

A Study of El Niño and La Niña effects on North America Weather

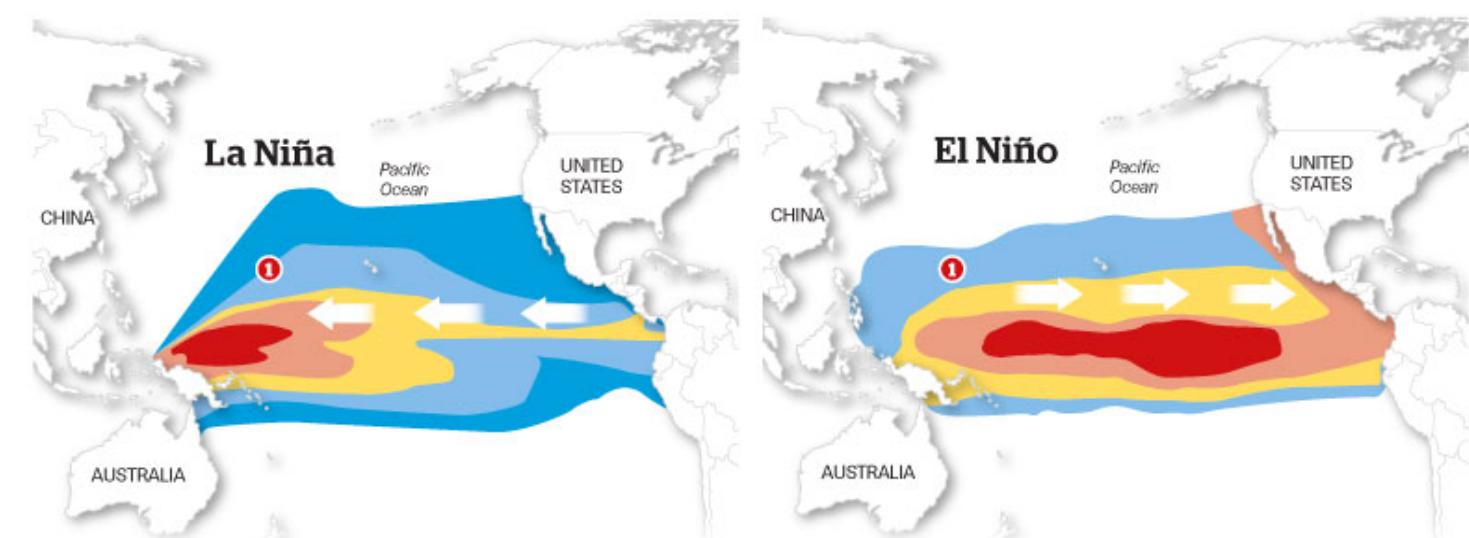
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Questions

