



*Table  
of artificial satellites  
launched  
in 1988*

	<b>A</b>		Cosmos-1944	1988-41-A	<b>E</b>		<b>O</b>	
Astra-1		1988-109-B	Cosmos-1945	1988-42-A				1988-56-A
	<b>B</b>		Cosmos-1946	1988-43-A	ECS-5	1988-63-B	Okean-1	1988-51-B
Buran		1988-100-A	Cosmos-1947	1988-43-B	Ekran-18	1988-36-A	Oscar-13	1988-33-A
	<b>C</b>		Cosmos-1948	1988-43-C	Ekran-19	1988-108-A	Oscar-23	1988-74-A
CS-3A		1988-12-A	Cosmos-1949	1988-45-A	Eutelsat-1 F5	1988-63-B	Oscar-25	1988-74-B
CS-3B		1988-86-A	Cosmos-1950	1988-46-A			Oscar-31	1988-33-B
China-23		1988-67-A	Cosmos-1951	1988-47-A			Oscar-32	
Cosmos-1908		1988-1-A	Cosmos-1952	1988-49-A	<b>F</b>			<b>P</b>
Cosmos-1909		1988-2-A	Cosmos-1953	1988-50-A	Fengyun-1	1988-80-A	PAS-1	1988-51-C
Cosmos-1910		1988-2-B	Cosmos-1954	1988-53-A	Fobos-1	1988-58-A	PRC-22	1988-14-A
Cosmos-1911		1988-2-C	Cosmos-1955	1988-54-A	Fobos-2	1988-59-A	PRC-25	1988-111-A
Cosmos-1912		1988-2-D	Cosmos-1956	1988-55-A	Foton-1	1988-31-A	Progress-34	1988-3-A
Cosmos-1913		1988-2-E	Cosmos-1957	1988-57-A			Progress-35	1988-24-A
Cosmos-1914		1988-2-F	Cosmos-1958	1988-60-A	<b>G</b>		Progress-36	1988-38-A
Cosmos-1915		1988-4-A	Cosmos-1959	1988-62-A	GDL-6	1988-109-B	Progress-37	1988-61-A
Cosmos-1916		1988-7-A	Cosmos-1960	1988-65-A	GSTAR-3	1988-81-A	Progress-36	1988-83-A
Cosmos-1917		1988-9-A	Cosmos-1961	1988-66-A	Gorizont-15	1988-28-A	Progress-38	1988-114-A
Cosmos-1918		1988-9-B	Cosmos-1962	1988-68-A	Gorizont-16	1988-71-A	Progress-39	
Cosmos-1919		1988-9-C	Cosmos-1963	1988-70-A				<b>R</b>
Cosmos-1920		1988-10-A	Cosmos-1964	1988-72-A	Horizon-1	1988-87-A	Raduga-22	1988-95-A
Cosmos-1921		1988-11-A	Cosmos-1965	1988-73-A				<b>S</b>
Cosmos-1922		1988-13-A	Cosmos-1966	1988-76-A	IRS-1A	1988-21-A	SBS-5	1988-81-B
Cosmos-1923		1988-15-A	Cosmos-1967	1988-79-A	Insat-1C	1988-63-A	STS-26	1988-91-A
Cosmos-1924		1988-16-A	Cosmos-1968	1988-82-A	Intelsat-5A F13	1988-40-A	STS-27	1988-106-A
Cosmos-1925		1988-16-B	Cosmos-1969	1988-84-A			Sakura-3A	1988-12-A
Cosmos-1926		1988-16-C	Cosmos-1970	1988-85-A	Lacrosse	1988-106-B	Sakura-3B	1988-86-A
Cosmos-1927		1988-16-D	Cosmos-1971	1988-85-B			San Marco-D	1988-26-A
Cosmos-1928		1988-16-E	Cosmos-1972	1988-85-C			Skynet-4B	1988-109-A
Cosmos-1929		1988-16-F	Cosmos-1973	1988-88-A	<b>L</b>		Soyuz-TM 5	1988-48-A
Cosmos-1930		1988-16-G	Cosmos-1974	1988-92-A	<b>M</b>		Soyuz-TM 6	1988-75-A
Cosmos-1931		1988-16-H	Cosmos-1975	1988-93-A	Meteor-2 (17)	1988-5-A	Soyuz-TM 7	1988-104-A
Cosmos-1932		1988-19-A	Cosmos-1976	1988-96-A	Meteor-3 (2)	1988-64-A	Spacenet-3R	1988-18-A
Cosmos-1933		1988-20-A	Cosmos-1977	1988-97-A	Meteosat-P2	1988-51-A		<b>T</b>
Cosmos-1934		1988-23-A	Cosmos-1978	1988-101-A	Molnya-1 (71)	1988-17-A	TDF-1	1988-98-A
Cosmos-1935		1988-25-A	Cosmos-1979	1988-102-A	Molnya-1 (72)	1988-22-A	TDRS-C	1988-91-B
Cosmos-1936		1988-27-A	Cosmos-1980	1988-103-A	Molnya-1 (73)	1988-69-A	Télécom-1C	1988-18-B
Cosmos-1937		1988-29-A	Cosmos-1981	1988-105-A	Molnya-1 (74)	1988-115-A		<b>U</b>
Cosmos-1938		1988-30-A	Cosmos-1982	1988-107-A	Molnya-3 (32)	1988-44-A		1988-6-A
Cosmos-1939		1988-32-A	Cosmos-1983	1988-110-A	Molnya-3 (33)	1988-90-A		1988-8-A
Cosmos-1940		1988-34-A	Cosmos-1984	1988-113-A	Molnya-3 (34)	1988-112-A		1988-77-A
Cosmos-1941		1988-35-A	Cosmos-1985	1988-116-A				1988-78-A
Cosmos-1942		1988-37-A	Cosmos-1986		<b>N</b>			1988-99-A
Cosmos-1943		1988-39-A			NOAA-11	1988-89-A		1988-78-A
					Nova-2	1988-52-A		1988-106-B
			Discovery	1988-91-A				

