

# Climate Change Impacts on Rainfall Extremes

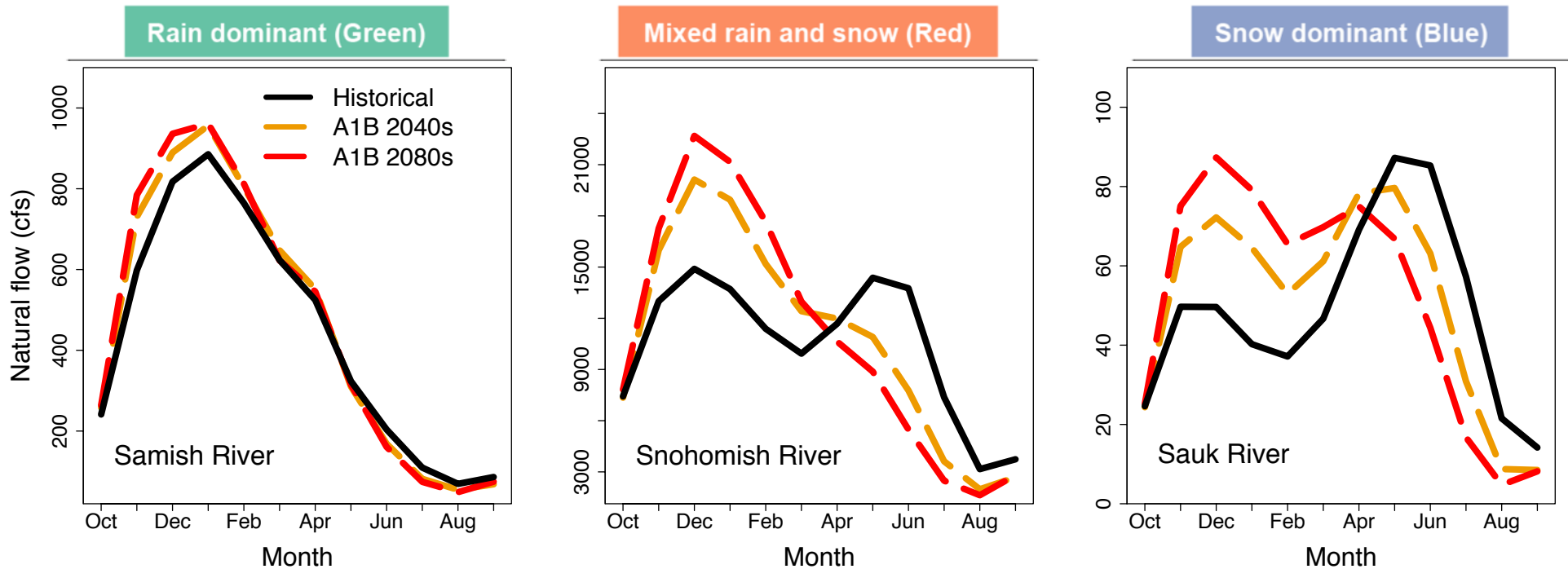


Guillaume Mauger  
Eric Salathé  
Raquel Lorente  
Todd Mitchell



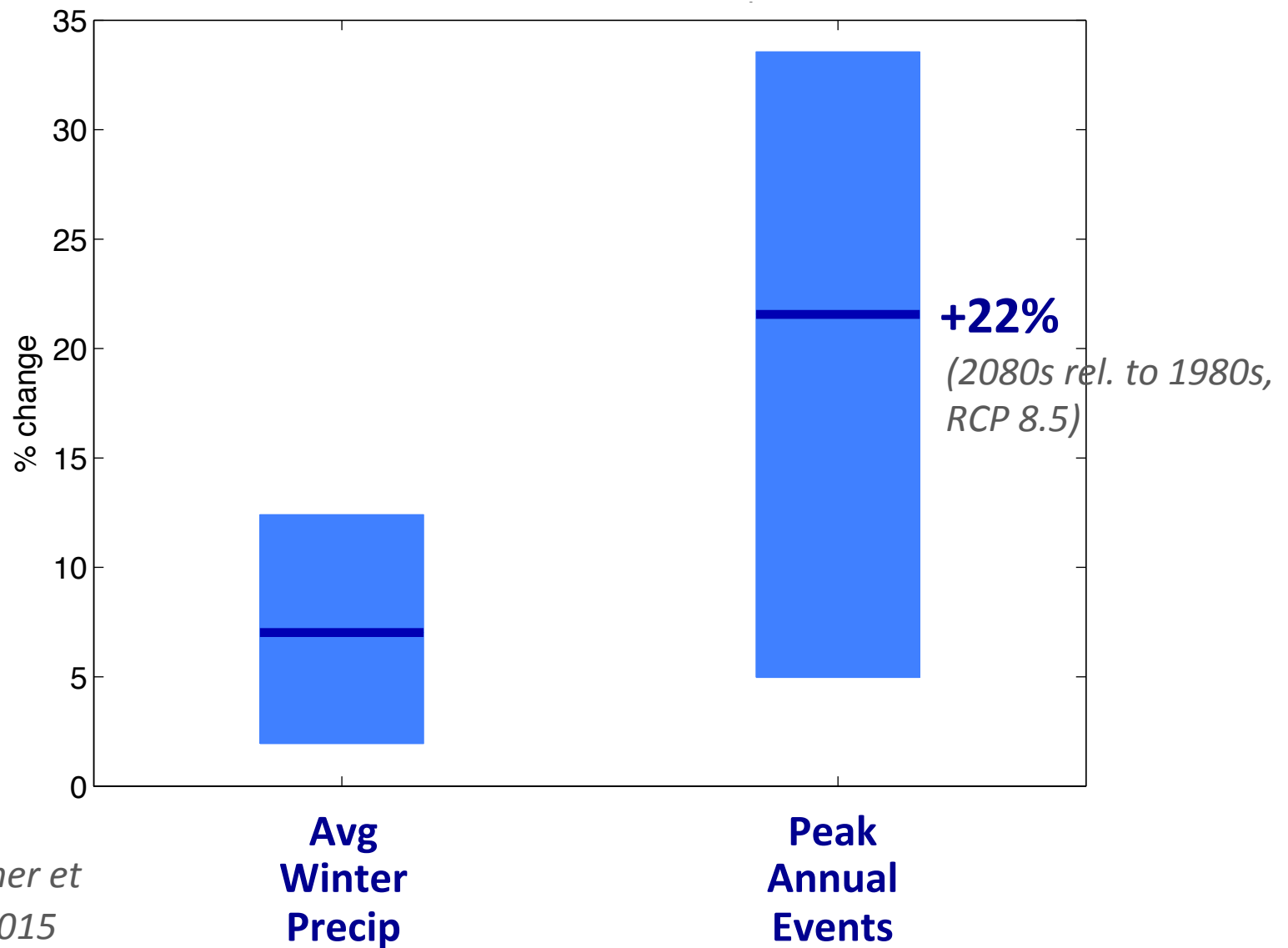
[www.bloomberg.com](http://www.bloomberg.com)

