

CURRENT AND FUTURE LEO/GEO/R&D SATELLITE TABLES

In response to CGMS permanent action 01 and for inclusion in the final CGMS-38 meeting report

This Working Paper contains the current and future leo, geo, and R&D coordinated satellite tables to be included in the final CGMS-38 report (following correctness confirmation at the meeting).

The Working Paper confirms the satellite status for EUMETSAT.

Unless already done, other CGMS Members are requested to verify the input and provide feedback as necessary to ensure correctness of the tables.

Action/Recommendation proposed:

Members who have not yet revised the tables are kindly invited to provide feedback on the data including any updates of their respective satellites to the CGMS Secretariat (sarah.grieu@eumetsat.int and anne.taube@eumetsat.int)

Table 1: Current Polar-Orbiting Satellites Coordinated within CGMS
(as of **27.10.2010**; sorted by Equatorial Crossing Time and organisation)

Orbit type (equatorial crossing times)	Satellites in orbit (+operation mode) P=Pre-operational Op=operational B=back-up L=limited availability R= R&D	Operator	Equatorial Crossing Time and orbital altitude A=Ascend (northward) D=Descend (southward)	Launch date	Expected end of service	Payload/Instruments	Remarks, URL on NRT data access
Sun-synchronous local "early morning" orbit (05:00–07:00) (17:00–19:00)	FY-1D (Op)	CMA	06:50 (D) 866 km	15 May 2002	≥2009	CHRPT, MVISR, SEM	Functional. Last s/c of FY-1 series.
	NOAA-15 (B)	NOAA	04:46 (D) 807 km	13 May 1998			Functional (intermittent problems with AVHRR, AMSU-B & HIRS). AMSU-A1 channels 11 & 14 inoperative.
	DMSP-F13 (B)	NOAA	18:33 (A) 850 km	24 Mar 1995			Defence satellite. Data available to civilian users through NOAA. Only 1 recorder on-board with limited functionality.
	DMSP-F14 (B)	NOAA	17:24 (A) 852 km	4 Apr 1997		SSM11, SSMT2 (Microwave Temperature Sounder)	Defence satellite. SSM11 (microwave temperature sounder) non-functional. SSMT2 non-functional. No functional on-board recorder. Data available to civilian users through NOAA
	DMSP-F17 (Op)	NOAA	17:31 (A) 850 km	4 Nov 2007			Defence satellite. SSMIS. Data available to civilian users through NOAA.
Sun-synchronous local "morning" orbit (07:00–12:00) (19:00–24:00)	DMSP-F18 (Op)	NOAA	08:00 (D) 833 km	18 Oct 2009		SSMI/S	(SSMI/S)
	FY-3A	CMA	10:00 (D) 836 km	27 May 2008			AHRPT/MPT transmission, 11 instruments; SBUS failed, IRAS with intermittent problem.

	Metop-A (Op)	EUMETSAT	21:30 (A) 817 km	19 Oct 2006	2012		Operational. HRPT and LRPT not functional. EUMETCast ADM
	NOAA-17 (B)	NOAA	9:22 (D) 810 km	24 June 2002			Functional. AMSU-A1 failed. DTR5 Failed February 2003. STX3 output power degraded to inoperable level. STX1 diminished performance.
	DMSP-F15 (B)	NOAA	19:37 (A) 850 km	12 Dec 1999		SSMT2 (microwave water vapour sounder)	Defence satellite. SSMT2 (microwave water vapour sounder) non-functional. Data available to civilian users through NOAA.
	DMSP-F16 (Op)	NOAA	20:04 (A) 850 km	18 Oct 2003		SSMIS.	Defence satellite. SSMIS. Data available to civilian users through NOAA.
	METEOR-M N1	ROS-HYDROMET	09:30 (D) 835 km	17 Sep 2009			HRPT, LRPT. Commissioning ongoing.
Sun-synchronous local "afternoon" orbit (12:00–17:00) (00:00–05:00)	NOAA-16 (B)	NOAA	17:57 (A) 849 km	21 Sep 2000		AVHRR	Functional, no APT, no LAC. Intermittent problems with AVHRR.
	NOAA-18 (B)	NOAA	13:45 (A) 854 km	20 May 2005		HIRS, MIMU-2	Functional. Noise on HIRS long wave channels. 7 June 2009 MIMU-2 failure (loss of redundancy)
	NOAA-19 (Op)	NOAA	13:51 (A) 870 km	6 Feb 2009		MHS	Primary pm spacecraft as per 2 June 2009, part of IJPS. Functional. Noise on MHS Channel H3.
Non-sun synchronous orbit	OSTM/Jason-2 (Ocean Surface Topography Mission)	CNES EUMETSAT NASA NOAA	(66° inclin.) 1336 km	20 Jun 2008	Mid 2013	Sea surface topography measurement. Global ocean circulation for climate prediction.	Follow-on of Jason-1.

