

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Monday, October 8

Poster Session 1

16:00–18:00

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Poster 65

ON THE USE OF SPACE-BASED POLARIMETRIC MEASUREMENTS FOR OCEAN COLOUR REMOTE SENSING – HERITAGE AND PERSPECTIVE

The polarization of the light within the water body has been already documented, and very well described from in-situ measurements. This signature mostly results from the process of scattering by all the constituents of the water body: the molecular water itself, but also hydrosols, phytoplankton and particles. Mie scattering calculations demonstrated the sensitivity of Polarization with the chemical and physical properties of marine particles (nature and quantity of particle, refractive index, size, shape...). As roughly for the scalar radiance, the marine polarised radiance once propagated to the top-of-atmosphere layer remains small and contributes to less than 10-20% of the total polarized radiance depending on the water type. Observation of the polarization from space have been experienced based on POLDER sensors. While for open ocean, the atmospheric correction or the accuracy of the estimation of the surface wind speed could be improved, it was possible to retrieve a significant water leaving polarized reflectance for bright waters. Alternatively, a new approach proposes to analyse the parallel polarized contribution with respect to the scattering plane, which reduces significantly the perturbing contribution from surface reflection. Despite these past studies, the potential of polarization from spaced-borne measurements remains largely un-exploited for ocean colour purposes. The 3MI mission, a POLDER follow-on improved instrument on-board EPS-SG, will offer beyond 2021 the opportunity for a long-term time series acquisition in fully operational framework. Applications to marine analysis will be therefore possible. Other polarimetric information could also be available from SGLI/GCOM-C, OCI/PACE or DPC/GF-5.

Bertrand Fougnie, EUMETSAT, Bertrand.Fougnie@eumetsat.int

Hubert Loisel, Laboratoire d'Océanologie et de Géosciences, hubert.loisel@univ-littoral.fr

Thierry Marbach, EUMETSAT, Thierry.Marbach@eumetsat.int

Amir Ibrahim, NASA-Goddard Space Flighing Center, Amir.Ibrahim@nasa.gov

Xianqiang He, Second Institute of Oceanography, hexianqiang@sina.com.cn

Bryan Franz, NASA-Goddard Space Flighing Center, bryan.a.franz@nasa.gov

Ewa Kwiatkowska, EUMETSAT, Ewa.Kwiatkowska@eumetsat.int