Drought-related targets of International Conventions

Several international agreements, including the Sendai Framework for Disaster Risk Reduction (SFDRR), feature more and more targets and indicators related to drought.

Remote Sensing for Drought Monitoring

Earth Observation Based Information Products for Drought Risk Early Warning at the National Level

Why Vulnerability Matters: The Case Study of South Africa

Crop Functions: The Case Study of Ukraine

Drought severity is mainly determined only using biophysical characteristics, such as meteorological, agricultural or hydrological indicators that measure the level of water deficiency. However, to understand the impact of droughts and the overall drought risks, the vulnerability of the social-ecological system that is being hit by the drought needs to be assessed in addition to the hazard related characteristics. According to the Intergovernmental Panel on Climate Change (IPCC), drought vulnerability can be defined as the degree to which geophysical, biological and socio-economic systems are susceptible to, and unable to cope with, adverse impacts of a drought. In order to quantify the degree of vulnerability, indicators need to be derived that capture and determine the characteristics of vulnerability (see details under Jördan et al., 2017).

Drought risk assessment is one important pillar to shift the focus from drought response to drought prevention. The hazard index map for the example of Eastern Cape, South Africa (cf. image below) demonstrates the results of a hazard assessment using biophysical characteristics. However, if decision making in the case of a drought would be based on hazard characteristics only, the activation of safety nets could mismatch the actual needs in both directions as demonstrated by the vulnerability index map (right image below). Thus, the combination of hazard and vulnerability information is essential to understand and sustainably manage drought risk.

The impacts of individual drought events on different crop types vary considerably due to the crop-specific drought responses at individual growth stages. In order to address these crop-specific vulnerabilities, EviDenz aims to derive crop specific damage functions that correlate vegetation health and yield anomalies. With regard to Kev Obst, the damage functions will be based on VCI time series derived from MODIS with a spatial resolution of 25m and crop classification maps with a spatial resolution of 30m. They will be assessed for all major crops including winter wheat, spring barley, maize and sunflower. The figure below displays preliminary results.