Table 2: Current Geostationary Satellites Coordinated within CGMS
(as of 27.10. 2010, sorted by longitude and organisation)

Sector	Satellites currently in orbit (+type) P: Pre-operational Op: Operational B: Back-up L: Limited Availability	Operator	Location	Launch date	Expected end of service	Payload/Instruments	Remarks, URL on NRT data access
West-Pacific (108°E-180°E)	MTSAT-1R (Op)	JMA	140°E	26 Feb 2005			Fully Functional
	MTSAT-2 (B)	JMA	145°E	18 Feb 2006			Multifunctional Transport Satellite (in-orbit back-up to MTSAT-1R until 2010 thereafter operational)
	FY-2E	CMA	123°E	23 Dec 2008			5 channel VISSR, to be moved to 105°E at the end of 2009.
East-Pacific (180°W-108°W)	GOES-11 (Op)	NOAA	135°W	3 May 2000			Operational GOES-West spacecraft since 28 Jun 2006. X-Ray Positioner failed February 2008.
	GOES-14 (P)	NOAA	105° W	27 Jun 2009			Stored in-orbit
West-Atlantic (108°W-36°W)	GOES-12 (Op)	NOAA	60°W	23 Jul 2001			Support South America users (May 2010) SXI Imaging suspended indefinitely April 2007. X-Ray Positioner failed April 2007.
	GOES-13 (Op)	NOAA	75°W	24 May 2006			XRS/EUV instrument had a capacitor failure rendering unit inoperable.
?	GOES-15 (P)	NOAA	90° W	4 Mar 2010			In commissioning phase.
East-Atlantic (36°W-36°E)	Meteosat-8 (B)	EUMETSAT	9.5°E	28 Aug 2002	2016		No LRIT. Back-up to Meteosat-9. Rapid scanning service. EUMETCast ADM.

	Meteosat-9 (Op)	EUMETSAT	0°W	21 Dec 2005	2019		Primary s/c. Fully operational. EUMETCast ADM.
Indian Ocean (36°E-108°E)	FY-2C (Op)	CMA	105 E	19 Oct 2004			S-VISSR (improved), DCS, SEM. Expected end of service at the end of 2009 and be moved to 123.5°E.
	FY-2D (Op)	CMA	86.5°E	15 Nov 2006			S-VISSR (improved), DCS, SEM.
	Meteosat-6 (B)	EUMETSAT	67.5°E	20 Nov 1993	Apr 2011		Functional. Back-up to Meteosat-7. DCP mission support. EUMETCast ADM. Likely to be de-orbited in 2010.
	Meteosat-7 (Op)	EUMETSAT	57.5°E	2 Sep 1997	2013		Functional. EUMETCast ADM. IODC coverage committed till end 2013. Further request for extension until 2016 to be made.
	GOMS-N1 (L)	Roshydromet	76°E	31 Oct 1994			Since 09/1998 in stand-by
	INSAT 3-C (L)	IMD	74°E	24 Jan 2002			No meteorological payload. Used for dissemination of processed meteorological data in broadcast mode in S-Band only over India and neighbouring countries. No WEFAX broadcast capability in L-band.
	Kalpana-1 (Op) (formerly METSAT)	IMD	74°E	12 Sep 2002		Monitoring cyclones & monsoon CMV Winds OLR Rainfall Estimation	Dedicated meteorological satellite. Working satisfactorily.
	INSAT-3A (Op)	IMD	93.5°E	10 Apr 2003		- Monitoring cyclones & monsoon - CMV Winds - OLR - Rainfall Estimation - Mesoscale features - Flood/intense precipitation advisory - Snow detection	Operational since 24 Apr 2003. A 3-channel VHRR imager and CCD payload available for use similar to INSAT-2-E.