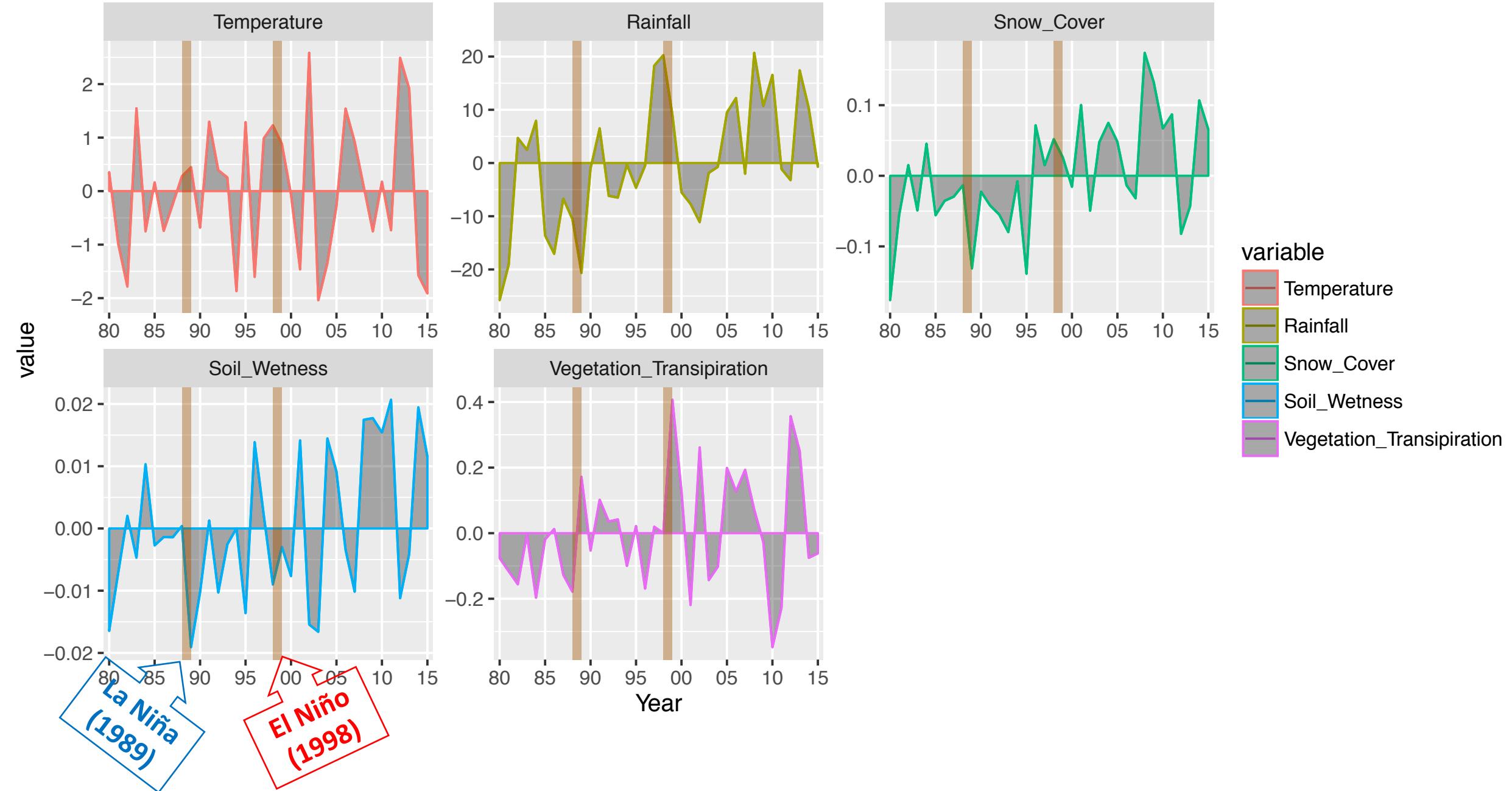
- 1. How do weather variables (temperature, precipitation, snow cover, soil water content, vegetation transpiration) react to the extreme events El Niño and La Niña (in terms of positive or negative feedback)? What variables are greater influenced?
- 2. What regions are affected most by El Niño/La Niña ?

