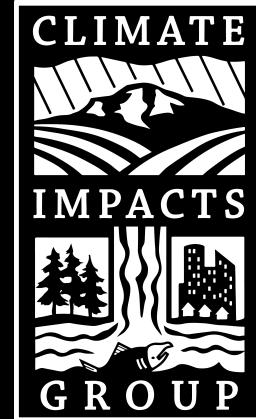


# What is the value of improved precipitation projections?



Guillaume Mauger, UW CIG

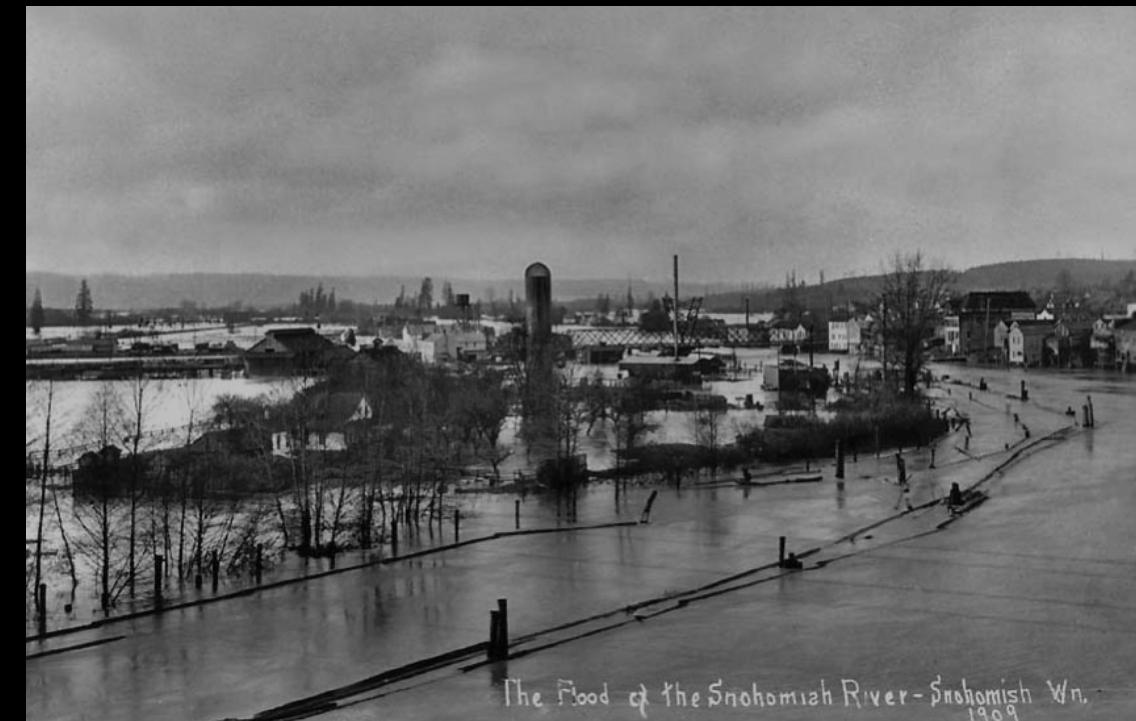
Eric Salathé, UW Bothell

Jason Won, UW CIG

Raquel Lorente , Univ. Murcia, Spain

Katherine Hegewisch, U. Idaho

Rick Steed, UW Atmos. Sci.



*October 11, 2017*

# Stormwater



**King County:**  
*Cost of meeting stormwater  
(CSO) standards under the  
Clean Water Act*

<i>Recurrence Interval (Long-term average)</i>	<i>Probability of meeting 5 in 5 years (%)</i>	<i>Size (MG)</i>	<i>Rough Project Cost (\$M)</i>
1.0	62	1.8	23.6
1.3	80	2.2	26.1 (+11%)
1.6	90	2.6	29.3 (+24%)
1.9	95	3.4	35.1 (+49%)



# Challenge: Uncertainty

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*“precipitation ... is kind of all over the place” (USGS 2017).*