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data		Frequencies Transmitter power	Observations
				Perigee (km) Apogee (km)	Period (min) Inclination (degree)		
<b>Cosmos-1908</b>	1988-1-A	USSR	6 Jan.	650 678	97.7 82.5		
<b>Cosmos-1909</b> to <b>Cosmos-1914</b>	1988-2-A to 1988-2-F	USSR (Plesetsk)	15 Jan.	1386 1433	113.8 82.6		
<b>Progress-34</b> modified <i>Soyuz</i> without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-3-A	USSR	20 Jan.	191 277	88.8 51.6		Expendable supply craft. Docked with <i>Mir-1</i> on 22 January 1988. After undocking, it disintegrated on re- entry on 4 March 1988
<b>Cosmos-1915</b>	1988-4-A	USSR	26 Jan.	207 402	90.3 72.9		Recovered on 9 February 1988
<b>Meteor-2 (17)</b> cylinder; 2750 kg; 2 solar panels	1988-5-A	USSR (Plesetsk)	30 Jan.	947 973	104.1 82.5		Meteorology
<b>USA-29</b>	1988-6-A	United States Department of Defense	3 Feb.	824 832	101.5 98.8		
<b>Cosmos-1916</b>	1988-7-A	USSR	3 Feb.	179 384	89.9 64.9		Recovered on 29 February 1988
<b>USA-30</b>	1988-8-A	United States Department of Defense	8 Feb.	223 333	90.1 28.6		Decayed on 1 March 1988
<b>Cosmos-1917</b> to <b>Cosmos-1919</b>	1988-9-A to 1988-9-C	USSR	18 Feb.				Satellites designed to test the elements and equipment of a space navigation system. The separation unit con- taining the satellites failed to reach the required orbit, entered dense layers of the atmosphere, and ceased exist- ence on 19 February 1988
<b>Cosmos-1920</b>	1988-10-A	USSR	18 Feb.	193 268	88.8 82.6		Exploration of Earth's natural resources. Recovered on 9 March 1988
<b>Cosmos-1921</b>	1988-11-A	USSR	19 Feb.	215 408	90.4 70.2		Recovered on 4 March 1988

