

## Using SeaPRISM Instrument on the Helsinki Lighthouse Tower for Satellite Validation

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The importance of monitoring the water quality by remote sensing has grown due to algal blooms becoming more common and occurring every summer. However, in coastal areas atmospheric correction process appears challenging and bio-optical algorithms used to quantify the optically significant constituents from water leaving radiance are not well established.

An autonomous above-water system called SeaWiFS photometer Revision for Incident Surface Measurements (SeaPRISM) was installed on the Helsinki Lighthouse Tower in May 2006. [1] It is part of the Aerosol Robotic Network – Ocean Colour (AERONET-OC), system of globally distributed autonomous sun photometers that was designed for validation of remote sensing products. It measures normalized water leaving radiance  $L_{WN}$  at various center-wavelengths from 412 to 675 nm. These standardized measurements of radiance emerging from the sea water and the atmosphere can be used to support investigations of quality of remote sensing products. [2]

Satellite instruments such as the Moderate Resolution Imaging Spectroradiometer (MODIS) and the Medium Resolution Imaging Spectrometer (MERIS) are widely used for water quality monitoring on coastal areas with complex optical properties. They are measuring radiance emerging from the sea which can be used to determine the normalized water leaving radiance corrected from the atmospheric perturbations and variations of sun angle. This carries information on the various optically significant seawater constituents like phytoplankton, particulate and dissolved organic matter. By combining in situ water samples and radiance measurements of SeaPRISM and MODIS-sensor the accuracy of optical remote sensing products for the Gulf of Finland can be investigated and more reliable bio-optical algorithms can be created. [1]

Observations of  $L_{WN}$  are recorded in four summers (2006-2009) and a preliminary bio-optical algorithm is created. The study is made in co-operation with Joint Research Center (JRC) of European Commission.

### References

[1] S. Kaitala, G. Zibordi, F. Mélin, J. Seppälä and P. Ylöstalo, Coastal water monitoring and remote sensing products validation using ferrybox and above-water radiometric measurements, *EARSel eProceedings* 7, January 2008.

[2] G. Zibordi, B. Holben, I. Slutsker, D. Giles, D. D'Alimonte, F. Mélin, J-F. Berthon, D. Vandemark, H. Feng, G. Schuster, B.E. Fabbri, S. Kaitala and J. Seppälä, "AERONET-OC: A Network for the Validation of ocean Color Primary Products", *Journal of Atmospheric and Oceanic Technology*, vol 26, pp.1634-1651, August 2009.