# Snow has a major effect on streamflow.



*These projections do not account for changes in heavy rains!*

# More Intense Heavy Rains



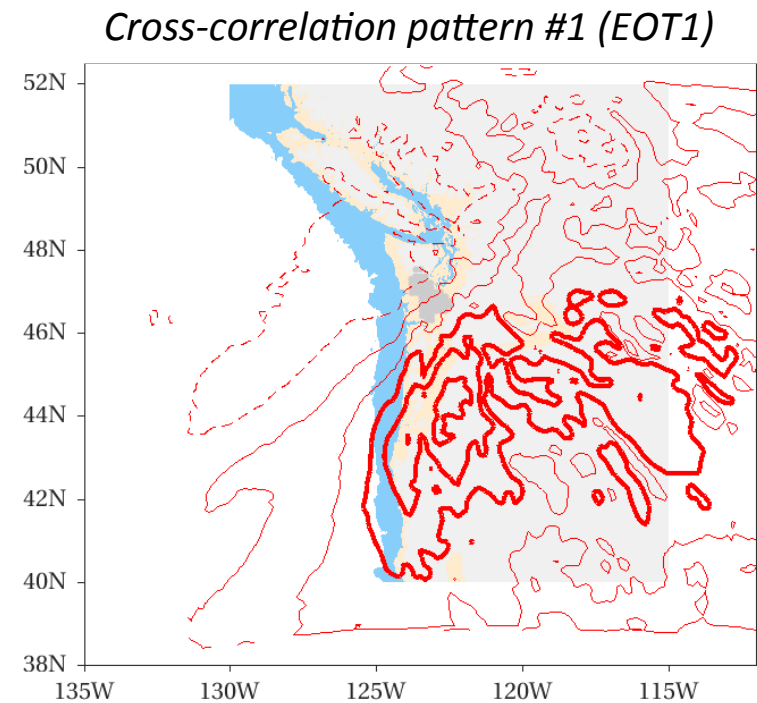
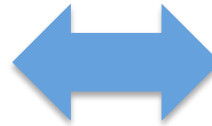
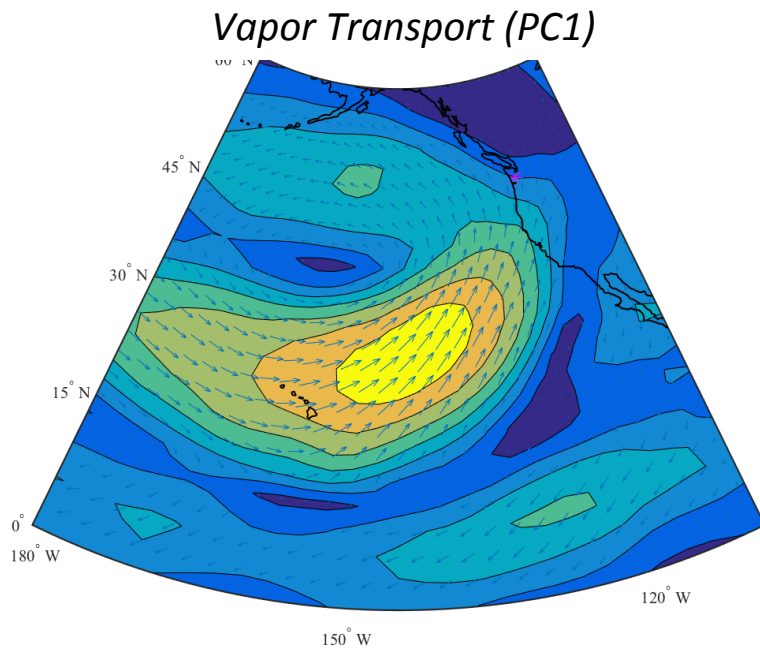
Warner et  
al., 2015



