	87.40	In Earth orbit
S47285	2020-100AD	OneWeb SL117	ONEWEB	UK	445	456	87.40	In Earth orbit
S47286	2020-100AE	OneWeb SL111	ONEWEB	UK	448	456	87.40	In Earth orbit
S47287	2020-100AF	OneWeb SL132	ONEWEB	UK	441	454	87.47	In Earth orbit
S47288	2020-100AG	OneWeb SL140	ONEWEB	UK	441	454	87.47	In Earth orbit

S47289	2020-100AH	OneWeb SL144	2020 Dec 18 1227:00	ONEWEB	UK	441	454	87.47	In Earth orbit
S47290	2020-100AJ	OneWeb SL109	2020 Dec 18 1227:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47291	2020-100AK	OneWeb SL122	2020 Dec 18 1227:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47292	2020-100AL	OneWeb SL114	2020 Dec 18 1227:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47293	2020-100AM	OneWeb SL125	2020 Dec 18 1227:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47294	2020-101A	USA 312	2020 Dec 19 1400:00	NROC	US	519	540	51.40	In Earth orbit
S47295	2020-101B	USA 313	2020 Dec 19 1400:00	NROC	US	519	540	51.40	In Earth orbit
S47296	2020-102A ?	Tianqi Xingzuo 08	2020 Dec 22 0437:37	GUOG	CN	494	497	97.39	In Earth orbit
S47297	2020-102B ?	Yuanguang	2020 Dec 22 0437:37	HBUT	CN	500	508	97.44	In Earth orbit
S47298	2020-102C ?	Xinjishu Yanzheng 7	2020 Dec 22 0437:37	CAST	CN	504	515	97.44	In Earth orbit
S47299	2020-102D ?	Haisi-1	2020 Dec 22 0437:37	DKJ38	CN	502	511	97.44	In Earth orbit
S47300	2020-102E ?	ET-SMART-RSS	2020 Dec 22 0437:37	ESSTI	ET	503	513	97.43	In Earth orbit
S47302	2020-103A	Yaogan Weixing 33	2020 Dec 27 1544:00	ZZB	CN	681	685	98.26	In Earth orbit
S47303	2020-103B	Wenna Jishu Shiyuan Weixing	2020 Dec 27 1544:00	WEINA?	CN	681	683	98.26	In Earth orbit
S47305	2020-104A	CSO-2	2020 Dec 29 1642:07	DGA/CNES	F	480	480	97.30	In Earth orbit
Payloads not included in annual statistics									
A09633	2020-049	Fenli celiang chuangan	2020 Jul 23 0441:12	LDSE/CAST	CN	177	-79757	29.42	Deep Space Att to Tianwen-1 Or- biter
A09628	2020-061	SSMS	2020 Sep 3 0151:10	AE/ESA	F	530	530	97.50	Reentered Att to Vega AVUM VV16
A09652	2020-085	Gnome Chompski	2020 Nov 20 0220:01	GABEN	NZ	492	513	97.37	Attached to Electron 16 Kick Stage
A09653	2020-087	Chang'e-5 Zhuolu Qi	2020 Nov 23 2030:22	LDSE/CAST	CN	201	392981	21.32	Deep Space Att to Lianjie Zhihua
A09654	2020-087	Chang'e-5 Shangsheng Qi	2020 Nov 23 2030:22	LDSE/CAST	CN	201	392981	21.32	Deep Space Att to Chang'e-5 Zhuolu Qi
A09655	2020-087	Chang'e-5 Fanhui Qi	2020 Nov 23 2030:22	LDSE/CAST	CN	201	392981	21.32	Deep Space Att to Chang'e-5 Gundao Qi

Appendix 2b: Satellite payloads deployed in 2020

CATID	LAUNCH ID	Name	Deploy date UTC	Owner	Country	Perigee	Apogee	Inc	Status
S45043	1998-067QY	STPSat-4	2020 Jan 29 07:20:00	STP	US	413	422	51.65	In Earth orbit
S45174	2019-022L	Gangestad	2020 Feb 12 00:00:00	AERO	US	468	483	51.64	Reentered
S45258	2019-022M	Fuller	2020 Apr 21 00:00:00	AERO	US	467	481	51.65	Reentered
S46928	2019-022N	Golf	2020 Nov 18 00:00:00	AERO	US	468	481	51.64	In Earth orbit
S45113	2019-071C	Orbital Factory 2	2020 Jan 31 22:30:00	UTEP	US	459	474	51.64	In Earth orbit
S45114	2019-071D	Aerocube 14A	2020 Jan 31 21:00:00	AERO/NROC	US	459	475	51.64	In Earth orbit
S45115	2019-071E	SwampSat-2	2020 Jan 31 22:30:00	UFL	US	459	476	51.64	In Earth orbit
S45116	2019-071F	Aerocube 14B	2020 Jan 31 21:00:00	AERO/NROC	US	459	475	51.64	In Earth orbit
S45117	2019-071G	Aerocube 15B	2020 Feb 1 00:10:00	AERO/AFSMC	US	458	474	51.64	In Earth orbit
S45118	2019-071H	Aerocube 15A	2020 Jan 31 21:00:00	AERO/AFSMC	US	459	476	51.64	In Earth orbit
S45119	2019-071J ?	HuskySat-OSCAR 107	2020 Jan 31 22:30:00	UWA	US	459	475	51.64	In Earth orbit
S45256	1998-067QZ	HARP	2020 Feb 19 16:00:00	UMBC	US	450	428	51.64	In Earth orbit
S45257	1998-067RA ?	SOCRATES	2020 Feb 19 14:30:00	UMN	US	412	422	51.64	In Earth orbit
S45258	1998-067RB	Phoenix	2020 Feb 19 09:35:00	ASU	US	410	423	51.64	In Earth orbit
S45259	1998-067RC ?	Argus-02	2020 Feb 19 16:00:00	SLU	US	412	422	51.65	In Earth orbit
S45262	1998-067RF	RadSat-U	2020 Feb 19 07:10:00	MSU	US	412	422	51.64	In Earth orbit
S45120	2019-071K	VPM	2020 Feb 1 00:00:00	AFRL	US	459	473	51.64	In Earth orbit
S45121	2019-071L	CRIS	2020 Feb 1 15:44:00	USU	US	458	474	51.64	In Earth orbit
S45122	2019-071M	MakersSat-1	2020 Feb 1 00:00:00	NWNAZ	US	459	473	51.64	In Earth orbit
S45123	2019-071N ?	EdgeCube	2020 Feb 1 21:15:00	SOSU	US	459	473	51.64	In Earth orbit
S45124	2019-071P ?	MiniCube	2020 Feb 1 00:00:00	GSFC/LLNL	US	459	473	51.64	In Earth orbit
S45125	2019-071Q ?	ORCA 2	2020 Feb 1 00:00:00	DARPA/HYPGG	US	458	473	51.64	In Earth orbit
S45126	2019-071R	ORCA-8	2020 Feb 1 00:00:00	DARPA?	US	459	473	51.64	In Earth orbit
S45260	1998-067RD	CryoCube 1	2020 Feb 19 12:55:00	KSC	US	412	421	51.65	In Earth orbit
S45261	1998-067RE	AztechSat 1	2020 Feb 19 12:55:00	UPAEP	MX	408	425	51.65	In Earth orbit
S45262	1998-067RG	QARMAN	2020 Feb 19 11:20:00	VKI	B	411	421	51.64	In Earth orbit
S45264	1998-067RH	Sortie	2020 Feb 19 17:40:00	ASTRA	US	412	422	51.64	In Earth orbit
S44914	2020-001A	Starlink 1073	2020 Jan 7 03:20:00	SPXS	US	292	297	53.00	In Earth orbit
S44915	2020-001B	Starlink 1084	2020 Jan 7 03:20:00	SPXS	US	293	297	53.00	In Earth orbit
S44916	2020-001C	Starlink 1097	2020 Jan 7 03:20:00	SPXS	US	293	297	53.00	In Earth orbit
S44917	2020-001D	Starlink 1098	2020 Jan 7 03:20:00	SPXS	US	294	299	53.00	In Earth orbit
S44918	2020-001E	Starlink 1099	2020 Jan 7 03:20:00	SPXS	US	295	297	53.00	In Earth orbit
S44919	2020-001F	Starlink 1101	2020 Jan 7 03:20:00	SPXS	US	305	306	53.00	In Earth orbit
S44920	2020-001G	Starlink 1102	2020 Jan 7 03:20:00	SPXS	US	292	298	53.00	In Earth orbit
S44921	2020-001H	Starlink 1103	2020 Jan 7 03:20:00	SPXS	US	293	297	53.00	In Earth orbit
S44922	2020-001J	Starlink 1104	2020 Jan 7 03:20:00	SPXS	US	292	298	53.00	In Earth orbit
S44923	2020-001K	Starlink 1106	2020 Jan 7 03:20:00	SPXS	US	292	300	53.00	In Earth orbit
S44924	2020-001L	Starlink 1111	2020 Jan 7 03:20:00	SPXS	US	292	300	53.00	In Earth orbit
S44925	2020-001M	Starlink 1112	2020 Jan 7 03:20:00	SPXS	US	295	297	53.00	In Earth orbit
S44926	2020-001N	Starlink 1113	2020 Jan 7 03:20:00	SPXS	US	292	299	53.00	In Earth orbit
S44927	2020-001P	Starlink 1114	2020 Jan 7 03:20:00	SPXS	US	292	298	53.00	In Earth orbit
S44928	2020-001Q	Starlink 1119	2020 Jan 7 03:20:00	SPXS	US	294	299	53.00	In Earth orbit
S44929	2020-001R	Starlink 1121	2020 Jan 7 03:20:00	SPXS	US	294	300	53.00	In Earth orbit
S44930	2020-001S	Starlink 1123	2020 Jan 7 03:20:00	SPXS	US	301	303	53.00	In Earth orbit
S44931	2020-001T	Starlink 1128	2020 Jan 7 03:20:00	SPXS	US	293	297	53.00	In Earth orbit
S44932	2020-001U	Starlink 1130/Darksat	2020 Jan 7 03:20:00	SPXS	US	291	299	53.00	In Earth orbit
S44933	2020-001V	Starlink 1144	2020 Jan 7 03:20:00	SPXS	US	292	299	53.00	In Earth orbit
S44934	2020-001W	Starlink 1071	2020 Jan 7 03:20:00	SPXS	US	294	297	53.00	In Earth orbit
S44935	2020-001X	Starlink 1072	2020 Jan 7 03:20:00	SPXS	US	294	298	53.00	In Earth orbit
S44936	2020-001Y	Starlink 1078	2020 Jan 7 03:20:00	SPXS	US	294	298	53.00	In Earth orbit
S44937	2020-001Z	Starlink 1079	2020 Jan 7 03:20:00	SPXS	US	289	302	53.00	In Earth orbit
S44938	2020-001AA	Starlink 1082	2020 Jan 7 03:20:00	SPXS	US	292	299	53.00	In Earth orbit
S44939	2020-001AB	Starlink 1083	2020 Jan 7 03:20:00	SPXS	US	293	298	53.00	In Earth orbit
S44940	2020-001AC	Starlink 1091	2020 Jan 7 03:20:00	SPXS	US	295	297	53.00	In Earth orbit
S44941	2020-001AD	Starlink 1094	2020 Jan 7 03:20:00	SPXS	US	289	301	53.00	In Earth orbit
S44942	2020-001AE	Starlink 1096	2020 Jan 7 03:20:00	SPXS	US	294	298	53.00	In Earth orbit
S44943	2020-001AF	Starlink 1100	2020 Jan 7 03:20:00	SPXS	US	301	304	53.00	In Earth orbit
S44944	2020-001AG	Starlink 1108	2020 Jan 7 03:20:00	SPXS	US	299	307	53.00	In Earth orbit
S44945	2020-001AH	Starlink 1109	2020 Jan 7 03:20:00	SPXS	US	299	305	53.00	In Earth orbit
S44946	2020-001AJ	Starlink 1110	2020 Jan 7 03:20:00	SPXS	US	294	299	53.00	In Earth orbit
S44947	2020-001AK	Starlink 1116	2020 Jan 7 03:20:00	SPXS	US	302	307	53.00	In Earth orbit

S44948	2020-001AL	Starlink 1118	SPXS	US	304	305	53.00	Reentered
S44949	2020-001AM	Starlink 1122	SPXS	US	302	306	53.00	In Earth orbit
S44950	2020-001AN	Starlink 1125	SPXS	US	301	305	53.00	In Earth orbit
S44951	2020-001AP	Starlink 1126	SPXS	US	305	307	53.00	In Earth orbit
S44952	2020-001AQ	Starlink 1117	SPXS	US	292	300	53.00	In Earth orbit
S44953	2020-001AR	Starlink 1124	SPXS	US	294	299	53.00	In Earth orbit
S44954	2020-001AS	Starlink 1066	SPXS	US	294	297	53.00	In Earth orbit
S44955	2020-001AT	Starlink 1069	SPXS	US	296	297	53.00	In Earth orbit
S44956	2020-001AU	Starlink 1070	SPXS	US	304	306	53.00	In Earth orbit
S44957	2020-001AV	Starlink 1074	SPXS	US	306	307	53.00	In Earth orbit
S44958	2020-001AW	Starlink 1075	SPXS	US	298	303	53.00	In Earth orbit
S44959	2020-001AX	Starlink 1076	SPXS	US	300	302	53.00	In Earth orbit
S44960	2020-001AY	Starlink 1077	SPXS	US	288	302	53.00	Reentered
S44961	2020-001AZ	Starlink 1080	SPXS	US	293	299	53.00	In Earth orbit
S44962	2020-001BA	Starlink 1081	SPXS	US	295	297	53.00	In Earth orbit
S44963	2020-001BB	Starlink 1085	SPXS	US	295	298	53.00	In Earth orbit
S44964	2020-001BC	Starlink 1086	SPXS	US	300	301	53.00	In Earth orbit
S44965	2020-001BD	Starlink 1087	SPXS	US	305	306	53.00	Reentered
S44966	2020-001BE	Starlink 1088	SPXS	US	294	299	53.00	In Earth orbit
S44967	2020-001BF	Starlink 1089	SPXS	US	301	304	53.00	In Earth orbit
S44968	2020-001BG	Starlink 1090	SPXS	US	283	294	53.00	In Earth orbit
S44969	2020-001BH	Starlink 1092	SPXS	US	294	300	53.00	In Earth orbit
S44970	2020-001BJ	Starlink 1093	SPXS	US	295	299	53.00	In Earth orbit
S44971	2020-001BK	Starlink 1095	SPXS	US	299	301	53.00	In Earth orbit
S44972	2020-001BL	Starlink 1107	SPXS	US	300	303	53.00	In Earth orbit
S44973	2020-001BM	Starlink 1115	SPXS	US	303	305	53.00	In Earth orbit
S44978	2020-002A	Tongxin Jishu Shiyuan 5	CASC	CN	35779	35796	1.00	In Earth orbit
S45016	2020-003A	Jilin-1 Kuantuo-1	CGSTL	CN	477	492	97.34	In Earth orbit
S45017	2020-003B	Sophie	URUGUIS	UY	476	491	97.34	In Earth orbit
S45018	2020-003C	Marie	URUGUIS	UY	475	492	97.34	In Earth orbit
S45019	2020-003D	Tianqi-5	GUOG	CN	475	491	97.34	In Earth orbit
S45024	2020-004A	Yinle 1	YINHE	CN	621	637	86.40	In Earth orbit
S45026	2020-005A	GSAT-30	ISRO	IN	35794	35844	0.12	In Earth orbit
S45027	2020-005B	Eutelsat Connect	EUTSA	F	498	36233	6.01	In Earth orbit
S45044	2020-006A	Starlink 1132	SPXS	US	300	300	53.00	In Earth orbit
S45045	2020-006B	Starlink 1120	SPXS	US	300	300	53.00	In Earth orbit
S45046	2020-006C	Starlink 1129	SPXS	US	300	300	53.00	In Earth orbit
S45047	2020-006D	Starlink 1131	SPXS	US	300	300	53.00	In Earth orbit
S45048	2020-006E	Starlink 1134	SPXS	US	300	300	53.00	In Earth orbit
S45049	2020-006F	Starlink 1135	SPXS	US	300	300	53.00	In Earth orbit
S45050	2020-006G	Starlink 1140	SPXS	US	300	300	53.00	In Earth orbit
S45051	2020-006H	Starlink 1141	SPXS	US	300	300	53.00	In Earth orbit
S45052	2020-006I	Starlink 1148	SPXS	US	300	300	53.00	In Earth orbit
S45053	2020-006K	Starlink 1155	SPXS	US	300	300	53.00	In Earth orbit
S45054	2020-006L	Starlink 1156	SPXS	US	300	300	53.00	In Earth orbit
S45055	2020-006M	Starlink 1157	SPXS	US	300	300	53.00	In Earth orbit
S45056	2020-006N	Starlink 1158	SPXS	US	300	300	53.00	In Earth orbit
S45057	2020-006P	Starlink 1159	SPXS	US	300	300	53.00	In Earth orbit
S45058	2020-006Q	Starlink 1162	SPXS	US	300	300	53.00	In Earth orbit
S45059	2020-006R	Starlink 1165	SPXS	US	300	300	53.00	In Earth orbit
S45060	2020-006S	Starlink 1166	SPXS	US	300	300	53.00	In Earth orbit
S45061	2020-006T	Starlink 1169	SPXS	US	300	300	53.00	In Earth orbit
S45062	2020-006U	Starlink 1171	SPXS	US	300	300	53.00	In Earth orbit
S45063	2020-006V	Starlink 1178	SPXS	US	300	300	53.00	In Earth orbit
S45064	2020-006W	Starlink 1133	SPXS	US	300	300	53.00	In Earth orbit
S45065	2020-006X	Starlink 1139	SPXS	US	300	300	53.00	In Earth orbit
S45066	2020-006Y	Starlink 1145	SPXS	US	300	300	53.00	In Earth orbit
S45067	2020-006Z	Starlink 1150	SPXS	US	300	300	53.00	In Earth orbit
S45068	2020-006AA	Starlink 1161	SPXS	US	300	300	53.00	In Earth orbit
S45069	2020-006AB	Starlink 1163	SPXS	US	300	300	53.00	In Earth orbit
S45070	2020-006AC	Starlink 1164	SPXS	US	300	300	53.00	In Earth orbit
S45071	2020-006AD	Starlink 1167	SPXS	US	300	300	53.00	In Earth orbit
S45072	2020-006AE	Starlink 1168	SPXS	US	300	300	53.00	In Earth orbit
S45073	2020-006AF	Starlink 1170	SPXS	US	300	300	53.00	In Earth orbit
S45074	2020-006AG	Starlink 1172	SPXS	US	300	300	53.00	In Earth orbit
S45075	2020-006AH	Starlink 1174	SPXS	US	300	300	53.00	In Earth orbit

