HOLOCENE SEA-LEVEL CHANGE IN THE MEDITERRANEAN SEA: QUANTITATIVE RECONSTRUCTIONS BASED ON FORAMINIFERAL TRANSFER FUNCTIONS

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Abstract
Results from Late Glacial and Holocene relative sea-level estimates in shelf carbonate environments of the Western Mediterranean Sea based on various regression methods and, on Plankton/ Benthos ratios, are presented. The relative sea-level estimations for the different regions are similar to the global sea-level history underlying the potential of benthic foraminifera for quantitative sea-level reconstructions.

Keywords: Western Mediterranean, Sea Level, Foraminifera

Introduction
Quantitative sea-level reconstructions using planktonic and benthic foraminifera were more applied in the recent past and, give a potential for paleo-sea level reconstructions over various timescales or for climate modeling.

Methods
The sea level estimations were based on various regression methods such as Weighted Averaging (WA), Partial Least Squares (PLS) and, a combination of both. Further, Modern Analogue Technique (MAT) and, a method based on Plankton/ Benthos ratios were used. The transfer functions generated from recent benthic foraminiferal assemblages in surface samples were applied on fossil data-sets from the Alboran Platform, the Oran Bight and the Mallorca shelf (cores 342-1, 367-1 and 401-1).

Results
The best predictive potential is given for the WA-PLS method. The relative sea-levels estimates are similar to the global sea-level history on the Alboran Platform and off the Mallorca Shelf (Fig. 1). In the Oran Bight, our estimates show also a sea-level rise for the past 6000 cal. years BP, but exhibit significant deviation from the global trend likely attributed to age model uncertainties. The sea-level estimates based on transfer functions generated from recent P/B ratios show in generally the global sea-level development, but with a higher inaccuracy. Species-environment relations were investigated, showing that on the Mallorca Shelf substrate and food effects interfere with the sea level signal resulting in an partly overestimation of paleo-water depths.

Fig. 1. The relative sea-levels estimates are similar to the global sea-level history on the Alboran Platform and off the Mallorca Shelf

References