Geophysical Research Abstracts
Vol. 14, EGU2012-6174, 2012
EGU General Assembly 2012

Provenance Analysis of Surface Sediments in the Chew Bahir Basin (Ethiopia) using Remote Sensing Data

N. Boesche and M. Trauth
Inst. f. Erd- und Umweltwissenschaften, Universität Potsdam, Germany (boesche@uni-potsdam.de)

Provenance analysis is an essential discipline for describing the generation and dispersal of sediments and yields a fundamental understanding of hydrological and sedimentological processes. Chew Bahir basin is a hardly accessible terrain in southern Ethiopia, which is barely investigated by sedimentological studies until today. In this work, those studies were conducted via remotely sensed digital image analysis (ASTER, Landsat ETM+, Worldview-1 and SRTM) combined with a climatological approach through precipitation data from the Tropical Rainfall Measuring Mission (TRMM). Besides remote sensing, sedimentological investigations were achieved from a highly resolved paleo-climate record through a short drill-core from Chew Bahir basin. In order to identify and localize potential source areas and to describe the dispersal of sediments, different processing methodologies were applied (achievement of sediment composition, land-surface classification, digital terrain analysis and generation of remote sensing time series). The result of this work demonstrates two different source rocks, which belong to two distinct source localities. Hence, the analysis of remote sensed digital imaginary provides an effective tool for studying the provenance of sediments, especially in remote regions such as Chew Bahir basin. Moreover, remotely sensed time series provide important insights into climatologically induced variations in the uppermost sediment-layer. However, fully automated analysis of remotely sensed imaginary cannot replace fieldwork, but provides outstanding contributions to interdisciplinarity.