

Monday, October 8

Poster Session 1

16:00–18:00

Poster 145

PROVAL: A PROFILING FLOAT DEDICATED TO RADIOMETRIC MEASUREMENTS

In-situ high quality measurements of radiometric quantities are mandatory to enable a “system vicarious calibration” (SVC) of satellite sensors dedicated to Ocean Color Radiometry (OCR) as well as to validate their derived products. These data are especially needed for remote areas poorly covered by oceanographic cruises, areas where atmospheric properties are poorly constrained and in areas with known bio-optical anomalies. This necessity is particularly critical during the early stages of an OCR satellite activity. Autonomous profiling floats have revolutionized oceanography by massively increasing the number of profiles; we argue here that dedicated floats could provide a strong foundation for global SVC. The ProVal float measures downward irradiance and upwelling radiance at seven wavelengths on two arms that allow radiometer redundancy and shading mitigation. We analyzed more than 500 profiles sampled in the Southern Ocean and Mediterranean Sea to date. We find that 45% and 85% of data in the surface layer exhibit tilts lower than 10° in the Southern Ocean and Mediterranean Sea respectively. From comparison between the redundant sensors the maximal relative drift is estimated by less than 0.2% per month over a year. Floats deployed in the Mediterranean Sea were recovered allowing post-deployment calibrations of radiometers that confirmed the low sensor drift. In addition, platform shading, estimated from the difference between the two radiometers, shows good agreement with Monte-Carlo simulations. Finally, comparisons of Remote Sensing Reflectance with the OLCI sensor (Sentinel-3A) show results in agreement with other sources of in-situ data but with extended coverage capabilities.

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