



# GlobeDrought – Information System for Better Drought Management

## Water as a Global Resource (GRoW)

**Drought is a global problem. But how do such dry periods come about in the first place and how do they impact water resources, crop productivity, food trade and the need for international aid? The researchers involved in the joint project GlobeDrought are examining drought occurrence and the risks of drought worldwide. The aim is to translate the study findings into an information system that will enable near real-time drought severity monitoring and facilitate drought forecasting.**

### Factoring in Global Impacts

In times of drought less water is available than required. The agricultural industry is especially hard-hit by water scarcity. Loss of crops leads to food and fodder shortages and, in extreme cases, can even end in famine. Usually, this worse-case scenario does not happen because societies have learned to adjust to drought hazards, e. g. by building reservoirs, tapping into groundwater resources, irrigating crops, or by importing food. However, drought-induced production bottlenecks in major food exporting countries such as the US, Brazil, Argentina or Australia, can push up food prices on the global markets. This affects poor population groups, in particular, who struggle immensely to address their own bottlenecks with the help of imports.

In order to take such long-distance impacts in a world of globalized trade into account, the project examines drought occurrence and the risks of drought around the world.



Reservoir in South Africa in March 2018, almost completely dried out due to persistent drought

In addition to analyses at global level, the project also conducts detailed analyses of regions that are especially impacted by droughts, southern Africa in particular. The main aim of the project is to use the findings to develop a web-based information system for comprehensive drought risk assessment.

### Risk Analysis Using Web-Based Information System

Most conventional drought early warning systems do little more than report on the actual situation. Such systems are especially lacking in contextual information: how do droughts come about in the first place and how do they develop? What are the socio-economic effects of the different types of drought, which can be categorized using meteorological, hydrological or agricultural criteria such as precipitation shortfall, temperature, evapotranspiration, soil moisture and runoff? Do they result in income loss and food scarcity, for instance? This lack of information is what the GlobeDrought project seeks to address with the help of an integrated drought information system.

To this end, the researchers' work involves the analysis of extensive socio-economic information and data obtaining using remote sensing techniques. This data is then combined with calculations acquired from hydrological and plant growth models. The analysis is performed both on a global scale and for regions that are at particular risk of drought and suffer significantly from the consequences, i. e. southern Africa, the West Indies, eastern Brazil and the west of the US.

GlobeDrought merges these regional and global components in the GlobeDrought information system. Regional project partners and future users of the information system

are involved both in defining the concept and developing the system. The aforementioned risk assessment is supplemented by a drought early warning system – developed as a prototype. It will enable the given degree of drought severity to be monitored in near real-time and drought development for the subsequent 12 months to be forecast..

### More Effective Prevention with Early Warning System

The projects' drought information system is designed to complement systems that are already in place. It can be used to compare drought risk by region, enabling effective risk mitigation measures to be developed. In particular, it is hoped that the early warning system created by the project partners will provide political decision makers and international stakeholders in the field of humanitarian aid with information that will enable early recognition of critical drought conditions and the potential need for emergency aid.



Vegetation has been strongly affected by persistent drought in South Africa, as seen in this photograph taken in March 2018

#### Funding Measure

Water as a Global Resource (GRoW)

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