



Paleoclimate Reconstructions in the Levant region (Israel) using Statistical Methods

B. Thoma (1), V. Schiebel (2), A. Hense (1), and T. Litt (2)

(1) Meteorological Institute, University of Bonn, Auf dem Hügel 20, 53121 Bonn, Germany, (2) Steinmann Institute of Geology, Mineralogy and Palaeontology, University of Bonn, Nussallee 8, 53115 Bonn, Germany

The reconstruction of the past climate is fundamental for an understanding of the variability of the climate system. Continuous measurements are only available for the last 100 years. This time period is too short to understand the variability and sensitivity of the climate, though the knowledge of both is essential to build good climate models. With climate reconstructions it is possible to get information about the past climate and the climate changes in the period of interest, in this case in the Levant region.

The Levant region is situated around the Jordan valley in Israel. In this work the presence of pollen and macrofossils is used as a proxy. In detail the method bases on the assumption that the presence of a plant or more general of biometypes in a certain area is addicted to the climate. This connection between the occurrence of the plants and the climate is described by transfer functions. The nature of these transfer functions has to be probabilistic because the climate-biosphere system is a stochastical system.

In the SFB 806 project B3 "Our way to Europe" high-resolution lacustrine sediment cores were drilled in Marc 2010 from Thomas Litt and his working group at Lake Kinneret and Birkat-Ram. The counting of the occurrence of the individual taxa is finished.

We present the results of local reconstructions based on methods which are a statistical extension of the concept of biomisation, plant functional types and mutual climatic range (MCR). In more detail we applied local reconstructions for Lake Kinneret, Birkat-Ram and Ein-Gedi for the near surface temperature, the climatic water deficit and the annual precipitation amount. We also present a interpolation of local reconstructions. This allows a better assessment of climate changes in the Jordan valley.

In this talk, the topic of climate reconstruction with statistical methods is introduced. The results for the local reconstructions and the Jordan valley reconstruction are presented.