

Instrument & agency (& any partners)	Missions	Status	Type	Measurements & applications	Technical characteristics
3MI Multi-Viewing Multi-Channel Multi-Polarisation Imaging EUMETSAT (ESA) ABI Advanced Baseline Imager NOAA	EPS-SG-a GOES-R, GOES-S, GOES-T, GOES-U	Being developed Being developed	Atmospheric chemistry Imaging multi-spectral radiometers (vis/IR)	Measure aerosol parameters, air quality index, surface albedo, cloud information Detects clouds, cloud properties, water vapour, land and sea surface temperatures, dust, aerosols, volcanic ash, fires, total ozone, snow and ice cover, vegetation index.	Waveband: VIS-SWIR: 12 channels between 0.41 µm to 2.1 µm Spatial resolution: 4km Swath width: 2200x2200 km Accuracy: Waveband: 16 bands in VIS, NIR and IR ranging from 0.47 µm to 13.3 µm Spatial resolution: 0.5 km in 0.64 µm band; 2.0 km in long wave IR and in the 1.378 µm band; 1.0 km in all others Swath width: Accuracy: Varies by product
ACC Accelerometer ESA ACE-FTS Atmospheric Chemistry Experiment (ACE) Fourier Transform Spectrometer CSA Advanced DCS Advanced Data Collection System	Swarm SCISAT-1 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3	Operational Operational Proposed	Precision orbit and space environment Atmospheric chemistry Data collection	Measurement of the spacecraft non-gravitational accelerations, linear accelerations range: +/- 2*10 ⁻⁴ m/s ² , angular measurement range: +/- 9.6° 10 ⁻³ rad/s ² ; measurement bandwidth: 10-4 to 10 ⁻² Hz; Linear resolution: 1.8*10 ⁻¹⁰ m/s ² ; angular resolution: 8*10 ⁻⁹ rad/s ² . Measure and understand the chemical processes that control the distribution of ozone in the Earth's atmosphere, especially at high altitudes. Collects data on temperature (air/water), atmospheric pressure, humidity and wind speed/direction, speed and direction of ocean and river currents.	Waveband: N/A Spatial resolution: 0.1 nm/s ² Swath width: N/A Accuracy: overall instrument random error: <10 - 8 m/s ² Waveband: SWIR - TIR: 2 - 5.5 µm, 5.5 - 13 µm (0.02 cm ⁻¹ resolution) Spatial resolution: Swath width: Accuracy: Depends on species, meets requirements for climate variables Waveband: Spatial resolution: Swath width: Accuracy:
ROSHYDROMET Advanced GGAK-M Advanced Module for Geophysical Measurements (SEM) ROSHYDROMET Advanced GOCI Advanced Geostationary Ocean Colour Imager KARI Advanced IKFS-2 Advanced Fourier spectrometer ROSHYDROMET Advanced KMSS Advanced Multispectral Imager (VIS) ROSHYDROMET Advanced MI Advanced Meteorological Imager KARI	Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 GEO-KOMPSAT-2B Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 GEO-KOMPSAT-2A	Proposed Proposed Proposed	Space environment and magnetic field Ocean colour instruments Imaging multi-spectral radiometers (vis/IR) Imaging multi-spectral radiometers (vis/IR)	Space Environmental Monitoring (SEM). Ocean colour information, coastal zone monitoring, land resources monitoring. Multispectral images of land & sea surfaces and ice cover. Continuous monitoring capability for the near real-time generation of high-resolution meteorological products and long-term change analysis of sea surface temperature and cloud coverage.	Waveband: Spatial resolution: Swath width: Accuracy: Waveband: VIS - NIR: 0.40 - 0.88 µm (8 channels) Spatial resolution: 236 x 360 m Swath width: 1440 km Accuracy: Waveband: 3.7 - 15.5 µm, more then 8000 spectral channels Spatial resolution: 35 -100 km Swath width: 1000/2000 km Accuracy: 0.5 K Waveband: 0.4 - 0.9 µm, 6 channels Spatial resolution: 60 m - 100 m Swath width: 900 km Accuracy: Waveband: 16 bands covering 1: VIS, 0.55 - 0.80 µm; 2: SWIR: 3.50 - 4.00 µm; 3: WV (Waver Vapour): 6.50 - 7.00 µm; 4: TIR1 (Thermal Infrared 1): 10.3 - 11.3 µm, 5: TIR2 (Thermal Infrared 2): 11.5 - 12.5 µm Spatial resolution: VIS: 0.5km, 1 km, IR: 2 km Swath width: Full Earth disk Accuracy:
Advanced MSU-MR Advanced Multispectral scanning imager-radiometer ROSHYDROMET Advanced MTVZA Advanced Scanning microwave imager-sounder ROSHYDROMET Advanced Radiomet Advanced Radio-occultation receiver ROSHYDROMET Advanced SAR Advanced Synthetic Aperture Radar X band ROSHYDROMET Advanced Scatterometer ROSHYDROMET	Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3 Meteor-MP N1, Meteor-MP N2, Meteor-MP N3	Proposed Proposed Proposed Proposed Proposed Proposed	Imaging multi-spectral radiometers (vis/IR) Imaging multi-spectral radiometers (passive microwave) Atmospheric temperature and humidity sounders Imaging microwave radars Scatterometers	Parameters of clouds, snow, ice and land cover, vegetation, surface temperature, fire detection. Atmospheric temperature and humidity profiles, precipitation, sea level wind speed, snow/ice coverage. Atmospheric temperature and humidity profiles with high vertical resolution. High resolution microwave radar images for ice watch. Ocean surface wind measurements.	Waveband: VIS: 0.5 - 0.7 µm; NIR: 0.7 - 1.1 µm; SWIR: 1.6 - 1.8 µm; MWIR: 3.5 - 4.1 µm; TIR: 10.5 - 11.5 µm, 11.5 - 12.5 µm Spatial resolution: 1 km Swath width: 3000 km Accuracy: VIS: 0.5%; IR: 0.1 - 0.2 K Waveband: 10.6 - 183.3 GHz, 26 channels Spatial resolution: 12 - 75 km Swath width: 2600 km Accuracy: 0.4 - 2.0 K depending on spectral band Waveband: Spatial resolution: Swath width: Accuracy: Waveband: X-Band Spatial resolution: 1 m, 5 m, 50 m, 200 m, 500 m Swath width: 10 km, 50 km, 130 km, 600 km, 750 km Accuracy: 1 dB Waveband: C (or X) - band, TBD Spatial resolution: 25 km Swath width: 1800 km Accuracy: Wind speed: 2 m/s, direction: 20 grad Waveband: Panchromatic VIS: 0.50 - 0.90 µm, VIS: 0.45 - 0.52 µm, 0.52 - 0.60 µm, 0.63 - 0.69 µm, NIR: 0.76 - 0.90 µm Spatial resolution: Pan: 0.8 m; VNIR: 4 m Swath width: 15 km Accuracy:
AEISS Advanced Electronic Image Scanning System KARI AEISS-A Advanced Electronic Image Scanning System-A KARI AHI Advanced Himawari Imager JMA	KOMPSAT-3 KOMPSAT-3A Himawari-8, Himawari-9	Operational Operational Operational	High resolution optical imagers High resolution optical imagers Imaging multi-spectral radiometers (vis/IR)	High resolution imager for land applications of cartography and disaster monitoring. High resolution imager for land applications of cartography and disaster monitoring. Measures cloud cover, cloud motion, cloud height, cloud properties, water vapour, rainfall, sea surface temperatures and Earth radiation, dust, aerosols, volcanic ash, fires, snow and ice cover.	Waveband: Panchromatic VIS: 0.50 - 0.90 µm, VIS: 0.45 - 0.52 µm, 0.52 - 0.60 µm, 0.63 - 0.69 µm, NIR: 0.76 - 0.90 µm Spatial resolution: Pan: 0.8 m, VNIR: 4 m, IR: 5.5m Swath width: 15 km Accuracy: Waveband: 16 bands in VIS, NIR and IR ranging from 0.46 µm to 13.3 µm VIS (~0.40 µm - ~0.75 µm) NIR (~0.75 µm - ~1.3 µm) SWIR (~1.3 µm - ~3.0 µm) MWIR (~3.0 µm - ~6.0 µm) TIR (~6.0 µm - ~15.0 µm) Spatial resolution: 0.5 km in 0.64 µm band; 1.0km in 0.46 µm, 0.51 µm and 0.86 µm band, 2.0 km in all others Swath width: Full Earth disk and several reserved sectors every 10 minutes Accuracy:
AIRS Atmospheric Infra-red Sounder NASA AIS AIS Receiver NSC AIS (RCM) Automated Identification System (RADARSAT Constellation) CSA	Aqua NORSAT-1, NORSAT-2 RADARSAT C-1, RADARSAT C-2, RADARSAT C-3	Operational Proposed Being developed	Atmospheric temperature and humidity sounders Data collection	High spectral resolution measurement of temperature and humidity profiles in the atmosphere. Long-wave Earth surface emissivity. Cloud diagnostics. Trace gas profiles. Surface temperatures. Ship identification (name, location, heading, cargo, etc).	Waveband: VIS - TIR: 0.4 - 1.7 µm, 3.4 - 15.4 µm, Has approximately 2382 bands from VIS to TIR Spatial resolution: 1.1 degree (13 x 13 km at nadir) Swath width: +/-48.95 degrees Accuracy: Humidity: 20%, Temperature: 1 K Waveband: Spatial resolution: Swath width: Accuracy: Waveband: VHF (162 MHz) Spatial resolution: N/A Swath width: 800 km minimum Accuracy: Better than 90% ship detection, for Class A ships, when ships are in view for a minimum of 5 minutes.

ALADIN Atmospheric Laser Doppler Instrument ESA	ADM-Aeolus	Being developed	Lidars	Global wind profiles (single line-of-sight) for an improved weather prediction.	Waveband: UV: 355 nm Spatial resolution: One wind profile every 200 km along track, averaged over 50 km Swath width: Along line 285 km parallel to satellite ground track Accuracy: Wind speed error below 2 m/s
ALI Advanced Land Imager NASA	NMP EO-1	Operational	High resolution optical imagers	Measurement of Earth surface reflectance. Will validate new technologies contributing to cost reduction and increased capabilities for future missions. ALI comprises a wide field telescope and multispectral and panchromatic instrument.	Waveband: 10 bands: VIS and NIR: 0.480 - 0.690 µm, 0.433 - 0.453 µm, 0.450 - 0.515 µm, 0.525 - 0.605 µm, 0.630 - 0.690 µm, 0.775 - 0.805 µm, 0.845 - 0.890 µm, 1.200 - 1.300 µm, SWIR: 1.550 - 1.750 µm, 2.080 - 2.350 µm Spatial resolution: PAN: 10 m, VNIR and SWIR: 30 m Swath width: 185 km Accuracy: SNR @ 5% surf refl Pan:220, Multi 1: 215, Multi 2: 280, Multi 3: 290, Multi 4:240, Multi 4':190, Multi 5':130, Multi 5.175, Multi 7:170 (prototype instrument exceeds ETM+ SNR by a factor of 4 - 8)
ALISS III Advanced LISS III ISRO ALT	RESOURCESAT-3	Proposed	Imaging multi-spectral radiometers (vis/IR)	For crops and vegetation dynamics, natural resources census, disaster management and large scale mapping of themes.	Waveband: 4 bands in VNIR and 1 band in SWIR Spatial resolution: 20 m, 10 m Swath width: 900 km Accuracy:
Radar Altimeter NSOAS (CAST) AltiKa Ka-band Altimeter CNES	HY-2A, HY-2B, HY-2C, HY-2D	Operational	Radar altimeters	Global ocean topography, sea level and gravity field measurements.	Waveband: 13.58 GHz and 5.25 GHz Spatial resolution: 16 km Swath width: 16 km Accuracy: < 4 cm
AMR Advanced Microwave Radiometer NASA	Jason-3, OSTM (Jason-2), SWOT	Operational	Radar altimeters	Sea surface height.	Waveband: 35.5 - 36 GHz, passive channels (radiometer): 24 (K-band) and 37 (Ka-band) GHz; active radar altimeter: 35 GHz (Ka-band) Spatial resolution: 20 m, 10 m Swath width: 900 km Accuracy:
AMR-C AMR-C Climate-quality microwave radiometer NOAA (ESA, NASA)	SARAL	Operational	Imaging multi-spectral radiometers (passive microwave)	Altimeter data to correct for errors caused by water vapour and cloud-cover. Also measures total water vapour and brightness temperature.	Waveband: Microwave: 18.7 GHz, 23.8 GHz, 34 GHz Spatial resolution: 41.6 km at 18.7 GHz, 36.1 km at 23.8 GHz, 22.9 km at 34 GHz Swath width: 120 deg cone centred on nadir Accuracy: Total water vapour: 0.2 g/sq cm, Brightness temperature: 0.15 K
AMSR-2 Advanced Microwave Scanning Radiometer -2 JAXA	Sentinel-6 A, Sentinel-6 B	Being developed	Imaging multi-spectral radiometers (passive microwave)	Capabilities of the AMR with the addition of high stability wet-tropospheric path delay correction.	Waveband: Mmicrowave: 18.7, 23.8 and 34 GHz. The feasibility of an additional high-frequency component for high resolution support to the SAR mode of SRAL is being assessed Spatial resolution: 25 km (high-resolution to support the SAR mode of SRAL being assessed) Swath width: Nadir-only viewing, associated to the JASON-CS radar altimeter Accuracy:
AMSU-A Advanced Microwave Sounding Unit-A NASA AMSU-A Advanced Microwave Sounding Unit-A NOAA (UKSA) AMSU-B Advanced Microwave Sounding Unit-B NOAA (UKSA)	Jason-3, OSTM (Jason-2), SWOT	Operational	Imaging multi-spectral radiometers (passive microwave)	Measurements of water vapour, cloud liquid water, precipitation, winds, sea surface temperature, sea ice concentration, snow cover, soil moisture.	Waveband: Microwave: 6.925 GHz, 7.3 GHz, 10.65 GHz, 18.7 GHz, 23.8 GHz, 36.5 GHz, 89.0 GHz Spatial resolution: 5 - 50 km (dependent on frequency) Swath width: 1450 km Accuracy: Sea surface temperature: 0.5 K, Sea ice cover: 10%, Cloud liquid water: 0.05 kg/m2, Precipitation rate: 10%, Water vapour: 3.5 kg/m2 through total column, Sea surface wind speed 1.5 m/s
AMSU-A Advanced Microwave Sounding Unit-A NASA AMSU-A Advanced Microwave Sounding Unit-A NOAA (UKSA) AMSU-B Advanced Microwave Sounding Unit-B NOAA (UKSA)	AMSU-A	Operational	Atmospheric temperature and humidity sounders	All-weather night-day temperature sounding to an altitude of 45 km.	Waveband: Microwave: 15 channels, 23.8 - 89.0 GHz Spatial resolution: 48 km Swath width: 2054 km Accuracy: Temperature profile: 2 K, humidity: 3 kg/m2, ice & snow cover: 10%
AMSU-A Advanced Microwave Sounding Unit-A NASA AMSU-A Advanced Microwave Sounding Unit-A NOAA (UKSA) AMSU-B Advanced Microwave Sounding Unit-B NOAA (UKSA)	Metop-A, Metop-B, Metop-C, NOAA-15, NOAA-18	Operational	Atmospheric temperature and humidity sounders	All-weather night-day temperature sounding to an altitude of 45 km.	Waveband: Microwave: 15 channels, 23.8 - 89.0 GHz Spatial resolution: 48 km Swath width: 2054 km Accuracy: Temperature profile: 2 K, humidity: 3 kg/m2, ice & snow cover: 10%
AMSU-A Advanced Microwave Sounding Unit-A NASA AMSU-A Advanced Microwave Sounding Unit-A NOAA (UKSA) AMSU-B Advanced Microwave Sounding Unit-B NOAA (UKSA)	NOAA-15	Operational	Atmospheric temperature and humidity sounders	All-weather night-day humidity sounding.	Waveband: Microwave: 89 GHz, 150 GHz, 183.3± 1.0 GHz (2 bands), 183.3± 3.0 GHz (2 bands), 183.3± 7.0 GHz (2 bands) Spatial resolution: 16 km Swath width: 2200 km Accuracy: Humidity profile: 1 kg/m2
ARGOS-3 CNES (NASA) ARGOS-4 NOAA Arina ROSKOSMOS (ROSHYDROMET)	Metop-A, Metop-B, Metop-C, NOAA-15, NOAA-18, NOAA-19, SARAL	Operational	Data collection	Location data by Doppler measurements.	Waveband: UHF: 401 MHz, 467 MHz Spatial resolution: 50 km Swath width: 2054 km Accuracy: Humidity profile: 1 kg/m2
ARGOS-4 NOAA Arina ROSKOSMOS (ROSHYDROMET)	CDARS, EPS-SG-b, GOES-13, GOES-14, GOES-15, Metop-C, NOAA-19	Operational	Data collection	Data collection and communication system for receiving and retransmitting data from ocean and land-based remote observing platforms/transponders.	Waveband: UHF: 401 MHz, 467 MHz Spatial resolution: 50 km Swath width: 2054 km Accuracy: Humidity profile: 1 kg/m2
Arina ROSKOSMOS (ROSHYDROMET)	Resurs DK 1	Operational	Space environment	Insights into electromagnetic field variations as the precursors of earthquakes.	Waveband: UHF: 401 MHz, 467 MHz Spatial resolution: 50 km Swath width: 2054 km Accuracy: Humidity profile: 1 kg/m2
ARMA-M3 Equipment for radio occultation monitoring of the atmosphere ROSHYDROMET (ROSKOSMOS) ASCAT Advanced Scatterometer EUMETSAT (ESA)	Meteor-M N3	Approved	Atmospheric temperature and humidity sounders	Atmospheric temperature and humidity profiles with high vertical resolution.	Waveband: frequency ranges of GLONASS and GPS: 1227.6 - 1605.375 MHz Spatial resolution: Sensing range of heights: 0.5 - 400 km Swath width: 2054 km Accuracy: Humidity profile: 1 kg/m2
ASI Atmospheric Sounding Interferometer CAST (NSMC-CMA) ASM Absolute Scalar Magnetometer CNES ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer METI (NASA)	Metop-A, Metop-B, Metop-C	Operational	Scatterometers	Measures wind speed and direction over ocean, soil moisture, sea ice cover, sea ice type, snow cover and snow parameters and vegetation parameters	Waveband: Microwave: C Band, 5.256 GHz Spatial resolution: Hi-res mode: 25 - 37 km, Nominal mode: 50 km Swath width: Continuous: 2 x 500 km swath width Accuracy: Wind speeds in range 4 - 24 m/s: 2 m/s and direction accuracy of 20 deg
ASI Atmospheric Sounding Interferometer CAST (NSMC-CMA) ASM Absolute Scalar Magnetometer CNES ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer METI (NASA)	FY-3D, FY-3E, FY-3F, FY-3G	Prototype	Atmospheric temperature and humidity sounders	Atmospheric sounding for weather forecasting.	Waveband: UHF: 401 MHz, 467 MHz Spatial resolution: 50 km Swath width: 2054 km Accuracy: Humidity profile: 1 kg/m2
ASI Atmospheric Sounding Interferometer CAST (NSMC-CMA) ASM Absolute Scalar Magnetometer CNES ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer METI (NASA)	Swarm	Operational	Magnetic field	Absolute calibration of Vector Field Magnetometer on board Swarm satellites.	Waveband: N/A Spatial resolution: 0.1 nT Swath width: N/A Accuracy: 0.1 nT
ASI Atmospheric Sounding Interferometer CAST (NSMC-CMA) ASM Absolute Scalar Magnetometer CNES ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer METI (NASA)	Terra	Operational	High resolution optical imagers	Surface and cloud imaging with high spatial resolution, stereoscopic observation of local topography, cloud heights, volcanic plumes, and generation of local surface digital elevation maps. Surface temperature and emissivity. ASTER SWIR detectors are no longer functioning due to anomalously high SWIR detector temperatures. ASTER SWIR data acquired since April 2008 are not useable, and show saturation of values and severe striping. All attempts to bring the SWIR bands back to life have failed, and no further action is envisioned.	Waveband: VIS and NIR: 3 bands in 0.52 - 0.86 µm, SWIR: 6 bands in 1.6 - 2.43 µm, TIR: 5 bands in 8.125 - 11.65 µm Spatial resolution: VNIR: 15 m, stereo: 15 m horizontally and 25 m vertical, SWIR: 30 m, TIR: 90 m Swath width: 60 km Accuracy: VNIR and SWIR: 4% (absolute), TIR: 4 K, Geolocation: 7 m
ATCOR Atmospheric correction ISRO ATLAS Advanced Topographic Laser Altimeter System NASA	RESOURCESAT-3	Proposed	High resolution optical imagers	Atmospheric correction.	Waveband: VNIR Hyperspectral Spatial resolution: 240 m Swath width: 900 km Accuracy:
ATCOR Atmospheric correction ISRO ATLAS Advanced Topographic Laser Altimeter System NASA	ICESat-II	Being developed	Lidars	Provide date on ice sheet height and sea ice thickness, land altitude, aerosol height distributions, cloud height and boundary layer height.	Waveband: VIS-NIR: Laser emits at 1064 nm (for altimetry) and 532 nm (for atmospheric measurements) Spatial resolution: 66 m spots separated by 170 m Swath width: 900 km Accuracy: Aerosol profile: 20%, Ice elevation: 20 cm, Cloud top height: 75 m, Land elevation: 20 cm, geoid: 5 m

