



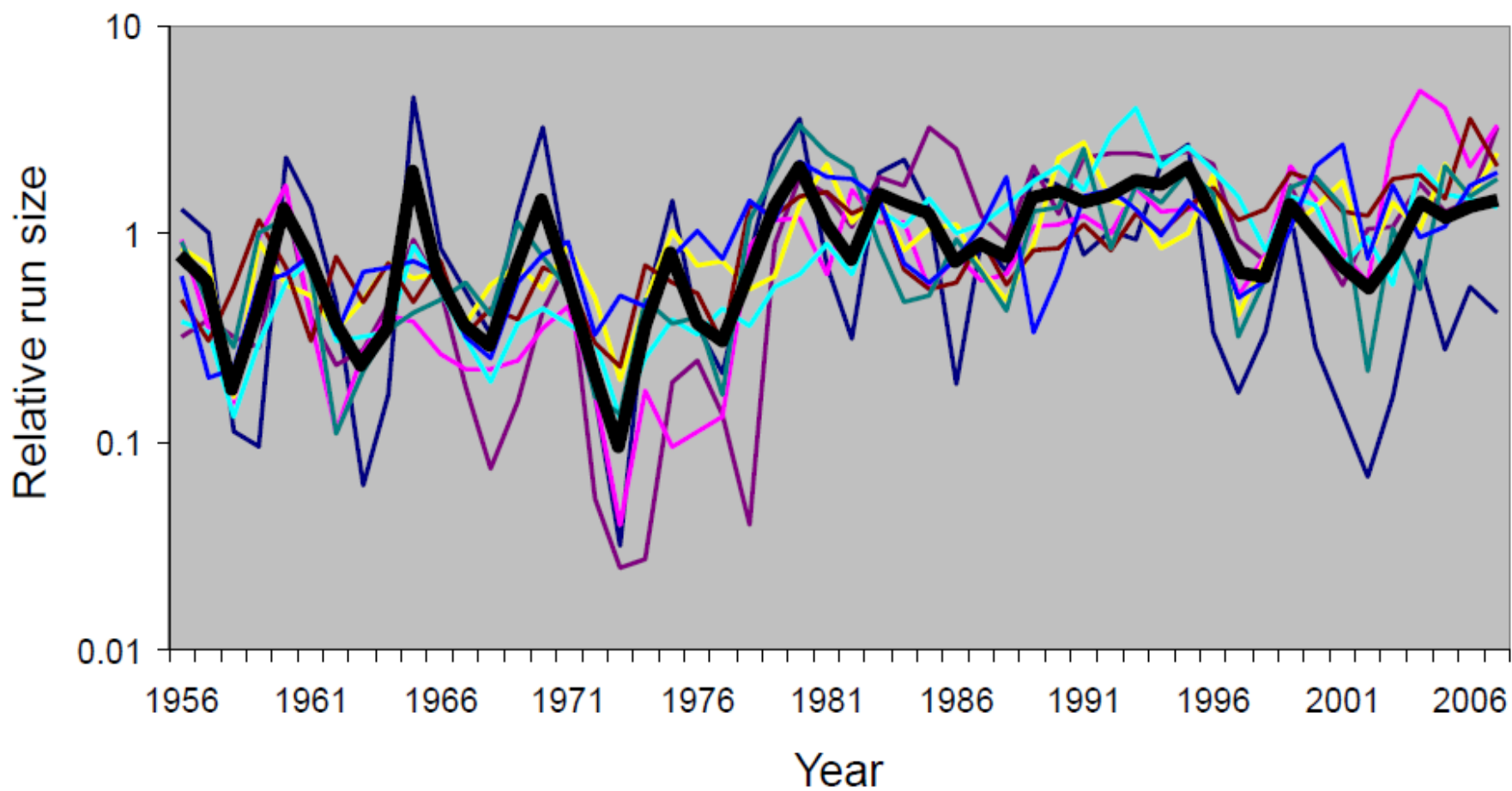
# Characterization of Thermal Regimes in the Mat-Su Basin

Rebecca Shaftel, Sue Mauger, Jeff Falke, Dan Rinella, Jeff Davis, and Leslie Jones

