



## **Addressing Extremes in the Context of Climate Change: A GEWEX and CLIVAR Coordinated Approach on Droughts**

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In this paper I address in a general sense the physical sciences issues that need to be tackled to be able to address the process understanding needed for predictability and prediction studies of extremes in particular drought. The background on the selection of drought and the specifics of the studied aspects will be highlighted. Both GEWEX and CLIVAR both core-projects part of the World Climate Research Programme have each developed their expertise with respect to climate change. Furthermore each of these core-projects have started to address extremes in this context. This paper explores the numerous possibilities to address extremes in the context of climate change, the relevance to specific communities and the rationale behind some of the choices that have led to the current focus area.

Although extremely important the social-economical impacts of adaptation and mitigation with respect to changing extreme events will only be briefly touched upon and primarily from the perspective of the physical sciences without implying that the social sciences/humanities are not relevant on the contrary but being a physical scientist I limit myself to the area I consider myself best suited to address. An important part in assessing what the social-economical impacts of adaptation and mitigation are is the predictability of the system, how can an extreme event be predicted both with respect to scale (size, magnitude, location etc.) and to time (onset, duration etc.). However, one could also reverse the question and ask what kind of predictability would be needed and how good that predictability needs to be to be able to address the mitigation and adaptation and consequently the impacts on a social-economical area.

For example the prediction of the onset of a particular drought is still very difficult and even when a drought has started its duration cannot be easily predicted. Even though there is consensus that current global change will also change and most likely increase the number and size of extreme events, how that will take shape is far from clear. A combination of observations and monitoring, modeling and prediction along with a continued expansion of process understanding and description on both global and regional scales is necessary to lead to better predictions and predictability. This paper will outline the studies undertaken by GEWEX and CLIVAR in this context.