



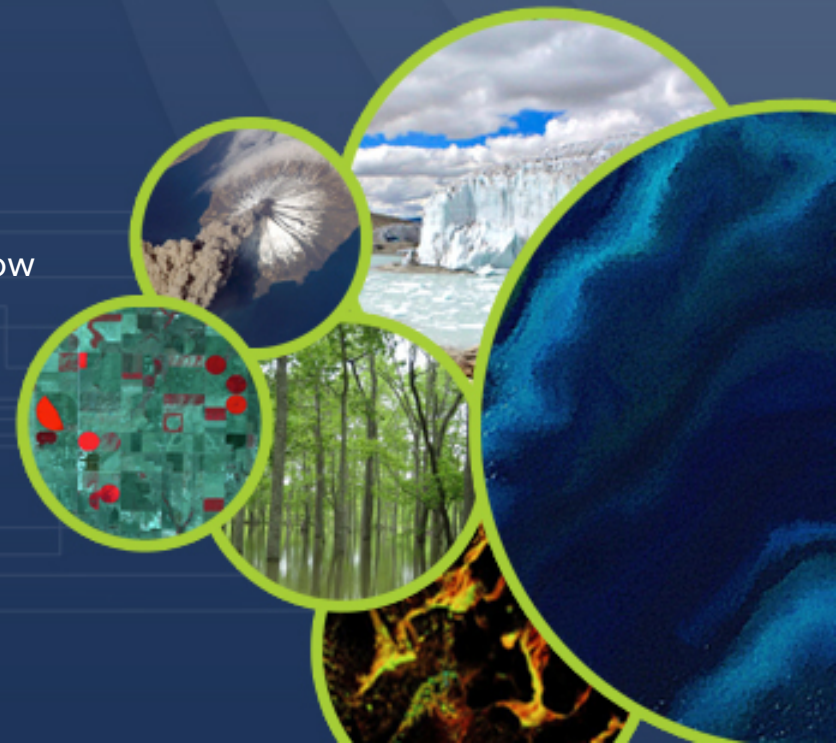
Committee on Earth Observation Satellites

Update from the OSVW-VC Status, Health and Future?

CEOS OSVW-Virtual Constellation:

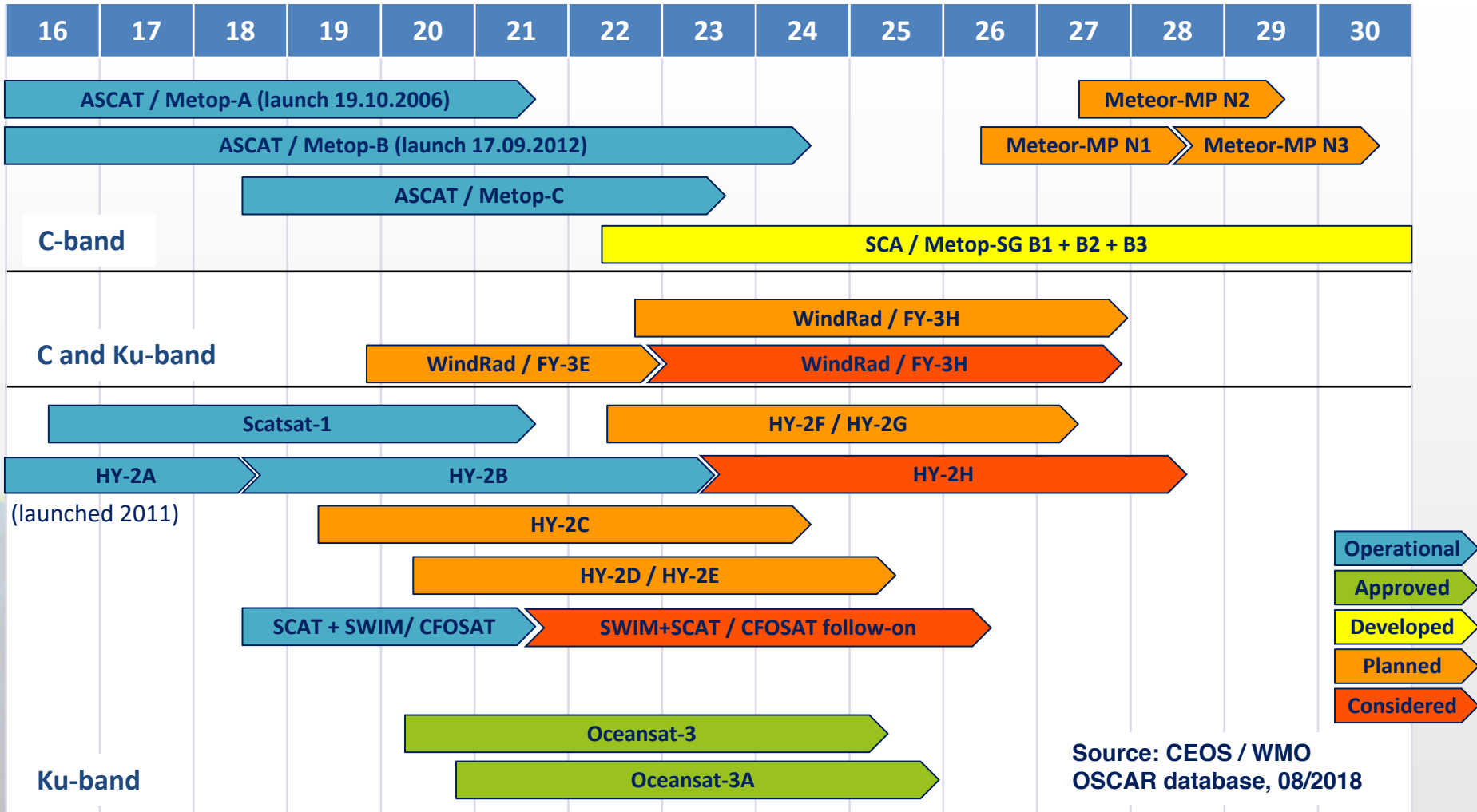
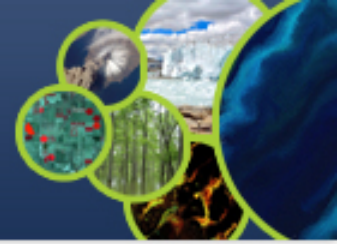
Co-Chairs:

