

## OCEAN SATELLITE DATA NEEDS FOR NWP

### NEEDS OF WMO GLOBAL PRODUCING CENTRES (GPC) AND REGIONAL SPECIALIZED METEOROLOGICAL CENTRES (RSMC) FOR NEAR REAL-TIME ACCESS TO SATELLITE-BASED OCEAN PRODUCTS

*(Submitted by the Secretariat)*

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#### Summary and Purpose of Document

In February-March 2017, WMO Secretariat sought an indication of requirements by WMO-recognized Global Producing Centres for Long-range Forecasts (GPCs; i.e., leading NWP centres), and by a subset of Regional Specialized Meteorological Centres (RSMCs) and Warning Centres for Tropical Cyclones, for near real-time (NRT) access to satellite data and products characterizing the oceans. This responds to IPET-SUP Action 2.2. The document summarizes the 11 responses received by the Secretariat.

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#### ACTION PROPOSED

The third session is invited to:

- (a) Review the summary analysis in Appendix A;
- (b) Review the individual responses in Appendix B;
- (c) Comment on the responses as appropriate.

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Appendices: A: Summary or results

B: Individual responses by:

BNOC - National Operational Centre, Australia; BNOC – Tropical Cyclone Warning Centre, Brisbane, Australia; MSC Canada; CMA; DWD; ECMWF; MétéoFrance; RSMC Honolulu Hurricane Center (NOAA/NWS, USA); JMA; Roshydromet; Tropical Cyclone Warning Centre Wellington, MetService New Zealand

C: Request for information by WMO Secretariat (18 Jan 2017)

## DISCUSSION

### Introduction

1. In response to IPET-SUP Action 2.2, the WMO Secretariat in January-February 2017 sought an indication of requirements for near real-time (NRT) access to satellite data and products characterizing the oceans such as sea-surface temperature, ocean surface winds, ocean colour, significant wave height, sea-surface topography etc. The request was sent with attention to Global NWP Centres (Global Producing Centres for Long-Range Forecasts, recognized within the WMO World Weather Watch Global Data Processing and Forecasting System (GDPFS)), and Regional Specialized Meteorological Centres (RSMCs) and Warning Centres for Tropical Cyclones.
  2. The WMO Secretariat acts a result of action 2.2 agreed in the CBS Inter-Programme Expert Team on Satellite Utilization and Products (IPET-SUP). The action was based on broad interest by global NWP centres for operational near real-time access to ocean satellite data that had been identified, for example, in the Global Data Exchange for NWP (GODEX-NWP) community at its meeting in October 2015.
  3. After review and agreement by the IPET-SUP, WMO plans to formally communicate these requirements to satellite operators (such as NOAA, EUMETSAT, JMA, CMA, KMA), in order to facilitate their uptake and technical implementation.
  4. The survey enquires on requirements for:
    - geophysical parameter (sea surface height, significant wave height and other wave parameters, ocean surface wind, ocean colour, sea-surface salinity, SST, others),
    - satellite instrument data source
    - timeliness (<3h, <48h, <30d)
    - coverage (global, regional)
  5. Appendix A is a summary of the 11 responses received by the WMO Secretariat. All geophysical parameters were requested by at least one respondent, some more than others. Sea Surface Temperature was requested by all (11 responders), followed by Ocean Surface Winds (10). Significant Wave Height and Sea Surface Height products are needed by 8 and 6 centres, respectively. Ocean colour and Sea Surface Salinity were requested the least (2 and 3 out of 11) of the set of physical parameters. The columns in Appendix 1 for satellite instrument data source, timeliness and geographic coverage are checked for the dominant response (see presentation). A timeliness of <3h was most commonly requested. Most data needs had global coverage; in addition, several centres indicated specific regional needs (lat/lon intervals).
  6. Some centres indicated a need for the satellite data (e.g., Poseidon/Jason, SRAL/Sentinel-3), but not for the geophysical products (e.g., sea surface height), probably due to the direct use of the respective L1 data streams in model assimilation frameworks.
  7. Additional parameters required: Canada requested sea ice products from a broad range of instruments (passive MW, scatterometry, SAR); ECMWF requested water vapour profiles derived from microwave instruments (AMR/Jason, MWR/Sentinel-3).
  8. Appendix B contains the individual responses: BNOC - National Operational Centre, Australia; BNOC – Tropical Cyclone Warning Centre, Brisbane, Australia; MSC Canada; CMA; DWD; ECMWF; MétéoFrance; RMSC Honolulu Hurricane Center (NOAA/NWS, USA); JMA; Roshydromet; Tropical Cyclone Warning Centre Wellington, MetService New Zealand
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## Appendix A

