

Agency supporting the mission

Department of Defense - Air Force Space and Missile Systems Center

Mission orbital parameters

Purpose	Precession rate	Orbit radius	Long. of ascending node	Inclination	Repeat time
-collect weather data for U.S. military operations (first launch 1962, currently 2 main satellites, satellites have lifetimes of ~4 years)	-sun synchronous -101.8 minute orbit	811-853 km above Earth	-ascending equator crossing time (Local Time): 21:10	98.9°	24 hours (per satellite)

Instr. Name	purpose	Wavelength range (units)	# of Channels	Spectral resol (units)	Horiz swath (units)	Horiz resol (units)	Vert resol (units)	Launch -& end dates
OLS – Operational Linescan System	-monitor cloud cover, snow cover, sea ice, sea and land surface temperature	Visible: 0.40 - 1.10 μm Infrared: 10.0 - 13.4 μm PMT(photo multiplier tube – for nighttime): 0.47 - 0.95 μm	3	10.3 – 10.5 W/cm ² Sr (63 relative steps) 190 - 310 K (256 equal steps) 10.5 - 10.9 W/cm ² Sr	3000 km	2.7km and 0.55 km	N/A	1976 - ~2015
SSM/I – Special Sensor Microwave / Imager	-can penetrate clouds to observe structure of tropical cyclone center	-19.35 GHz V & H -22.235 GHz V only -37.0 GHz V & H -85.5 GHz V & H	7 channel – 4 frequency	N/A	1400 km conical scan	12.5 km (85.5 GHz) and 25.0 km for all others	N/A	First launch: July, 1987 -
SSM/T – Atmospheric Temperature Profiler	-provide temperature soundings of high altitudes	-measures in the 50-60 GHz O ₂ band (50.5, 53.2, 54.35, 54.9, 58.4, 58.825, 59.4 GHz)	-7 channels	N/A	1500 km	174 km at NADIR	Vertical coverage (sfc – 30 km)	First launch - 1979
SSM/T-2 – Atmospheric Water Vapor Profiler	-monitoring global water vapor	-3 frequencies situated symmetrically about 183.31 GHz (+/- 7 GHz) and 2 window channels at 91.5 GHz and 150 GHz	5 channel	N/A	1500 km	~48 km (120 km at edge of scan)	Vertical coverage (sfc – 10 km)	Fist launch: 1991 -
SSMIS - Special Sensor Microwave Imager Sounder suite	- combines the capabilities of SSM/I, SSM/T-1 and SSM/T-2 and includes upper air temperature sounder	- 24 discrete frequencies from 19 – 183 GHz - see reference for channel info below **	- 24 channel	N/A	1707 km	38 km	N/A	First launch - 10/18/2003

SSJ/5 – Precipitating Electron and Ion Spectrometer	-map energy spectrum for low-energy particles responsible for aurora	-measure electrons and ions between 30 eV and 30 KeV - 2 low-energy detectors and 1 high-energy detector	-20 channels low-energy (34, 49, 71, 101, 150, 218, 320, 460, 670, and 960 eV) high-energy (1.0, 1.4, 2.1, 3.0, 4.4, 6.5, 9.5, 14.0, 20.5 and 29.5 KeV)	in-situ	in-situ	in-situ	in-situ	(1975-SSJ/2) and latest launch 10/8/2003
SSIES – Ion Scintillation Monitor	-measures ambient electron density and temperatures, ambient ion densities, temperatures, and weight	N/A	N/A	N/A	in-situ	in-situ	in-situ	N/A
SSM – Magnetometer	-measures geomagnetic fluctuations associated with geophysical phenomena (i.e., ionospheric currents flowing at high latitudes)	N/A	N/A	N/A	in-situ	in-situ	in-situ	First launch - 1994

Sources

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<http://www.aerospaceweather.com/dmsp/prohist.html>

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