“Modeling Central Asian Climate Dynamics”

This project is a part of BMBF-project CADY(Central Asia Dynamics).In this project, palaeoclimate simulations of different durations will be carried out for selected time periods.. The combination of multi-proxy data and model generated data will lead to an improved understanding of the physical mechanisms controlling the monsoon dynamics. Based objectives of the project, the investigations are divided into three modules: Module A (environmental monitoring), Module B (Paleoclimate investigations, i.e. lake sediments and tree rings) and Module C (Climate modeling).

The main focus of this PhD-study lies in Module C, where both, global and regional model will be run and analyzed. In a first step, existing global simulations for the last 2000 years will be analyzed concentrating on dynamics of monsoon and Westerlies, and on climate modes like ENSO and NAO and their tele-connections with the Central Asian Climate. Other interesting periods in the past that will be run and analyzed include the early Holocene and the 4.2 ka event. Additional sensitivity simulations will be carried out with and without Tibetan Plateau to test the hypothesis by Boos and Huang (2010). The global simulations will be serve as boundary conditions for regional climate and its transition from one climate period to another (e.g. from MWP to LIA). For these climatic periods typical circulation anomalies responsible for changes in regional climate will be identified and the physical mechanisms causing them will be studied. In one of the regional simulations the Tibetan Plateau will be removed to investigate if the results of Boos and Huang are resolution dependent.