Table 3: Current R & D satellites discussed within CGMS

(as of 27.10.2010, sorted by organisation)

Satellites in orbit	Operator	Orbital altitude and Equator Crossing Time A=Northw D=Southw +Altitude	Launch date	Expected end of service	Application/ instruments	Remarks, URL on data/product access
PARASOL	CNES	705 km sun-synchr.	18 Dec 2004	End 2011	POLDER Characterisation of clouds and aerosols micro-physical and radiative properties.	Data can be accessed at http://www.icare.univ-lille1.fr/ PARASOL was moved to a lower orbit (3.9 km beneath the A-Train) on December 2, 2009, where it is still operating
SPOT-5	CNES	832 km sun-synchr.	3 May 2002		DORIS, HRG, HRS, VEGETATION Cartography, land surface, agriculture and forestry, civil planning and mapping, digital terrain models, environmental monitoring	
CBERS-02	CNSA/ AEB	10:30 (D) 778 km	21 Oct 2003		Multi-spectral Camera, Infrared Scanner Camera, Wide Field Imager Camera	Land resource observation
CBERS-02B	CNSA/ AEB	10:30 (D) 778 km	19 Sep 2007		Multi-spectral Camera, Infrared Scanner Camera, Wide Field Imager Camera	Land resource observation
HJ-1A	CNSA	650 km 10:30 A	06 Sep 2008		Land, resource and environment monitoring	
HJ-1B	CNSA	650 km 10:30 A	06 Sep 2008		Land, resource and environment monitoring	
HY-1B	CNSA	10:30 +/-30 min (D) 798 km	11 Apr 2007		Ocean colour and temperature scanner and 4 bands CCD imager. (CZI)	In operation.

ERS-2	ESA	10:30 (D) 785 km	21 Apr 1995		Altimeter, SAR, SAR-wave, ATSR, Scatterometer, GOME	<ul style="list-style-type: none"> No on-board recorder since 2003, the data acquisition is ensured over a network of acquisition stations. ATSR-2 instrument anomaly since Feb 2008.
ENVISAT	ESA	10:00 (D) 800 km	1 Mar 2002		10 instruments for Environment: ASAR, AATSR, MERIS, GOMOS, MIPAS, SCHIAMACHY, RA-2, MWR, DORIS	<ul style="list-style-type: none"> MIPAS is operated at 80% of its duty cycle. GOMOS performs with reduced azimuth range, since Aug 2005. GOMOS instrument anomalies since early 2009. Altimeter: Loss of secondary frequency (S-band) in Jan.08, compensated with on-ground ionospheric corrections. <p>Operations funding extended 3 years.</p>
GOCE	ESA	(6:00 A) 250 km	17 Mar 2009		Gravity-Field and steady-state Ocean Circulation Explorer,	Commissioning achieved.
CRYOSAT-2	ESA	717 km Non-sun-synchronous	8 Apr 2010		Polar ice monitoring	
SMOS	ESA	755 km (6:00 A)	2 Nov 2009		Ocean salinity and soil moisture	
PROBA	ESA	10: 30 (D) 615 km	22 Oct 2001		CHRIS	Drifting orbit. Technology experiment. AO Science mission since 2001.
OCEANSAT-1	ISRO	12:00 (A)/ 24:00 (D) 98.28° 720 Km sun- synchronous	26 May 1999			Multifrequency Scanning Microwave Radiometer (MSMR) for SST, Sea surface wind speed, total water vapour, cloud liquid water, sea ice extend, rainfall, soil moisture etc.
OCEANSAT-2	ISRO	Sun synch.	23 Sept 2009		Scatterometer, Radio Occultation Sounder, Ocean Colour Monitoring	
DAICHI (ALOS)	JAXA	10:30 691.65 km sun-synchronous	24 Jan 2006		PRISM, AVNIR-2, PALSAR	Mapping, precise land coverage observation, disaster monitoring, resource surveying.
IBUKI (GOSAT)	JAXA & Japan's Ministry of Environment	13:00 666km sun- synchronous	23 Jan 2009		TANSO-FTS and TANSO-CAI	Greenhouse gas and carbon dioxide monitoring.