<b>CS-3A (Sakura-3A)</b> 550 kg	1988-12-A	Japan NSDA (Tanegashima)	19 Feb.	36 755	650 28.3	17.8-19.5 GHz band	Communications
				in geostationary-satellite orbit at 132° E			
<b>Cosmos-1922</b>	1988-13-A	USSR	26 Feb.	612 39 344	709 62.8		
<b>PRC-22</b>	1988-14-A	China (Jiuquan)	7 March	35 716 36 613	1455.5 0.6		Telecommunications
				in geostationary-satellite orbit at 87.5° E			
<b>Cosmos-1923</b>	1988-15-A	USSR	10 March	205 332	89.5 72.8		Recovered on 22 March 1988
<b>Cosmos-1924</b> to <b>Cosmos-1931</b>	1988-16-A to 1988-16-H	USSR (Plesetsk)	11 March	1445 1508	115 74		
<b>Molnya-1 (71)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1988-17-A	USSR (Plesetsk)	11 March	491 38 967	699 62.5	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications
<b>Spacenet-3R</b> 3-axis stabilized; 1195 kg at launch; 705 kg in orbit	1988-18-A	United States GTE (Kourou)	11 March	35 548 35 775	1429.7 0.1	6/4 and 14/12 GHz bands	Commercial communications
				in geostationary-satellite orbit			
<b>Télécom-1C</b> 3-axis stabilized; 718 kg; 2 solar panels	1988-18-B	France FRANCE TELECOM (Kourou)	11 March	35 083 35 799	1418.4 0.4	14/12, 6/4, 8/7 and 4/2 GHz bands	
				in geostationary-satellite orbit at 3° E			
<b>Cosmos-1932</b>	1988-19-A	USSR	14 March	256 279	89.7 65		
<b>Cosmos-1933</b>	1988-20-A	USSR	15 March	650 675	97.7 82.5		

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				Perigee (km) Apogee (km)	Period (min) Inclination (degree)		
<b>IRS-1A</b>	1988-21-A	India	17 March	863 917	102.7 99.01		Remote sensing
<b>Molnya-1 (72)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1988-22-A	USSR (Plesetsk)	17 March	655 40 584	735 62.9	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications
<b>Cosmos-1934</b>	1988-23-A	USSR	22 March	967 1021	104.7 83		
<b>Progress-35</b> modified Soyuz spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-24-A	USSR (Baikonur)	23 March	190 281	88.9 51.6		Expendable supply craft. Docked with the <i>Mir</i> orbital complex and delivered supplies. After undocking, it disintegrated on re-entry on 5 May 1988
<b>Cosmos-1935</b>	1988-25-A	USSR	24 March	179 356	89.5 67		Recovered on 8 April 1988
<b>San Marco-D</b>	1988-26-A	Italy (San Marco launch platform in Indian Ocean)	25 March	263 615	93.4 3.0		Carries experiments to measure drag forces on the satellite in orbit and for research on the upper atmosphere
<b>Cosmos-1936</b>	1988-27-A	USSR	30 March	189 290	89 64.8		Recovered on 18 May 1988
<b>Gorizont-15</b> 3-axis stabilized; solar panels	1988-28-A	USSR (Baikonur)	31 March	36 560  in geostationary-satellite orbit	1476 1.3	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>Cosmos-1937</b>	1988-29-A	USSR	5 April	774 813	100.6 74		

<b>Cosmos-1938</b>	1988-30-A	USSR	11 April	209 316	89.4 72.8		Recovered on 25 April 1988
<b>Foton-1</b>	1988-31-A	USSR	14 April	225 397	90.5 62.8		Carries instruments to obtain semiconductor materials with improved properties and extra pure biologically active preparation under microgravitation
<b>Cosmos-1939</b>	1988-32-A	USSR	20 April	620 678	97.6 98		
<b>Oscar-23</b>	1988-33-A	United States (Western Test Range)	26 April	1017 1302	108.6 90.4		Part of navigation transit system for orientation of submarines
<b>Oscar-32</b>	1988-33-B	United States (Western Test Range)	26 April	1018 1316	108.7 90.4		Part of navigation transit system for orientation of submarines
<b>Cosmos-1940</b>	1988-34-A	USSR	26 April	35 849  in geostationary-satellite orbit	1441 1.2		
<b>Cosmos-1941</b>	1988-35-A	USSR	27 April	217 293	89.3 70.3		Recovered on 11 May 1988
<b>Ekran-18</b> 3-axis stabilized; 5 tonnes; solar cells	1988-36-A	USSR (Baikonur)	6 May	35 620  in geostationary-satellite orbit	1427 0.4	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television relay
<b>Cosmos-1942</b>	1988-37-A	USSR	12 May	178 385	89.8 67		Recovered on 4 July 1988
<b>Progress-36</b> modified Soyuz spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-38-A	USSR (Baikonur)	13 May	193 262	88.6 51.6		Expendable supply craft. Docked with <i>Mir</i> orbital complex on 15 May 1988 and delivered supplies. After undocking, it re-entered Earth's atmosphere and disintegrated on 5 June 1988
<b>Cosmos-1943</b>	1988-39-A	USSR	15 May	851 876	101.2 71.2		
<b>Intelsat-5A F13</b> 3-axis stabilized; height: 6.6 m; 2 solar arrays	1988-40-A	International INTELSAT (Kourou)	17 May	33 364 35 734  in geostationary-satellite orbit at 307° E	1373.3 0.9	6/4 and 14/11 GHz bands (communications)	Commercial telecommunications