S45076	2020-006AJ	Starlink 1180	SPXS	US	300	53.00	In Earth orbit	
S45077	2020-006AK	Starlink 1182	SPXS	US	300	53.00	In Earth orbit	
S45078	2020-006AL	Starlink 1177	SPXS	US	300	53.00	In Earth orbit	
S45079	2020-006AM	Starlink 1149	SPXS	US	300	53.00	In Earth orbit	
S45080	2020-006AN	Starlink 1153	SPXS	US	300	53.00	In Earth orbit	
S45081	2020-006AP	Starlink 1151	SPXS	US	300	53.00	In Earth orbit	
S45082	2020-006AQ	Starlink 1160	SPXS	US	300	53.00	In Earth orbit	
S45083	2020-006AR	Starlink 1190	SPXS	US	300	53.00	In Earth orbit	
S45084	2020-006AS	Starlink 1173	SPXS	US	300	53.00	In Earth orbit	
S45085	2020-006AT	Starlink 1179	SPXS	US	300	53.00	In Earth orbit	
S45086	2020-006AU	Starlink 1181	SPXS	US	300	53.00	In Earth orbit	
S45087	2020-006AV	Starlink 1185	SPXS	US	300	53.00	In Earth orbit	
S45088	2020-006AW	Starlink 1183	SPXS	US	300	53.00	In Earth orbit	
S45089	2020-006AX	Starlink 1136	SPXS	US	300	53.00	In Earth orbit	
S45090	2020-006AY	Starlink 1176	SPXS	US	300	53.00	In Earth orbit	
S45091	2020-006AZ	Starlink 1127	SPXS	US	300	53.00	In Earth orbit	
S45092	2020-006BA	Starlink 1137	SPXS	US	300	53.00	In Earth orbit	
S45093	2020-006BB	Starlink 1142	SPXS	US	300	53.00	In Earth orbit	
S45094	2020-006BC	Starlink 1146	SPXS	US	300	53.00	In Earth orbit	
S45095	2020-006BD	Starlink 1147	SPXS	US	300	53.00	In Earth orbit	
S45096	2020-006BE	Starlink 1152	SPXS	US	300	53.00	In Earth orbit	
S45097	2020-006BF	Starlink 1175	SPXS	US	300	53.00	In Earth orbit	
S45098	2020-006BG	Starlink 1184	SPXS	US	300	53.00	In Earth orbit	
S45099	2020-006BH	Starlink 1186	SPXS	US	300	53.00	In Earth orbit	
S45100	2020-006BJ	Starlink 1193	SPXS	US	300	53.00	In Earth orbit	
S45101	2020-006BK	Starlink 1194	SPXS	US	300	53.00	In Earth orbit	
S45102	2020-006BL	Starlink 1195	SPXS	US	300	53.00	In Earth orbit	
S45103	2020-006BM	Starlink 1196	SPXS	US	300	53.00	In Earth orbit	
S45110	2020-007A C	USA 294	NROC	US	586	588	70.00	In Earth orbit
S45111	2020-008A	OneWeb 0013	ONEWEB	UK	439	460	87.40	In Earth orbit
S45112	2020-008B	OneWeb 0017	ONEWEB	UK	448	475	87.40	In Earth orbit
S45132	2020-008C	OneWeb 0020	ONEWEB	UK	439	465	87.40	In Earth orbit
S45133	2020-008D	OneWeb 0021	ONEWEB	UK	439	465	87.40	In Earth orbit
S45134	2020-008E	OneWeb 0022	ONEWEB	UK	443	467	87.40	In Earth orbit
S45135	2020-008F	OneWeb 0023	ONEWEB	UK	445	467	87.40	In Earth orbit
S45136	2020-008G	OneWeb 0024	ONEWEB	UK	448	472	87.40	In Earth orbit
S45137	2020-008H	OneWeb 0025	ONEWEB	UK	446	467	87.40	In Earth orbit
S45138	2020-008I	OneWeb 0026	ONEWEB	UK	450	476	87.40	In Earth orbit
S45139	2020-008J	OneWeb 0026	ONEWEB	UK	439	465	87.40	In Earth orbit
S45140	2020-008K	OneWeb 0028	ONEWEB	UK	439	465	87.40	In Earth orbit
S45141	2020-008L	OneWeb 0032	ONEWEB	UK	443	467	87.40	In Earth orbit
S45142	2020-008M	OneWeb 0033	ONEWEB	UK	453	476	87.40	In Earth orbit
S45143	2020-008N	OneWeb 0035	ONEWEB	UK	448	475	87.40	In Earth orbit
S45144	2020-008P	OneWeb 0036	ONEWEB	UK	442	467	87.40	In Earth orbit
S45145	2020-008Q	OneWeb 0038	ONEWEB	UK	448	475	87.40	In Earth orbit
S45146	2020-008R	OneWeb 0039	ONEWEB	UK	447	468	87.40	In Earth orbit
S45147	2020-008S	OneWeb 0040	ONEWEB	UK	452	476	87.40	In Earth orbit
S45148	2020-008T	OneWeb 0041	ONEWEB	UK	452	476	87.40	In Earth orbit
S45149	2020-008U	OneWeb 0043	ONEWEB	UK	447	467	87.40	In Earth orbit
S45150	2020-008V	OneWeb 0044	ONEWEB	UK	455	476	87.40	In Earth orbit
S45151	2020-008W	OneWeb 0045	ONEWEB	UK	447	467	87.40	In Earth orbit
S45152	2020-008X	OneWeb 0047	ONEWEB	UK	454	476	87.40	In Earth orbit
S45153	2020-008Y	OneWeb 0048	ONEWEB	UK	448	468	87.40	In Earth orbit
S45154	2020-008Z	OneWeb 0049	ONEWEB	UK	453	476	87.40	In Earth orbit
S45155	2020-008AA	OneWeb 0051	ONEWEB	UK	448	474	87.40	In Earth orbit
S45156	2020-008AB	OneWeb 0052	ONEWEB	UK	440	466	87.40	In Earth orbit
S45157	2020-008AC	OneWeb 0053	ONEWEB	UK	451	476	87.40	In Earth orbit
S45158	2020-008AD	OneWeb 0054	ONEWEB	UK	451	476	87.40	In Earth orbit
S45159	2020-008AE	OneWeb 0056	ONEWEB	UK	448	473	87.40	In Earth orbit
S45160	2020-008AF	OneWeb 0057	ONEWEB	UK	448	469	87.40	In Earth orbit
S45161	2020-008AG	OneWeb 0058	ONEWEB	UK	448	471	87.40	In Earth orbit
S45162	2020-008AH	OneWeb 0059	ONEWEB	UK	443	467	87.40	In Earth orbit
S45163	2020-008AJ	OneWeb 0062	ONEWEB	UK	441	467	87.40	In Earth orbit
S45164	2020-008AK	OneWeb 0065	ONEWEB	UK	448	469	87.40	In Earth orbit
S45165	2020-009A C	JSE koungaku 7 gouki	CS/CE	UK	449	475	87.40	In Earth orbit
S45167	2020-010A	Solar Orbiter	ESA	J	487	494	97.40	In Earth orbit
S45175	2020-011A	S.S. Robert Lawrence	OSC	US	206	272	51.63	Deorbited

S45800	1998-067RM	MERLOT	2020 Jun 17 17:50:00	DARPA	US	417	419	51.60	In Earth orbit
S45809	1998-067RN	CABERNET	2020 Jun 23 21:10:00	DARPA	US	416	419	51.65	In Earth orbit
S45916	1998-067RP	DeMi	2020 Jul 13 13:40:00	DARPA/AURFS	US	415	418	51.64	In Earth orbit
S45917	1998-067RQ	TechEdSat-10	2020 Jul 13 16:55:00	ARC/SISU	US	412	418	51.64	In Earth orbit
S45178	2020-012A	Startink 1138	2020 Feb 17 15:20:00	SPXS	US	291	380	53.00	In Earth orbit
S45179	2020-012B	Startink 1143	2020 Feb 17 15:20:00	SPXS	US	291	380	53.00	In Earth orbit
S45180	2020-012C	Startink 1192	2020 Feb 17 15:20:00	SPXS	US	290	380	53.00	In Earth orbit
S45181	2020-012D	Startink 1200	2020 Feb 17 15:20:00	SPXS	US	289	379	53.00	In Earth orbit
S45182	2020-012E	Startink 1201	2020 Feb 17 15:20:00	SPXS	US	214	370	53.00	In Earth orbit
S45183	2020-012F	Startink 1202	2020 Feb 17 15:20:00	SPXS	US	284	377	53.00	In Earth orbit
S45184	2020-012G	Startink 1205	2020 Feb 17 15:20:00	SPXS	US	214	363	53.00	In Earth orbit
S45185	2020-012H	Startink 1216	2020 Feb 17 15:20:00	SPXS	US	283	378	53.00	In Earth orbit
S45186	2020-012I	Startink 1224	2020 Feb 17 15:20:00	SPXS	US	286	378	53.00	In Earth orbit
S45187	2020-012K	Startink 1225	2020 Feb 17 15:20:00	SPXS	US	281	378	53.00	In Earth orbit
S45188	2020-012L	Startink 1228	2020 Feb 17 15:20:00	SPXS	US	209	368	53.00	In Earth orbit
S45189	2020-012M	Startink 1230	2020 Feb 17 15:20:00	SPXS	US	287	378	53.00	In Earth orbit
S45190	2020-012N	Startink 1234	2020 Feb 17 15:20:00	SPXS	US	209	368	53.00	In Earth orbit
S45191	2020-012P	Startink 1236	2020 Feb 17 15:20:00	SPXS	US	288	379	53.00	In Earth orbit
S45192	2020-012Q	Startink 1237	2020 Feb 17 15:20:00	SPXS	US	284	377	53.00	In Earth orbit
S45193	2020-012R	Startink 1239	2020 Feb 17 15:20:00	SPXS	US	281	378	53.00	In Earth orbit
S45194	2020-012S	Startink 1240	2020 Feb 17 15:20:00	SPXS	US	282	377	53.00	In Earth orbit
S45195	2020-012T	Startink 1241	2020 Feb 17 15:20:00	SPXS	US	281	377	53.00	In Earth orbit
S45196	2020-012U	Startink 1244	2020 Feb 17 15:20:00	SPXS	US	290	379	53.00	In Earth orbit
S45197	2020-012V	Startink 1269	2020 Feb 17 15:20:00	SPXS	US	288	379	53.00	In Earth orbit
S45198	2020-012W	Startink 1154	2020 Feb 17 15:20:00	SPXS	US	215	367	53.00	In Earth orbit
S45199	2020-012X	Startink 1197	2020 Feb 17 15:20:00	SPXS	US	215	368	53.00	In Earth orbit
S45200	2020-012Y	Startink 1198	2020 Feb 17 15:20:00	SPXS	US	216	367	53.00	In Earth orbit
S45201	2020-012Z	Startink 1199	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45202	2020-012AA	Startink 1203	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45203	2020-012AB	Startink 1204	2020 Feb 17 15:20:00	SPXS	US	213	368	53.00	In Earth orbit
S45204	2020-012AC	Startink 1206	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45205	2020-012AD	Startink 1208	2020 Feb 17 15:20:00	SPXS	US	216	367	53.00	In Earth orbit
S45206	2020-012AE	Startink 1209	2020 Feb 17 15:20:00	SPXS	US	219	363	53.00	In Earth orbit
S45207	2020-012AF	Startink 1210	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45208	2020-012AG	Startink 1211	2020 Feb 17 15:20:00	SPXS	US	213	368	53.00	In Earth orbit
S45209	2020-012AH	Startink 1218	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45210	2020-012AJ	Startink 1219	2020 Feb 17 15:20:00	SPXS	US	213	368	53.00	In Earth orbit
S45211	2020-012AK	Startink 1220	2020 Feb 17 15:20:00	SPXS	US	210	368	53.00	Recovered
S45212	2020-012AL	Startink 1231	2020 Feb 17 15:20:00	SPXS	US	214	368	53.00	In Earth orbit
S45213	2020-012AM	Startink 1232	2020 Feb 17 15:20:00	SPXS	US	214	368	53.00	In Earth orbit
S45214	2020-012AN	Startink 1233	2020 Feb 17 15:20:00	SPXS	US	212	369	53.00	In Earth orbit
S45215	2020-012AP	Startink 1245	2020 Feb 17 15:20:00	SPXS	US	213	368	53.00	In Earth orbit
S45216	2020-012AQ	Startink 1254	2020 Feb 17 15:20:00	SPXS	US	214	367	53.00	In Earth orbit
S45217	2020-012AR	Startink 1271	2020 Feb 17 15:20:00	SPXS	US	215	367	53.00	In Earth orbit
S45218	2020-012AS	Startink 1105	2020 Feb 17 15:20:00	SPXS	US	214	368	53.00	In Earth orbit
S45219	2020-012AT	Startink 1187	2020 Feb 17 15:20:00	SPXS	US	214	368	53.00	In Earth orbit
S45220	2020-012AU	Startink 1188	2020 Feb 17 15:20:00	SPXS	US	215	368	53.00	In Earth orbit
S45221	2020-012AV	Startink 1189	2020 Feb 17 15:20:00	SPXS	US	216	368	53.00	In Earth orbit
S45222	2020-012AW	Startink 1191	2020 Feb 17 15:20:00	SPXS	US	213	368	53.00	In Earth orbit
S45223	2020-012AX	Startink 1212	2020 Feb 17 15:20:00	SPXS	US	213	367	53.00	In Earth orbit
S45224	2020-012AY	Startink 1214	2020 Feb 17 15:20:00	SPXS	US	213	369	53.00	In Earth orbit
S45225	2020-012AZ	Startink 1215	2020 Feb 17 15:20:00	SPXS	US	214	367	53.00	In Earth orbit
S45226	2020-012BA	Startink 1217	2020 Feb 17 15:20:00	SPXS	US	215	367	53.00	In Earth orbit
S45227	2020-012BB	Startink 1221	2020 Feb 17 15:20:00	SPXS	US	216	368	53.00	In Earth orbit
S45228	2020-012BC	Startink 1222	2020 Feb 17 15:20:00	SPXS	US	213	368	53.01	In Earth orbit
S45229	2020-012BD	Startink 1226	2020 Feb 17 15:20:00	SPXS	US	214	367	53.00	In Earth orbit
S45230	2020-012BE	Startink 1227	2020 Feb 17 15:20:00	SPXS	US	214	368	53.00	In Earth orbit
S45231	2020-012BF	Startink 1229	2020 Feb 17 15:20:00	SPXS	US	215	367	53.00	In Earth orbit
S45232	2020-012BG	Startink 1235	2020 Feb 17 15:20:00	SPXS	US	205	337	53.00	In Earth orbit
S45233	2020-012BH	Startink 1238	2020 Feb 17 15:20:00	SPXS	US	214	367	53.00	In Earth orbit
S45234	2020-012BJ	Startink 1243	2020 Feb 17 15:20:00	SPXS	US	287	379	53.00	In Earth orbit
S45235	2020-012BK	Startink 1246	2020 Feb 17 15:20:00	SPXS	US	278	376	53.00	In Earth orbit
S45236	2020-012BL	Startink 1247	2020 Feb 17 15:20:00	SPXS	US	212	368	53.00	In Earth orbit
S45237	2020-012BM	Startink 1270	2020 Feb 17 15:20:00	SPXS	US	215	367	53.00	In Earth orbit
S45245	2020-013A	JCSAT 17	2020 Feb 18 22:45:00	SKPJ	J	30860	36066	4.41	In Earth orbit
S45246	2020-013B	Cheollian 2B	2020 Feb 18 22:49:00	KARI	KR	35680	35689	0.05	In Earth orbit

