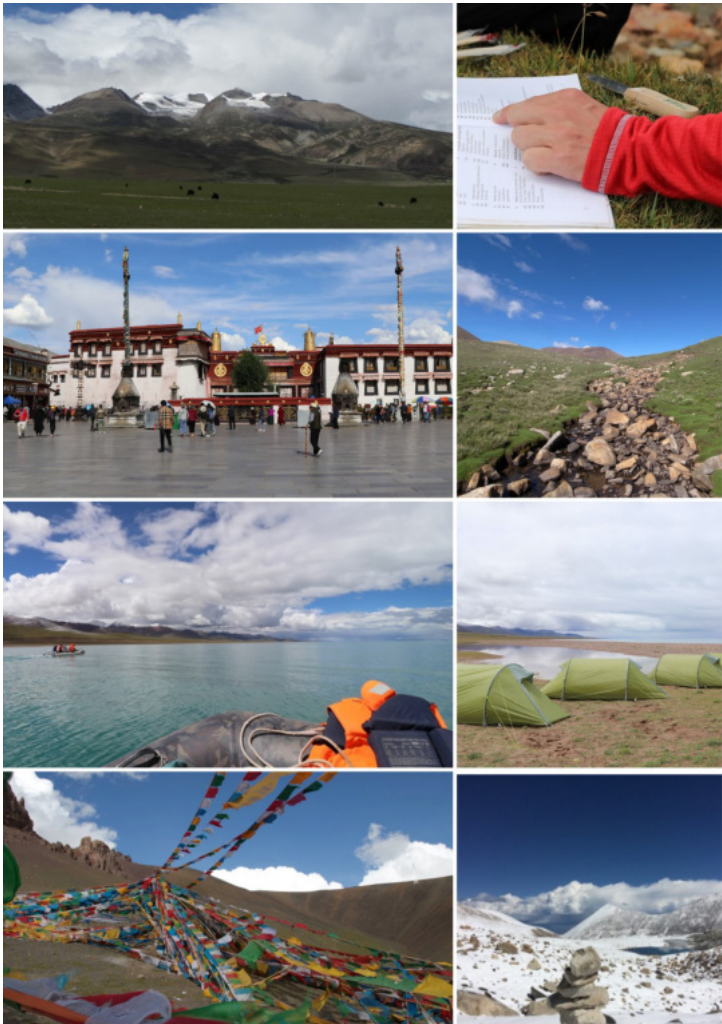


# Geo-ecosystems in Transition on the Tibetan Plateau (TransTiP)



International Research Training Group  
funded by

**DFG** Deutsche Forschungsgemeinschaft  
German Research Foundation



## Participating Institutions

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Field campaign, Sep 2019, alpine wetland near Nam Co, Tibet