ATLID	EarthCARE	Approved	Lidars	Derivation of cloud and aerosol properties - Measurement of molecular and particle backscatter in Rayleigh, co-polar and cross-polar Mie channels.	Waveband: Laser at 355 nm Spatial resolution: 300 m horizontal (TBC) Swath width: Accuracy:
ATmospheric LiDar					
ESA					
ATMS	JPSS-1, JPSS-2, JPSS-3, JPSS-4, Suomi NPP	Operational	Atmospheric temperature and humidity sounders	Collects microwave radiance data that when combined with the CrIS data will permit calculation of atmospheric temperature and water vapour profiles.	Waveband: Microwave: 22 bands, 23-184 GHz Spatial resolution: 5.2 - 1.1 deg Swath width: 2300 km Accuracy: 0.75 K - 3.60 K
Advanced Technology Microwave Sounder					
NASA (NOAA) ATOVS (HIRS/3 + AMSU + AVHRR/3)	NOAA-15	Operational	Atmospheric temperature and humidity sounders	Advanced TIROS Operational Vertical Sounder instrument suite.	Waveband: Spatial resolution: Swath width: Accuracy:
Advanced TIROS Operational Vertical Sounder					
NOAA AVHRR/3	Metop-A, Metop-B, Metop-C, NOAA-15, NOAA-18, NOAA-19	Operational	Imaging multi-spectral radiometers (vis/IR)	Measurements of land and sea surface temperature, cloud cover, snow and ice cover, soil moisture and vegetation indices. Data also used for volcanic eruption monitoring.	Waveband: VIS: 0.58 - 0.68 µm, NIR: 0.725 - 1.1 µm, SWIR: 1.58 - 1.64 µm, MWIR: 3.55 - 3.93 µm, TIR: 10.3 - 11.3 µm, 11.5 - 12.5 µm Spatial resolution: 1.1 km Swath width: 3000 km approx, Ensures full global coverage twice daily Accuracy:
Advanced Very High Resolution Radiometer/3					
NOAA					
AWIFS	RESOURCESAT-2, RESOURCESAT-2A	Operational	Imaging multi-spectral radiometers (vis/IR)	Vegetation and crop monitoring, resource assessment (regional scale), forest mapping, land cover/ land use mapping, and change detection.	Waveband: VIS: 0.52 - 0.59 µm and 0.62 - 0.68 µm, NIR: 0.77 - 0.86 µm, SWIR: 1.55 - 1.7 µm Spatial resolution: 55 m Swath width: 740 km Accuracy: 10 bit data
Advanced Wide Field Sensor					
ISRO BBR (EarthCARE)	EarthCARE	Approved	Earth radiation budget radiometers	Top of the atmosphere radiances and radiative flux.	Waveband: Shortwave channel: 0.2 - 4 µm, Total channel 0.2 - 50 µm Spatial resolution: 10 x 10 km ground pixel size for each of the three views Swath width: Accuracy: flux retrieval accuracy 10 Wm-2
BroadBand Radiometer (EarthCARE)					
ESA					
BIK-SD 1	Resurs-PM N1, Resurs-PM N2, Resurs-PM N3, Resurs-PM N4	Proposed	Imaging multi-spectral radiometers (vis/IR)	Provides a simultaneous taking of images of an object in several spectral bands of thermal range with detection and registration of land-based, subsurface-based and space-based objects.	Waveband: 3.5 - 4.1 µm; 8.1 - 8.45 µm; 8.45 - 8.80 µm; 8.90 - 9.25 µm; 10.3 - 11.3 µm; 11.5 - 12.5 µm Spatial resolution: 20 - 23.5 m Swath width: 120 km Accuracy:
High resolution wide capture multispectral infraredoptical sensor					
ROSKOSMOS BRLK	Meteor-M N2, Meteor-M N3	Operational	Imaging microwave radars	Land and sea surface monitoring	Waveband: X-band Spatial resolution: 350-1000 m Swath width: 450 km Accuracy:
X-band Synthetic Aperture Radar					
ROSHYDROMET (ROSKOSMOS) BRLK S-range	Kondor-FKA N1, Kondor-FKA N2	Approved	Imaging microwave radars	Disaster monitoring, sea surface monitoring, information support of environmental management	Waveband: S-band Spatial resolution: 1-12 m Swath width: 10-100 km Accuracy:
S-band Synthetic Aperture Radar					
ROSKOSMOS BRLK X-range	Obzor-R N1, Obzor-R N2, Obzor-R N3	Approved	Imaging microwave radars	Disaster monitoring, sea surface monitoring, information support of environmental management	Waveband: X-band Spatial resolution: 1-500 m Swath width: 10-750 km Accuracy:
X-band Synthetic Aperture Radar					
ROSKOSMOS C-Band SAR	Sentinel-1 A, Sentinel-1 B, Sentinel-1 C	Operational	Imaging microwave radars	Marine core services, land monitoring and emergency services. Monitoring sea ice zones and arctic environment. Surveillance of marine environment, monitoring land surface motion risks, mapping of land surfaces (forest, water and soil, agriculture), mapping in support of humanitarian aid in crisis situations.	Waveband: C-band: 5.405 GHz; HH, VV, HH+HV, VV+VH; Incidence angle: 20-45 Spatial resolution: Strip mode: 9 m, Interferometric wide swath mode: 20 m, extra-wide swath mode: 50 m, wave mode: 50 m Swath width: Strip mode: 80 km; Interferometric wide swath mode: 250 km, extra-wide swath mode: 400 km, Wave mode: sampled images of 20 x 20 km at 100 km intervals Accuracy: NESZ: -22 dB; PTAR: -25 dB; DTAR: -22 dB; Radiometric accuracy 1 dB (3 sigma); Radiometric stability: 0.5 dB (3 sigma)
C-Band Synthetic Aperture Radar					
ESA					
CALIOP	CALIPSO	Operational	Lidars	Two-wavelength, polarisation lidar capable of providing aerosol and cloud profiles and properties.	Waveband: 532 nm (polarization-sensitive), 1064 nm, VIS - NIR Spatial resolution: Vertical sampling: 30 m, 0 - 40 km Swath width: 333 m along-track Accuracy: 5% (532 nm)
Cloud-Aerosol Lidar with Orthogonal Polarization					
NASA CAR	SARE-2A (S1), SARE-2A (S2), SARE-2A (S3), SARE-2A (S4)	Approved	Imaging multi-spectral radiometers (vis/IR)	Panchromatic and multispectral (Vis/IR) measurements with high spatial resolution, with stereo capability for DEM generation. Applications in emergencies in general, agriculture, land use/land cover, change detection, urban environment, cartography, topography.	Waveband: Panchromatic band - P: 450-900 nm Vis/IR bands - B1: 450-520 nm - B2: 520-590 nm - B3: 630-690 nm - B4: 770-890 nm Spatial resolution: Panchromatic band: 1 m Vis/IR bands: 4 m Swath width: 12 km Accuracy: Absolute radiometric accuracy: 5% Waveband: 532 and 1064 nm (polarization sensing at both)
High Resolution Camera					
CONAE					
CATS	CATS-on-ISS	Operational	Lidars	cloud and aerosol lidar profiling	Spatial resolution: 60 m vertical by 350 horizontal, from 0 - 30 km Swath width: 350 m along-track Accuracy:
Cloud-Aerosol Transport System					
NASA CCD (HJ)	HJ-1A, HJ-1B	Operational	High resolution optical imagers	Multispectral measurements of Earth's surface for natural environment and disaster applications.	Waveband: 0.43 - 0.90 µm (4 bands) Spatial resolution: 30 m Swath width: 360 km (per set), 720 km (two sets) Accuracy:
CCD camera					
CAST CCD (ZY-1-02C and ZY-3)	ZY-1-02C, ZY-3	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.5-0.8 µm Spatial resolution: 2.36m (ZY-1-02C HR) 2.1m(ZY-3) Swath width: 52km(ZY-3) 54km(ZY-1-02C) Accuracy:
CCD and multispectral imager					
CRESDA					
CCD camera	INSAT-3A	Operational	Imaging multi-spectral radiometers (vis/IR)	Cloud and vegetation monitoring.	Waveband: VIS: 0.62 - 0.68 µm; NIR: 0.77 - 0.86 µm; SWIR: 1.55 - 1.69 µm Spatial resolution: 1 x 1 km Swath width: Normal: 6000 (N-S) X 6000 km (E-W) anywhere on earth disc, Program: 6000 (N-S) X (n X 300) km (E-W); n and number of frames programmable Accuracy:
Charged Coupled Device Camera					
ISRO					
CEFI	Swarm	Operational	Space environment and gravity instruments	Suprathermal ion imager and Langmuir probe to measure ion temp, electron temp, ion density, electron density, spacecraft potential and ion incident angle.	Waveband: N/A Spatial resolution: 0.3 mV/m Swath width: N/A Accuracy: <3 mV/m
Canadian Electric Field Instrument					
CSA (ESA) CER	ePOP on CASSIOPE	Operational	Space environment	Radio transmission from e-POP to ground for radio propagation and ionospheric scintillation measurements.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
Coherent EM Radio Tomography					
CSA CERES	Aqua, JPSS-1, Suomi NPP, Terra	Operational	Earth radiation budget radiometers	Long term measurement of the Earth's radiation budget and atmospheric radiation from the top of the atmosphere to the surface; provision of an accurate and self-consistent cloud and radiation database.	Waveband: 3 channels: 0.3-5 µm, 0.3 - 100 µm, 8 - 12 µm Spatial resolution: 20 km Swath width: Accuracy: 0.5%, 1%, 0.3% (respectively for the 3 channels)
Cloud and the Earth's Radiant Energy System					
NASA					

CHRIS Compact High Resolution Imaging Spectrometer ESA (UKSA)	PROBA	Operational	Imaging multi-spectral radiometers (vis/IR)	Supports a range of land, ocean and atmospheric applications, including agricultural science, forestry, environmental science, atmospheric science and oceanography.	Waveband: VIS - NIR: 400 - 1050 nm (63 spectral bands at a spatial resolution of 36 m; or 18 bands at full spatial resolution (18 m)) Spatial resolution: 36 m or 18 m depending on wavebands selected. Swath width: 14 km Accuracy: S/N 200 @ target albedo of 0.2. 12 bits digitisation.
CIRC Compact InfraRed Camera JAXA CLARREO Pathfinder IR NASA	ALOS-2	Operational	Other	Active fire detection. Land surface temperature.	Waveband: TIR: 8 - 12 μ m Spatial resolution: 200m Swath width: 128 km Accuracy: 0.2 K@300 K
CLARREO Pathfinder RS (hyperspectral imager) CLARREO Pathfinder - RS NASA	CLARREO Pathfinder-on-ISS	Proposed	Imaging multi-spectral radiometers (vis/IR)	Measuring key climate change variables such as global and zonal mean surface temperature, tropospheric lapse rate and humidity, cloud fraction, snow and ice cover, and aerosol optical depth.	Waveband: 200 cm ⁻¹ – 2000 cm ⁻¹ required, extension to 2760 cm ⁻¹ desired. NOTE: the longwave cutoff is assumed to result from the Cesium Iodide (CsI) beamsplitter and is somewhat flexible as long as the limiting optic is the beamsplitter substrate. Spatial resolution: 0.5 cm ⁻¹ unapodized (1 cm maximum optical path difference in the interferometer). Swath width: IFOV: The field of view at nadir shall be between 25 km and 100 km, imaged onto a single pixel. FOR: The Earth shall be viewed at nadir only; cross-track coverage not required. Cross-track and in-track compensation for ISS motion during interferogram acquisition is desirable but not required if image motion during an FTS scan is less than a few percent of the IFOV. Geolocation knowledge: Absolute geolocation of the nadir footprint shall be known to better than 1.5 km. This will likely require a star tracker attached to the IRS frame due to significant flexing in the ISS structure. Nadir bias: The IRS shall view Earth at nadir to within 0.2 degrees. Coverage/Repeat interval: The in-track interval between nadir views shall not exceed 225 km. Accuracy: The absolute radiometric accuracy of the mean of a large number of nadir spectra shall be better than 0.1 K, k=3. By taking the mean of a large number of spectra the contribution of random error (precision) to the uncertainty budget can be neglected. Systematic errors caused by interaction between the rotating scene select mirror and the polarization sensitivity of the FTS must be carefully considered and included in the estimate of overall accuracy.
Cloud Radar Cloud radar (ACE) NASA CO Sensor (ASCENDS) NASA	ACE ASCENDS	Proposed	Cloud profile and rain radars Atmospheric chemistry	Radar measurement for cloud droplets and precipitation. Measure the total column CO concentration.	Waveband: Dual frequency: 35 and 94 GHz Spatial resolution: Vertical: 250 m, Cross-track: 1.4 km, Along-track: 2.5 km Swath width: Instantaneous Footprint < 1 km Accuracy: TBD Waveband: 2.3 μ m Spatial resolution: 200 m Accuracy:
CO2 and O2 LIDAR (ASCENDS) Combined CO2 and O2 column absorption LIDAR (ASCENDS) NASA COMIS	ASCENDS	Proposed	Lidars	Measure the number density of Carbon Dioxide (CO2) in the column. Measure length of the column using a laser altimeter and measure ambient air pressure and temperature.	Waveband: 1.57 μ m Spatial resolution: 200 m Accuracy: 1 ppm CO2; 2 K for temperature
COMpact Imaging Spectrometer KARI COSI Corea SAR Instrument KARI CPR (CloudSat) Cloud Profiling Radar NASA	STSAT-3 KOMPSAT-5 CloudSat	Operational	Imaging multi-spectral radiometers (vis/IR) Imaging microwave radars Cloud profile and rain radars	Land use assessments SAR for land applications of cartography and disaster monitoring. Primary goal to provide data needed to evaluate and improve the way clouds are represented in global climate models. Measures vertical profile of clouds.	Waveband: 0.4 ~ 1.05 μ m Spatial resolution: 28m Swath width: 28 km Accuracy: Waveband: microwave Spatial resolution: High: 1 m Swath width: 100 km Accuracy: Waveband: Microwave: 94 GHz Spatial resolution: Vertical: 500 m, Cross-track: 1.4 km, Along-track: 2.5 km Swath width: Instantaneous Footprint < 2 km Accuracy: detects ice clouds optical depth >1, water clouds optical depth >3, ice content to +100%, -50%, liquid content to <50%, in-cloud heating to within 1K day-1 km-1
CPR (EarthCARE) Cloud Profiling Radar (EarthCARE) JAXA (NICT) CrIS Cross-track Infrared Sounder NOAA	EarthCARE JPSS-1, JPSS-2, JPSS-3, JPSS-4, Suomi NPP	Being developed Operational	Cloud profile and rain radars Atmospheric temperature and humidity sounders	Measurement of cloud properties, light precipitation, vertical motion. Daily measurements of vertical atmospheric distribution of temperature, moisture, and pressure.	Waveband: Microwave: 94 GHz Spatial resolution: Range resolution: 500m (100m sample) Horizontal resolution: 800m (500m sample) Swath width: Accuracy: Waveband: MWIR - TIR: 3.92 - 4.4 μ m, 5.7 - 8.62 μ m, 9.1 - 14.7 μ m, 1300 spectral channels Spatial resolution: IFOV 14 km diameter, 1 km vertical layer resolution Swath width: 2200 km Accuracy: Temperature profiles: to 0.9 K, Moisture profiles: 20 - 35%, Pressure profiles: 1% Waveband: Microwave: X-band (9.6 GHz) single-, dual- and quad- polarization Spatial resolution: [range x azimuth] Spotlight: 0.8x0.8 m (Single pol) 1x1 m (Single/Dual pol), Stripmap: 3x3 m (Single/Dual/Quad pol), ScanSAR: 4x20 or 6x40 m (Single/Dual pol) Swath width: Dual polarisation modes: Spotlight: 10 km, Stripmap: 40 km, ScanSAR: 100 or 200 km. Quad polarisation modes: 15 km. Accuracy: -
CSG SAR COSMO Seconda Generazione SAR ASI (MoD (Italy))	CSG-1, CSG-2	Approved	Imaging microwave radars	All-weather images of ocean, land and ice for monitoring of land surface processes, ice, environmental monitoring, risk management, environmental resources, maritime management, Earth topographic mapping.	Waveband: Microwave: X-band (9.6 GHz) single-, dual- and quad- polarization Spatial resolution: [range x azimuth] Spotlight: 0.8x0.8 m (Single pol) 1x1 m (Single/Dual pol), Stripmap: 3x3 m (Single/Dual/Quad pol), ScanSAR: 4x20 or 6x40 m (Single/Dual pol) Swath width: Dual polarisation modes: Spotlight: 10 km, Stripmap: 40 km, ScanSAR: 100 or 200 km. Quad polarisation modes: 15 km. Accuracy: -
CZS Coastal Zone Scanner ROSHYDROMET DCS Data Collecting System Transponder INPE DCS Data Collecting System Transponder INPE (CAST) DCS Data Collection System ROSHYDROMET	Meteor-M N3 SCD-1, SCD-2 CBERS-4, CBERS-4A Elektro-L N1, Elektro-L N2, Elektro-L N3, Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Approved Operational Operational	Ocean colour instruments Data collection Data collection	Coastal zone data, estimation of phytoplankton concentration. Data collection and communication. Data collection and communication.	Waveband: 0.4 - 0.79 μ m, 4 channels Spatial resolution: 80 m Swath width: 800 km Accuracy: Waveband: Spatial resolution: Swath width: Accuracy: Waveband: Spatial resolution: Swath width: Accuracy:

DCS (GOES-R)	GOES-R, GOES-S, GOES-T, GOES-U	Approved	Data collection	Collects data on temperature (air/water), atmospheric pressure, humidity and wind speed/direction, speed and direction of ocean and river currents.	Waveband: Spatial resolution: Swath width: Accuracy:
Data Collection System (NOAA, GOES-R)					
NOAA					
DCS (SABIA_MAR)	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Proposed	Data collection	Environmental and meteorological data collection from ground platforms (UHF 401.62 MHz uplink // S-band downlink).	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy: N/A
Data Collection System					
CONAE					
DDMI (CYGNSS)	CYGNSS	Being developed	Other	Constellation of bistatic radar receivers using GPS satellite transmitters to detect ocean surface roughness and estimate near surface wind speed from calm sea through hurricane force conditions and under all levels of precipitation.	Waveband: Microwave: 1.575 GHz Spatial resolution: 20-50 km (variable in ground processing) Swath width: Field of view of potential GPS specular point contacts extends 740 km cross-track in both port and starboard directions. Accuracy: wind speed RMS retrieval uncertainty: 2 m/s for winds less than 20 m/s and 10% for winds greater than 20 m/s
Delay Doppler Mapping Instrument (DDMI)					
NASA (NOAA)					
DESI	DESI-on-ISS	TBD	Imaging multi-spectral radiometers (vis/IR) and hyperspectral imagers	DESI is a hyperspectral camera that records image data using an array of up to 240 closely spaced channels, covering the visible and near infrared portions of the spectrum (450 to 915 nanometres) with a ground resolution of approximately 90 metres. This multifaceted information allows scientists to detect changes in ecosystems and to make statements on the condition of forests and agricultural land.	Waveband: Spectral range: 450nm – 950nm (400 - 1000nm) Spectral sampling: ≈ 2.32nm
DLR Earth Sensing Imaging Spectrometer					
DLR					Spectral channels: 240 (without binning) Spatial resolution: 79m/104m @330 km/435km orbit (min/max) Swath width: 44km/57km @330 km/435km orbit (min/max) Accuracy:
DORIS-NG	CryoSat-2, HY-2A, Jason-3, OSTM (Jason-2), Sentinel-6 A, Sentinel-6 B, SWOT	Operational	Precision orbit	Precise orbit determination; Real time onboard orbit determination (navigation).	Waveband: Spatial resolution: Swath width: Accuracy: Orbit error ~1 cm
Doppler Orbitography and Radio-positioning Integrated by Satellite-NG					
DNES					
DPR	GPM Core	Operational	Cloud profile and rain radars	Measures precipitation rate classified by rain and snow, in latitudes up to 65 degrees.	Waveband: Microwave: 13.6 GHz (Ku band) and 35.5 GHz (Ka band) Spatial resolution: Range resolution: 125m (NS, MS mode), 250m (HS mode). Horizontal resolution: 5 km at nadir Swath width: 245 km (Ku-band), 125 km (Ka band) Accuracy: Rainfall rate 0.2 mm/h
Dual-frequency Precipitation Radar					
JAXA (NICT)					
DRT-S&R	INSAT-3A, KALPANA-1	Operational	Communications	Relay of search and rescue information.	Waveband: Spatial resolution: Swath width: Accuracy:
ISRO					
ECOSTRESS	ECOSTRESS-on-ISS	Being developed	Imaging multi-spectral radiometers (vis/IR)	This project will use a high-resolution thermal infrared radiometer to measure plant evapotranspiration, the loss of water from growing leaves and evaporation from the soil.	Waveband: TIR Spatial resolution: Swath width: Accuracy:
ECOSystem Spaceborne Thermal Radiometer Experiment on Space Station					
NASA					
EPIC	DSCOVR	Operational	Imaging multi-spectral radiometers (vis/IR)	Diurnal measurements of ozone, UV surface radiation, clouds and aerosols.	Waveband: 317 - 799 nm in 10 channels Spatial resolution: 25-35 km Swath width: Whole Earth Accuracy:
Earth Polychromatic Imaging Camera					
NASA (NOAA)					
ERM	FY-3A, FY-3B, FY-3C	Operational	Earth radiation budget radiometers	Measures Earth radiation gains and losses on regional, zonal and global scales.	Waveband: 0.2 - 3.8 µm, 0.2 - 50 µm Spatial resolution: 25 km Swath width: 2200 km Accuracy: DLR/DSR10 watts/m2 net solar 3 w/m2 OLR 5 w/m2
Earth Radiation Measurement					
NRSCC (NSMC-CMA, CAST)	FY-3E, FY-3G	Approved	Earth radiation budget radiometers	Measures Earth radiation gains and losses on regional, zonal and global scales.	Waveband: Spatial resolution: Swath width: Accuracy:
ERM-2					
Improved Earth Radiation Measurement					
NRSCC (NSMC-CMA, CAST)					
ES	DSCOVR	Operational	Space environment	Space Physics experiment for measuring speed and direction of electrons coming from the sun.	Waveband: Spatial resolution: Swath width: Accuracy:
Electron Spectrometer					
NOAA (NASA)					
ETM+	Landsat 7	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures surface radiance and emittance, land cover state and change (eg vegetation type). Used as multi-purpose imagery for land applications.	Waveband: VIS - TIR: 8 bands: 0.45 - 12.5 µm Spatial resolution: PAN: 15 m, VIS - SWIR: 30 m, TIR: 60 m Swath width: 185 km Accuracy: 50 - 250 m systematically corrected geodetic accuracy
Enhanced Thematic Mapper Plus					
USGS (NASA)					
Event Imaging Spectrometer from GEO (GeoCape)	GEO-CAPE	Proposed	High resolution optical imagers	Predictions of impacts from oil spills, fires, water pollution from sewage and other sources, fertilizer runoff, and other environmental threats. Detection and tracking of waterborne hazardous materials. Monitoring and improvement of coastal health.	Waveband: UV/VIS (310 - 481 nm) and the VIS/NIR (500 - 900 nm) Spatial resolution: 250 m spatial resolution, 20 - 50 nm (MODIS-like) spectral bands Swath width: 300 km swath width coastal regions an targets of opportunity Accuracy:
NASA					
EXIS	GOES-R, GOES-S, GOES-T, GOES-U	Being developed	Other	Monitors the whole-Sun X-ray irradiance in two bands and the whole-Sun EUV irradiance in five bands.	Waveband: Spatial resolution: N/A Swath width: Accuracy:
Extreme Ultraviolet and X-ray Irradiance Sensors					
NOAA					
FAI	ePOP on CASSIOPE	Operational	Space environment	Measures the large-scale auroral emissions in the 630-1100 nm wavelength range. The FAI imager system produces 16-bit digital images of the near infrared band at one image per second (again taking advantage of the non-rotating platform on CASSIOPE), and the 630-nm wavelength at two images per minute, giving adequate temporal resolution to investigate the above scientific objectives.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
Fast Auroral Imager					
CSA					
FCI	MTG-I1 (imaging), MTG-I2 (imaging), MTG-I3 (imaging), MTG-I4 (imaging)	Being developed	Imaging multi-spectral radiometers (vis/IR)	Measurements of cloud cover, cloud top height, precipitation, cloud motion, vegetation, radiation fluxes, convection, air mass analysis, cirrus cloud discrimination, tropopause monitoring, stability monitoring, total ozone and sea surface temperature.	Waveband: VIS0.4=0.414 - 0.474 µm, VIS0.5=0.49 - 0.53 µm, VIS0.6=0.615 - 0.665 µm, VIS0.8=0.84 - 0.89 µm, VIS0.9=0.904 - 0.924 µm, NIR1.3=1.365 - 1.395 µm, NIR1.6=1.585 - 1.635 µm, NIR2.2=2.225 - 2.275 µm, IR3.8=3.6 - 4 µm, WV6.3=5.8 - 6.8 µm, WV7.3=7.1 - 7.6 µm, IR8.7=8.5 - 8.9 µm, IR9.7=9.51 - 9.81 µm, IR10.5=10.15 - 10.85 µm, IR12.3=12.05 - 12.55 µm, IR13.3=13 - 13.6 µm (measured at FWHM) Spatial resolution: VIS0.4=1.0 km, VIS0.5=1.0 km, VIS0.6=1.0 km & 0.5 km, VIS0.8=1.0 km, VIS0.9=1.0 km, NIR1.3=1.0 km, NIR1.6=1.0 km, NIR2.2=1.0 km & 0.5 km, IR3.8=2.0 km & 1.0 km, WV6.3=2.0 km, WV7.3=2.0 km, IR8.7=2.0 km, IR9.7=2.0 km, IR10.5=2.0 km & 1.0 km, IR12.3=2.0 km, IR13.3=2.0 km (spatial sampling distance at SSP) Swath width: 210 km swath moved alternately W-E and E-W, moving up S-N a swath width at the end of each swath. Full Disc Coverage (FDC) or Local Area Coverage (LAC) possible. Accuracy: Cloud cover: 10%, Cloud top height: 1 km, Cloud top temperature: 1 K, Cloud type: 8 classes, Surface temperature: 0.7-2.0K, Specific humidity profile: 10%, Wind profile (horizontal component): 2 - 10 m/s, Long wave Earth surface radiation: 5 W/m2
Flexible Combined Imager					
EUMETSAT (ESA)					
GAMI	FY-3D, FY-3F	TBD	Atmospheric chemistry	Measures greenhouse gases.	Waveband: Spatial resolution: Swath width: Accuracy:
Greenhouse Gases monitoring Instrument					
CAST (NSMC-CMA)					

