

# **Coupled Ocean-Atmosphere Dynamics of Regional Climate Change**

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Global mean temperature has risen for the past century and is projected to rise even more in response to the increasing atmospheric CO<sub>2</sub> concentrations. Precipitation change is of vital importance to societies but precipitation projections are intrinsically challenging as they change sign from one region to another. Recent studies show that in the tropics, radiatively forced changes in precipitation and atmospheric circulation are tightly coupled to spatial patterns of ocean surface warming. Mechanisms identified for ocean warming pattern formation include those important in natural variability such as Bjerknes and WES feedbacks but there are also mechanisms unique to climate change. Developing predictive understanding of ocean-atmosphere coupling holds the key to building confidence in regional climate projections, much as in the historical development of El Nino prediction. We will examine the interactions between radiatively forced changes in the ocean and atmosphere, and discuss important questions such as: how El Nino and its effect on the U.S. will change as climate warms.