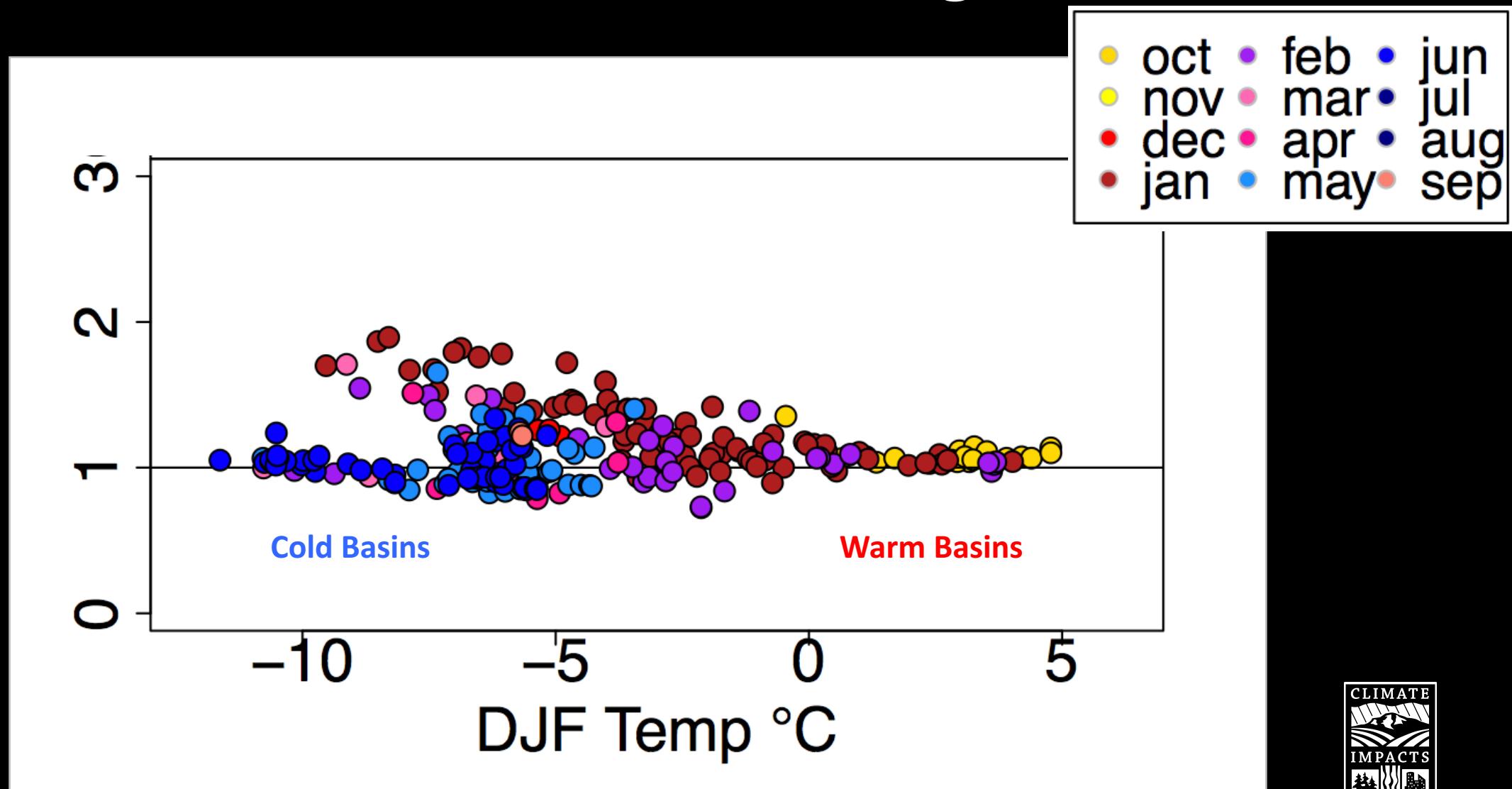
*“people ... turn off when they see we don’t know what the risk really is” (ECY 2017).*

*“having modeling where we can at least get some kind of confidence level and say here’s the range we can work with” (ECY 2017).*