GAP	ePOP on CASSIOPE	Operational	Space environment	Used for spacecraft position and attitude determination and for ionospheric radio occultation profiling measurements in which the relative phase delay of the measured L1 and L2 signals (at frequencies of 1.57542 GHz and 1.2276 GHz, respectively) from different satellites of the GPS constellation will be used to determine the electron density profile of the ionosphere using tomographic techniques. The GAP is turned on an average of 10% of the time, following a schedule devised by the science team.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
GPS receiver-based Attitude, Position, and profiling experiment (GAP)					
CSA					
GED	GED-on-ISS	Being developed	Lidars	This project will use a laser-based system to study a range of climates, including the observation of the forest canopy structure over the tropics, and the tundra in high northern latitudes.	Waveband: Spatial resolution: Swath width: Accuracy:
Global Ecosystem Dynamics Investigation Lidar					
NASA					
GEMS	GEO-KOMPSAT-2B	Being developed	Atmospheric chemistry	Measurements of atmospheric chemistry, precursors of aerosols and ozone in particular, in high temporal and spatial resolution over Asia.	Waveband: 0.30 µm - 0.50µm Spatial resolution: 56km2 at Seoul Swath width: TBD Accuracy:
Geostationary Environmental Monitoring Spectrometer					
KARI	PATH	Proposed	Imaging multi-spectral radiometers (passive microwave)	High frequency, all-weather temperature and humidity soundings for weather forecasting and SST.	Waveband: 50 - 57 GHz, 165 - 183 GHz, and possibly 118 - 125 GHz Spatial resolution: Temporal resolution is 15 to 30 minutes; 25 - 50 km at nadir Swath width: Temporal resolution is 15 to 30 minutes; 25 - 50 km at nadir Accuracy: < 5 K (brightness temperature)
GeoSTAR					
MW Array Spectrometer (PATH)					
NASA					
Geoton-L1 (1)	Resurs DK 1	Operational	High resolution optical imagers	Multispectral images of land surfaces and Oceans.	Waveband: 0.58 - 0.8 µm; 0.5 - 0.6 µm; 0.6 - 0.7 µm; 0.7 - 0.8 µm Spatial resolution: 3 m; 5 m Swath width: 16 km Accuracy:
Geoton-L1					
ROSKOSMOS (ROSHYDROMET)					
Geoton-L1 (2)	Resurs-P N1, Resurs-P N2, Resurs-P N3, Resurs-P N4, Resurs-P N5	Operational	High resolution optical imagers	Multispectral images of land surfaces and Oceans.	Waveband: 0.58 - 0.8 µm; 0.45 - 0.52 µm; 0.52 - 0.60 µm; 0.61 - 0.68 µm; 0.72 - 0.80 µm; 0.80 - 0.90 µm Spatial resolution: 1 m; 3 m Swath width: 38 km Accuracy:
Geoton-L1					
ROSKOSMOS					
GERB	Meteosat-10, Meteosat-11, Meteosat-8, Meteosat-9	Operational	Earth radiation budget radiometers	Measures long and short wave radiation emitted and reflected from the Earth's surface, clouds and top of atmosphere. Full Earth disk, all channels in 5 minutes.	Waveband: SW: 0.32 - 4.0 µm, LW 4.0 - 30 µm (by subtraction) Spatial resolution: 44.6 x 39.3 km Swath width: Single column moved alternately W-E and E-W to cover the complete earth disc Accuracy: SW=1.2 Wm-2, LW=7.5 Wm-2
Geostationary Earth Radiation Budget					
EUMETSAT (ESA)					
GGAK-E	Elektro-L N1, Elektro-L N2, Elektro-L N3	Operational	Space environment and magnetic field	Monitoring and forecasting of solar activity, radiation and magnetic field in the near-Earth space, monitoring of natural and modified magnetosphere, ionosphere and upper atmosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
Module for Geophysical Measurements					
ROSKOSMOS (ROSHYDROMET)					
GGAK-M	Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Operational	Space environment and magnetic field	Space Environmental Monitoring (SEM), heliogeophysical.	Waveband: Spatial resolution: Swath width: Accuracy:
Module for Geophysical Measurements (SEM)					
ROSKOSMOS (ROSHYDROMET)					
GGAK-VE	Arctic-M N1, Arctic-M N2	Approved	Space environment	Monitoring and forecasting of solar activity, radiation and magnetic field in the near-Earth space, monitoring of natural and modified magnetosphere, ionosphere and upper atmosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
Module for Geophysical Measurements					
ROSKOSMOS					
GLM	GOES-R, GOES-S, GOES-T, GOES-U	Being developed	Lightning sensors	Detect total lightning flash rate over near full disk.	Waveband: NIR at 777.4 nm Spatial resolution: 10 km Swath width: Accuracy: 70%
GEO Lightning Mapper					
NOAA					
GMI	GPM Core	Operational	Imaging multi-spectral radiometers (passive microwave)	Measures rainfall rates over oceans and land, combined rainfall structure and surface rainfall rates with associated latent heating Used to produce three hour, daily, and monthly total rainfall maps over oceans and land.	Waveband: Microwave: 10.65 GHz, 18.7 GHz, 23.8 GHz, 36.5 GHz, 89.0 GHz, 165.5 GHz, 183.31 ± 3 GHz, 183.31 ± 8 GHz Spatial resolution: Horizontal: 36 km cross-track at 10.65 GHz (required - Primary Spacecraft, goal - Constellation Spacecraft); 10 km along-track and cross-track (goal - Primary Spacecraft) Swath width: 800 km (Core Observatory) Accuracy: 0.65 - 1.5 K Waveband: Spatial resolution: Swath width: Accuracy:
GPM Microwave Imager					
NASA					
GNOS	FY-3D, FY-3E, FY-3F, FY-3G, FY-3RM	Approved	Atmospheric temperature and humidity sounders	Atmospheric sounding for weather forecasting.	Waveband: Spatial resolution: Swath width: Accuracy:
GNSS Occultation Sounder					
CAST (NSMC-CMA)	Sentinel-6 A, Sentinel-6 B	Being developed	Precision orbit and atmospheric temperature and humidity sounders		Waveband: Spatial resolution: Swath width: Accuracy:
GNSS POD Receiver					
ESA					
GOCI	COMS	Operational	Ocean colour instruments	Ocean colour information, coastal zone monitoring, land resources monitoring.	Waveband: VIS - NIR: 0.40 - 0.88 µm (8 channels) Spatial resolution: 236 x 500 m Swath width: 1440 km Accuracy:
Geostationary Ocean Colour Imager					
KARI	GOES Comms	Operational	Communications		Waveband: Spatial resolution: Swath width: Accuracy:
GOES Comms	GOES-13, GOES-14, GOES-15				
Communications package on GOES					
NOAA					
GOME-2	Metop-A, Metop-B, Metop-C	Operational	Atmospheric chemistry	Measurement of total column amounts and stratospheric and tropospheric profiles of ozone. Also amounts of H2O, NO2, OClO, BrO, SO2 and HCHO.	Waveband: UV - NIR: 0.24 - 0.79 µm (resolution 0.2 - 0.4 nm) Spatial resolution: Horizontal: 40 x 80 km (1920 km swath) to 40 x 10 km (for polarization monitoring) Swath width: 120 - 1920 km Accuracy: Ozone profile 15% strat + 30% trop; Total ozone 4-6%; Total NO2 8-15% annual mean + 3-4x10 ⁻¹⁴ mole/cm ² ; Tropospheric NO2 30%; Total SO2 50%; Total HCHO (polluted) 50%; Total BrO 30%; Total H2O 10%
Global Ozone Monitoring Experiment - 2					
EUMETSAT (ESA)					
GOX	COSMIC-1 FM1, COSMIC-1 FM2, COSMIC-1 FM4, COSMIC-1 FM5, COSMIC-1 FM6	Operational	Atmospheric temperature and humidity sounders	Each instrument equipped with 4 GPS antennas to receive the L1 and L2 radio wave signals transmitted from the 24 US GPS satellites. Based on the signal transmission delay caused by the electric density, temperature, pressure, and water content in the ionosphere and atmosphere, information about ionosphere and atmosphere can be derived.	Waveband: L1/L2 Spatial resolution: Vertical: 0.3 - 1.5 m; Horizontal: 300 - 600 km Swath width: Accuracy:
Global Positioning Satellite Occultation Experiment (GOX)					
NASA, NSPO (JPL)	Swarm	Operational	Precision orbit	Provides position and timing determination	Waveband: Spatial resolution: L1 C/A code range error better than 0.5 m RMS; L1/L2 P-code range error better than 0.25 m RMS; L1 carrier phase error better than 5 mm Swath width: Accuracy:
GPS Receiver (Swarm)					
ESA					
GPSP	Jason-3, OSTM (Jason-2), SWOT	Operational	Precision orbit	Precision orbit determination.	Waveband: Spatial resolution: Swath width: Accuracy:
Global Positioning System Payload					
NASA	Oersted	Operational	Atmospheric temperature and humidity sounders	Measurements of atmospheric temperature, pressure and water vapour content.	Waveband: Spatial resolution: Swath width: Accuracy:
GPSRO (Oersted)					
GPS Radio Occultation System					
NASA	TerraSAR-X	Operational	Atmospheric temperature and humidity sounders	Measurements of atmospheric temperature, pressure and water vapour content.	Waveband: Spatial resolution: Swath width: Accuracy:
GPSRO (Terra-SAR)					
GPS Radio Occultation System					
NASA					

GRACE instrument NASA (DLR, ESA)	GRACE, GRACE FO, GRACE-II	Operational	Gravity instruments	Includes BlackJack Global Positioning System (Turbo Rogue Space Receiver) and High Accuracy Inter-satellite Ranging System (aka K-band Ranging System) for Inter-satellite ranging system estimates for global models of the mean and time variable Earth gravity field.	Waveband: Microwave: 24 GHz and 32 GHz Spatial resolution: 400 km horizontal, N/A vertical Swath width: N/A Accuracy: 1 cm equivalent water
GRAS GNSS Receiver for Atmospheric Sounding	Metop-A, Metop-B, Metop-C	Operational	Atmospheric temperature and humidity sounders and precision orbit	GNSS receiver for atmospheric temperature and humidity profile sounding.	Waveband: L-Band Spatial resolution: Vertical: 150 m (troposphere) and 1.5 km (stratosphere), Horizontal: 100 km approx (troposphere), 300 km approx (stratosphere) Swath width: Altitude range of 5 - 30 km Accuracy: Temperature sounding to 1 K rms
EUMETSAT (ESA) GSA (1) Hyperspectral imaging equipment	Resurs-P N1, Resurs-P N2, Resurs-P N3, Resurs-P N4, Resurs-P N5	Operational	Other	Land surface monitoring	Waveband: 0.4 - 1.1 µm, 96-255 spectral bands Spatial resolution: 30 m Swath width: 25 km Accuracy:
ROSKOSMOS GSA (2) Hyperspectral imaging equipment	Resurs-PM N1, Resurs-PM N2, Resurs-PM N3, Resurs-PM N4	Approved	Other	Land surface monitoring	Waveband: >130 bands - 400 - 1000 nm 100 bands - 1300 - 2500 nm 60 bands - 3000 - 12000 nm Spatial resolution: 25 - 30 m 60 - 70 m 90 - 100 m Swath width: 25-30 km Accuracy:
GSA (3) Hyperspectral imaging equipment	Obzor-O N1, Obzor-O N2	Prototype	Other	Land surface monitoring	Waveband: 0.4 - 1.1 µm Spatial resolution: Swath width: Accuracy:
ROSKOSMOS GSA (4) Hyperspectral imaging equipment	Obzor-O N3, Obzor-O N4	Approved	Other	Land surface monitoring	Waveband: 0.43-0.90 µm; 0.9-1.7 µm; 2-2.4 µm; 130 channels Spatial resolution: 25-84 m Swath width: 42 km Accuracy:
ROSKOSMOS HDWL (3D Winds) NASA	3D Winds	Proposed	Lidars	Tropospheric winds for weather forecasting and pollution transport.	Waveband: 2.051 µm and 0.355 µm Spatial resolution: 300 km along track horizontal resolution Swath width: View 45 degrees of nadir at four azimuth angles: 45, 135, 225, 315 deg. Accuracy: 2-3 m/s LOS wind accuracy projected into horizontal from all effects including sampling error
High Resolution Optical Sensor KARI	CAS500-1	Being developed	High resolution optical imagers	Cartography, land use and planning	Waveband: Spatial resolution: Swath width: Accuracy:
Himawari Comms Communications package for Himawari	Himawari-8, Himawari-9	Operational	Communications		Waveband: Spatial resolution: Swath width: Accuracy:
JMA Himawari DCS Data Collection System for Himawari	Himawari-8, Himawari-9	Operational	Data collection		Waveband: Spatial resolution: Swath width: Accuracy:
JMA HIRDLS High Resolution Dynamics Limb Sounder	Aqua, Aura	Operational	Atmospheric chemistry	Measures atmospheric temperature, concentrations of ozone, water vapour, methane, NOx, N2O, CFCs and other minor species, aerosol concentration, location of polar stratospheric clouds and cloud tops. Currently not collecting data on Aqua.	Waveband: TIR: 6.12 - 17.76 µm (21 channels) Spatial resolution: Vertical: 1 km, Horizontal: 10 km Swath width: Accuracy: Trace gas: 10%, Temperature: 1 K, Ozone: 10%
NASA (UKSA) HIRI High-Resolution Imager CNES	Pleiades 1A, Pleiades 1B	Operational	High resolution optical imagers	Cartography, land use, risk, agriculture and forestry, civil planning and mapping, digital terrain models, defence.	Waveband: 4 bands + PAN: Near IR (0.77 - 0.91 µm), Red (0.61 - 0.71 µm), Green (0.50 - 0.60 µm), Blue (0.44 - 0.54 µm), Pan (0.47 - 0.84 µm) Spatial resolution: 0.70 m Swath width: 20 km swath at nadir. Agile platform giving ±50 deg off-track Accuracy:
HIRS/3 High Resolution Infra-red Sounder/3	NOAA-15	Operational	Atmospheric temperature and humidity sounders	Atmospheric temperature profiles and data on cloud parameters, humidity soundings, water vapour, total ozone content, and surface temperatures.	Waveband: VIS - TIR: 0.69 - 14.95 µm (20 channels) Spatial resolution: 20.3 km Swath width: 2240 km Accuracy:
NOAA HIRS/4 High Resolution Infra-red Sounder/4	Metop-A, Metop-B, NOAA-18, NOAA-19	Operational	Atmospheric temperature and humidity sounders	Atmospheric temperature profiles and data on cloud parameters, humidity soundings, water vapour, total ozone content, and surface temperatures. Same as HIRS/3, with 10 km IFOV.	Waveband: VIS - TIR: 0.69 - 14.95 µm (20 channels) Spatial resolution: 20.3 km Swath width: 2240 km Accuracy:
NOAA HRC High Resolution Camera	PROBA	Operational	Imaging multi-spectral radiometers (vis/IR)	The objective is to demonstrate a high-resolution imager, primarily intended for technology, educational and general public information purposes.	Waveband: Gray scale images Spatial resolution: Ground resolution of 8 m (from an altitude of 600 km) Swath width: Images of size 4 km x 4 km Accuracy:
ESA HRMX High Resolution Multi Spectral	CARTOSAT-2E	Proposed	Imaging multi-spectral radiometers (vis/IR)	For crops and vegetation dynamics, natural resources census, disaster management and large scale mapping of themes.	Waveband: 4 bands MX in VIS and NIR Spatial resolution: 2 m Swath width: 10 km Accuracy:
ISRO HRMX-TIR High resolution Mx TIR	GISAT	Proposed	Imaging multi-spectral radiometers (vis/IR)	Continuous monitoring of the earth and natural resources applications in hyperspectral thermal bands	Waveband: MX (3 Bands TIR) Spatial resolution: 1.5 km Swath width: Accuracy:
ISRO HRMX-VNIR High Resolution MX-VNIR	GISAT	Proposed	Imaging multi-spectral radiometers (vis/IR)	Continuous monitoring of the earth and natural resources applications in Visible and VNIR bands	Waveband: MX (4 Bands VNIR) Spatial resolution: 50 m Swath width: Accuracy:
ISRO HRTPC High Resolution Technological Panchromatic Camera	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	TBD	High resolution optical imagers	High Resolution Panchromatic Camera - Technological objective - Coastal development mapping	Waveband: VIS - NIR: 400 - 900 nm Spatial resolution: 5m Swath width: 30 km Accuracy:
CONAE HRWS X-Band Digital Beamforming SAR DLR	HRWS SAR	Proposed	Imaging microwave radars	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: 9.65 GHz, up to 1200 MHz bandwidth, fully polarimetric Spatial resolution: VHR Mode: 0.25 x 0.5 m, HR Stripmap: 0.5 x 0.5 m, Stripmap: 1 x 1 m ScanSAR: 4 - 25 x 25 m Swath width: HR Mode: 10 km, HR Stripmap: 20 km Stripmap: 70 km, ScanSAR: up to 800 km Accuracy:
HSC (SABIA_MAR) High Sensitivity Camera	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Proposed	Imaging multi-spectral radiometers (vis/IR)	High Sensitivity Camera (HSC) measures top of atmosphere radiance in the VIS spectral range measured by a high sensitivity sensor detects: urban lights, electric storms, polar regions, snow cover, forest fires, sea surveillance.	Waveband: PAN (VIS-NIR): 450 - 900 nm Spatial resolution: 400 m Swath width: 1560 km Accuracy:
CONAE HSI Hyperspectral Imager	EnMAP	Approved	Hyperspectral imagers and imaging multi-spectral radiometers (vis/IR)	Detailed monitoring and characterization of rock and soil targets, vegetation, inland and coastal waters on a global scale.	Waveband: 420 - 2450 nm Spatial resolution: GSD 30 m Swath width: 30 km Accuracy: Radiometric: <5%
DLR HSI (HJ-1A) Hyper Spectrum Imager	HJ-1A	Operational	Imaging multi-spectral radiometers (vis/IR)	Hyperspectral measurements for environment and disaster management operations.	Waveband: 0.45 - 0.95 µm (128 bands) Spatial resolution: 100 m Swath width: 50 km Accuracy:
CAST HYC HYperspectral Camera ASI	PRISMA	Approved	Hyperspectral imagers and imaging multi-spectral radiometers (vis/IR)	Hyperspectral data for complex land ecosystem studies.	Waveband: VNIR: 400 - 1010 nm, SWIR: 920 - 2500 nm Spatial resolution: 30 m Swath width: 30 km Accuracy: Spectral resolution 10 nm

