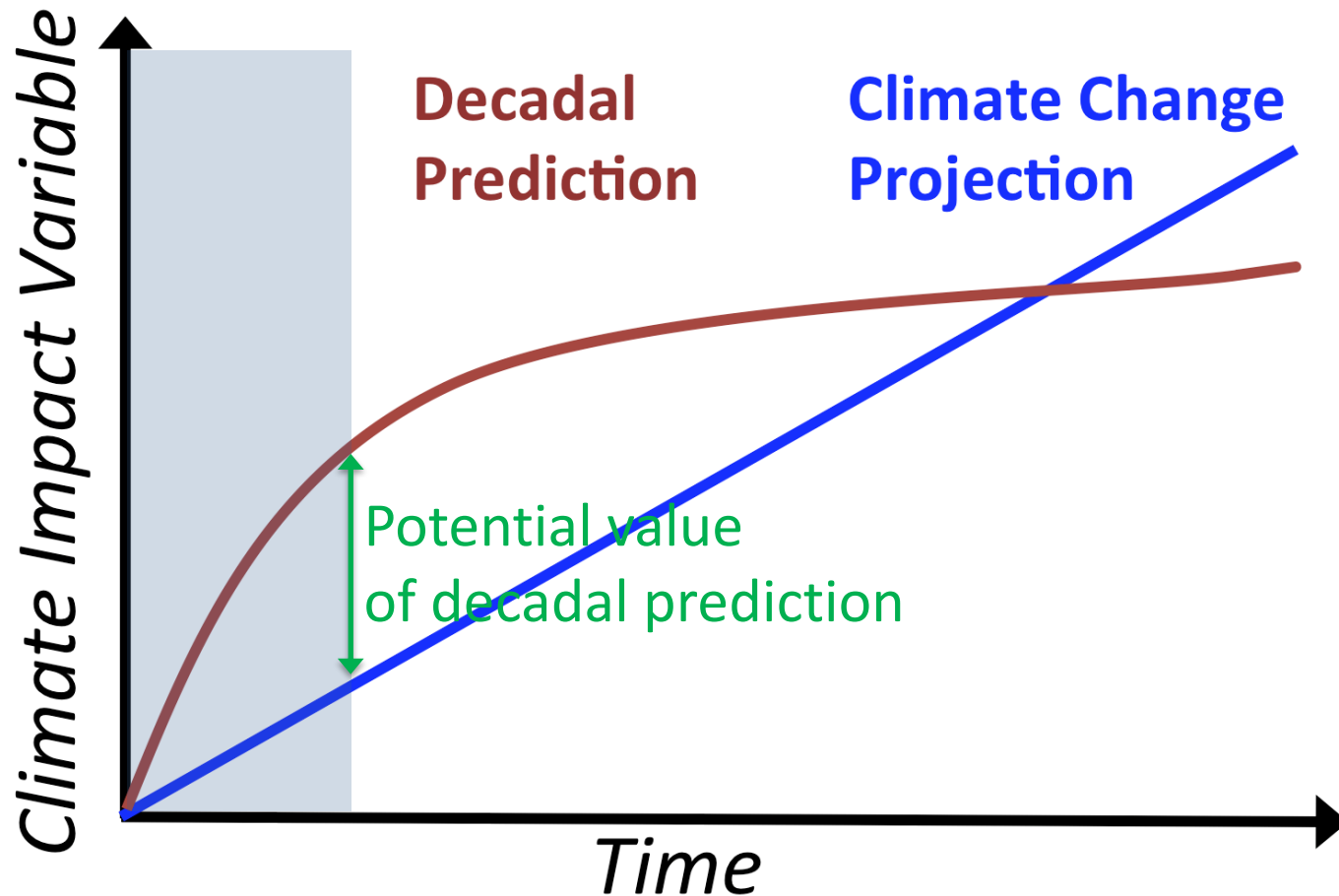


# **Assessing and communicating uncertainty in decadal climate predictions: Connecting predictive capacity to stakeholder needs**

