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**Automation and retrieval of remote-sensing reflectance observed from ships-of-opportunity: new directions from the MONOCLE project**

**Abstract**: The most prominent challenges in the estimation of above-water remote-sensing reflectance, particularly in automated spectroradiometer deployment, are to remove poor-quality samples and to determine variable reflected sky radiance due to changing atmospheric conditions. We combine the use of solar-tracking reflectance spectroradiometers with a new hyperspectral radiometer that measures partitioned (direct and diffuse components) of downwelling solar irradiance into a shipborne autonomous sensor array. Data sets from both sensors are being developed as part of the EU-funded MONOCLE project (monocle-h2020.eu) and were jointly deployed at Lake Balaton and the English Channel in 2019-2020 and will be briefly showcased during this presentation.

To demonstrate the added value of the combined sensor set, we evaluate then use a three-component atmospheric model as an inversion scheme to solve for remote-sensed reflectance, subject to previously unobtainable constraints on the atmospheric optical state. Inclusion of partitioned solar irradiance in the reflection estimate results in a smaller spread of retrieved reflectance and reduces dependency on the atmospheric optical state. Consequently, the new shipborne sensor measurements and algorithm enables characterization of inland and coastal water bodies across a greater range of measurement conditions than before."