<https://twitter.com/LigaDos32>

# Linking to the large-scale processes

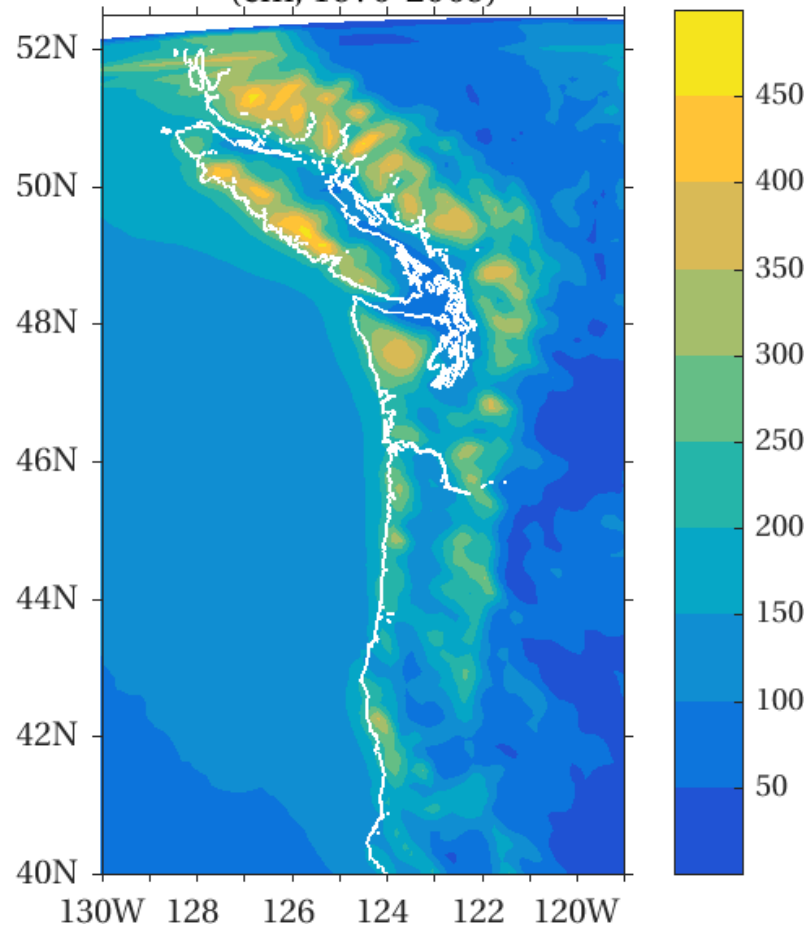
*How do the large-scale mechanisms relate to local-scale precipitation?*



