# VALIDATION OF L2 OLCI PRODUCTS WITH MOORING, PROFILING FLOATS AND SHIP OBSERVATIONS

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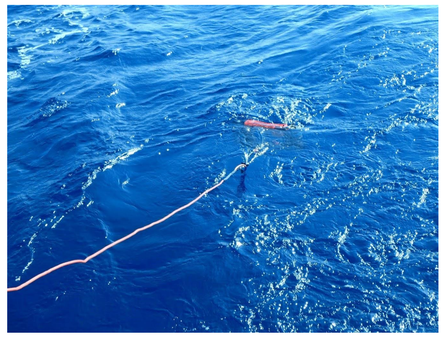
## ABSTRACT

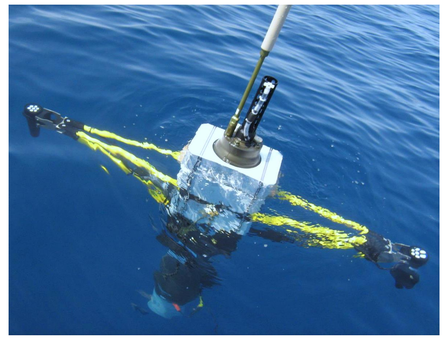
The Ocean and Land Colour Instrument (OLCI) is, on board S3A, the sensor dedicated to screen the ocean and land surface to harvest information related to biology and is the first Ocean Colour instrument to provide users with global coverage at 300 m resolution. In July 2017 the first public release of OLCI Level-2 Ocean Colour product was announced. Prior public release, intensive work had been carried out to implement System Vicarious Calibration (SVC) in the processing chain (the so called *g*-factors). The entire OLCI Level-2 archive had therefore been reprocessed to benefit from SVC improvement. New OLCI acquisitions were then processed on a routine basis with SVC. The present work aims at contributing to the assessment of OLCI L2-water products validity and quality for the current processing version by comparing S3A-OLCI products with a validation data set of radiometric and chlorophyll-a measurements collected with mooring and ship observations at the BOUSSOLE site in the NW Mediterranean Case I waters and from PROVAL profiling floats deployed in the same area and in the S Indian Ocean (Kerguelen area).

## PLATFORMS

The BOUSSOLE buoy (left picture) is a mooring deployed since 2003 at 43°22'N, 7°54'E (2240 m depth) performing bio-optical measurements every 15'. Data shown here were acquired from S3A launch until Nov 2017.
A set of Satlantic HyperOCR radiometers mounted at surface (Es), 4 m and 9 m depth (Lu, Ed) was used to obtain the normalized radiance reflectance ($\rho_{wn}$ spectrally weighted for the OLCI response functions), the surface PAR (integration of Es in the 400-700 nm range) and Kd490.

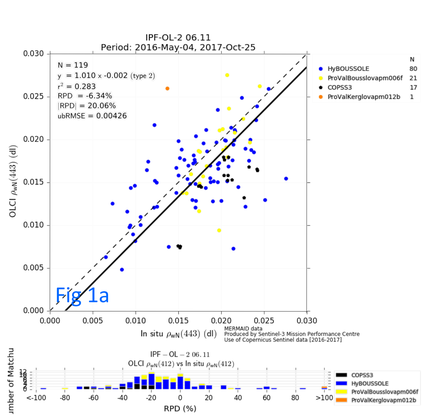


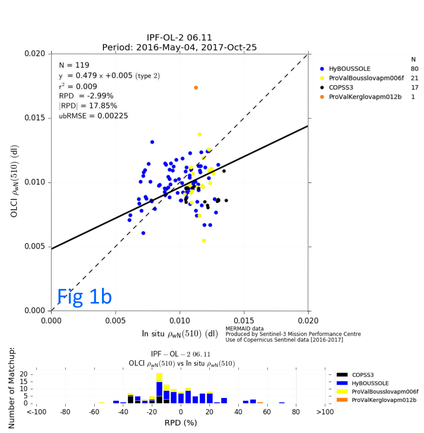
A Biospherical C-OPS profiling radiometer (Es, Ed, Eu at 18 λ between 320 and 780 nm) was deployed during monthly cruises close to the buoy (left picture) to obtain $\rho_{wn}$ and Kd490.
Discrete water samples were also collected during monthly cruises for [TChl-a] measurements through HPLC analyses. As only 3 match-up were retained, additional data from buoy fluorescence calibrated into [TChl-a] were included in the present analysis.