**Summary for 11 responses**  
**Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
[6] Sea Surface Height	[5] Jason-2 [5] Jason-3 [5] SRAL (Sentinel-3) [5] SARAL (AltiKa) [3] Other (pls specify:) [3] SIRAL (CRYOSAT-2) [3] No preference	[5] <3h [3] <48h [ ] <30days	[6] global [1] regional (pls specify:)	Potential use of Sentinel-3 in the future
[8] Significant Wave Height, other Wave parameters	[6] Jason-2 [6] Jason-3 [6] SRAL (Sentinel-3) [6] SARAL (AltiKa) [2] Other (pls specify:) [2] CRYOSAT-2 [4] No preference	[8] <3h [2] <48h [ ] <30days	[6] global [3] regional (pls specify:)  Some regional	
[10] Ocean Surface Wind	[9] ASCAT (Metop) [6] Jason-2 [6] Jason-3 [6] SRAL (Sentinel-3) [5] SARAL (AltiKa) [4] Other (pls specify:) [1] Windsat [3] Cryosat-2 (SIRAL) [1] SAR [2] CYGNSS [2] ScatSat [1] SMOS [1] SMAP [1] AMSR-2 (GCOM-W1) [2] No preference	[10] <3h [3] <48h [ ] <30days	[8] global [5] regional (pls specify:)	
[2] Ocean colour	[1] MODIS (Terra/Aqua) [ ] GOCI (COMS) [1] OLCI (Sentinel-3) [1] VIIRS (S-NPP) [ ] Other (pls specify:) [2] No preference	[2] <3h [1] <48h [ ] <30days	[2] global [1] regional (pls specify:)	
[11] Sea Surface Temperature	[6] AMSR-2 (GCOM-W1) [7] AVHRR [6] SLSTR (Sentinel-3) [3] SEVIRI (MSG) [4] GOES imager (GOES) [3] IASI (Metop) [5] VIIRS (S-NPP) [5] Multimission (GHRST)	[9] <3h [6] <48h [1] <30days	[8] global [6] regional (pls specify:)  Some regional	

	<input type="checkbox"/> Other (pls specify: <input type="checkbox"/> NOAA Bluelink <input type="checkbox"/> OSTIA <input type="checkbox"/> AHI (Himawari-8) <input type="checkbox"/> No preference			
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify: <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Other (pls specify: Sea Ice (Canada)	<input type="checkbox"/> AMSR-2 (GCOM-W1) <input type="checkbox"/> AVHRR <input type="checkbox"/> RADARSAT-2 <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> SSM/I <input type="checkbox"/> SSMIS <input type="checkbox"/> ASCAT <input type="checkbox"/> SMOS <input type="checkbox"/> SMAP <input type="checkbox"/> Cryosat	<input type="checkbox"/> <3h <input type="checkbox"/> <48h	<input type="checkbox"/> global	
Water Vapour (ECMWF)	<input type="checkbox"/> AMR (Jason-2) <input type="checkbox"/> AMR (Jason-3) <input type="checkbox"/> MWR (Sentinel-3) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> AltiKa (SARAL)	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