TRMM	JAXA/ NASA	402 km non-sun-synchr.	27 Nov 1997		Precipitation Radar equipment provided by JAXA and TRMM Microwave Imager (TMI), satellite bus and other instruments provided by NASA	Measures tropical rainfall/precipitation and radiation energy
ACRIMSAT	NASA	716 km sun-synchr.	20 Dec 1999		ACRIM III	Active Cavity Radiometer Irradiance Monitor Satellite Measures total solar irradiance, studies incoming solar radiation and adds measurements of ocean and atmosphere currents and temperatures as well as surface temperatures.
Aura	NASA/BNSC	705 km sun-synchr.	15 Jul 2004		Comprehensive measurements of atmospheric chemistry and trace gasses	
Terra	NASA	705 km sun-synchr.	18 Dec 1999		CERES, MISR, MODIS, MOPITT, ASTER	Measurement of the Earth's climate system, atmosphere, land, oceans and interactions with solar radiation
Jason-1	NASA/ CNES	1336 km non-sun-synchr.	07 Dec 2001		Laser retroreflector array Poseidon-2 solid state radar altimeter DORIS receiver Jason Microwave Radiometer BlackJack GPS Receiver tracking system	Ocean surface topography Follow-on mission to TOPEX/P. Monitor global ocean circulation for global climate prediction.
Aqua	NASA	705 km sun-synchr.	04 May 2002		AMSR-E, AIRS, AMSU-A, CERES, HSB, MODIS	Collects data on Earth's water cycle, precise atmospheric and oceanic measurements, and interaction with solar radiation AMSR-E provided by JAXA. HSB provided by INPE (no longer functional)
Landsat 7	NASA	705 km sun-synchr.	15 Apr 1999		Enhanced Thematic Mapper Plus Instrument (ETM+)	Well-calibrated, multispectral, moderate resolution, substantially cloud-free, sunlit digital images of the Earth's continental and coastal areas
NMP EO-1 (New Millennium Program Earth Observing-1)	NASA	10:01 (D) 705 km sun-synchr.	21 Nov 2000		Advanced Land Imager Hyperion LAC (atmospheric corrector)	Demonstrates and validates advanced technology instruments (multi and hyperspectral), spacecraft systems, and in flight mission concepts

