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Interannual Chlorophyll a Variability During 2004-2015 in The Eastern part of the Gulf of Finland with Remote Sensing and In-Situ Data

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Chlorophyll a estimates for most of the ocean regions are made on the basis of in-situ data and modern remote sensing techniques and algorithms, which provide estimation of the chlorophyll concentrations in the upper layer of the ocean over the large areas on cloudless days.

For the Eastern part of the Gulf of Finland a regional algorithm for summer season has been developed and undergone validation over the period of 2004-2013. The regional algorithm has presented stable correlation with the in-situ data; therefore it was used to estimate the variability of the chlorophyll a in the summers over the whole period of 2004-2015. Both in-situ data and the remote sensing data have shown the decline in chlorophyll concentrations through the last 10 years.

The in-situ data on chlorophyll a concentrations in the Eastern part of the Gulf of Finland are collected routinely each summer in late July – early August during the expeditions held by the Russian State Hydrometeorological University. The remote sensing data are provided by MODIS Aqua satellite mission through the Ocean Color portal [<http://oceancolor.gsfc.nasa.gov/cms/>].

The estimates of chlorophyll a concentrations interannual variability in the eastern part of the Gulf of Finland for 2004 - 2015, based on a combination of regular in-situ and satellite data allows estimation of primary production and identification of natural background values. Furthermore this information can be used to enhance monitoring of the Gulf of Finland, primary production calculations, evaluation of the water body condition and for modeling purposes.

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Keywords: chlorophyll a, Remote sensing, in-situ data, eastern part of the Gulf of Finland

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