## Appendix B

**BNOG NATIONAL OPERATIONAL CENTRE, AUSTRALIA**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
[x] Sea Surface Height	[x] Jason-2 [x] Jason-3 [x] SRAL (Sentinel-3) [x] SARAL (AltiKa) [ ] Other (pls specify:) [ ] No preference	[ ] <3h [x] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	
[x] Significant Wave Height, other Wave parameters	[x] Jason-2 [x] Jason-3 [x] SRAL (Sentinel-3) [x] SARAL (AltiKa) [ ] Other (pls specify:) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	
[x] Ocean Surface Wind	[x] ASCAT (Metop) [x] Jason-2 [x] Jason-3 [x] SRAL (Sentinel-3) [x] SARAL (AltiKa) [ ] Other (pls specify:) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	
[x] Ocean colour	[x] MODIS (Terra/Aqua) [ ] GOCI (COMS) [x] OLCI (Sentinel-3) [x] VIIRS (S-NPP) [ ] Other (pls specify:) [ ] No preference	[ ] <3h [x] <48h [ ] <30days	[ ] global [x] regional (pls specify: 80E-200E; 20N-60S)	
[x] Sea Surface Temperature	[x] AMSR-2 (GCOM-W1) [x] AVHRR [x] SLSTR (Sentinel-3) [ ] SEVIRI (MSG) [ ] GOES imager (GOES) [ ] IASI (Metop) [ ] VIIRS (S-NPP) [x] Multimission (GHRST) [ ] Other (pls specify:) [ ] No preference	[x] <3h [x] <48h [ ] <30days	[x] global [x] regional (pls specify: 80E-200E; 20N-60S)	
[x] Sea Surface Salinity	[x] MIRAS (SMOS) [ ] SMAP [ ] other (pls specify:) [ ] No preference	[ ] <3h [x] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	
[ ] Other (pls specify:)		[ ] <3h [ ] <48h [ ] <30days	[ ] global [ ] regional (pls specify:)	

**BNOC – TCWC, BRISBANE, AUSTRALIA****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
<input type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Significant Wave Height, other Wave parameters	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (pls specify: WINDSAT) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: Australian region)	Beneficial for now-casting of winds over open waters and away from any automatic weather stations. Scatterometry provides critical intensity information in regards to low pressure systems, particularly tropical cyclones, which is important in constructing appropriate warning messages.
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

<p>X Sea Surface Temperature</p>	<p><input type="checkbox"/> AMSR-2 (GCOM-W1)  <input type="checkbox"/> AVHRR  <input type="checkbox"/> SLSTR (Sentinel-3)  <input type="checkbox"/> SEVIRI (MSG)  <input type="checkbox"/> GOES imager (GOES)  <input type="checkbox"/> IASI (Metop)  <input type="checkbox"/> VIIRS (S-NPP)  <input type="checkbox"/> Multimission (GHRSSST)  <input checked="" type="checkbox"/> Other (pls specify: NOAA, Bluelink)  <input type="checkbox"/> No preference</p>	<p>X &lt;3h  X &lt;48h  X &lt;30days</p>	<p>X global  X regional (pls specify: Australian region)</p>	<p>NOAA:  <a href="http://www.aoml.noaa.gov/phod/cyclone/data/sp.html">http://www.aoml.noaa.gov/phod/cyclone/data/sp.html</a>  Bureau of Meteorology: <a href="http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDY00001.gif">http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDY00001.gif</a></p>
<p><input type="checkbox"/> Sea Surface Salinity</p>	<p><input type="checkbox"/> MIRAS (SMOS)  <input type="checkbox"/> SMAP  <input type="checkbox"/> other (pls specify:)  <input type="checkbox"/> No preference</p>	<p><input type="checkbox"/> &lt;3h  <input type="checkbox"/> &lt;48h  <input type="checkbox"/> &lt;30days</p>	<p><input type="checkbox"/> global  <input type="checkbox"/> regional (pls specify:)</p>	
<p><input type="checkbox"/> Other (pls specify:)</p>		<p><input type="checkbox"/> &lt;3h  <input type="checkbox"/> &lt;48h  <input type="checkbox"/> &lt;30days</p>	<p><input type="checkbox"/> global  <input type="checkbox"/> regional (pls specify:)</p>	

**CANADA****Needs of WMO GPCs and RSMCs C near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
<input type="checkbox"/> Sea Surface Height	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (pls specify: Sentinel 3 SIRAL (cryostat 2) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Significant Wave Height, other Wave parameters	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify: <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> SIRAL (CryoSat-2) <input checked="" type="checkbox"/> SAR <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify: <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input checked="" type="checkbox"/> SLSTR (Sentinel-3) <input type="checkbox"/> SEVIRI (MSG) <input checked="" type="checkbox"/> GOES imager (GOES) <input checked="" type="checkbox"/> IASI (Metop) <input checked="" type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> Multimission (GHRSSST) <input type="checkbox"/> Other (pls specify: <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Sea Surface Salinity	<input checked="" type="checkbox"/> MIRAS (SMOS) <input checked="" type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify: <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea ice	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls	