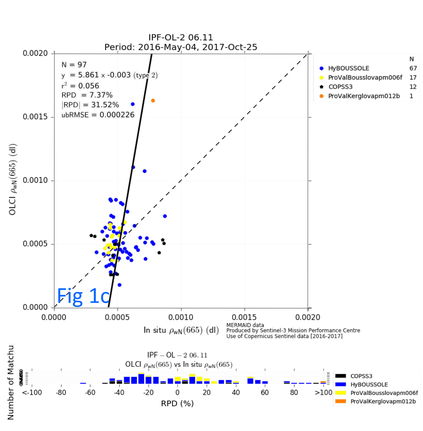


The ProVal (left picture) is a new float (based on PROVOR CTS5, NKE) equipped with 2 Satlantic OCR-500 combos (Ed+Lu at 7 λ: 400, 412, 443, 490, 510, 560, 665 nm).
Data shown here were collected by a float deployed in the BOUSSOLE area (Jun-Sep 2017) and a float deployed in the S Indian Ocean (Kerguelen area, Oct 2016 - Jan 2018). Only $\rho_{wn}$ was available for this study.

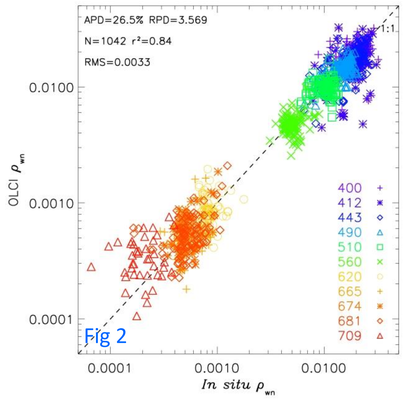
## REFLECTANCE



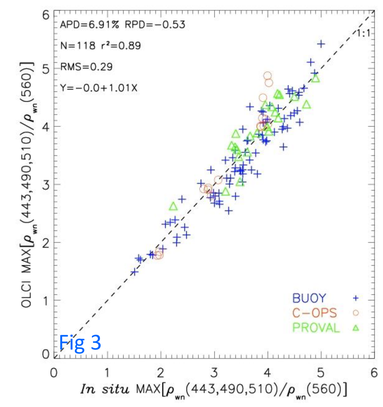



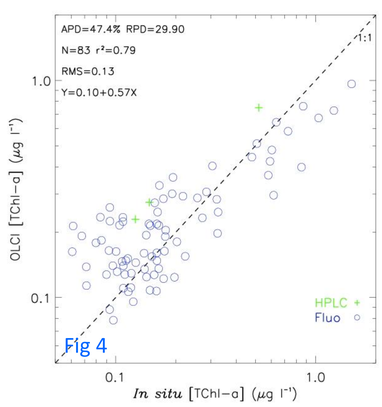



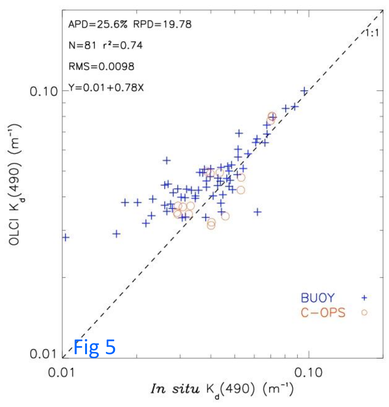

OLCI match-up points were averaged over a 5x5 FR pixels grid centered on the location of the measurements and flags recommended by the S3VT used to select the appropriate data set. A maximum of 119 match-up were obtained for $\rho_{wn}$ (depending on the λ) and are shown for selected BGR bands (Fig 1a-c) and for all wavelengths (Fig 2). A comparison of the MAX[$\rho_{wn}$(443,490,510)/$\rho_{wn}$(560)] is shown in Fig 3.
About 83 match-up on average were obtained for T[chl-a], Kd490, and PAR and displayed in Fig 4-6.

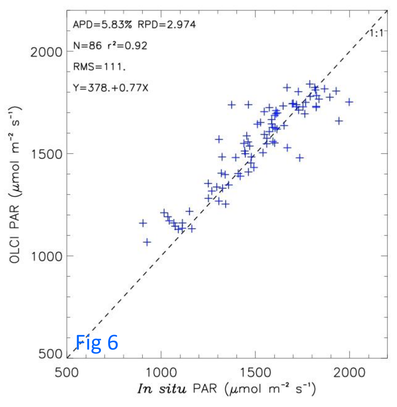



## MBR – TCHL-A – KD490 – PAR




## ACKNOWLEDGEMENTS

**Disclaimer**

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