Hyperion	NMP EO-1	Operational	Hyperspectral imagers and imaging multi-spectral radiometers (vis/ir)	Hyperspectral imaging of land surfaces.	Waveband: VIS - NIR: 400 - 1000 nm; NIR - SWIR: 900 - 2500 nm; 10 nm spectral resolution for 220 bands Spatial resolution: 30 m Swath width: 185 km Accuracy: SNR @ 10% refl target: vis 10-40 swir 10-20
Hyperspectral Imager					
NASA HYSI-SWIR	GISAT	Proposed	Imaging multi-spectral radiometers (vis/IR)	Continuous monitoring of the earth and natural resources applications in hyperspectral SWIR bands	Waveband: 60 Bands VNIR Spatial resolution: 320 m Swath width: Accuracy:
Hyperspectral SWIR					
ISRO HYSI-VNIR	GISAT	Proposed	Imaging multi-spectral radiometers (vis/IR)	Continuous monitoring of the earth and natural resources applications in hyperspectral VNIR bands	Waveband: 150 Bands SWIR Spatial resolution: 192 m Swath width: Accuracy:
Hyperspectral VNIR					
ISRO IASI	Metop-A, Metop-B, Metop-C	Operational	Atmospheric temperature and humidity sounders and atmospheric chemistry	Measures tropospheric moisture and temperature, column integrated contents of ozone, carbon monoxide, methane, dinitrogen oxide and other minor gases which affect tropospheric chemistry. Also measures sea surface and land temperature.	Waveband: MWIR - TIR: 645 to 2760 cm-1 or 3.4 - 15.5 µm (8461 channels) Spatial resolution: Vertical: 1 - 30 km, Horizontal: 25 km Swath width: 2052 km Accuracy: Temperature: 0.5 - 2 K, specific humidity: 0.1 - 0.3 g/kg, ozone, trace gas profile: 10%
Infrared Atmospheric Sounding Interferometer					
CNES (EUMETSAT) IASI-NG	EPS-SG-a	Proposed	Atmospheric temperature and humidity sounders	Measures tropospheric moisture and temperature, column integrated contents of ozone, carbon monoxide, methane, dinitrogen oxide and other minor gases which affect tropospheric chemistry. Also measures sea surface and land temperature.	Waveband: MWIR - TIR: 645 to 2760 cm-1 or 3.4 - 15.5 µm (16921 channels) Spatial resolution: Vertical: 1 - 30 km, Horizontal: 25 km Swath width: 2052 km Accuracy: TBC
Infrared Atmospheric Sounding Interferometer - New Generation					
CNES (EUMETSAT) ICI	EPS-SG-b	Proposed	Imaging multi-spectral radiometers (passive microwave)	Measures cloud ice content, snowfall detection, precipitation content, snowfall rate near surface and water vapour profiles	Waveband: 11 channels from 183 to 664 GHz Spatial resolution: Footprint size 15 km (Threshold) Swath width: Accuracy:
Ice Cloud Imager					
EUMETSAT (ESA) IIR	CALIPSO	Operational	Imaging multi-spectral radiometers (vis/IR)	Radiometer optimised for combined IIR/lidar retrievals of cirrus particle size.	Waveband: TIR: 8.7 µm, 10.5 µm, and 12.0 µm (0.8 µm resolution) Spatial resolution: 1 km Swath width: 64 km Accuracy: 1 K
Imaging Infrared Radiometer					
CNES IK-radiometer (1)	Obzor-O N1, Obzor-O N2	Proposed	Imaging multi-spectral radiometers (vis/IR)	Parameters of clouds, snow, ice and land cover, vegetation, surface temperature, fire detection.	Waveband: 3.5-4.1 µm; 8.1-9.1 µm; 10.5-12.5 µm Spatial resolution: 40 m Swath width: 120-200 km Accuracy:
IR-radiometer					
ROSKOSMOS IKFS	Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Operational	Atmospheric temperature and humidity sounders	Atmospheric temperature/humidity profiles, data on cloud parameters, water vapour & ozone column amounts, surface temperature.	Waveband: 5 - 15 µm, more than 5000 spectral channels Spatial resolution: 35000-100000 m Swath width: 1000 km; 1500 km; 2000 km; 2500 km Accuracy:
IR-Fourier spectrometer					
ROSKOSMOS (ROSHYDROMET) Imager	GOES-13, GOES-14, GOES-15	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures cloud cover, atmospheric radiance, winds, atmospheric stability, rainfall estimates. Used to provide severe storm warnings/ monitoring day and night (type, amount, storm features).	Waveband: GOES 8 - 11: VIS: 1 channel (8 detectors), IR: 4 channels: 3.9 µm, 6.7 µm, 10.7 µm and 12 µm, GOES 12 - Q: VIS: 1 channel (8 detectors), IR: 4 channels: 3.9 µm, 6.7 µm, 10.7 µm and 13.3 µm Spatial resolution: 10 km Swath width: Full Earth disk Accuracy:
NOAA					
Imager (INSAT)	INSAT-3D, INSAT-3DR	Operational	Imaging multi-spectral radiometers (vis/IR)	Cloud cover, severe storm warnings/monitoring day and night (type, amount, storm features), atmospheric radiance winds, atmospheric stability rainfall.	Waveband: VIS: 0.55 - 0.75 µm; SWIR: 1.55 - 1.7 µm; MWIR: 3.80 - 4.00 µm, 6.50 - 7.00 µm; TIR: 10.2 - 11.3 µm, 11.5 - 12.5 µm Spatial resolution: 1 x 1 km (VIS and SWIR), 4 x 4 km (MWIR, TIR), 8 x 8 km (in 6.50 - 7.00 µm) Swath width: Full Earth disc and space around, Normal Frame (50 deg. N to 40 deg. S and full E-W coverage), Program Frame (Programmable, E-W Full coverage) Accuracy:
Very High Resolution Radiometer					
ISRO					
IMAGER/MTSAT-2	MTSAT-2	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures cloud cover, cloud motion, cloud height, water vapour, rainfall, sea surface temperature and Earth radiation.	Waveband: VIS - SWIR: 0.55 - 0.80 µm, MWIR - TIR: 3.5 - 4 µm, 6.5 - 7 µm, 10.3 - 11.3 µm, 11.5 - 12.5 µm Spatial resolution: Visible: 1 km, TIR: 4 km Swath width: Full Earth disk every hour Accuracy:
Imager/MTSAT					
JMA IMWAS	FY-3C, FY-3D, FY-3E, FY-3F, FY-3G	Operational	Atmospheric temperature and humidity sounders	Atmospheric sounding measurements.	Waveband: Microwave: 19.35 - 89.0 GHz (8 channels) Spatial resolution: Swath width: Accuracy:
Improved MicroWave Atmospheric Sounder					
NRSCC (CAST) IPDA LIDAR	MERLIN	Proposed	Atmospheric chemistry	'Active' optical remote sensing instrument for atmospheric parameters or trace gases. Global information on atmospheric Methane concentration (Methane column density measurements).	Waveband: Two laser wavelengths, mean wavelength 1645 µm Spatial resolution: 50 km x 0.1 km Swath width: 0.1 km Accuracy: <2%
Integrated Path Differential Absorption Light Detection and Ranging Instrument					
DLR (CNES) IR (HJ-1B)	HJ-1B	Operational	Imaging multi-spectral radiometers (vis/IR)	Infrared measurements for environment and natural disaster monitoring.	Waveband: 0.75 - 1.10 µm, 1.55 - 1.75 µm, 3.50 - 3.90 µm, 10.5 - 12.5 µm Spatial resolution: 300 m (10.5 - 12.5 µm), 150 m (the other bands) Swath width: 720 km Accuracy:
Infrared Camera					
CAST					
IR Correlation Radiometer (GeoCape)	GEO-CAPE	Proposed	Imaging multi-spectral radiometers (vis/IR)	The near-IR and thermal-IR data will describe vertical CO ₂ an excellent tracer of long-range transport of pollution. Identifying large scale vegetation burning events. Characterizing the oxidizing capacity of the atmosphere.	Waveband: 2.3, 4.6 µm Spatial resolution: 7 km horizontal spatial resolution, 2-3 layers in vertical resolution; < 0.2 µm spectral resolution. Swath width: 2-d image of continental domain (north or south America). Accuracy: CO ₂ precision: 1 x 10 ⁻¹⁷ cm ⁻¹ (-2)
NASA					
IR Spectrometer (GACM)	GACM	Proposed	Atmospheric chemistry	Daytime column measurements of CO in SWIR at 2.4 µm.	Waveband: 2.4 and 4.6 µm Spatial resolution: Swath width: Accuracy:
NASA					
IRAS	FY-3A, FY-3B, FY-3C	Operational	Atmospheric temperature and humidity sounders	Atmospheric sounding for weather forecasting.	Waveband: VIS - TIR: 0.65 - 14.95 µm (26 channels) Spatial resolution: 14 km Swath width: 952 km Accuracy: 17 km
InfraRed Atmospheric Sounder					
NRSCC (NSMC-CMA, CAST) IRM	ePOP on CASSIOPE	Operational	Space environment	Measures the composition and 3-dimensional velocity distributions of ions.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
Imaging and Rapid-Scanning Ion Mass Spectrometer					
CSA IRS	MTG-S1 (sounding), MTG-S2 (sounding)	Being developed	Atmospheric temperature and humidity sounders	Measurements of vertically resolved clear sky atmospheric motion vectors, temperature and water vapour profiles.	Waveband: LWIR: 700 - 1210 cm ⁻¹ , MWIR: 1600 - 2175 cm ⁻¹ Spatial resolution: Horizontal: 4 km at SSP, Vertical: 1 km Swath width: 640 x 640 km dwells, step and stare, moving alternately E-W and W-E moving up S-N one dwell step at the end of each row of dwells. Each disc is divided in 4 areas of Local Area Coverage (LAC). Accuracy: clear sky AMVs: 2 m/s, temperature profile: 1 K, water vapour profile: 5%
Infra-Red Sounder					
EUMETSAT (ESA)					
IRS	CBERS-4, CBERS-4A	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.5 - 0.9 µm; 1.55 - 1.75 µm; 2.08 - 2.35 µm; 10.4 - 12.5 µm Spatial resolution: PAN, SWIR: 40 m, TIR: 80 m Swath width: 120 km Accuracy:
Infrared scanner					
CAST (INPE) IRS (SJ-9B)	SJ-9B	Operational	Imaging multi-spectral radiometers (passive microwave)		Waveband: 8-12 µm Spatial resolution: 73 m Swath width: 18 km Accuracy:
Infrared scanner					
CRESDA					

IVISSR (FY-2)	FY-2D, FY-2E, FY-2F	Operational	Imaging multi-spectral radiometers (vis/IR)	Meteorological.	Waveband: VIS - TIR: 0.5 - 12.5 µm (5 channels) Spatial resolution: 5 km Swath width: Full Earth disk Accuracy: 1.25 - 5 km
Improved Multispectral Visible and Infra-red Scan Radiometer (5 channels)					
NRSCC (NSMC-CMA, CAST) IVM	COSMIC-2A (Equatorial)	Being developed	Space environment	Measures the in-situ plasma density, ion temperature and composition, and drift velocity. Used for modeling the ionosphere to determine electric fields that could impact other systems (e.g. GPS radio signals).	Waveband: Spatial resolution: Swath width: Accuracy:
Ion Velocity Meter					
NOAA JAMI/MTSAT-1R	MTSAT-1R	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures cloud cover, cloud motion, cloud height, water vapour, rainfall, sea surface temperature and Earth radiation.	Waveband: VIS - SWIR: 0.55 - 0.90 µm, MWIR - TIR: 3.5 - 4 µm, 6.5 - 7 µm, 10.3 - 11.3 µm, 11.5 - 12.5 µm Spatial resolution: Visible: 1 km, TIR: 4 km Swath width: Full Earth disk every hour Accuracy:
Japanese Advanced Meteorological Imager					
JMA K band radiometers (SCLP)	SCLP	Proposed	Imaging multi-spectral radiometers (passive microwave)	Snow accumulation for fresh water availability.	Waveband: Spatial resolution: Spatial resolution of 50 to 100 m 15 day temporal resolution Swath width: Accuracy:
NASA					
Ka-band Radar Interferometer (KaRIN)	SWOT	Proposed	Radar altimeters	Swath mapping radar altimeter that provides measurements for surface water.	Waveband: Spatial resolution: Vertical resolution is 2 cm Swath width: Accuracy:
NASA (CNES)					
KMSS	Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Operational	Imaging multi-spectral radiometers (vis/IR)	Multispectral images of land & sea surfaces and ice cover.	Waveband: 0.53 - 0.57 µm; 0.63-0.68 µm; 0.76-0.90 µm Spatial resolution: 60 m - 120 m Swath width: 900 km Accuracy:
Multispectral Imager (VIS) system					
ROSKOSMOS (ROSHYDROMET) Ku and X-band radars (SCLP)	SCLP	Proposed	Imaging microwave radars	Snow accumulation for fresh water availability.	Waveband: Spatial resolution: Spatial resolution of 50 to 100 m; 15 day temporal resolution Swath width: Accuracy:
NASA					
L-band Radiometer (SMAP)	SMAP	Operational	Imaging multi-spectral radiometers (passive microwave)	High-accuracy measurements of brightness temperatures for global estimates of surface soil moisture for climate modeling and weather prediction	Waveband: L-band (1.4 GHz) Spatial resolution: 40km spatial resolution; 3 days temporal resolution Swath width: 40-deg constant incidence angle across the 1000 km swath Accuracy: 1.3K accuracy brightness temperature
NASA					
L-band SAR (NISAR)	NISAR	Proposed	Imaging microwave radars	3-year mission to study solid earth deformation (earthquakes, volcanoes, landslides), changes in ice (glaciers, sea ice) and changes in vegetation biomass	Waveband: L-Band: 1215 - 1300 Hz Spatial resolution: At 12-day repeat, global coverage, ~10m resolution Swath width: 240 km (12-day repeat and global coverage) Accuracy: TBD
L-band Synthetic Aperture Radar (SAR) (NISAR)					
NASA (ISRO) Langmuir Probe	NORSAT-1	Proposed			Waveband: Spatial resolution: Swath width: Accuracy:
NSC					
Laser altimeter (LIST)	LIST	Proposed	Lidars	New technology laser system that performs spatial mapping of Earth's surface from an orbital platform.	Waveband: Planned: 1030um Spatial resolution: Swath width: Accuracy:
NASA					
Laser Reflectors	STARLETTE, STELLA	Operational	Precision orbit	Measures distance between the satellite and the laser tracking stations.	Waveband: Spatial resolution: Swath width: Accuracy:
CNES					
Laser Reflectors (ESA)	CryoSat-2, Swarm	Operational	Precision orbit	Measures distance between the satellite and the laser tracking stations.	Waveband: Spatial resolution: Swath width: Accuracy:
Laser Reflectors					
ESA					
LCCRA	LADES	Operational	Precision orbit	Accuracy measurements on Lense-Thirring effect and baseline tracking data for General Relativity study and precision geodesy. Also for calibration of radar altimeter bias.	Waveband: VIS: 400 - 750 nm Spatial resolution: N/A Swath width: N/A Accuracy: 2 cm overhead ranging
Laser Corner Cube Reflector Assembly					
ASI					
LI	MTG-11 (imaging), MTG-12 (imaging), MTG-13 (imaging), MTG-14 (imaging)	Being developed	Lightning sensors	Real time lightning detection (cloud-to-cloud and cloud-to-ground strokes, with no discrimination between the two), lightning location.	Waveband: NIR neutral oxygen lightning emission features at 777.4 nm Spatial resolution: < 10 km at 45°N Swath width: Fixed view of 80% of visible earth disc, all EUMETSAT member states Accuracy: Detection Efficiency: 90% at 45N, SSP longitude, 70% on average over the area of coverage (for lightning signals 6.7 mWm-2sr-1 during the night, 16.7 mWm-2sr-1 during the day), Radiance accuracy: 10% for radiances higher than 70 mWm-2sr-1, 7 mWm-2sr-1 for radiances lower than 70 mWm-2sr-1
Lightning Imager					
EUMETSAT (ESA)					
Lidar	ACE	Proposed	Lidars	Measurement of aerosol heights, cloud top heights and aerosol properties.	Waveband: 532 nm (polarization-sensitive), 1064 nm, 355 nm Spatial resolution: Vertical sampling: 30 - 60 m, -2 to 40 km Swath width: 333 m along-track Accuracy:
NASA					
LIS	LIS-on-ISS	Operational	Lightning sensors	Global distribution and variability of total lightning. Data can be related to rainfall to study hydrological cycle.	Waveband: NIR: 0.7774 µm Spatial resolution: 4 km Swath width: FOV: 80 x 80 deg Accuracy: 90% day and night detection probability
Lightning Imaging Sensor					
NASA					
LISS-III (Resourcesat)	RESOURCESAT-2, RESOURCESAT-2A	Operational	High resolution optical imagers	Data used for vegetation type assessment, resource assessment, crop stress detection, crop production forecasting, forestry, land use and land cover change.	Waveband: VIS: Band 2: 0.52 - 0.59 µm, Band 3: 0.62 - 0.68 µm, NIR: Band 4: 0.77 - 0.86 µm, SWIR: Band 5: 1.55 - 1.75 µm Spatial resolution: 23.5 m Swath width: 141 km Accuracy:
Linear Imaging Self Scanner - III (Resourcesat)					
ISRO					
LISS-IV	RESOURCESAT-2, RESOURCESAT-2A	Operational	High resolution optical imagers	Vegetation monitoring, improved crop discrimination, crop yield, disaster monitoring and rapid assessment of natural resources.	Waveband: VIS: 0.52 - 0.59 µm, 0.62 - 0.68 µm, NIR: 0.77 - 0.86 µm Spatial resolution: 5.8 m Swath width: 70 km Accuracy:
Linear Imaging Self Scanner - IV					
ISRO					
LM	FY-4A, FY-4B, FY-4C, FY-4D, FY-4E	Approved	Lightning sensors	Lightning mapping for locating thunder storms in flooding season. CCD camera operating 0.77 µm to count flashes and intensity.	Waveband: 0.774 µm Spatial resolution: 10 km Swath width: Full Earth disk Accuracy: 8 km
Lightning Mapper					
NRSCC (NSMC-CMA, CAST) LOTUSat 1 SAR	LOTUSat 1	Proposed	Imaging microwave radars	The LOTUSat 1 SAR instrument is designed for land cover measurements and applications.	Waveband: X-band SAR. Spatial resolution: Swath width: Accuracy:
VAST					
LOTUSat 2 SAR	LOTUSat 2	Proposed	Imaging microwave radars	The LOTUSat 2 SAR instrument is designed for land cover measurements and applications.	Waveband: X-band SAR. Spatial resolution: Swath width: Accuracy:
VAST					
LRA	Jason-3, OSTM (Jason-2), SWOT	Operational	Precision orbit	Baseline tracking data for precision orbit determination and/or geodesy. Also for calibration of radar altimeter bias. Several types used on various missions. (ASI involved in LAGEOS 2 development).	Waveband: Spatial resolution: Swath width: Accuracy: 2 cm overhead ranging
Laser Retroreflector Array					
NASA (ASI)					
LRA (LAGEOS)	LAGEOS-1, LAGEOS-2	Operational	Precision orbit	Baseline tracking data for precision geodesy. Also for calibration of radar altimeter bias. Several types used on various missions.	Waveband: VIS: 400 - 750 nm Spatial resolution: N/A Swath width: N/A Accuracy: 2 cm overhead ranging
Laser Retroreflector Array					
ASI					

LRA (Sentinel-6) Laser Retroreflector Array (Sentinel-6)	Sentinel-6 A, Sentinel-6 B	Being developed	Precision orbit		Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (ESA, NASA) LRI Laser Ranging Instrument	GRACE FO	Being developed	Gravity instruments		Waveband: Spatial resolution: Swath width: Accuracy:
NASA LRIT Low-Rate Information Transmission	GOES-13, GOES-14, GOES-15, NOAA-19	Operational	Communications	Follow-on from the Weather Facsimile (WEFAX) Processing System.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA MAC Multi-Angle Multispectral Camera	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Proposed	Imaging multi-spectral radiometers (vis/IR)	Ocean Colour - Multi-angle viewing for atmospheric correction purposes for both, open ocean and coastal	Waveband: VIS-NIR 4 bands: 412 - 443 - 555 - 865 nm Spatial resolution: 400m - 800 m Swath width: 1350 km Accuracy:
CONAE MADRAS Microwave Analysis and Detection of Rain and Atmospheric Structures	MEGHA-TROPIQUES	Operational	Imaging multi-spectral radiometers (passive microwave)	To estimate rainfall, atmospheric water parameters and ocean surface winds in the equatorial belt.	Waveband: 18.7 GHz, 23.8 GHz, 36.5 GHz, 89 GHz, 157 GHz Spatial resolution: 40 km Swath width: 1700 km Accuracy:
ISRO (CNES) MAESTRO Measurements of Aerosol Extinction in the Stratosphere and Troposphere Retrieved by Occultation	SCISAT-1	Operational	Atmospheric chemistry	Chemical processes involved in the depletion of the ozone layer.	Waveband: UV - NIR: 0.285 - 1.03 µm (1 - 2 nm spectral resolution) Spatial resolution: Approx 1 - 2 km vertical Swath width: Accuracy:
CSA Magnetometer (NOAA) Magnetometer	GOES-R, GOES-S, GOES-T, GOES-U	Approved	Magnetic field		Waveband: Spatial resolution: Swath width: Accuracy:
NOAA MCSI Multiple Channel Scanning Imager	FY-4A, FY-4B, FY-4C, FY-4D, FY-4E	Approved	Imaging multi-spectral radiometers (vis/IR)	Multipurpose visible/IR imagery and wind derivation.	Waveband: 12 channels from 0.55 - 13.8 µm Spatial resolution: 1 km VIS, 2 km NIR, 4 km TIR Swath width: Full Earth disk Accuracy: 0.5 - 4.0 km
NRSCC (NSMC-CMA, CAST) MERSI-2 Improved Medium Resolution Spectral Imager	FY-3D, FY-3E, FY-3F, FY-3G	Approved	Imaging multi-spectral radiometers (vis/IR)	Measurement of vegetation indexes and ocean colour.	Waveband: Spatial resolution: Swath width: Accuracy:
NRSCC (NSMC-CMA, CAST) MERSI-S Improved Medium Resolution Spectral Imager - Simplified	FY-3RM	Proposed	Imaging multi-spectral radiometers (vis/IR)	Measurement of vegetation indexes and ocean colour.	Waveband: MERSI-S is a simplified sensor, derived from MERSI but with fewer channels. Spatial resolution: Swath width: Accuracy:
NRSCC (NSMC-CMA, CAST) Meteosat Comms Communications package for Meteosat	Meteosat-7	Operational	Communications	Communication package onboard Meteosat series satellites.	Waveband: Spatial resolution: Swath width: Accuracy:
EUMETSAT METImage Multi Spectral Imager EUMETSAT (DLR)	EPS-SG-a	Proposed	Imaging multi-spectral radiometers (vis/IR)	Operational multi spectral imager for meteorological Post-EPS VIS/IR Imaging Mission (VII).	Waveband: UV-TIR (No of Channels and centre wavelengths tbd by EUMETSAT Post-EPS MRD) Spatial resolution: 250 - 500 m (TBD by EUMETSAT Post-EPS MRD) Swath width: 2800 km (+/-55°) (TBD by EUMETSAT Post-EPS MRD) Accuracy:
MGF Fluxgate Magnetometer CSA	ePOP on CASSIOPE	Operational	Magnetic field	The MGF consists of dual, tri-axial fluxgate magnetometers mounted on an 80-cm carbon fibre boom for measurements of magnetic field perturbations to a precision of 0.0625 nanotesla, from which to infer small-scale field-aligned currents. The MGF is turned on an average of 20% of the time, following a schedule devised by the science team.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
MHS Microwave Humidity Sounder EUMETSAT	Metop-A, Metop-B, Metop-C, NOAA-18, NOAA-19	Operational	Atmospheric temperature and humidity sounders	Atmospheric humidity profiles, cloud cover, cloud liquid, water content, ice boundaries and precipitation data.	Waveband: Microwave: 89 GHz, 166 GHz and 3 channels near 183 GHz Spatial resolution: Vertical: 3 - 7 km, Horizontal: 30 - 50 km Swath width: 1650 km Accuracy: Cloud water profile: 10 g/m2, specific humidity profile: 10 - 20%
MI Meteorological Imager KARI	COMS	Operational	Imaging multi-spectral radiometers (vis/IR)	Continuous monitoring capability for the near real-time generation of high-resolution meteorological products and long-term change analysis of sea surface temperature and cloud coverage.	Waveband: 1: VIS, 0.55 - 0.80 µm; 2: SWIR: 3.50 - 4.00 µm; 3: WV (Waver Vapour): 6.50 - 7.00 µm; 4: TIR1 (Thermal Infrared 1): 10.3 - 11.3 µm, 5: TIR2 (Thermal Infrared 2): 11.5 - 12.5 µm Spatial resolution: VIS: 1 km, IR: 4 km Swath width: Full Earth disk Accuracy:
Microwave limb sounder (GACM) NASA	GACM	Proposed	Atmospheric chemistry	Limb-viewing measurements of O3, N2O, temperature, water vapour, CO, HNO3, ClO, and volcanic SO2 in the.	Waveband: Spatial resolution: Swath width: Accuracy:
MIRAS Multichannel Infrared Atmospheric Sounder	FY-3C, FY-3D, FY-3E, FY-3F, FY-3G	Operational	Imaging multi-spectral radiometers (passive microwave)		Waveband: Spatial resolution: Swath width: Accuracy:
NRSCC (CAST) MIRAS (SMOS) Microwave Imaging Radiometer using Aperture Synthesis (MIRAS)	SMOS	Operational	Imaging multi-spectral radiometers (passive microwave) and multiple direction/polarisation radiometers	Objective is to demonstrate observations of sea surface salinity and soil moisture in support of climate, meteorology, hydrology, and oceanography applications.	Waveband: L-Band 1.41 GHz Spatial resolution: 33 - 50 km depending on the position in the swath - resampled to 15 km grid Swath width: Hexagon shape, nominal width 1050 km allowing a 3 day revisit time at the equator Accuracy: 2.6 K absolute accuracy, RMS 1.6-4 K depending on the scene and the position within the swath
ESA MIRIS Multi-purpose IR Imaging System	STSAT-3	Operational	Space environment	Mapping of the Galactic plane and measurement of large angular fluctuations of cosmic near infrared background radiation. Not an EO payload.	Waveband: 0.9 - 2.0µm, 3 - 5µm Spatial resolution: Swath width: Accuracy:
KARI MISR Multi-angle Imaging SpectroRadiometer	Terra	Operational	Multiple direction/polarisation radiometers	Measurements of global surface albedo, aerosol and vegetation properties. Also provides multi-angle bidirectional data (1% angle-to-angle accuracy) for cloud cover and reflectances at the surface and aerosol opacities. Global and local modes.	Waveband: VIS: 0.44 µm, 0.56 µm, 0.67 µm, NIR: 0.86 µm Spatial resolution: 275 m, 550 m or 1.1 km, Summation modes available on selected cameras/bands: 1 x 1, 2 x 2, 4 x 4, 1 x 4, 1 pixel = 275 x 275 m Swath width: 380 km common overlap of all 9 cameras Accuracy: 0.03% hemispherical albedo, 10% aerosol opacity, 1-2% angle to angle accuracy in bidirectional reflectance
NASA MLS (EOS-Aura) Microwave Limb Sounder (EOS-Aura)	Aura	Operational	Atmospheric temperature and humidity sounders	Measures lower stratospheric temperature and concentration of H2O, O3, ClO, HCl, OH, HNO3, N2O and SO2.	Waveband: Microwave: 118 GHz, 190 GHz, 240 GHz, 640 GHz and 2.5 THz Spatial resolution: 3 x 300 km horizontal x 1.2 km vertical Swath width: Limb scan 2.5 - 62.5 km Limb to limb Accuracy: Temperature: 4 K, Ozone: 50%
NASA MODIS MODerate-Resolution Imaging Spectroradiometer	Aqua, Terra	Operational	Imaging multi-spectral radiometers (vis/IR) and ocean colour instruments	Data on biological and physical processes on the surface of the Earth and in the lower atmosphere, and on global dynamics. Surface temperatures of land and ocean, chlorophyll fluorescence, land cover measurements, cloud cover (day and night).	Waveband: VIS - TIR: 36 bands in range 0.4 - 14.4 µm Spatial resolution: Cloud cover: 250 m (day) and 1000 m (night), Surface temperature: 1000 m Swath width: 2330 km Accuracy: Long wave radiance: 100 nW/m2, Short wave radiance: 5%, Surface temperature of land: <1 K, Surface temperature of ocean: <0.2 K, Snow and ice cover: 10%

