Lead Author e-mail: *drozd@iopan.gda.pl*

Title: *Abstract title: Spatial changes in the bio-optical properties of surface seawater in the Nordic Seas – AREX'2003, 2006 and 2012*

Violetta Drozdowska[1], Nina Yarovenko[2], Larisa Poryvkina[3], Agnieszka Promińska[1], Jakub Kowalczyk[1], Przemysław Makuch[1], Agata Strzałkowska[1], Tomasz Petelski[1], Jacek Piskozub[1], Dorota Gutowska[1], Tymon Zieliński[1]

[1]***Institute of Oceanology Polish Academy of Sciences, Sopot, Poland***

[2]*Remote Sensing and GIS Lab, Department. of Applied Physics, University of Vigo, Vigo , Spain*

[3]*AS Laser Diagnostic Instruments, Tallinn, Estonia.*

Abstract text:

The research of bio-optical as well as hydrophysical properties of surface waters of the Nordic Seas have been for many years the subject of the polar experiments conducted by the Institute of Oceanology Polish Academy of Sciences. The spatial distribution and composition of organic matter molecules contained in a surface seawater layer is a consequence of the history of water masses' routs, running both, far from lands and along the shelves and shorelines as well as a local biological system conditions.

Fluorimetric examinations of surface waters, with the Fluor-Imagers and SFS scanner, LDI Ltd, were carried out repeatedly during Arctic cruises on board of r/v Oceania. The spectrophotometric study of seawater samples, taken from several depths, allow obtaining the excitation spectra of Chlorophyll a via different pigments and the fluorescence spectra of CDOM (chromophoric dissolved organic matter). The fluorescence excitation spectra of phytoplankton and CDOM up to now remain one of the most effective bio-optical techniques for rapid diagnostics of algae population and DOM in vivo.

The analyses of these spectra give information about the phytoplankton species and CDOM spatial distribution at various vertical and horizontal sections as well as allow distinguishing different sea water masses.

The two groups of algae cultures was identified - 1) characteristic for Atlantic water and 2) characteristic for Arctic water. There were another groups of spectra which were the mixture of these phytoplankton species and Atlantic water with water comming from Barents Sea. What is more the analyses of CDOM measurements reveal its specific spatial distribution.