

# Characterizing Groundwater Response Time to Droughts Across the United States

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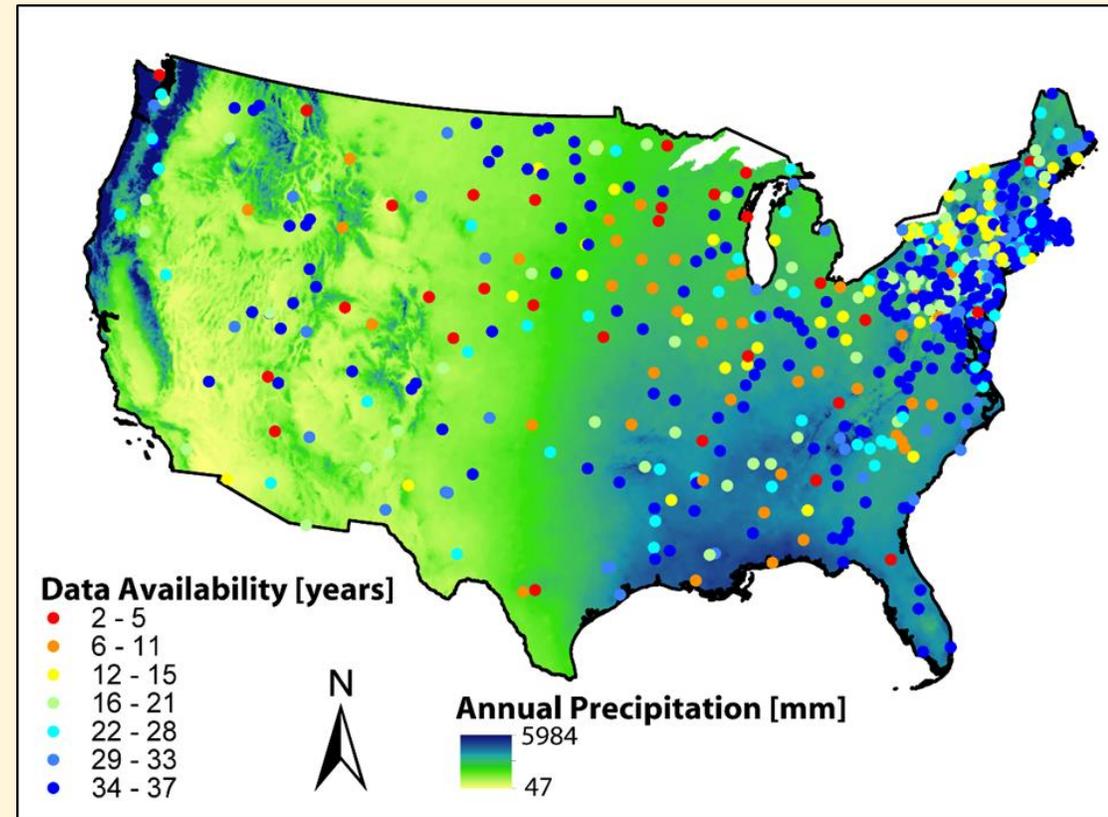
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# Research Questions

1. What is the time lag between precipitation drought and groundwater drought?
2. How do watershed/aquifer properties control the lag time?
3. How long does it take for aquifers to recover from a drought?