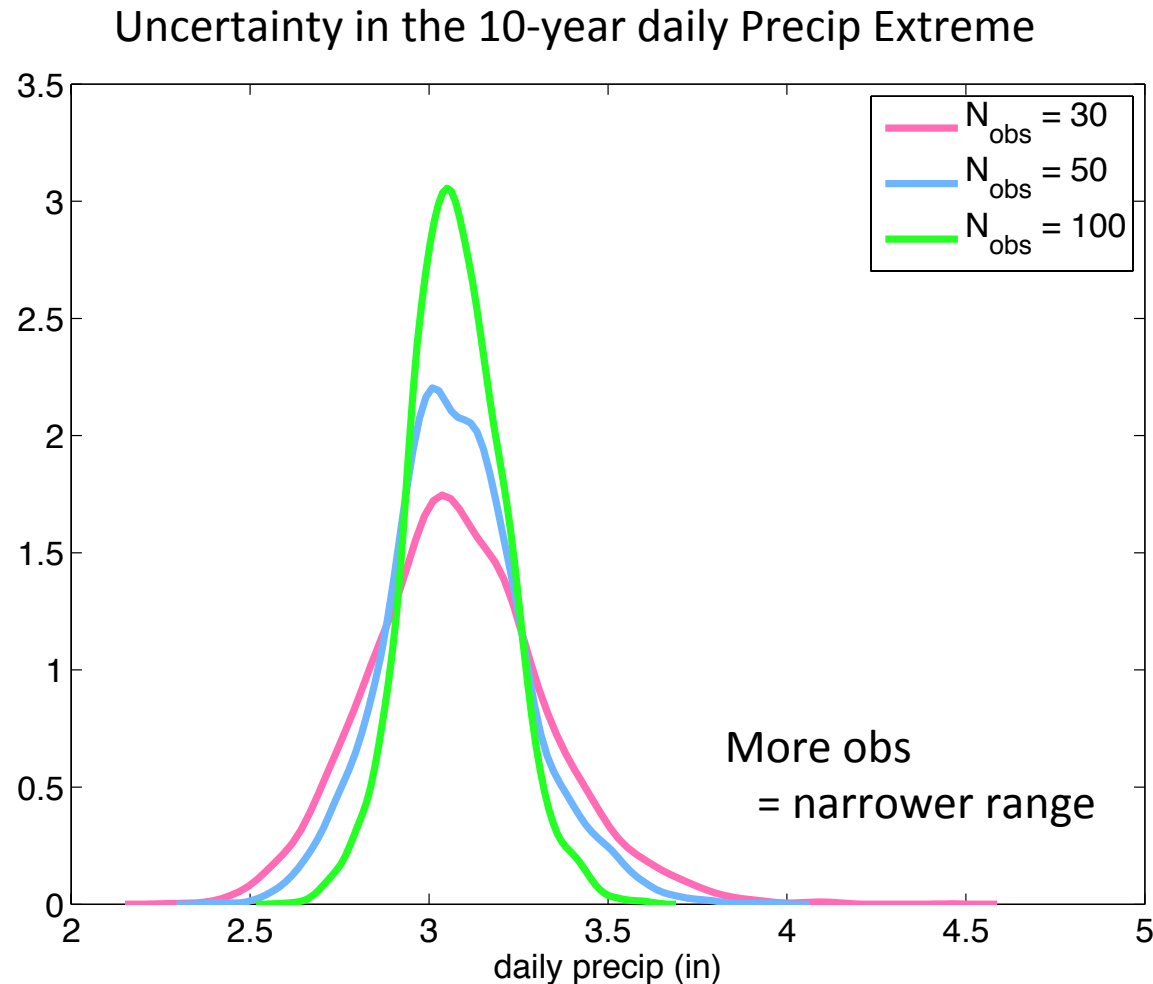
# Regional Climate Model Projections

*Using the Weather Research and Forecasting (WRF) mesoscale model.*

WRF October through March total precipitation  
(cm, 1970-2009)