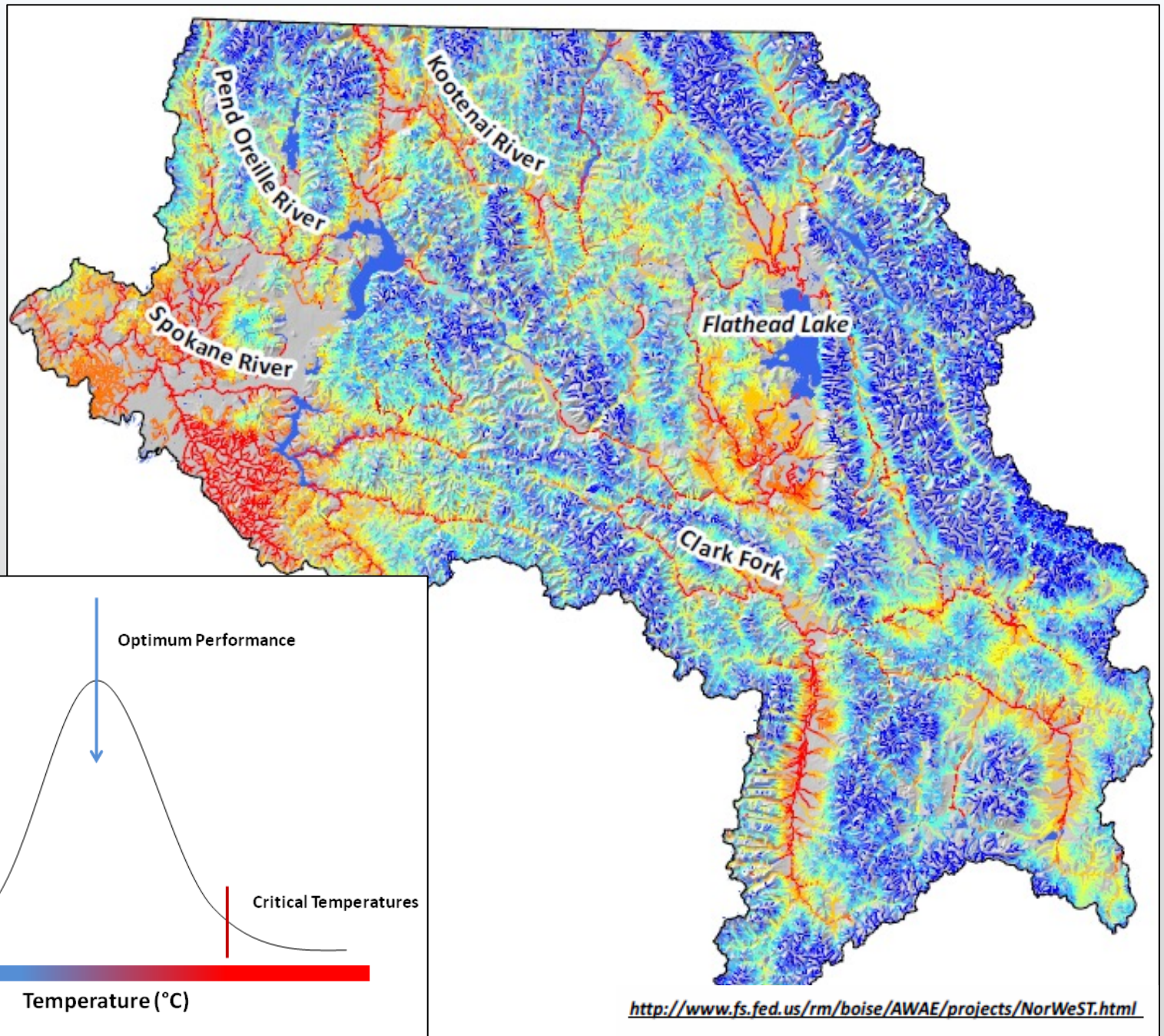


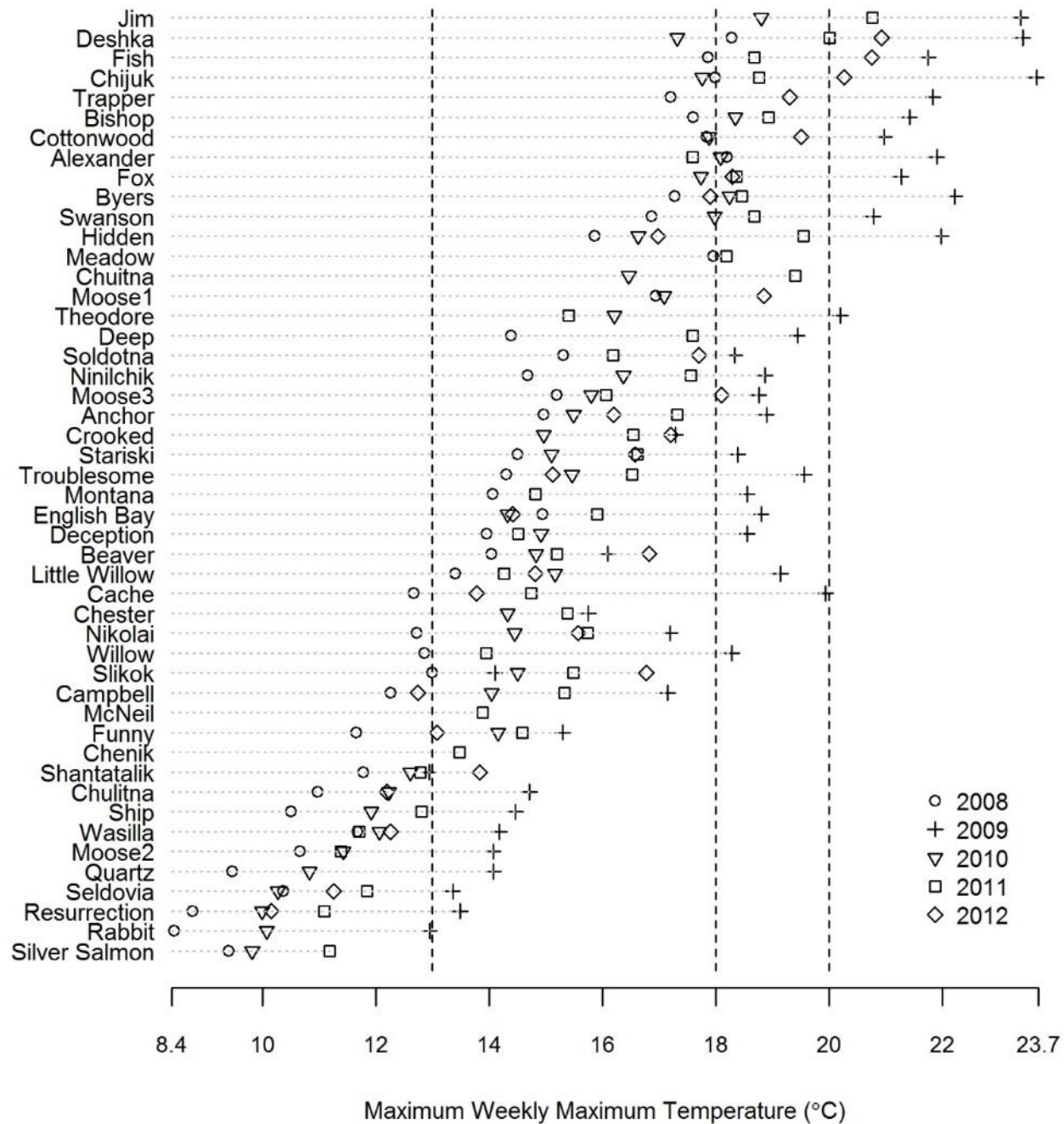
Alaska Center for  
Conservation Science  
UNIVERSITY of ALASKA ANCHORAGE