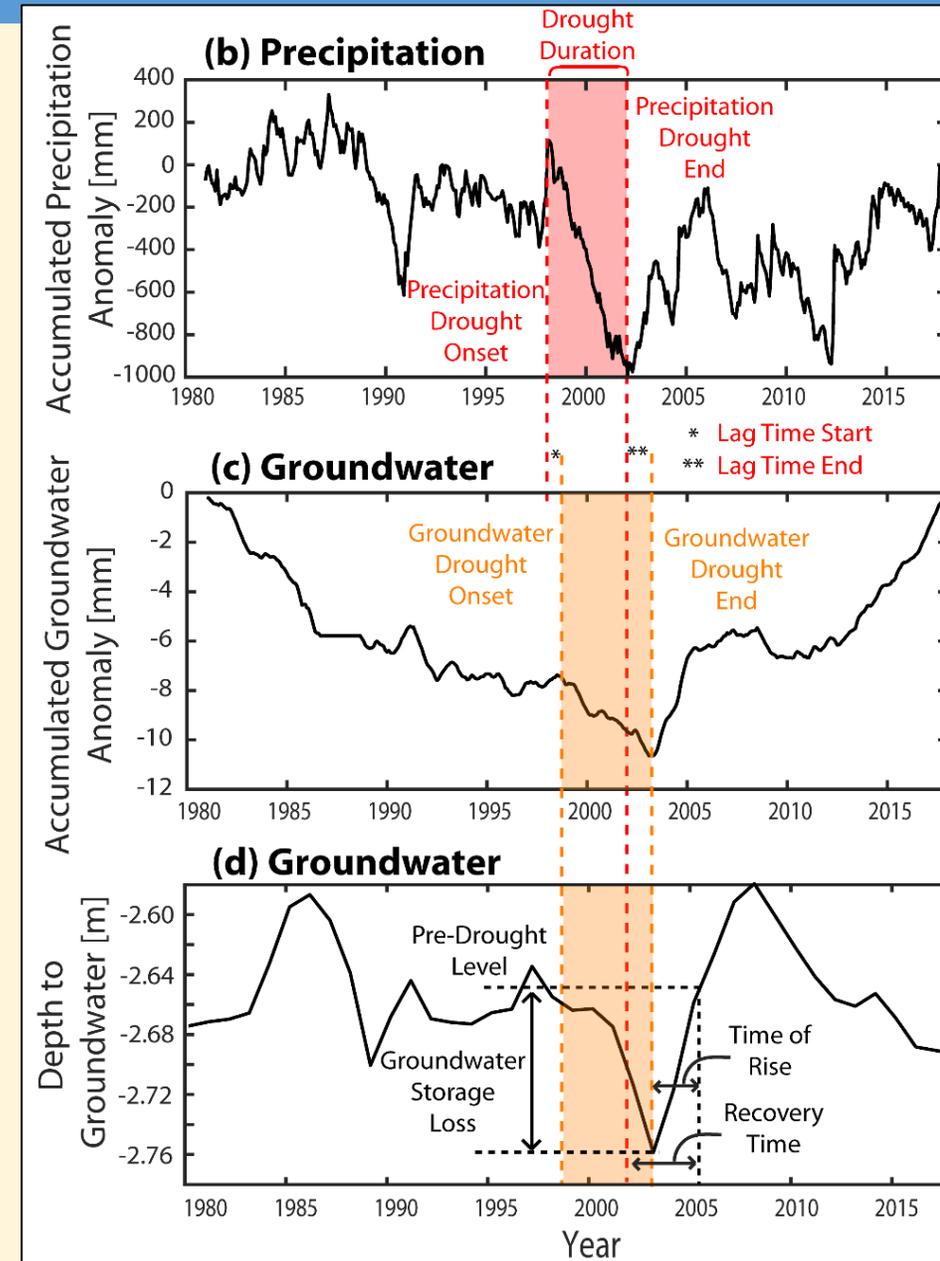


Observation wells in unconfined aquifers.