S45249	2020-014A	Xin jishu shiyan C xing	SAST	CN	472	483	35.00	In Earth orbit
S45250	2020-014B	Xin jishu shiyan D xing	SAST	CN	474	482	35.01	In Earth orbit
S45251	2020-014C	Xin jishu shiyan E xing	HARB	CN	473	482	35.01	In Earth orbit
S45253	2020-014E	Xin jishu shiyan F xing	DFH	CN	472	482	35.01	In Earth orbit
S45254	2020-015A	Meridian-M No. 19L	KVR	RU	1007	39712	62.86	In Earth orbit
S45341	2020-016A	Dragon CRS-20	SPX	US	375	385	51.64	Landed
S45397	1998-067RK	G-SATELLITE	TOK	J	413	419	51.64	In Earth orbit
S45598	1998-067RL	Quezacoatl	LYG	GT	415	416	51.65	In Earth orbit
S45605	2020-011D	ULTP	LYNK	US	476	486	51.65	In Earth orbit
S45344	2020-017A	Beidou DW 54	UN	CN	35776	486	51.65	In Earth orbit
S45358	2020-018A	Kosmos-2545	CNSA	CN	35776	35796	3.08	In Earth orbit
S45360	2020-019A	Startink 1279	KVRIA/CG	RU	19130	19154	64.80	In Earth orbit
S45361	2020-019B	Startink 1301	SPXS	US	216	338	53.00	In Earth orbit
S45362	2020-019C	Startink 1306	SPXS	US	212	340	53.00	In Earth orbit
S45363	2020-019D	Startink 1311	SPXS	US	277	344	53.00	In Earth orbit
S45364	2020-019E	Startink 1313	SPXS	US	262	344	53.00	In Earth orbit
S45365	2020-019F	Startink 1317	SPXS	US	214	334	53.00	Reentered
S45366	2020-019G	Startink 1262	SPXS	US	214	332	53.00	In Earth orbit
S45367	2020-019H	Startink 1273	SPXS	US	292	357	53.00	In Earth orbit
S45368	2020-019I	Startink 1276	SPXS	US	295	358	53.00	In Earth orbit
S45369	2020-019K	Startink 1277	SPXS	US	291	357	53.00	In Earth orbit
S45370	2020-019L	Startink 1281	SPXS	US	299	359	53.00	In Earth orbit
S45371	2020-019M	Startink 1287	SPXS	US	294	358	53.00	In Earth orbit
S45372	2020-019N	Startink 1288	SPXS	US	296	359	53.00	In Earth orbit
S45373	2020-019P	Startink 1295	SPXS	US	293	358	53.00	In Earth orbit
S45374	2020-019Q	Startink 1300	SPXS	US	289	357	53.00	In Earth orbit
S45375	2020-019R	Startink 1302	SPXS	US	295	362	53.00	In Earth orbit
S45376	2020-019S	Startink 1304	SPXS	US	295	362	53.00	In Earth orbit
S45377	2020-019T	Startink 1305	SPXS	US	239	358	53.00	In Earth orbit
S45378	2020-019U	Startink 1310	SPXS	US	288	357	53.01	In Earth orbit
S45379	2020-019V	Startink 1319	SPXS	US	285	357	53.00	In Earth orbit
S45380	2020-019W	Startink 1207	SPXS	US	286	357	53.00	In Earth orbit
S45381	2020-019X	Startink 1258	SPXS	US	254	347	53.00	In Earth orbit
S45382	2020-019Y	Startink 1264	SPXS	US	255	348	53.00	In Earth orbit
S45383	2020-019Z	Startink 1266	SPXS	US	253	347	53.00	In Earth orbit
S45384	2020-019AA	Startink 1267	SPXS	US	255	348	53.00	In Earth orbit
S45385	2020-019AB	Startink 1268	SPXS	US	254	347	53.00	In Earth orbit
S45386	2020-019AC	Startink 1272	SPXS	US	258	348	53.00	Reentered
S45387	2020-019AD	Startink 1274	SPXS	US	253	348	53.00	In Earth orbit
S45388	2020-019AE	Startink 1280	SPXS	US	256	348	53.00	In Earth orbit
S45389	2020-019AF	Startink 1283	SPXS	US	257	348	53.00	In Earth orbit
S45390	2020-019AG	Startink 1284	SPXS	US	198	313	53.00	In Earth orbit
S45391	2020-019AH	Startink 1289	SPXS	US	207	359	53.00	In Earth orbit
S45392	2020-019AJ	Startink 1290	SPXS	US	256	348	53.00	In Earth orbit
S45393	2020-019AK	Startink 1291	SPXS	US	257	348	53.00	In Earth orbit
S45394	2020-019AL	Startink 1292	SPXS	US	253	348	53.00	In Earth orbit
S45395	2020-019AM	Startink 1297	SPXS	US	255	348	53.00	In Earth orbit
S45396	2020-019AN	Startink 1303	SPXS	US	255	349	53.00	In Earth orbit
S45397	2020-019AP	Startink 1307	SPXS	US	252	348	53.00	In Earth orbit
S45398	2020-019AQ	Startink 1312	SPXS	US	257	344	53.00	In Earth orbit
S45399	2020-019AR	Startink 1255	SPXS	US	258	343	53.00	In Earth orbit
S45400	2020-019AS	Startink 1256	SPXS	US	265	352	53.00	In Earth orbit
S45401	2020-019AU	Startink 1256	SPXS	US	254	347	53.00	In Earth orbit
S45402	2020-019AU	Startink 1257	SPXS	US	207	359	53.00	In Earth orbit
S45403	2020-019AV	Startink 1259	SPXS	US	254	348	53.00	In Earth orbit
S45404	2020-019AV	Startink 1260	SPXS	US	254	348	53.00	In Earth orbit
S45405	2020-019AX	Startink 1263	SPXS	US	255	348	53.00	In Earth orbit
S45406	2020-019AY	Startink 1265	SPXS	US	207	359	53.00	In Earth orbit
S45407	2020-019AZ	Startink 1275	SPXS	US	255	348	53.00	In Earth orbit
S45408	2020-019BA	Startink 1278	SPXS	US	207	360	53.00	In Earth orbit
S45409	2020-019BB	Startink 1282	SPXS	US	257	348	53.00	In Earth orbit
S45410	2020-019BC	Startink 1285	SPXS	US	207	360	53.00	In Earth orbit
S45411	2020-019BD	Startink 1293	SPXS	US	254	348	53.00	In Earth orbit
S45412	2020-019BE	Startink 1296	SPXS	US	257	349	53.00	In Earth orbit
S45413	2020-019BF	Startink 1298	SPXS	US	255	348	53.00	In Earth orbit
S45414	2020-019BG	Startink 1309	SPXS	US	252	349	53.00	In Earth orbit
S45414	2020-019BG	Startink 1309	SPXS	US	251	349	53.00	In Earth orbit

S45415	2020-019BH	Starlink 1316	SPXS	US	249	347	53.00	In Earth orbit
S45416	2020-019BJ	Starlink 1318	SPXS	US	252	347	53.00	In Earth orbit
S45417	2020-019BK	Starlink 1286	SPXS	US	289	352	53.00	In Earth orbit
S45418	2020-019BL	Starlink 1299	SPXS	US	207	360	53.00	In Earth orbit
S45419	2020-019BM	Starlink 1308	SPXS	US	283	355	53.01	In Earth orbit
S45424	2020-020A	OneWeb 0066	ONEWEB	UK	433	463	87.40	In Earth orbit
S45425	2020-020B	OneWeb 0067	ONEWEB	UK	433	463	87.40	In Earth orbit
S45426	2020-020C	OneWeb 0080	ONEWEB	UK	433	467	87.40	In Earth orbit
S45427	2020-020D	OneWeb 0090	ONEWEB	UK	433	467	87.40	In Earth orbit
S45428	2020-020E	OneWeb 0061	ONEWEB	UK	434	468	87.40	In Earth orbit
S45429	2020-020F	OneWeb 0081	ONEWEB	UK	434	468	87.40	In Earth orbit
S45430	2020-020G	OneWeb 0069	ONEWEB	UK	435	469	87.40	In Earth orbit
S45431	2020-020H	OneWeb 0031	ONEWEB	UK	436	469	87.40	In Earth orbit
S45432	2020-020I	OneWeb 0027	ONEWEB	UK	437	469	87.40	In Earth orbit
S45433	2020-020K	OneWeb 0064	ONEWEB	UK	437	469	87.40	In Earth orbit
S45434	2020-020L	OneWeb 0018	ONEWEB	UK	439	469	87.40	In Earth orbit
S45435	2020-020M	OneWeb 0083	ONEWEB	UK	440	469	87.40	In Earth orbit
S45436	2020-020N	OneWeb 0095	ONEWEB	UK	440	469	87.40	In Earth orbit
S45437	2020-020P	OneWeb 0092	ONEWEB	UK	441	469	87.40	In Earth orbit
S45438	2020-020Q	OneWeb 0085	ONEWEB	UK	441	470	87.40	In Earth orbit
S45439	2020-020R	OneWeb 0096	ONEWEB	UK	441	470	87.40	In Earth orbit
S45440	2020-020S	OneWeb 0037	ONEWEB	UK	441	471	87.40	In Earth orbit
S45441	2020-020T	OneWeb 0042	ONEWEB	UK	442	471	87.40	In Earth orbit
S45442	2020-020U	OneWeb 0098	ONEWEB	UK	441	473	87.40	In Earth orbit
S45443	2020-020V	OneWeb 0055	ONEWEB	UK	441	474	87.40	In Earth orbit
S45444	2020-020W	OneWeb 0093	ONEWEB	UK	441	474	87.40	In Earth orbit
S45445	2020-020X	OneWeb 0029	ONEWEB	UK	441	475	87.40	In Earth orbit
S45446	2020-020Y	OneWeb 0068	ONEWEB	UK	441	475	87.40	In Earth orbit
S45447	2020-020Z	OneWeb 0046	ONEWEB	UK	441	476	87.40	In Earth orbit
S45448	2020-020AA	OneWeb 0063	ONEWEB	UK	442	477	87.40	In Earth orbit
S45449	2020-020AB	OneWeb 0019	ONEWEB	UK	442	477	87.40	In Earth orbit
S45450	2020-020AC	OneWeb 0094	ONEWEB	UK	442	477	87.40	In Earth orbit
S45451	2020-020AD	OneWeb 0087	ONEWEB	UK	443	478	87.40	In Earth orbit
S45452	2020-020AE	OneWeb 0082	ONEWEB	UK	444	478	87.40	In Earth orbit
S45453	2020-020AF	OneWeb 0050	ONEWEB	UK	445	478	87.40	In Earth orbit
S45454	2020-020AG	OneWeb 0034	ONEWEB	UK	446	478	87.40	In Earth orbit
S45455	2020-020AH	OneWeb 0060	ONEWEB	UK	446	478	87.40	In Earth orbit
S45456	2020-020AJ	OneWeb 0086	ONEWEB	UK	447	478	87.40	In Earth orbit
S45457	2020-020AK	OneWeb 0088	ONEWEB	UK	448	478	87.40	In Earth orbit
S45460	2020-021A	Yaogan 30 hao 06 zu 01 xing	ONEWEB	UK	448	478	87.40	In Earth orbit
S45461	2020-021B	Yaogan 30 hao 06 zu 02 xing	ZZB	CN	590	602	35.00	In Earth orbit
S45462	2020-021C	Yaogan 30 hao 06 zu 03 xing	ZZB	CN	590	602	35.00	In Earth orbit
S45464	2020-022A	TDO 2	ZZB	CN	590	602	35.00	In Earth orbit
S45465	2020-022B	AEHF SV-6	AFMCSW	US	200	35459	26.50	In Earth orbit
S45476	2020-023A	Soyuz MS-16	AFMCSW	US	200	35459	9.56	In Earth orbit
S45477	2020-023A	Noor 1	RKKE	RU	25845	35301	51.75	Landed
S45529	2020-024A	Starlink 1329	IRGC	IR	426	436	59.81	In Earth orbit
S45531	2020-025A	Starlink 1338	SPXS	US	229	354	53.01	In Earth orbit
S45532	2020-025B	Starlink 1339	SPXS	US	229	355	53.00	In Earth orbit
S45533	2020-025C	Starlink 1339	SPXS	US	230	354	53.01	In Earth orbit
S45534	2020-025D	Starlink 1341	SPXS	US	230	354	53.00	In Earth orbit
S45535	2020-025E	Starlink 1350	SPXS	US	229	355	53.01	In Earth orbit
S45536	2020-025F	Starlink 1352	SPXS	US	229	355	53.00	In Earth orbit
S45537	2020-025G	Starlink 1353	SPXS	US	229	355	53.01	In Earth orbit
S45538	2020-025H	Starlink 1362	SPXS	US	229	354	53.01	In Earth orbit
S45539	2020-025I	Starlink 1367	SPXS	US	228	355	53.00	In Earth orbit
S45540	2020-025K	Starlink 1368	SPXS	US	230	355	53.00	In Earth orbit
S45541	2020-025L	Starlink 1369	SPXS	US	230	355	53.01	In Earth orbit
S45542	2020-025M	Starlink 1371	SPXS	US	229	355	53.00	In Earth orbit
S45543	2020-025N	Starlink 1372	SPXS	US	231	355	53.01	In Earth orbit
S45544	2020-025P	Starlink 1373	SPXS	US	229	355	53.00	In Earth orbit
S45545	2020-025Q	Starlink 1374	SPXS	US	230	354	53.01	In Earth orbit
S45546	2020-025R	Starlink 1375	SPXS	US	230	355	53.01	In Earth orbit
S45547	2020-025S	Starlink 1377	SPXS	US	230	354	53.01	In Earth orbit
S45548	2020-025T	Starlink 1378	SPXS	US	231	355	53.01	In Earth orbit
S45549	2020-025U	Starlink 1379	SPXS	US	231	355	53.00	In Earth orbit
S45550	2020-025V	Starlink 1390	SPXS	US	229	355	53.01	In Earth orbit

S45551	2020-025W	Starlink 1294	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45552	2020-025X	Starlink 1322	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45553	2020-025Y	Starlink 1323	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45554	2020-025Z	Starlink 1325	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45555	2020-025AA	Starlink 1327	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45556	2020-025AB	Starlink 1334	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45557	2020-025AC	Starlink 1336	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45558	2020-025AD	Starlink 1342	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45559	2020-025AE	Starlink 1344	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45560	2020-025AF	Starlink 1346	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45561	2020-025AG	Starlink 1348	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45562	2020-025AH	Starlink 1354	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45563	2020-025AJ	Starlink 1355	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45564	2020-025AK	Starlink 1356	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45565	2020-025AL	Starlink 1357	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45566	2020-025AM	Starlink 1358	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45567	2020-025AN	Starlink 1361	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45568	2020-025AP	Starlink 1363	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45569	2020-025AQ	Starlink 1366	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45570	2020-025AR	Starlink 1376	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45571	2020-025AS	Starlink 1376	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45572	2020-025AT	Starlink 1261	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45573	2020-025AU	Starlink 1320	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45574	2020-025AV	Starlink 1324	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45575	2020-025AW	Starlink 1326	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45576	2020-025AX	Starlink 1328	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45577	2020-025AY	Starlink 1330	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45578	2020-025AZ	Starlink 1331	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45579	2020-025BA	Starlink 1332	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45580	2020-025BB	Starlink 1333	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45581	2020-025BC	Starlink 1335	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45582	2020-025BD	Starlink 1337	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45583	2020-025BE	Starlink 1340	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45584	2020-025BF	Starlink 1343	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45585	2020-025BG	Starlink 1345	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45586	2020-025BH	Starlink 1347	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45587	2020-025BJ	Starlink 1349	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45588	2020-025BK	Starlink 1360	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45589	2020-025BL	Starlink 1364	2020 Apr 22 15:44:00	SPXS	US	211	358	53 01	In Earth orbit
S45590	2020-025BM	Starlink 1365	2020 Apr 22 15:44:00	SPXS	US	211	359	53 01	In Earth orbit
S45595	2020-026A	Progress MS-14	2020 Apr 25 02:00:00	RKKE	RU	189	227	51.66	In Earth orbit
S45599	2020-027A	XZF-SC	2020 May 5 10:08:00	CMSIO	RU	162	377	41.09	Attached to Zvezda
S45600	2020-027B	RCS-FC-SC	2020 May 5 10:08:00	CASIC	CN	161	372	41.10	Deorbited
S45602	2020-028A	Xingyun-2 01 xing	2020 May 11 01:41:00	XYUN	CN	556	572	97.55	In Earth orbit
S45603	2020-028B	Xingyun-2 02 xing	2020 May 11 01:44:00	XYUN	CN	556	572	97.55	In Earth orbit
S45606	2020-029A C	X-37B OTV-6	2020 May 17 13:34:00	AFRCO	US	379	399	45.08	In Earth orbit
S45610	2020-029B C	USA 300	2020 May 28 00:00:00	USAF	US	389	389	45.01	In Earth orbit
S45607	2020-030A	Koumori 9 gouki	2020 May 20 17:46:00	JAXA	J	284	302	51.67	Deorbited
S45608	2020-031A	Kosmos-2546	2020 May 22 11:53:00	KVRA	RU	1659	38503	63.82	In Earth orbit
S45611	2020-032A	XJS G	2020 May 29 20:20:00	SECM	CN	467	485	35.03	In Earth orbit
S45612	2020-032B	XJS H	2020 May 29 20:20:00	NUDTC	CN	466	485	35.03	In Earth orbit
S45623	2020-033A	Endeavour	2020 May 30 19:34:00	SPX	US	416	420	51.64	Landed
S45624	2020-034A	HEAD-4	2020 May 31 09:06:00	HEAD	CN	487	502	97.29	In Earth orbit
S45625	2020-034B	Gao Fen 9 02 xing	2020 May 31 09:06:00	CNSAS	CN	485	501	97.29	In Earth orbit
S45657	2020-035A	Starlink 1440	2020 Jun 4 01:40:00	SPXS	US	217	355	53.00	Reentered
S45658	2020-035B	Starlink 1441	2020 Jun 4 01:40:00	SPXS	US	292	366	53.00	In Earth orbit
S45659	2020-035C	Starlink 1442	2020 Jun 4 01:40:00	SPXS	US	294	364	53.00	In Earth orbit
S45660	2020-035D	Starlink 1443	2020 Jun 4 01:40:00	SPXS	US	294	365	53.00	In Earth orbit
S45661	2020-035E	Starlink 1444	2020 Jun 4 01:40:00	SPXS	US	299	358	53.00	In Earth orbit
S45662	2020-035F	Starlink 1445	2020 Jun 4 01:40:00	SPXS	US	292	364	53.00	In Earth orbit
S45663	2020-035G	Starlink 1446	2020 Jun 4 01:40:00	SPXS	US	293	364	53.00	In Earth orbit
S45664	2020-035H	Starlink 1447	2020 Jun 4 01:40:00	SPXS	US	292	365	53.00	In Earth orbit
S45665	2020-035I	Starlink 1448	2020 Jun 4 01:40:00	SPXS	US	294	364	53.00	In Earth orbit
S45666	2020-035K	Starlink 1449	2020 Jun 4 01:40:00	SPXS	US	295	364	53.00	In Earth orbit
S45667	2020-035L	Starlink 1450	2020 Jun 4 01:40:00	SPXS	US	294	362	53.00	In Earth orbit
S45668	2020-035M	Starlink 1451	2020 Jun 4 01:40:00	SPXS	US	293	365	53.00	In Earth orbit