	<input checked="" type="checkbox"/> RADARSAT-2 <input checked="" type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> SSM/I <input checked="" type="checkbox"/> SSMIS <input checked="" type="checkbox"/> ASCAT <input checked="" type="checkbox"/> SMOS <input checked="" type="checkbox"/> SMAP <input checked="" type="checkbox"/> Cryosat	<input type="checkbox"/> <30days	specify:)	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

**CMA****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
<input checked="" type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:) 5S-65N,60E-145E	High priority
<input checked="" type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input checked="" type="checkbox"/> SLSTR (Sentinel-3) <input checked="" type="checkbox"/> SEVIRI (MSG) <input checked="" type="checkbox"/> GOES imager (GOES) <input checked="" type="checkbox"/> IASI (Metop) <input checked="" type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> Multimission (GHRSSST) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:) 5S-65N,60E-145E	High priority
<input checked="" type="checkbox"/> Sea Surface Salinity	<input checked="" type="checkbox"/> MIRAS (SMOS) <input checked="" type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

**DWD, GERMANY****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
<input type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (Cryosat) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (ScatSat (CYGNSS)) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input checked="" type="checkbox"/> SLSTR (Sentinel-3) <input type="checkbox"/> SEVIRI (MSG) <input type="checkbox"/> GOES imager (GOES) <input type="checkbox"/> IASI (Metop) <input type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> Multimission (GHRSSST) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

**ECMWF****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
[x] Sea Surface Height	[x] Poseidon-3(Jason-2) [x] Poseidon-3B(Jason-3) [ ] SRAL (Sentinel-3) [x] AltiKa (SARAL) [x] Other (Cryosat-2) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	Potential to use NRT SSH obs from Sentinel-3 in the future
[x] Significant Wave Height, other Wave parameters	[X] Poseidon-3 (Jason-2) [X] Poseidon-3B (Jason-3) [X] SRAL (Sentinel-3) [X] AltiKa (SARAL) [X] SIRAL (Cryosat-2) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[x ] global [ ] regional (pls specify:)	
[x] Ocean Surface Wind	[X] ASCAT (Metop) [X] Poseidon-3 (Jason-2) [X] Poseidon-3B (Jason-3) [X] SRAL (Sentinel-3) [X] AltiKa (SARAL) [X] SIRAL (Cryosat-2) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[ x] global [ ] regional (pls specify:)	
[ ] Ocean colour	[ ] MODIS (Terra/Aqua) [ ] GOCI (COMS) [ ] OLCI (Sentinel-3) [ ] VIIRS (S-NPP) [ ] Other (pls specify:) [ ] No preference	[ ] <3h [ ] <48h [ ] <30days	[ ] global [ ] regional (pls specify:)	Potential to use OC data from Sentinel-3 in the future
[x] Sea Surface Temperature	[ ] AMSR-2 (GCOM-W1) [ ] AVHRR [ ] SLSTR (Sentinel-3) [ ] SEVIRI (MSG) [ ] GOES imager (GOES) [ ] IASI (Metop) [ ] VIIRS (S-NPP) [ ] Multimission (GHRSSST) [x] Other (OSTIA) [ ] No preference	[x] <3h [ ] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	Operational OSTIA use satellite SST data provided by GHRSSST, and bias corrected against MetOp-A AVHRR or ACSPO VIIRS
[ ] Sea Surface Salinity	[ ] MIRAS (SMOS) [ ] SMAP [ ] other (pls specify:) [ ] No preference	[ ] <3h [ ] <48h [ ] <30days	[ ] global [ ] regional (pls specify:)	Potential to use SMOS and SMAP SSS in the future
[X] Water Vapour	[X] AMR (Jason-2) [X] AMR (Jason-3) [X] MWR (Sentinel-3) [X] OLCI (Sentinel-3) [X] AltiKa (SARAL)	[ x] <3h [ ] <48h [ ] <30days	[x] global [ ] regional (pls specify:)	