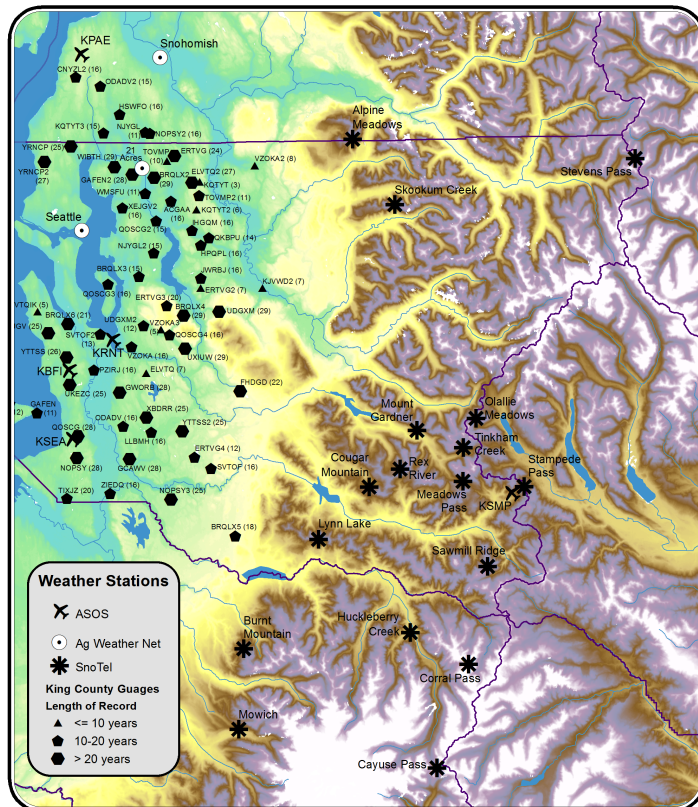


# Use “superensemble” to quantify errors in extremes calculations



# Regional Climate Model Projections

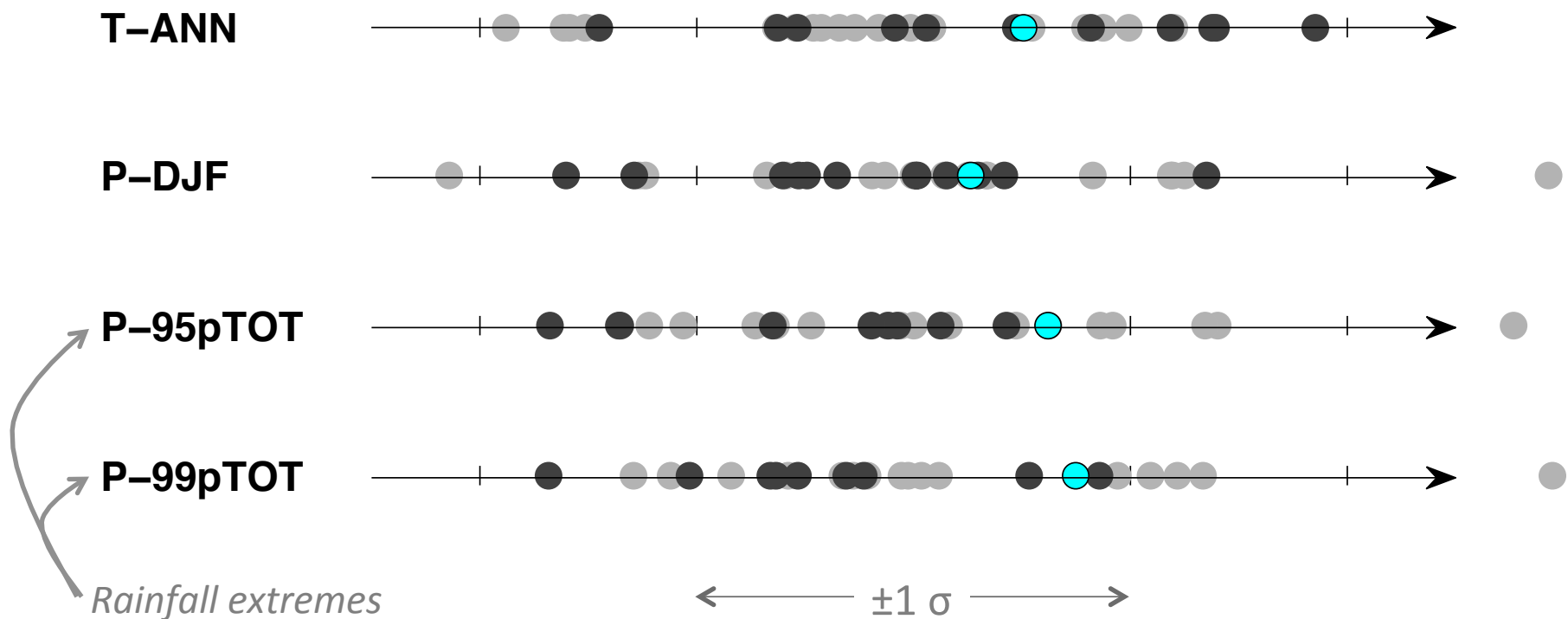
*Using the Weather Research and Forecasting (WRF) mesoscale model.*



- Two new regional model simulations, 1970-2099.
- Hourly Precipitation
- Bias-correct to ~50 weather stations throughout King Cty