*“if you want us to pay for it tell us more” (USACE 2017).*



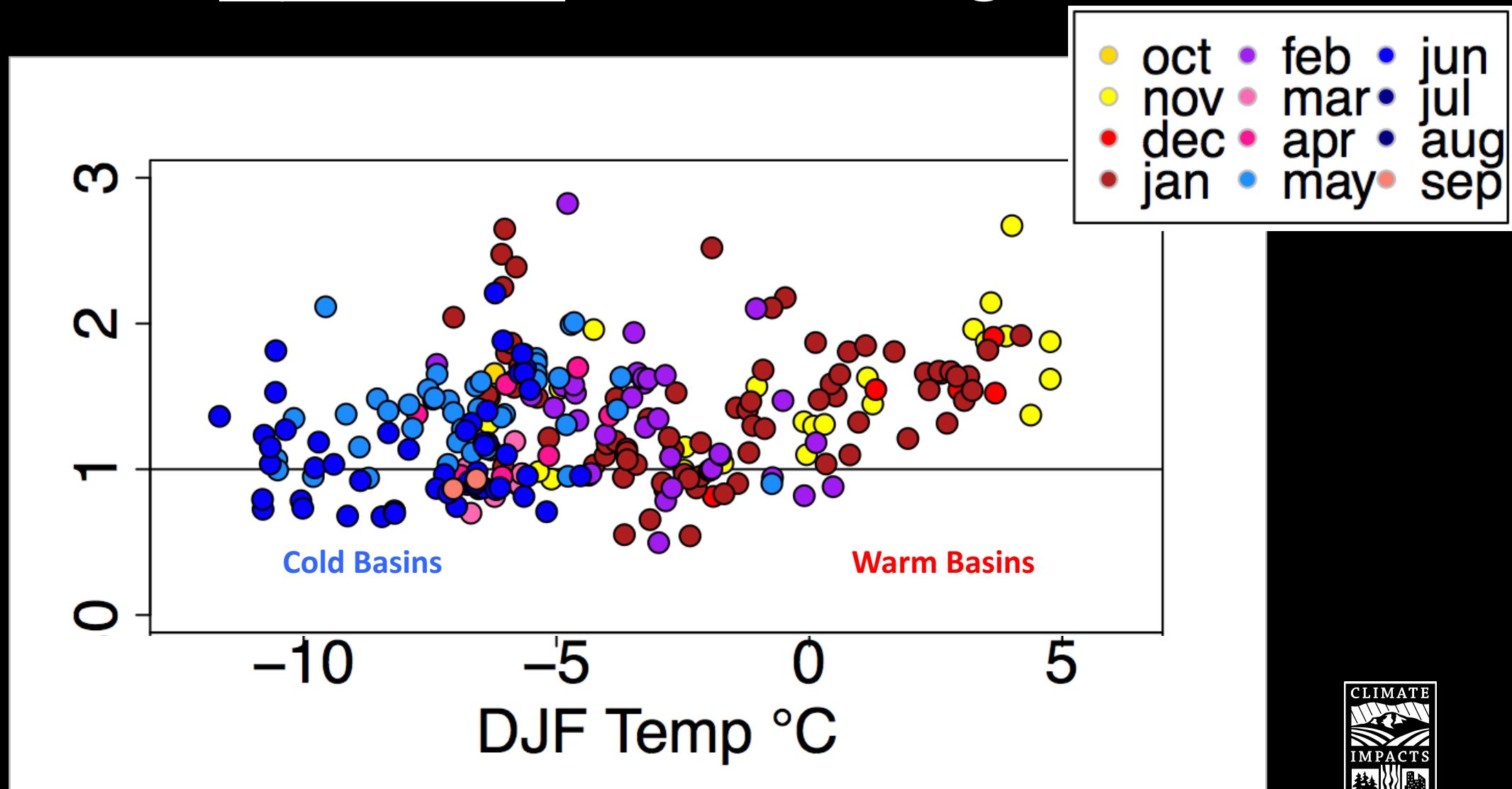
# Results from Statistical Downscaling



Salathé et al. 2014

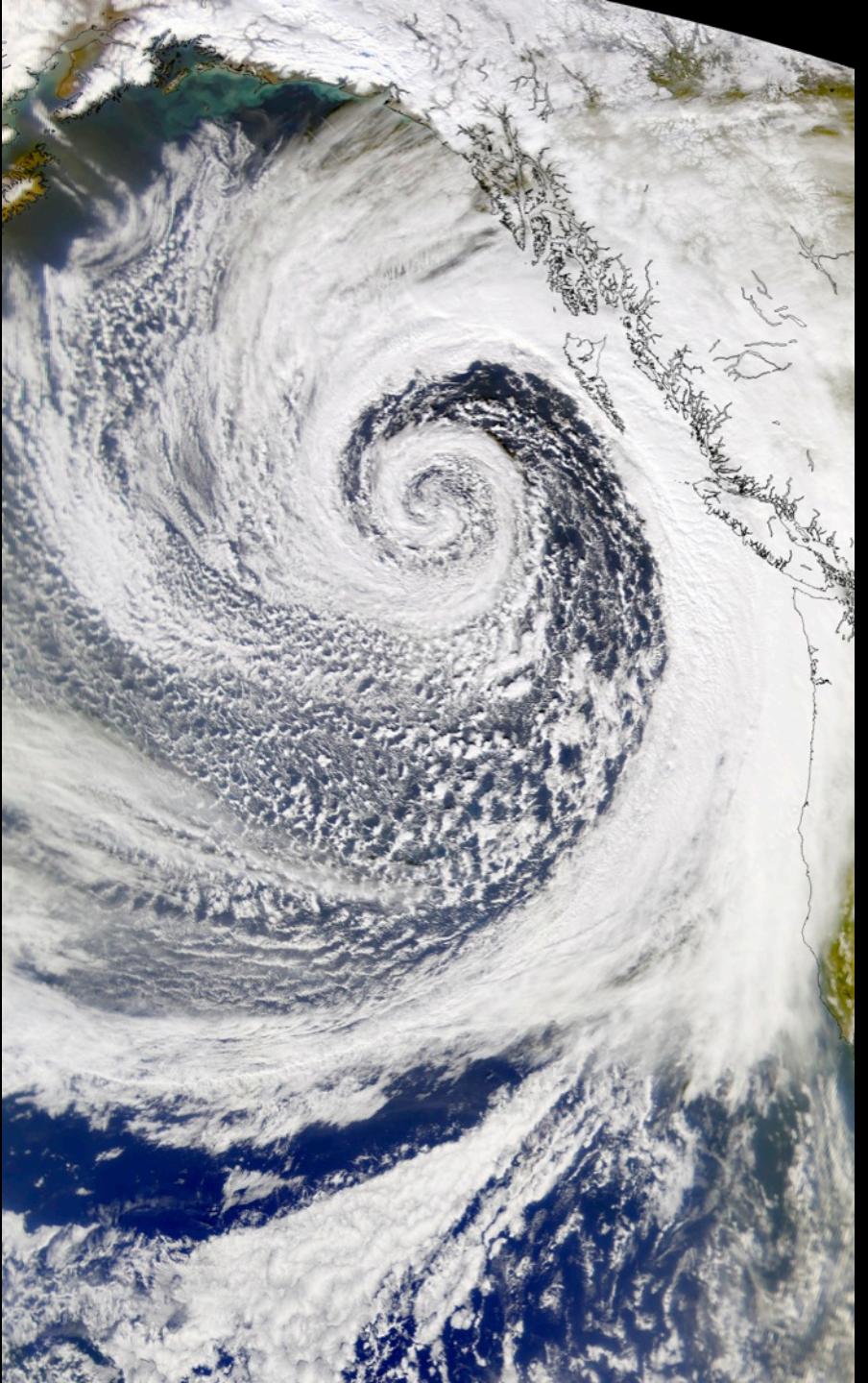


# Results from Dynamical Downscaling



Salathé et al. 2014





# *Region-wide:* More Intense Heavy Rains

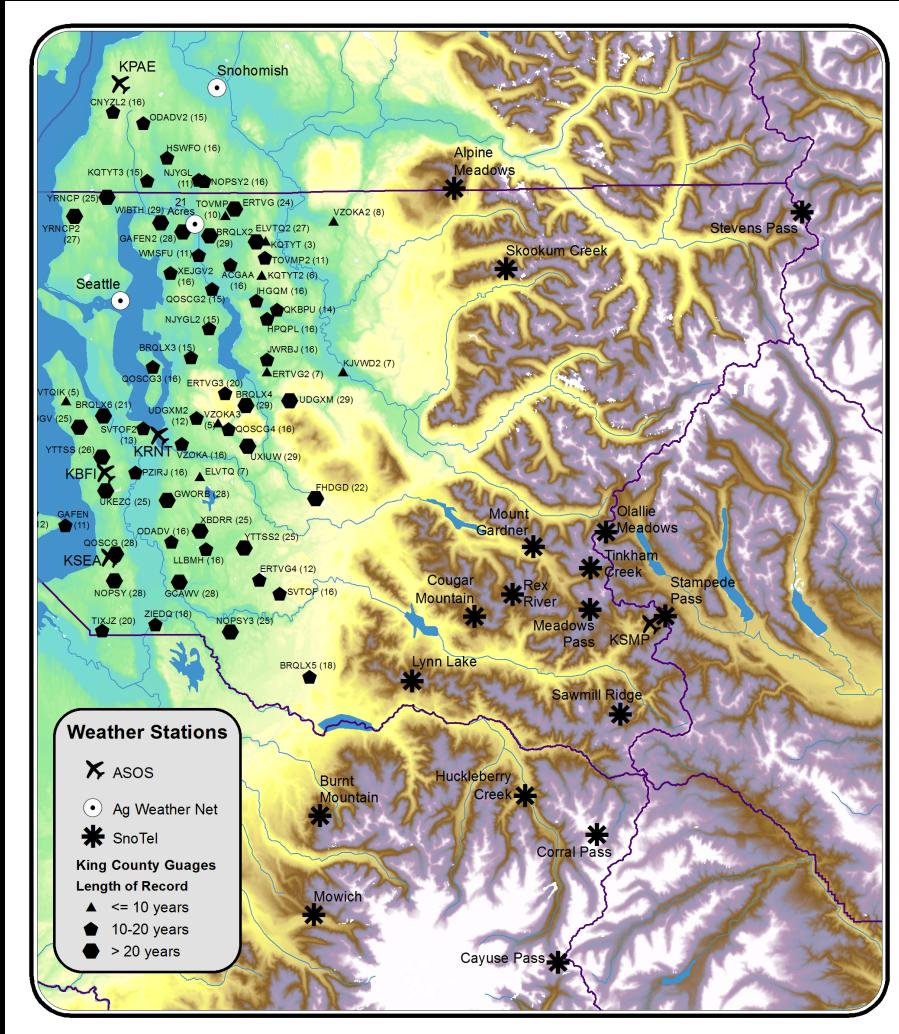
Heaviest rain events are projected  