**FRANCE****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
<input checked="" type="checkbox"/> Sea Surface Height	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:)	48h OK if not possible within 3h. Regional = South Indian Ocean.
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters  <b>HIGH Priority</b>	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:)	48h OK if not possible within 3h. Regional = South Indian Ocean.
<input checked="" type="checkbox"/> Ocean Surface Wind  <b>HIGH PRIORITY</b>	<input checked="" type="checkbox"/> ASCAT (Metop) <input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (pls specify: <b>SMOS, SMAP</b> ) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:)	48h OK if not possible within 3h. Regional = South Indian Ocean. <b>SMAP and SMOS scatterometer winds of high value in high winds (like Tropical cyclones) environment!!</b>
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature  <b>HIGH Priority</b>	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input checked="" type="checkbox"/> SLSTR (Sentinel-3) <input checked="" type="checkbox"/> SEVIRI (MSG) <input type="checkbox"/> GOES imager (GOES) <input checked="" type="checkbox"/> IASI (Metop) <input checked="" type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> Multimission (GHRSSST) <input checked="" type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify:)	48h OK if not possible within 3h. Regional = South Indian Ocean.
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

[x] Other (pls specify:)	All data (imagery) from all available MicroWave Radiometers (including SRAL Sentinel-3) High resolution scatterometer ocean surface winds (like Radarsat...)	[x] <3h [ ] <48h [ ] <30days	[ ] global [x] regional (pls specify:)	48h OK if not possible within 3h. Regional = South Indian Ocean
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**RSMC Honolulu****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

<b>Geophysical Parameter</b>	<b>Satellite Instrument Data Source</b>	<b>Timeliness Requirement</b>	<b>Geographic coverage</b>	<b>Comments</b>
<input type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify: )	
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: PACIFIC)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: PACIFIC)	
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify: )	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input type="checkbox"/> SLSTR (Sentinel-3) <input type="checkbox"/> SEVIRI (MSG) <input checked="" type="checkbox"/> GOES imager (GOES) <input type="checkbox"/> IASI (Metop) <input checked="" type="checkbox"/> VIIRS (S-NPP) <input checked="" type="checkbox"/> Multimission (GHRSSST) [ <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: PACIFIC)	
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify: )	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify: )	

**RSMC, TOKYO, JAPAN****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
<input checked="" type="checkbox"/> Sea Surface Height	<input checked="" type="checkbox"/> Jason-2 <input checked="" type="checkbox"/> Jason-3 <input checked="" type="checkbox"/> SRAL (Sentinel-3) <input checked="" type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (pls specify: <b>Cryosat2</b> <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	Using sea surface height data from satellites, ocean heat content product is retrieved in JMA.
<input type="checkbox"/> Significant Wave Height, other Wave parameters	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify: <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input checked="" type="checkbox"/> ASCAT (Metop) <input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input checked="" type="checkbox"/> Other (pls specify: <b>AMSR-2 (GCOM-W1)</b> <b>SCATSAT-1</b> <b>CYGNSS</b> <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	If the ocean surface wind data from SCATSAT-1 and CYGNSS is available in future, we will use them.
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify: <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input checked="" type="checkbox"/> AMSR-2 (GCOM-W1) <input checked="" type="checkbox"/> AVHRR <input checked="" type="checkbox"/> SLSTR (Sentinel-3) <input checked="" type="checkbox"/> SEVIRI (MSG) <input checked="" type="checkbox"/> GOES imager (GOES) <input type="checkbox"/> IASI (Metop) <input checked="" type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Multimission (GHRST) <input checked="" type="checkbox"/> Other (pls specify: <b>Himawari imager (AHI)</b> <input type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	Using sea surface temperature data from satellites, sea surface temperature product is retrieved in JMA.
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify: <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	



<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

**RUSSIAN FEDERATION****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
<input checked="" type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input type="checkbox"/> ASCAT (Metop) <input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input type="checkbox"/> AMSR-2 (GCOM-W1) <input type="checkbox"/> AVHRR <input type="checkbox"/> SLSTR (Sentinel-3) <input type="checkbox"/> SEVIRI (MSG) <input type="checkbox"/> GOES imager (GOES) <input type="checkbox"/> IASI (Metop) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Multimission (GHRSSST) [ <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input checked="" type="checkbox"/> No preference	<input type="checkbox"/> <3h <input checked="" type="checkbox"/> <48h <input type="checkbox"/> <30days	<input checked="" type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

