

Holocene paleoceanography: marine palynology records from Atlantic Canada

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New transfer functions, using a database of more than 500 modern reference sites, have been used to reconstruct sea surface conditions on the Atlantic margin of Canada. They were applied to palynological records from the La Have, Emerald and Bedford Basins. The interval from 10 to 6 ka B.P. was characterized by stable sea surface conditions similar as today. More frequent and greater variations are found after 6 ka: two episodes with colder sea surface temperature and lower salinity occur around 5,500 and 2,500 ka.

Cysts of *Alexandrium excavatum*, a dinoflagellate species responsible for paralytic shellfish poisoning (PSP) show a peak at Bedford Basin during the 6 ka thermal maximum, and at about 7,500-10,000 years B.P. in La Have and Emerald basins. Blooms of PSP causing dinoflagellates are a major concern for the shellfish industry and have shown an increase

in the past 50 years on the Atlantic coast. Laboratory and field observations over the past 20 years show that blooms of PSP dinoflagellates are often triggered by warm sea surface temperature, high runoff and storm resuspension of resting cysts. Our results do not show a strong correlation between PSP cyst abundance and summer sea surface temperature, salinity or sea ice cover over the Scotian Shelf. However, a correlation between peaks in cyst abundance and intervals of silt/sand beds suggests that storm resuspension plays a greater role in triggering harmful alga blooms. This observation has important implications for the Atlantic Provinces because of the increased frequency and intensity of storms apparently associated with global warming.