

Monday, October 8

Poster Session 1

16:00–18:00

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Poster 169

PARAMETERIZATION OF THE SPECTRAL LIGHT ABSORPTION COEFFICIENT OF PHYTOPLANKTON IN THE BALTIC SEA: GENERAL, MONTHLY AND TWO-COMPONENT VARIANTS OF APPROXIMATION FORMULAS

Approximate formulas for parameterization of the light absorption coefficient by phytoplankton a_{ph} in the surface waters of the Baltic Sea have been developed. Over a thousand of absorption spectra (in a range: 350–750 nm) registered during nine years of research conducted in different months of the year and in various regions of the southern and central Baltic, were used to develop these parameterizations. The analysed empirical material was characterized by a wide range of variability: the total chlorophyll a concentration (Tchl_a) varied between 0.3 and more than 140 mg m⁻³, the relative proportion of the sum of all accessory pigments concentrations relative to chlorophyll a (acc.pigm./Tchl_a) varied between 0.21 and 1.5, whereas the absorption coefficients a_{ph} at individual light wavelengths changed by almost three orders of magnitude. Using the collected material, various variants of parameterization formulas were developed. Among them are parameterizations in the “classic” form of a power function (with Tchl_a as the only variable), as well as an example of two-component formula (the product of the power and exponential functions, with Tchl_a and acc.pigm./Tchl_a as variables). A distinct difference between general version of one-component parameterization and its variants developed for individual months of the year have been documented. In contrast to the general parameterization both the monthly and the two-component variants allow, at least partially, taking into account the variability of pigment composition occurring throughout the year within the examined Baltic phytoplankton populations.

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