

## **HYDROGEN ISOTOPES IN MARINE SEDIMENTARY ORGANIC MATTER: A PALEOCEANOGRAPHIC STUDY IN THE MEDITERRANEAN SEA**

Paul, H.A., Bernasconi, S.M., Andersen, N., McKenzie, J.A. Geological Institute, Swiss Federal Institute of Technology, ETH-Zentrum, Zurich, Switzerland

The aim of this study is to examine the correlation between the hydrogen isotopic signature of modern marine surface waters and sedimentary organic matter. This will be a first step in assessing the use of hydrogen isotopes as a new proxy for paleoceanographic research. We focus on the examination of the D/H ratios in the lipid fraction of the organic matter (individual molecular compounds) as they have been shown to accurately record the D/H ratio of the surrounding environmental waters in fresh water aquatic plants. Water samples, extracts of surface water organic material, and sediment cores have been obtained from east-west transects in the Mediterranean Sea. A detailed set of hydrogen and oxygen isotopic data was created to investigate the regional water balance and to try to characterize the different water masses. Analysis of samples from the surface water display the expected decrease in isotopic composition from east to west (oxygen isotopic values ranging from 1.52 to 1.11‰ and hydrogen isotopic values from 11.37 to 2.41‰) corresponding to the larger freshwater input in the west and the dominance of evaporation in the east. In addition, 3 time slices from one sediment core have been analyzed for hydrogen isotopic composition including: the top most cm of sediment, representing the modern value; one slice from Sapropel Event 1, a period of high organic matter deposition/preservation (3% organic carbon) thought to coincide with warm and wet climatic conditions; and one slice just below the sapropel layer, for examining the environmental conditions just prior to sapropel deposition.