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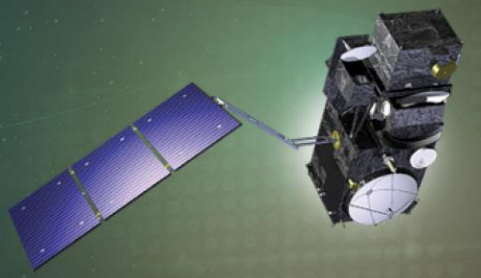

Ocean Colour session wrap-up

7th Sentinel-3 Validation Team Meeting 2022

18-20 October 2022 | ESA-ESRIN | Frascati (Rm), Italy

Ewa Kwiatkowska and the Ocean Colour group

OLCI instrument and flagging

OLCI-A and OLCI-B are operating nominally, no major instrument changes

- Further validation methods confirm OLCI-A bright bias
- See the results from Ludovic, Camille, Lena – FLEX tandem results, Dominique – deep convective clouds

Main OLCI L1 developments

- L1 uncertainty products developed (currently, ESA processing only)
- Information available on OLCI spectral evolution through the mission, spectral prediction model and O_2A-band harmonization

Cloud shadow

- Cloud shadow may affect possibly up to 13% of data
- **Recommendation** to implement cloud shadow detection in OLCI processing and investigate whether it should be used in data masking
- Future analyses may also consider cloud shadow correction feasibility but, to develop the method over water, may be difficult

Cloud flagging

- New CLOUD_AMBIGUOUS flag in OLCI Collection-3 eliminates many cloud omissions in Collection-2 flagging and results in more reliable Ocean Colour coverage
- New CLOUD_AMBIGUOUS erroneously flags some sea ice and glint areas, which are however irrelevant for Ocean Colour
- **Action** to provide examples of cloud flag issues, such as cloud flagging of turbid waters (Ana)
- **Recommendation** to consider cloud flagging update to eliminate the omissions as well as sea ice and glint misclassifications

OLCI data dissemination

EUMETSAT Data Store is excellent

- Full OLCI L2 Collection-3 time series available, consistent reprocessed and operational

EUMETSAT Data Store issues and recommendations

- Confusion about the reprocessed and operational data stored as different dataset collections and users not finding all data
- **Recommendation** to make a clear description to avoid confusion but to use single collection numbers in the future, if possible
- Guidelines and Juan's scripts available to support seamless access to the full OLCI L2 time series
- **Recommendation** to enable download of only user-selected parameters within the OC SAFE directory, to speed up the data transfer

DIAS WEkEO to support community own processing of OLCI data and validations

- Include in situ validation workflow on the WEkEO

OLCI L2 Ocean Colour product validations

"In summary, much progress but still room for improvements"

OLCI Collection-3 shows a significant advancement

- OLCI-A and OLCI-B products are highly consistent !!!
- OLCI shows good results in the open ocean
- OLCI radiometry performs well in validations over clear and moderately complex waters, with the exception of the bluest bands
- OLCI standard chlorophyll performs well in the Atlantic
- OLCI has significantly more matchups than other sensors
- OLCI data used in applications, e.g. water quality in British Columbia, Canada (but with POLYMER)

OLCI Collection-3 limitations

- Persisting problems over very turbid waters (Standard Atmospheric Correction at Belgian coast and NN C2RCC in La Plata estuary)
- Persisting problems over highly absorbing waters like Baltic Sea (Standard Atmospheric Correction negative water reflectance in the blue but sometimes reasonable retrievals between the green and the NIR)
- Persisting problems over lakes, but adjacency effects need to be considered

OLCI L2 algorithm evolutions towards Collection-4

Redevelopment of Standard Atmospheric Correction (OC-SAC)

- Needed and awaited
- **Recommendation** to address OC-SAC Collection-3 limitations
- **Recommendations** to compare OC-SAC with POLYMER / SACSO; to assess the benefit of ALH; to do the validations separately and specifically for the Baltic Sea; to consider more realistic mission requirements (not from MRTD); Baltic Sea processor improvements to be shared in advance with OC-TAC
- **Recommendation** to standardize the NIR water reflectance output, either from BPC or from CWAC, and to better understand the NIR retrievals, e.g. 753 nm

Development of BRDF correction for complex and clear waters

- Needed and awaited
- **Recommendation** to include a BRDF correction for water reflectance products but keep the possibility to reverse the correction! Trust in BRDF correction accuracy in complex waters is important for users.
- **Recommendation** to make the BRDF correction available for users for in situ measurements

S3VT-OC and EUM cooperation on algorithm evolutions and validations

Effort into improvement of OLCI algorithms appreciated by the Team

- Needed and awaited

Cooperation on algorithm verifications and validations towards Collection-4

- Team to provide examples of scenes where the current OLCI processing fails
- Team to provide in situ measurements to validate the algorithms and to cooperate on potential peer-review papers
- **Action** to initiate the cooperation with Maycira
- **Action** to initiate the cooperation with Kevin
- **Action** to request from Menghua examples of data matchups that did not perform well for OLCI in NOAA's validations

FRM4SOC-2

FRM4SOC-2 valuable project for the community

- Needed and awaited
- **Recommendation** to include the evaluation of the environmental conditions of in situ measurements
- **Recommendation** to issue guidelines on measurement procedures and conditions that minimize the environmental uncertainties (more precise definition of environmental conditions, including spatial and temporal recommendations depending on measurement conditions) (temporal interpolation, spatial extrapolation, etc.)
- Test the developed guidelines in campaigns to ensure they encompass different measurement conditions

Sharing of in situ data for algorithm development and validation

How to support sharing of in situ data for algorithm development and validations

- **Recommendation** to enable assignment of **doi** in OCDB in situ database, so that PIs could refer to their datasets in OCDB
- Possibility to acquire data from PANGEA but need additional information that will help us to establish the data quality
- Be proactive in acquiring the data from different PIs and past projects but also make sure to follow up about the use of the data and always acknowledge the providers
- Provide a specific domain space with ID in the full data repository for users for keeping and maintaining the user part of dataset
- **Recommendation** critical point is to ensure that OCDB sustains long-term preservation of in situ data holdings and long-term in situ community services
- **Recommendation** for EC to require the teams on EC projects to deliver in situ data to the space agencies in the projects involving in situ data collection

Wonderful meeting
Great discussions
Productive outcome
S3VT rocks!