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				Perigee (km) Apogee (km)	Period (min) Inclination (degree)		
<b>Cosmos-1944</b>	1988-41-A	USSR	18 May	205 311	89.4 64.8		Recovered on 23 June 1988
<b>Cosmos-1945</b>	1988-42-A	USSR	19 May	217 391	90.3 70.4		Recovered on 31 May 1988
<b>Cosmos-1946</b>	1988-43-A	USSR	21 May	19 137	675 64.2		Testing elements and equipment of a space navigation system to determine the location of aircraft and ships
<b>Cosmos-1947</b>	1988-43-B	USSR	21 May	19 137	675 64.2		Testing elements and equipment of a space navigation system to determine the location of aircraft and ships
<b>Cosmos-1948</b>	1988-43-C	USSR	21 May	19 137	675 64.2		Testing elements and equipment of a space navigation system to determine the location of aircraft and ships
<b>Molyna-3 (32)</b> 3-axis stabilized; 1500 kg	1988-44-A	USSR (Plesetsk)	26 May	636 40 716	737 62.5	5.9-6.2 GHz (reception)  3.6-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>Cosmos-1949</b>	1988-45-A	USSR	28 May	412 431	93 65		
<b>Cosmos-1950</b>	1988-46-A	USSR	30 May	1503 1534	116 73.6		
<b>Cosmos-1951</b>	1988-47-A	USSR	31 May	187 272	88.8 82.3		Earth resources studies. Recovered on 14 June 1988
<b>Soyuz-TM 5</b>	1988-48-A	USSR (Baikonur)	7 June				Crew: A. Solovev, V. Savinikh, A. Aleksandrov. Forty-six projects involving astrophysics experiments, remote probing of the Earth's surface and studies in space biology and medicine. Docked with the <i>Mir</i> orbital complex on 9 June 1988. Undocked from <i>Mir</i> on 5 September with cosmonauts Lyakhov and Mohmand on board. Landed in USSR on 7 September 1988
<b>Cosmos-1952</b>	1988-49-A	USSR	11 June	215 300.2	89.4 70		Recovered on 25 June 1988
<b>Cosmos-1953</b>	1988-50-A	USSR	14 June	647 680	97.8 82.5		

<b>Meteosat-P2</b>	1988-51-A	Europe ESA (Kourou)	15 June	35 796 35 889	1439.0 0.5	14/11 GHz band	Meteorology
<b>Oscar-13</b>	1988-51-B	United States (Kourou)	15 June	242 36 094	637.9 10.0		Commercial telecommunications
<b>PAS-1</b>	1988-51-C	United States PanAmSat (Kourou)	15 June	35 612 36 162	1441.3 0.1		
				in geostationary-satellite orbit			
<b>Nova-2</b>	1988-52-A	United States	16 June	773 1105	103.8 90.1		
<b>Cosmos-1954</b>	1988-53-A	USSR	21 June	783 819	100.8 74		
<b>Cosmos-1955</b>	1988-54-A	USSR	22 June	181 382	89.8 64.8		Decayed on 20 August 1988
<b>Cosmos-1956</b>	1988-55-A	USSR	23 June	196 265	88.8 82.3		Recovered on 7 July 1988
<b>Okean-1</b>	1988-56-A	USSR	5 July	651 680	97.8 82.5		Optical scanning and radio-physical equipment to obtain oceanographic information and data on ice conditions
<b>Cosmos-1957</b>	1988-57-A	USSR	7 July	194 256	88.7 82.6		Recovered on 21 July 1988
<b>Fobos-1</b>	1988-58-A	USSR	7 July	trans-Mars trajectory heliocentric orbit			First of two spacecraft to probe Mars and its moon Phobos, the Sun and interplanetary space. The on-board equipment has been developed in 13 countries and by the European Space Agency. Main tasks are to chart martian surface temperature, study daily and seasonal dynamics of its thermal regime, measure thermal inertia of martian soil, seek areas of heat emission and permafrost zones and investigate the mineral composition of the martian surface
<b>Fobos-2</b>	1988-59-A	USSR	12 July	trans-Mars trajectory heliocentric orbit			Second of two spacecraft to probe Mars and its moon, the Sun and interplanetary space
<b>Cosmos-1958</b>	1988-60-A	USSR	14 July	375 417	92.4 65.8		



