

OCEAN OPTICS XXIV

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Tuesday, October 9

Poster Session 2

10:30–12:30

Poster 205

MEASUREMENTS OF THE VOLUME SCATTERING FUNCTION IN NORWEGIAN FJORDS AND ARCTIC WATERS

Accurate quantitative observations of ocean particles such as phytoplankton are becoming increasingly important, but can be difficult to obtain in coastal and Arctic waters. Improving remote sensing accuracy and developing new optical in-situ methods requires improved measurements of inherent optical properties of water constituents, for instance the volume scattering function (VSF). This function characterizes the ability of particles to scatter light in a given direction. The VSF of water constituents has been measured sparingly, especially in situ. This is due to the technical difficulty of the measurements, in particular in the forward scattering direction. There is a high demand on instrument dynamical range; the ratio of forward to backward scattered radiance may be larger than 107. The LISST-VSF instrument (Sequoia Scientific, Inc.) measures the VSF between 0.1° and 155° at 515 nm. A laser beam is sent into the sampling chamber, and the large-angle (15° - 155°) part is measured by an eyeball detector, while the forward scattering (0.1° - 15°) is measured by a ring detector. The instrument has been used in field work in fjords around Bergen, Norway, and in polar regions north of Svalbard, giving VSF profiles down to varying depths in both coastal Case II and Arctic waters. Initial laboratory measurements show good agreement with Mie theory for plastic spheres. The fjord water measurements agree well with the Petzold measurements for coastal waters, but there is some deviation in the forward scattering regime, implying regional or instrumental differences.

Håkon Sandven, University of Bergen, hsa060@uib.no, <https://orcid.org/0000-0002-8042-510X>

Arne Kristoffersen, University of Bergen, Arne.Kristoffersen@uib.no

Yi-Chun Chen, University of Bergen, Yi-Chun.Chen@uib.no

Børge Hamre, University of Bergen, Borge.Hamre@uib.no