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Factors affecting vertical distribution of the Dissolved Organic Carbon in the southern Baltic Sea

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During the r/v 'Oceania' cruise, May 2006, seven vertical dissolved organic carbon (DOC) concentration profiles on the background of CTD, chlorophyll a (chl a) and pheopigment concentration profiles were carried out. The results indicate distinct vertical and spatial DOC oscillations, in the range from 248+/-7 μmol C*dm^{-3} at the depth of 70 m of the most western station G/06, to 398+/-5 μmol C*dm^{-3} at the depth of 5 m of the station A/06 located in the western Gulf of Gdańsk. The highest DOC concentrations are observed at the depth of 10 m, accompanied by relatively intensive activity of the phytoplankton as derived from the active chl a concentrations distribution. The DOC concentrations decrease toward the sea bottom.

The non-linear segment regression model was applied in order to establish the influence of organic matter delivered with river run-off, released from phytoplankton cells, and delivered due to zooplankton activity on the DOC vertical distribution. The measured and modelled DOC concentrations are well correlated. The linear regression determination coefficient (R^2) was calculated at 78,4% indicating that above mentioned processes are indeed decisive for DOC pool.