Paul Chang (NOAA), Raj Kumar (ISRO), and Stefanie Linow
(EUMETSAT)



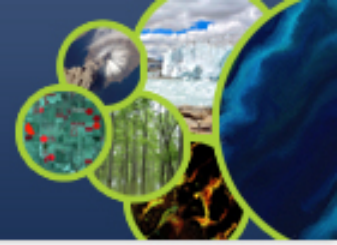


- ASCAT (METOP-A, B and C)
 - Open and near real-time data access
 - METOP-C launched on 7 November 2018
 - SCA (ASCAT Follow-On, EPS-SG, from ~2022 / 23)
 - ASCAT available through the EPS-SG/SCA launch
 - Decision yet to be made: Orbit phasing of METOP-B and METOP- C
- SCATSAT September 2017 (injected into ~9:45 am local crossing time and drifting to ~8:45 am)
 - Open and near real-time data access (since April 24, 2017)
- OSCAT follow-on (OceanSat-3&3A) ~first quarter of 2020 and last quarter of 2020
- CMA will be providing OSVW measurements starting with their FY-3E launch (late 2019?)
- NSOAS HY2 series: first tests to provide NRT data via EUMETCast, HY2B launched on 25 Oct 2018
- CFOSAT (launched on 29 October 2018), data distribution pending agreements