MOPITT	Terra	Operational	Atmospheric chemistry	Measurements of CO in the troposphere.	Waveband: SWIR-MWIR: 2.3 µm, 2.4 µm and 4.7 µm Spatial resolution: CO profile: 4 km vertical, 22 x 22 km horizontal, CO, CH4 column: 22 x 22 km horizontal Swath width: 616 km Accuracy: Carbon monoxide (4 km layers): 10%
Measurements Of Pollution In The Troposphere					
CSA (NASA)					
MS (GISTDA)	THEOS	Operational	Imaging multi-spectral radiometers (vis/IR)	THEOS MS consists of 4 spectral bands (R.G.B. NIR) with resolution 15 m and swath width at 90 km. The applications which are suitable for this instrument such as cartography, land use, land cover change management, agricultural and natural resources management, etc.	Waveband: 0.45 - 0.52 µm, 0.53 - 0.60 µm, 0.62 - 0.69 µm, 0.77 - 0.90 µm Spatial resolution: 15 m Swath width: 90 km Accuracy: GSD for MS = 15 m +/- 10% MTF for MS > 0.12 in each band
Multi spectral imager					
GISTDA					
MSA (1)	Obzor-O N1, Obzor-O N2	Proposed	Imaging multi-spectral radiometers (vis/IR)	Land surface and ocean monitoring	Waveband: 0.5-0.8 µm; 0.44-0.51 µm; 0.52-0.59 µm; 0.63-0.68 µm; 0.69-0.73 µm; 0.76-0.85 µm; 0.85-1 µm; 1.55-1.7 µm Spatial resolution: 7 m;14 m Swath width: 85 km Accuracy:
Multispectral imaging equipment					
ROSKOSMOS					
MSA (2)	Obzor-O N3, Obzor-O N4	Proposed	Imaging multi-spectral radiometers (vis/IR)	Land surface and ocean monitoring	Waveband: 0.5-0.8 µm; 0.44-0.51 µm; 0.52-0.59 µm; 0.63-0.68 µm; 0.69-0.73 µm; 0.76-0.85 µm; 0.85-1 µm; 1.55-1.7 µm Spatial resolution: 5 m; 10 m; 21 m Swath width: 120 km Accuracy:
Multispectral imaging equipment					
ROSKOSMOS					
MSC	KOMPSAT-2	Operational	High resolution optical imagers	High resolution imager for land applications of cartography and disaster monitoring.	Waveband: Panchromatic VIS: 0.50 - 0.90 µm, VIS: 0.45 - 0.52 µm, 0.52 - 0.60 µm, 0.63 - 0.69 µm, NIR: 0.76 - 0.90 µm Spatial resolution: Pan: 1 m; VIS-NIR: 4 m Swath width: 15 km Accuracy:
Multi-Spectral Camera					
KARI					
MSG Comms	Meteosat-10, Meteosat-11, Meteosat-8, Meteosat-9	Operational	Communications	Communication package onboard MSG series satellites.	Waveband: Spatial resolution: Swath width: Accuracy:
Communications package for MSG					
EUMETSAT					
MSI	RapidEye	Operational	High resolution optical imagers	High resolution images with short observing cycle for commercial and scientific applications.	Waveband: 4 VIS + 1 NIR band: 440 - 510 nm, 520 - 590 nm, 630 - 690 nm, 690 - 730 nm, 760 - 880 nm Spatial resolution: 6.5 m Swath width: 78 km Accuracy: 2 - 3%
Multi Spectral Imager					
DLR					
MSI (BJ-2)	BJ-2	Operational	Imaging multi-spectral radiometers (vis/IR)	SSTL-300 S1 Imager also known as VHRI 100 (Very High Resolution Imager 100).	Waveband: 600-670 nm (red) 510-590 nm (green) 440-510 nm (blue) 760-910 nm (NIR) Spatial resolution: 4 metre ground sampling distance Swath width: 23.4 km Accuracy:
Multispectral Imager					
NRSCC					
MSI (EarthCARE)	EarthCARE	Approved	Imaging multi-spectral radiometers (vis/IR)	Observation of cloud properties and aerosol (aerosols to be confirmed).	Waveband: VIS - NIR: Band1: VIS, 670 nm, Band2: NIR, 865 nm, Band3: SWIR-1, 1.67 µm, Band4: SWIR-2, 2.21 µm, Thermal Infrared: Band5: 8.8 µm, Band6: 10.8µm, Band7: 12.0 µm Spatial resolution: 500 x 500 m Swath width: 150 km swath with, asymmetrically, 35 km to 115 km versus nadir point Accuracy:
Multi-Spectral Imager (EarthCARE)					
ESA					
MSI (Sentinel-2)	Sentinel-2 A, Sentinel-2 B, Sentinel-2 C	Operational	High resolution optical imagers	Optical high spatial resolution imagery over land and coastal areas for GMES operational services.	Waveband: 13 bands in the VNIR-SWIR Spatial resolution: 10 m for 4 bands in VNIR, 60 m for 3 dedicated atmospheric correction bands, 20 m for remaining bands Swath width: 290 km Accuracy: Absolute radiometric accuracy for Level 1C data: 3 - 5%
Multi-Spectral Instrument (Sentinel-2)					
ESA (COM)					
MSS	Kanopus-V, Kanopus-V N3, Kanopus-V N4, Kanopus-V N5, Kanopus-V N6, Kanopus-V-IR	Operational	High resolution optical imagers	Multispectral images of land & sea surfaces and ice cover.	Waveband: 0.46 - 0.51 µm; 0.51 - 0.6 µm; 0.63 - 0.69 µm; 0.75 - 0.84 µm Spatial resolution: 12 m Swath width: 20 km Accuracy:
Multispectral imaging system					
ROSKOSMOS (ROSHYDROMET)					
MSU-GS	Elektro-L N1, Elektro-L N2, Elektro-L N3	Operational	Imaging multi-spectral radiometers (vis/IR)	Measurements of cloud cover, cloud top height, precipitation, cloud motion, albedo, vegetation, convection, air mass analysis, tropopause monitoring, stability monitoring, total ozone and surface temperature, fire detection.	Waveband: 0.5 - 0.65 µm; 0.65 - 0.8 µm; 0.8-0.9 µm; 3.5 - 4.01 µm; 5.7 - 7.0 µm; 7.5-8.5 µm; 8.2-9.2 µm; 9.2-10.2 µm; 10.2 - 11.2 µm, 11.2 - 12.5 µm Spatial resolution: 1000 m; 4000 m Swath width: Full Earth disk Accuracy:
Multispectral scanning imager-radiometer					
ROSKOSMOS (ROSHYDROMET)					
MSU-GS/VE	Arctic-M N1, Arctic-M N2	Approved	Imaging multi-spectral radiometers (vis/IR)	Operational metrology, hydrology, climate monitoring and environmental monitoring	Waveband: 0.5 - 0.65 µm; 0.65 - 0.8 µm; 0.8-0.9 µm; 3.5 - 4.01 µm; 5.7 - 7.0 µm; 7.5-8.5 µm; 8.2-9.2 µm; 9.2-10.2 µm; 10.2 - 11.2 µm, 11.2 - 12.5 µm Spatial resolution: 1000 m; 4001 m Swath width: Full Earth disk Accuracy:
Multispectral scanning imager-radiometer					
ROSKOSMOS					
MSU-IK-SR	Kanopus-V-IR	Approved	Imaging multi-spectral radiometers (vis/IR)	Parameters of clouds, snow, ice and land cover, vegetation, surface temperature, fire detection.	Waveband: 3.5-4.1 µm; 8.1-9.1 µm Spatial resolution: 200 m Swath width: 2000 km Accuracy:
Multi-channel medium and far IR range radiometer					
ROSKOSMOS (ROSHYDROMET)					
MSU-MR	Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Operational	Imaging multi-spectral radiometers (vis/IR)	Parameters of clouds, snow, ice and land cover, vegetation, surface temperature, fire detection.	Waveband: 0.5 - 0.7 µm; 0.7 - 1.1 µm; 1.6 - 1.8 µm; 3.5 - 4.1 µm; 10.5 - 11.5 µm, 11.5 - 12.5 µm Spatial resolution: 1000 m Swath width: 2800 km Accuracy:
Low-resolution multispectral scanning imager-radiometer					
ROSKOSMOS (ROSHYDROMET)					
MSU-O	Meteor-M N3	Being developed	Ocean colour instruments	Ocean colour data, estimation of phytoplankton concentration.	Waveband: 0.405 - 0.875 µm, 13 channels Spatial resolution: 1 km Swath width: 1800 km Accuracy: TBD
Ocean colour scanner					
ROSHYDROMET (ROSKOSMOS)					
MTSAT Comms	MTSAT-1R, MTSAT-2	Operational	Communications		
Communications package for MTSAT					
JMA					
MTSAT DCS	MTSAT-1R, MTSAT-2	Operational	Data collection		
Data Collection System for MTSAT					
JMA					
MTVZA	Meteor-M N2, Meteor-M N2-1, Meteor-M N2-2	Operational	Imaging multi-spectral radiometers (passive microwave)	Atmospheric temperature and humidity profiles, precipitation, sea-level wind speed, snow/ice coverage.	Waveband: 18.7 - 183.3 GHz, 26 channels Spatial resolution: 10000 - 100000 m Swath width: 1500 km Accuracy:
Scanning microwave imager-sounder					
ROSKOSMOS (ROSHYDROMET)					
Multi-band UV/VIS Spectrometer (ACE)	ACE	Proposed	Ocean colour instruments	Ocean colour spectrometer for measuring ocean leaving light which contains information on biological components.	Waveband: Spatial resolution: Swath width: Accuracy:
NASA					
Multi-spectral thermal infrared imager (HyspIRI)	HyspIRI	Proposed	Imaging multi-spectral radiometers (vis/IR)	Ecosystem focused mission with measurements of surface and cloud imaging with high spatial resolution, stereoscopic observation of local topography, cloud heights, volcanic plumes, and generation of local surface digital elevation maps, surface temperature and emissivity.	Waveband: 3-5 µm, 7.5-12 µm Spatial resolution: 60 m at nadir; 1 week revisit time Swath width: 600 km Accuracy: 0.1 K, <0.1 µm
NASA					
MUX	CBERS-4	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 20 m Swath width: 120 km Accuracy:
Multispectral CCD Camera					
INPE (CAST)					

MUX (CBERS-4A)	CBERS-4A	Proposed	Imaging multi-spectral radiometers (vis/IR)	Agriculture; Forestry; Geology; Natural disaster management; Cartography; Environment monitoring; Fire detection, localization and counting; Hydrology, coastal water mapping; Land use; Surveillance and law enforcement	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 16 m Swath width: 90 km Accuracy:
INPE (CAST) MUX (GF-1)	GF-1	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 6 m Swath width: 70km Accuracy:
CRESDA MUX (GF-2)	GF-2	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 6 m Swath width: 45km Accuracy:
CRESDA MUX (SJ-9A)	SJ-9A	Operational	High resolution optical imagers		Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm; 0.77 - 0.89 µm Spatial resolution: 10 m Swath width: 30 km Accuracy:
CRESDA MUX (ZY-3)	ZY-3	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 6 m Swath width: 52 km Accuracy:
MVIRI	Meteosat-7	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures cloud cover, motion, height, upper tropospheric humidity and sea surface temperature.	Waveband: VIS - NIR: 0.5 - 0.9 µm, TIR: 5.7 - 7.1 µm (water vapour), 10.5 - 12.5 µm Spatial resolution: Visible: 2.5 km, Water vapour: 5 km (after processing), TIR: 5 km Swath width: Full Earth disk in all three channels, every 30 minutes Accuracy: Cloud top height: 0.5 km, Cloud top/ sea surface temperature: 0.7 K, Cloud cover: 15%
METEOSAT Visible and Infra-Red Imager					
EUMETSAT (ESA)					
MVIRS	FY-3F, FY-3G	Approved	Imaging multi-spectral radiometers (vis/IR)	Measures surface temperature and cloud and ice cover. Used for snow and flood monitoring and surface temperature.	Waveband: VIS - TIR: 0.47 - 12.5 µm (20 channels) Spatial resolution: Swath width: Accuracy:
Moderate Resolution Visible and Infrared Imaging Spectroradiometer					
NRSCC (CAST) MWAS	FY-3A, FY-3B	Operational	Atmospheric temperature and humidity sounders	Meteorological applications.	Waveband: Microwave: 19.35 - 89.0 GHz (8 channels) Spatial resolution: Swath width: Accuracy:
MicroWave Atmospheric Sounder					
NRSCC (CAST) MWHS	FY-3A, FY-3B	Operational	Atmospheric temperature and humidity sounders	Meteorological applications.	Waveband: Microwave: 19.35 - 89.0 GHz (8 channels) Spatial resolution: 15 km at media, 41 x 27 km at outer edge Swath width: 2700 km Accuracy: 15 km
MicroWave Humidity Sounder					
NRSCC (NSMC-CMA, CAST) MWHS-2	FY-3C, FY-3D, FY-3E, FY-3F, FY-3G	Operational	Atmospheric temperature and humidity sounders	Meteorological applications.	Waveband: Spatial resolution: Swath width: Accuracy:
Improved MicroWave Humidity Sounder					
CAST (NSMC-CMA) MWI	EPS-SG-b	Proposed	Imaging multi-spectral radiometers (passive microwave)	Measure cloud liquid water, ice cloud content, precipitation, total column water vapour, snow parameters, sea ice parameters	Waveband: Microwave: 18 channels between 18.7 GHz to 183 GHz Spatial resolution: Swath width: Accuracy:
Microwave Imager					
EUMETSAT (ESA) MWI	GRACE FO	Being developed	Gravity instruments		Waveband: Spatial resolution: Swath width: Accuracy:
Microwave Instrument					
NASA MWRI	FY-3A, FY-3B, FY-3C, FY-3D, FY-3F, FY-3RM	Operational	Imaging multi-spectral radiometers (passive microwave)	All weather observations of precipitation, cloud features, vegetation, soil moisture sea ice, etc.	Waveband: 12 channels, 6 frequencies: 10.65 GHz, 18.7 GHz, 23.8 GHz, 36.5 GHz, 89 GHz, 150 GHz Spatial resolution: 7.5 x 12 km at 150 GHz to 51 x 85 km at 10.65 GHz Swath width: 1400 km Accuracy:
MicroWave Radiation Imager					
NRSCC (NSMC-CMA, CAST)					
MWS	EPS-SG-a, EPS-SG-b	Proposed	Atmospheric temperature and humidity sounders	All-weather night-day temperature sounding	Waveband: 25 channels from 23.8 to 229 GHz Spatial resolution: Footprint size 17 - 80 km (Threshold) Swath width: Accuracy:
Microwave Sounder					
EUMETSAT (ESA) MWTS	FY-3A, FY-3B	Operational	Atmospheric temperature and humidity sounders	Temperature sounding in nearly all weather conditions.	Waveband: 50.3 GHz, 53.6 GHz, 54.94 GHz, 57.29 GHz Spatial resolution: 62 km Swath width: 750 - 1125 km Accuracy: 50 - 75 km
Microwave Temperature Sounder					
NRSCC (NSMC-CMA, CAST) MX (Cartosat-3)	CARTOSAT-3	Proposed	Imaging multi-spectral radiometers (vis/IR)		Waveband: VNIR Multispectral Spatial resolution: 1 m Swath width: 16 km Accuracy:
Multispectral VNIR					
ISRO Next Gen APS (ACE)	ACE, PACE	Proposed	Multiple direction/polarisation radiometers	Polarimeter for measuring aerosol optical properties and aerosol types.	Waveband: Spatial resolution: Swath width: Accuracy:
NASA					
NigeriaSat 2 Remote Sensing (Med and High Res)	NigeriaSat-2	Operational	High resolution optical imagers	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: NIR: ~0.75 - ~1.3 µm, VIS: ~0.40 - ~0.75 µm Spatial resolution: 2.5 PAN, 5 m multispectral (red blue green, NIR), 32 m multispectral (red, green, NIR) Swath width: 20 x 20 km, 300 x 300 km Accuracy: 35 - 45 m
NASRDA					
NigeriaSat X Remote Sensing (Medium Resolution)	NigeriaSat-X	Operational	Imaging multi-spectral radiometers (vis/IR)	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: NIR: ~0.75 - ~1.3 µm, VIS: ~0.40 - ~0.75 µm Spatial resolution: 22 m multispectral (red, green and NIR) Swath width: 600 x 600 km Accuracy: 150 - 300 m
NASRDA					
NIR-SWIR	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Approved	Ocean colour instruments	Ocean Colour - Open ocean, coastal & in-land waters. Atmospheric corrections	Waveband: Near & Short Wave Infrared 6 bands- 750 - 765 - 865 - 1044 - 1240 - 1640 - 2130 nm Spatial resolution: 400m - 800 m Swath width: 1350 km Accuracy:
Multi-spectral Optical Camera near&short_wave_infrared					
CONAE NISTAR	DSCOV	Operational	Earth radiation budget radiometers	Measure the energy emitted and reflected by the Earth.	Waveband: 0.2 - 100 µm in 4 channels Spatial resolution: Swath width: Accuracy: 0.1% accuracy; 0.03% precision
NIST Advanced Radiometer					
NASA (NOAA) NMS	ePOP on CASSIOPE	Operational	Space environment	The Neutral Mass and velocity Spectrometer (NMS) measures mass composition and velocity of neutral atmospheric species in the 1-40 amu mass and 0.1-2 km/s velocity range.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
Neutral Mass Spectrometer					
CSA					
NOAA Comms	NOAA-15, NOAA-18, NOAA-19	Operational	Communications		Waveband: Spatial resolution: Swath width: Accuracy:
Communications package for NOAA					
NOAA NORSAT-1 Instrument	NORSAT-1	Proposed			Waveband: Spatial resolution: Swath width: Accuracy:
NSC					
Ocean Color Spectrometer	ACE, PACE	Proposed	Ocean colour instruments	Ocean colour spectrometer for measuring ocean leaving light which contains information on biological components.	Waveband: Near UV-VIS (360 - 710 nm); NIR (748 - 865 nm); SWIR (1245, 1640, 2135 nm) Spatial resolution: 1 km Swath width: 2500 km swath Accuracy:
NASA					

