Session Title: Quantifying Water Scarcity under Data Scarcity

Conveners: Elisabeth Krüger, Jan Friesen, Luis Samaniego

Keynotes: Nick van de Giesen (TU Delft), Justin Sheffield (Princeton University)

Abstract:
Water scarce regions often coincide with data scarcity. Large-scale hydrological or drought models demonstrate the high vulnerability of these regions to small changes in the hydrological cycle. At the same time the data basis feeding these models is extremely thin and is characterized by high uncertainties, because monitoring networks on the ground are sparse, and monitoring methods typically developed for more humid regions are not suited to quantitatively capture the water-related states and fluxes in dry conditions with accuracy. High variability related to extreme events or pronounced seasonal effects pose an additional challenge to the quantification of the different water cycle components.

This session calls for contributions from both the modeling community on how to address the data scarcity and uncertainty challenge in semi-arid to arid environments, and from the monitoring community on how to better quantify water-related states and fluxes that occur in a wide array of extremes from virtually no flow or dry soil states to short and episodic extreme events.
As such monitoring often deviates from classic methods, usually applied in more humid regions, the focus further lies on contributions successfully incorporating data scarcity or unconventional, novel monitoring into modeling.