*Rebecca E. Morss, James M. Done, Heather Lazrus,  
Erin Towler, and Mari R. Tye*

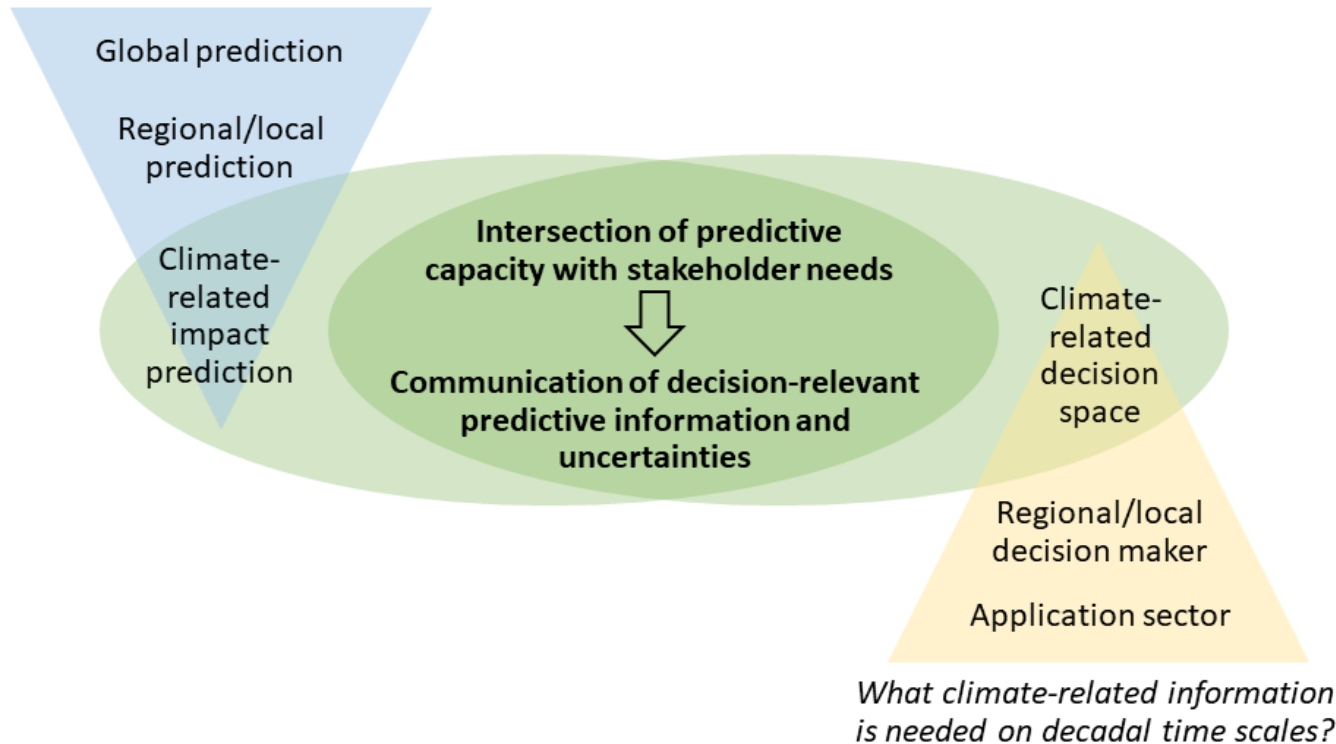


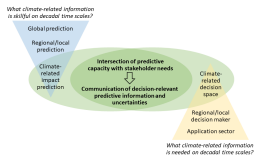
# The Potential Value of Decadal Prediction



# The Approach

*What climate-related information is skillful on decadal time scales?*





# What is Needed?

## Colorado

Urban Drainage Flood Control District.

Stormwater drainage.

Built versus natural channel construction?

Denver Water.

Drinking water supply.

If we're in a drought, when will we come out of it?

## California

Sonoma County Water Agency.

Drinking water quality.

How often will organic carbon exceed threshold at chlorination intake?