to become **+22% more intense**  
(*range: +5 to +34%*) by the 2080s.

Warner, Mass, Salathé, J Hydromet, 2014



# Regional Climate Model Projections

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

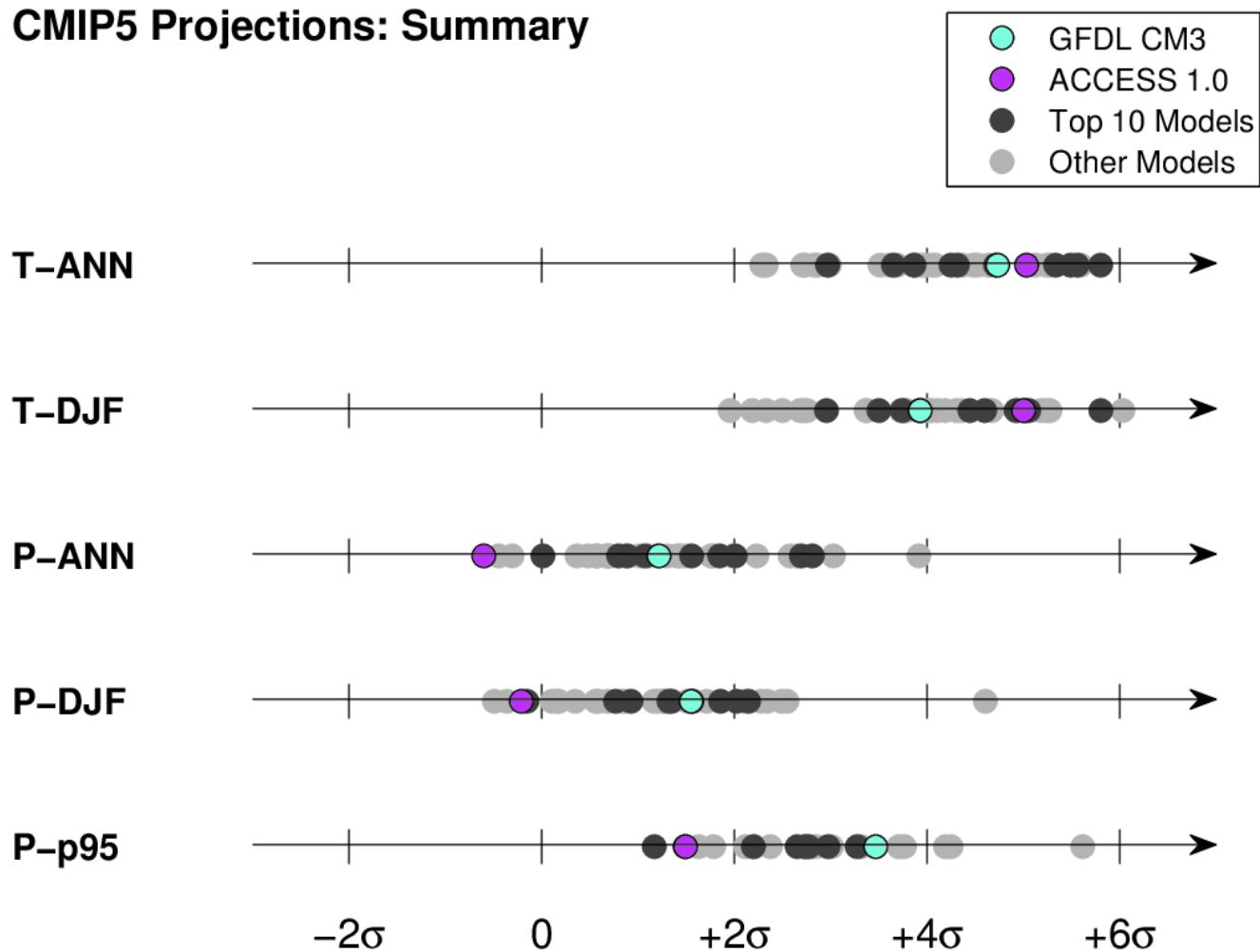


- Two new regional model simulations, 1970-2099.
- Hourly Precipitation
- Bias-corrected to ~50 weather stations throughout King County