S45669	2020-035N	Starlink 1452	2020 Jun 4 01:40:00	SPXS	US	298	358	53.00	In Earth orbit
S45670	2020-035P	Starlink 1453	2020 Jun 4 01:40:00	SPXS	US	244	359	53.00	In Earth orbit
S45671	2020-035Q	Starlink 1454	2020 Jun 4 01:40:00	SPXS	US	293	348	53.00	In Earth orbit
S45672	2020-035R	Starlink 1455	2020 Jun 4 01:40:00	SPXS	US	222	364	53.00	In Earth orbit
S45673	2020-035S	Starlink 1456	2020 Jun 4 01:40:00	SPXS	US	293	364	53.00	In Earth orbit
S45674	2020-035T	Starlink 1457	2020 Jun 4 01:40:00	SPXS	US	293	365	53.00	In Earth orbit
S45675	2020-035U	Starlink 1458	2020 Jun 4 01:40:00	SPXS	US	292	365	53.00	In Earth orbit
S45676	2020-035V	Starlink 1460	2020 Jun 4 01:40:00	SPXS	US	292	364	53.00	In Earth orbit
S45677	2020-035W	Starlink 1392	2020 Jun 4 01:40:00	SPXS	US	286	364	53.00	In Earth orbit
S45678	2020-035X	Starlink 1393	2020 Jun 4 01:40:00	SPXS	US	280	362	53.00	In Earth orbit
S45679	2020-035Y	Starlink 1394	2020 Jun 4 01:40:00	SPXS	US	289	364	53.00	In Earth orbit
S45680	2020-035Z	Starlink 1395	2020 Jun 4 01:40:00	SPXS	US	251	356	53.00	In Earth orbit
S45681	2020-035AA	Starlink 1396	2020 Jun 4 01:40:00	SPXS	US	290	363	53.00	In Earth orbit
S45682	2020-035AB	Starlink 1397	2020 Jun 4 01:40:00	SPXS	US	289	364	53.00	In Earth orbit
S45683	2020-035AC	Starlink 1399	2020 Jun 4 01:40:00	SPXS	US	289	364	53.00	In Earth orbit
S45684	2020-035AD	Starlink 1401	2020 Jun 4 01:40:00	SPXS	US	290	364	53.00	In Earth orbit
S45685	2020-035AE	Starlink 1402	2020 Jun 4 01:40:00	SPXS	US	290	365	53.00	In Earth orbit
S45686	2020-035AF	Starlink 1404	2020 Jun 4 01:40:00	SPXS	US	291	364	53.00	In Earth orbit
S45687	2020-035AG	Starlink 1406	2020 Jun 4 01:40:00	SPXS	US	224	352	53.00	In Earth orbit
S45688	2020-035AH	Starlink 1408	2020 Jun 4 01:40:00	SPXS	US	226	352	53.00	In Earth orbit
S45689	2020-035AJ	Starlink 1413	2020 Jun 4 01:40:00	SPXS	US	287	365	53.00	In Earth orbit
S45690	2020-035AK	Starlink 1414	2020 Jun 4 01:40:00	SPXS	US	286	364	53.00	In Earth orbit
S45691	2020-035AL	Starlink 1415	2020 Jun 4 01:40:00	SPXS	US	249	360	53.00	In Earth orbit
S45692	2020-035AM	Starlink 1416	2020 Jun 4 01:40:00	SPXS	US	285	364	53.00	In Earth orbit
S45693	2020-035AN	Starlink 1417	2020 Jun 4 01:40:00	SPXS	US	287	364	53.00	In Earth orbit
S45694	2020-035AP	Starlink 1419	2020 Jun 4 01:40:00	SPXS	US	288	365	53.00	In Earth orbit
S45695	2020-035AQ	Starlink 1420	2020 Jun 4 01:40:00	SPXS	US	288	365	53.00	In Earth orbit
S45696	2020-035AR	Starlink 1422	2020 Jun 4 01:40:00	SPXS	US	291	366	53.00	In Earth orbit
S45697	2020-035AS	Starlink 1351	2020 Jun 4 01:40:00	SPXS	US	291	365	53.00	In Earth orbit
S45698	2020-035AT	Starlink 1370	2020 Jun 4 01:40:00	SPXS	US	288	365	53.00	In Earth orbit
S45699	2020-035AU	Starlink 1398	2020 Jun 4 01:40:00	SPXS	US	293	362	53.00	In Earth orbit
S45700	2020-035AV	Starlink 1400	2020 Jun 4 01:40:00	SPXS	US	291	365	53.00	In Earth orbit
S45701	2020-035AW	Starlink 1403	2020 Jun 4 01:40:00	SPXS	US	291	366	53.00	In Earth orbit
S45702	2020-035AX	Starlink 1405	2020 Jun 4 01:40:00	SPXS	US	291	301	53.00	In Earth orbit
S45703	2020-035AY	Starlink 1407	2020 Jun 4 01:40:00	SPXS	US	292	365	53.00	In Earth orbit
S45704	2020-035AZ	Starlink 1409	2020 Jun 4 01:40:00	SPXS	US	293	365	53.00	In Earth orbit
S45705	2020-035BA	Starlink 1410	2020 Jun 4 01:40:00	SPXS	US	290	366	53.00	In Earth orbit
S45706	2020-035BB	Starlink 1411	2020 Jun 4 01:40:00	SPXS	US	292	367	53.00	In Earth orbit
S45707	2020-035BC	Starlink 1412	2020 Jun 4 01:40:00	SPXS	US	292	366	53.00	In Earth orbit
S45708	2020-035BD	Starlink 1418	2020 Jun 4 01:40:00	SPXS	US	292	365	53.00	In Earth orbit
S45709	2020-035BE	Starlink 1421	2020 Jun 4 01:40:00	SPXS	US	291	365	53.00	In Earth orbit
S45710	2020-035BF	Starlink 1423	2020 Jun 4 01:40:00	SPXS	US	291	365	53.00	In Earth orbit
S45711	2020-035BG	Starlink 1433	2020 Jun 4 01:40:00	SPXS	US	293	365	53.00	In Earth orbit
S45712	2020-035BH	Starlink 1434	2020 Jun 4 01:40:00	SPXS	US	239	359	53.00	In Earth orbit
S45713	2020-035BJ	Starlink 1436 (VisorSat)	2020 Jun 4 01:40:00	SPXS	US	296	363	53.00	In Earth orbit
S45714	2020-035BK	Starlink 1437	2020 Jun 4 01:40:00	SPXS	US	295	364	53.00	In Earth orbit
S45715	2020-035BL	Starlink 1438	2020 Jun 4 01:40:00	SPXS	US	294	365	53.00	In Earth orbit
S45716	2020-035BM	Starlink 1439	2020 Jun 4 01:40:00	SPXS	US	210	347	53.00	In Earth orbit
S45721	2020-036A	Hai Yang 1D	2020 Jun 10 18:44:00	GYZ/CASC	CN	770	785	98.44	In Earth orbit
S45723	2020-037A C	USA 301	2020 Jun 13 06:12:00	NROC	US	585	600	97.70	In Earth orbit
S45724	2020-037B C	USA 302	2020 Jun 13 06:12:00	NROC	US	585	600	97.70	In Earth orbit
S45725	2020-037C C	USA 303	2020 Jun 13 06:12:00	NROC	US	585	600	97.70	In Earth orbit
S45726	2020-037D	ANDESITE	2020 Jun 13 06:12:00	BU	US	582	600	97.71	In Earth orbit
S45727	2020-037E	RAAF M2 Pathfinder	2020 Jun 13 06:12:00	RAAF/UNSW	AU	586	602	97.70	In Earth orbit
S45730	2020-038A	Starlink 1461	2020 Jun 13 09:47:00	SPXS	US	257	362	53.00	In Earth orbit
S45731	2020-038B	Starlink 1465	2020 Jun 13 09:47:00	SPXS	US	257	362	53.00	In Earth orbit
S45732	2020-038C	Starlink 1466	2020 Jun 13 09:47:00	SPXS	US	256	362	53.00	In Earth orbit
S45733	2020-038D	Starlink 1467	2020 Jun 13 09:47:00	SPXS	US	254	365	53.00	In Earth orbit
S45734	2020-038E	Starlink 1468	2020 Jun 13 09:47:00	SPXS	US	257	361	53.00	In Earth orbit
S45735	2020-038F	Starlink 1471	2020 Jun 13 09:47:00	SPXS	US	255	365	53.00	In Earth orbit
S45736	2020-038G	Starlink 1472	2020 Jun 13 09:47:00	SPXS	US	256	363	53.00	In Earth orbit
S45737	2020-038H	Starlink 1473	2020 Jun 13 09:47:00	SPXS	US	256	362	53.00	In Earth orbit
S45738	2020-038I	Starlink 1474	2020 Jun 13 09:47:00	SPXS	US	257	361	53.00	In Earth orbit
S45739	2020-038J	Starlink 1475	2020 Jun 13 09:47:00	SPXS	US	256	362	53.00	In Earth orbit
S45740	2020-038L	Starlink 1479	2020 Jun 13 09:47:00	SPXS	US	255	362	53.00	In Earth orbit
S45741	2020-038M	Starlink 1480	2020 Jun 13 09:47:00	SPXS	US	257	361	53.00	In Earth orbit

S45742	2020-038N	Starlink 1481	2020 Jun 13 0947:00	SPXS	US	257	361	53.00	In Earth orbit
S45743	2020-038P	Starlink 1483	2020 Jun 13 0947:00	SPXS	US	257	362	53.00	In Earth orbit
S45744	2020-038Q	Starlink 1500	2020 Jun 13 0947:00	SPXS	US	256	361	53.00	In Earth orbit
S45745	2020-038R	Starlink 1503	2020 Jun 13 0947:00	SPXS	US	255	362	53.00	In Earth orbit
S45746	2020-038S	Starlink 1504	2020 Jun 13 0947:00	SPXS	US	256	362	53.00	In Earth orbit
S45747	2020-038T	Starlink 1506	2020 Jun 13 0947:00	SPXS	US	256	362	53.00	In Earth orbit
S45748	2020-038U	Starlink 1507	2020 Jun 13 0947:00	SPXS	US	255	362	53.00	In Earth orbit
S45749	2020-038V	Starlink 1516	2020 Jun 13 0947:00	SPXS	US	221	357	53.00	In Earth orbit
S45750	2020-038W	Starlink 1391	2020 Jun 13 0947:00	SPXS	US	221	357	53.00	In Earth orbit
S45751	2020-038X	Starlink 1464	2020 Jun 13 0947:00	SPXS	US	222	356	53.00	In Earth orbit
S45752	2020-038Y	Starlink 1469	2020 Jun 13 0947:00	SPXS	US	220	357	53.00	In Earth orbit
S45753	2020-038Z	Starlink 1476	2020 Jun 13 0947:00	SPXS	US	220	357	53.00	In Earth orbit
S45754	2020-038AA	Starlink 1477	2020 Jun 13 0947:00	SPXS	US	218	359	53.00	In Earth orbit
S45755	2020-038AB	Starlink 1478	2020 Jun 13 0947:00	SPXS	US	220	357	53.00	In Earth orbit
S45756	2020-038AC	Starlink 1484	2020 Jun 13 0947:00	SPXS	US	218	359	53.00	In Earth orbit
S45757	2020-038AD	Starlink 1486	2020 Jun 13 0947:00	SPXS	US	218	357	53.00	In Earth orbit
S45758	2020-038AE	Starlink 1487	2020 Jun 13 0947:00	SPXS	US	218	357	53.00	In Earth orbit
S45759	2020-038AF	Starlink 1493	2020 Jun 13 0947:00	SPXS	US	220	357	53.00	In Earth orbit
S45760	2020-038AG	Starlink 1494	2020 Jun 13 0947:00	SPXS	US	221	358	53.00	In Earth orbit
S45761	2020-038AH	Starlink 1495	2020 Jun 13 0947:00	SPXS	US	218	357	53.00	In Earth orbit
S45762	2020-038AJ	Starlink 1499	2020 Jun 13 0947:00	SPXS	US	220	360	53.00	In Earth orbit
S45763	2020-038AK	Starlink 1501	2020 Jun 13 0947:00	SPXS	US	219	359	53.00	In Earth orbit
S45764	2020-038AL	Starlink 1502	2020 Jun 13 0947:00	SPXS	US	218	357	53.00	In Earth orbit
S45765	2020-038AM	Starlink 1508	2020 Jun 13 0947:00	SPXS	US	219	357	53.00	In Earth orbit
S45766	2020-038AN	Starlink 1509	2020 Jun 13 0947:00	SPXS	US	219	359	53.00	In Earth orbit
S45767	2020-038AP	Starlink 1511	2020 Jun 13 0947:00	SPXS	US	217	357	53.00	In Earth orbit
S45768	2020-038AQ	Starlink 1485	2020 Jun 13 0947:00	SPXS	US	220	358	53.00	In Earth orbit
S45769	2020-038AR	Starlink 1521	2020 Jun 13 0947:00	SPXS	US	220	361	53.00	In Earth orbit
S45770	2020-038AS	Starlink 1459	2020 Jun 13 0947:00	SPXS	US	221	359	53.00	In Earth orbit
S45771	2020-038AT	Starlink 1462	2020 Jun 13 0947:00	SPXS	US	220	357	53.00	In Earth orbit
S45772	2020-038AU	Starlink 1463	2020 Jun 13 0947:00	SPXS	US	219	357	53.00	In Earth orbit
S45773	2020-038AV	Starlink 1470	2020 Jun 13 0947:00	SPXS	US	219	358	53.00	In Earth orbit
S45774	2020-038AW	Starlink 1482	2020 Jun 13 0947:00	SPXS	US	219	357	53.00	In Earth orbit
S45775	2020-038AX	Starlink 1485	2020 Jun 13 0947:00	SPXS	US	218	359	53.00	In Earth orbit
S45776	2020-038AY	Starlink 1488	2020 Jun 13 0947:00	SPXS	US	217	357	53.00	In Earth orbit
S45777	2020-038AZ	Starlink 1489	2020 Jun 13 0947:00	SPXS	US	218	357	53.00	In Earth orbit
S45778	2020-038BA	Starlink 1490	2020 Jun 13 0947:00	SPXS	US	218	360	53.00	In Earth orbit
S45779	2020-038BB	Starlink 1491	2020 Jun 13 0947:00	SPXS	US	221	357	53.00	In Earth orbit
S45780	2020-038BC	Starlink 1492	2020 Jun 13 0947:00	SPXS	US	221	359	53.00	In Earth orbit
S45781	2020-038BD	Starlink 1496	2020 Jun 13 0947:00	SPXS	US	216	357	53.00	In Earth orbit
S45782	2020-038BE	Starlink 1497	2020 Jun 13 0947:00	SPXS	US	225	355	53.00	In Earth orbit
S45783	2020-038BF	Starlink 1505	2020 Jun 13 0947:00	SPXS	US	220	360	53.00	In Earth orbit
S45784	2020-038BG	Starlink 1510	2020 Jun 13 0947:00	SPXS	US	217	357	53.00	In Earth orbit
S45785	2020-038BH	Starlink 1512	2020 Jun 13 0947:00	SPXS	US	220	359	53.00	In Earth orbit
S45786	2020-038BJ	Starlink 1513	2020 Jun 13 0947:00	SPXS	US	218	358	53.00	In Earth orbit
S45787	2020-038BK	Starlink 1517	2020 Jun 13 0947:00	SPXS	US	219	358	53.00	In Earth orbit
S45788	2020-038BL	SkySat C14	2020 Jun 13 0934:00	PLABST	US	234	363	53.00	In Earth orbit
S45789	2020-038BM	SkySat C15	2020 Jun 13 0934:00	PLABST	US	255	368	53.00	In Earth orbit
S45790	2020-038BN	SkySat C15	2020 Jun 13 0934:00	PLABST	US	253	367	53.00	In Earth orbit
S45794	2020-039A	Gao Fen 9 03 xing	2020 Jun 17 0730:00	CNSAS	CN	486	503	97.32	In Earth orbit
S45795	2020-039B	Zheda Pixing 3A	2020 Jun 17 0731:00	ZHEJ	CN	485	502	97.32	In Earth orbit
S45796	2020-039C	HEAD-5	2020 Jun 17 0731:00	HEAD	CN	484	501	97.32	In Earth orbit
S45807	2020-040A	Beidou DW 55	2020 Jun 23 0208:00	CNSA	CN	35763	35809	3.08	In Earth orbit
S45854	2020-041A	GPS III SV03	2020 Jun 30 2140:00	USAF	US	20164	20198	55.06	In Earth orbit
S45856	2020-042A	Gao Fen Duomo Weixing	2020 Jul 3 0323:00	ZZB	CN	630	648	98.02	In Earth orbit
S45857	2020-042B	Xibupo hao	2020 Jul 3 0324:00	BAYUCASTIX	CN	634	648	98.01	In Earth orbit
S45859	2020-043A	Shiyao 6-02	2020 Jul 4 2356:00	CNSA	CN	686	706	98.20	In Earth orbit
S45860	2020-044A C	*Oleg-16	2020 Jul 6 0110:00	DDR/D/9900	IL	329	602	140.64	In Earth orbit
S45863	2020-045A	Apstar 6D	2020 Jul 9 1237:00	APTS	CN	35784	35884	0.10	In Earth orbit
S45873	2020-046A C	USA 305	2020 Jul 15 1400:00	NROC	US	569	580	54.00	In Earth orbit
S45874	2020-046B C	USA 306	2020 Jul 15 1400:00	NROC	US	569	580	54.00	In Earth orbit
S45875	2020-046C C	USA 307	2020 Jul 15 1400:00	NROC	US	572	579	54.00	In Earth orbit
S45876	2020-046D C	USA 308	2020 Jul 15 1400:00	NROC	US	572	579	54.00	In Earth orbit
S45918	2020-047A	Misbar Al'Amal	2020 Jul 19 2255:00	MBRSC	UAE	181	-72833	30.24	Deep Space
S45920	2020-048A	ANASIS-II	2020 Jul 20 2202:00	ADD/DAPA	KR	35904	36025	0.02	In Earth orbit
S45935	2020-049A	Tianwen-1 Orbiter	2020 Jul 23 0518:00	LDSE/CASIT	CN	177	-79757	29.42	Deep Space