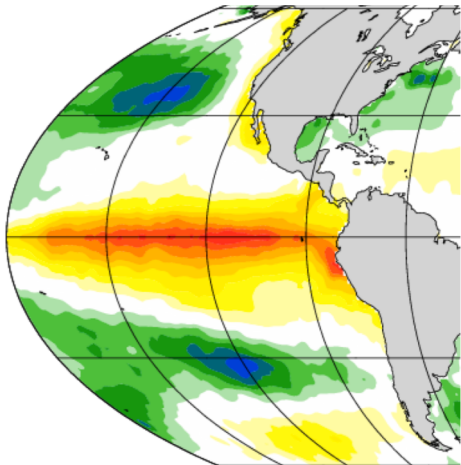
California Department of Water Resources. Drought prediction.

How often will 8-river index fall below a minimum threshold?

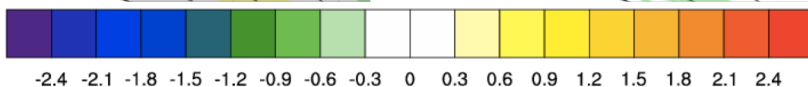
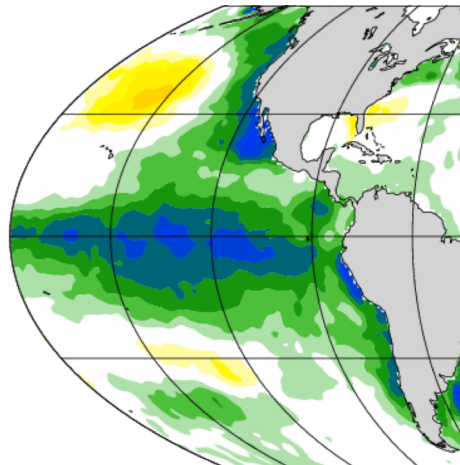
# Decadal Conditioning of Atmospheric Rivers

10-member ensemble simulations of the 2016/2017 winter under opposite phases of the Interdecadal Pacific Oscillation (IPO).

