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First bloom record of toxic dinoflagellate *Prorocentrum lima* (Ehrenberg) F.Stein, 1878 and climate change interactions in the Dardanelles (Turkish Straits Sistem)

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This investigation focused in daily variations in cell density toxic dinoflagellate *Prorocentrum lima* between 09 July 2013 and 06 August 2013 in the Dardanelles. The sampling period was excessive bloom period of both dinoflagellates and diatoms. The bloom of toxic dinoflagellate *P.lima* was recorded as a first time in the Turkish Straits System. During the bloom the cell density of *P. lima* reached to $2.40x10^6$ cells L^{-1} and exhibited four excessive blooms over $1.0x10^6$ cell L^{-1} during a month. The contribution of *P.lima* to both *Prorocentrum* spp. and dinoflagellates reached to 100%, particularly in the intervening period of the excessive bloom time and it was attested by regression (R^2=700-800) and correlation findings (R=800-900). Nutrient concentrations were lower than previous concentration levels due to excessive blooms. Concentrations of NO^-_2+NO^-_3, PO^{-3}_4 and SiO_4 varied between 0.20 and 0.78 µM (average: 0.44±0.17 µM), 0.08 and 0.18 µM (average: 0.12±0.03 µM) and 0.25 and 0.65 µM (average: 0.41±0.09 µM) respectively. During the bloom, nutrient ratios (N:P, Si:P and Si:N) were more different than Redfield ratios due to eutrophication and ratios of N:P, Si:P and Si:N varied between 1.57 and 7.50 (average: 4.04±1.74), 1.67 and 6.50 (average: 3.79±1.24) and 0.51 and 1.95 (average: 1.04±0.36). Chlorophll a concentration varied between 1.57 and 8.52 mg L^{-1} (average: 4.82±2.29 mg L^{-1}) in the bloom period. During the bloom temperature, salinity, pH and dissolved oxygen (DO) levels were approximately constant and changed from 24.0 to 25.0° C (average: 24.7±0.44° C), from 21.4 to 23.5 ppt (average: 22.9±0.49 ppt) from 8.01 to 8.54 (average: 8.23±0.15) and from 6.05 to 8.65 mg L^{-1} (average: 7.35±0.60 mg L^{-1}). The compact bloom of *P. Lima* such as excessive blooms of other dinoflagellates and diatoms was associated not only with eutrophication but also with climate change interactions.

Biography

Muhammet Turkoglu has completed his PhD in the 1998 from Ege University, Turkey. Currently, he is an Associate Professor of Marine Science and Technology, Faculty in Çanakkale Onsekiz Mart University. His research has involved studies in Aegean Sea, Black Sea, Turkish Straits System including Dardanelles, Sea of Marmara and Bosphorus and Caspian Sea. He has been interested in marine phytoplankton species distribution and ecology especially in coastal habitats and also in harmful algal blooms (HABs). He has nearly 100 scientific studies published by various reputed scientific journals and others.

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