S45937	2020-050A	Progress MS-15	RU	198	227	51.68	Attached to Pirs
S45939	2020-051A	Zi Yuan 3 03 xing	CN	485	498	97.50	In Earth orbit
S45940	2020-051B ?	Tianqi-10	CN	483	498	97.50	In Earth orbit
S45941	2020-051C ?	Longxia yan 01	CN	483	498	97.50	In Earth orbit
S45985	2020-053A	Ekspress-103	RU	16720	54790	0.61	In Earth orbit
S45986	2020-053B	Ekspress-80	RU	16581	54800	0.60	Identified with S45986 Ekspress-80
S46025	2020-054A	Gao Fen 9 04 xing	RU	485	505	97.47	In Earth orbit
S46026	2020-054B	Zhongli yu Daqi Kexue	CN	483	504	97.47	In Earth orbit
S46027	2020-055A	Starlink 1522	US	415	422	53.01	In Earth orbit
S46028	2020-055B	Starlink 1523	US	404	414	53.01	In Earth orbit
S46029	2020-055C	Starlink 1526	US	402	414	53.01	In Earth orbit
S46030	2020-055D	Starlink 1534	US	410	411	53.01	In Earth orbit
S46031	2020-055E	Starlink 1544	US	412	413	53.01	In Earth orbit
S46032	2020-055F	Starlink 1555	US	416	418	53.01	In Earth orbit
S46033	2020-055G	Starlink 1556	US	411	416	53.01	In Earth orbit
S46034	2020-055H	Starlink 1557	US	414	415	53.01	In Earth orbit
S46035	2020-055J	Starlink 1558	US	415	416	53.01	In Earth orbit
S46036	2020-055K	Starlink 1560	US	411	413	53.01	In Earth orbit
S46037	2020-055L	Starlink 1565	US	411	412	53.01	In Earth orbit
S46038	2020-055M	Starlink 1567	US	412	418	53.01	In Earth orbit
S46039	2020-055N	Starlink 1569	US	415	417	53.01	In Earth orbit
S46040	2020-055P	Starlink 1576	US	408	409	53.01	In Earth orbit
S46041	2020-055Q	Starlink 1580	US	408	409	53.01	In Earth orbit
S46042	2020-055R	Starlink 1581	US	385	402	53.01	In Earth orbit
S46043	2020-055S	Starlink 1582	US	417	419	53.01	In Earth orbit
S46044	2020-055T	Starlink 1584	US	403	415	53.01	In Earth orbit
S46045	2020-055U	Starlink 1591	US	409	410	53.01	In Earth orbit
S46046	2020-055V	Starlink 1514	US	385	402	53.01	In Earth orbit
S46047	2020-055W	Starlink 1524	US	385	402	53.01	In Earth orbit
S46048	2020-055X	Starlink 1527	US	385	402	53.01	In Earth orbit
S46049	2020-055Y	Starlink 1530	US	385	402	53.01	In Earth orbit
S46050	2020-055Z	Starlink 1535	US	385	402	53.01	In Earth orbit
S46051	2020-055AA	Starlink 1540	US	385	402	53.01	In Earth orbit
S46052	2020-055AB	Starlink 1541	US	385	402	53.01	In Earth orbit
S46053	2020-055AC	Starlink 1543	US	385	402	53.01	In Earth orbit
S46054	2020-055AD	Starlink 1548	US	385	402	53.01	In Earth orbit
S46055	2020-055AE	Starlink 1554	US	385	402	53.01	In Earth orbit
S46056	2020-055AF	Starlink 1561	US	385	402	53.01	In Earth orbit
S46057	2020-055AG	Starlink 1562	US	385	402	53.01	In Earth orbit
S46058	2020-055AH	Starlink 1564	US	385	402	53.01	In Earth orbit
S46059	2020-055AJ	Starlink 1570	US	385	402	53.01	In Earth orbit
S46060	2020-055AK	Starlink 1572	US	385	402	53.01	In Earth orbit
S46061	2020-055AL	Starlink 1573	US	385	402	53.01	In Earth orbit
S46062	2020-055AM	Starlink 1574	US	385	402	53.01	In Earth orbit
S46063	2020-055AN	Starlink 1577	US	385	402	53.01	In Earth orbit
S46064	2020-055AP	Starlink 1583	US	385	402	53.01	In Earth orbit
S46065	2020-055AQ	Starlink 1515	US	385	402	53.01	In Earth orbit
S46066	2020-055AR	Starlink 1525	US	385	402	53.01	In Earth orbit
S46067	2020-055AS	Starlink 1529	US	385	402	53.01	In Earth orbit
S46068	2020-055AT	Starlink 1532	US	385	402	53.01	In Earth orbit
S46069	2020-055AU	Starlink 1533	US	385	402	53.01	In Earth orbit
S46070	2020-055AV	Starlink 1536	US	385	402	53.01	In Earth orbit
S46071	2020-055AW	Starlink 1538	US	385	402	53.01	In Earth orbit
S46072	2020-055AX	Starlink 1539	US	385	402	53.01	In Earth orbit
S46073	2020-055AY	Starlink 1542	US	385	402	53.01	In Earth orbit
S46074	2020-055AZ	Starlink 1549	US	385	402	53.01	In Earth orbit
S46075	2020-055BA	Starlink 1551	US	385	402	53.01	In Earth orbit
S46076	2020-055BB	Starlink 1552	US	385	402	53.01	In Earth orbit
S46077	2020-055BC	Starlink 1559	US	385	402	53.01	In Earth orbit
S46078	2020-055BD	Starlink 1563	US	385	402	53.01	In Earth orbit
S46079	2020-055BE	Starlink 1566	US	385	402	53.01	In Earth orbit
S46080	2020-055BF	Starlink 1568	US	385	402	53.01	In Earth orbit
S46081	2020-055BG	Starlink 1571	US	385	402	53.01	In Earth orbit
S46082	2020-055BH	Starlink 1578	US	385	402	53.01	In Earth orbit
S46083	2020-055BJ	Starlink 1579	US	385	402	53.01	In Earth orbit
S46088	2020-055BP	BlackSky Global 7	US	385	401	53.01	In Earth orbit

S46089	2020-055BQ	BlackSky Global 8	2020 Aug 7 06:18:00	BSKG	US	385	402	53.01	In Earth orbit
S46112	2020-056A	BSA1-4b	2020 Aug 15 22:51:00	BSAT	J	17396	35762	1.12	In Earth orbit
S46113	2020-056B	MEV-2	2020 Aug 15 22:38:00	SPLOG	US	3038	35761	4.37	In Earth orbit
S46114	2020-056C	Galaxy 30	2020 Aug 15 22:31:00	INTELU	US	4561	35740	3.62	In Earth orbit
S46117	2020-057A	Starlink 1585	2020 Aug 18 15:16:00	SPXS	US	279	353	53.00	In Earth orbit
S46118	2020-057B	Starlink 1588	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46119	2020-057C	Starlink 1593	2020 Aug 18 15:16:00	SPXS	US	288	356	53.00	In Earth orbit
S46120	2020-057D	Starlink 1601	2020 Aug 18 15:16:00	SPXS	US	288	356	53.00	In Earth orbit
S46121	2020-057E	Starlink 1602	2020 Aug 18 15:16:00	SPXS	US	280	353	53.00	In Earth orbit
S46122	2020-057F	Starlink 1604	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46123	2020-057G	Starlink 1605	2020 Aug 18 15:16:00	SPXS	US	289	357	53.00	In Earth orbit
S46124	2020-057H	Starlink 1614	2020 Aug 18 15:16:00	SPXS	US	290	356	53.00	In Earth orbit
S46125	2020-057I	Starlink 1618	2020 Aug 18 15:16:00	SPXS	US	288	356	53.00	In Earth orbit
S46126	2020-057K	Starlink 1619	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46127	2020-057L	Starlink 1621	2020 Aug 18 15:16:00	SPXS	US	288	357	53.00	In Earth orbit
S46128	2020-057M	Starlink 1622	2020 Aug 18 15:16:00	SPXS	US	280	353	53.00	In Earth orbit
S46129	2020-057N	Starlink 1623	2020 Aug 18 15:16:00	SPXS	US	290	356	53.00	In Earth orbit
S46130	2020-057P	Starlink 1624	2020 Aug 18 15:16:00	SPXS	US	291	354	53.00	In Earth orbit
S46131	2020-057Q	Starlink 1625	2020 Aug 18 15:16:00	SPXS	US	279	353	53.00	In Earth orbit
S46132	2020-057R	Starlink 1630	2020 Aug 18 15:16:00	SPXS	US	291	353	53.00	In Earth orbit
S46133	2020-057S	Starlink 1637	2020 Aug 18 15:16:00	SPXS	US	277	353	53.00	In Earth orbit
S46134	2020-057T	Starlink 1638	2020 Aug 18 15:16:00	SPXS	US	291	356	53.00	In Earth orbit
S46135	2020-057U	Starlink 1639	2020 Aug 18 15:16:00	SPXS	US	289	357	53.00	In Earth orbit
S46136	2020-057V	Starlink 1643	2020 Aug 18 15:16:00	SPXS	US	289	357	53.00	In Earth orbit
S46137	2020-057W	Starlink 1586	2020 Aug 18 15:16:00	SPXS	US	278	353	53.00	In Earth orbit
S46138	2020-057X	Starlink 1590	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46139	2020-057Y	Starlink 1592	2020 Aug 18 15:16:00	SPXS	US	289	355	53.00	In Earth orbit
S46140	2020-057Z	Starlink 1594	2020 Aug 18 15:16:00	SPXS	US	291	356	53.00	In Earth orbit
S46141	2020-057AA	Starlink 1596	2020 Aug 18 15:16:00	SPXS	US	289	357	53.00	In Earth orbit
S46142	2020-057AB	Starlink 1597	2020 Aug 18 15:16:00	SPXS	US	287	355	53.00	In Earth orbit
S46143	2020-057AC	Starlink 1599	2020 Aug 18 15:16:00	SPXS	US	278	353	53.00	In Earth orbit
S46144	2020-057AD	Starlink 1606	2020 Aug 18 15:16:00	SPXS	US	278	353	53.00	In Earth orbit
S46145	2020-057AE	Starlink 1607	2020 Aug 18 15:16:00	SPXS	US	288	355	53.00	In Earth orbit
S46146	2020-057AF	Starlink 1608	2020 Aug 18 15:16:00	SPXS	US	287	355	53.00	In Earth orbit
S46147	2020-057AG	Starlink 1611	2020 Aug 18 15:16:00	SPXS	US	286	355	53.00	In Earth orbit
S46148	2020-057AH	Starlink 1616	2020 Aug 18 15:16:00	SPXS	US	280	353	53.00	In Earth orbit
S46149	2020-057AJ	Starlink 1620	2020 Aug 18 15:16:00	SPXS	US	278	352	53.00	In Earth orbit
S46150	2020-057AK	Starlink 1629	2020 Aug 18 15:16:00	SPXS	US	287	356	53.00	In Earth orbit
S46151	2020-057AL	Starlink 1631	2020 Aug 18 15:16:00	SPXS	US	255	338	53.00	In Earth orbit
S46152	2020-057AM	Starlink 1634	2020 Aug 18 15:16:00	SPXS	US	288	356	53.00	In Earth orbit
S46153	2020-057AN	Starlink 1636	2020 Aug 18 15:16:00	SPXS	US	250	344	53.00	In Earth orbit
S46154	2020-057AP	Starlink 1642	2020 Aug 18 15:16:00	SPXS	US	250	344	53.00	In Earth orbit
S46155	2020-057AQ	Starlink 1667	2020 Aug 18 15:16:00	SPXS	US	277	352	53.00	In Earth orbit
S46156	2020-057AR	Starlink 1545	2020 Aug 18 15:16:00	SPXS	US	279	353	53.00	In Earth orbit
S46157	2020-057AS	Starlink 1587	2020 Aug 18 15:16:00	SPXS	US	277	352	53.00	In Earth orbit
S46158	2020-057AT	Starlink 1589	2020 Aug 18 15:16:00	SPXS	US	291	356	53.00	In Earth orbit
S46159	2020-057AU	Starlink 1595	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46160	2020-057AV	Starlink 1598	2020 Aug 18 15:16:00	SPXS	US	278	353	53.00	In Earth orbit
S46161	2020-057AW	Starlink 1600	2020 Aug 18 15:16:00	SPXS	US	279	353	53.00	In Earth orbit
S46162	2020-057AX	Starlink 1603	2020 Aug 18 15:16:00	SPXS	US	278	352	53.00	In Earth orbit
S46163	2020-057AY	Starlink 1610	2020 Aug 18 15:16:00	SPXS	US	279	352	53.00	In Earth orbit
S46164	2020-057AZ	Starlink 1612	2020 Aug 18 15:16:00	SPXS	US	278	352	53.00	In Earth orbit
S46165	2020-057BA	Starlink 1613	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46166	2020-057BB	Starlink 1615	2020 Aug 18 15:16:00	SPXS	US	287	356	53.00	In Earth orbit
S46167	2020-057BC	Starlink 1626	2020 Aug 18 15:16:00	SPXS	US	288	356	53.00	In Earth orbit
S46168	2020-057BD	Starlink 1627	2020 Aug 18 15:16:00	SPXS	US	290	356	53.00	In Earth orbit
S46169	2020-057BE	Starlink 1628	2020 Aug 18 15:16:00	SPXS	US	288	355	53.00	In Earth orbit
S46170	2020-057BF	Starlink 1632	2020 Aug 18 15:16:00	SPXS	US	289	356	53.00	In Earth orbit
S46171	2020-057BG	Starlink 1633	2020 Aug 18 15:16:00	SPXS	US	280	353	53.00	In Earth orbit
S46172	2020-057BH	Starlink 1635	2020 Aug 18 15:16:00	SPXS	US	278	353	53.00	In Earth orbit
S46173	2020-057BJ	Starlink 1640	2020 Aug 18 15:16:00	SPXS	US	287	355	53.00	In Earth orbit
S46174	2020-057BK	Starlink 1641	2020 Aug 18 15:16:00	SPXS	US	287	355	53.00	In Earth orbit
S46179	2020-057BQ	SkySat C17	2020 Aug 18 1444:00	PLABST	US	260	359	53.00	In Earth orbit
S46180	2020-057BR	SkySat C18	2020 Aug 18 1444:00	PLABST	US	250	359	53.00	In Earth orbit
S46235	2020-057BS	SkySat C19	2020 Aug 18 1443:00	PLABST	US	211	355	53.00	In Earth orbit
S46232	2020-058A	Gao Fen 9 05 Xing	2020 Aug 23 02:38:00	CNSAS	CN	485	505	97.50	In Earth orbit

S46233	2020-0588B ?	Tiantuo-5	NUDTC	CN	484	502	97.50	In Earth orbit
S46234	2020-0588C ?	Duogongneng Shiyuan Weixing	JKY	CN	483	503	97.50	In Earth orbit
S46265	2020-059A	SAOCOM 1B	CONAE	AR	605	611	97.88	In Earth orbit
S46266	2020-059B	GNOMES-1	PLANO	US	599	609	97.89	In Earth orbit
S46267	2020-059C	Tyvak-0172	TYVAK	US	598	608	97.88	In Earth orbit
S46269	2020-060B	Sequoia	CAPSP	US	528	545	45.10	In Earth orbit
S46272	2020-061A	Hypatia	URUGUS	UY	516	524	97.47	In Earth orbit
S46273	2020-061B	ESAIL	EXEA	CA	517	518	97.46	In Earth orbit
S46274	2020-061C	ION SVC LUCAS	DORBIT	I	517	517	97.46	In Earth orbit
S46275	2020-061D	Athens	PNTV	US	516	524	97.47	In Earth orbit
S46276	2020-061E	UPMSat-2	UPM	E	517	518	97.46	In Earth orbit
S46277	2020-061F	NEMO-HD	SPSI	SI	516	523	97.47	In Earth orbit
S46278	2020-061G	Iris	GHG	CA	515	518	97.46	In Earth orbit
S46279	2020-061H	SIMBA	IRMB	B	534	536	97.52	In Earth orbit
S46280	2020-061I	TRISAT	UMARB	SI	534	535	97.52	In Earth orbit
S46281	2020-061J	PICASSO	IASB	B	534	536	97.52	In Earth orbit
S46282	2020-061K	Flock 4v-9	PLABS	US	533	535	97.52	In Earth orbit
S46283	2020-061L	Flock 4v-8	PLABS	US	533	535	97.52	In Earth orbit
S46284	2020-061M	Flock 4v-12	PLABS	US	533	535	97.52	In Earth orbit
S46285	2020-061N	Dido-3	SPHARM	IL	534	536	97.52	In Earth orbit
S46286	2020-061P	Flock 4v-11	PLABS	US	533	535	97.52	In Earth orbit
S46287	2020-061Q	Flock 4v-14	PLABS	US	533	535	97.52	In Earth orbit
S46288	2020-061R	AMICal-Sat	CSUG	F	534	535	97.52	In Earth orbit
S46289	2020-061S	Flock 4v-8	PLABS	US	533	535	97.52	In Earth orbit
S46290	2020-061T	Flock 4v-6	PLABS	US	533	535	97.52	In Earth orbit
S46291	2020-061U	Flock 4v-5	PLABS	US	533	535	97.52	In Earth orbit
S46292	2020-061V	Flock 4v-7	PLABS	US	533	535	97.52	In Earth orbit
S46293	2020-061W	FSSCAT A	UJC	E	534	538	97.52	In Earth orbit
S46294	2020-061X	FSSCAT B	UJC	E	534	537	97.52	In Earth orbit
S46295	2020-061Y	OSM-1 CICERO	GEOPPT/OSM	US	534	537	97.52	In Earth orbit
S46296	2020-061Z	Tyvak-0171	TYVAK	US	534	536	97.52	In Earth orbit
S46297	2020-061A	Flock 4v-10	PLABS	US	533	535	97.52	In Earth orbit
S46298	2020-061B	Flock 4v-13	PLABS	US	533	535	97.52	In Earth orbit
S46299	2020-061C	Lemur-2-EthianOakes	SPIRE	US	534	538	97.52	In Earth orbit
S46300	2020-061D	Lemur-2-Oscillator	SPIRE	US	534	538	97.52	In Earth orbit
S46301	2020-061E	SpaceBEE 21	SWARM	US	536	538	97.52	In Earth orbit
S46302	2020-061F	SpaceBEE 20	SWARM	US	531	534	97.52	In Earth orbit
S46303	2020-061G	SpaceBEE 15	SWARM	US	531	534	97.52	In Earth orbit
S46304	2020-061H	SpaceBEE 19	SWARM	US	532	535	97.52	In Earth orbit
S46305	2020-061I	SpaceBEE 18	SWARM	US	533	535	97.52	In Earth orbit
S46306	2020-061J	SpaceBEE 10	SWARM	US	533	535	97.52	In Earth orbit
S46307	2020-061K	SpaceBEE 17	SWARM	US	533	535	97.52	In Earth orbit
S46308	2020-061L	SpaceBEE 11	SWARM	US	532	535	97.52	In Earth orbit
S46309	2020-061M	SpaceBEE 16	SWARM	US	531	534	97.52	In Earth orbit
S46310	2020-061N	SpaceBEE 12	SWARM	US	532	535	97.52	In Earth orbit
S46311	2020-061O	SpaceBEE 13	SWARM	US	532	534	97.52	In Earth orbit
S46312	2020-061P	SpaceBEE 14	SWARM	US	532	534	97.52	In Earth orbit
S46313	2020-061Q	Hamarik	TTU	EE	534	535	97.52	In Earth orbit
S46314	2020-061R	Flock 4v-1	PLABS	US	534	535	97.52	In Earth orbit
S46315	2020-061S	Flock 4v-4	PLABS	US	533	535	97.52	In Earth orbit
S46316	2020-061T	Lemur-2-SchmidFall	SPIRE	US	534	538	97.52	In Earth orbit
S46317	2020-061U	Lemur-2-DJUProFra	SPIRE	US	534	538	97.52	In Earth orbit
S46318	2020-061V	Lemur-2-SquareLaws	SPIRE	US	534	539	97.52	In Earth orbit
S46319	2020-061W	Lemur-2-Ursa Avion	SPIRE	US	534	539	97.52	In Earth orbit
S46320	2020-061X	TARS	KEPLER	CA	531	535	97.52	In Earth orbit
S46321	2020-061Y	NAPA 1	RTAF	T	531	535	97.52	In Earth orbit
S46322	2020-061Z	Flock 4v-2	PLABS	US	533	535	97.52	In Earth orbit
S46323	2020-061A	Flock 4v-3	PLABS	US	533	535	97.52	In Earth orbit
S46324	2020-061B	Flock 4v-16	PLABS	US	515	529	97.47	In Earth orbit
S46325	2020-061C	Flock 4v-15	PLABS	US	515	520	97.46	In Earth orbit
S46326	2020-061D	Flock 4v-17	PLABS	US	516	521	97.46	In Earth orbit
S46327	2020-061E	Flock 4v-21	PLABS	US	515	523	97.46	In Earth orbit
S46328	2020-061F	Flock 4v-18	PLABS	US	514	527	97.47	In Earth orbit
S46329	2020-061G	Flock 4v-19	PLABS	US	513	523	97.45	In Earth orbit
S46330	2020-061H	Flock 4v-20	PLABS	US	515	528	97.47	In Earth orbit
S46331	2020-061I	Flock 4v-22	PLABS	US	514	526	97.45	In Earth orbit
S46332	2020-061J	Flock 4v-23	PLABS	US	514	523	97.46	In Earth orbit