## Sockeye salmon returns to Bristol Bay rivers











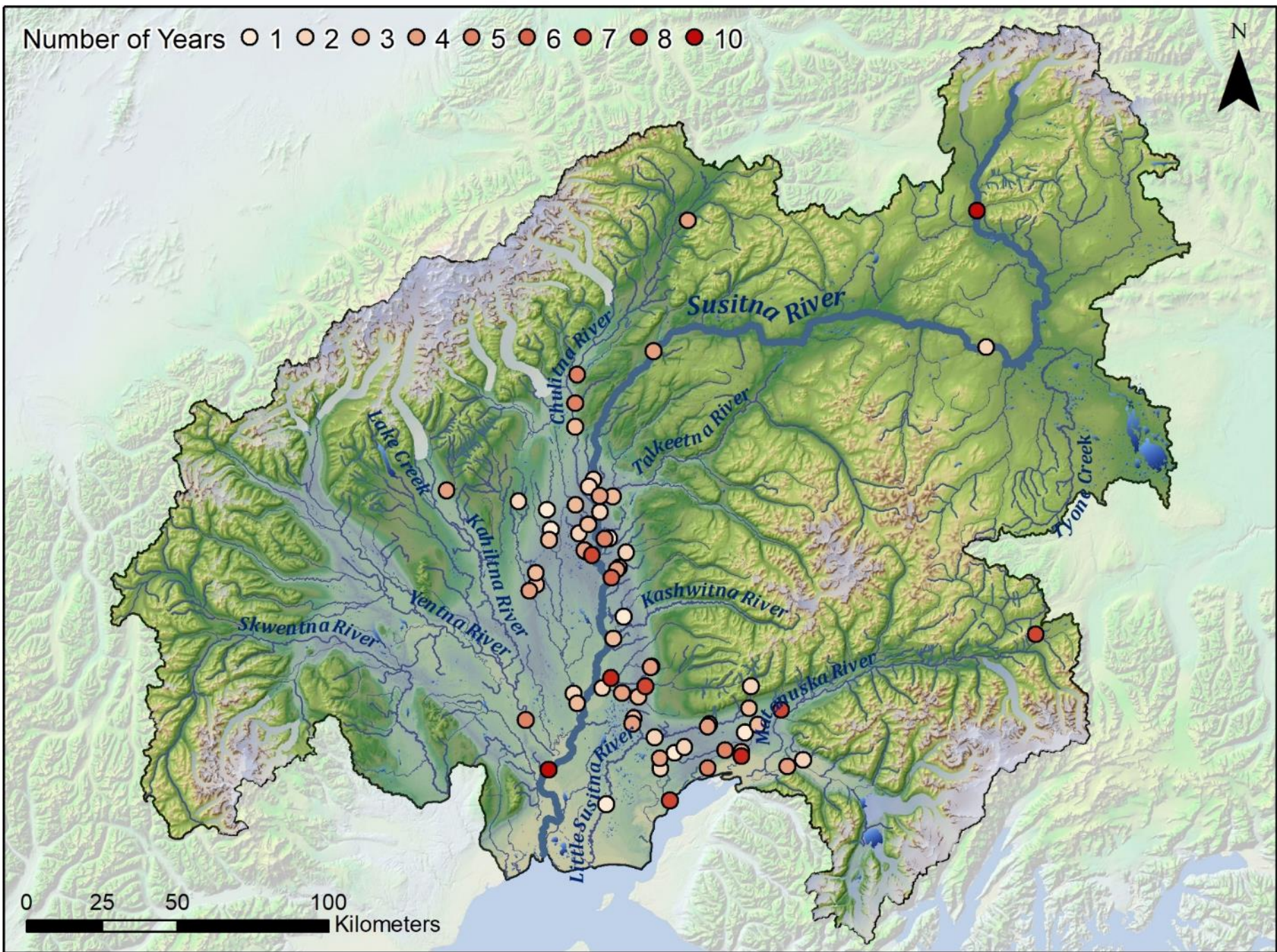
# Project Objectives

- I. Characterize diversity of stream thermal regimes across the Mat-Su Basin using existing temperature data
- II. Identify landscape and climate drivers of thermal regimes





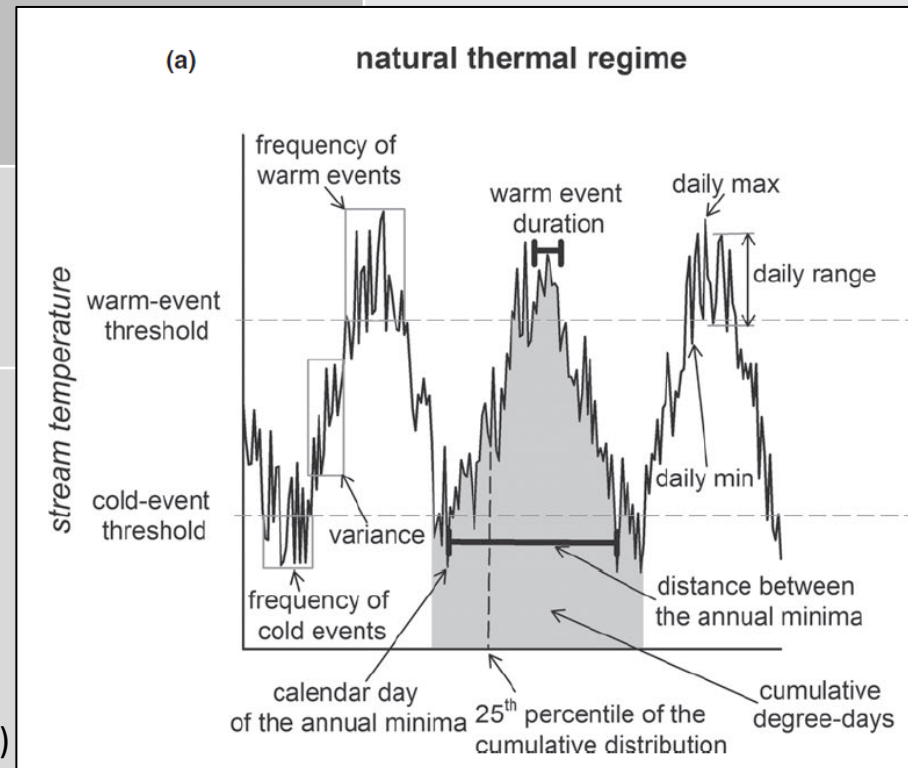
Number of Years ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 10