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				Perigee (km) Apogee (km)	Period (min) Inclination (degree)		
<b>Progress-37</b> modified Soyuz spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-61-A	USSR (Baikonur)	18 July	194 273	88.8 51.6		Expendable supply craft. Docked with <i>Mir</i> orbital complex on 20 July 1988 and delivered fuel and supplies for the crew. After undocking, it disintegrated on re-entry on 12 August 1988
<b>Cosmos-1959</b>	1988-62-A	USSR	18 July	975 1019	104.8 83		
<b>Insat-1C</b>	1988-63-A	India (Kourou)	21 July	35 959 35 989	1445.7 0.2	6/4 GHz band	National telecommunications
<b>Eutelsat-1 F5 (ECS-5)</b> 3-axis stabilized; 700 kg; 2 solar panels (1000 W)	1988-63-B	Europe EUTELSAT (Kourou)	21 July	35 418 35 883	1429.1 0.1	14/11-12 GHz band	European telecommunications
				in geostationary-satellite orbit at 93.50° E			
				in geostationary-satellite orbit at 13° E			
<b>Meteor-3 (2)</b>	1988-64-A	USSR	26 July	1198 1221	109.4 82.5		Meteorology and geophysical exploration
<b>Cosmos-1960</b>	1988-65-A	USSR	28 July	475 518	94.5 65.9		
<b>Cosmos-1961</b>	1988-66-A	USSR	1 August	36 312	1463 1.4	SHF band	Experimental telecommunications
<b>China-23</b>	1988-67-A	China (Jiuquan)	5 August	204 296	63.0		Reusable satellite carrying experimental devices from the Federal Republic of Germany. The capsule landed by parachute in China on 13 August 1988
<b>Cosmos-1962</b>	1988-68-A	USSR	8 August	215 297	89.4 70		Recovered on 22 August 1988
<b>Molnya-1 (73)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1988-69-A	USSR (Plesetsk)	12 August	617 40 754	738 62.9	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications

Cosmos-1963	1988-70-A	USSR	16 August	181	89.8	Recovered on 2 October 1988
Gorizont-16	1988-71-A	USSR (Baikonnur)	18 August	35 772	1435	Television and multichannel radiocommunications 5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)
Cosmos-1964	1988-72-A	USSR	23 August	216	89.4	Recovered on 9 September 1988
Cosmos-1965	1988-73-A	USSR	23 August	195	88.7	Earth resources exploration. Recovered on 22 September 1988
Oscar-25	1988-74-A	United States	25 August	1032	107.4	Part of navigation transit system for orientation of submarines
Oscar-31	1988-74-B	United States	25 August	1032	107.4	Part of navigation transit system for orientation of submarines
Soyuz-TM 6	1988-75-A	USSR (Baikonnur)	29 August			Crew: V. Lyakhov, V. Polyakov and A. A. Mohmand (Afghanistan). Docked with the <i>Mir</i> orbital complex on 31 August 1988. Undocked on 21 December. The descent module landed the same day 180 km south-east of Dzherkazgan
Cosmos-1966	1988-76-A	USSR	30 August	617	708	
USA-31	1988-77-A	United States Department of Defense (Western Test Range)	2 Sept.			
USA-32	1988-78-A	United States Department of Defense (Western Test Range)	5 Sept.			
Cosmos-1967	1988-79-A	USSR	6 Sept.	206	90.3	Recovered on 15 September 1988
Fengyun-1	1988-80-A	China	6 Sept.	881	102.8	Two very high resolution scanning radiometers with five detecting channels for day and night monitoring