S46738	2020-061BN	Flock 4v-24	PLABS	US	516	527	97.46	In Earth orbit
S46812	2020-061BP	Flock 4v-25	PLABS	US	514	523	97.46	In Earth orbit
S46825	2020-061BQ	Flock 4v-26	PLABS	US	516	526	97.47	In Earth orbit
S46326	2020-062A	Startink 1734	SPXS	US	201	290	53.00	In Earth orbit
S46327	2020-062B	Startink 1654	SPXS	US	242	334	53.00	In Earth orbit
S46328	2020-062C	Startink 1673	SPXS	US	244	335	53.00	In Earth orbit
S46329	2020-062D	Startink 1686	SPXS	US	242	334	53.00	In Earth orbit
S46330	2020-062E	Startink 1695	SPXS	US	214	328	53.00	In Earth orbit
S46331	2020-062F	Startink 1710	SPXS	US	237	342	53.00	In Earth orbit
S46332	2020-062G	Startink 1719	SPXS	US	243	334	53.00	In Earth orbit
S46333	2020-062H	Startink 1721	SPXS	US	244	334	53.00	In Earth orbit
S46334	2020-062I	Startink 1723	SPXS	US	244	335	53.00	In Earth orbit
S46335	2020-062K	Startink 1725	SPXS	US	242	334	53.00	In Earth orbit
S46336	2020-062L	Startink 1727	SPXS	US	243	334	53.00	In Earth orbit
S46337	2020-062M	Startink 1738	SPXS	US	207	322	53.00	In Earth orbit
S46338	2020-062N	Startink 1750	SPXS	US	214	329	53.00	In Earth orbit
S46339	2020-062P	Startink 1752	SPXS	US	244	335	53.00	In Earth orbit
S46340	2020-062Q	Startink 1757	SPXS	US	242	334	53.00	In Earth orbit
S46341	2020-062R	Startink 1759	SPXS	US	243	334	53.00	In Earth orbit
S46342	2020-062S	Startink 1760	SPXS	US	241	334	53.00	In Earth orbit
S46343	2020-062T	Startink 1762	SPXS	US	243	334	53.00	In Earth orbit
S46344	2020-062U	Startink 1764	SPXS	US	216	326	53.00	In Earth orbit
S46345	2020-062V	Startink 1765	SPXS	US	214	328	53.00	In Earth orbit
S46346	2020-062W	Startink 1767	SPXS	US	244	335	53.00	In Earth orbit
S46347	2020-062X	Startink 1546	SPXS	US	194	269	53.00	In Earth orbit
S46348	2020-062Y	Startink 1547	SPXS	US	240	334	53.00	In Earth orbit
S46349	2020-062Z	Startink 1553	SPXS	US	241	334	53.00	In Earth orbit
S46350	2020-062AA	Startink 1575	SPXS	US	243	334	53.00	In Earth orbit
S46351	2020-062AB	Startink 1617	SPXS	US	239	334	53.00	In Earth orbit
S46352	2020-062AC	Startink 1646	SPXS	US	243	335	53.00	In Earth orbit
S46353	2020-062AD	Startink 1653	SPXS	US	213	329	53.00	In Earth orbit
S46354	2020-062AE	Startink 1656	SPXS	US	242	334	53.00	In Earth orbit
S46355	2020-062AF	Startink 1657	SPXS	US	244	335	53.00	In Earth orbit
S46356	2020-062AG	Startink 1661	SPXS	US	242	334	53.00	In Earth orbit
S46357	2020-062AH	Startink 1665	SPXS	US	244	334	53.00	In Earth orbit
S46358	2020-062AJ	Startink 1666	SPXS	US	240	334	53.00	In Earth orbit
S46359	2020-062AK	Startink 1690	SPXS	US	243	335	53.00	In Earth orbit
S46360	2020-062AL	Startink 1707	SPXS	US	240	333	53.00	In Earth orbit
S46361	2020-062AM	Startink 1713	SPXS	US	213	328	53.00	In Earth orbit
S46362	2020-062AN	Startink 1722	SPXS	US	240	333	53.00	In Earth orbit
S46363	2020-062AO	Startink 1726	SPXS	US	214	328	53.00	In Earth orbit
S46364	2020-062AP	Startink 1739	SPXS	US	242	334	53.00	In Earth orbit
S46365	2020-062AR	Startink 1763	SPXS	US	214	329	53.00	In Earth orbit
S46366	2020-062AS	Startink 1550	SPXS	US	241	334	53.00	In Earth orbit
S46367	2020-062AT	Startink 1651	SPXS	US	241	333	53.00	In Earth orbit
S46368	2020-062AU	Startink 1652	SPXS	US	244	334	53.00	In Earth orbit
S46369	2020-062AV	Startink 1658	SPXS	US	242	334	53.00	In Earth orbit
S46370	2020-062AW	Startink 1662	SPXS	US	242	334	53.00	In Earth orbit
S46371	2020-062AX	Startink 1670	SPXS	US	215	328	53.00	In Earth orbit
S46372	2020-062AY	Startink 1688	SPXS	US	213	329	53.00	In Earth orbit
S46373	2020-062AZ	Startink 1689	SPXS	US	242	334	53.00	In Earth orbit
S46374	2020-062BA	Startink 1691	SPXS	US	214	328	53.00	In Earth orbit
S46375	2020-062BB	Startink 1711	SPXS	US	242	334	53.00	In Earth orbit
S46376	2020-062BC	Startink 1724	SPXS	US	241	333	53.00	In Earth orbit
S46377	2020-062BD	Startink 1742	SPXS	US	241	334	53.00	In Earth orbit
S46378	2020-062BE	Startink 1745	SPXS	US	214	328	53.00	In Earth orbit
S46379	2020-062BF	Startink 1751	SPXS	US	213	328	53.00	In Earth orbit
S46380	2020-062BG	Startink 1756	SPXS	US	242	333	53.00	In Earth orbit
S46381	2020-062BH	Startink 1758	SPXS	US	242	334	53.00	In Earth orbit
S46382	2020-062BJ	Startink 1768	SPXS	US	240	333	53.00	In Earth orbit
S46383	2020-062BK	Startink 1769	SPXS	US	214	328	53.00	In Earth orbit
S46384	2020-062BL	Startink 1770	SPXS	US	240	337	53.00	In Earth orbit
S46389	2020-063A	Startink 1771	SPXS	US	211	340	53.00	In Earth orbit
S46396	2020-064A	Chonthi Shiyong Shiyuan HQ Gao Fen 11-02	ZZB	CN	330	346	50.21	Landed
S46454	2020-065A ?	Jilin-1 GaoFen 03B 01 xing	CGSTL	CN	247	694	97.33	In Earth orbit

S46455	2020-065B ?	Jilin-1 GaoFen 03B 02 xing	2020 Sep 15 0130:00	CGSTL	CN	530	546	97.53	In Earth orbit
S46456	2020-065C ?	Jilin-1 GaoFen 03B 03 xing	2020 Sep 15 0130:00	CGSTL	CN	530	546	97.54	In Earth orbit
S46457	2020-065D ?	Jilin-1 GaoFen 03B 04 xing	2020 Sep 15 0130:00	CGSTL	CN	530	546	97.54	In Earth orbit
S46458	2020-065E ?	Jilin-1 GaoFen 03B 05 xing	2020 Sep 15 0130:00	CGSTL	CN	529	546	97.53	In Earth orbit
S46459	2020-065F ?	Jilin-1 GaoFen 03B 06 xing	2020 Sep 15 0130:00	CGSTL	CN	529	546	97.54	In Earth orbit
S46460	2020-065G ?	Jilin-1 GaoFen 03C 01 xing	2020 Sep 15 0130:00	CGSTL	CN	528	546	97.53	In Earth orbit
S46461	2020-065H ?	Jilin-1 GaoFen 03C 02 xing	2020 Sep 15 0130:00	CGSTL	CN	528	546	97.54	In Earth orbit
S46462	2020-065J ?	Jilin-1 GaoFen 03C 03 xing	2020 Sep 15 0130:00	CGSTL	CN	528	546	97.54	In Earth orbit
S46463	2020-066A	Hai Yang 2 03 xing	2020 Sep 21 0552:00	GYZ/CASC	CN	930	949	66.00	In Earth orbit
S46464	2020-067A	Huanjing Jianzai 02A	2020 Sep 23 0335:00	ZZWYZ	CN	602	653	97.98	In Earth orbit
S46465	2020-067B	Huanjing Jianzai 02B	2020 Sep 23 0335:00	ZZWYZ	CN	598	654	97.98	In Earth orbit
S46486	2020-068A	Gonets-M No. 27L	2020 Sep 28 1303:00	KVR	RU	1486	1506	82.50	In Earth orbit
S46487	2020-068B	Gonets-M No. 28L	2020 Sep 28 1303:00	KVR	RU	1486	1505	82.50	In Earth orbit
S46488	2020-068C	Gonets-M No. 29L	2020 Sep 28 1303:00	KVR	RU	1484	1504	82.50	In Earth orbit
S46489	2020-068D	MeznSat	2020 Sep 28 1452:00	AURAK/MASDAR	UAE	544	567	97.67	In Earth orbit
S46490	2020-068E	Yarilo-1	2020 Sep 28 1445:00	BAUM	RU	552	567	97.67	In Earth orbit
S46491	2020-068F	Yarilo-2	2020 Sep 28 1445:00	BAUM	RU	552	567	97.67	In Earth orbit
S46492	2020-068G	LacunaSat 3	2020 Sep 28 1445:00	LACUNA	UK	552	567	97.67	In Earth orbit
S46493	2020-068H	Dekart	2020 Sep 28 1445:00	MGU	RU	548	567	97.67	In Earth orbit
S46494	2020-068J	Norbi	2020 Sep 28 1445:00	NOVSU	RU	552	567	97.67	In Earth orbit
S46495	2020-068K	SALSAT	2020 Sep 28 1446:00	TUB	D	546	567	97.67	In Earth orbit
S46496	2020-068L	ICEYE-X7	2020 Sep 28 1448:00	ICEYE	FI	548	567	97.67	In Earth orbit
S46497	2020-068M	ICEYE-X6	2020 Sep 28 1448:00	ICEYE	FI	545	568	97.67	In Earth orbit
S46498	2020-068N	Amidala	2020 Sep 28 1445:00	KEPLER	CA	554	568	97.67	In Earth orbit
S46499	2020-068P	Antilles	2020 Sep 28 1445:00	KEPLER	CA	554	568	97.67	In Earth orbit
S46500	2020-068Q	Lemur-2-Slicers	2020 Sep 28 1445:00	SPIRE	US	553	567	97.67	In Earth orbit
S46501	2020-068R	Lemur-2-DayWazGoodDay	2020 Sep 28 1445:00	SPIRE	US	554	568	97.67	In Earth orbit
S46502	2020-068S	Lemur-2-Susurus	2020 Sep 28 1445:00	SPIRE	US	554	568	97.67	In Earth orbit
S46503	2020-068T	Lemur-2-Nichol	2020 Sep 28 1445:00	SPIRE	US	553	568	97.67	In Earth orbit
S46504	2020-068U	NetSat 4	2020 Sep 28 1452:00	ZFT	D	544	568	97.67	In Earth orbit
S46505	2020-068V	NetSat 3	2020 Sep 28 1452:00	ZFT	D	544	568	97.67	In Earth orbit
S46506	2020-068W	NetSat 1	2020 Sep 28 1452:00	ZFT	D	544	567	97.67	In Earth orbit
S46507	2020-068X	NetSat 2	2020 Sep 28 1452:00	ZFT	D	544	567	97.67	In Earth orbit
S46530	2020-069A	S.S. Kalpana Chawla	2020 Oct 3 0125:00	NGIS	US	418	418	51.65	Attached to Unity
S46531	1998-067RR	SPOC	2020 Nov 5 0905:00	UGA	US	412	418	51.65	In Earth orbit
S46922	1998-067RS	Bobcat 1	2020 Nov 5 0905:00	OHIOU	US	414	414	51.65	In Earth orbit
S46923	1998-067RT ?	NEUTRON-1	2020 Nov 5 1040:00	UHI	US	414	417	51.65	In Earth orbit
S46924	1998-067RU ?	SATLLA-1	2020 Nov 5 1315:00	ARIU	IL	413	418	51.65	In Earth orbit
S46925	1998-067RV	Lemur-2-Baxter-Oliver	2020 Nov 5 1315:00	SPIRE	US	414	418	51.65	In Earth orbit
S46926	1998-067RW	Djara	2020 Nov 5 1215:00	ONI	AU	413	417	51.65	In Earth orbit
S46927	1998-067RX	DESCENT Mother	2020 Nov 5 1315:00	YORK	CA	411	420	51.66	In Earth orbit
S46532	2020-070A	Starlink 1644	2020 Oct 6 1230:00	SPXS	US	260	276	52.99	In Earth orbit
S46533	2020-070B	Starlink 1648	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46534	2020-070C	Starlink 1659	2020 Oct 6 1230:00	SPXS	US	258	275	52.99	In Earth orbit
S46535	2020-070D	Starlink 1663	2020 Oct 6 1230:00	SPXS	US	258	275	52.99	In Earth orbit
S46536	2020-070E	Starlink 1668	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46537	2020-070F	Starlink 1672	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46538	2020-070G	Starlink 1678	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46539	2020-070H	Starlink 1684	2020 Oct 6 1230:00	SPXS	US	258	274	52.99	In Earth orbit
S46540	2020-070I	Starlink 1685	2020 Oct 6 1230:00	SPXS	US	258	275	52.99	In Earth orbit
S46541	2020-070K	Starlink 1687	2020 Oct 6 1230:00	SPXS	US	259	275	52.99	In Earth orbit
S46542	2020-070L	Starlink 1692	2020 Oct 6 1230:00	SPXS	US	258	274	52.99	In Earth orbit
S46543	2020-070M	Starlink 1693	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46544	2020-070N	Starlink 1694	2020 Oct 6 1230:00	SPXS	US	261	276	52.99	In Earth orbit
S46545	2020-070P	Starlink 1696	2020 Oct 6 1230:00	SPXS	US	262	278	52.99	In Earth orbit
S46546	2020-070Q	Starlink 1697	2020 Oct 6 1230:00	SPXS	US	263	277	52.99	In Earth orbit
S46547	2020-070R	Starlink 1698	2020 Oct 6 1230:00	SPXS	US	259	275	52.99	In Earth orbit
S46548	2020-070S	Starlink 1699	2020 Oct 6 1230:00	SPXS	US	258	275	52.99	In Earth orbit
S46549	2020-070T	Starlink 1700	2020 Oct 6 1230:00	SPXS	US	258	275	52.99	In Earth orbit
S46550	2020-070U	Starlink 1701	2020 Oct 6 1230:00	SPXS	US	259	275	52.99	In Earth orbit
S46551	2020-070V	Starlink 1702	2020 Oct 6 1230:00	SPXS	US	260	275	52.99	In Earth orbit
S46552	2020-070W	Starlink 1649	2020 Oct 6 1230:00	SPXS	US	258	274	52.99	In Earth orbit
S46553	2020-070X	Starlink 1664	2020 Oct 6 1230:00	SPXS	US	259	274	52.99	In Earth orbit
S46554	2020-070Y	Starlink 1671	2020 Oct 6 1230:00	SPXS	US	259	274	52.99	In Earth orbit
S46555	2020-070Z	Starlink 1674	2020 Oct 6 1230:00	SPXS	US	258	273	52.99	In Earth orbit
S46556	2020-070AA	Starlink 1676	2020 Oct 6 1230:00	SPXS	US	298	304	52.99	In Earth orbit