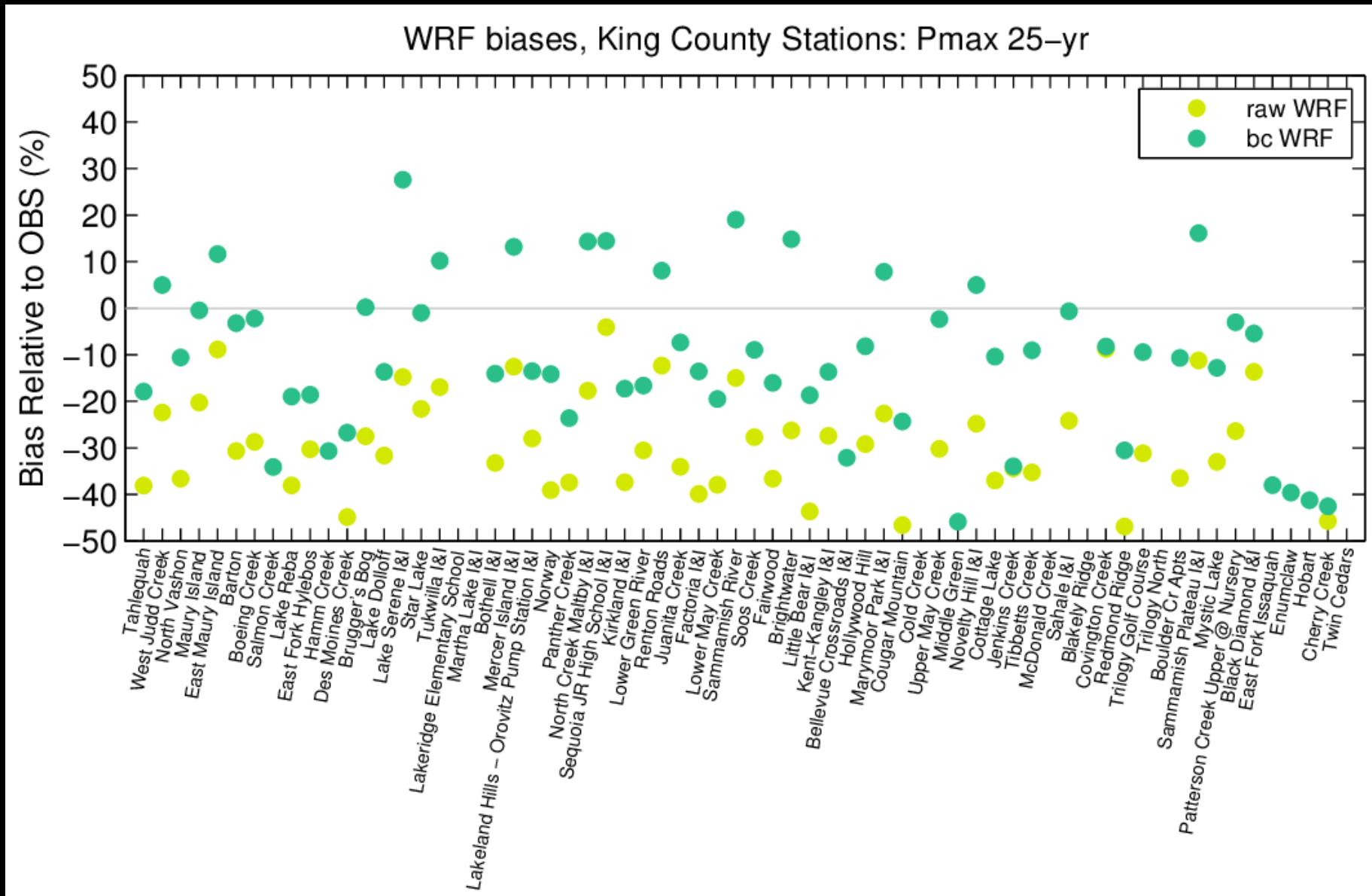
# Global Model Rankings

*Projections:*