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<b>GSTAR-3</b>	1988-81-A	United States GTE Spacenet (Kourou)	8 Sept.	16 587 36 161	983.1 1.5	14/12 GHz band	Commercial telecommunications
<b>SBS-5</b> 550 kg	1988-81-B	United States (Kourou)	8 Sept.	35 289 35 786 in geostationary-satellite orbit	1423.4 0.1	14/12 GHz band	Telecommunications
<b>Cosmos-1968</b>	1988-82-A	USSR	9 Sept.	192 262	88.7 82.3		Exploration of Earth resources. Recovered on 23 September 1988
<b>Progress-28</b> modified <i>Soyuz</i> spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-83-A	USSR (Baikonur)	9 Sept.	193 267	88.8 51.6		Expendable supply craft. Docked with the <i>Mir</i> orbital complex on 12 September 1988. After undocking, it disintegrated on re-entry on 23 November 1988
<b>Cosmos-1969</b>	1988-84-A	USSR	15 Sept.	178 373	89.7 67		
<b>Cosmos-1970</b>	1988-85-A	USSR	16 Sept.	19 102	674 64.8		Instruments to develop components for a space navigation system for aircraft and ships
<b>Cosmos-1971</b>	1988-85-B	USSR	16 Sept.	19 102	674 64.8		Instruments to develop components for a space navigation system for aircraft and ships
<b>Cosmos-1972</b>	1988-85-C	USSR	16 Sept.	19 102	674 64.8		Instruments to develop components for a space navigation system for aircraft and ships
<b>CS-3B (Sakura-3B)</b> 550 kg	1988-86-A	Japan NSDA (Tanegashima)	16 Sept.	199 37 405 in geostationary-satellite orbit at 136° E	663 28.3	17.8-19.2 GHz band 10 W 3820 and 4080 MHz 7 W	Communications
<b>Horizon-1</b>	1988-87-A	Israel	19 Sept.	250 1150	98.8 142.9		
<b>Cosmos-1973</b>	1988-88-A	USSR	22 Sept.	206 395	90.2 72.9		Recovered on 10 October 1988

<b>NOAA-11</b>	1988-89-A	United States NOAA (Western Test Range)	24 Sept.	849 865	102.1 98.8		Meteorology
<b>Molnya-3 (33)</b> 3-axis stabilized; 1500 kg	1988-90-A	USSR (Plesetsk)	29 Sept.	646 38 937	702 62.9	5.9-6.2 GHz (reception) 3.6-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>STS-26 (Discovery)</b>	1988-91-A	United States NASA (Eastern Test Range)	29 Sept.	306 336	91 28.5		Space transportation System-26. Reusable spacecraft. Crew: F. Hauck, R. Covey, D. Hilmers, J. Lounge and G. Nelson. Returned Earth on 3 October 1988
<b>TDRS-C</b>	1988-91-B	United States launched from <i>STS-26</i>	29 Sept.	35 719 35 803	1434.8 0.1		Tracking and data relay satellite. Deployed from the orbiting <i>STS-26</i>
<b>Cosmos-1974</b>	1988-92-A	USSR	3 Oct.	613 39 342	709 62.8		
<b>Cosmos-1975</b>	1988-93-A	USSR (Plesetsk)	11 Oct.	649 679	97.8 82.5		
<b>Cosmos-1976</b>	1988-94-A	USSR (Plesetsk)	13 Oct.	206 396	90.2 72.9		
<b>Raduga-22</b> 3-axis stabilized; 5 tonnes; solar panels	1988-95-A	USSR (Baikonur)	20 Oct.	36 522	1473 1.5	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television and multichannel radiocommunications
				in geostationary-satellite orbit			
<b>Cosmos-1977</b>	1988-96-A	USSR	25 Oct.	613 39 432	709 62.8		
<b>Cosmos-1978</b>	1988-97-A	USSR	27 Oct.	206 394	90.2 72.9		Recovered on 10 November 1988
<b>TDF-1</b> 1272.7 kg	1988-98-A	France CNES (Kourou)	28 Oct.	35 562 35 983	1435.1 0.1	11.72; 11.80; 11.88; 11.95; 12.03 GHz 230 W	Direct broadcasting satellite
				in geostationary-satellite orbit at 19°W			
<b>USA-33</b>	1988-99-A	United States Department of Defense	6 Nov.				

