

# Application development for Operations

## Summary

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# Overview of APOP splinter

**The 2023 APOP Splinter consisted of a poster session and a roundtable discussion. The posters presented are listed below:**

- **The Global Water Monitor: Operational Monitoring of Lakes, Wetlands, and River Reaches for Resources and Hazards; Charon Birkett**
- **Assessing Tropical Cyclone Intensity Forecasts Using the NOAA Next-Generation Enterprise Ocean Heat Content Algorithm; Deirdre Byrne**
- **A near global improved gridded multi-mission daily SLA product slightly beyond real time.; Mathias Jensen**
- **Seasonal Prediction of Harmful Algal Blooms Caused by *Karenia brevis* on the West Florida Shelf Using Satellite Altimetry Data; Yonggang Liu**
- **Status in the development of the CRISTAL Marine Data Centre; Thomas Moreau**
- **NOAA Jason-3 Products; Donald Richardson**
- **Jason-3 Near-Real Time Products Latency from October 2022 to October 2023; Donald Richardson**
- **Multiparameter Mesoscale Eddy Tracking Products for Operational Use; Heather Roman-Stork**
- **Physically-consistent mapped altimetry products on user-customizable grids; Cimarron Wortham**

# Round Table

- The round table discussion was handled through a number of seed questions on different topics.
- The round table was co-chaired by Carolina Nogueira Loddo (*EUMETSAT*), Josh Willis (*NASA*), Heather Roman-Stork (*NOAA*), Pierre Femenias (*ESA*).
  - on behalf of the official co-chairs (slide 1)

# Data availability and applications

**Would the splinter recommend investigating the use of smallsats/cubesats to monitor high frequency events, e.g. in coastal zones, inland waters (sacrificing accuracy for temporal frequency)? Do you currently have applications that could benefit from such measurements? Would it be beneficial scientifically and/or financially for your uses?**

- **CubeSats were brought up wrt “Future Mission Scenarios” as they are smaller, cheaper etc, but several questions were raised on the acceptable reduced accuracy and ongoing studies on accuracy, repeatability, use for cross-validation etc...**
- **Can considered as a complement to a strong, reliable, stable constellation; but should NOT replace anything stable;**
- **Regarding accuracy, 10 cm accuracy for inland water is okay, 1 m is bad;**
- **High latitudes with fast hydrological changes would benefit from this’;**
- **Daily temporal resolution would be good for hydrology;**
- **CNES has a phase 0 with a SMASH constellation for hydrology.**

# Data availability and applications

Altimetry L2 OGDR products from 3 Chinese missions (HY-B, -C, -D) are distributed by EUMETSAT via EUMETCast Europe and terrestrial. As far as we know, their performance is good. In particular, the NRT & STC products might add some much-desired coverage. What does the splinter think about these new sources of altimetry data?

- Need clarity on the access to and use of data from the Chinese HY-2 missions (3 planned) – from a viewpoint of quality assurance and importantly – the legal side of this wrt any integration or use-of by the US folk, especially the US gov agencies;
- EUMETSAT is distributing the L2 data to Europe; nevertheless it's still not simple within Europe to get access to L2 (EUMETSAT has to greenlight it). If there is a recommendation from the community to receive this data, EUMETSAT can talk to the Chinese agency about making it happen;
- (NASA has rules, NOAA likely does as well, so it would be nontrivial for either agency)
- Copernicus has L2P, L3 alongtrack calibrated by Jason-3;
- Meteo France gets the data from EUMETSAT and uses it.

# Data availability and applications

- **There is a strong need for altimeters over polar oceans and the gap between Cryosat and CRISTAL is a cause for concern. CryoSat is reaching the end of its life and there is a big risk in a few weeks related to the switchover of the Side B controls. The CRISTAL community is pushing for the launch not to be delayed, a recommendation from OSTST to extend CryoSat will make it easier for the CRISTAL community and possibly extend CryoSat funding. It was clearly expressed that the end users want continuity more than accuracy to justify the funding for system upgrades etc.**
- **In the context of Copernicus S3 NG Topo, ESA is proposing to make a switch from profiling radar altimetry to a combination of swath + profiling altimetry, perhaps by the mid-2030's i.e., taking the initiative to follow-on the SWOT instrument format. We may then be also left with a time gap between SWOT and the next SWOT-format mission. How best to close this gap? Especially noting that continuity is required for both science (climate data records) and applied science (operational) programs.**

# User Services – Communication

- In terms of user information, there is recognition that despite the effort from the different agencies to communicate in a simpler way, the information is frequently spread out in too many places. Tailored/simplified products to use with fewer things to explain are appreciated by end users, i.e. products that are easier to use, with fewer parameters, and information on the uncertainty parameter. It was noted that too much information can be overwhelming/intimidating... Similar theme to outcomes of OSOS meetings (push for sensor agnostic products, including uncertainty);
- The product portfolio is wide, with a variety of SSHA, Wind and Wave L2/L2P/L3 products; with the 1Hz and 20Hz in the L2 products and 5Hz in L3 products (coming soon, before the end of 2023). The agencies should better communicate to the end-user about the different products available.
- It would be useful to inform the community about evolutions related to NRT/OGDR and STC/IGDR, without spamming people with too many emails. It was suggested to provide clear information through the data access websites.

# Products contents

Given the recent improvements in the performance of NRT/OGDR products, a question was raised on the value of STC/IGDR for applications. NRT products have a good orbit and the dynamic atmospheric correction was recently added, so the gap between NRT and STC is in principle smaller than it used to be.

- A lot of people are likely unaware that the NRT product has reached this point;
- In case the difference between NRT/STC is proved to be negligible, it would make sense to consider this (NRT only) for new missions (like CRISTAL);
- Some people at OSTST want to continue STC products, e.g.:
  - Global land service uses STC only
  - Sentinel-6 STC products are used for ENSO
- Could the agency perform studies to characterize differences in performance?
  - Need to look at download figures for both data types
  - Compare SSH calculations
  - Need to look at overall data coverage to compare performance of two products