Na/Ca ratios in planktonic foraminifera – A new proxy for sea surface salinity reconstructions

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Research Aims

- direct proxy for salinity reconstructions
- method development
- applicability for paleo-reconstructions

Salinity is crucial for any reconstruction of the past global thermohaline circulation and changes in the hydrologic cycle. A recent laboratory study culturing benthic foraminifera (Wit et al., 2013) suggests Na/Ca as a direct proxy for ocean salinity.

This project aims to provide a proper method for the preparation of planktonic foraminiferal samples for Na/Ca analyses and to provide evidences for the applicability of Na/Ca as a paleo-salinity proxy.

The study area provides high variations in surface salinity (Figures 1 and 2), caused by monsoon precipitation over land and over the ocean.

References:

Figure 1: Core top locations in equatorial East-Atlantic (Gulf of Guinea). WOA annual salinity data (Zweng et al., 2013; ODV: Schlitzer, 2012, http://odv.awi.de).

Figure 2: Annual salinity profiles at the sample sites (Fig. 1) with habitat depths of different planktonic foraminifera species.