
**The tale of two shelves: palynology records of
red tides off Nova Scotia vs. Ukraine**

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Red tides are harmful algal blooms (HABs) that include outbreaks of toxic dinoflagellates causing paralytic shellfish poisoning and human death. Increased frequency of red tide outbreaks in Atlantic Canada have been linked to shellfish farming, ballast discharge from ships, and or climate warming, but Canadian historical records are too short to verify these possible causes. Previous studies of Holocene sediment from Emerald Basin on the Scotian Shelf provide a centennial-scale

record of the history of red tides in the Atlantic Region for the past 10 000 years, and show that periods of greatest red tide frequency were linked to early Holocene sea surface warming. As part of the IGCP 521 program on the history of sea level and climate change in the Black Sea – Mediterranean Sea corridor, we are now beginning to apply this palynological technique to a decadal-scale study of the history of red tides in shelf sediments of the southwestern Black Sea. Initial results of a 9,000 yr palynological record shows that red tide outbreaks were largest during the relatively dry warm mid-Holocene thermal maximum. However, recent increases in the diversity of toxic dinoflagellates and HABs are linked to historical events recorded over the past 3,000 years in literary works ranging from Homer's *Odyssey* (ca. 3,000 yr BP) and Strabo's histories (ca. 2,000 yr BP) to detailed scientific papers published over the past 30 years. Other changes are linked to palynological evidence of deforestation as well as livestock and grain farming during the Bronze Age. As part of a new PhD study at Odessa National University named after I.I.Mechnikov, a description will be given of the collection and laboratory processing of >100 box core samples to provide a new palynological database for the Black Sea Shelf off the Ukraine. The data from the cross-shelf and long-shelf transects will allow future quantification of nearshore – offshore changes in assemblages and evaluation of the influence of freshwater discharge from large rivers such as the Danube, Dnieper, and Dniester on the paleoecology of the northern Black Sea Shelf.