S46557	2020-070AB	Starlink 1679	SPXS	US	258	274	52.99	In Earth orbit
S46558	2020-070AC	Starlink 1680	SPXS	US	258	274	52.99	In Earth orbit
S46559	2020-070AD	Starlink 1681	SPXS	US	258	273	52.99	In Earth orbit
S46560	2020-070AE	Starlink 1706	SPXS	US	258	274	52.99	In Earth orbit
S46561	2020-070AF	Starlink 1709	SPXS	US	261	275	52.99	In Earth orbit
S46562	2020-070AG	Starlink 1714	SPXS	US	258	274	52.99	In Earth orbit
S46563	2020-070AH	Starlink 1730	SPXS	US	258	274	52.99	In Earth orbit
S46564	2020-070AJ	Starlink 1733	SPXS	US	257	273	52.99	In Earth orbit
S46565	2020-070AK	Starlink 1735	SPXS	US	258	274	52.99	In Earth orbit
S46566	2020-070AL	Starlink 1740	SPXS	US	258	273	52.99	In Earth orbit
S46567	2020-070AM	Starlink 1741	SPXS	US	257	272	52.99	In Earth orbit
S46568	2020-070AN	Starlink 1743	SPXS	US	258	273	52.99	In Earth orbit
S46569	2020-070AP	Starlink 1747	SPXS	US	258	273	52.99	In Earth orbit
S46570	2020-070AQ	Starlink 1748	SPXS	US	248	262	52.99	In Earth orbit
S46571	2020-070AR	Starlink 1753	SPXS	US	258	273	52.99	In Earth orbit
S46572	2020-070AS	Starlink 1531	SPXS	US	257	272	52.99	In Earth orbit
S46573	2020-070AT	Starlink 1650	SPXS	US	258	275	52.99	In Earth orbit
S46574	2020-070AU	Starlink 1660	SPXS	US	259	274	52.99	In Earth orbit
S46575	2020-070AV	Starlink 1675	SPXS	US	299	300	52.99	In Earth orbit
S46576	2020-070AW	Starlink 1677	SPXS	US	259	274	52.99	In Earth orbit
S46577	2020-070AX	Starlink 1682	SPXS	US	261	275	52.99	In Earth orbit
S46578	2020-070AY	Starlink 1683	SPXS	US	260	275	52.99	In Earth orbit
S46579	2020-070AZ	Starlink 1705	SPXS	US	257	273	52.99	In Earth orbit
S46580	2020-070BA	Starlink 1708	SPXS	US	258	274	52.99	In Earth orbit
S46581	2020-070BB	Starlink 1712	SPXS	US	258	274	52.99	In Earth orbit
S46582	2020-070BC	Starlink 1728	SPXS	US	258	273	52.99	In Earth orbit
S46583	2020-070BD	Starlink 1729	SPXS	US	259	274	52.99	In Earth orbit
S46584	2020-070BE	Starlink 1732	SPXS	US	258	273	52.99	In Earth orbit
S46585	2020-070BF	Starlink 1736	SPXS	US	258	274	52.99	In Earth orbit
S46586	2020-070BG	Starlink 1737	SPXS	US	258	273	52.99	In Earth orbit
S46587	2020-070BH	Starlink 1744	SPXS	US	258	273	52.99	In Earth orbit
S46588	2020-070BI	Starlink 1746	SPXS	US	258	273	52.99	In Earth orbit
S46589	2020-070BK	Starlink 1749	SPXS	US	257	272	52.99	In Earth orbit
S46590	2020-070BL	Starlink 1754	SPXS	US	258	274	52.99	In Earth orbit
S46591	2020-070BM	Starlink 1755	SPXS	US	257	273	52.99	In Earth orbit
S46610	2020-071A	Gao Fen 13	YWZB	CN	35775	35799	1.98	In Earth orbit
S46613	2020-072A	Soyuz MS-17	RKKE	RU	188	210	51.65	Attached to Rassvet
S46670	2020-073A	Starlink 1819	SPXS	US	253	269	53.05	Reentered
S46671	2020-073B	Starlink 1715	SPXS	US	314	316	53.05	In Earth orbit
S46672	2020-073C	Starlink 1716	SPXS	US	314	316	53.05	In Earth orbit
S46673	2020-073D	Starlink 1717	SPXS	US	315	317	53.05	In Earth orbit
S46674	2020-073E	Starlink 1718	SPXS	US	314	316	53.05	In Earth orbit
S46675	2020-073F	Starlink 1720	SPXS	US	314	316	53.05	In Earth orbit
S46676	2020-073G	Starlink 1731	SPXS	US	314	315	53.05	In Earth orbit
S46677	2020-073H	Starlink 1766	SPXS	US	314	316	53.05	In Earth orbit
S46678	2020-073J	Starlink 1772	SPXS	US	313	317	53.05	Reentered
S46679	2020-073K	Starlink 1773	SPXS	US	314	316	53.05	In Earth orbit
S46680	2020-073L	Starlink 1774	SPXS	US	315	316	53.05	In Earth orbit
S46681	2020-073M	Starlink 1775	SPXS	US	315	317	53.05	In Earth orbit
S46682	2020-073N	Starlink 1776	SPXS	US	315	316	53.05	In Earth orbit
S46683	2020-073P	Starlink 1778	SPXS	US	315	316	53.05	In Earth orbit
S46684	2020-073Q	Starlink 1780	SPXS	US	314	315	53.05	In Earth orbit
S46685	2020-073R	Starlink 1781	SPXS	US	314	317	53.05	In Earth orbit
S46686	2020-073S	Starlink 1783	SPXS	US	315	317	53.05	In Earth orbit
S46687	2020-073T	Starlink 1784	SPXS	US	314	315	53.05	In Earth orbit
S46688	2020-073U	Starlink 1786	SPXS	US	315	317	53.05	In Earth orbit
S46689	2020-073V	Starlink 1788	SPXS	US	315	317	53.05	In Earth orbit
S46690	2020-073W	Starlink 1789	SPXS	US	314	316	53.05	In Earth orbit
S46691	2020-073X	Starlink 1790	SPXS	US	314	317	53.05	In Earth orbit
S46692	2020-073Y	Starlink 1791	SPXS	US	315	317	53.05	In Earth orbit
S46693	2020-073Z	Starlink 1792	SPXS	US	314	315	53.05	In Earth orbit
S46694	2020-073AA	Starlink 1793	SPXS	US	315	316	53.05	In Earth orbit
S46695	2020-073AB	Starlink 1794	SPXS	US	315	317	53.05	In Earth orbit
S46696	2020-073AC	Starlink 1795	SPXS	US	314	315	53.05	In Earth orbit
S46697	2020-073AD	Starlink 1796	SPXS	US	315	316	53.05	In Earth orbit
S46698	2020-073AE	Starlink 1797	SPXS	US	314	316	53.05	In Earth orbit

S46699	2020-073AF	Starlink 1799	SPXS	US	314	316	53.05	In Earth orbit
S46700	2020-073AG	Starlink 1800	SPXS	US	315	317	53.05	In Earth orbit
S46701	2020-073AH	Starlink 1801	SPXS	US	315	316	53.05	In Earth orbit
S46702	2020-073AJ	Starlink 1802	SPXS	US	314	316	53.05	In Earth orbit
S46703	2020-073AK	Starlink 1803	SPXS	US	314	316	53.05	In Earth orbit
S46704	2020-073AL	Starlink 1804	SPXS	US	311	319	53.05	In Earth orbit
S46705	2020-073AM	Starlink 1805	SPXS	US	315	317	53.05	In Earth orbit
S46706	2020-073AN	Starlink 1807	SPXS	US	314	316	53.05	In Earth orbit
S46707	2020-073AP	Starlink 1808	SPXS	US	312	317	53.05	In Earth orbit
S46708	2020-073AQ	Starlink 1809	SPXS	US	314	315	53.05	In Earth orbit
S46709	2020-073AR	Starlink 1810	SPXS	US	315	316	53.05	In Earth orbit
S46710	2020-073AS	Starlink 1811	SPXS	US	315	317	53.05	In Earth orbit
S46711	2020-073AT	Starlink 1813	SPXS	US	314	316	53.05	In Earth orbit
S46712	2020-073AU	Starlink 1814	SPXS	US	314	315	53.05	In Earth orbit
S46713	2020-073AV	Starlink 1815	SPXS	US	314	316	53.05	In Earth orbit
S46714	2020-073AW	Starlink 1816	SPXS	US	314	316	53.05	In Earth orbit
S46715	2020-073AX	Starlink 1817	SPXS	US	315	315	53.05	In Earth orbit
S46716	2020-073AY	Starlink 1818	SPXS	US	316	317	53.05	In Earth orbit
S46717	2020-073AZ	Starlink 1820	SPXS	US	316	316	53.05	In Earth orbit
S46718	2020-073BA	Starlink 1821	SPXS	US	316	317	53.05	In Earth orbit
S46719	2020-073BB	Starlink 1822	SPXS	US	314	316	53.05	In Earth orbit
S46720	2020-073BC	Starlink 1823	SPXS	US	315	316	53.05	In Earth orbit
S46721	2020-073BD	Starlink 1824	SPXS	US	315	316	53.05	In Earth orbit
S46722	2020-073BE	Starlink 1825	SPXS	US	316	317	53.05	In Earth orbit
S46723	2020-073BF	Starlink 1826	SPXS	US	313	317	53.05	In Earth orbit
S46724	2020-073BG	Starlink 1827	SPXS	US	314	316	53.05	In Earth orbit
S46725	2020-073BH	Starlink 1828	SPXS	US	315	317	53.05	In Earth orbit
S46726	2020-073BJ	Starlink 1829	SPXS	US	315	316	53.05	In Earth orbit
S46727	2020-073BK	Starlink 1830	SPXS	US	315	315	53.05	In Earth orbit
S46728	2020-073BL	Starlink 1831	SPXS	US	315	316	53.05	In Earth orbit
S46729	2020-073BM	Starlink 1841	SPXS	US	315	317	53.05	In Earth orbit
S46739	2020-074A	Starlink 1847	SPXS	US	257	270	53.05	In Earth orbit
S46740	2020-074B	Starlink 1848	SPXS	US	256	269	53.05	In Earth orbit
S46741	2020-074C	Starlink 1865	SPXS	US	256	269	53.05	In Earth orbit
S46742	2020-074D	Starlink 1872	SPXS	US	257	270	53.05	In Earth orbit
S46743	2020-074E	Starlink 1892	SPXS	US	257	269	53.05	In Earth orbit
S46744	2020-074F	Starlink 1894	SPXS	US	256	269	53.05	In Earth orbit
S46745	2020-074G	Starlink 1898	SPXS	US	257	270	53.05	In Earth orbit
S46746	2020-074H	Starlink 1905	SPXS	US	256	269	53.05	In Earth orbit
S46747	2020-074J	Starlink 1908	SPXS	US	257	269	53.05	In Earth orbit
S46748	2020-074K	Starlink 1910	SPXS	US	256	269	53.05	In Earth orbit
S46749	2020-074L	Starlink 1911	SPXS	US	257	270	53.05	In Earth orbit
S46750	2020-074M	Starlink 1915	SPXS	US	256	269	53.05	In Earth orbit
S46751	2020-074N	Starlink 1920	SPXS	US	256	269	53.05	Reentered
S46752	2020-074P	Starlink 1921	SPXS	US	256	269	53.05	In Earth orbit
S46753	2020-074Q	Starlink 1922	SPXS	US	256	269	53.05	In Earth orbit
S46754	2020-074R	Starlink 1923	SPXS	US	256	269	53.05	In Earth orbit
S46755	2020-074S	Starlink 1924	SPXS	US	256	269	53.05	In Earth orbit
S46756	2020-074T	Starlink 1925	SPXS	US	257	269	53.05	In Earth orbit
S46757	2020-074U	Starlink 1926	SPXS	US	256	269	53.05	In Earth orbit
S46758	2020-074V	Starlink 1928	SPXS	US	256	269	53.05	In Earth orbit
S46759	2020-074W	Starlink 1833	SPXS	US	256	270	53.05	In Earth orbit
S46760	2020-074X	Starlink 1896	SPXS	US	257	270	53.05	In Earth orbit
S46761	2020-074Y	Starlink 1897	SPXS	US	257	270	53.05	In Earth orbit
S46762	2020-074Z	Starlink 1901	SPXS	US	257	271	53.05	In Earth orbit
S46763	2020-074AA	Starlink 1902	SPXS	US	257	270	53.05	In Earth orbit
S46764	2020-074AB	Starlink 1903	SPXS	US	257	270	53.05	In Earth orbit
S46765	2020-074AC	Starlink 1906	SPXS	US	257	271	53.05	In Earth orbit
S46766	2020-074AD	Starlink 1916	SPXS	US	257	271	53.05	In Earth orbit
S46767	2020-074AE	Starlink 1917	SPXS	US	256	270	53.05	In Earth orbit
S46768	2020-074AF	Starlink 1918	SPXS	US	257	270	53.05	In Earth orbit
S46769	2020-074AG	Starlink 1919	SPXS	US	257	271	53.05	In Earth orbit
S46770	2020-074AH	Starlink 1932	SPXS	US	257	270	53.05	In Earth orbit
S46771	2020-074AJ	Starlink 1935	SPXS	US	257	270	53.05	In Earth orbit
S46772	2020-074AK	Starlink 1936	SPXS	US	257	271	53.05	In Earth orbit
S46773	2020-074AL	Starlink 1937	SPXS	US	257	271	53.05	In Earth orbit

S46774	2020-074AM	Starlink 1939				SPXS	US	257	270	53.05	In Earth orbit
S46775	2020-074AN	Starlink 1945				SPXS	US	257	271	53.05	In Earth orbit
S46776	2020-074AP	Starlink 1946				SPXS	US	257	270	53.05	In Earth orbit
S46777	2020-074AQ	Starlink 1949				SPXS	US	257	271	53.05	In Earth orbit
S46778	2020-074AR	Starlink 1950				SPXS	US	259	271	53.05	Resentred
S46779	2020-074AS	Starlink 1798				SPXS	US	263	275	53.05	In Earth orbit
S46780	2020-074AT	Starlink 1832				SPXS	US	257	270	53.05	In Earth orbit
S46781	2020-074AU	Starlink 1834				SPXS	US	257	270	53.05	In Earth orbit
S46782	2020-074AV	Starlink 1835				SPXS	US	256	270	53.05	In Earth orbit
S46783	2020-074AW	Starlink 1851				SPXS	US	257	270	53.05	In Earth orbit
S46784	2020-074AX	Starlink 1882				SPXS	US	257	270	53.05	In Earth orbit
S46785	2020-074AY	Starlink 1883				SPXS	US	257	270	53.05	In Earth orbit
S46786	2020-074AZ	Starlink 1893				SPXS	US	256	270	53.05	In Earth orbit
S46787	2020-074BA	Starlink 1899				SPXS	US	257	270	53.05	In Earth orbit
S46788	2020-074BB	Starlink 1929				SPXS	US	257	270	53.05	In Earth orbit
S46789	2020-074BC	Starlink 1930				SPXS	US	257	270	53.05	In Earth orbit
S46790	2020-074BD	Starlink 1931				SPXS	US	257	270	53.05	In Earth orbit
S46791	2020-074BE	Starlink 1933				SPXS	US	256	270	53.05	In Earth orbit
S46792	2020-074BF	Starlink 1934				SPXS	US	256	270	53.05	In Earth orbit
S46793	2020-074BG	Starlink 1941				SPXS	US	256	269	53.05	In Earth orbit
S46794	2020-074BH	Starlink 1942				SPXS	US	257	270	53.05	In Earth orbit
S46795	2020-074BJ	Starlink 1943				SPXS	US	257	270	53.05	In Earth orbit
S46796	2020-074BK	Starlink 1944				SPXS	US	256	270	53.05	In Earth orbit
S46797	2020-074BL	Starlink 1947				SPXS	US	257	270	53.05	In Earth orbit
S46798	2020-074BM	Starlink 1948				SPXS	US	257	270	53.05	In Earth orbit
S46805	2020-075A	Glonass-K No. 15L				KVRI/ACG	RU	19103	19146	64.81	In Earth orbit
S46807	2020-076A	Yaogan 30 hao 07 zu 01 xing				ZZB	CN	588	604	34.99	In Earth orbit
S46808	2020-076B	Yaogan 30 hao 07 zu 02 xing				ZZB	CN	588	604	34.99	In Earth orbit
S46809	2020-076C	Yaogan 30 hao 07 zu 03 xing				ZZB	CN	588	604	34.99	In Earth orbit
S46810	2020-076D	Tianqi-6				GUOG	CN	583	603	35.00	In Earth orbit
S46813	2020-077A	Flock 4e*-1				PLABS	US	511	527	97.50	In Earth orbit
S46814	2020-077B	Flock 4e*-7				PLABS	US	510	527	97.50	In Earth orbit
S46815	2020-077C	Flock 4e*-9				PLABS	US	510	526	97.50	In Earth orbit
S46816	2020-077D	Flock 4e*-8				PLABS	US	511	524	97.50	In Earth orbit
S46817	2020-077E	Flock 4e*-5				PLABS	US	511	525	97.50	In Earth orbit
S46818	2020-077F	CE-SAT-HIB				CANON	J	507	523	97.50	In Earth orbit
S46819	2020-077G	Flock 4e*-3				PLABS	US	505	524	97.50	In Earth orbit
S46820	2020-077H	Flock 4e*-2				PLABS	US	505	522	97.51	In Earth orbit
S46821	2020-077I	Flock 4e*-4				PLABS	US	504	522	97.50	In Earth orbit
S46822	2020-077J	Flock 4e*-6				PLABS	US	507	524	97.50	In Earth orbit
S46826	2020-078A	GPS III SV04				USAF	US	20178	20186	54.97	In Earth orbit
S46827	2020-079A	Dorothy				URUGUS	UY	467	477	97.27	In Earth orbit
S46828	2020-079B	Alice				URUGUS	UY	467	479	97.27	In Earth orbit
S46829	2020-079C	Cora				URUGUS	UY	467	478	97.26	In Earth orbit
S46830	2020-079D	Katherine				URUGUS	UY	467	476	97.27	In Earth orbit
S46831	2020-079E	Hedy				URUGUS	UY	467	478	97.27	In Earth orbit
S46832	2020-079F	Caroline				URUGUS	UY	468	478	97.27	In Earth orbit
S46833	2020-079G	Emily				URUGUS	UY	467	477	97.27	In Earth orbit
S46835	2020-079I	Mary				URUGUS	UY	465	475	97.27	In Earth orbit
S46836	2020-079K	Vera				URUGUS	UY	465	474	97.27	In Earth orbit
S46837	2020-079L ?	Behrang kongshi 1				BUAA	CN	465	473	97.26	In Earth orbit
S46838	2020-079M ?	Dianzi keji daxue				GUOX	CN	465	473	97.27	In Earth orbit
S46839	2020-079N ?	Taiyuan				CAST	CN	465	473	97.27	In Earth orbit
S46840	2020-079P	Lise				URUGUS	UY	466	476	97.27	In Earth orbit
S46904	2020-080A	Tianqi-11				GUOG	CN	484	500	97.41	In Earth orbit
S46906	2020-081A	EOS-1				ISRO	IN	567	577	36.90	In Earth orbit
S46907	2020-081B ?	KSM-1A				KLEOS	L	564	576	36.91	In Earth orbit
S46908	2020-081C ?	KSM-1B				KLEOS	L	562	575	36.91	In Earth orbit
S46909	2020-081D	Lemur-2-Ozarak				SPIRE	US	564	576	36.91	In Earth orbit
S46910	2020-081E	Lemur-2-Jindra				SPIRE	US	564	576	36.91	In Earth orbit
S46911	2020-081F	Lemur-2-Wallace				SPIRE	US	563	578	36.89	In Earth orbit
S46912	2020-081G	Lemur-2-Jeremiah				SPIRE	US	565	577	36.91	In Earth orbit
S46913	2020-081H ?	KSM-1C				KLEOS	L	561	575	36.90	In Earth orbit
S46914	2020-081J ?	R2				NANAV	LT	564	576	36.91	In Earth orbit
S46916	2020-082A	KSM-1D				KLEOS	L	562	574	36.90	In Earth orbit
		Tiantong-1 02 xing				CAST	CN	35773	35800	5.46	In Earth orbit

