

COMMISSION FOR BASIC SYSTEMS  
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

ITEM: 3

**SCOPE-Nowcasting Ad-hoc Steering Group, First Meeting**

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## **New Generation of Geostationary Satellites (2015-2019)**

*(Submitted by the Secretariat)*

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### **Summary and Purpose of Document**

A number of new generation meteorological imagers will be commissioned into geostationary orbit over the timeframe 2015-2019. All WMO Regions will be in a position to benefit from improved imaging capabilities, with higher sampling rates, higher spatial resolution, more spectral channels, and more scanning flexibility. These open new possibilities for satellite-based nowcasting applications. At the same time, data rates increase drastically (by factors 10-100), and user reception systems and data processing facilities may require adjustments.

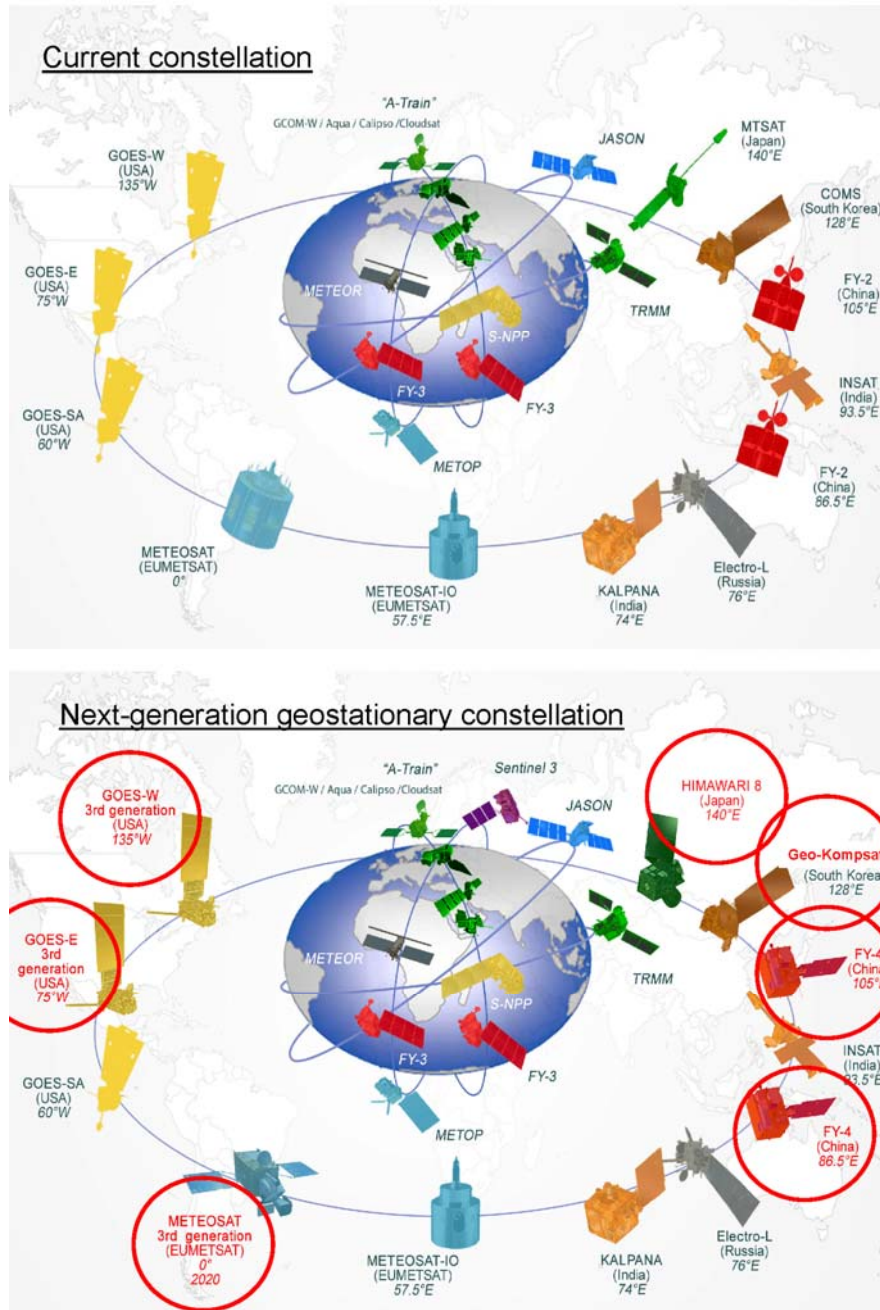
For the purpose of SCOPE-Nowcasting, it is important to take into account the capabilities from the upcoming geostationary imagers (and possibly sounders). This with two objectives in mind: (i) to plan for the incorporation of these data streams into SCOPE-Nowcasting Pilot Projects, and (ii) to influence, from a nowcasting perspective, ongoing product specification and dissemination plans by satellite operators.

