



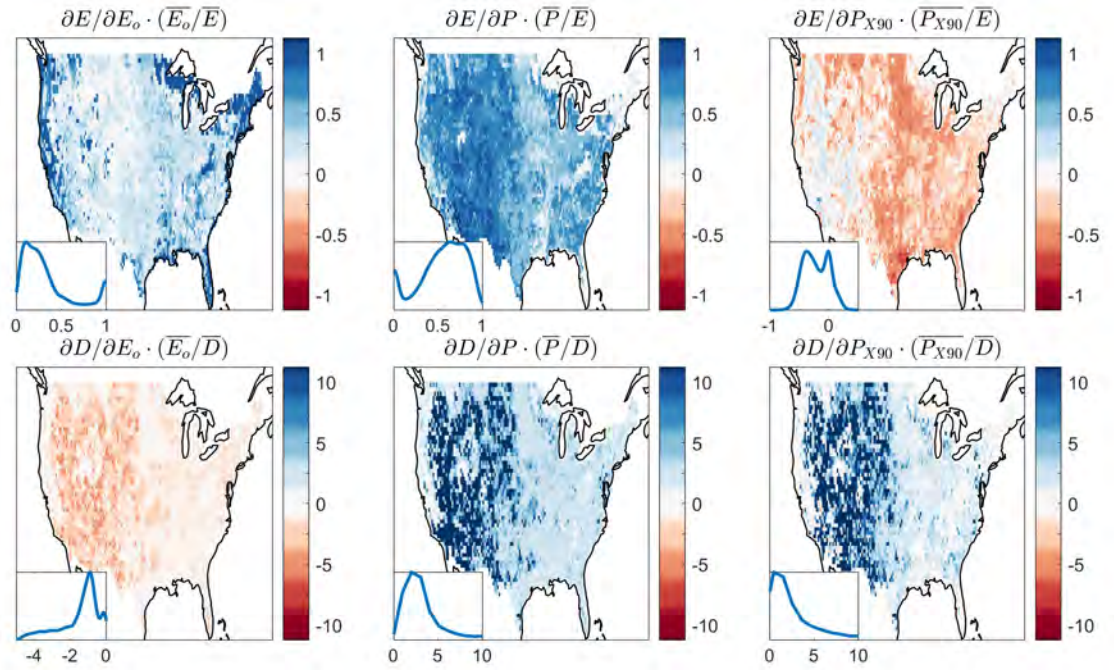
The Elasticity of the Water Cycle under Climate Change



Problem: What effect does a small change in precipitation or atmospheric dryness have on evaporation and streamflow?

Finding: A SMAP-based water balance suggests that a 1% increase in summertime precipitation will lead to a roughly 1% increase in evaporation over the United States. The same precipitation will also lead to a 10% increase in drainage and streamflow in the West.

A 1% increase in atmospheric water demand will lead to a 5% decrease in streamflow in the West. More extreme precipitation will lead to widespread decreases in evaporation, and much larger relative impacts in drainage in dry regions.



Impact: The water cycle is more sensitive to changes in precipitation than atmospheric water demand across the US.

Precipitation is difficult to predict under climate change, which presents a challenge for regional water resource management in the future.