0 25 50 100 Kilometers

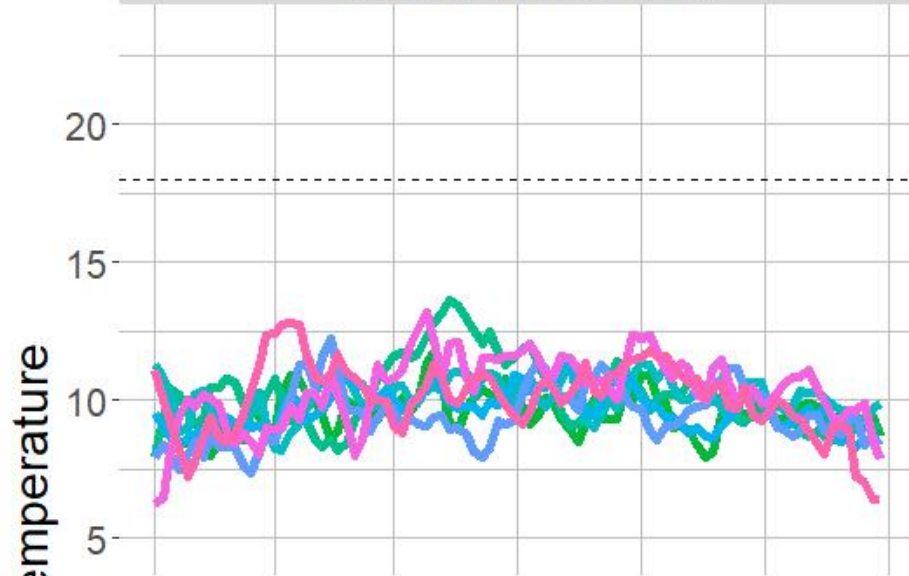


Descriptor	Temperature Metric
Magnitude	Maximum of 7-day Moving Average
Timing	Date of Maximum Daily Temperature Date of Maximum of 7-day Moving Average
Duration	Longest Event Above 13° C Longest Event Above 18° C
Frequency	Total Days Above 13° C Total Days Above 18° C
Variability	Variance Coefficient of Variation Maximum Daily Range

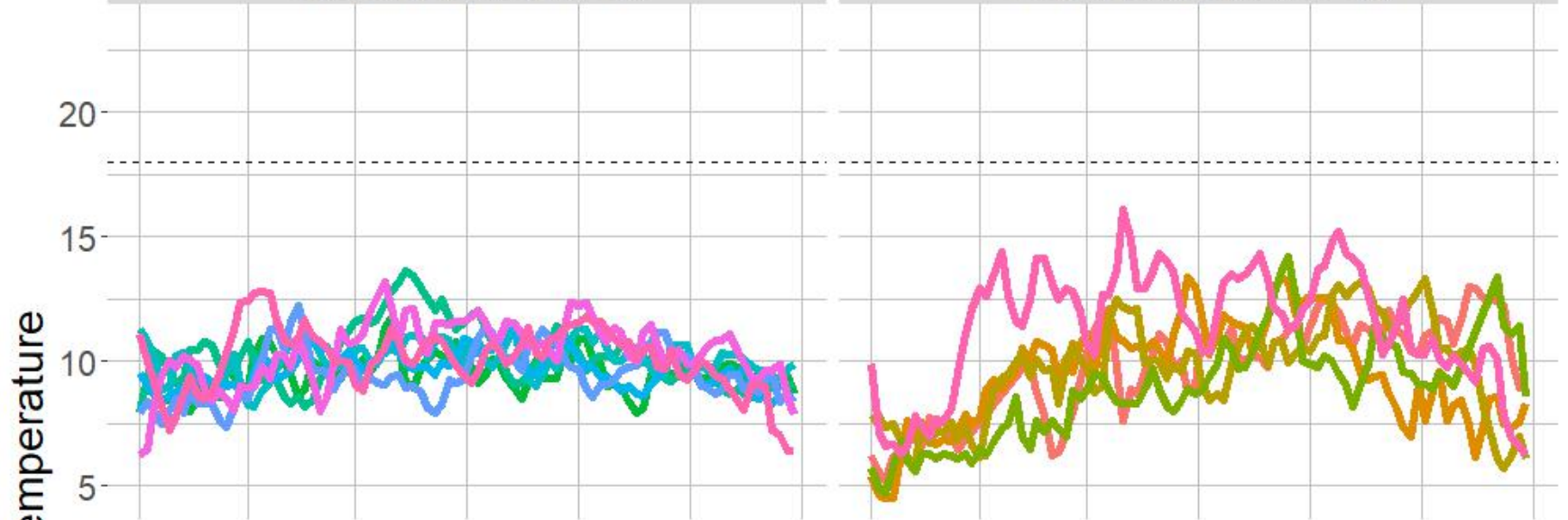


(Arismendi et al. 2013)