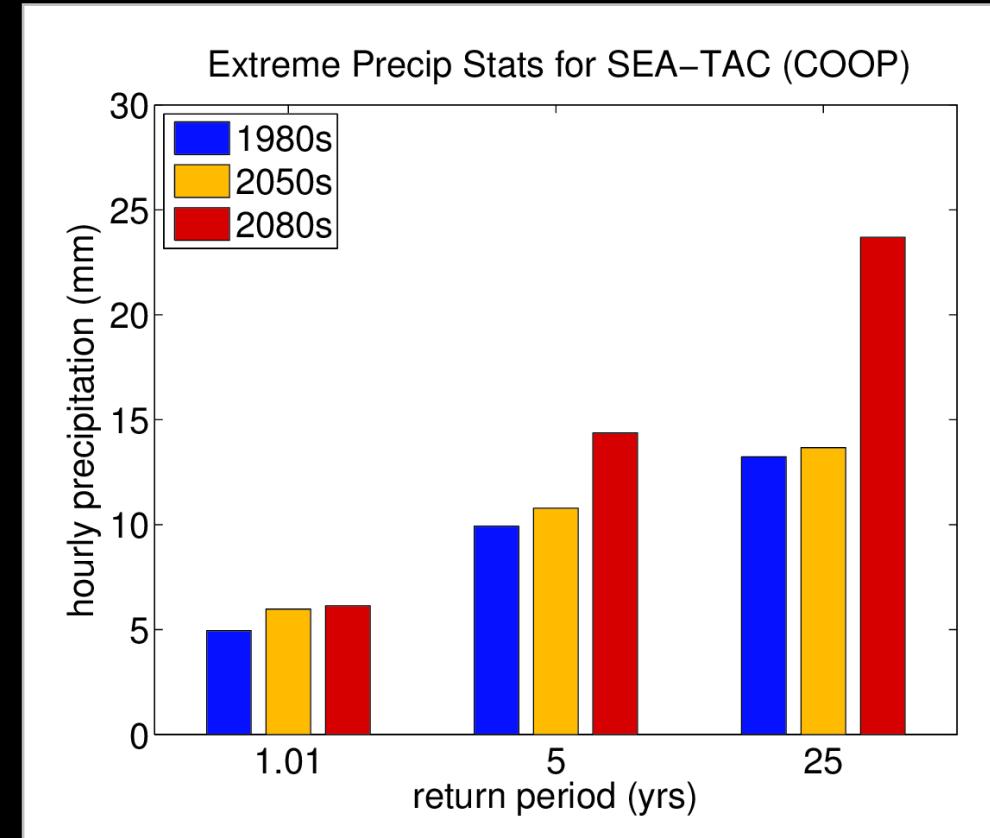
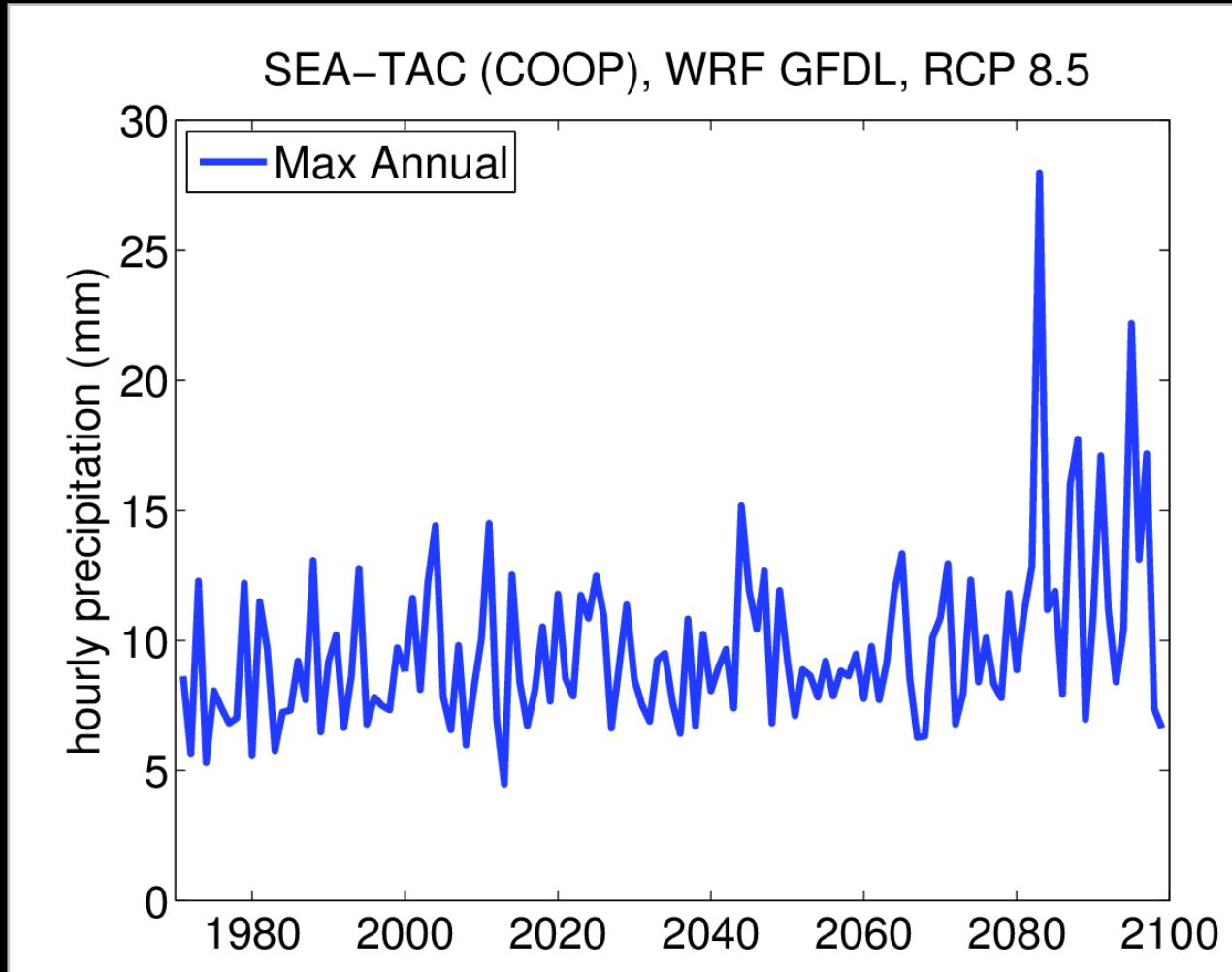