ICESat (Ice, Cloud, and Land Elevation Satellite)	NASA	600 km circular non-sun-synchr.	12 Jan 2003		Geo-science Laser Altimeter System GPS BlackJack receiver	Measures ice sheet topography, ice sheet elevation changes, cloud and aerosol heights and land topography and vegetation characteristics.
QuikSCAT (Quick Scatterometer)	NASA	803 km sun-synchr.	19 Jun 1999	23 Nov 2009	SeaWinds	Sea surface wind speed and direction data for global climate research operational weather forecasting and storm warning. Services stopped 23 Nov 2009 after antenna failure.
SORCE (Solar Radiation and Climate Experiment)	NASA	(40° incl) 640 km non-sun-synchr.	25 Jan 2003		- XPS (Extreme Ultraviolet (XUV) Photometer System) - TIM (Total Irradiance Monitor) - SIM (Spectral Irradiance Monitor A&B) - SOLSTICE (Solar Stellar Irradiance Comparison Experiment A&B)	Will provide total irradiance measurements and full spectral irradiance measurements. Continuation of ACRIMSAT total solar irradiance measurements.
GRACE (Gravity Recovery and Climate Experiment)	NASA/DRL	(89° incl) 485 km non-sun-synchr.	17 Mar 2002		- Star Camera Assembly - GPS BlackJack Receiver - Instruments Processing Unit - Laser Retro-Reflector Assembly - K-Band Ranging Instruments - SuperSTAR Accelerometers	Accurate global and high-resolution determination of static and time-variable components of Earth's gravity field Measurement of: - Gravitational field - GPS atmospheric and ionospheric limb sounding
CALIPSO	NASA/ CNES	705 km sun-synchronous	28 Apr 2006		Lidar CALIOP Infrared radiometer IIR Visible camera WFC	Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observations for climate predictions. Data can be accessed at < http://eosweb.larc.nasa.gov/PRODOCS/calipso/table_calipso.html > and http://www.icare.univ-lille1.fr/ CALIPSO functioning with its back-up laser since March 2009
CloudSAT	NASA/ CSA	705 km sun-synchronous	28 Apr 2006		Global cloud properties (applications: air quality, aviation safety, disaster management, energy and water management)	
Monitor-E	ROSCOSMOS	(550 km) (10:30)	26 Aug 2005		Land Observing Satellite	Experimental exploitation

RESURS-DK1	ROSCOSMOS	Elliptical orbit, H _p =360km, H _a =604km, incl.=70.4	15 Jun 2006		<ul style="list-style-type: none"> - Panchromatic scanner - Multi-spectral scanner - PAMELA (Italy) for primary cosmic radiation investigation - ARINA for earthquake prediction investigation 	Exploitation
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Table 4: Future Polar-Orbiting Satellites Coordinated within CGMS
(as of **27.10.2010**, sorted by Equatorial Crossing Time and organisation)

Orbit type (equatorial crossing times)	Future additional satellites	Operator	Equatorial Crossing Time and orbital altitude A=Ascend. (northward) D=Descend. (southward)	Planned launch date	Nominal life time (years)	Payload/Instruments	Remarks, URL on planned NRT data access
Sun-synchronous local "early morning" orbit (05:00 – 07:00) (17:00 – 19:00)	NPOESS-2	NOAA	05:30 (D) 833 km	2016		LRD (AHRPT), HRD	
	NPOESS-4	NOAA	05:30 (D) 833 km	2022		LRD (AHRPT), HRD	
	DMSP-F19	NOAA	05:30 (D) 833 km	2012		(SSMI/S)	
	DMSP-F20	NOAA	05:30 (D) 833 km	2014		(SSMI/S)	
Sun-synchronous local "morning" orbit (07:00 – 12:00) (19:00 – 24:00)	FY-3B	CMA	836 km	2010		- " -	
	FY-3C	CMA	836 km	2013		- " -	
	FY-3D	CMA	836 km	2015		- " -	
	FY-3E	CMA	836 km	2017		- " -	
	FY-3F	CMA	836 km	2019		- " -	
	FY-3G	CMA	836 km	2021		- " -	