Code name Spacecraft description	International number	Country Organization Site of launching	Date	Initial orbital data		Frequencies Transmitter power	Observations
				Perigee (km) Apogee (km)	Period (min) Inclination (degree)		
<b>Buran</b>	1988-100-A	USSR	15 Nov.				Reusable orbital spacecraft. After two orbits, it re-entered the atmosphere and landed successfully the same day as launched
<b>Cosmos-1979</b>	1988-101-A	USSR	18 Nov.	408 432	92.8 65		
<b>Cosmos-1980</b>	1988-102-A	USSR	23 Nov.	852 880	101.9 71		
<b>Cosmos-1981</b>	1988-103-A	USSR	24 Nov.	245 364	90.4 62.8		Recovered on 8 December 1988
<b>Soyuz-TM 7</b> 7 tonnes at launch	1988-104-A	USSR (Baikonur)	26 Nov.				Crew: A. Volkov, S. Krikalev and J.-L. Chrétien (France). Docked with <i>Mir-1/Soyuz-6</i> orbital complex on 28 November 1988
<b>Cosmos-1982</b>	1988-105-A	USSR	30 Nov.	215 403	90.4 70		Recovered on 14 December 1988
<b>STS-27</b> space shuttle <i>Atlantis</i>	1988-106-A	United States Department of Defense (Eastern Test Range)	2 Dec.		57	S band UHF	Reusable spacecraft. Landed at Edwards Air Force Base on 6 December 1988
<b>USA-34 (Lacrosse)</b> span: 45 m; solar arrays	1988-106-B	United States Department of Defense launched from <i>STS-27</i>	2 Dec.				Imaging radar satellite
<b>Cosmos-1983</b>	1988-107-A	USSR	8 Dec.	197 251	89 62.8		Recovered on 22 December 1988
<b>Ekran-19</b> 3-axis stabilized; 5 tonnes; solar cells	1988-108-A	USSR (Baikonur)	10 Dec.	35 455  in geostationary-satellite orbit	1419 1.4	5.7-6.2 GHz (reception) 3.4-3.9 GHz (emission)	Television relay

<b>Skynet-4B</b>	1988-109-A	United Kingdom Ministry of Defence (Kourou)	11 Dec.	34 424 35 860	1403.3 3.1		Military telecommunication satellite
<b>Astra-1 (GDL-6)</b> 3-axis stabilized; 1820 kg at launch; 1045 kg in orbit	1988-109-B	Luxembourg SES (Kourou)	11 Dec.	35 518 35 573	1428.8 0.2	14.25-14.50 GHz (uplink) 11.20-11.45 GHz (downlink)	Sixteen television broadcasting channels of 45 W each plus six spares; alternate channels are horizontally and vertically polarized. Intended for direct reception although using FSS frequencies
<b>Cosmos-1984</b>	1988-110-A	USSR	16 Dec.	195 345	89.6 62.8		
<b>PRC-25</b>	1988-111-A	China (Jiuquan)	22 Dec.	35 785 36 365	1450.8 0.6		Telecommunications
<b>Molnya-3 (34)</b> 3-axis stabilized; 1500 kg	1988-112-A	USSR (Plesetsk)	22 Dec.	437 39 832	716 62.8	5.9-6.2 GHz (reception) 3.6-3.9 GHz (emission)	Television and multichannel radiocommunications
<b>Cosmos-1985</b>	1988-113-A	USSR	23 Dec.	529 549	95.2 73.6		
<b>Progress-39</b> modified Soyuz spacecraft without the descent section; 7 tonnes at launch; diameter: 2.3 m; length: 7.9 m	1988-114-A	USSR (Baikonur)	25 Dec.	193 255	88.7 51.6		Expendable supply craft. Docked with <i>Mir-1</i>
<b>Molyna-1 (74)</b> hermetically sealed cylinder with conical ends; 1000 kg; 6 solar panels	1988-115-A	USSR (Plesetsk)	28 Dec.	623 38 874	700.5 62.8	800 MHz band 40 W (emission) 1000 MHz band (reception) 3400-4100 MHz (retransmission of television)	Television and multichannel radiocommunications
<b>Cosmos-1986</b>	1988-116-A	USSR	29 Dec.	204 316	89.4 64.8		

