

## **CONSIDERATION FOR THE IOC SATELLITES REQUIREMENTS**

**This paper responds to Action 31.11, which reads: CGMS satellite operators to consider the IOC satellite requirements, especially the data dissemination methods, incorporating also the ongoing formations of GRAs. Deadline: CGMS XXXII meeting.**



**CONSIDERATION FOR THE IOC SATELLITES REQUIREMENTS****1 INTRODUCTION**

NOAA reviewed the satellite parameters for the GOOS coastal modules that require high spatial resolution. Considering these data are critical to improve the safety and efficiency of marine operations and more effectively control and mitigate the effects of natural hazards, quick delivery of the sea state information is essentially important. Recalling the World Summit on Sustainable Development Implementation, IOC member states need to make best use of satellite data and to make remote sensing a new focus for IOC's capacity building efforts. NOAA plans to support the IOC requirements for satellite data and satellite derived products. The present satellite data requirements from the IOC are summarized in Table 1 shown in the next page.

Most of users of the satellite-derived information are in the coastal seas. To enable IOC members to routinely and systematically collect satellite data for their coastal regions, NOAA is developing a Multi-Constellation User Terminal (MCUT) capable of receiving environmental satellite data from multiple polar-orbiting and geostationary satellites. The MCUT will allow IOC members to acquire coastal seas information from environmental satellites in realtime. NOAA is in the process of investigating an Alternative Dissemination Methods (ADM) system for distribution of environmental data by means of Internet, commercial space communications and/or dedicated landlines. The ADM communications are separate from the technology utilized in Direct Readout (DR) services, which is a broadcast from government owned satellites.

**Table 1 IOC Satellite requirements**

Requirement	Horizontal Resolution	U.S. Satellite Platform (Current)	Sensor	U.S. Satellite Platform (future)	Sensor	Data Dissemination Methods
Aerosol (total column) size (coastal)	1 - 10 km					
Aerosol (total column) size	4 - 50 km	Terra	MISR			<a href="http://eosweb.larc.nasa.gov/PRODOCS/misr/table_misr.html">http://eosweb.larc.nasa.gov/PRODOCS/misr/table_misr.html</a>
Air Pressure over sea surface	50 - 100 km			NPP, CloudSAT	N: CRIS, ATMS C: CPR	FTP, ADM
Dominant wave direction	10 - 30 km					
Dominant wave period	10 - 30 km					
Geoid	250 - 500 km	Jason-1	Poseidon Altimeter	OSTM	Poseidon Altimeter	GTS
Ocean Chlorophyll (coastal)	1 - 5 km	Orbview-2, Aqua	Orbview: SeaWiFS Aqua: MODIS	NPP, NPOESS, GOES-R	N: VIIRS G: HES-CW	FTP, ADM
Ocean Chlorophyll	10 - 50 km	Orbview-2, Aqua	Orbview: SeaWiFS Aqua: MODIS	NPP, NPOESS	VIIRS	FTP, ADM
Ocean Chlorophyll	25 - 100 km	Orbview-2, Aqua	Orbview: SeaWiFS Aqua: MODIS	NPP, NPOESS	VIIRS	FTP, ADM
Ocean dynamic topography	25 - 100 km	Jason-1	Poseidon Altimeter	OSTM	Poseidon Altimeter	FTP
Ocean dynamic topography	100 - 300 km	Jason-1	Poseidon Altimeter	OSTM	Poseidon Altimeter	FTP
Ocean salinity	200 - 500 km			Aquarius (NASA)	1.413/1.26 GHz Radiometer/Scatterometer	FTP
Ocean yellow substance absorbance	1 - 5 km	Aqua	MODIS POES: ATOVS	NPP, NPOESS	VIIRS	FTP, ADM
Ozone profile - Total column	50 - 200 km	POES, Aqua	Aqua: AIRS	NPP, NPOESS	OMPS	FTP, ADM

Photosynthetic ally Active Radiation (coastal)	1 - 5 km	Aqua	MODIS	NPP, NPOESS	VIIRS	FTP, ADM
Photosynthetic ally Active Radiation	10 - 50 km	Aqua	MODIS	NPP, NPOESS	VIIRS	FTP, ADM
Sea surface bulk temperature (coastal)	1 - 5 km	POES, Aqua	POES: AVHRR Aqua: MODIS POES: AVHRR	NPP, NPOESS	VIIRS (accuracy: 0.5 K)	FTP, ADM
Sea surface bulk temperature	1 - 10 km	POES, Aqua	POES: AVHRR Aqua: MODIS POES: AVHRR	NPP, NPOESS, GOES-R	N: VIIRS; G: ABI	FTP, ADM
Sea surface bulk temperature	10 - 50 km	POES, Aqua	POES: AVHRR Aqua: MODIS POES: AVHRR	NPP, NPOESS, GOES-R	N: VIIRS; G: ABI	FTP, ADM
Sea surface bulk temperature	10 - 300 km	POES, Aqua	POES: AVHRR Aqua: MODIS DMSP: SSMIS, GOES: Imager;	NPP, NPOESS, GOES-R	N: VIIRS; G: ABI	FTP, ADM
Sea Ice Cover	10 - 100 km	DMSP, GOES, POES, Aqua	POES: AVHRR; A:MODIS, AMSR-E	NPP, NPOESS, GOES-R	N: VIIRS, CMIS; G: ABI	FTP, ADM
Sea ice thickness	25 - 100 km					
Specific Humidity Profile -- Total Column	unknown	POES, Aqua	POES: ATOVS A: AIRS, AMSR-E	NPP, NPOESS, GOES-R	N: ATMS, CMIS; G: HES	FTP, ADM
Wind speed over sea surface	25 - 100 km	DMSP, Aqua	D: SSMIS, A: AMSR-E	NPOESS	CMIS	ADM
Wind vector over sea surface	4 - 50 km	QuikSCAT	SeaWINDS			ADM
Wind vector over sea surface	25 - 100 km	QuikSCAT	SeaWINDS	NPOESS	CMIS	ADM