



## Future droughts in Global Climate Models and adaptation strategies from regional present-day analogues

B. Orlowsky and S. I. Seneviratne

ETH Zurich, IAC, Zürich, Switzerland (boris.orlowsky@env.ethz.ch)

Droughts are among the most impacting phenomena of a changing climate, affecting agricultural productivity and human health. They can furthermore interact with and amplify other climatic extreme events such as heat waves. Our analysis of the CMIP5 ensemble of GCM simulations identifies several hot spots of aggravating droughts in coming decades, such as the Mediterranean, parts of the Southern US and North East Brazil, which also compare well with increasing stress from heat waves. However, as we show by a comparison of drought indices, the exact pattern can substantially depend on the index choice. In some regions of the developing world which are particularly vulnerable to droughts, e.g. Central Africa, this uncertainty is further increased by a high disagreement between the GCMs.

In a second step, we perform an analogue search which, for a given target region, identifies regions which under present-day climate show drought conditions that are similar to the projected future drought conditions of the target region. For example, the future conditions in the Mediterranean are found to be analogue to the present-day conditions in parts of the US, Central Asia or Australia. Information from web resources on climate change adaptation and agricultural practices for the identified similar regions are then assessed in the context of the target region as potential guidelines for adaptation. Thus combining the temporal and spatial dimension helps to transfer local climate adaptation knowledge to other regions, where it is expected to become relevant in the future.