OCM Ocean Colour Monitor	OCEANSAT-2	Operational	Ocean colour instruments	Ocean colour data, Estimation of phytoplankton concentration, identification of potential fishing zones, assessment of primary productivity.	Waveband: VIS - NIR: 0.40 - 0.88 µm (8 channels) Spatial resolution: 236 x 360m Swath width: 1400 km Accuracy:
ISRO OCM (OCEANSAT-3) Ocean Colour Monitor (Oceansat-3)	OCEANSAT-3	Proposed	Ocean colour instruments	Ocean colour data, Estimation of phytoplankton concentration, identification of potential fishing zones, assessment of primary productivity.	Waveband: 13 channel Spatial resolution: 360m Swath width: 1400 km Accuracy:
ISRO OEK VR Multispectral optoelectronic high resolution module	Resurs-PM N1, Resurs-PM N2, Resurs-PM N3, Resurs-PM N4	Approved	High resolution optical imagers	Multispectral images of land surfaces and Oceans.	Waveband: 1 panchromatic band (0.5 - 0.8 µm). 8 multispectral bands (0.40 - 0.45 µm, 0.45 - 0.51 µm, 0.51 - 0.58 µm, 0.58 - 0.62 µm, 0.63 - 0.69 µm, 0.70 - 0.74 µm, 0.77 - 0.89 µm, 0.86 - 1.05 µm). Spatial resolution: panchromatic band - 0.4 m multispectral bands - 1.6 m Swath width: 19 km Accuracy:
ROSKOSMOS					
OLCI Ocean and Land Colour Imager	Sentinel-3 A, Sentinel-3 B, Sentinel-3 C	Approved	Imaging multi-spectral radiometers (vis/IR) and ocean colour instruments	Marine and land services.	Waveband: 21 bands in VNIR/SWIR Spatial resolution: 300 m Swath width: 1270 km, across-track tilt 12.2 deg to the West Accuracy: 2% abs, 0.1% rel.
ESA (COM) OLI Operational Land Imager	Landsat 8, Landsat 9	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures surface radiance, land cover state and change (eg vegetation type). Used as multi-purpose imagery for land applications.	Waveband: VIS - SWIR: 9 bands: 0.43 - 2.3 µm Spatial resolution: Pan: 15 m, VIS - SWIR: 30 m Swath width: 185 km Accuracy: Absolute geodetic accuracy of 32 m; relative geodetic accuracy of 18 m (excluding terrain effects); geometric accuracy of 12 m or better
USGS (NASA)					
OLS Operational Linescan System	DMSP F-14, DMSP F-15, DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Imaging multi-spectral radiometers (vis/IR)	Day and night cloud cover imagery.	Waveband: VIS - NIR: 0.4 - 1.1 µm, TIR: 10.0 - 13.4 µm, and 0.47 - 0.95 µm Spatial resolution: 0.56 km (fine), 5.4 km (stereo products) Swath width: 3000 km Accuracy:
NOAA (DoD (USA)) OMI Ozone Measuring Instrument	Aura	Operational	Atmospheric chemistry	Mapping of ozone columns, key air quality components (NO2, SO2, BrO, OClO and aerosols), measurements of cloud pressure and coverage, global distribution and trends in UV-B radiation.	Waveband: UV: 270 - 314 nm and 306 - 380 nm, VIS: 350 - 600 nm Spatial resolution: 13 x 24 km or 36 x 48 km depending on the product. Also has zoom modes (13 x 13 km) for example for urban pollution detection Swath width: 2600 km Accuracy:
NSO (NASA)					
OMPS Ozone Mapping and Profiler Suite	JPSS-1, JPSS-2, JPSS-3, JPSS-4, Suomi NPP	Operational	Atmospheric chemistry	Measures total amount of ozone in the atmosphere and the ozone concentration variation with altitude.	Waveband: Nadir Mapper: UV 0.3 - 0.38 µm, Nadir profiler: UV 0.25 - 0.31 µm, Limb soundings: UV - TIR 0.29 - 10 µm Spatial resolution: Mapper: 50 km, Profiler: 250 km, Limb: 1 km vertical Swath width: Mapper: 2800 km, Profiler: 250 km, Limb: 3 vertical slits along track +/- 250 km Accuracy: Total Ozone 15 Dobson units. Profile Ozone 10% between 15 and 60 km; 20% between Tropopause and 15 km
NOAA					
OMPS-L Ozone Mapping and Profiler Suite Limb Profiler	JPSS-2, JPSS-3, JPSS-4	Being developed	Atmospheric chemistry	Measures total amount of ozone in the atmosphere and the ozone concentration variation with altitude.	Waveband: Limb soundings UV - TIR 0.29 - 10 µm Spatial resolution: 1 km vertical Swath width: 3 vertical slits along track +/- 250 km Accuracy: Total Ozone 15 Dobson units. Profile Ozone 10% between 15 and 60 km; 20% between Tropopause and 15 km
NASA (NOAA) OMS Ozone Monitoring Suite	FY-3E, FY-3G	TBD	Atmospheric chemistry	Ozone total column vertical profile measurements.	Waveband: Spatial resolution: Swath width: Accuracy:
CAST (NSMC-CMA) OSIRIS Optical Spectrograph and Infra-Red Imaging System	Odin	Operational	Atmospheric chemistry	Detects aerosol layers and abundance of species such as O3, NO2, OClO, BrO and NO. Consists of spectrograph and IR imager.	Waveband: Spectrograph: UV - NIR: 0.28 - 0.80 µm; IR Imager: NIR: 1.26 µm, 1.27 µm, 1.52 µm Spatial resolution: Spectrograph 1 km at limb, Imager 1 km in vertical Swath width: N/A, but measures in the altitude range 5 - 100 km Accuracy: Depends on species. Ozone meets requirements for trend analysis
CSA (SNSB)					
Overhauser Magnetometer	Oersted	Operational	Magnetic field	Measurements of the strength of the Earth's magnetic field.	Waveband: Spatial resolution: Swath width: Accuracy:
OM					
CNES P-Band SAR P-Band Synthetic Aperture Radar	BIOMASS	Being developed	Imaging microwave radars	Forest biomass monitoring	Waveband: P-band: 435 MHz; four polarization channels - HH, HV, VH, and VV - together with height measurements from polarimetric interferometry; incidence angles ranging from 23 to 31 degrees Spatial resolution: Strip mode: 9 m, Interferometric wide swath mode: 20 m, extra-wide swath mode: 50 m, wave mode: 50 m Swath width: Strip mode: 80 km; Interferometric wide swath mode: 250 km, extra-wide swath mode: 400 km, Wave mode: sampled images of 20 x 20 km at 100 km intervals Accuracy: NESZ: -22 dB; PTAR: -25 dB; DTAR: -22 dB; Radiometric accuracy 1 dB (3 sigma); Radiometric stability: 0.5 dB (3 sigma)
ESA					
PALSAR-2 (ALOS-2) Phased Array type L-band Synthetic Aperture Radar-2	ALOS-2	Operational	Imaging microwave radars	Disaster Monitoring, Land monitoring, Agricultural Monitoring, Natural Resource Exploration, Global Forest Monitoring, Potential use and interferometry.	Waveband: Microwave: L-Band 1270 MHz Spatial resolution: Spotlight mode (1 to 3 m), stripmap mode (3 to 10 m). Swath width: Spotlight mode: 25km, Stripmap mode: 50-70 km, Scan SAR mode: 350 - 490 km, Polarimetry: 30-50 km Accuracy: Surface Resolution: 1 to 3 m (Spotlight Mode), 3m (Ultra-Fine Mode), 6m (High sensitive Mode), 10m (Fine Mode), 100 m (Scan Mode); Radiometric: ±1 dB
JAXA					
Pamela ROSKOSMOS	Resurs DK 1	Operational	Space environment	Cosmic ray research.	Waveband: Spatial resolution: Swath width: Accuracy:
PAN (BJ-2) Panchromatic Imager	BJ-2	Operational	High resolution optical imagers	SSTL-300 S1 Imager also known as VHRI 100 (Very High Resolution Imager 100).	Waveband: 450-650 nm Spatial resolution: 1 metre ground sampling distance Swath width: 23.4 km Accuracy:
NRSCC PAN (Cartosat-1) Panchromatic Camera	CARTOSAT-1	Operational	High resolution optical imagers	High resolution stereo images for study of topography, urban areas, development of DTM, run-off models etc. Urban sprawl, forest cover/timber volume, land use change.	Waveband: Panchromatic VIS: 0.5 - 0.75 µm Spatial resolution: 2.5 m Swath width: 30 km Accuracy:
ISRO PAN (Cartosat-2) Panchromatic Camera	CARTOSAT-2	Operational	High resolution optical imagers	High resolution stereo images for large scale (better than 1:0000) mapping applications, urban applications, GIS ingest.	Waveband: VIS: 0.5 - 0.75 µm Spatial resolution: 1 m Swath width: 10 km Accuracy:
ISRO PAN (Cartosat-2A/2B) Panchromatic Camera	CARTOSAT-2A, CARTOSAT-2B	Operational	High resolution optical imagers	High resolution stereo images for large scale (better than 1:0000) mapping applications, urban applications, GIS ingest.	Waveband: VIS: 0.5 - 0.75 µm Spatial resolution: 1 m Swath width: 10 km Accuracy:
ISRO PAN (Cartosat-2E) Panchromatic Camera	CARTOSAT-2E	Operational	High resolution optical imagers	High resolution stereo images for large scale (better than 1:0000) mapping applications, urban applications, GIS ingest.	Waveband: VIS: 0.5 - 0.75 µm Spatial resolution: 0.65 m Swath width: 10 km Accuracy:
ISRO PAN (Cartosat-3) Panchromatic sensor	CARTOSAT-3	Being developed	High resolution optical imagers	High resolution images for study of topography, urban areas, development of DTM, run-off models etc. Urban sprawl, forest cover/timber volume, land use change.	Waveband: Panchromatic VIS: 0.5 - 0.75 µm Spatial resolution: 0.25 m Swath width: 16 km Accuracy:
ISRO					

PAN (CBERS)	CBERS-4	Operational	High resolution optical imagers	Earth resources, environmental monitoring, land use, urban studies.	Waveband: 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm, 0.51 - 0.85 µm Spatial resolution: 5 m panchromatic and 10 m multispectral Swath width: 60 km Accuracy:
Panchromatic and Multispectral Imager					
CAST (INPE)	GF-1	Operational	High resolution optical imagers	Earth resources, environmental monitoring, land use, urban studies.	Waveband: 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm, 0.51 - 0.85 µm Spatial resolution: 5 m panchromatic and 10 m multispectral Swath width: 70km Accuracy:
PAN (GF-1)					
Panchromatic and multispectral imager					
CRESDA	GF-2	Operational	High resolution optical imagers	Earth resources, environmental monitoring, land use, urban studies.	Waveband: 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm, 0.51 - 0.85 µm Spatial resolution: 5 m panchromatic and 10 m multispectral Swath width: 45km Accuracy:
PAN (GF-2)					
Panchromatic and multispectral imager					
CRESDA	THEOS	Operational	High resolution optical imagers	THEOS PAN is an optical instrument with resolution 2 m and swath width at 22 km. It can be used in several applications such as cartography, land use planning and management, national security, etc.	Waveband: 0.45 - 0.90 µm Spatial resolution: 2 m Swath width: 22 km Accuracy: GSD for PAN = 2 m +/- 10% MTF for PAN > 0.10
PAN (GISTDA)					
Panchromatic imager					
GISTDA	SJ-9A	Operational	High resolution optical imagers		Waveband: 0.45 - 0.89 µm Spatial resolution: 2.5 m Swath width: 30 km Accuracy:
PAN (SJ-9A)					
Panchromatic and multispectral imager					
CRESDA	ZY-1-02C	Operational	High resolution optical imagers	Earth resources, environmental monitoring, land use	Waveband: 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm, 0.51 - 0.85 µm Spatial resolution: 5 m panchromatic and 10 m multispectral Swath width: 60 km Accuracy:
PAN (ZY-1-02C)					
Panchromatic and multispectral imager					
CRESDA	PRISMA	Approved	High resolution optical imagers	Panchromatic data.	Waveband: VIS: 400 - 700 nm Spatial resolution: 5 m Swath width: 30 km Accuracy: -
PAN CAMERA					
Panchromatic Camera					
ASI	Ingenio	Being developed	High resolution optical imagers	High resolution multi-spectral land optical images for applications in cartography, land use, urban management, water management, agriculture and environmental monitoring, risk management and security.	Waveband: VIS+NIR band: 520 - 670 nm, 410 - 480 nm, 520 - 580 nm, 610 - 670 nm, 790 - 880 nm Spatial resolution: PAN: 2.5 m, MS: 10 m Swath width: Swath will move between 55 and 60 km depending on latitude. Accuracy: SNR: 100 in PAN and 120 in MS. The geo-location accuracy of level 1c PAN data product shall be better than or equal to 2.5 m RMS 2D in nadir view.
PAN+MS (RGB+NIR)					
Ingenio PAN+MS (RGB+NIR)					
CDTI (ESA)					
Paz SAR-X	PAZ	Being developed	Imaging microwave radars	High resolution X-band radar for security, land use, urban management, environmental monitoring, risk management. Different acquisition modes: Spotlight (5 x 5-10 km SSD =<1 m), Scansar (100 x 100 km, SSD <=15 m), Stripmode (strips of 30 x 30 km with SSD 3 m).	Waveband: The Radar will use a frequency close to 9.65 GHz with an BW of 300 MHz. Spatial resolution: Resolution will move between <1 x 1 m and 6 x 18m depending on acquisition modes. Swath width: Swath will vary according to the acquisition mode: 5x5 km to 100 km x 100 km. Accuracy: Pixel Localization: Pixel Localization: 50 cm to 8.5 m (1s) depending of the product selected.
X Band Synthetic Aperture Radar					
CDTI					
PCW PHEOS - Atmospheric	PCW-1, PCW-2	Proposed	Atmospheric chemistry	Complement PCW operational numerical weather prediction. Will also collect information about atmospheric gaseous and aerosol composition to better understand transport and climate processes.	Waveband: 4 non-continuous bands from 0.758 - 14.3 µm at a spectral sampling of 0.25 cm-1. Spatial resolution: 10 x 10 km Swath width: Field of View is 560 x 560km. Field of Regard is 3024 x 3530 km. Accuracy: Cal/Val requirements currently being developed
Polar Highly Elliptical Orbit Science Weather, Climate & Air Quality Mission					
CSA (EnvCan)	PCW-1, PCW-2	Proposed	Space environment	Combination of payloads to study the near-Earth space dominated by plasmas and to observe the electromagnetic and charged particle environments in a highly elliptical orbit. May potentially include both in-situ space weather instruments and an Auroral imager.	Waveband: Dual band LBH long (160 - 175 nm) and LBH short (140 - 160 nm) for the Auroral imager. N.A. for the in-situ space weather instruments. Spatial resolution: 40 km for the Auroral imager. Not applicable for the in-situ space weather instruments. Swath width: Field of Regard for each full acquisition is the entire Earth disc. N.A. for the in-situ space weather instruments. Accuracy: Cal/Val requirements currently being developed
PCW PHEOS - Solar-Terrestrial					
Polar Highly Elliptical Orbit Science, Solar-Terrestrial Mission					
CSA					
PCWMP	PCW-1, PCW-2	Proposed	Imaging multi-spectral radiometers (vis/IR)	Continuous high-temporal resolution measurements of atmospheric properties over the Arctic. Associated observations, using additional instruments include in situ space weather and also broadband radiometry of Earth.	Waveband: Multiple bands, non-continuous, from 0.45 µm - 14.5 µm Spatial resolution: Band dependent, varies from 0.5 km GSD (goal) for some of the VNIR bands to 2 km GSD for TIR bands. Swath width: Field of Regard for each full acquisition is the entire Earth disc Accuracy: Cal/Val requirements currently being developed
PCW Meteorological Payload (1 on each PCW S/C)					
CSA (EnvCan)					
PHA	DSCOV	Operational	Space environment		Waveband: Spatial resolution: Swath width: Accuracy:
Pulse Height Analyzer					
NOAA (NASA)	DSCOV	Operational	Space environment	Magnetometer and plasma sensor to measure solar wind properties for forecasting geomagnetic storms. The Plasma-mag instrument comprises a Faraday Cup (measures solar wind) and a Fluxgate Magnetometer, as well as two space weather instruments: the Electron Spectrometer and the Pulse Height Analyzer.	Waveband: Spatial resolution: Swath width: Accuracy:
Plasma-Mag					
NOAA (NASA)					
Polarimeter	ACE, PACE	Proposed			Waveband: Spatial resolution: Swath width: Accuracy:
NASA					
POSEIDON-3	OSTM (Jason-2)	Operational	Radar altimeters	Nadir viewing sounding radar for provision of real-time high precision sea surface topography, ocean circulation and wave height data.	Waveband: Microwave: Ku-band (13.575 GHz), C-band (5.3 GHz) Spatial resolution: Basic measurement: 1/sec (6 km along track), Raw measurement: 10/sec (600 m along track) Swath width: On baseline TOPEX/POSEIDON orbit (10 day cycle): 300 km between tracks at equator Accuracy: Sea level: 3.9 cm, Significant wave height: 0.5 m, Horizontal sea surface wind speed: 2 m/s
Positioning Ocean Solid Earth Ice Dynamics Orbiting Navigator (Single frequency solid state radar altimeter)					
CNES					
POSEIDON-3B Altimeter	Jason-3	Operational	Radar altimeters	Nadir viewing sounding radar for provision of real-time high precision sea surface topography, ocean circulation and wave height data.	Waveband: Microwave: Ku-band (13.575 GHz), C-band (5.3 GHz) Spatial resolution: Basic measurement: 1/sec (6 km along track), Raw measurement: 20/sec (300 m along track) Swath width: On baseline TOPEX/POSEIDON orbit (10 day cycle): 300 km between tracks at equator Accuracy: Sea level: 3.4 cm, Significant wave height: 0.4 m, Horizontal sea surface wind speed: 1.5 m/s
Positioning Ocean Solid Earth Ice Dynamics Orbiting Navigator (Single frequency solid state radar altimeter)					
CNES					
Poseidon-4 Altimeter	Sentinel-6 A, Sentinel-6 B	Being developed	Radar altimeters		Waveband: Microwave: Ku-band (13.575 GHz), C-band (5.3 GHz) Spatial resolution: Swath width: Accuracy:
Poseidon-4 SAR Radar Altimeter					
CNES (ESA)	FY-3RM	Proposed	Cloud profile and rain radars	Precipitation radar.	Waveband: Spatial resolution: Swath width: Accuracy:
PR					
Precipitation Radar					
NSMC-CMA	Kanopus-V, Kanopus-V N3, Kanopus-V N4, Kanopus-V N5, Kanopus-V N6, Kanopus-V-IR	Operational	High resolution optical imagers	Panchromatic data for environmental monitoring, agriculture and forestry.	Waveband: 0.54 - 0.86 µm Spatial resolution: 2.5 m Swath width: 23 km Accuracy:
PSS					
Panchromatic imaging system					
ROSKOSMOS (ROSHYDROMET)	RapidScat-on-ISS	Operational	Scatterometers	The RapidScat instrument replaced NASA's QuikScat Earth satellite. The instrument is currently on board the International Space Station and measures Earth's ocean surface wind speed and direction.	Waveband: Microwave: 13.4 GHz Spatial resolution: 790 – 730 m (altitude dependent) Swath width: 900 – 1100 km (altitude dependent) Accuracy:
RapidScat					
Rapid Scatterometer					
NASA					

RASAT VIS Multispectral RASAT VIS Multispectral camera	RASAT	Operational	Imaging multi-spectral radiometers (vis/IR)	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: Band 1: 0.42 - 0.55 µm, Band 2: 0.55 - 0.63 µm, Band 3: 0.58 - 0.73 µm Spatial resolution: 15 m Swath width: 30 km Accuracy:
TUBITAK RASAT VIS Panchromatic RASAT VIS Panchromatic camera	RASAT	Operational	Imaging multi-spectral radiometers (vis/IR)	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: 0.42 - 0.73 µm Spatial resolution: 7.5 m Swath width: 30 km Accuracy:
TUBITAK RBI Radiation Budget Instrument	JPSS-2, JPSS-3, JPSS-4	Being developed	Earth radiation budget radiometers	Long term measurement of the Earth's radiation budget and atmospheric radiation from the top of the atmosphere to the surface; provision of an accurate and self-consistent cloud and radiation database.	Waveband: 3 channels: 0.3-100 µm, 0.3 - 5µm, 5- 50 µm Spatial resolution: 38 km Swath width: Limb to Limb Accuracy: 0.5%, 1%, 0.5% (respectively for the 3 channels)
NASA RF Beacon Radio Frequency Beacon	COSMIC-2A (Equatorial)	Being developed	Space environment	Transmitter that enables ground-based measurement of ionospheric scintillation and ionospheric total electron content (TEC). Critical to understanding the impacts of space weather on satellite communication systems and GPS.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA RO EUMETSAT (ESA)	EPS-SG-a, EPS-SG-b	Proposed	Other	GNSS receiver for atmospheric temperature and humidity profile sounding.	Waveband: L-Band 1575.42, 1176.45, 1176.45 MHz Spatial resolution: <1.5 km Swath width: Altitude range of 0 - 30 km Accuracy: Temperature sounding better 1 K rms
ROSA Radio Occultation Sensor for Atmosphere	MEGHA-TROPIQUES	Operational	Atmospheric temperature and humidity sounders	Enables measurement of water vapour and temperature profiles in the tropics.	Waveband: Spatial resolution: Swath width: Accuracy:
ISRO ROSA Radio Occultation Sounder for the Atmosphere	OCEANSAT-2	Operational	Atmospheric temperature and humidity sounders and precision orbit	Climate change studies. High-vertical resolution temperature-humidity sounding for NWP. Space weather.	Waveband: Around 1600 MHz (L1) and 1200 MHz (L2). Spatial resolution: 300 km (horizontal), 0.5 km (vertical). Swath width: N/A (occultation); about 300 soundings/day. Accuracy: Bending angle: 0.5 µ rad
ASI (ISRO) RRA Retroreflector Array	Diademe 1&2	Operational	Precision orbit	Satellite laser ranging for geodynamic measurements.	Waveband: Spatial resolution: Swath width: Accuracy:
CNES RRI Radio Receiver Instrument	ePOP on CASSIOPE	Operational	Space environment	The RRI measures wave electric fields in the 10Hz - 18MHz range, at magnitudes from 1 µV/m to 1 V/m to study the morphology and dynamics of ionospheric density structures, auroral wave-particle interactions, plasma nonlinear processes created by intense high frequency waves, and the mechanism of coherent wave backscatter.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
CSA S-Band SAR S-Band Synthetic Aperture Radar	HJ-1C	Operational	Imaging microwave radars	Radar measurements for natural and disaster monitoring.	Waveband: S-Band SAR Spatial resolution: 20 m (4 looks) Swath width: 100 km Accuracy: 3 dB
CAST S-band SAR (NISAR) S-band Synthetic Aperture Radar (SAR) (NISAR)	NISAR	Proposed	Imaging microwave radars	3-year mission to study solid earth deformation (earthquakes, volcanoes, landslides), changes in ice (glaciers, sea ice) and changes in vegetation biomass	Waveband: S-Band: 4-2 GHz Spatial resolution: At 12-day repeat, global coverage, 10m resolution Swath width: 240 km Accuracy: TBD
ISRO S&R (GOES) Search and Rescue	GOES-13, GOES-14, GOES-15	Operational	Other	Satellite and ground based system to detect and locate aviators, mariners, and land-based users in distress.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA S&R (NOAA) Search and Rescue Satellite Aided Tracking	CDARS, Metop-A, Metop-B, NOAA-15, NOAA-18, NOAA-19	Operational	Other	Satellite and ground based system to detect and locate aviators, mariners, and land-based users in distress.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA SAGE-III Stratospheric Aerosol and Gas Experiment	SAGE-III-on-ISS	Being developed	Atmospheric chemistry	Limb-viewing measurements of aerosol, O3, H2O, NO2, OClO, NO3, temperature and pressure in the stratosphere, upper troposphere, and mesosphere using solar occultation, lunar occultation and limb scatter measurement techniques.	Waveband: Nine spectral regions between 290 - 1550 nm Spatial resolution: 1 - 2 km vertical Swath width: N/A Accuracy: Aerosol profile: 5%, H2O: 10 - 15%; NO2: 10-15%; NO3: 10%; O3: 5%; OClO: 25%; Pressure: 2%; Temperature Profile: 2K
NASA SAPHIR Sondeur Atmospherique du Profil'd'Humidite Intertropicale par Radiometrie	MEGHA-TROPIQUES	Operational	Atmospheric temperature and humidity sounders	Cross-track sounder with the objective of measuring water vapour profiles in the troposphere in six layers from 2 - 12 km altitudes.	Waveband: Microwave: 183.3 GHz (6 channels) Spatial resolution: 10 km Swath width: 2200 km Accuracy:
CNES SAR (KOMPSAT-6) KARI	KOMPSAT-6	Approved	Imaging microwave radars		Waveband: X-Band Spatial resolution: Swath width: Accuracy:
SAR (RADARSAT-2) Synthetic Aperture Radar (CSA) C band CSA	RADARSAT-2	Operational	Imaging microwave radars	All-weather images of ocean, ice and land surfaces. Used for monitoring of coastal zones, polar ice, sea ice, sea state, geological features, vegetation and land surface processes.	Waveband: Microwave: C band 5.405 GHz. HH, VV, HV, VH polarization - includes Quad polarization imaging modes. Spatial resolution: Standard: 27 - 17 x 25 m (4 looks); Wide: 40 - 19 x 25 m (4 looks); Fine: 10 - 7 x 8 m (1 look); ScanSAR (N/W): 80 - 38 x 60 m / 160 - 172 x 100 m (4/8 looks), Extended (H/L): 18 - 16 x 25 m / 60 - 23 x 25 m (4 looks); Ultra-Fine: 4.6 - 2.1 x 2.9 m (1 lo) Swath width: Standard: 100 km (inc.: 20 - 49 deg); Wide: 150 km (inc.: 20 - 45 deg); Fine: 50 km (inc.: 30 - 50 deg); ScanSAR (N/W): 300/500 km (inc.: 20 - 46 / 20 - 49 deg); Extended (H/L): 75/170 km (inc.: 49 - 60 / 10 - 23 deg); Ultra-Fine: 20 km (inc.: 20 - 49 deg Accuracy: Relative Radiometric Accuracy (within a 100 km scene): <1 dB
SAR (RCM) Synthetic Aperture Radar (CSA) C band CSA (NRCAN, DND, DFO, AAFC, EnvCan, PSC)	RADARSAT C-1, RADARSAT C-2, RADARSAT C-3	Being developed	Imaging microwave radars	All-weather, C-band data to support ecosystem monitoring, maritime surveillance and disaster management.	Waveband: Microwave: C band 5.405 GHz: HH, VV, HV, VH polarization - includes Quad polarization imaging mode and compact polarimetry. Spatial resolution: Low Resolution 100 m: 100 x 100 m (8 looks); Medium Resolution 50 m: 50 x 50 m (4 looks); Medium Resolution 16 m: 16 x 16 m (4 looks); Medium Resolution 30 m: 30 x 30 m (4 looks); High-Resolution 5 m: 5 x 5 m (1 look); Very High Resolution 3 m: 3 (@35deg) Swath width: Low Resolution 100 m: 500 km; Medium Resolution 50 m: 350 km; Medium Resolution 16 m: 30 km; Medium Resolution 30 m: 125 km; High-Resolution 5 m: 30 km; Very High Resolution 3 m: 20 km; Low Noise 100m: 350 km; Spotlight: 5 km; Ship Detection: 350 km. Accuracy: Absolute Radiometric Accuracy: +/- 1.0 dB Scansar discontinuities: 0.2 dB
SAR (RISAT) Synthetic Aperture Radiometer (RISAT) ISRO	RISAT-1, RISAT-1A	Operational	Imaging microwave radars	Radar backscatter measurements of land, water and ocean surfaces for applications in soil moisture, crop applications (under cloud cover), terrain mapping, etc.	Waveband: C-Band (5.350 GHz) Spatial resolution: 3 - 6 m (FRS-1), 9 - 12 m (FRS-2), 25/50 m (MRS/CRS) Swath width: 30 km (HRS), 30 km (FRS-1/FRS-2), 120/240 km (MRS/CRS) Accuracy:

SAR 2000 Synthetic Aperture Radar - 2000 ASI (MoD (Italy))	COSMO-SkyMed 1, COSMO-SkyMed 2, COSMO-SkyMed 3, COSMO-SkyMed 4	Operational	Imaging microwave radars	All-weather images of ocean, land and ice for monitoring of land surface processes, ice, environmental monitoring, risk management, environmental resources, maritime management, Earth topographic mapping.	Waveband: Microwave: X-band, 9.6 GHz, with choice of 5 polarisation modes (VV, HH, HV, VH, HH/HV + VV/VH) Spatial resolution: Single polarisation modes: Spotlight: 1 m. Stripmap: 3 - 15 m. ScanSAR: 30 or 100 m. Two polarisation mode (PING-PONG): 15 m. Swath width: Single polarisation modes: Spotlight: 10 km. Stripmap: 40 km. ScanSAR: 100 or 200 m - Two polarisation mode (PING-PONG): 30 km. Accuracy:
SAR-L L-Band Synthetic Aperture Radar	SAOCOM 1A, SAOCOM 1B, SAOCOM-2A, SAOCOM-2B	Being developed	Imaging microwave radars	Land, ocean, emergencies, soil moisture, interferometry, others.	Waveband: L-band (1.275 GHz) Spatial resolution: 10 x 10 m – 100 x 100 m Swath width: 20 – 350 km Accuracy: 0.5 dB
CONAE SAR-X Synthetic Aperture Radiometer (RISAT-2)	RISAT-2	Operational	Imaging microwave radars	For disaster management applications.	Waveband: X Band (9.0 GHz) Spatial resolution: 3 - 8 m Swath width: 10 km, 50 km Accuracy:
ISRO SBUV/2 Solar Backscatter Ultra-Violet Instrument/2	NOAA-18, NOAA-19	Operational	Atmospheric chemistry	Data on trace gases including vertical profile ozone, and solar irradiance and total ozone concentration measurements.	Waveband: UV: 0.16 - 0.4 µm (12 channels) Spatial resolution: 170 km Swath width: Accuracy: Absolute accuracy: 1%
NOAA SCA EUMETSAT (ESA)	EPS-SG-b	Approved	Scatterometers	Measures wind speed and direction over ocean, soil moisture, sea ice cover, sea ice type, snow cover and snow parameters and vegetation parameters	Waveband: Microwave: C Band, 5.355 GHz Spatial resolution: 25 km Swath width: 2x 550 km swath width Accuracy: Wind speeds in range 4 - 24 m/s
ScaRaB Scanner for Earth's Radiation Budget CNES	MEGHA-TROPIQUES	Operational	Earth radiation budget radiometers	Measures top-of-atmosphere shortwave radiation (0.2 - 4.0 µm) and total radiation (0.2 - 50 µm). Two additional narrow-band channels (0.5 - 0.7 µm and 11 - 12 µm) allow cloud detection and scene identification.	Waveband: VIS window channel: 0.5 - 0.7 µm, Solar channel UV - SWIR: 0.2 - 4 µm, Total channel UV - FIR: 0.2 - 50 µm, Thermal window channel: 10.5 - 12.5 µm Spatial resolution: 40 km Swath width: 2200 km Accuracy: Absolute: ± 2.5 W/m2/sr, Relative: ± 0.7 W/m2/sr
SCAT Wind SCATerometer CNES SCAT-M3 Scatterometer	CFOSAT	Being developed	Scatterometers	Ocean surface wind vector	Waveband: Ku-band Spatial resolution: Swath width: Accuracy:
ROSHYDROMET (ROSKOSMOS) Scatterometer (OCEANSAT-3) ISRO	Meteor-M N3	Approved	Scatterometers	Ocean surface wind measurements.	Waveband: Ku-band Spatial resolution: 25 km Swath width: 1800 km Accuracy: Wind speed: 2 m/s, direction: 20 grad
Scatterometer (Scatsat-1) ISRO	OCEANSAT-3	Being developed	Scatterometers	Ocean surface wind measurements, continuity to ocean vector wind	Waveband: 13.515 GHz Spatial resolution: 25 km Swath width: 1440 km Accuracy:
SDR Software Defined Radio NSC	SCATSAT-1	Being developed	Scatterometers	Ocean surface wind measurements.	Waveband: 13.515 GHz Spatial resolution: 50 km Swath width: 1440 km Accuracy:
SeaWinds NASA	AISSat-1, AISSat-2, AISSat-3	Operational	Communications	Software Defined Radio (SDR) for reception of VHF AIS (Automatic Identification System).	Waveband: VHF Spatial resolution: Swath width: Accuracy: Modelling shows that the instrument should detect more than 95% of the vessels carrying AIS within the satellite's field of view in the High North each orbit.
SEI Suprathermal Electron Imager	QuikSCAT	Operational	Scatterometers	Measurement of surface wind speed and direction. The SeaWinds antenna on QuikSCAT stopped rotating in November 2009, and the instrument no longer collects ocean wind vector data. However it still provides calibration data for other on-orbit scatterometers, which enables the continuation of a climate-quality wind vector dataset.	Waveband: Microwave: 13.402 GHz Spatial resolution: 25 km Swath width: 1600 km Accuracy: Speed: 2 - 3.5 m/s Direction: 20 deg
CSA SEISS Space Environment In Situ Suite	ePOP on CASSIOPE	Operational	Space environment	The SEI measures the electron energy and pitch angle distribution over the energy range of 1 to 200 eV, with particular emphasis on photoelectrons in the 1 to 50 eV range.	Waveband: N/A Spatial resolution: N/A Swath width: N/A Accuracy:
NOAA SEM Space Environment Monitor	GOES-R, GOES-S, GOES-T, GOES-U	Being developed	Space environment	Monitor proton, electron, and alpha particle fluxes.	Waveband: 30 eV - 500 MeV Spatial resolution: 15 deg, 30 deg, 60 deg, 90 deg Swath width: Accuracy: 25%
NRSCC (NSMC-CMA, CAST) SEM (GOES) Space Environment Monitor	FY-3A, FY-3B	Operational	Space environment	Measures space environment parameters to support space craft operations.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA SEM (POES) Space Environment Monitor NOAA	GOES-13, GOES-14, GOES-15	Operational	Space environment	Used for equipment failure analysis, solar flux measurement, solar storm warning, and magnetic and electric field measurement at satellite.	Waveband: Spatial resolution: Swath width: Accuracy:
SES Space Environment Suite, improved SEM	Metop-A, Metop-B, Metop-C, NOAA-18, NOAA-19	Operational	Space environment	Used for equipment failure analysis, solar flux measurement, solar storm warning, and magnetic and electric field measurement at satellite.	Waveband: Senses and quantifies intensity in the sequentially selected energy bands, with energies ranging from 0.05 - 20 keV. Senses protons, electrons, and ions with energies from 30 keV to levels exceeding 6.9 MeV Spatial resolution: Swath width: Accuracy:
CAST (NSMC-CMA) SEVIRI Spinning Enhanced Visible and Infra-Red Imager EUMETSAT (ESA)	FY-3C, FY-3D, FY-3E, FY-3F	Operational	Space environment	Measures space environment parameters to support space craft operations.	Waveband: Spatial resolution: Swath width: Accuracy:
SGLI Second-generation Global Imager JAXA	Meteosat-10, Meteosat-11, Meteosat-8, Meteosat-9	Operational	Imaging multi-spectral radiometers (vis/IR) and ocean colour instruments	Measurements of cloud cover, cloud top height, precipitation, cloud motion, vegetation, radiation fluxes, convection, air mass analysis, cirrus cloud discrimination, tropopause monitoring, stability monitoring, total ozone and sea surface temperature.	Waveband: VIS0.6=0.5975 - 0.6725 µm, VIS0.8=0.775 - 0.845 µm, NIR1.6=1.57 - 1.71 µm, IR3.9=3.7 - 4.14 µm, WV6.3=5.8 - 6.7 µm, WV7.3=7.1 - 7.6 µm, IR8.7=8.5 - 8.9 µm, IR9.7=9.52 - 9.8 µm, IR10.8=10.3 - 11.3 µm, IR12.0=11.5 - 12.5 µm, IR13.4=12.9 - 13.9 µm, HRV=0.48 - 0.91 µm, unfiltered Si (measured at FWHM) Spatial resolution: HRV=1 km, All other channels=3 km (spatial sampling distance at SSP) Swath width: 9 km swath scanning E-W, moving up S-N a swath width at the end of each swath. Full Disc Coverage (FDC) or Local Area Coverage (LAC) possible. Accuracy: Cloud cover: 10%, Cloud top height: 1 km, Cloud top temperature: 1 K, Cloud type: 8 classes, Surface temperature: 0.7 - 2.0 K, Specific humidity profile: 10%, Wind profile (horizontal component): 2 - 10 m/s, Long wave Earth surface radiation: 5 W/m2
SHMASR Medium resolution wide capture multispectral optical sensor ROSKOSMOS	FY-3C, FY-3D, FY-3E, FY-3F	Operational	Space environment	Measures space environment parameters to support space craft operations.	Waveband: VIS - NIR: 0.38 - 0.865 µm; SW: 1.05 - 2.21 µm; TIR: 10.8 - 12.0 µm Spatial resolution: SGLI-VNR: 250 m, 1000 m; SGLI-IRS: 250 m, 500 m, 1000 m Swath width: SGLI-VNR: 1150 km; SGLI-IRS: 1400km Accuracy:
	Resurs-PM N1, Resurs-PM N2, Resurs-PM N3, Resurs-PM N4	Proposed	Imaging multi-spectral radiometers (vis/IR)	Land surface and ocean monitoring	Waveband: 0.50-0.80 µm; 0.45-0.51 µm; 0.51-0.58 µm; 0.63-0.69 µm; 0.77-0.89 µm; 0.71-0.75 µm; 0.76-0.80 µm; 0.85-0.89 µm; 0.89-0.96 µm; 1.55-1.70 µm Spatial resolution: 5; 10; 20 Swath width: 120 km Accuracy:

SHMSA-SR Medium resolution wide capture multispectral optical sensor	Resurs-P N1, Resurs-P N2, Resurs-P N3, Resurs-P N4, Resurs-P N5	Operational	Imaging multi-spectral radiometers (vis/IR)	Land surface and ocean monitoring	Waveband: 0.43 - 0.7 µm; 0.43 - 0.51 µm; 0.51 - 0.58 µm; 0.60 - 0.70 µm; 0.70 - 0.80 µm; 0.80 - 0.90 µm; Spatial resolution: 60 m; 120 m Swath width: 441 km Accuracy:
ROSKOSMOS SHMSA-VR High resolution wide capture multispectral optical sensor	Resurs-P N1, Resurs-P N2, Resurs-P N3, Resurs-P N4, Resurs-P N5	Operational	Imaging multi-spectral radiometers (vis/IR)	Land surface and ocean monitoring	Waveband: 0.43 - 0.7 µm; 0.43 - 0.51 µm; 0.51 - 0.58 µm; 0.60 - 0.70 µm; 0.70 - 0.80 µm; 0.80 - 0.90 µm; Spatial resolution: 12 m; 23,8 m Swath width: 97 km Accuracy:
ROSKOSMOS SIM Solar Irradiation Monitor	FY-3A, FY-3B, FY-3C, FY-3E	Operational	Earth radiation budget radiometers	Solar irradiance monitoring.	Waveband: 0.2 - 50 µm Spatial resolution: Swath width: Accuracy:
NRSCC (NSMC-CMA, CAST) SIM Spectral Irradiance Monitor	SORCE	Operational	Earth radiation budget radiometers	Measures solar spectral irradiance in the 200 - 2000 nm range.	Waveband: UV - SWIR: 200 - 2490 nm Spatial resolution: Swath width: Accuracy: 2% (0.02)
NASA SIM-2 Solar Irradiation Monitor-2	FY-3C, FY-3E, FY-3G	Operational	Earth radiation budget radiometers	Solar irradiance monitoring.	Waveband: 0.2 - 50 µm Spatial resolution: Swath width: Accuracy:
NRSCC (NSMC-CMA, CAST) SIRAL SAR Interferometer Radar Altimeter ESA	CryoSat-2	Operational	Radar altimeters	Marine ice and terrestrial ice sheet thickness measurement.	Waveband: Microwave: 13.575 GHz (Ku-Band) Spatial resolution: Range resolution 45 cm, along-track resolution 250 m Swath width: Footprint 15 km Accuracy: Arctic sea-ice: 1.6 cm/year for 300 km x 300 km cells, Land ice (small scale): 3.3 cm/year for 100 x 100 km cells, Land ice (large scale): 0.17 cm/year for Antarctica size area
SLIM-6-22 Surrey Linear Imager - 6 channel - 22m resolution UKSA	UK-DMC2	Operational	High resolution optical imagers	Visible and NIR imagery in support of disaster management - part of the Disaster Management constellation.	Waveband: VIS: 0.63 - 0.69 µm, 0.52 - 0.61 µm; NIR: 0.77 - 0.90 µm. Spatial resolution: 22 m Swath width: Two imaging banks each with a 330km swath. The two swaths overlap by 11km, providing a total swath up to 638km Accuracy: S/N 150:1 @ target albedo of 0.1.
SLSTR Sea and Land Surface Temperature Radiometer ESA (COM) SMR Submillimetre Radiometer SNSB	Sentinel-3 A, Sentinel-3 B, Sentinel-3 C	Approved	Imaging multi-spectral radiometers (vis/IR)	Marine and land services.	Waveband: 9 bands in VNIR/SWIR/TIR Spatial resolution: 500 m (VNIR/SWIR), 1 km (TIR) Swath width: 1675 km (near-nadir view), 750km (backward view) Accuracy: 0.2 K abs., 80 mK rel.
SOLSTICE SOLar STellar Irradiance Comparison Experiment	SORCE	Operational	Earth radiation budget radiometers	Measures global distributions of ozone and species of importance for ozone chemistry ClO, HNO3, H2O, N2O, (HO2, H2O2). Measures temperature in the height range 15 - 100 km.	Waveband: Microwave: 118.7 GHz + 4 bands in the region 480 - 580 GHz: Tuneable measures 2 - 3 x 1 GHz regions at a time; -0.1 cm - -0.3 cm Spatial resolution: Vertical resolution 1.5 - 3 km, along track 600 km Swath width: Altitudes of 5 - 100 km Accuracy: 2 - 40% depending on species and altitude
NASA Sounder NOAA Sounder (INSAT) IR Sounder ISRO	GOES-13, GOES-14, GOES-15	Operational	Atmospheric temperature and humidity sounders	Measures solar UV spectral irradiance (115 - 310 nm) with resolution of 0.1 nm and with an absolute accuracy of 2% and relative stability of 0.3% per year. Compares solar UV output with UV radiation of stable bright blue stars.	Waveband: UV: 115 - 310 nm Spatial resolution: Swath width: Accuracy: 2% (0.02)
Spectrometer (OCO-2) NASA	INSAT-3D, INSAT-3DR	Operational	Atmospheric temperature and humidity sounders	Atmospheric soundings and data on atmospheric stability and thermal gradient winds.	Waveband: VIS - TIR: 19 channels Spatial resolution: 10 km Swath width: Horizon to horizon Accuracy:
Spectrometer (OCO-3) NASA (JAXA)	OCO-2	Operational	Atmospheric chemistry	Atmospheric soundings, atmospheric stability, thermal gradient winds.	Waveband: SWIR: 3.74 - 4.74 µm; MWIR: 6.51 - 11.03 µm; TIR: 12.02 - 14.71 µm; VIS: 0.55 - 0.75 µm Spatial resolution: 10 x 10 km Swath width: Full (Full Earth disc sounding), Program (Options provided for for Sector Scans) Accuracy:
Spectrometer (TEMPO) NASA	OCO-2	Operational	Atmospheric chemistry	Global measurements of atmospheric CO2 needed to describe the variability of CO2 sources and sinks.	Waveband: 0.76 µm, 1.61 µm, 2.06 µm Spatial resolution: 2.25 km downtrack, variable cross-track Swath width: Varies from 0.1 km at the sub-solar latitude to 10.6 km at terminators Accuracy: Provide the data needed to yield single sounding estimates of XCO2 with one sigma errors of <= 2 ppm
Spectrometer (TEMPO) NASA	OCO-3-on-ISS	Being developed	Atmospheric chemistry	Global measurements of atmospheric CO2 needed to describe the variability of CO2 sources and sinks.	Waveband: 0.765 µm, 1.61 µm, 2.06 µm Spatial resolution: 2.25 km downtrack by 0.7 km cross-track Swath width: Soundings <= 3 km2 in area during Nadir Observation Accuracy: provide single sounding estimates of XCO2 with one sigma errors of <= 2 ppm
SRAL SAR Radar Altimeter ESA (COM) SSB/X-2 Special Sensor Gamma Ray Particle Detector	TEMPO	Being developed	Atmospheric chemistry	Hourly measurements of air pollution over North America, from Mexico City to the Canadian oil sands, at high spatial resolution. Measurements in ultraviolet and visible wavelengths will provide a suite of products including the key elements of tropospheric air pollution chemistry. Will be part of the first global geostationary constellation for pollution monitoring, along with European and Korean missions now in development.	Waveband: 290 to 750 nm (TBC) Spatial resolution: 2.22 km by 5.15 km at at geodetic location 36.5° N, 100° W Swath width: From 18 degrees N to 58 degrees N Accuracy: Precisions include tropospheric O3 to 10 ppbv in 1 hour, tropospheric NO2 to 1e15 molecules cm-2 in 1 hour, and tropospheric H2CO to 1e16 molecules cm-2 in 3 hours, all geo-located to an accuracy of 4 km.
NOAA (DoD (USA)) SSI/ES-2 Special Sensor Ionospheric Plasma Drift/Scintillation Meter	Sentinel-3 A, Sentinel-3 B, Sentinel-3 C	Approved	Radar altimeters	Marine and land services.	Waveband: Dual freq radar altimeter, Ku-band, C-band Spatial resolution: 300 m Swath width: Profiling Accuracy: 3 cm in range (1 s average, 2 m SWH including atm. corrections)
NOAA (DoD (USA)) SSI/ES-3 Special Sensor Ionospheric Plasma Drift/Scintillation Meter	DMSP F-14	Operational	Space environment	Detects the location, intensity, and spectrum of X-rays emitted from the Earth's atmosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (DoD (USA)) SSI/ES-3 Special Sensor Ionospheric Plasma Drift/Scintillation Meter	DMSP F-14, DMSP F-15	Operational	Space environment	Measurement of the ambient electron density and temperatures, the ambient ion density, and ion temperature and molecular weight.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (DoD (USA)) SSI/ES-3 Special Sensor Ionospheric Plasma Drift/Scintillation Meter	DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Space environment	Measurement of the ambient electron density and temperatures, the ambient ion density, and ion temperature and molecular weight.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (DoD (USA)) SSJ/4 Special Sensor Precipitating Plasma Monitor	DMSP F-14, DMSP F-15	Operational	Magnetic field	Measurement of transfer energy, mass, and momentum of charged particles through the magnetosphere-ionosphere in the Earth's magnetic field.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (DoD (USA)) SSJ/5 Special Sensor Precipitating Plasma Monitor NOAA (DoD (USA))	DMSP F-16	Operational	Magnetic field	Measurement of transfer energy, mass, and momentum of charged particles through the magnetosphere-ionosphere in the Earth's magnetic field.	Waveband: Spatial resolution: Swath width: Accuracy:

SSM Special Sensor Magnetometer	DMSP F-14, DMSP F-15, DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Magnetic field	Measures geomagnetic fluctuations associated with solar geophysical phenomena. With SSIES and SSJ provides heating and electron density profiles in the ionosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (DoD (USA)) SSM/I Special Sensor Microwave Imager	DMSP F-14, DMSP F-15	Operational	Imaging multi-spectral radiometers (passive microwave)	Measures atmospheric, ocean and terrain microwave brightness temperatures to provide: sea surface winds, rain rates, cloud water, precipitation, soil moisture, ice edge, ice age.	Waveband: Microwave: 19.35 GHz, 22.235 GHz, 37 GHz, 85 GHz Spatial resolution: 15.7 x 13.9 km to 68.9 x 44.3 km (depends on frequency) Swath width: 1400 km Accuracy:
NOAA (DoD (USA)) SSM/IS Special Sensor Microwave Imager Sounder	DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Atmospheric temperature and humidity sounders	Measures thermal microwave radiation. Global measurements of air temp profile, humidity profile, ocean surface winds, rain overland/ocean, ice concentration/age, ice/snow edge, water vapour/clouds over ocean, snow water content, land surface temperature.	Waveband: Microwave: 19 - 183 GHz (24 frequencies) Spatial resolution: Varies with frequency: 25 x 17 km to 70 x 42 km Swath width: 1700 km Accuracy:
NOAA (DoD (USA)) SSM/T-1 Special Sensor Microwave Temperature Sounder	DMSP F-14, DMSP F-15	Operational	Atmospheric temperature and humidity sounders	Measures Earth's surface and atmospheric emission in the 50 - 60 GHz oxygen band.	Waveband: Microwave: 7 channels in the 50 - 60 GHz range Spatial resolution: 174 km diameter beam Swath width: 1500 km Accuracy:
NOAA (DoD (USA)) SSM/T-2 Special Sensor Microwave Water Vapor Sounder	DMSP F-14, DMSP F-15	Operational	Atmospheric temperature and humidity sounders	Water vapour profiler.	Waveband: Microwave: 91.6, 150, 183.31 (3 channels) (Total 5 channels) Spatial resolution: Approx 48 km Swath width: 1500 km Accuracy:
NOAA (DoD (USA)) SSTM-1 (OCEANSAT-3) Sea Surface Temperature Monitor-1	OCEANSAT-3	Being developed	Imaging multi-spectral radiometers (vis/IR)	TIR and OCM combination will support joint analysis for operational potential fishing zones.	Waveband: 2 bands Spatial resolution: 1080 m Swath width: 1440 km Accuracy:
ISRO SSULI Special Sensor Ultraviolet Limb Imager	DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Space environment	Measures vertical profiles of the natural airglow radiation from atoms, molecules and ions in the upper atmosphere and ionosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA SSUSI Special Sensor Ultraviolet Spectrographic Imager	DMSP F-16, DMSP F-17, DMSP F-18, DMSP F-19, DMSP F-20	Operational	Space environment	Monitors the composition and structure of the upper atmosphere and ionosphere, as well as auroral energetic particle inputs, with spectrographic imaging and photometry.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA STR Star Tracker Set (3)	Swarm	Operational	Precision orbit	Precise attitude determination from the combination of two or three star trackers.	Waveband: N/A Spatial resolution: <1 arcsec Swath width: N/A Accuracy: < 3 arcsec pointing accuracy around all STR axes
ESA SUVI Solar Ultraviolet Imager	GOES-R, GOES-S, GOES-T, GOES-U	Being developed	Other	The SUVI will monitor the entire dynamic range of solar x-ray features, including coronal holes and solar flares, and will provide quantitative estimates of the physical conditions in the Sun's atmosphere.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA SWIM Surface Waves Investigation and Monitoring	CFOSAT	Approved	Scatterometers	Ku-band Real-aperture radar (RAR) system, multi-incidence beams(0-10°) and azimuth scanning. Measurement of 2D ocean waves spectrum	Waveband: Ku-band Spatial resolution: 50x50km on 2D spectra Swath width: 140 km Accuracy: accuracy for wave estimates: minimum detectable wavelength of about 70 m, maximum detectable wavelength about 500m, accuracy in wave propagation direction of about 15°, accuracy in wavelength of 10 to 20%, accuracy in significant wave height of 10% or better than 40-50 cm (TBC)
NOAA SXI Solar X-ray Imager	GOES-13, GOES-14, GOES-15	Operational	Space environment	Obtains data on structure of solar corona. Full disk imagery also provides warnings of geomagnetic storms, solar flares, and information on active regions of sun and filaments.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (USAF) TANSO-CAI Thermal And Near infrared Sensor for carbon Observation - Cloud and Aerosol Imager	GOSAT	Operational	Imaging multi-spectral radiometers (vis/IR)	Detection and correction of cloud and aerosol for TANSO-FTS.	Waveband: 0.380 µm, 0.674 µm, 0.870 µm, 1.60 µm Spatial resolution: 0.5 km (0.380, 0.674, 0.870 µm bands), 1.5 km (1.62 µm band) Swath width: 1000 km (0.380 µm, 0.678 µm, 0.870 µm bands), 750 km (1.62 µm band) Accuracy:
JAXA (MOE (Japan), NIES (Japan)) TANSO-CAI-2 Thermal And Near infrared Sensor for carbon Observation - Cloud and Aerosol Imager-2	GOSAT-2	Being developed	Imaging multi-spectral radiometers (vis/IR)	Detection and correction of cloud and aerosol for TANSO-FTS, aerosol characteristics	Waveband: 0.343 µm, 0.443 µm, 0.674 µm, 0.869 µm, 1.63 µm / tilt angle +20deg, 0.380 µm, 0.550 µm, 0.674 µm, 0.869 µm, 1.63 µm / tilt angle -20deg. Spatial resolution: 0.5 km (0.343, 0.443, 0.674, 0.869, 0.380, 0.550, 0.674, 0.869 µm bands), 1.0 km (1.63 µm band) Swath width: 1000 km Accuracy:
JAXA (MOE (Japan), NIES (Japan)) TANSO-FTS Thermal And Near infrared Sensor for carbon Observation - Fourier Transform Spectrometer	GOSAT	Operational	Atmospheric chemistry	CO2 and CH4 distribution.	Waveband: 0.758 - 0.775 µm, 1.56 - 1.72 µm, 1.92 - 2.08 µm, 5.56 - 14.3 µm Spatial resolution: 10.5 km Swath width: 160 km Accuracy:
JAXA (MOE (Japan), NIES (Japan)) TANSO-FTS-2 Thermal And Near infrared Sensor for carbon Observation - Fourier Transform Spectrometer-2	GOSAT-2	Being developed	Atmospheric chemistry	CO2, CH4, and CO distribution.	Waveband: 0.754 - 0.772 µm, 1.56 - 1.69 µm, 1.92 - 2.38 µm, 5.55-8.41 µm, 8.41 - 14.3 µm Spatial resolution: 9.7km Swath width: 160km Accuracy:
JAXA (MOE (Japan), NIES (Japan)) TES Tropospheric Emission Spectrometer	Aura	Operational	Atmospheric chemistry	3D profiles on a global scale of all infra-red active species from surface to lower stratosphere. Measures greenhouse gas concentrations, tropospheric ozone, acid rain precursors, gas exchange leading to stratospheric ozone depletion.	Waveband: SWIR-TIR: 3.2 - 15.4 µm Spatial resolution: In limb mode: 2.3 km vertical resolution. In down-looking mode: 50 x 5 km (global), 5 x 0.5 km (local) Swath width: Limb mode: global: 50 x 180 km, local: 5 x 18 km Accuracy: Ozone: 20 ppb, Trace gases: 3 - 500 ppb
NASA TGRS TriG (Tri-GNSS) GNSS Radio-occultation System	COSMIC-2A (Equatorial), COSMIC-2B (Polar)	Proposed	Atmospheric temperature and humidity sounders	TGRS is the radio occultation receiver, which will receive signals from GPS, Galileo, and Glonass.	Waveband: Spatial resolution: Swath width: Accuracy:
NOAA, NSPO (UCAR) TGSP Trace Gas Spectrometer	Meteor-MP N1, Meteor-MP N2, Meteor-MP N3	Proposed	Atmospheric chemistry	Trace gas measurements.	Waveband: Spatial resolution: Swath width: Accuracy:
ROSHYROMET TIM Total Irradiance Monitor	SORCE, TCTE	Operational	Earth radiation budget radiometers	Measurement of total solar irradiance directly traceable to SI units with an absolute accuracy of 0.03% and relative accuracy of 0.001% per year.	Waveband: Spatial resolution: Swath width: Looks at the sun every orbit, providing 15 measurements per day Accuracy: 0.04%
NASA TIP Tiny Ionospheric Photometer	COSMIC-1 FM1, COSMIC-1 FM2, COSMIC-1 FM4, COSMIC-1 FM5, COSMIC-1 FM6	Operational	Space environment	Observes Earth's ionosphere at 135.6 nm and facilitates tomography of the ionosphere (when combined with other instruments aboard the COSMIC satellites).	Waveband: 135.6 nm Spatial resolution: Swath width: Accuracy:
NOAA					

TIR Two band Thermal Infrared Camera	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Approved	Imaging multi-spectral radiometers (vis/IR)	Sea surface temperature measurement	Waveband: TIR 2 bands: 10800 - 11800 nm Spatial resolution: 400m - 800 m Swath width: 1350 km Accuracy:
CONAE TIRS Thermal Infrared Sensor	Landsat 8	Operational	Imaging multi-spectral radiometers (vis/IR)	Measures surface emittance, lands cover state and change). Used as multipurpose imagery for land applications.	Waveband: TIR 10.5 µm and 12 µm Spatial resolution: 100 m Swath width: 185 km Accuracy: Absolute geodetic accuracy of 44 m; geometric accuracy of 32 m or better
USGS (NASA) TIRS-2 Thermal Infrared Sensor - 2	Landsat 9	Approved	Imaging multi-spectral radiometers (vis/IR)	Measures surface radiance and emittance, lands cover state and change (eg vegetation type). Used as multipurpose imagery for land applications. TIRS-2 will adhere to the Landsat 8 TIRS instrument performance specifications, but will be built to NASA Class-B instrument standards (including a 5-year design life).	Waveband: TIR 10.5 µm and 12 µm Spatial resolution: 100 m Swath width: 185 km Accuracy:
USGS (NASA) TOU/SBUS Total Ozone Unit & Solar Backscatter Ultraviolet Sounder	FY-3A, FY-3B, FY-3C	Operational	Atmospheric temperature and humidity sounders	Ozone total column vertical profile measurements.	Waveband: TOU: 6 channels in the range 308 - 360 nm, SBUS: in the range 252 - 340 nm Spatial resolution: TOU: 50 km total ozone, SBUS: 200 km total ozone Swath width: TOU: 3000 km, SBUS: nadir only Accuracy: 50km
NRSCC (NSMC-CMA, CAST) TriG TriG Receiver for Radio Occultation	Sentinel-6 A, Sentinel-6 B	Being developed			Waveband: Spatial resolution: Swath width: Accuracy:
NOAA (ESA, NASA) TSI NSC	NORSAT-1	Proposed			Waveband: Spatial resolution: Swath width: Accuracy:
TSIS-1 Total Solar and Spectral Irradiance Sensor 1	TSIS-on-ISS	Being developed	Earth radiation budget radiometers	0.2 - 2 µm solar spectral irradiance monitor and total spectra monitor	Waveband: UV - SWIR: 0.2 - 2 µm and total spectra Spatial resolution: Swath width: Accuracy: 1.5 w/m2
NOAA (NASA) TSX-NG X-Band SAR DLR	TSX-NG	Proposed	Imaging microwave radars	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: 9.65 GHz, up to 1200 MHz bandwidth, fully polarimetric Spatial resolution: HR Spotlight: 0.25 x 0.25 m, HR Stripmap: 0.5 x 1 m, Stripmap: 1 x 1 m ScanSAR: 10 - 25 x 25 m Swath width: HR Spotlight: 5 km x 10 km, HR Stripmap: 10 km Stripmap: 30 km, ScanSAR: up to 600 km Accuracy:
UV Spectrometer (GACM) NASA	GACM	Proposed	Atmospheric chemistry	Daytime measurements of O3, NO2, SO2, CH2O, and aerosols.	Waveband: 305 - 320 nm and 500 - 650 nm Spatial resolution: Swath width: Accuracy:
UV-VIS Multi-spectral Optical Camera ultraviolet_visible	SAC-E/SABIA_MAR-A, SAC-E/SABIA_MAR-B	Approved	Ocean colour instruments	Ocean Colour - Open ocean, coastal & in-land waters.	Waveband: Ultraviolet-Visible-NearInfraRed 11 bands: 380 - 412 - 443 - 490 - 531 - 555 - 620 - 665 - 680 - 710 - 865 nm Spatial resolution: 200m - 800 m Swath width: 1350 km Accuracy:
CONAE UV/Vis Near IR Wide Imaging Spectrometer (Geo-Cape) NASA	GEO-CAPE	Proposed	Imaging multi-spectral radiometers (vis/IR)	Measures natural and human-produced gases and aerosols in the atmosphere, including those that react in sunlight to form polluting low-level ozone.	Waveband: 315 - 600 nm Spatial resolution: 7 km spatial resolution, single layer vertical resolution, 0.9 nm spectral resolution Swath width: typically uses 2D data array with 1-D north to south in space (7 km wide) and 1D for (oversampled) spectral intervals/bins. The spatial domain is mechanically scanned for east to west to cover a continental domain (either north or south America). Accuracy: ozone prediction: 1.3 x 10 ⁻¹⁶ cm ⁻¹ (-2); NO2 prediction: 5 x 10 ⁻¹⁴ cm ⁻¹ (-2) Waveband: UV/VIS 290 - 430 nm Spatial resolution: 20 km nominal, 10 km zoom. Swath width: 250 Accuracy: trace gas profile 10 - 40%
UVAS UVAS (Ultraviolet Visible and near-infrared Atmospheric Sounder) CDTI	Ingenio	Being developed	Atmospheric chemistry	High spatial resolution observations of air quality and climate gases such as ozone (O3), nitrogen dioxide (NO2), sulphur dioxide (SO2), formaldehyde (HCHO) glyoxal (CHO-CHO), and aerosols over selected zones of interest (urban and industrialized areas, mayor motorways, and special events like forest fires, volcano eruption and sand storms). Also measurements of halogenated compounds will be performed, including bromine monoxide (BrO) and iodine monoxide (IO).	Waveband: UV-1: 290 - 308 nm, UV-2: 308 - 400 nm, VIS: 400 - 500 nm, NIR: 750 - 775 nm Spatial resolution: < 5 km at SSP, possibly relaxed to 50 km for wavelengths < 308 nm Swath width: FOV E-W: 30°W-45°E @ 40°N, N-S: 30°N-65°N Accuracy: H2CO: 50%, NO2: 50%, O3: 10%, SO2: 50%
UVN UV-VIS-NIR Sounder EUMETSAT (ESA)	MTG-S1 (sounding), MTG-S2 (sounding)	Approved	Atmospheric chemistry	Measurements of atmospheric trace gases, mainly O3, NO2, SO2, H2CO. The product list is not yet approved, the accuracy summary column lists the breakthrough user requirements.	Waveband: UV-1: 290 - 308 nm, UV-2: 308 - 400 nm, VIS: 400 - 500 nm, NIR: 750 - 775 nm Spatial resolution: < 5 km at SSP, possibly relaxed to 50 km for wavelengths < 308 nm Swath width: FOV E-W: 30°W-45°E @ 40°N, N-S: 30°N-65°N Accuracy: H2CO: 50%, NO2: 50%, O3: 10%, SO2: 50%
UVN (Sentinel-4) UV-visible- near infrared imaging spectrometer (Sentinel-4) ESA (COM)	Sentinel-4 A, Sentinel-4 B	Proposed	Atmospheric chemistry	Supporting atmospheric composition and air quality monitoring services.	Waveband: UV-1: 290 - 308 nm, UV-2: 308 - 400 nm, VIS: 400 - 500 nm, NIR: 750 - 775 nm Spatial resolution: < 5 km at SSP, possibly relaxed to 50 km for wavelengths < 308 nm Swath width: FOV E-W: 30°W-45°E @ 40°N, N-S: 30°N-65°N Accuracy: TBD
UVNS (Sentinel-5 precursor) Ultra-violet Visible Near-infrared Shortwave-infrared spectrometer ESA (COM, NSO) UVNS (Sentinel-5)	Sentinel-5 precursor	Proposed	Atmospheric chemistry	Supporting atmospheric composition and air quality monitoring services.	Waveband: UV-1: 270 - 300 nm, UV-2: 300 - 400 nm, VIS: 400 - 500 nm, NIR: 710 - 775 nm, SWIR-3: 2305 - 2385 nm Spatial resolution: 5 - 15 km at SSP, possibly relaxed to 50 km for wavelengths < 300 nm Swath width: Daily global coverage Accuracy: TBD
Ultra-violet Visible Near-infrared Shortwave-infrared spectrometer ESA (EUMETSAT, COM)	EPS-SG-a, Sentinel-5A, Sentinel-5B	Proposed	Atmospheric chemistry	Supporting atmospheric composition and air quality monitoring services. Measurements of atmospheric trace gases, primarily O3, NO2, SO2, HCHO, CH4 and CO.	Waveband: UV-1: 270 - 300 nm, UV-2: 300 - 400 nm, VIS: 400 - 500 nm, NIR: 710 - 775 nm, SWIR-1: 1593 - 1672 nm, SWIR-2: 1940 - 2030 nm, SWIR-3: 2305 - 2385 nm Spatial resolution: 5 - 15 km at SSP, possibly relaxed to 50 km for wavelengths < 300 nm Swath width: Daily global coverage Accuracy: TBD
VDES Test Mission NSC	NORSAT-2	Approved			Waveband: Spatial resolution: Swath width: Accuracy:
Vegetation ESA	PROBA-V	Operational	Imaging multi-spectral radiometers (vis/IR)	Global coverage every two days for uses including climate impact assessments, surface water resource management, agricultural monitoring, and food security estimates.	Waveband: Equivalent spectral bands to Spot Vegetation: VNIR: Blue (438-486 nm), Red (615-696 nm), Near IR (772-914 nm), SWIR (1564-1634 nm). Spatial resolution: 100 m resolution at Nadir, 350 m on full field of view Swath width: 102° field of view with 2250 km wide swath Accuracy:
VFM Vector Field Magnetometer ESA VHRR	Swarm	Operational	Magnetic field	Magnetic field vector measurements.	Waveband: N/A Spatial resolution: <0.1nT Swath width: N/A Accuracy: <0.5 nT/15 days
Very High Resolution Radiometer	INSAT-3A, KALPANA-1	Operational	Imaging multi-spectral radiometers (vis/IR)	Cloud cover, rainfall, wind velocity, sea surface temperature, outgoing longwave radiation, reflected solar radiation in spectral band 0.55 - 0.75 µm, emitted radiation in 10.5 - 12.5 µm range.	Waveband: VIS: 0.55 - 0.75 µm, NIR: 5.7 - 7.1 µm, TIR: 10.5 - 12.5 µm Spatial resolution: 2 km in visible, 8 km in IR Swath width: Full Earth disk every 30 minutes Accuracy:
ISRO VIIRS Visible/Infrared Imager Radiometer Suite NOAA (NASA)	DWSS, JPSS-1, JPSS-2, JPSS-3, JPSS-4, Suomi NPP	Operational	Imaging multi-spectral radiometers (vis/IR) and ocean colour instruments	Global observations of land, ocean, and atmosphere parameters: cloud/weather imagery, sea-surface temperature, ocean colour, land surface vegetation indices.	Waveband: VIS - TIR: 0.4 - 12.5 µm (22 channels) Spatial resolution: 400 m - 1.6 km Swath width: 3000 km Accuracy: SST 0.35 K

VIR	FY-3A, FY-3B, FY-3C	Operational	Imaging multi-spectral radiometers (vis/IR)	Multispectral Visible and Infra-red Scan Radiometer.	Waveband: Instrument features 10 channels over 0.43 - 10.5 µm Spatial resolution: 1.1 km at nadir Swath width: 2800 km Accuracy: 1.1 km
Multispectral Visible and Infra-red Scan Radiometer (10 channels)					
NRSCC (NSMC-CMA, CAST)					
Visible imaging spectrometer (HyspIRI)	HyspIRI	Proposed	Hyperspectral imagers and imaging multi-spectral radiometers (vis/ir)		Waveband: 400 - 2500 nm Spatial resolution: 60 m at nadir; 3 week revisit time Swath width: 90 km Accuracy: Spectral accuracy < .5 nm
NASA					
VNREDSat 1 MS	VNREDSat-1	Operational	Imaging multi-spectral radiometers (vis/IR)	The VNREDSat 1 multispectral instrument is designed for land cover measurements and applications.	Waveband: There are 4 bands of multispectral, visible and infrared and panchromatic Spatial resolution: 10m; panchromatic 2.5m Swath width: 17.5 km Accuracy:
VNREDSat 1 Multispectral					
VAST					
VSC	VENUS	Being developed	Imaging multi-spectral radiometers (vis/IR)	High resolution superspectral images (12 spectral bands) for vegetation and landcover applications.	Waveband: 420 nm centre wavelength (width: 40 nm); 443 nm (40); 490 nm (40); 555 nm (40); 620 nm (40); 620 nm (40); 667 nm (30); 702 nm (24); 742 nm (16); 782 nm (16); 865 nm (40); 910 nm (20) Spatial resolution: 5.3 m spatial resolution with 27 km swath Swath width: 27 km Accuracy:
Venus Superspectral Camera					
CNES (ISA)					
WFC	CALIPSO	Operational	Imaging multi-spectral radiometers (vis/IR)	Acquires high spatial resolution imagery with CALIPSO for meteorological context.	Waveband: VIS: 620 to 670 nm Spatial resolution: 125 m Swath width: 61 km Accuracy:
Wide Field Camera					
NASA					
WFI (CBERS-4A)	CBERS-4A	Proposed	Imaging multi-spectral radiometers (vis/IR)	Agriculture; Forestry; Geology; Natural disaster management; Cartography; Environment monitoring; Fire detection, localization and counting; Hydrology, coastal water mapping; Land use; Surveillance and law enforcement	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 55 m Swath width: 690 km Accuracy:
Wide Field Imager					
INPE (CAST)					
WFI-2 (Amazonia-1)	AMAZONIA-1	Approved	Imaging multi-spectral radiometers (vis/IR)	Used for fire extent detection measurement, coastal and vegetation monitoring, land cover and land use mapping. WFI-2 (Amazonia-1) is the same instrument as WFI-2 (CBERS), however due differences in orbital altitude, they have different spatial resolutions.	Waveband: VIS: 0.45 - 0.50 µm, 0.52 - 0.57 µm, 0.63 - 0.69 µm, NIR: 0.76 - 0.90 µm Spatial resolution: VIS - NIR: 60 m Swath width: 740 km Accuracy:
Wide Field Imager-2 (Amazonia-1)					
INPE					
WFI-2 (CBERS)	CBERS-4	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use. WFI-2 (Amazonia-1) is the same instrument as WFI-2 (CBERS), however due differences in orbital altitude, they have different spatial resolutions.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 64 m Nadir Swath width: 866 km Accuracy:
Wide Field Imager-2 (CBERS)					
INPE (CAST)					
WfV	GF-1	Operational	Imaging multi-spectral radiometers (vis/IR)	Earth resources, environmental monitoring, land use.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm Spatial resolution: 16 m Nadir Swath width: 800 km Accuracy:
Wide Field View					
CRESDA					
WindRAD	FY-3E, FY-3G	Prototype	Scatterometers	Measures sea-surface wind.	Waveband: C and Ku band. Spatial resolution: Swath width: Accuracy:
Wind Radar					
NSMC-CMA					
WPM	CBERS-4A	Proposed	High resolution optical imagers	Earth resources, environmental monitoring, land use, urban studies.	Waveband: 0.45 - 0.52 µm, 0.52 - 0.59 µm, 0.63 - 0.69 µm, 0.77 - 0.89 µm, 0.45 - 0.90 µm Spatial resolution: 8 m multispectral, 2 m panchromatic Swath width: 90 km Accuracy:
Wide Swath Panchromatic and Multispectral Camera					
CAST (INPE)					
WSAR	HY-3A, HY-3B, HY-3C	Proposed	Imaging microwave radars	High resolution radar measurements of land and ocean features.	Waveband: X-Band: 8 - 12 GHz Spatial resolution: 3 modes: 1 m, 5 m, 10 m Swath width: 3 swaths: 40 km, 80 km, 150 km Accuracy:
NSOAS (CAST)					
X-Band SAR	TanDEM-X, TerraSAR-X	Operational	Imaging microwave radars	High resolution images for monitoring of land surface and coastal processes and for agricultural, geological and hydrological applications.	Waveband: 9.65 GHz, 300 MHz bandwidth, all 4 polarisation modes Spatial resolution: Spotlight: 1.2 x 1 - 4 m Stripmap: 3 x 3 - 6 m ScanSAR: 16 x 16 m Swath width: Spotlight: 5-10km x 10 km, Stripmap: 30 km, ScanSAR: 100 km Accuracy:
X-Band Synthetic Aperture Radar					
DLR					
XPS	SORCE	Operational	Other	Measure the extreme UV solar irradiance from 1 - 35 nm with absolute accuracy of 20% and relative stability of 1% per year.	Waveband: UV: 1 - 35 nm Spatial resolution: Swath width: Accuracy: 20% (0.2)
XUV Photometer System					
NASA					