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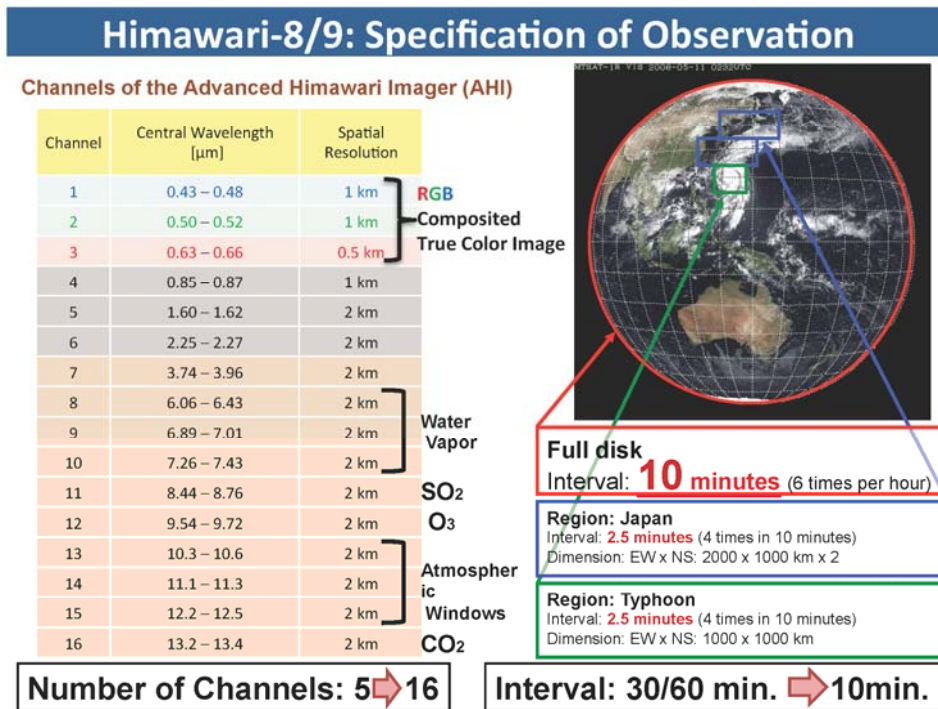
## DISCUSSION

A number of new generation meteorological imagers will be commissioned into geostationary orbit over the timeframe 2015-2019 (Figure 1). All WMO Regions will be in a position to benefit from improved imaging capabilities, with higher sampling rates, higher spatial resolution, more spectral channels, and more scanning flexibility. These open new possibilities for satellite-based nowcasting applications.



**Figure 1: Planned meteorological satellites in geostationary orbit in the period 2015-2019.**

At the same time, data rates increase drastically (by factors 10-100), and user reception systems and data processing facilities may require adjustments. For example, Figure 2 shows the planned capabilities for the Advanced Himawari Imager (AHI) to be launched on-board the JMA Himawari-8 satellite in late 2014, with begin of operations in 2015.



**Figure 2: Specification details of planned Advanced Himawari Imager (AHI) onboard the geostationary Himawari-8 satellite, to be launched by JMA in 2014 and put into operation in 2015 at a nominal position of 140°E. In contrast, the imager on the current MTSAT-2 has only 5 channels and scans the full disk every 30 minutes.**

At a side event during the 65<sup>th</sup> WMO Executive Council in May 2013, representatives from CMA, EUMETSAT, JMA, and NOAA NESDIS reported on their plans for new generation meteorological satellites and associated user preparedness activities ([presentations](#)). Table 1 provides an overview of planned meteorological geostationary imagers.

**Table 1: Overview of planned meteorological imagers on geostationary satellites**

Satellite	Operator	Expected launch date	Longitude	Imager	Spectral channels	Spatial resolution	Temporal resolution (full disk)
<a href="#">Himawari-8</a>	JMA	2014	140E	<a href="#">AHI</a>	16	0.5-2km	10min
<a href="#">GOES-R</a>	NOAA	2015	137W	<a href="#">ABI</a>	16	0.5-2km	15min
<a href="#">Himawari-9</a>	JMA	2016	140E	<a href="#">AHI</a>	16	0.5-2km	10min
<a href="#">FY-4A</a>	CMA	2017	86.5E	<a href="#">AGRI</a>	14	1-4km	15min
<a href="#">Geo-KOMPSAT-2A</a>	KMA	2017	128.2E	<a href="#">AMI</a>	16	0.5-2km	10min
<a href="#">GOES-S</a>	NOAA	2017	75W	<a href="#">ABI</a>	16	0.5-2km	15min
<a href="#">MTG-I1</a>	EUMETSAT	2019	9.5E	<a href="#">FCI</a>	16	0.5-2km	10min
<a href="#">FY-4B</a>	CMA	2019	105E	<a href="#">AGRI</a>	14	1-4km	15min

Infrared sounders on geostationary satellites are currently planned as follows:

- The Geostationary Interferometric Infrared Sounder ([GIIRS](#)) onboard the CMA FY-4 series; and
- The Infra-Red Sounder ([IRS](#)) onboard the EUMETSAT MTG-S1 and –S2 satellites.

The WMO Commission for Basic Systems recognized the opportunities and challenges associated with the new generation of geostationary satellites and published a *Guideline for Ensuring User Readiness for New Generation Satellites* ([Report CBS-15, 2012](#)). It states that

“operational users [NMHSs] to establish user readiness projects 5 years prior to launch” and that “satellite operators to assist users in introduction of new data streams into operations, in the areas of:

- Technical/ programmatic information
- Format specification, test datasets, prototype products
- Parallel operation/ parallel dissemination
- Training.”

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- (i) to plan for the incorporation of these data streams into SCOPE-Nowcasting Pilot Projects, and
  - (ii) to influence, from a nowcasting perspective, ongoing product specification and dissemination plans by satellite operators.
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