CNES = Centre national d'études spatiales

ESA = European Space Agency

EUTELSAT = European Telecommunications Satellite Organization

INTELSAT = International Telecommunications Satellite Organization

NASA = National Aeronautics and Space Administration (United States)

NOAA = National Oceanic and Atmospheric Administration (United States)

NSDA = National Space Development Agency (Japan)

PanAmSat = Pan-American Satellite Corporation

SES = Société européenne des satellites

*The following satellites have decayed since the preparation of the "Table of artificial satellites launched in 1987" published in May 1988*

<i>satellite</i>	<i>international number</i>	<i>decay</i>
Cosmos-118	1966-38-A	23 November 1988
Intelsat-3 F5	1969-64-A	14 October 1988
Molnya-2 (11)	1974-102-A	7 July 1988
Molnya-3 (2)	1975-29-A	29 November 1988
Astro-B	1983-11-A	17 December 1988
Ohzora	1984-15-A	20 April 1988
Cosmos-1567	1984-53-A	3 April 1988
Cosmos-1588	1984-83-A	17 February 1988
Cosmos-1646	1985-30-A	12 May 1988
Cosmos-1682	1985-82-A	17 May 1988
Cosmos-1686 <i>1688</i>	1985-89-A	2 July 1988

<i>satellite</i>	<i>international number</i>	<i>decay</i>
Cosmos-1735	1986-21-A	17 November 1988
Cosmos-1769	1986-59-A	18 February 1988
Cosmos-1786	1986-80-A	6 March 1988
Cosmos-1815	1987-7-A	15 November 1988
Cosmos-1834	1987-31-A	14 October 1988
Cosmos-1881	1987-76-A	30 March 1988
Cosmos-1890	1987-86-A	26 December 1988
Cosmos-1901	1987-102-A	3 February 1988
Cosmos-1902	1987-103-A	30 December 1988
Soyuz-TM 4	1987-104-A	17 June 1988
Cosmos-1906	1987-108-A	13 March 1988













Orbital position	Space station	Frequency bands GHz																
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20
164.00 E N	AUS AUSSAT PAC3										12	14						
164.00 E N	AUS AUSSAT-3										12	13	14					
164.00 E A	TON TONGASAT C-2				4		6											
166.00 E C	URS GOMS-2	0	1	2			7	8									20	29
166.00 E A	URS GOMS-2M	0	1	2			7	8									20	29
166.00 E C	URS PROGNOZ-6			2														
167.00 E N	URS VSSRD-2								11	12	13	14						
167.45 E A	PNG PACSTAR A-1		1			5	6											
167.45 E C	PNG PACSTAR-1				4		6				12	14						
170.00 E A	USA USASAT-13M								11	12		14						
170.75 E A	TON TONGASAT C-1				4		6											
171.00 E A	USA ACS-5		1															
172.00 E N	USA FLTSATCOM W PAC	0					7	8										
172.00 E N	USA FLTSATCOM-B WEST PAC																20	44
174.00 E N	USAIT INTELSAT5 PAC1				4		6		11			14						

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C Presently being coordinated under RR 1060  
N Notified

Orbital position	Space station	Frequency bands GHz																
		0	1	2	4	5	6	7	8	11	12	13	14	15	17	18	19	20
174.00 E C	USAIT INTELSAT5A PAC1				4		6											
175.00 E N	USA USGCSS PH2 W PAC							7	8	11			14					
175.00 E C	USA USGCSS PH3 W PAC							7	8									
176.50 E N	USA MARISAT-PAC	0	1		4		6											
177.00 E N	USAIT INTELSAT4A PAC2				4		6											
177.00 E C	USAIT INTELSAT5 PAC2				4		6			11			14					
177.00 E C	USAIT INTELSAT5A PAC2				4		6			11			14					
177.50 E A	USA MILSTAR 14	0		2													20	45
178.00 E N	F ESA MARECS PAC1	0	1		4		6											
179.50 E A	G INM INMARSAT POR-1		1		4		6											
180.00 E A	USA USGCSS PH2 W PAC-2							7	8									
180.00 E A	USA USGCSS PH3 W PAC-2			2				7	8									
180.00 E N	USAIT INTELSAT MCS PAC A	C1		C4		C6												
180.00 E N	USAIT INTELSAT5 PAC3				4		6			11			14					
180.00 E C	USAIT INTELSAT5A PAC3				4		6			11			14					

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