Tracing the variability of dissolved organic matter fluorescence in the East China Sea in the red tide season with use of excitation-emission matrix spectroscopy and parallel factor analysis

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Chromophoric dissolved organic Matter (CDOM) plays an important role in the biogeochemistry of biogenic elements. From the end of March to the end of May, 2011, five cruises were carried out to survey the red tide occurrence in the Zhejiang coast of the East China Sea where the red tides occurred each spring and there was a trend for community succession from diatoms to dinoflagellates. Sea water samples were collected to determine the dissolved organic matter fluorescence by using the Excitation-emission matrix spectroscopy (EEMs). Using the parallel factor analysis (PARAFAC), three components were resolved, C1 (230,280/320) tyrosine-like component, C2 (240,305/355) tryptophan-like component and C3 (270,340/480) humic-like component. The three components had the significant positive correlations between each other, which implied that they had the same sources. The C1 component intensities were higher than the other two components, which indicated that phytoplankton production was the main sources to the protein-like matter. The C1 components variabilities were influenced by red tide process while other two components were not. During the diatom bloom dispersion phase, the three components had the significant negative linearity relationship with the salinity indicating their terrestrial sources. During the diatom bloom and dinoflagellate bloom, the terrestrial input relatively weakened while the phytoplankton production became the master control fact.

Biography

Weihong Zhao has completed her Ph.D. at the age of 28 years from Ocean University of China and postdoctoral studies from Institute of Oceanology, Chinese Academy of Sciences, China. Now she works as a research professor in the Institute of Oceanology, Chinese Academy of Sciences. She published more than 70 papers.

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