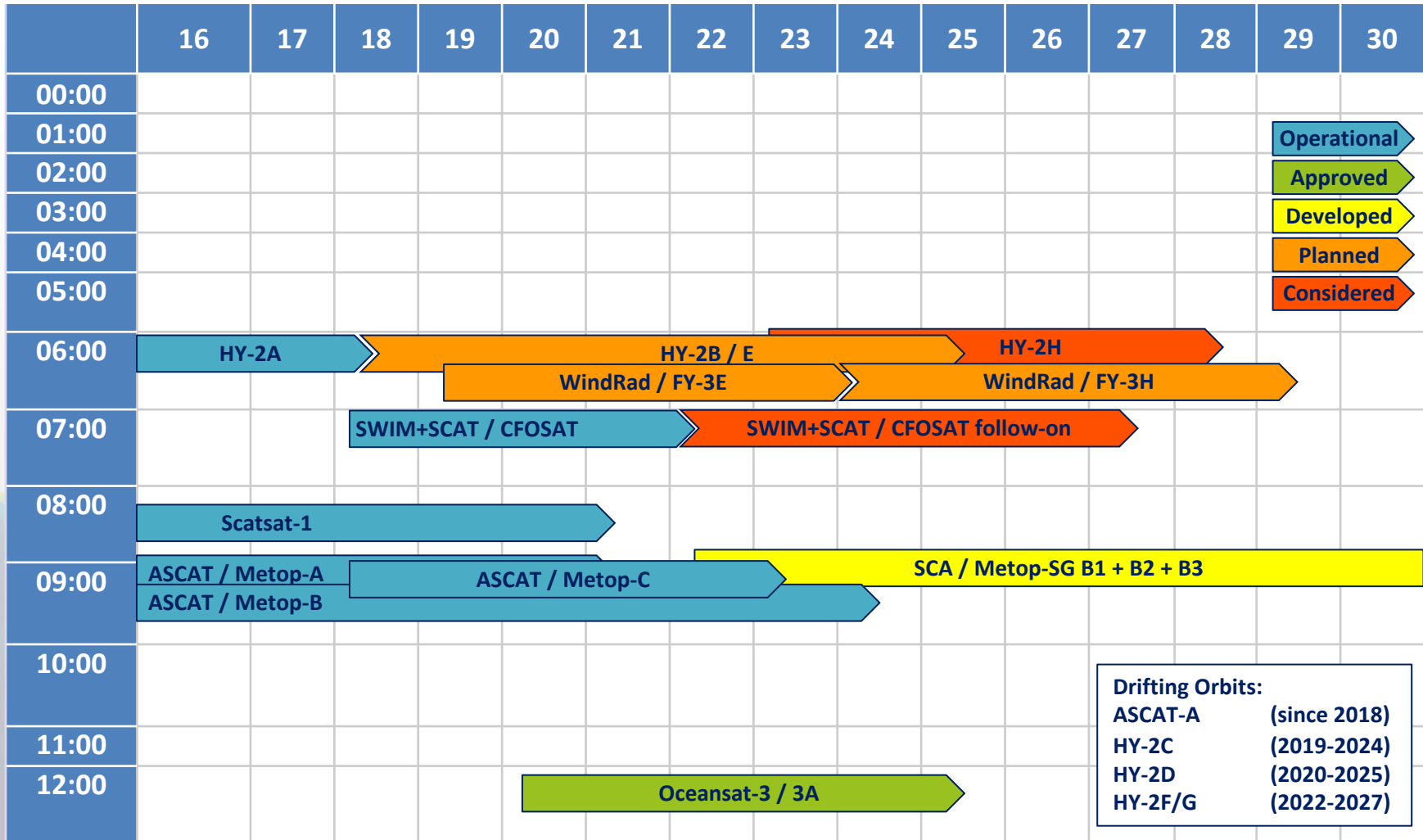


Note: Near real-time and open data access not assured for all missions listed

Local time coverage assessment (ground track)



descending node crossing time

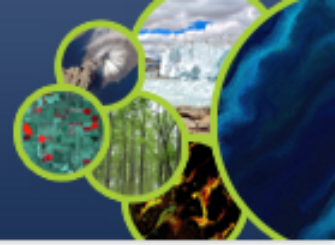


Source: CEOS / WMO OSCAR database, 08/2018

6 hour WMO minimum observation cycle requirement. Note: OSCAT and ASCAT with only 2.5 hour separation shown to have impacts in NWP data assimilation



Optimum (minimum) OSVW constellation 2015 IOVWST meeting recommendation



- At least 3 scatterometers in orbits designed to roughly meet WMO requirements (observations every 6 hours)
- One instrument in a non-sun-synchronous orbit for sampling the diurnal cycle, better mid-latitude sampling and provide inter-calibration

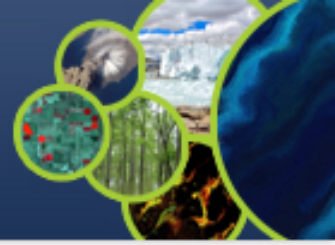


There are ongoing discussions within the IOVST on the quality assessment of data products and wind retrievals, which include:

- Wind retrievals in extreme winds
- GMF* development and validation
- Comparison of wind retrieval algorithms
- Assessment of rain effects in the tropics (particularly relevant for Ku-band instruments / radiometers)
- Spatial scaling effects
- Generation of a quality-controlled wind reference dataset linking dropsondes / buoys / SFMR (plane-based measurements) / SAR data

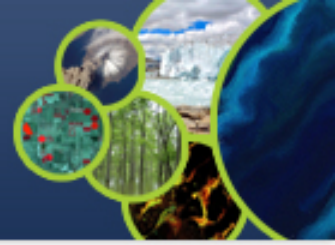
* Geophysical Model Function;
relates scatterometer
measurements to wind

What is really needed for the OSVW Constellation?



- Satellite scatterometers (C- and Ku-band) have become the standard for providing global ocean surface wind vector data. However, other remote sensing techniques have demonstrated varying capabilities at retrieving the ocean surface winds and include
 - Microwave radiometers
 - Multi-frequency
 - Polarimetric
 - L-band
 - Synthetic Aperture Radar (SAR)
 - GNSSR
 - HF radars (regional coverage but frequent temporal refresh)
 - **How do these other techniques compare with microwave scatterometry and where do they fit within the OSVW observing system portfolio?**

What is really needed for the OSVW Constellation?

