

In the Anthropocene when the Earth system is profoundly affected by human activities, drought is no longer a natural hazard. Drought management is inefficient because feedbacks between drought and people are not fully understood. We need to rethink the concept of drought to include the human role in mitigating and enhancing it. At the same time, the projected increase in temperature is said to influence hydrological regimes. These changes impact the frequency and magnitude of droughts causing increasing losses world-wide. The project HUMDROUGHT introduces a novel, holistic approach aiming to deepen our understanding of the direct and indirect causes of drought and the processes governing the transformation from meteorological to hydrological drought for the purposes of sustainable water management and drought prevention in Poland and China. The Huai River basin in China and the River Vistula basin in Poland will be used as case study catchments. The objective will be accomplished by addressing the following topics: (i) assessment of drought characteristics and their links with catchment properties in the study areas (ii) investigation of human impacts on the spatio-temporal characteristics of hydrological droughts; (iii) derivation of hydrological drought projections in the 21st century; and (iv) development of water resource management options for enhancing drought resilience in the context of climate change. The development of an adaptation strategy to projected human and climate impacts on low flow events taking into account the uncertainty of the projections will be an important project deliverable. The comparison of the propagation of drought processes in two different climatic and geographical conditions in China and Poland will widen our knowledge on the dominant processes governing the dynamics of drought and its sensitivity to physio-climatic characteristics. The cooperation between Chinese and Polish teams will open new possibilities in both countries regarding studies of climate impact on droughts, related both to statistical analysis and to a system-science approach.