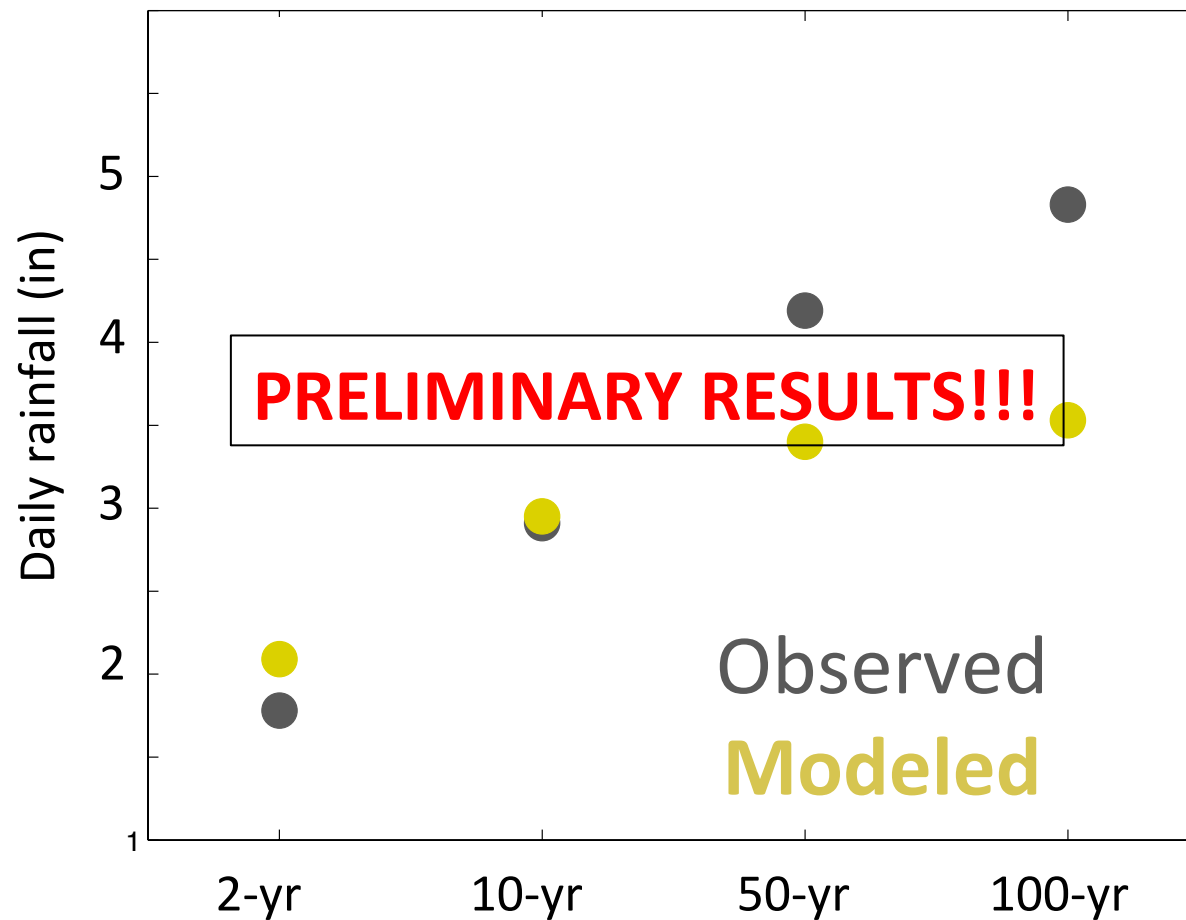
# Choosing a high-end projection

*Model Rankings:*



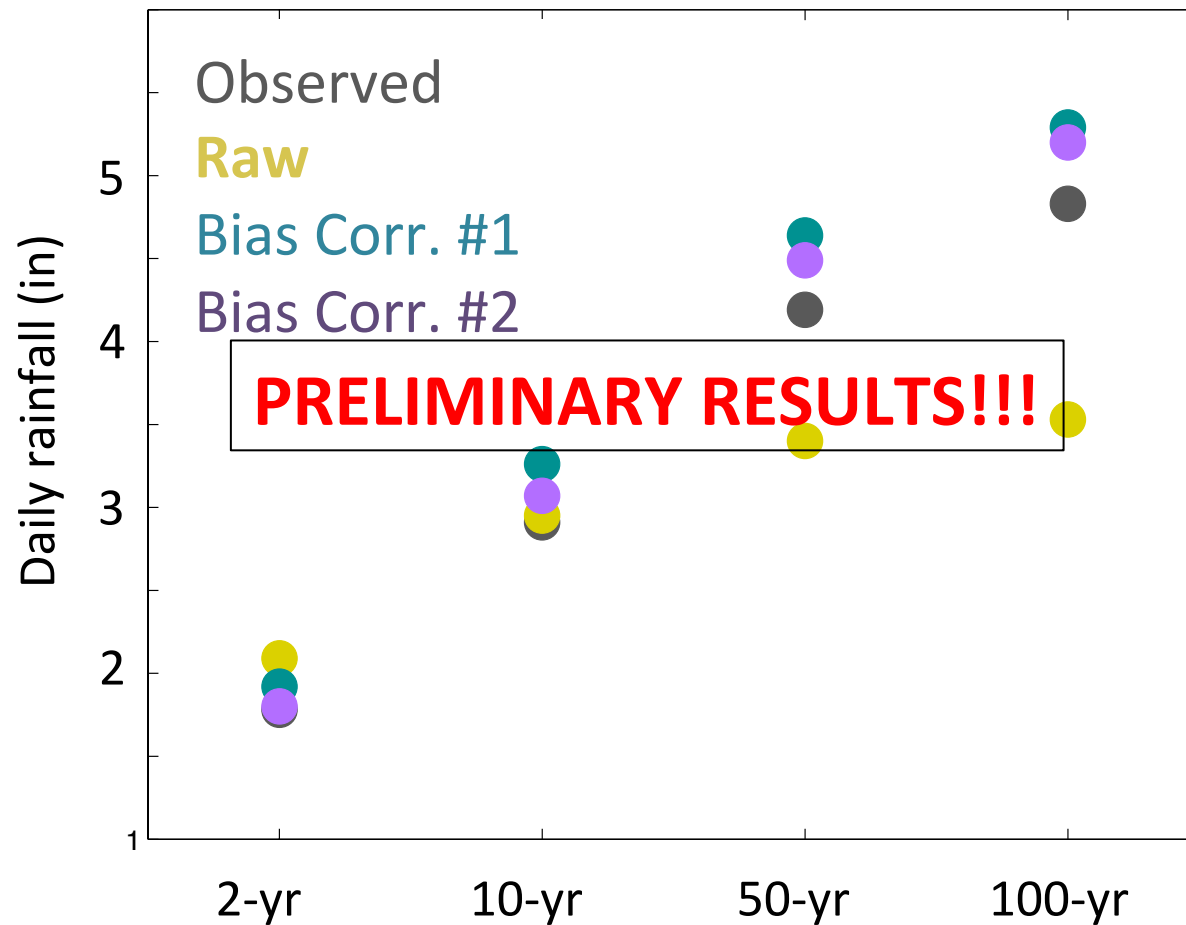