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Metop-1 (B)	EUMETSAT	21:30 (A) 817 km	2012	4.5	HRPT, LRPT. EUMETCast ADM.	
Metop-3 (C)	EUMETSAT	21:30 (A) 817 km	2016	4.5	HRPT, LRPT. EUMETCast ADM.	
EPS-SG 1a	EUMETSAT		2019	8.5		
EPS-SG 1b	EUMETSAT		2020	8.5		
DMSP-F18	NOAA	08:00 (D) 833 km	2009		(SSM/I/S)	
METEOR-M N3	ROS- HYDROMET	TBD ~560 km	2012		HRPT, LRPT	

Orbit type (equatorial crossing times)	Future additional Satellites	Operator	Equatorial Crossing Time and orbital altitude A=Ascend. (northward) D=Descend. (southward)	Planned launch date	Nominal life time (years)	Payload/Instruments	Remarks, URL on NRT data access
Sun-synchronous local "afternoon" orbit (12:00 – 17:00) (00:00 – 05:00)	FY-3B	CMA	14:00 (A) 836 km	2010		AHRPT/MPT, VIRR, MERSI, MWRI, IRAS, MWTS, MWHS, TOU/SBUS, SEM, ERM, SIM	
	NPP-NPOESS Preparatory Project	NOAA/NASA	13:30 (A) 833 km	2011		(VIIRS, CrIS, ATMS, OMPS) HRD. Monitoring climate trends, global biological productivity	
	JPSS [NPOESS]-1	NOAA	13:30 (A) 833 km	2014		LRD (AHRPT), HRD	
	JPSS [NPOESS]-3	NOAA	13:30 (A) 833 km	2020		LRD (AHRPT), HRD	
	METEOR-M N2	ROS-HYDROMET	15:30 (A) 835 km	2010		HRPT, LRPT	
Non-sun synchronous Orbit	Jason-3	EUMETSAT NOAA CNES		2013	5	OST	66° inclination
	Jason-CS			2017	5-7	OST	TBC

Table 5: Future Geostationary Satellites Coordinated within CGMS
(as of 26.10. 2010, sorted by longitude and organisation)

Sector	Future additional satellites	Operator	Planned launch	Nominal life time (years)	Planned location	Payload/Instruments	Remarks URL on planned NRT data access
East-Atlantic sector (36°W-36°E)	MSG-3	EUMETSAT	2012	7	0°	LRIT, EUMETCast ADM.	
	MSG-4	EUMETSAT	2014	7	0°	LRIT, EUMETCast ADM.	
	MTG I1	EUMETSAT	2017	8.5			Meteosat Third Generation 1 st imaging satellite
	MTG S1	EUMETSAT	2019	8.5			Meteosat Third Generation 1 st sounding satellite
	MTG I2	EUMETSAT	2022	8.5			Meteosat Third Generation 2 nd imaging satellite
	MTG I3	EUMETSAT	2026	8.5			Meteosat Third Generation 3 rd imaging satellite
	MTG S2	EUMETSAT	2027	8.5			S2 Meteosat Third Generation
	MTG I4	EUMETSAT	2030	8.5			Meteosat Third Generation 4 th imaging satellite
East-Pacific (180°W-108°W) and West-Atlantic (108°W-36°W)	GOES-R	NOAA	2015		135° W or 75° W	ABI, GLM, SUV, EXIS, SEISS (Advanced Baseline Imager, Geostationary Lightning Mapper), Solar UV Imager, Extreme UV and X-ray Irradiance Sensors, Space Environment In-Situ Suite)	
	GOES-S	NOAA	2016		135° W or 75° W		
Indian Ocean (36°E-108°E)	FY-2F	CMA	2011		86.5°E	5 channel VISSR	
	FY-4A, C, E	CMA	2014			Multi-spectral imager, Atmospheric Sounder, lightning mapper, SEM	
	Electro-L N1	Roshydromet	2010		76°E	HRIT/LRIT	
	Electro-L N2	Roshydromet	2011		14.5° W (TBD)		
	Electro-M N1	Roshydromet	2015		TBD		