**28-yr  
Extreme**

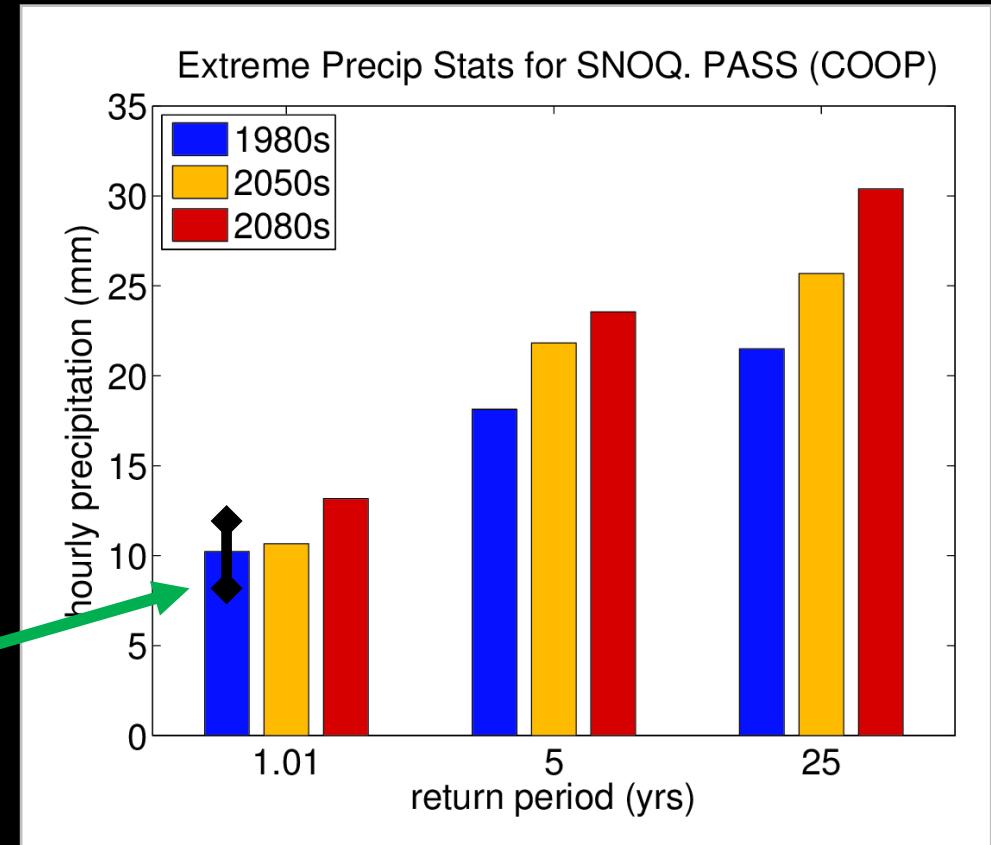
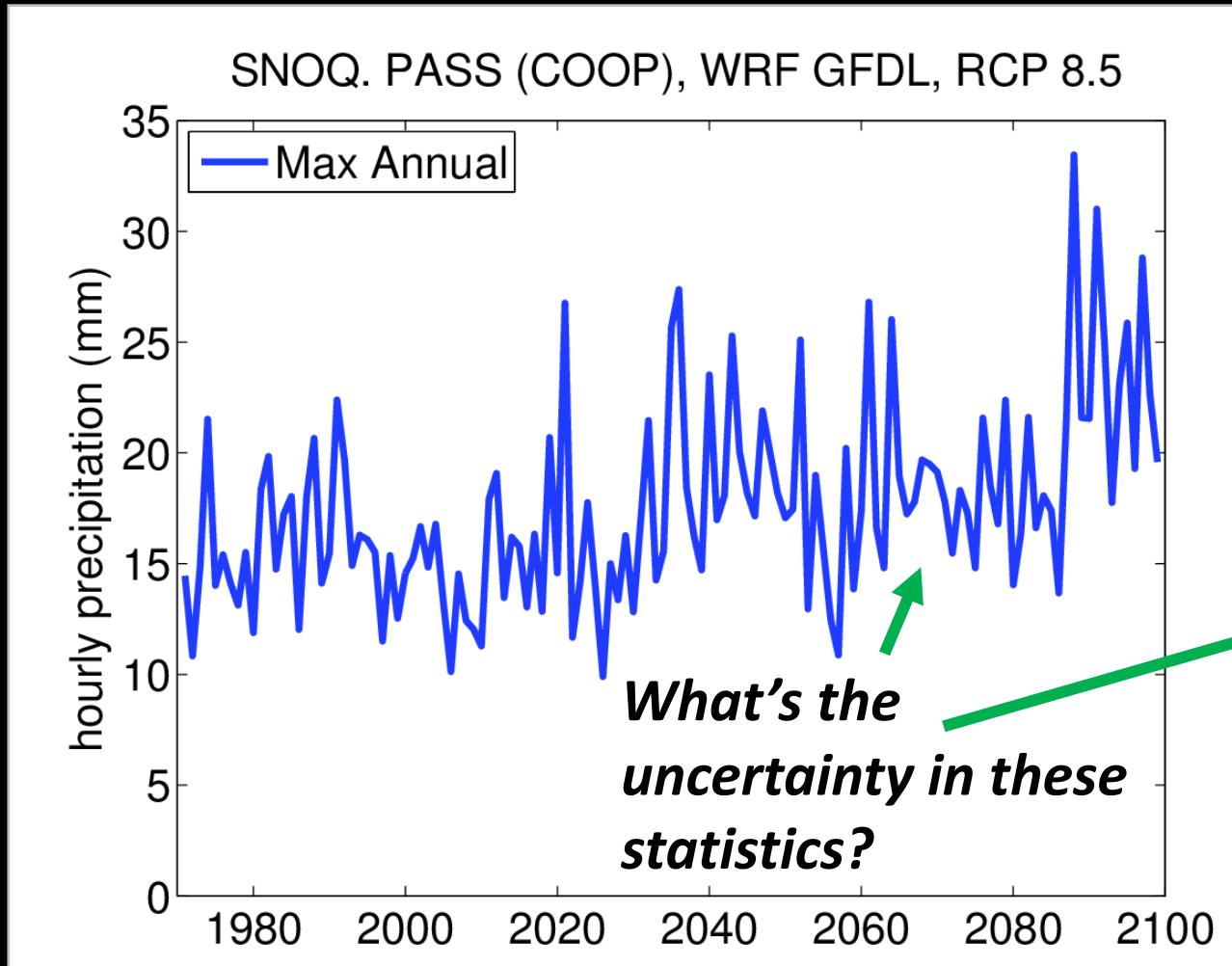
# Evaluation of Precipitation Projections



