

Seasonal productivity in the Azores Front (North Atlantic) as derived from dinoflagellate cysts in a two-year sediment trap sample

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Context

Organic walled dinoflagellate cysts are a planktonic group which is abundantly present in the modern oceans and shows a high fossilisation potential. Their taxonomic composition can be used as proxy for a variety of environmental factors (e.g. temperature, upwelling, productivity), as different species favour inherently different environmental conditions. Sediment trap material from a station in the vicinity of the Azores Front, spanning a two-year cycle, will be used to gain important insights into the seasonal and inter-annual variation in surface water productivity in the North Atlantic Ocean.

Objectives and Methods

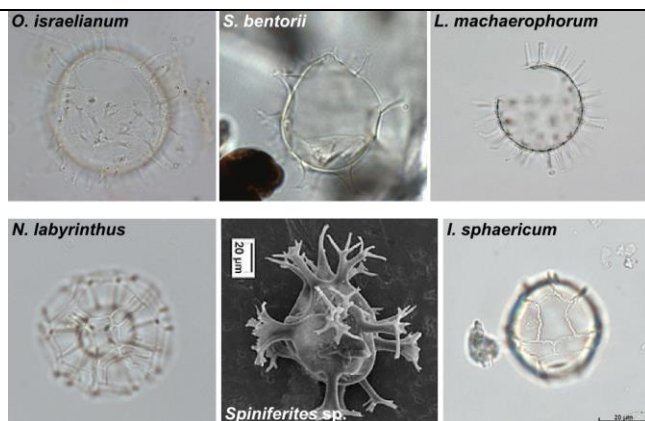
This work aims at characterizing seasonal and inter-annual productivity changes in the North Atlantic. The candidate will prepare sample material from a sediment trap (sieving, HF digestion) and prepare microslides of palynomorphs. Samples will be analysed for their species composition under the microscope, and productivity changes in the Azores Front based on observed palynomorph compositional changes will be reconstructed. The results will be interpreted in the light of a larger oceanographic framework, to arrive at a better understanding of Azores Current productivity changes. The candidate will have the opportunity to prepare samples and get a short course in dinoflagellate taxonomy with Dr. Ilham BOUIMETARHAN (University Bremen), and will thus have to find funding to cover a 4-week stay in Bremen, Germany (e.g. bourses A. LOMBARD).

Literature

POSPELOVA, V. ; ESENKULOVA, S. ; JOHANNESSEN, S.C. ; O'BRIEN, M.C. ; MACDONALD, R.W., 2010. Organic-walled dinoflagellate cyst production, composition and flux from 1996 to 1998 in the central Strait of Georgia (BC, Canada): A sediment trap study. – *Marine Micropaleontology* 75:17–37.

PRICE, R.M. ; POSPELOVA, V., 2011. High-resolution sediment trap study of organic-walled dinoflagellate cyst production and biogenic silica flux in Saanich Inlet (BC, Canada). – *Marine Micropaleontology* 80:18–43.

ZONNEVELD, K.A.F ; MARRET, F. ; VERSTEEGH, G.J.M. ; BOGUS, K. ; BONNET, S. ; BOUIMETARHAN, I. ; et. al., 2013. Atlas of modern dinoflagellate cyst distribution based on 2405 data points. – *Review of Palaeobotany and Palynology* 191:1–197.



Source: <https://www.marum.de/dinocystkey.html> ; <http://www.hgi-cgs.hr/>

Sites WEB

<http://cms.unige.ch/sciences/terre/research/Groups/sedimentology/sedimentology.php>

https://www.marum.de/Marine_Palynologie.html

http://www.io-warnemuende.de/de_index.html

Choice of orientation: Sedimentary, Environmental and Reservoir Geology