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	INSAT-3D	IMD	2010		TBD	Dedicated Meteorological mission with improved 6-channel Imager and a 19 channel Sounder.	
	FY-2G	CMA	2013		123°E	5 channel VISSR	
West-Pacific (108°E-180°E)	FY-4B, D, F	CMA	2016			Multi-spectral imager, Atmospheric Sounder, lightning mapper, SEM	
	Himawari-8	JMA	2014		140°E		(Previously MTSAT follow-on).
	Himawari-9	JMA	2016		140°E.		Himawari-8/-9: 15 years of operations foreseen in total.
	COMS	KMA	2010	2017	128.2°E	5 channel. HRIT/LRIT Meteorological imager (MI), Geostationary Ocean Colour Imager (GOCI)	
	COMS follow-on	KMA	2017	2027	116.2°E or 128.2°E	Advanced Meteorological Imager Advanced GOCI	

Table 6: Future R&D satellites discussed within CGMS
(as of 26.10. 2010, sorted by Equatorial Crossing Time and organisation)

Future satellites	Operator	Equatorial Crossing Time and orbital altitude	Planned launch date	Nominal life time (years)	Application/Instruments	Remarks, URL on planned data/product access
SARAL	CNES/ISRO	800 km (6:00D).	2011		AltiKa (Ka band altimeter) Doris receiver Argos-3 Laser retroreflector	
MEGHA-TROPIQUES	CNES/ISRO	867 km 20° inclination	2011	3	Microwave radiometer (MADRAS), microwave humidity sounder (SAPHIR), Radio Occultation sounder, Earth radiation budget (SCARAB)	
HJ-1C	CNSA	499 km (6:00 D)	2010		Land, resource and environment monitoring	
CBERS-03	CNSA/AEB	778 km (10:00 A)	2010		Land, resource and environment monitoring	
CBERS-04	CNSA/AEB	778 Km (10:30 D)	2012		Land, resource and environment monitoring	
SMOS	ESA	763 km (6:00 D)	2 Nov 2009		Ocean salinity and soil moisture	
ADM-Aeolus	ESA	405 km (18:00 A)	Sept 2011		Wind profiles	
SWARM (three satellites)	ESA	2 sats at 450 km 1 sat at 530 km (drifting up to 9 hours from the lower pair)	June 2011		Earth interior	
EarthCare	ESA/JAXA	400 km (10:30D)	Sep 2013		Cloud, radiation, aerosols	
OCEANSAT-2	ISRO	723 km (12:00 D).	23 Sept 2009		Scatterometer, Radio Occultation Sounder, Ocean Colour Monitoring	
SAC-D/Aquarius	NASA/CONAE	657 km (6:00 D)	May 2010		Global sea surface salinity (SSS)	

GPM (core)	NASA/JAXA	405 km 65° inclination	Jul 2013		Global Precipitation Measurement, follow-on and expanded mission of the current on-going TRMM
GCOM-W1	JAXA	700 km (13:30 A)	JFY2011 (Jan 2012)		Global water and energy circulation
GCOM-C1	JAXA	800 km (10:30 D)	JFY2014		Carbon cycle and radiation budget (Atmosphere, Ocean, Land and Cryosphere)
LDCM (Landsat Data Continuity Mission)	NASA/US Geological Survey	705 km (10:00 D)	Jan 2011		Extension of Landsat record of multispectral 30m resolution
Glory	NASA	705 km (13:30 A)	2010		In the framework of Climate Change Research Initiative (CCRI) global distribution of natural and anthropogenic aerosols
Kanopus-V N1	ROSCOSMOS	650 km (10:30)	2010		Monitoring of naturally occurring and man-made extreme events
Kanopus-V N2	ROSCOSMOS	650 km (10:30 A)	2011		Monitoring of naturally occurring and man-made extreme events

Add for all tables

*Details on near real time access and web links are available at <http://www.wmo.int/pages/prog/sat/Satellites.html>

*Details on applications and instrumentation are available at <http://eohandbook.com/>