Background

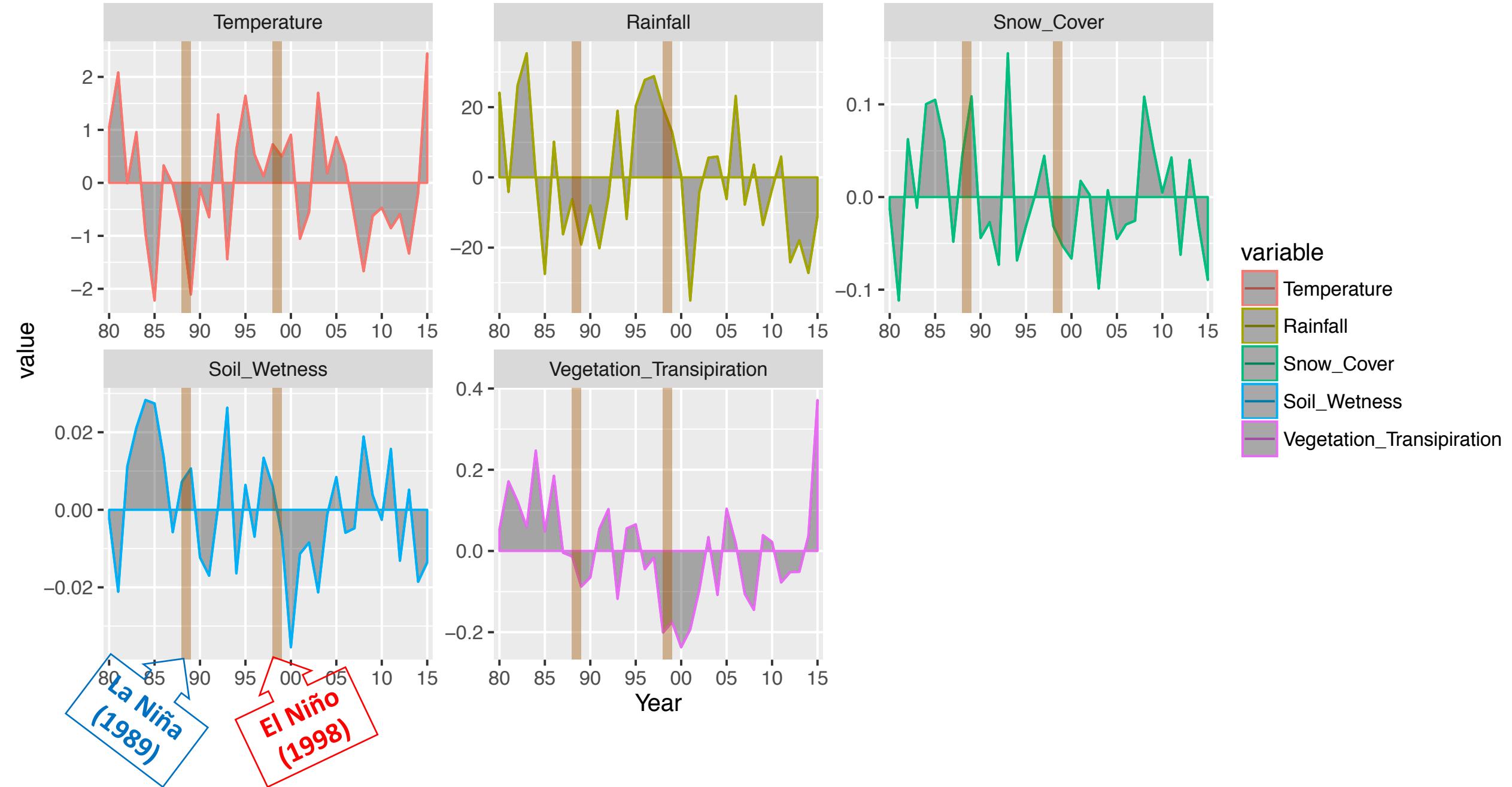
- El Niño (Warm) and La Niña (cool) are two extreme events that particularly occurs in tropical pacific region.
- Data description: Land surface variables from North American Land Data Assimilation System (NLDAS-2). This data set contains monthly averaged parameters simulated from land-surface model from Jan, 1979.
- The anomalies for each variable are calculated by subtracting the long-term averaged values (base values) from each single year. Two individual regions: Eastern U.S. and Western U.S are separated for averaging.