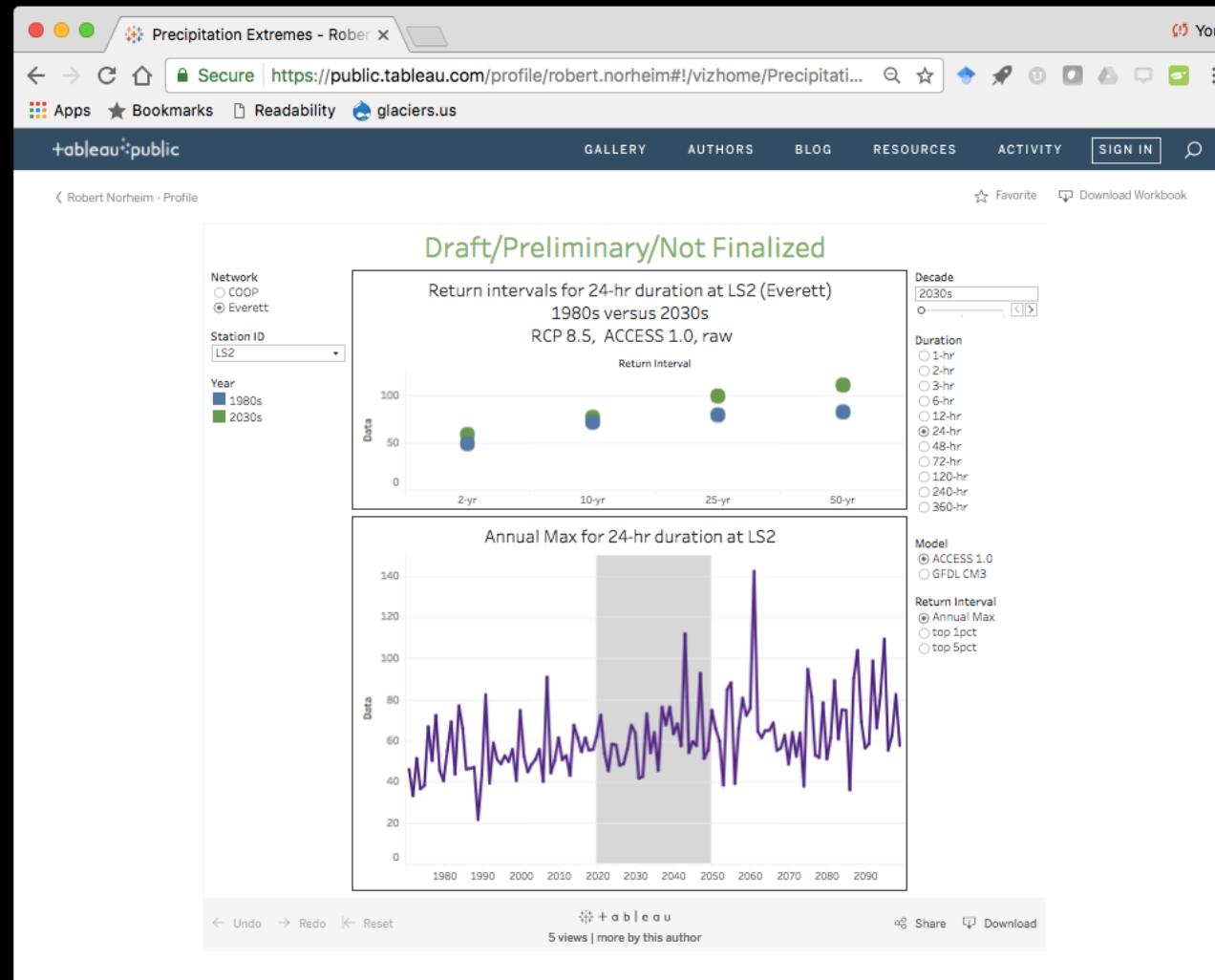
# Preliminary Results: Sea-Tac



# Preliminary Results: Snoqualmie Pass



# Regional Model Projections



<https://public.tableau.com/profile/robert.norheim#/vizhome/PrecipitationExtremesv2/PrecipitationExtremes>



# Thanks!

*Project Researchers:*

Guillaume Mauger, UW CIG  
Eric Salathé, UW Bothell  
Jason Won, UW CIG  
Raquel Lorente , Univ. Murcia, Spain  
Katherine Hegewisch, U. Idaho  
Rick Steed, UW Atmos. Sci.

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WA Department of Ecology



<https://twitter.com/LigaDos32>

