

Title: Microplankton composition off the coasts of Tanzania and Comoros Island

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Background

Microplankton are a diverse group of phyto- and zooplankton. Globally they have been understudied, and this is no exception for the Western Indian Ocean region. The Second International Indian Ocean Expedition (IIOE2) cruises provided the perfect platform from which to start increasing our knowledge of these abundant and variable organisms. Microplankton are susceptible to changes in the marine environment such as eutrophication, ocean acidification and ocean warming. Traditional methods of quantifying microplankton include microscopy, a time consuming process. Newer technologies that make use of automated imaging and analysis are used as they can provide data in a shorter time frame.

Methodology

Water samples were collected from CTD bottles during the July 2018 IIOE2 cruise for Tanzania and the Comoros. Samples were taken from both the surface and Fmax. All samples were analysed at sea using the FlowCam to obtain taxa data and build image libraries. Libraries were used to classify particles found in samples in broad taxon groups.

Results

Preliminary results show that good quality image data can be obtained from use of the FlowCam. Both phytoplankton and zooplankton organisms were adequately imaged and enumerated. The time taken to obtain results from automated analyses was far less than traditional microscopy. Broad taxon groups can be distinguished using automated classifications. Differences in community structure were noted between the surface and Fmax.

Conclusion

The study suggests the resolution of data obtained from FlowCam would be useful for monitoring of marine microplankton. Obtaining data in a shorter time frame will allow for better understanding of the impacts of a changing environment such as ocean acidification, ocean warming and eutrophication on these organisms and may assist with management decisions.

Keywords: Microplankton; Phytoplankton; Zooplankton; FlowCam; Comoros; Tanzania;