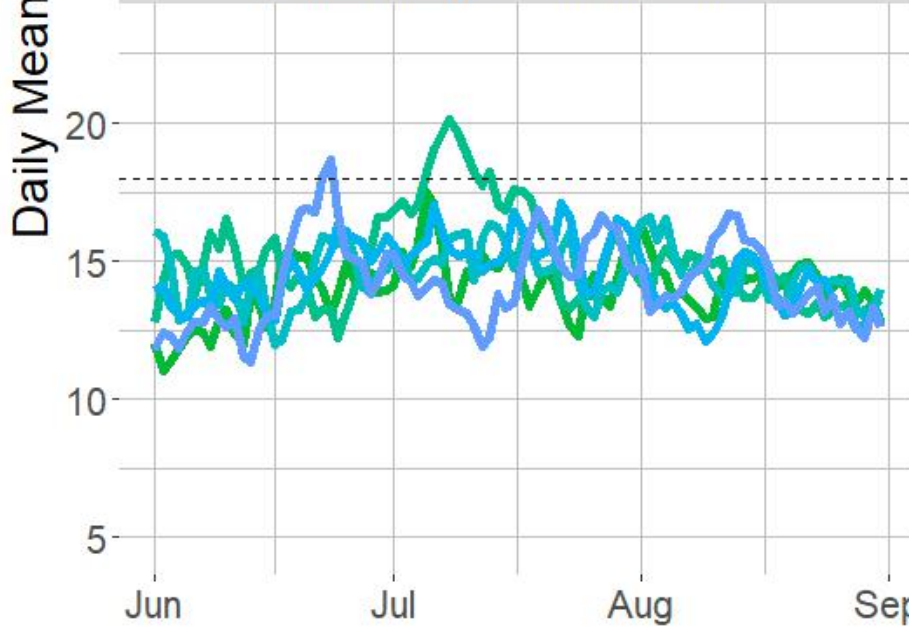
Cold-Stable (Wasilla Cr)



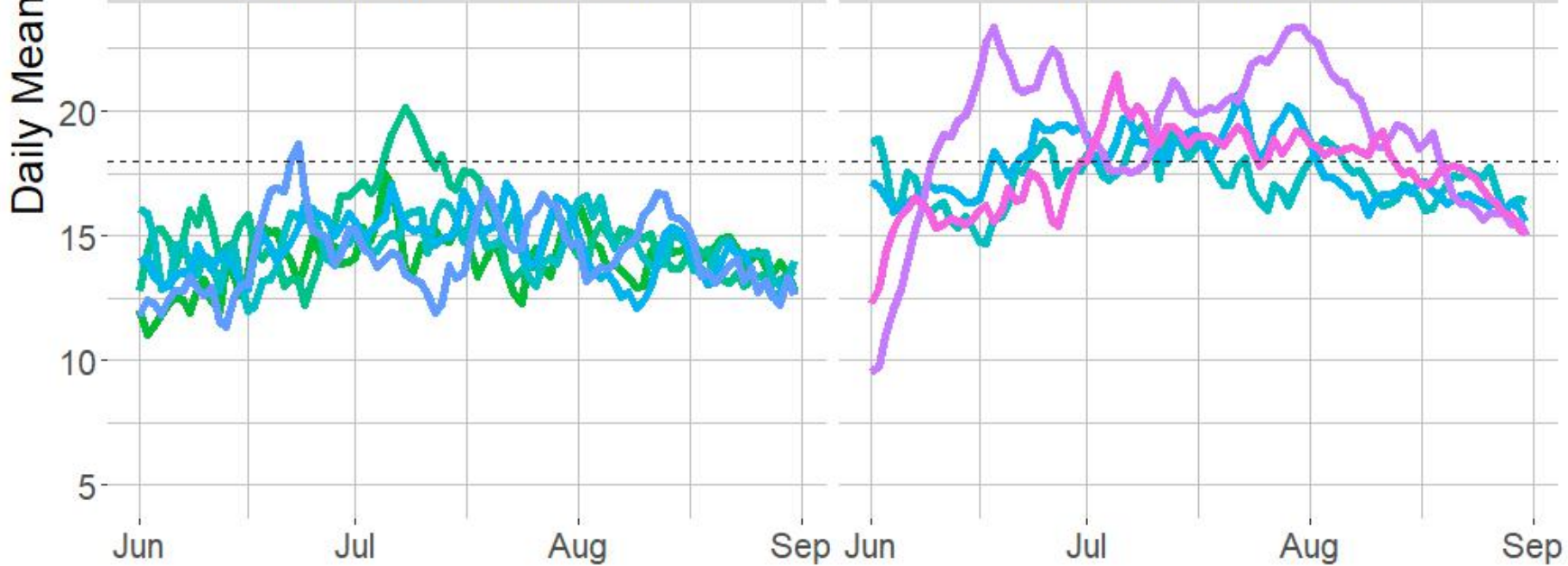
Cold-Variable (Willow Cr)



Warm-Variable (Cottonwood Cr)

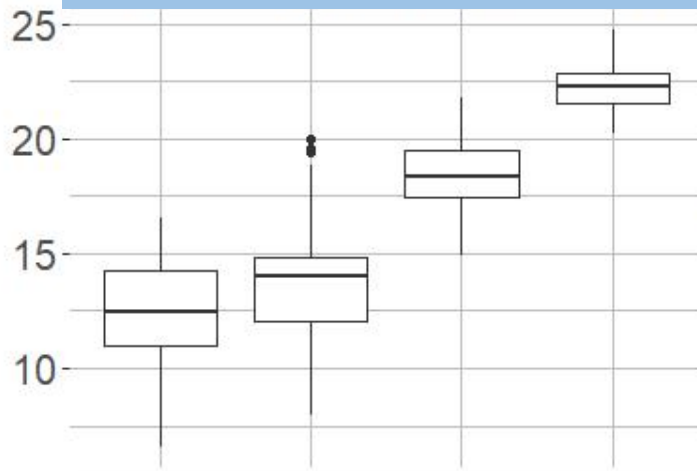


Warm-Long (Question Cr)