# Model Validation

SeaTac: Obs (1948-2013) vs raw WRF (1970-1999)



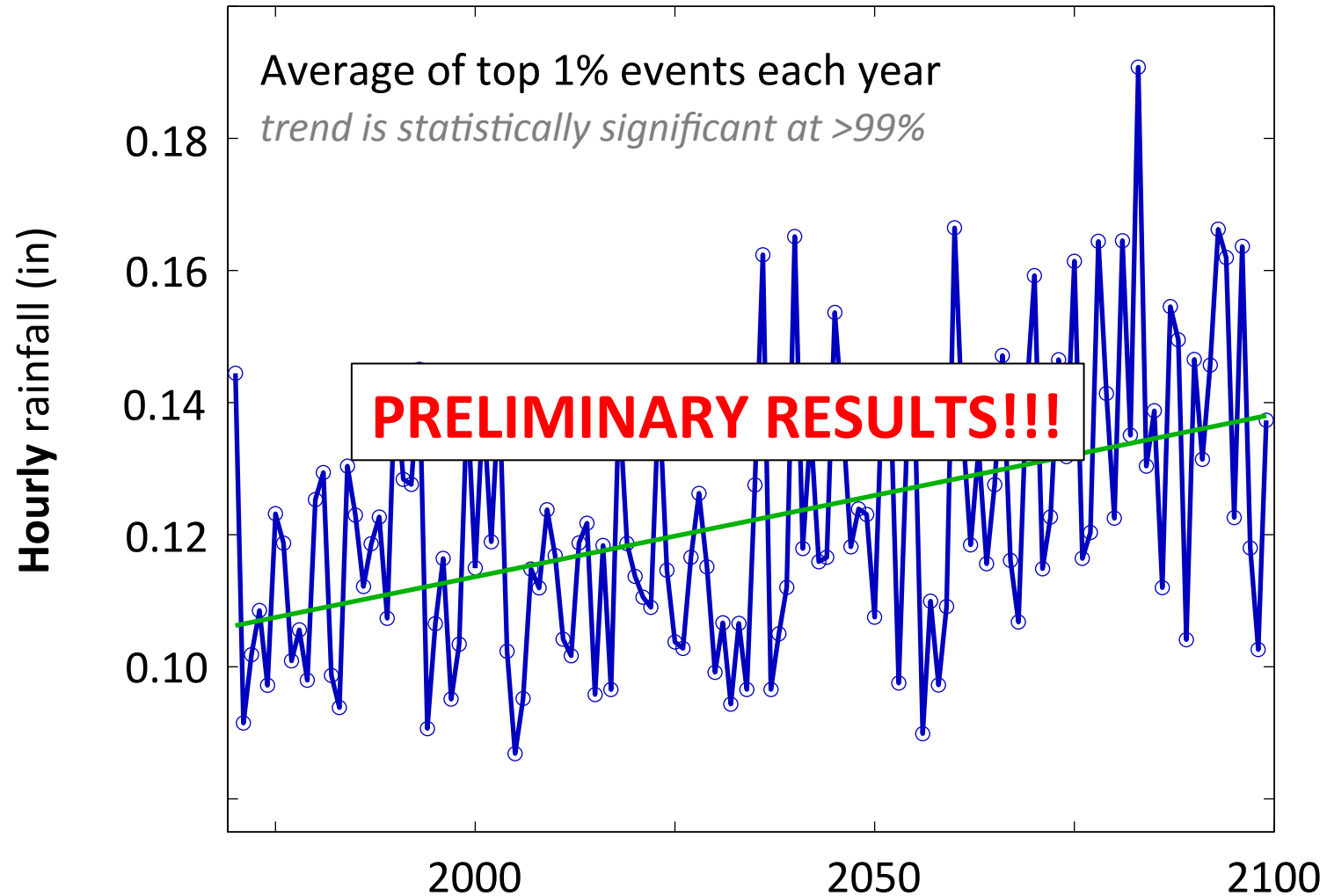
# Model Validation

SeaTac: Obs (1948-2013) vs raw WRF (1970-1999)