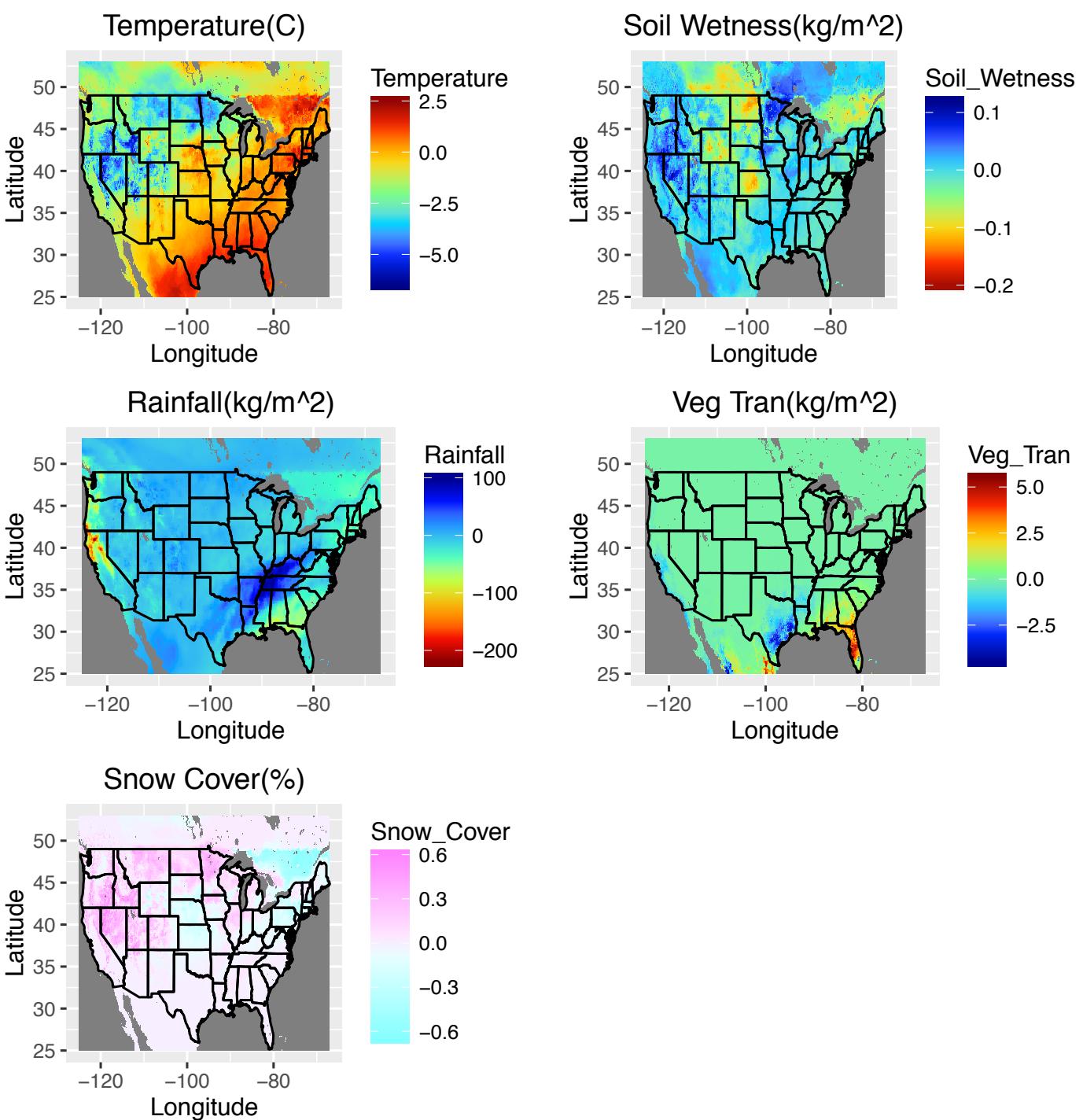
Variable Anomalies of U.S. East



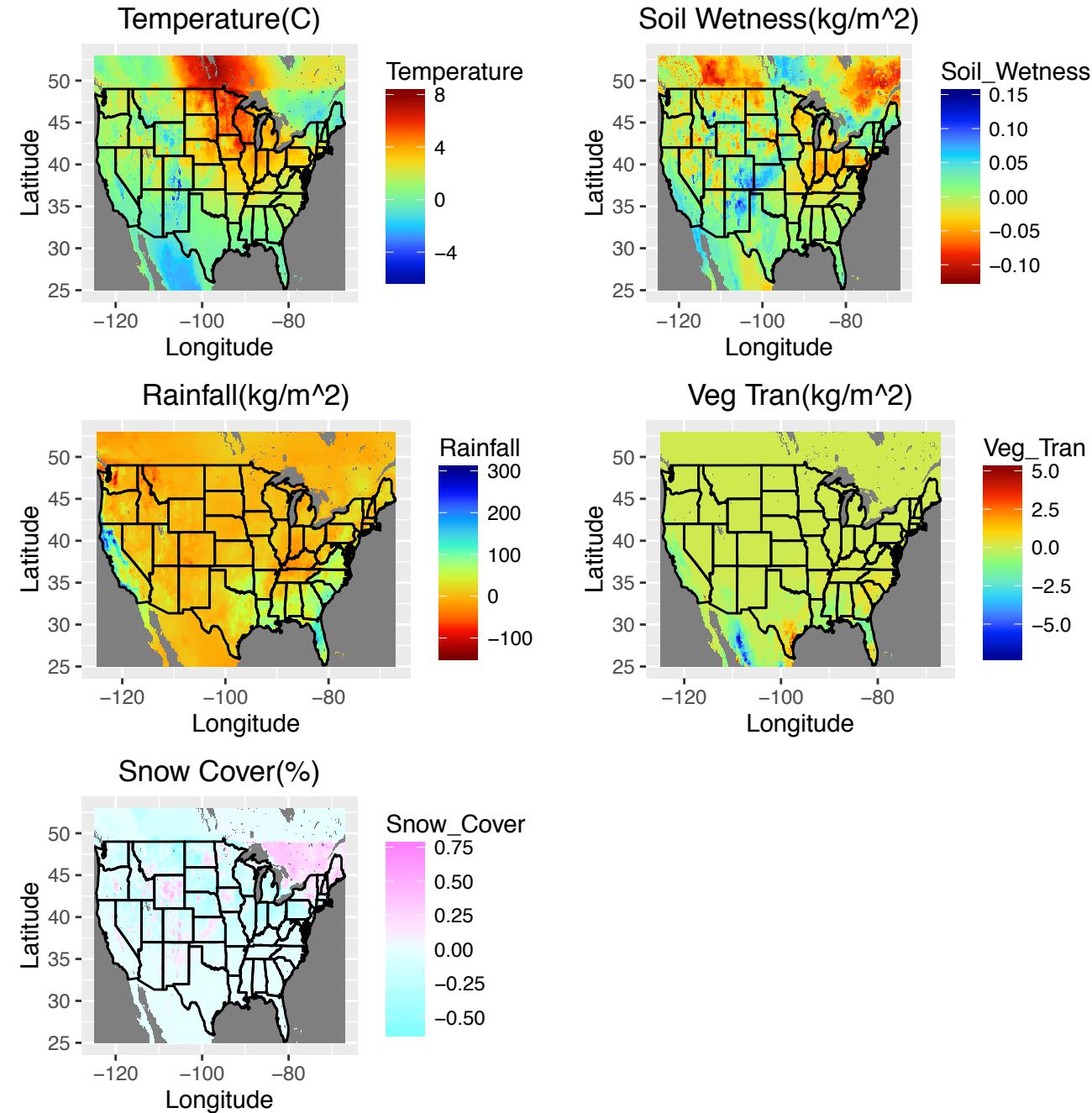
Variable Anomalies of U.S. West



La Niña effect (1989)



El Niño effect (1998)



Summary

- Temperature, precipitation and vegetation status are stronger related to El Niño/La Niña effects than snow cover and soil wetness.
- Mostly, El Niño is positively related to temperature, precipitation and vegetation in U.S. east, while La Niña is negatively related to these variables in U.S. west.
- South and East Coast U.S. as well as California tend to be easier affected by El Niño/La Niña effects.