**TCWC, WELLINGTON, NEW ZEALAND****Needs of WMO GPCs and RSMCs for near real-time access to satellite-based ocean products**

Geophysical Parameter	Satellite Instrument Data Source	Timeliness Requirement	Geographic coverage	Comments
<input type="checkbox"/> Sea Surface Height	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Significant Wave Height, other Wave parameters	<input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: <b>120E to 120W</b> <b>10N to 90S)</b>	
<input checked="" type="checkbox"/> Ocean Surface Wind	<input type="checkbox"/> ASCAT (Metop) <input type="checkbox"/> Jason-2 <input type="checkbox"/> Jason-3 <input type="checkbox"/> SRAL (Sentinel-3) <input type="checkbox"/> SARAL (AltiKa) <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: <b>120E to 120W</b> <b>10N to 90S)</b>	
<input type="checkbox"/> Ocean colour	<input type="checkbox"/> MODIS (Terra/Aqua) <input type="checkbox"/> GOCI (COMS) <input type="checkbox"/> OLCI (Sentinel-3) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input checked="" type="checkbox"/> Sea Surface Temperature	<input type="checkbox"/> AMSR-2 (GCOM-W1) <input type="checkbox"/> AVHRR <input type="checkbox"/> SLSTR (Sentinel-3) <input type="checkbox"/> SEVIRI (MSG) <input type="checkbox"/> GOES imager (GOES) <input type="checkbox"/> IASI (Metop) <input type="checkbox"/> VIIRS (S-NPP) <input type="checkbox"/> Multimission (GHRST) [ <input type="checkbox"/> Other (pls specify:) <input checked="" type="checkbox"/> No preference	<input checked="" type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input checked="" type="checkbox"/> regional (pls specify: <b>120E to 120W</b> <b>10N to 90S)</b>	
<input type="checkbox"/> Sea Surface Salinity	<input type="checkbox"/> MIRAS (SMOS) <input type="checkbox"/> SMAP <input type="checkbox"/> other (pls specify:) <input type="checkbox"/> No preference	<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	
<input type="checkbox"/> Other (pls specify:)		<input type="checkbox"/> <3h <input type="checkbox"/> <48h <input type="checkbox"/> <30days	<input type="checkbox"/> global <input type="checkbox"/> regional (pls specify:)	

## Appendix C:

Request for information by WMO Secretariat (18 January 2017)

Attn:  
Global NWP Centres  
Regional Specialized Meteorological Centres (RSMCs) for Tropical Cyclones

Dear Colleagues,

WMO is writing to enquire on the requirements of your Centre for near real-time (NRT) access to satellite data and products characterizing the oceans, such as sea-surface temperature, ocean surface winds, ocean colour, significant wave height, sea-surface topography etc.

WMO is interested in your needs for geophysical products, your preferences regarding the satellite instrument data source, and requirements on timeliness and geographic region of interest.

Please fill in the attached table to this effect and return it to WMO Secretariat (asoares@wmo.int, sbojinski@wmo.int) by 15 February 2017. In case your Service hosts both a Global NWP Centre and an RSMC-TC, please fill in 2 separate tables. [My apologies for sending this request to multiple focal points in the same Service, so appreciate it if you could coordinate the response among yourselves.]

Once compiled and consolidated, WMO will formally communicate these requirements to satellite operators (such as NOAA, EUMETSAT, JMA, CMA, KMA), in order to facilitate their uptake and technical implementation.

WMO acts a result of an action agreed in the CBS Inter-Programme Expert Team on Satellite Utilization and Products (IPET-SUP), based on broad interest by global NWP centres in operational access to space-based ocean data that has been identified, for example, in the Global Data Exchange for NWP (GODEX-NWP) community at its meeting in October 2015.

WMO also responds to increasing interest by satellite operators in responding to operational needs related to the marine environment.

Thank you and best regards,  
Alice Soares (WMO Data-processing and Forecasting Systems Division)  
Stephan Bojinski (WMO Space Programme)