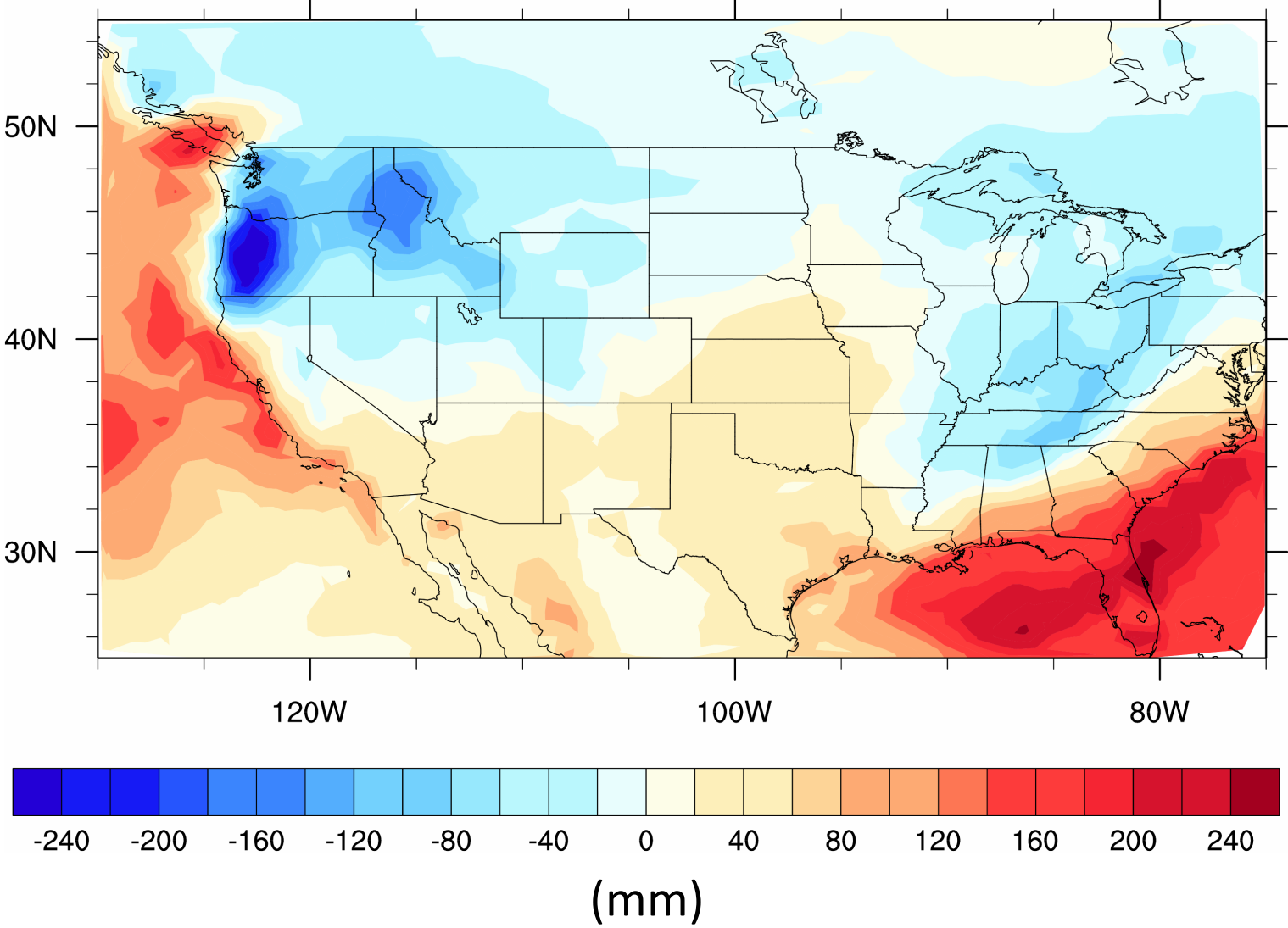
+IPO SST Anomaly



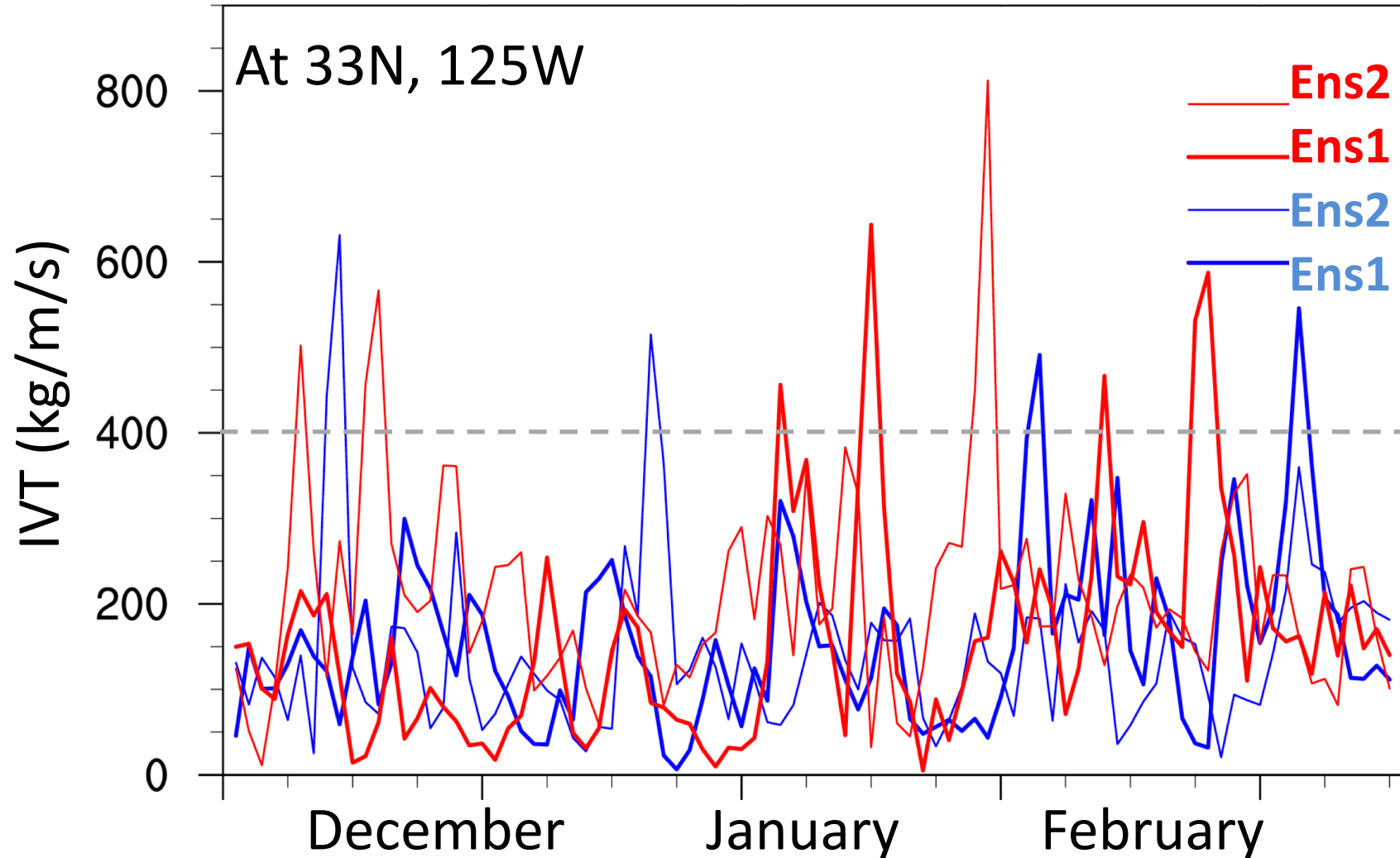
-IPO SST Anomaly



# Winter Precipitation Change under +IPO

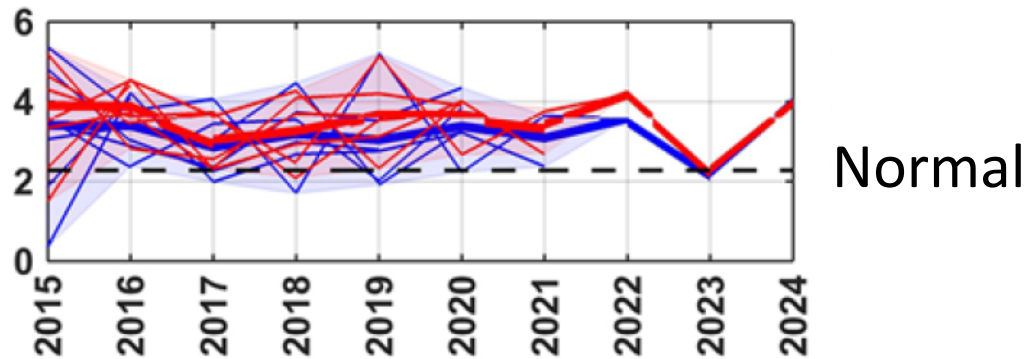


# +IPO drives twice the number of strong events into southern California

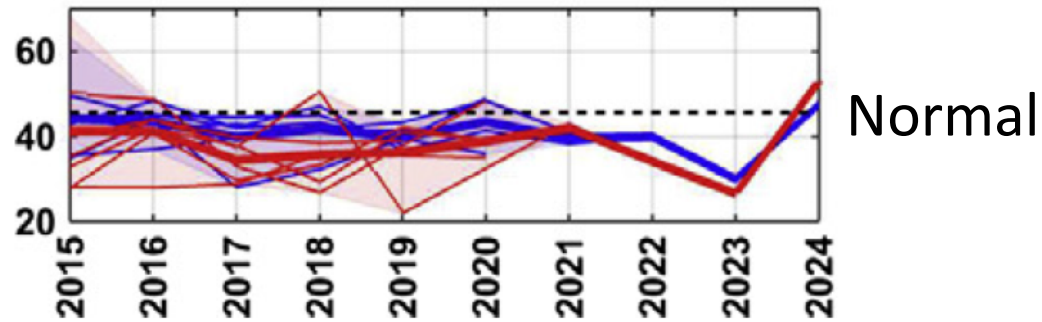


