Technische Universität München

Faculty of Civil, Geo and Environmental Engineering

Chair of Hydrology and River Basin Management

Study Project – Environmental Engineering

Workload: 12 ECTS, 360 hours

Topic: Three-dimensional droughts analysis in the atmosphere and terrestrial systems worldwide

Study Objective:

Spatiotemporal behaviors of multiple types of droughts are crucial for understanding droughts' development and driving forces. The study project aims to recognize the spatial-temporal migration features of two kinds of droughts based on the dynamic space-time motion method.

Task:

In this study project, the task is divided into four parts:

1) Search for suitable datasets at the daily time scale;
2) Train the existing framework to identify three-dimensional (3D) droughts;
3) To analyse the migration trajectory and direction of identified 3D drought types and characterise their spatio-temporal migration characteristics;
4) Compare the similarities and differences of migration characteristics between different types of droughts.

The datasets would be from the remote sensing data and earth observation data. The type of droughts in this work is supposed to select one of the following three combinations:

1) Precipitation and runoff
2) Evaporation and soil moisture
3) Vegetation and total water storage

Time:

Since 01.2024

Contact:

M.Sc. Lu Tian, lu.tian@tum.de
Dr. Jingshui Huang, Jingshui.huang@tum.de