

## Advanced Climate Data Analysis

Prof. Dr. Thomas Mölg

**Programmes:** MSc Climate & Environmental Sciences (Module  
Advanced Methods)

**ECTS:** 5 (2 SWS)

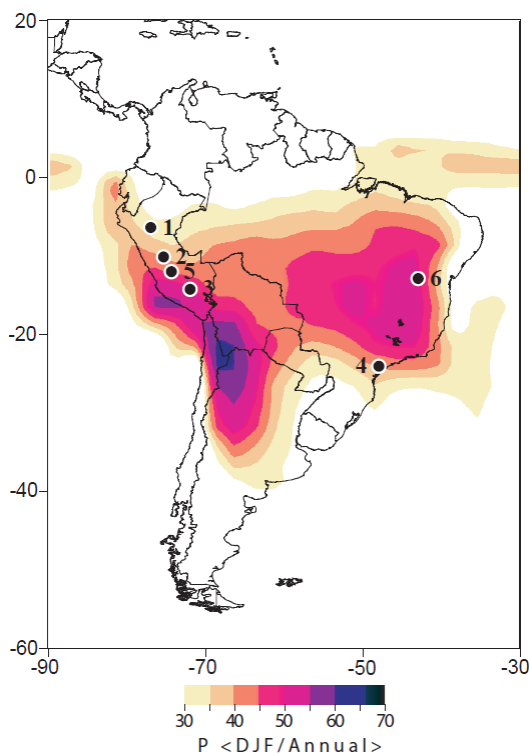
**Participants:** max. 20

**Times & Location:** see UnivIS

**Pre-meeting:** none

The goal of this course is to improve your treatment of four-dimensional data sets. We will focus on various climatic data: station data; modern reanalysis products; satellite-based data; and climate model output; Simple exercises in the beginning will help remind us of the basic properties of climate data while they are transformed between different spatial and temporal scales. We then proceed to more sophisticated methods, which include the extraction of patterns from 4D data, statistical downscaling, and statistical model building. Application to predicting climate

variability or revealing processes will highlight the practical value of these procedures. Even if the focus is on climate data, the underlying principles of the analysis methods can be applied to any large data sets that contain space/time data. For participation in the course, **good knowledge of statistics and basic knowledge in programming are a requirement.**



### Requirements and responsibilities:

- Attendance is mandatory
- Missing more than 15% of the meetings will result in a fail grade, regardless of your standing
- Be punctual; participate and add to the discussions
- Follow the rules of science ethics
- Submit home assignments on time

Source: Vuille et al. (2012), *Clim. Past*, 8, 1309–1321.