# Large-scale Climate Influences on Drought: Past, Present, and Future

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**Abstract**

One of the key existing uncertainties in predicting the potential regional hydroclimatic impacts of climate change relates to the El Nino/Southern Oscillation (ENSO) phenomenon. State of the art coupled ocean-atmosphere models used in climate change modeling experiments do not fully resolve the physics central to the behavior of ENSO, and currently indicate a broad, and in many cases, contradictory range of scenarios for how ENSO might change in response to anthropogenic climate forcing. As long as this uncertainty exists, it is difficult to determine the possible impacts of climate change on drought in regions such as the Desert Southwest of the U.S., Indonesia, and equatorial east Africa. I will present results from experiments using a model (the "Cane-Zebiak" model) of the El Nino/Southern Oscillation that more fully captures the essential physics, by focusing entirely on the coupled behavior of the tropical Pacific ocean and atmosphere. These experiments allow us to look at the natural variability of ENSO over the past millennium. By comparing the predictions with proxy records of El Nino behavior and of drought, over that time frame, we can gain a better understanding of the processes that may be important in predicting future drought.