

WMO OMM

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU



World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

Secrétariat

7 bis, avenue de la Paix – Case postale 2300
CH 1211 Genève 2 – Suisse
Tél.: +41 (0) 22 730 81 11
Fax: +41 (0) 22 730 81 81
wmo@wmo.int – public.wmo.int

Ref.: 01242/2017-19 OBS-WIGOS/SAT

Our ref.: 01242/2017/OBS/SAT

20 July 2017

Annex: 1 (available in English only)

Subject: Preparing for the new generation of Meteorological Satellites 2015-2022

Dear Sir/Madam,

A new generation of geostationary meteorological satellites operated by China, India, Japan the Republic of Korea, the Russian Federation, USA and EUMETSAT are entering into operation in the 2015-2022 timeframe, covering all WMO Regions. In addition, other new-generation systems are being developed for implementation in polar orbit and other orbit types in the coming years, all with enhanced and new capabilities on board.

Himawari-8 operated by the Japan Meteorological Agency (JMA) as the first geostationary satellite of the new generation, entered operations on 7 July 2015 over 140° East longitude and has already proved its high additional value to meteorological services in the Asia-Pacific region. The new-generation Himawari-9, GOES-16 (GOES-R) and FY-4A geostationary satellites have recently been launched by JMA, NOAA and CMA, respectively, and more satellites are to follow.

The Seventeenth World Meteorological Congress in 2015 in its Resolution 37 pointed out that the transition to operations of these new systems would enable significant enhancements to satellite-related products and services delivered by WMO Members. Ingesting data from the new systems in operational schemes would also have a major impact on user infrastructure, systems, applications and services, and require coordinated action at the scientific, technical, financial, organizational and educational levels.

Congress appreciated that timely and careful preparation by Members was essential to avoid any disruption of operations upon transition to these new systems, and to ensure that Members can take advantage of the new capabilities as early as possible, to optimize their services to users.

With this letter, I would like to raise your awareness about the guidance that WMO provides to assist your service in preparing for, and exploiting data from, the new generation of satellites:

To: Permanent Representatives (or Directors of Meteorological or Hydrometeorological Services) of Members of WMO

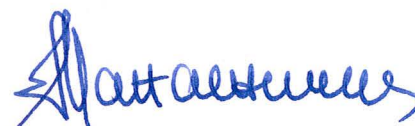
cc: Hydrological Advisers to Permanent Representatives
CGMS Secretariat

- Guidelines on Best Practices for Achieving User Readiness for New Meteorological Satellites:
Arabic version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19931
Chinese version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19930
English version: https://library.wmo.int/opac/doc_num.php?explnum_id=3553
French version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19932
Russian version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19929
Spanish version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19928;
- The Satellite User Readiness Navigator (SATURN) online resource (<https://www.wmo-sat.info/satellite-user-readiness/>) hosting up-to-date information on the new satellite systems, including on payload characteristics, calibration and other ground segment details, data format descriptions, proxy datasets, and preliminary data samples; SATURN is maintained jointly with satellite operators;
- The space-based Observing Systems Capability Analysis and Review tool (OSCAR/Space, <https://oscar.wmo.int/space>), which is part of the WMO Integrated Global Observing System (WIGOS) Operational Information Resource and contains comprehensive information on space-based systems of relevance to WMO;
- Training events, virtual and classroom-based, organized by the WMO-CGMS Virtual Laboratory for Education and Training in Satellite Meteorology (VLab) in all WMO languages, with strong emphasis on preparation for new-generation meteorological satellites (calendar of events available at <http://vlab.wmo.int>);
- Guidance to design and implement satellite-related training programmes to support WMO competencies, provided through the Guideline on Satellite Skills and Knowledge for Operational Meteorologists:
Arabic version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19890
Chinese version: https://library.wmo.int/opac/doc_num.php?explnum_id=3585
English version: https://library.wmo.int/opac/doc_num.php?explnum_id=3439
French version: https://library.wmo.int/opac/doc_num.php?explnum_id=3539
Russian version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19870
Spanish version: https://library.wmo.int/opac/index.php?lvl=notice_display&id=19869;
- Meteorological Satellite User Conferences and WMO Regional Satellite User Requirements Groups which regularly highlight the new generation of meteorological satellites and offer a forum for exchange among users and structured dialogue with satellite operators; you are encouraged to nominate participants to these events to share experience with other users in your Region, and to formulate coordinate requirements for satellite data access and exchange;
- The following WMO Regional Satellite User Requirements Groups are in place: RA-I Dissemination Expert Group (RAIDEG); the Coordination Group of the RA II WIGOS Project to Develop Support for NMHSs in Satellite Data, Products, and Training; the Coordination Group on Satellite Data Requirements in RA III and IV; and the RA V Task Team on Satellite Utilization;
- Satellite operators in CGMS have committed to provide regular and timely updates on their new systems to the user community and in particular through input to the SATURN and OSCAR online resources. Operators also adopted the Best Practices for Achieving User Readiness, as far as they apply to their area of responsibility, at their 44th meeting in June 2016.