# Raw Model Projections

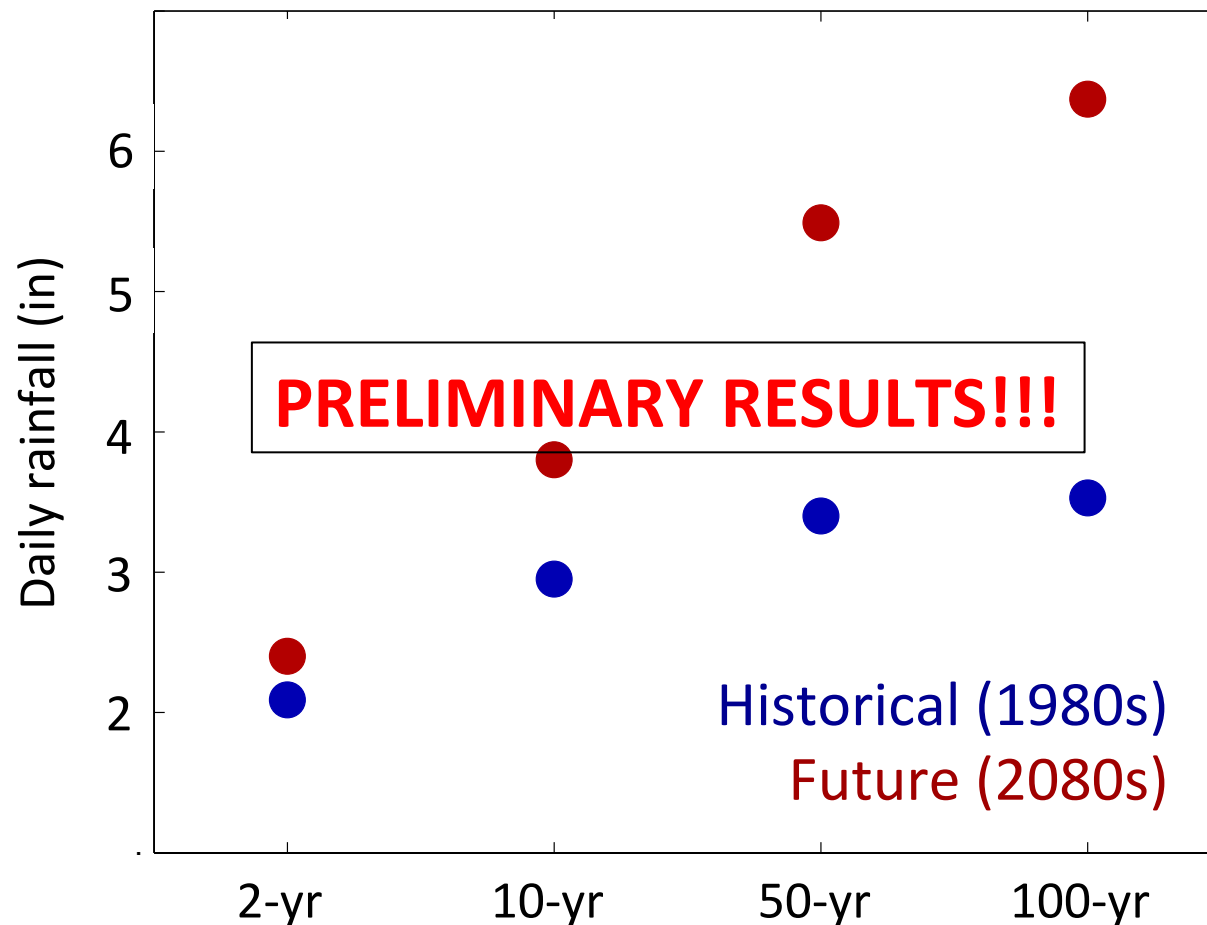
*(i.e.: No Bias-Correction)*



# Raw Model Projections

*(i.e.: No Bias-Correction)*

SeaTac: GFDL CM3, RCP 8.5





*Climate Science in the  
Public Interest*

UW Climate Impacts Group

[cig.uw.edu](http://cig.uw.edu)

[gmauger@uw.edu](mailto:gmauger@uw.edu)

(206) 685-0317



**COLLEGE OF THE ENVIRONMENT**  
UNIVERSITY *of* WASHINGTON