Understanding and predicting drought on subseasonal to decadal and longer time scales: Progress and plans

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Drought is a complicated phenomenon that occurs on a wide range of time scales, and within a variety of different types of regional climates. It is driven foremost by an extended period of reduced precipitation and/or enhanced evapotranspiration, but it is the impacts on such quantities as soil moisture, streamflow and crop yields that are often most important from a users perspective. As such, understanding the physical basis for drought and its predictability requires that we improve our understanding of the physical mechanisms impacting precipitation and evapotranspiration on subseasonal to decadal and longer time scales, while questions of predictability must extend to those quantities that are most relevant to the user community. In order to make progress on these issues. the WCRP drought information group (DIG), recently organized an international workshop on drought (Barcelona 2011) with a focus on advancing regional drought prediction capabilities for variables and scales most relevant to user needs on sub-seasonal to centennial time scales. This talk provides an overview of the results and recommendations of that workshop. This includes a review of our current understanding of the physical mechanisms that drive precipitation variations on subseasonal to centennial time scales. The talk will conclude with an outline of a plan for advancing the drought prediction problem that facilitates the development of an integrated international research program that builds on WCRP experience and capabilities.