Project Title:
Tipping Points of Lake Systems in the Arid Environments of Central Asia (Q-TiP)

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Abstract:
The impacts of modern climate change are already visible today in Central Asia. Almost half of the Earth’s arid environments are located here. Understanding the development and evolution of these arid environments and surrounding regions, specifically with regards to regional water resources and as living space and source regions for dust transport, is of scientific and socioeconomic importance. The project Q-TiP investigates the controls on water resources in Central Asia with the aim to improve our understanding of the mechanisms involved in the development of arid environments and their relevance for present-day and potential future climate change. The project addresses the questions: “What allows the persistence of large lake systems in arid environments over longer periods of time?”, “What are the tipping points for these lake systems leading to their disappearance?” and “What are the impacts of these tipping points on the regional landscape system with regards to its sensitivity to ongoing and future changes in climate?”. These questions are addressed for different time scales with the support of records from deep boreholes from the Qaidam Basin and Gaxun Nur Basin and geomorphological work from Gaxun Nur and Orog-Nur Basin, as well as with the assistance of a series of global (ECHAM5-wiso) and nested regional climate model simulations to provide climatic context for geological records and test the sensitivity of these lake systems to global and regional drivers.