# Groundwater Drought Metrics

**Lag Time ( $T_L$ ):** The lag between the start of a precipitation drought and the start of a groundwater drought.

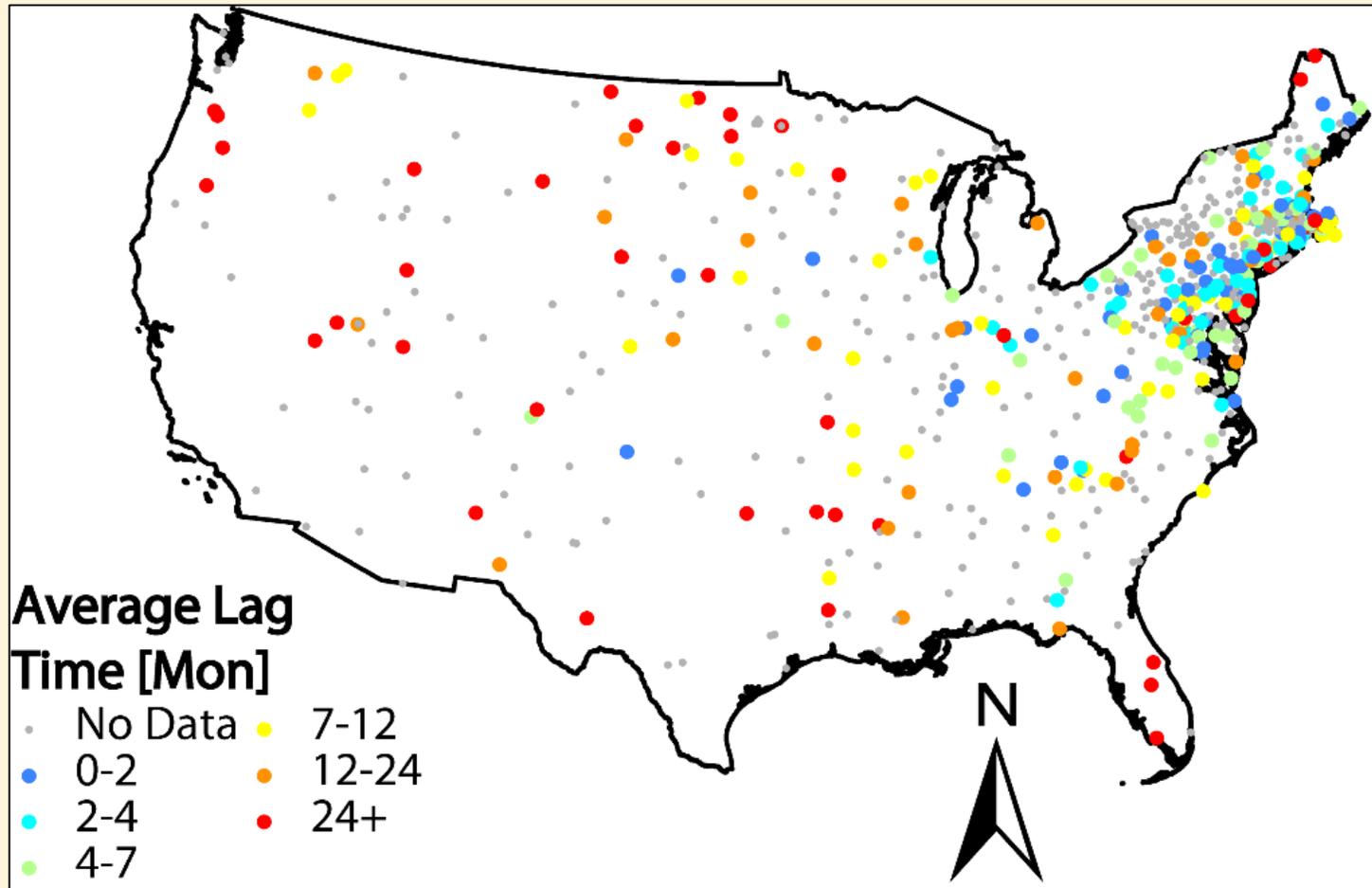
**Recovery Time ( $T_R$ ):** The time required for groundwater to recover from the end of a precipitation drought to the pre-drought level.