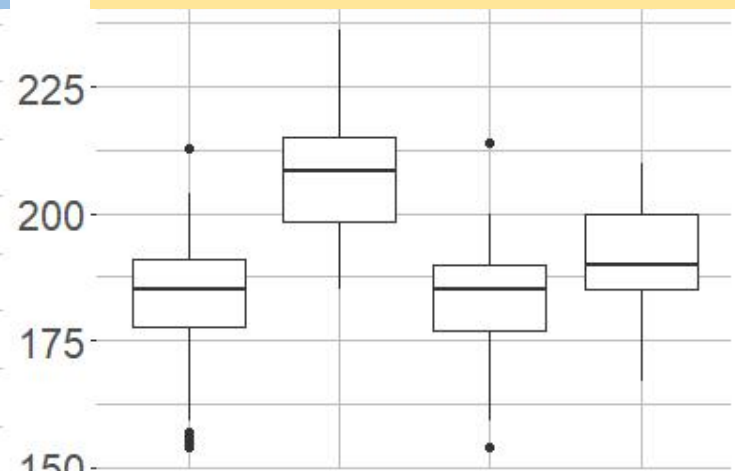




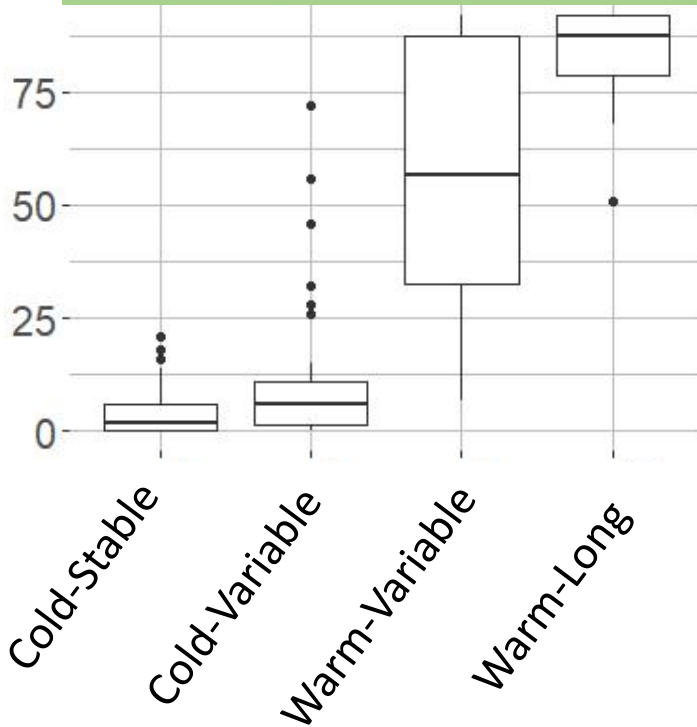
Magnitude: 7-Day Maximum



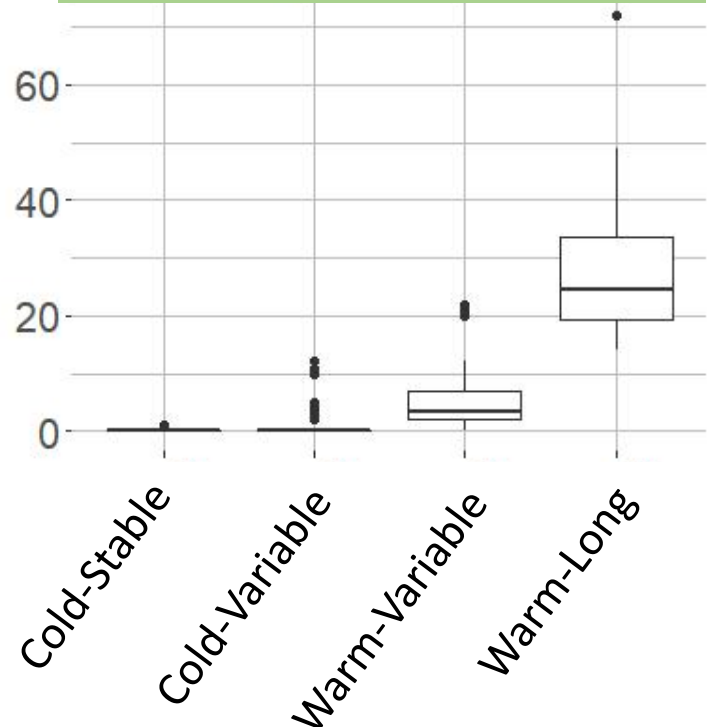
Timing of 7-Day Maximum



