

Effects of Meteorological Conditions on the Occurrence of *Cochlodinium polykrikoides* and *Pyrodinium bahamense* var. *compressum* in Coastal Waters of Kota Kinabalu, Sabah, Malaysia

Abstract

In the Kota Kinabalu coastal area, the episodic occurrences of harmful algal bloom (HAB) species had been reported more than a decade ago. But, the time of the occurrence and factors contributing to the occurrence are still inadequately understood. To fill the gap, a study using 4 years field data from 2007 to 2010 was conducted. Cell densities of two HAB species, physicochemical parameters such as temperature, salinity, pH and dissolved oxygen together with rainfall data, wind data and general influence of ENSO episodes were taken into account to identify the most probable factors that trigger the occurrence of HAB species in the Kota Kinabalu coastal waters. From the analysis, *C. polykrikoides* blooms after 1 to 2 days of rain and significantly high nutrient concentrations were recorded during the blooms. Other physicochemical parameters were almost the same during the bloom and non-bloom events. Climate phenomena like ENSO (El Niño Southern Oscillation) affected the occurrence of *P. bahamense* var. *compressum* and *C. polykrikoides*. *P. bahamense* var. *compressum* occurred during El Niño due to high salinity and no blooms were recorded during La Niña. This indicates that unusual climate condition suppressed the bloom formation. The results gained from this study provide important information in managing HAB species particularly in the Kota Kinabalu coastal area.