



Spatial distribution of sediment parameters in the Donggi Cona, NE Tibetan Plateau - A multivariate approach for reconstructing climate signals and its pathways within the catchment of the lake

K. Hartmann (1), B. Diekmann (2), E. Dietze (1), U. Herzschuh (2), J. IJmker (3), F. Lehmkuhl (3), S. Mischke (1), S. Opitz (2), G. Stauch (3), and B. Wünnemann (1)

(1) Freie Universität Berlin, Dept. for Geosciences, Germany (kai@geog.fu-berlin.de), (2) Alfred-Wegener-Institut Potsdam, Germany, (3) RWTH Aachen University, Physical Research, Germany

Palaeoclimate research on terrestrial archives needs a complete understanding of signal transformation from signal provider to final archive. In lake catchments, a climate signal affects more or less the whole catchment. Depending on geomorphological inventory, the signal will be buffered by physical and biological processes in different temporary archives. Hereby, an in phase and amplitude modified signal will further respond on the way to final archive.

Therefore, interferences of signals within the sediment cascades will make deterministic approaches on lake sediment properties for environmental reconstruction difficult. From a mathematical view a large set of methods like endmember-modelling, standardized-equation-models (SEM), hyperplane analyses and others provide fruitful ways to dissolve different signal pathways.

We hereby present different geostatistical methods on recent surface samples from the lake bottom and from the outer vicinity of the shore of Donggi Cona on the northeastern Tibetan Plateau. In order to find proxies for different climate induced processes such as fluvial runoff, aeolian dust flux and dune movement as well as changes in the water budget, a large set of sediment parameters has been analysed with stochastic methods without any prior settings.

Lake Donggi Cona is influenced by SE-Monsoon dynamic and the westerlies with low human impact on high elevation at 4090m asl. Sediment cascades from glacial origin, meltwater erosion and accumulation, dune and loess deposits as well as fluvial and lacustrine forms around the lake provide different buffer of signal transmission to the final archive. Recent spatial distribution and interaction of sediment parameter within the lake is regarded to prove and improve interpretation of multivariate sediment records from the centre of the lake.

The project is part of the DFG founded SPP 1372 (Tibetan Plateau: Formation - Climate – Ecosystems) and is contributing to the topic which aims for the reconstruction of the Late Cenozoic climate evolution and environmental response.