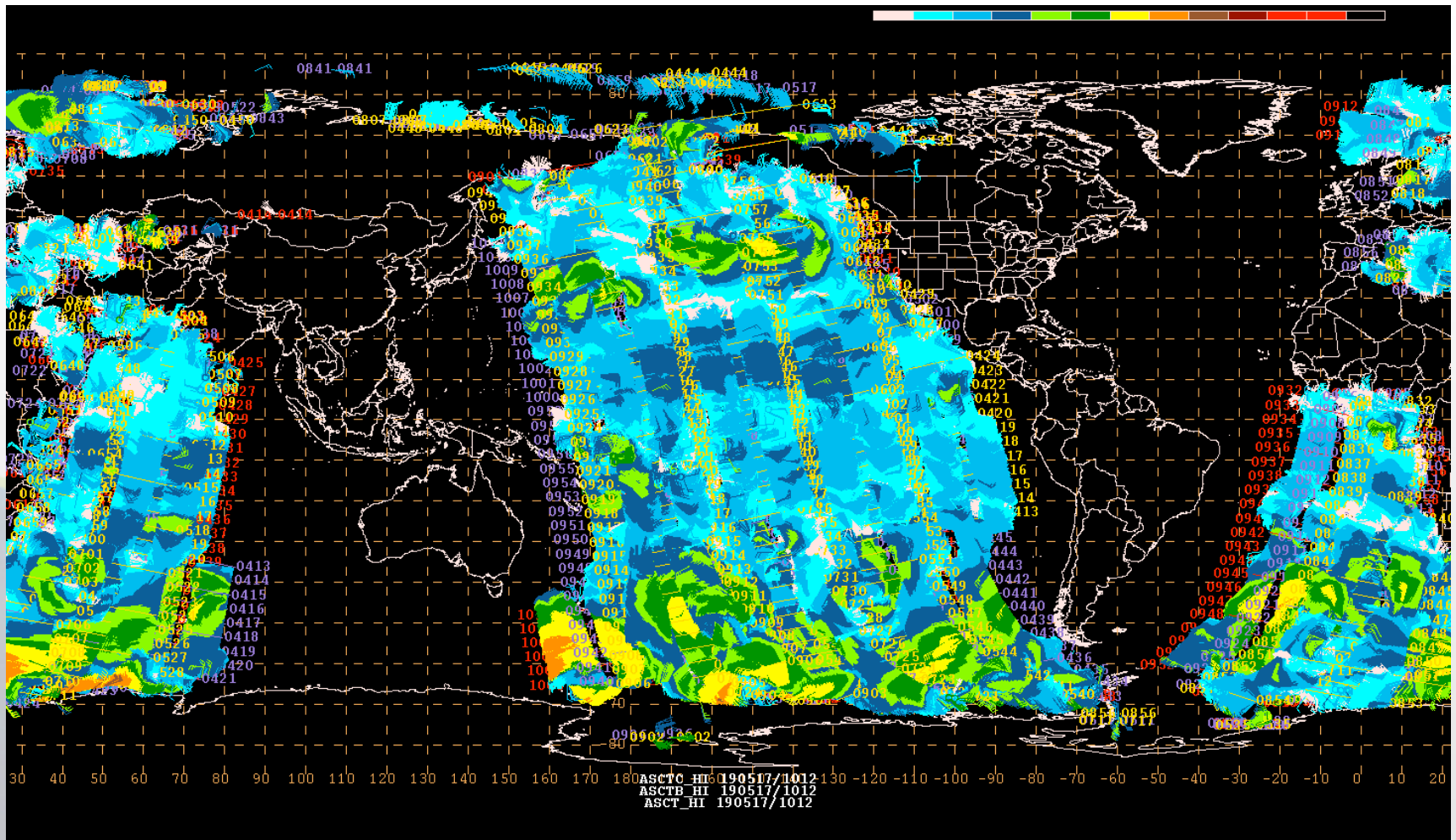


- To effectively answer this question properly we need to view from the OSVW applications perspective. The applications include:
 - • Weather forecasting and warning (short time scales)
 - • Climate observing/analysis (seasonal, inter-annual and longer time scales)
 - • Ocean dynamics...
- A proper comparison requires utilizing a standard set of metrics and validation methodologies. These comparisons include
 - • Global statistical analyses
 - • Geographical distribution analyses
 - • Performance in the extremes (low ($< 3\text{m/s}$) and strong wind speeds ($> 30\text{m/s}$))
 - • Dependency on ancillary data

- Objective: A report objectively assessing the requirements of an OSVW constellation from the applications perspective and the ability of current observing systems capability to address these requirements
- How: A workshop will be held in the November time frame
 - Will include experts from the measurement and applications communities
- Outcome: A report with the backing of the IOVWST objectively assessing observing system capabilities of ocean surface wind retrievals from the measurement and downstream applications perspectives

TriStar configuration for METOP B&C with METOP A drifting

6 hour coverage – no gaps in tropics!





- Recommend TriStar configuration for METOP-B and METOP-C
- Endorse the need for a document (and the resulting document) that addresses “What is really needed for the satellite OSVW observing system constellation?”