## Selected Publications

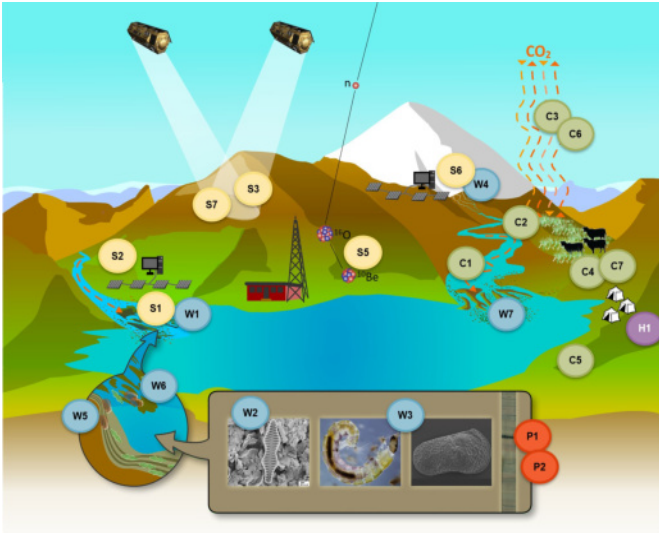
- Anslan et al. 2020. Reviews and syntheses: How do abiotic and biotic processes respond to climatic variations in the Nam Co catchment (Tibetan Plateau)? *Biogeosciences* 17, 1261–1279.
- Buckel et al. 2021. Insights in a remote cryosphere: A multi method approach to assess permafrost occurrence at the Qugaqie basin, western Nyainqêntanglha Range, Tibetan Plateau. *The Cryosphere* 15, 149–168
- Kai et al. 2020. Spatio-temporal variations of hydrochemistry and modern sedimentation processes in the Nam Co basin, Tibetan Plateau: Implications for carbonate precipitation. *Journal of Great Lakes Research* 46, 961–975
- Kang et al. 2021. Diatom metabarcoding and microscopic analyses from sediment samples at Lake Nam Co, Tibet: The effect of sample-size and bioinformatics on the identified communities. *Ecological Indicators* 121
- Nieberding et al. 2020. A Long Term (2005–2019) Eddy Covariance Data Set of CO<sub>2</sub> and H<sub>2</sub>O Fluxes from the Tibetan Alpine Steppe. *Earth System Science Data*, 12, 4, 2705–2724. DOI:10.5194/essd-12-2705-2020
- Reinosch et al. 2020. InSAR time series analysis of seasonal surface displacement dynamics on the Tibetan Plateau. *The Cryosphere* 14, 1633–1650
- Yu et al. 2019. Seasonal variation of chemical weathering and its controlling factors in two alpine catchments, Nam Co basin, central Tibetan Plateau. *Journal of Hydrology* 576, 381–395



## Research

The Tibetan Plateau is of crucial importance for the global hydrological, energy and element cycles and represents one of the most vulnerable geo-ecosystems on Earth, being affected by accelerated climate warming and rapid intensification in land use. The scientific goals of TransTiP are to

- quantify rates of sediment movement and transport,
- identify the impact of land-use on soil carbon fluxes,
- determine water balances and climate-change effects on geo-ecosystems and
- understand, how societies interact with these changes.



Location of research projects in the diverse landscape of the Tibetan Plateau integrating natural sciences, engineering and social sciences.

Main questions to be answered include:

- How do Earth surface fluxes respond to climate change?
- What are the seasonal variabilities and current rates?
- How did these fluxes vary on decadal to centennial time scales?
- How has environmental change affected abiotic and biotic components of geo-ecosystems?
- How have local communities responded to climate changes in the past and are responding at present day?

## Topics

### Carbon fluxes

Identifying soil organic carbon (SOC), assessing turnover rates, quantifying CO<sub>2</sub> exchange and C transport between soil, plant, hydro-sphere, and atmosphere, projecting changes in C fluxes under different climate and land use regimes.

### Water fluxes & water quality

Quantifying runoff, meltwater and groundwater contributions to the hydrological budget, modeling subsurface flow and water balance, assessing long-term hydrological variability and evolution of water quality by studying lake sediments.

### Sediment fluxes

Quantifying matter transport along the present day fluvial pathway, assessing permafrost content by combining ground-based geophysical methods with remote sensing.

### Biodiversity

Obtaining integrative species inventories for Tibetan Plateau ecosystems, assessing current and past freshwater diversity, and tracking population dynamics by analysis of palaeoenvironmental DNA.

### Multi-species conversation

Understanding human and non-human interactions in the Anthropocene: local communities perception of climate change and their coping strategies.

## Training



TransTiP offers a three-year curriculum consisting of individual research projects in one of the research topics and a high-value qualification program:

- Interdisciplinary, international framework for training in innovative research methods
- Joint Sino-German supervision
- First class research training and education in a stimulating research network
- International workshops and summer schools
- Two fieldwork seasons in small interdisciplinary groups
- A research stay of at least six months at the partner institute

