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Development, calibration and application of independent salinity proxies - PaleoSalt

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Testing climate models for future and past climate change critically depend on our ability to quantitatively reconstruct past climate. Paleosalinity is the single most important oceanographic parameter which currently can still not be quantified from sedimentary records.

Nine partners from 6 different European countries will bring together complementary expertise in a multidisciplinary project to develop accurate and robust salinity proxies by (1) increasing precision, accuracy and applicability of the only currently used salinity proxy (combined δ^{18}O-Mg/Ca approach), (2) developing a new approach through compound specific δD combined with UK37 and link the two by using δ^{18}O and δD to deconvolve salinity, (3) using ultra-high-resolution elemental and isotopic analysis of biogenic carbonates to trace salinity changes.

For all three approaches a *mechanistic understanding* for proxy relationships will be developed. Only through understanding the processes underlying the actual proxy recording we can develop robust proxy relationships that will hold beyond *empirical* calibrations under none analogue conditions. Different organisms have been selected (foraminifera, coccolithophorids and bivalves) taking advantage of their specific possibilities.

These new proxies will be be verified in key areas where temperature and salinity gradients can be separated and finally applied by investigating the impact of the Mediterranean "*salt distil*" and Agulhas "*salt valve*" on North Atlantic convection.