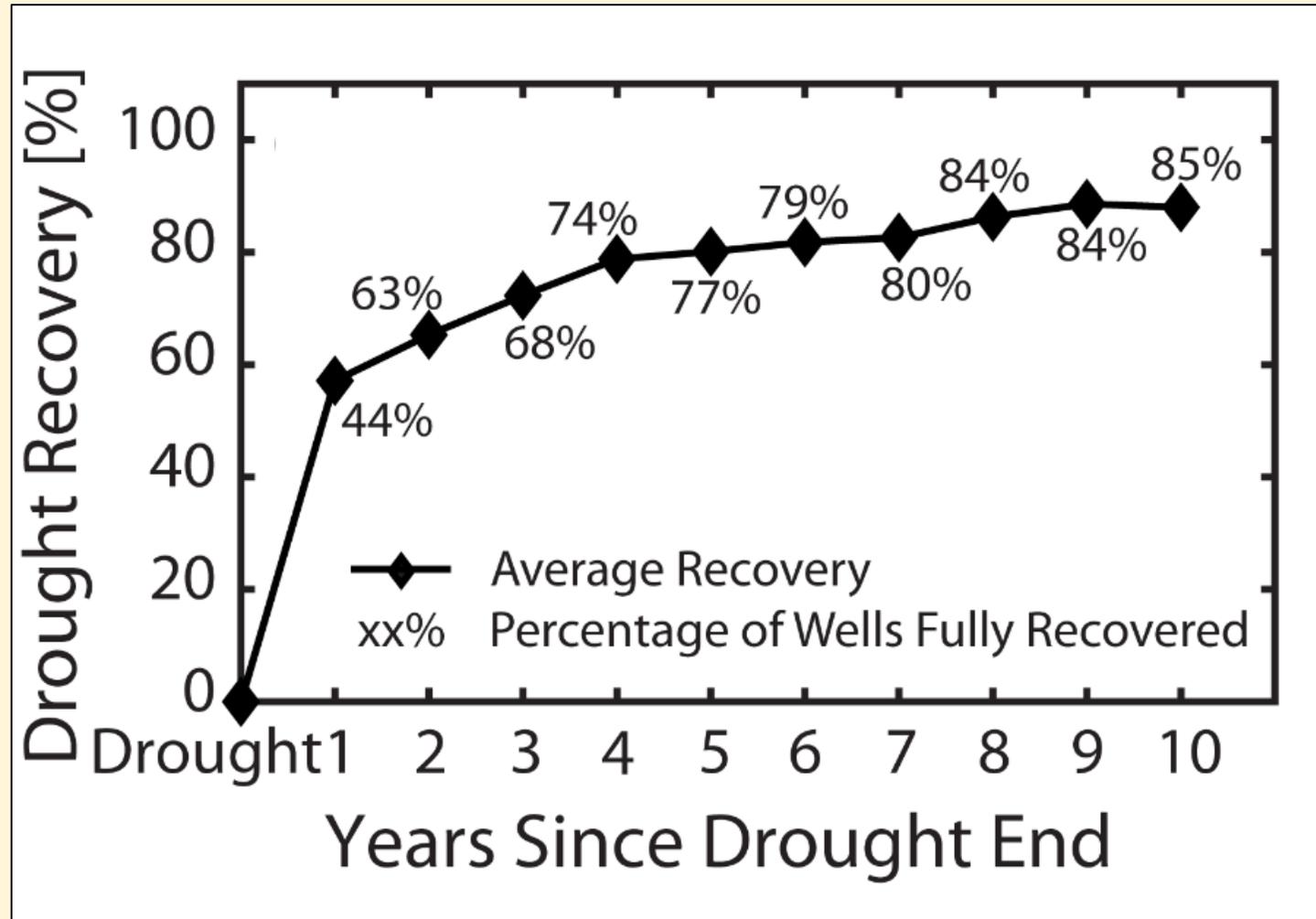
# Groundwater Lag Time

The lag between a change in precipitation and a change in groundwater level is highly variable but displays several significant trends.



# Groundwater Recovery Time

For 85% of droughts, groundwater recovers within 10 years.





# Concluding Remarks

1. Lag time of up to 15 years exist between precipitation drought and groundwater drought.
2. Average groundwater recovery time is about 3 years.

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