# Predictions of warmer and drier winters for the US Southwest Region.

Temperature



Precip

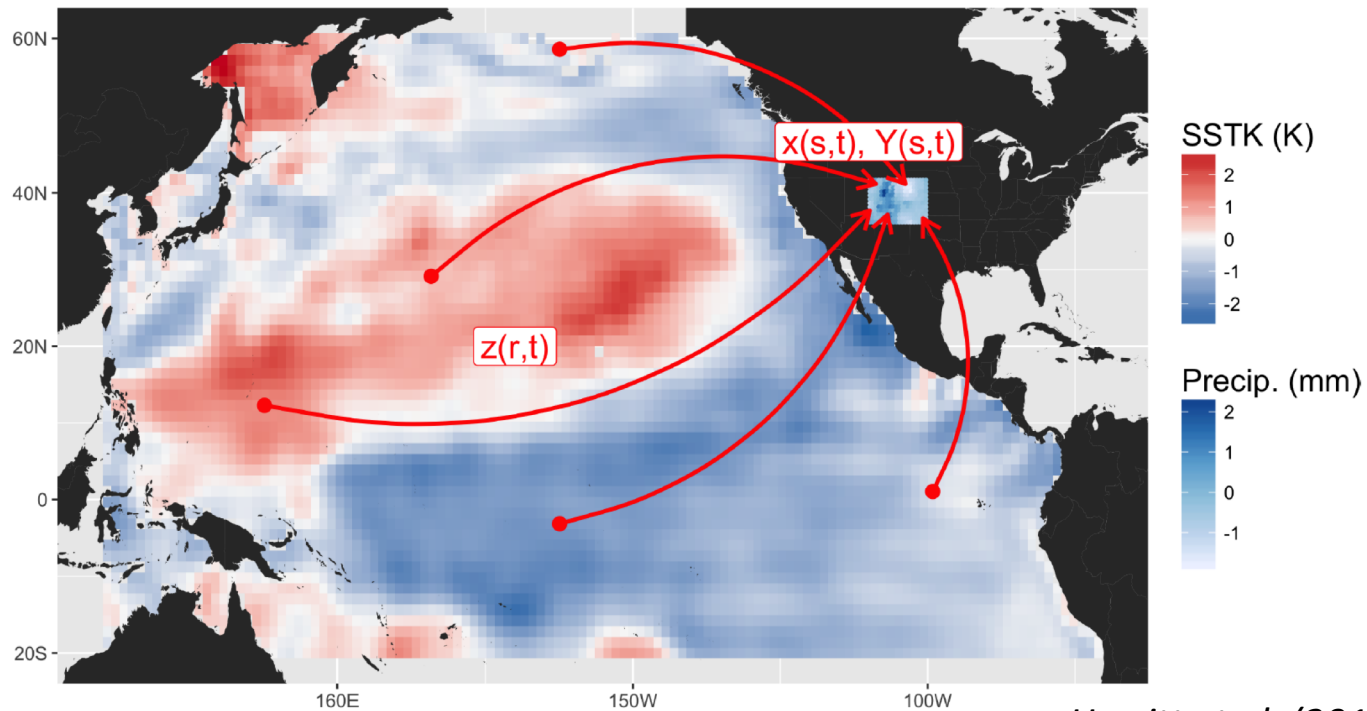


*Salvi et al. (2017)*



# Statistical-Dynamical Prediction of US Precipitation

- Model US precipitation on Pacific Ocean temperature patterns.
- May outperform raw precipitation predictions from global models.



*Hewitt et al. (2018)*

# What are the Key Characteristics of Useful Information?

- Finding intersections of skill and need is insufficient.
- Test prototype presentations of predictive information.
- Do predictions narrow the uncertainty compared to projections?  
And how is this useful?

