Drought risk on a pan European scale: integrating the missing piece

Veit Blauhut and Kerstin Stahl

Freiburg, Chair of Hydrology, Faculty of Environment and Natural Resources, Freiburg, Germany
(veit.blauhut@hydrology.uni-freiburg.de)

The effects of drought on the environment and socio- economic sectors are indisputably linked to each other. Nevertheless, past drought research suffered from an evident lack of ground truth in form of past observed impacts. Consequently most drought indicators are missing the link to a drought's effects on natural and human systems, and the majority of drought risk analyses are based on non-sector-specific, epistemic approaches. Hence, the science and application demands an integration of the missing piece: past drought impacts. Furthermore, for the case of Europe, drought risk analyses are mainly done for country scale or smaller units, even though the effects of the drought hazard are transboundary and long term measures are initiated through the European governance mechanism. This contribution faces drought risk on a pan European scale. A spatio-temporal clustering of drought impact occurrences from the European Drought Impact report Inventory divides Europe into macro regions with similar drought impact characteristics. To link drought impacts to indicators and vulnerability factors, multivariate logistic regression is applied to predict the likelihood of impact occurrence as a proxy for drought risk. As predictive variables we used a selection of common drought indicators and drought vulnerability analysis factors. The final results are displayed as drought risk maps, presenting drought risk for different levels of hazard severity, showing distinct differences in drought risk depending on location and impact sector. With this work, we contribute to the understanding of feedbacks between drought and society. The knowledge of this relation is essential for drought impact predictions and will improve resilience to this hazard. Furthermore, this information may become an essential tool for policy and decision makers on a European level.