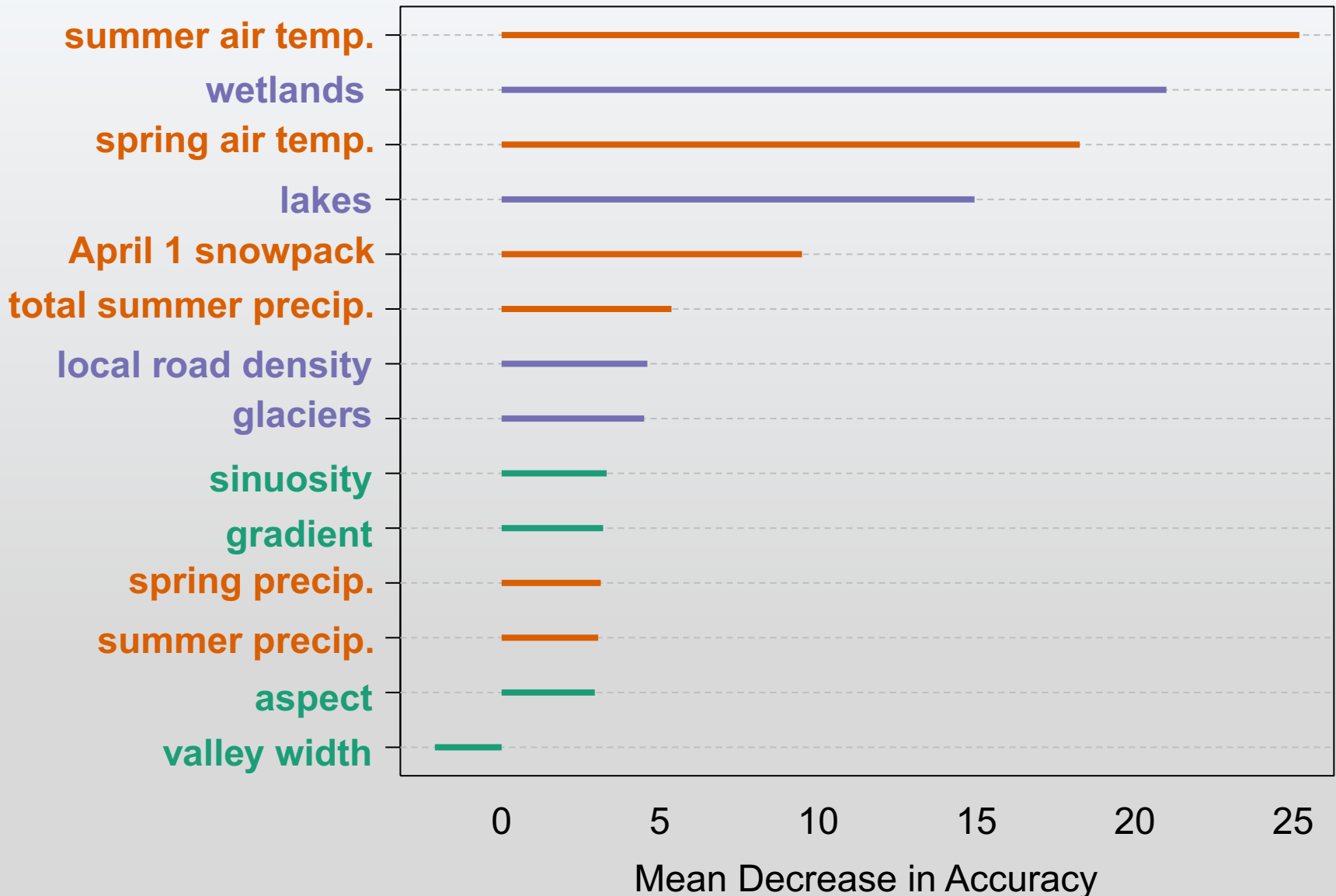
Duration Temperatures > 13°C



Duration Temperatures > 18°C



# Variable Importance



CLIMATE

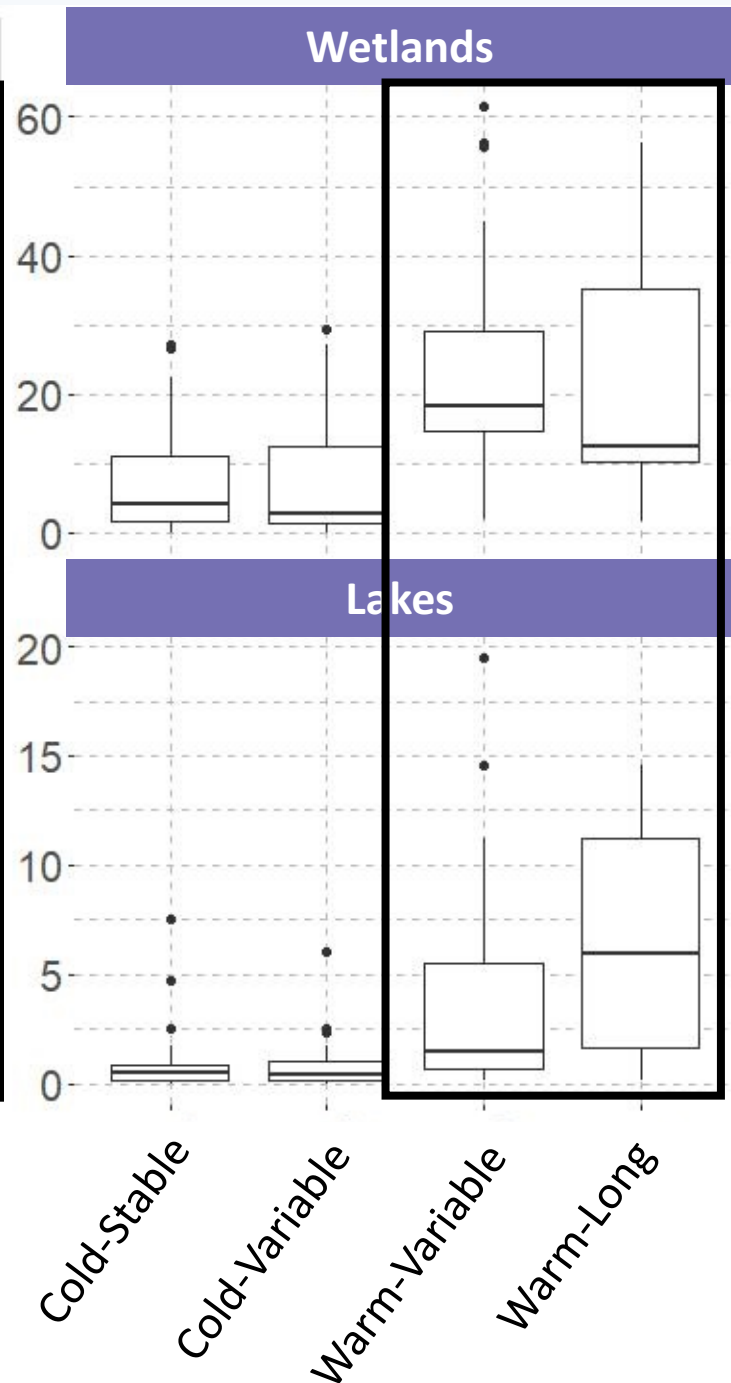
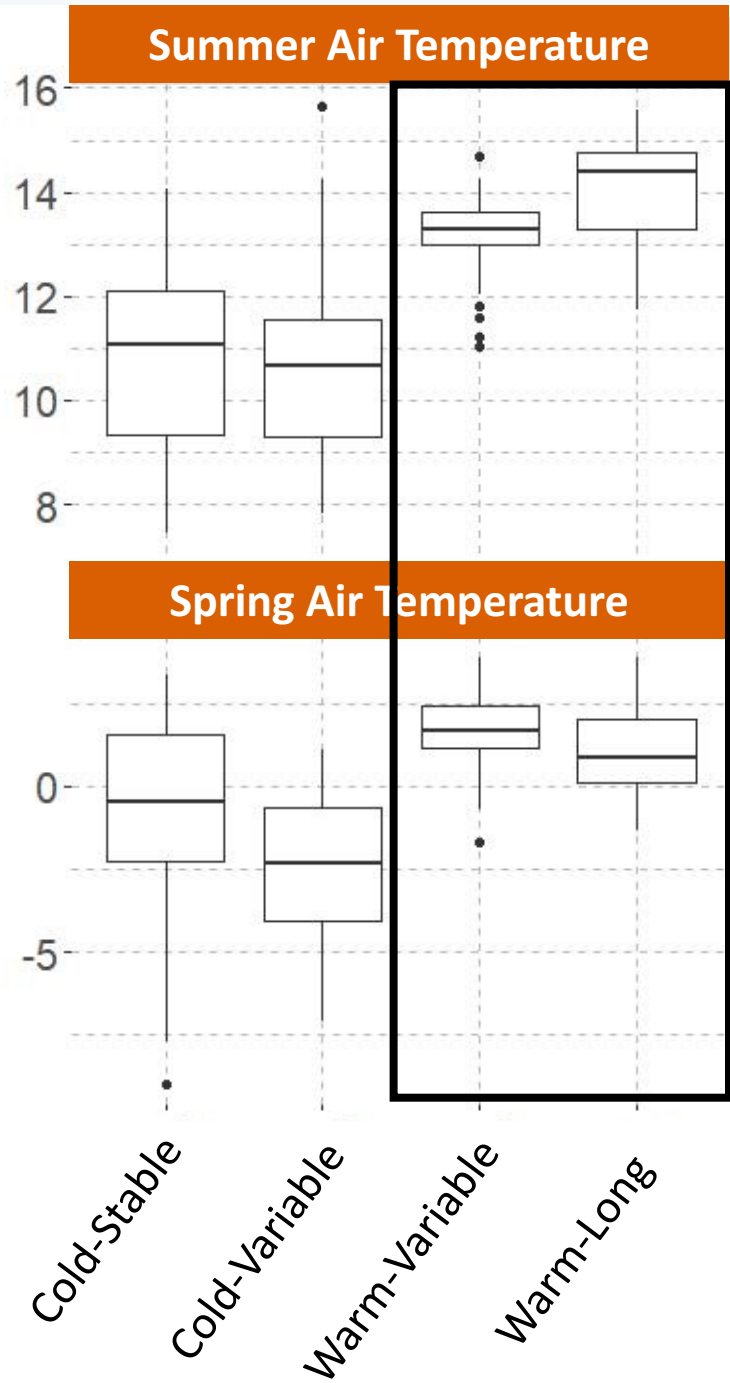