S46918	2020-083A C	USA, 310	NROC	11032	11067	58.53	In Earth orbit
S46920	2020-084A	Resilience	SPX	189	208	51.65	Attached to IDA-2
S46931	2020-085C	CORVUS BC5	ADIG	495	509	97.36	In Earth orbit
S46932	2020-085D ?	Te Waka Anorangi o Aotearoa	APSS	495	509	97.36	In Earth orbit
S46933	2020-085E	SpaceBEE-34	SWARM	498	511	97.36	In Earth orbit
S46934	2020-085F	SpaceBEE-35	SWARM	492	513	97.36	In Earth orbit
S46935	2020-085G	SpaceBEE-36	SWARM	492	513	97.36	In Earth orbit
S46936	2020-085H	SpaceBEE-37	SWARM	492	513	97.37	In Earth orbit
S46937	2020-085I	SpaceBEE-38	SWARM	493	512	97.37	In Earth orbit
S46938	2020-085K	SpaceBEE NZ-3	SWARNZ	492	513	97.37	In Earth orbit
S46939	2020-085L	SpaceBEE NZ-4	SWARNZ	492	513	97.37	In Earth orbit
S46940	2020-085M	BRO-2	UNSEEN	492	512	97.36	In Earth orbit
S46941	2020-085N	SpaceBEE NZ-5	SWARNZ	492	518	97.37	In Earth orbit
S46942	2020-085P	SpaceBEE NZ-6	SWARNZ	494	516	97.38	In Earth orbit
S46943	2020-085Q	BRO-3	UNSEEN	493	512	97.36	In Earth orbit
S46944	2020-085R	SpaceBEE 33	SWARM	495	514	97.37	In Earth orbit
S46945	2020-085S	SpaceBEE 32	SWARM	497	512	97.37	In Earth orbit
S46946	2020-085T	SpaceBEE 30	SWARM	495	514	97.37	In Earth orbit
S46947	2020-085U	SpaceBEE 31	SWARM	496	514	97.36	In Earth orbit
S46948	2020-085V	SpaceBEE 28	SWARM	495	514	97.37	In Earth orbit
S46949	2020-085W	SpaceBEE 29	SWARM	495	515	97.37	In Earth orbit
S46950	2020-085X	SpaceBEE 27	SWARM	496	514	97.37	In Earth orbit
S46951	2020-085Y	SpaceBEE 25	SWARM	496	514	97.36	In Earth orbit
S46952	2020-085Z	SpaceBEE 24	SWARM	495	515	97.37	In Earth orbit
S46953	2020-085A	SpaceBEE 22	SWARM	495	515	97.37	In Earth orbit
S46954	2020-085AB	Alchemy	TSEPT	490	510	97.35	In Earth orbit
S46955	2020-085AC	Augury	TSEPT	497	514	97.37	In Earth orbit
S46956	2020-085AD	SpaceBEE 26	SWARM	497	514	97.36	In Earth orbit
S46957	2020-085AE	SpaceBEE NZ-2	SWARNZ	497	514	97.36	In Earth orbit
S46958	2020-085AF	SpaceBEE 39	SWARM	492	513	97.37	In Earth orbit
S46959	2020-085AG	SpaceBEE NZ-1	SWARNZ	492	513	97.37	In Earth orbit
S46960	2020-085AH	SpaceBEE-23	SWARM	496	511	97.36	In Earth orbit
S46964	2020-086A	Sentinel-6 Michael Freilich	COPERNI/ESA	1308	1327	66.06	In Earth orbit
S47097	2020-087A	Chang'e-5 Guidao Q1	LDSE/SAST	392981	21.32	Deep Space	
S47122	2020-088B	Starlink 1777	SPXS	272	347	53.05	In Earth orbit
S47123	2020-088B	Starlink 1779	SPXS	291	354	53.05	In Earth orbit
S47124	2020-088C	Starlink 1785	SPXS	292	353	53.05	In Earth orbit
S47125	2020-088D	Starlink 1787	SPXS	271	347	53.05	In Earth orbit
S47126	2020-088E	Starlink 1812	SPXS	272	347	53.05	In Earth orbit
S47127	2020-088F	Starlink 1836	SPXS	271	347	53.05	In Earth orbit
S47128	2020-088G	Starlink 1837	SPXS	271	347	53.05	In Earth orbit
S47129	2020-088H	Starlink 1838	SPXS	277	348	53.05	In Earth orbit
S47130	2020-088I	Starlink 1839	SPXS	271	347	53.05	In Earth orbit
S47131	2020-088J	Starlink 1840	SPXS	292	354	53.05	In Earth orbit
S47132	2020-088K	Starlink 1842	SPXS	271	346	53.05	In Earth orbit
S47133	2020-088M	Starlink 1843	SPXS	271	347	53.05	In Earth orbit
S47134	2020-088N	Starlink 1844	SPXS	271	347	53.05	In Earth orbit
S47135	2020-088P	Starlink 1845	SPXS	271	347	53.05	In Earth orbit
S47136	2020-088Q	Starlink 1846	SPXS	271	347	53.05	In Earth orbit
S47137	2020-088R	Starlink 1849	SPXS	271	347	53.05	In Earth orbit
S47138	2020-088S	Starlink 1850	SPXS	271	347	53.05	In Earth orbit
S47139	2020-088T	Starlink 1852	SPXS	271	347	53.05	In Earth orbit
S47140	2020-088U	Starlink 1853	SPXS	291	354	53.05	In Earth orbit
S47141	2020-088V	Starlink 1854	SPXS	292	354	53.05	In Earth orbit
S47142	2020-088W	Starlink 1855	SPXS	292	354	53.05	In Earth orbit
S47143	2020-088X	Starlink 1856	SPXS	292	354	53.05	In Earth orbit
S47144	2020-088Y	Starlink 1857	SPXS	271	347	53.05	In Earth orbit
S47145	2020-088Z	Starlink 1858	SPXS	271	348	53.05	In Earth orbit
S47146	2020-088AA	Starlink 1859	SPXS	270	347	53.05	In Earth orbit
S47147	2020-088AB	Starlink 1860	SPXS	291	355	53.05	In Earth orbit
S47148	2020-088AC	Starlink 1861	SPXS	271	348	53.05	In Earth orbit
S47149	2020-088AD	Starlink 1862	SPXS	271	348	53.05	In Earth orbit
S47150	2020-088AE	Starlink 1863	SPXS	271	347	53.05	In Earth orbit
S47151	2020-088AF	Starlink 1864	SPXS	271	348	53.05	In Earth orbit
S47152	2020-088AG	Starlink 1866	SPXS	271	348	53.05	In Earth orbit
S47153	2020-088AH	Starlink 1867	SPXS	291	354	53.05	In Earth orbit

S47154	2020-088AJ	Starlink 1868	SPXS	US	271	347	53.05	In Earth orbit
S47155	2020-088AK	Starlink 1869	SPXS	US	294	352	53.05	In Earth orbit
S47156	2020-088AL	Starlink 1870	SPXS	US	346	353	53.05	In Earth orbit
S47157	2020-088AM	Starlink 1871	SPXS	US	291	354	53.05	In Earth orbit
S47158	2020-088AN	Starlink 1873	SPXS	US	271	347	53.05	In Earth orbit
S47159	2020-088AP	Starlink 1874	SPXS	US	271	348	53.05	In Earth orbit
S47160	2020-088AQ	Starlink 1875	SPXS	US	271	347	53.05	In Earth orbit
S47161	2020-088AR	Starlink 1876	SPXS	US	271	347	53.05	In Earth orbit
S47162	2020-088AS	Starlink 1877	SPXS	US	272	348	53.05	In Earth orbit
S47163	2020-088AT	Starlink 1878	SPXS	US	269	348	53.05	In Earth orbit
S47164	2020-088AU	Starlink 1879	SPXS	US	269	348	53.05	In Earth orbit
S47165	2020-088AV	Starlink 1880	SPXS	US	291	354	53.05	In Earth orbit
S47166	2020-088AW	Starlink 1881	SPXS	US	291	354	53.05	In Earth orbit
S47167	2020-088AX	Starlink 1884	SPXS	US	272	347	53.05	In Earth orbit
S47168	2020-088AY	Starlink 1885	SPXS	US	272	347	53.05	In Earth orbit
S47169	2020-088AZ	Starlink 1886	SPXS	US	272	347	53.05	In Earth orbit
S47170	2020-088BA	Starlink 1887	SPXS	US	294	351	53.05	In Earth orbit
S47171	2020-088BB	Starlink 1888	SPXS	US	272	347	53.05	In Earth orbit
S47172	2020-088BC	Starlink 1889	SPXS	US	271	347	53.05	In Earth orbit
S47173	2020-088BD	Starlink 1890	SPXS	US	292	354	53.05	In Earth orbit
S47174	2020-088BE	Starlink 1891	SPXS	US	272	347	53.05	In Earth orbit
S47175	2020-088BF	Starlink 1895	SPXS	US	291	354	53.05	In Earth orbit
S47176	2020-088BG	Starlink 1896	SPXS	US	270	347	53.05	In Earth orbit
S47177	2020-088BH	Starlink 1907	SPXS	US	270	347	53.05	In Earth orbit
S47178	2020-088BJ	Starlink 1912	SPXS	US	271	347	53.05	In Earth orbit
S47179	2020-088BK	Starlink 1913	SPXS	US	290	355	53.05	In Earth orbit
S47180	2020-088BL	Starlink 1914	SPXS	US	292	354	53.05	In Earth orbit
S47181	2020-088BM	Starlink 1927	SPXS	US	270	348	53.05	In Earth orbit
S47202	2020-089A C	FalconEye 2	CSIEA	J	357734	357734	0.04	In Earth orbit
S47227	2020-091A	Gonets-M No. 30L	UAFAF	UAE	597	598	97.87	In Earth orbit
S47228	2020-091B	Gonets-M No. 31L	KVR	RU	1487	1506	82.50	In Earth orbit
S47229	2020-091C	Gonets-M No. 32L	KVR	RU	1486	1505	82.50	In Earth orbit
S47230	2020-091D	Kosmos-2548	MORF	RU	1484	1504	82.49	In Earth orbit
S47231	2020-092A	Gao Fen 14	YWZF	RU	1480	1507	82.52	In Earth orbit
S47233	2020-093A	Dragon CRS-21	SPXZ	CN	481	495	97.36	In Earth orbit
S47234	2020-094A	Xiaojin	SPX	US	418	420	51.64	Attached to IDA-3
S47235	2020-094B	Xiaomu	CAS	CN	587	604	29.00	In Earth orbit
S47237	2020-095A C	USA 311	NROC	CN	586	604	29.00	In Earth orbit
S47240	2020-096A	SXM-7	SIRX	US	35780	35800	0.00	In Earth orbit
S47253	2020-098A	StrX-Alpha	SYNSP	US	277	22040	26.93	In Earth orbit
S47256	2020-099A	CMS 1	ISRO	J	495	512	97.38	In Earth orbit
S47258	2020-100A	OneWeb SLL128	ONEWEB	IN	35664	35769	0.09	In Earth orbit
S47259	2020-100B	OneWeb SLL135	ONEWEB	UK	433	445	87.40	In Earth orbit
S47260	2020-100C	OneWeb SLL145	ONEWEB	UK	433	445	87.40	In Earth orbit
S47261	2020-100D	OneWeb SLL139	ONEWEB	UK	446	446	87.47	In Earth orbit
S47262	2020-100E	OneWeb SLL127	ONEWEB	UK	434	446	87.40	In Earth orbit
S47263	2020-100F	OneWeb SLL133	ONEWEB	UK	436	448	87.40	In Earth orbit
S47264	2020-100G	OneWeb SLL118	ONEWEB	UK	435	447	87.40	In Earth orbit
S47265	2020-100H	OneWeb SLL134	ONEWEB	UK	428	442	87.47	In Earth orbit
S47266	2020-100I	OneWeb SLL102	ONEWEB	UK	428	442	87.47	In Earth orbit
S47267	2020-100K	OneWeb SLL123	ONEWEB	UK	432	445	87.47	In Earth orbit
S47268	2020-100L	OneWeb SLL110	ONEWEB	UK	442	448	87.40	In Earth orbit
S47269	2020-100M	OneWeb SLL120	ONEWEB	UK	441	448	87.40	In Earth orbit
S47270	2020-100N	OneWeb SLL131	ONEWEB	UK	432	445	87.47	In Earth orbit
S47271	2020-100P	OneWeb SLL142	ONEWEB	UK	442	448	87.40	In Earth orbit
S47272	2020-100Q	OneWeb SLL130	ONEWEB	UK	442	448	87.40	In Earth orbit
S47273	2020-100R	OneWeb SLL136	ONEWEB	UK	445	450	87.47	In Earth orbit
S47274	2020-100S	OneWeb SLL137	ONEWEB	UK	445	450	87.47	In Earth orbit
S47275	2020-100T	OneWeb SLL147	ONEWEB	UK	417	449	87.47	In Earth orbit
S47276	2020-100U	OneWeb SLL124	ONEWEB	UK	442	450	87.40	In Earth orbit
S47277	2020-100V	OneWeb SLL126	ONEWEB	UK	442	448	87.40	In Earth orbit
S47278	2020-100W	OneWeb SLL119	ONEWEB	UK	417	449	87.47	In Earth orbit
S47279	2020-100X	OneWeb SLL138	ONEWEB	UK	443	454	87.40	In Earth orbit
S47280	2020-100Y	OneWeb SLL146	ONEWEB	UK	443	455	87.40	In Earth orbit
S47281	2020-100Z	OneWeb SLL141	ONEWEB	UK	442	454	87.40	In Earth orbit

S47282	2020-100AA	OneWeb SLL143	2020 Dec 18 1539:00	ONEWEB	UK	445	456	87.40	In Earth orbit
S47283	2020-100AB	OneWeb SLL121	2020 Dec 18 1539:00	ONEWEB	UK	431	447	87.47	In Earth orbit
S47284	2020-100AC	OneWeb SLL129	2020 Dec 18 1539:00	ONEWEB	UK	444	456	87.40	In Earth orbit
S47285	2020-100AD	OneWeb SLL117	2020 Dec 18 1539:00	ONEWEB	UK	445	456	87.40	In Earth orbit
S47286	2020-100AE	OneWeb SLL111	2020 Dec 18 1558:00	ONEWEB	UK	448	454	87.40	In Earth orbit
S47287	2020-100AF	OneWeb SLL132	2020 Dec 18 1558:00	ONEWEB	UK	441	454	87.47	In Earth orbit
S47288	2020-100AG	OneWeb SLL140	2020 Dec 18 1558:00	ONEWEB	UK	441	454	87.47	In Earth orbit
S47289	2020-100AH	OneWeb SLL144	2020 Dec 18 1558:00	ONEWEB	UK	441	454	87.47	In Earth orbit
S47290	2020-100AJ	OneWeb SLL109	2020 Dec 18 1618:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47291	2020-100AK	OneWeb SLL122	2020 Dec 18 1618:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47292	2020-100AL	OneWeb SLL114	2020 Dec 18 1618:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47293	2020-100AM	OneWeb SLL125	2020 Dec 18 1618:00	ONEWEB	UK	448	454	87.47	In Earth orbit
S47294	2020-101A	USA 312	2020 Dec 19 1410:00	NROC	US	519	540	51.40	In Earth orbit
S47295	2020-101B	USA 313	2020 Dec 19 1410:00	NROC	US	519	540	51.40	In Earth orbit
S47296	2020-102A ?	Tianqi Xingzuo 08	2020 Dec 22 0500:00	GUOG	CN	494	497	97.39	In Earth orbit
S47297	2020-102B ?	Yuanguang	2020 Dec 22 0500:00	HBUT	CN	500	508	97.44	In Earth orbit
S47298	2020-102C ?	Xinjishu Yanzheng 7	2020 Dec 22 0459:00	CAST	CN	504	515	97.44	In Earth orbit
S47299	2020-102D ?	Haisi-1	2020 Dec 22 0500:00	DKJ38	CN	502	511	97.44	In Earth orbit
S47300	2020-102E ?	ET-SMART-RSS	2020 Dec 22 0500:00	ESSTI	ET	503	513	97.43	In Earth orbit
S47302	2020-103A	Yaogan Weixing 33	2020 Dec 27 1556:00	ZZB	CN	681	685	98.26	In Earth orbit
S47303	2020-103B	Werna Jishu Shiyuan Weixing	2020 Dec 27 1556:00	WEINA?	CN	681	683	98.26	In Earth orbit
S47305	2020-104A	CSO-2	2020 Dec 29 1738:00	DGA/CNES	F	480	480	97.30	In Earth orbit
Payloads not included in annual statistics									
S45915	2019-079E	Kosmos-2543 projectile	2020 Jul 15 0749:00	TSKIM	RU	504	783	97.87	In Earth orbit