WMO will continue to support Members in their endeavours to use the promising new data streams that are becoming available from the new-generation satellites. WMO, through its Space Programme Office and together with international scientific working groups, provides guidance on satellite-derived products and related training. WMO stands ready to assist Members in meeting challenges they may face associated with the new data streams, such as adapting to new formats, higher data rates, new data types, upgrading receiving equipment, or staff training. Please inform the WMO Secretariat if you have any questions or concerns.

WMO will do its utmost to facilitate a seamless transition to the exploitation of the new satellite systems for all Members, in partnership with satellite operators in CGMS.

Yours faithfully,



(E. Manaenkova)
for the Secretary-General



World Meteorological Organization
Weather · Climate · Water

Satellite User Readiness Navigator (SATURN) <http://www.wmo-sat.info/satellite-user-readiness/>

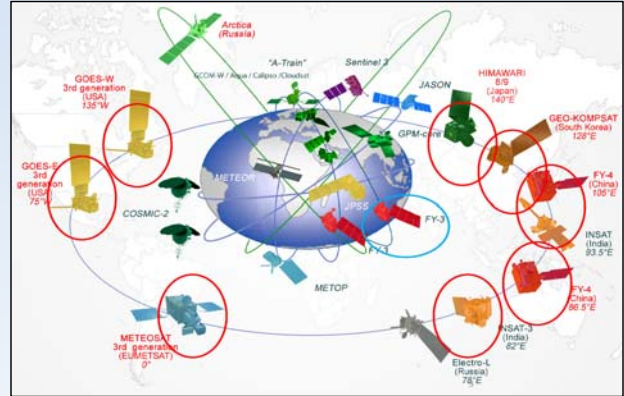
PREPARING FOR THE NEXT GENERATION OF METEOROLOGICAL SATELLITES

- Satellites are widely used by WMO Members in support of weather, climate, water applications

The 2015-2022 generation of meteorological satellites provides:

- Unprecedented **capabilities** for key meteorological applications such as nowcasting, as well as **challenges** for both satellite operators and users

NEXT-GENERATION GEOSTATIONARY SATELLITES CONSTELLATION



SATURN CONCEPT

- SATURN is an online portal with information on:
 - Upcoming geostationary satellite systems and instruments
 - Planned products, datasets, data distribution methods
 - Test and proxy data, software tools
 - Training material
- Developed by satellite operators and WMO
- To be extended to polar-orbiting satellites
- Regularly updated



EXAMPLE OF SATURN CONTENT

Himawari-8/9: Specification of Observation

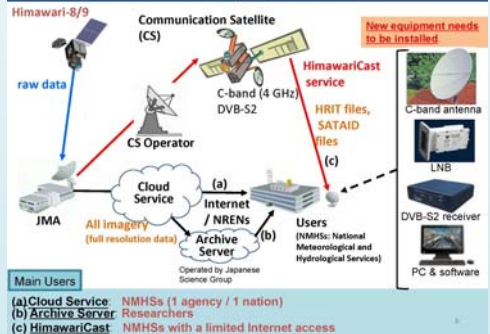
Channels of the Advanced Himawari Imager (AHI) to be carried by Himawari-8/9

Channel	Central Wavelength (nm)	Spatial Resolution	Notes
1	0.41-0.48	1 km	Composited True Color Image
2	0.50-0.52	1 km	
3	0.63-0.66	0.5 km	
4	0.85-0.87	1 km	Water Vapor
5	1.60-1.62	2 km	
6	2.25-2.27	2 km	SO ₂
7	3.74-3.96	2 km	
8	6.06-6.43	2 km	O ₃
9	8.80-9.05	2 km	
10	7.26-7.40	2 km	Atmospheric Windows
11	8.44-8.76	2 km	
12	9.54-9.72	2 km	CO ₂
13	10.3-10.6	2 km	
14	11.3-11.9	2 km	Full disk Interval: 10 minutes (6 times per day)
15	12.2-12.5	2 km	
16	13.2-13.4	2 km	

Number of Bands: 5 → 16

Interval: 30/60 min. → 10 min.

Data Distribution/Dissemination Plan



Source: JMA

CAPABILITIES OF NEXT GENERATION GEOSTATIONARY SATELLITES

- Higher sampling rate, higher spatial resolution, more spectral channels
- Leading to more accurate and timely forecasts, and improved application support
- Data rates increase drastically, by factors of 10-100

REFERENCE USER READINESS PROJECT: MILESTONES PRIOR TO LAUNCH

Users	Satellite operators
Budget planning, R&D	Operation plans & schedules
Data reception & handling	Instrument characterization
Data processing & visualization	Data access specifications
Training and capacity building	Test data and tools; Software
Contributions to cal/val	User dialogue channels