LAND COVER

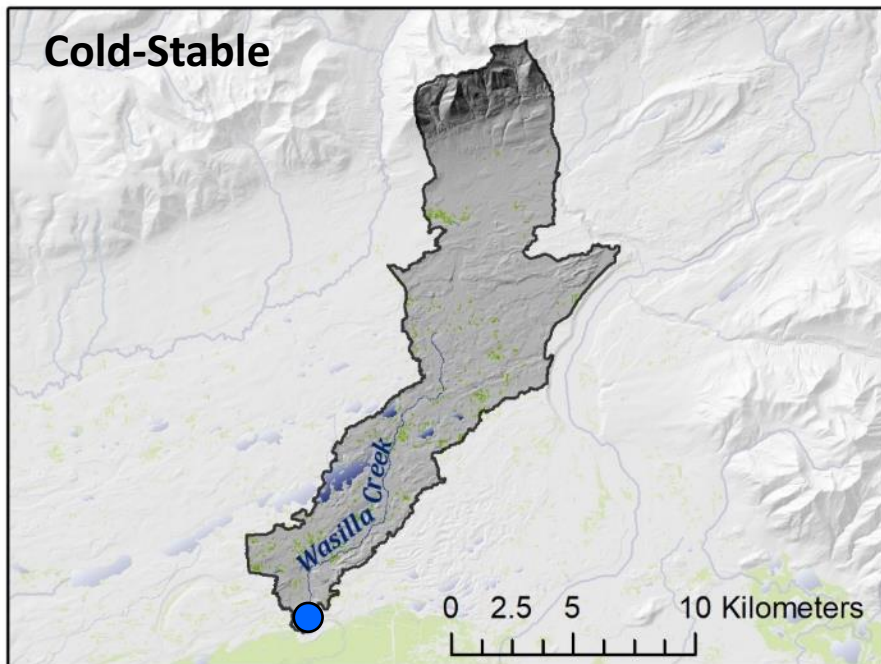


GEOMORPHOLOGY

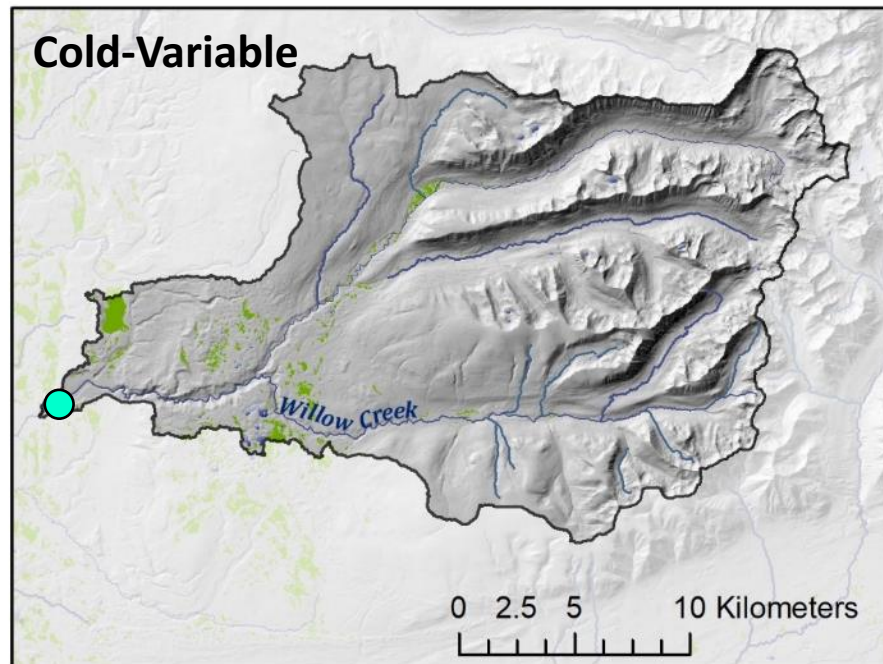




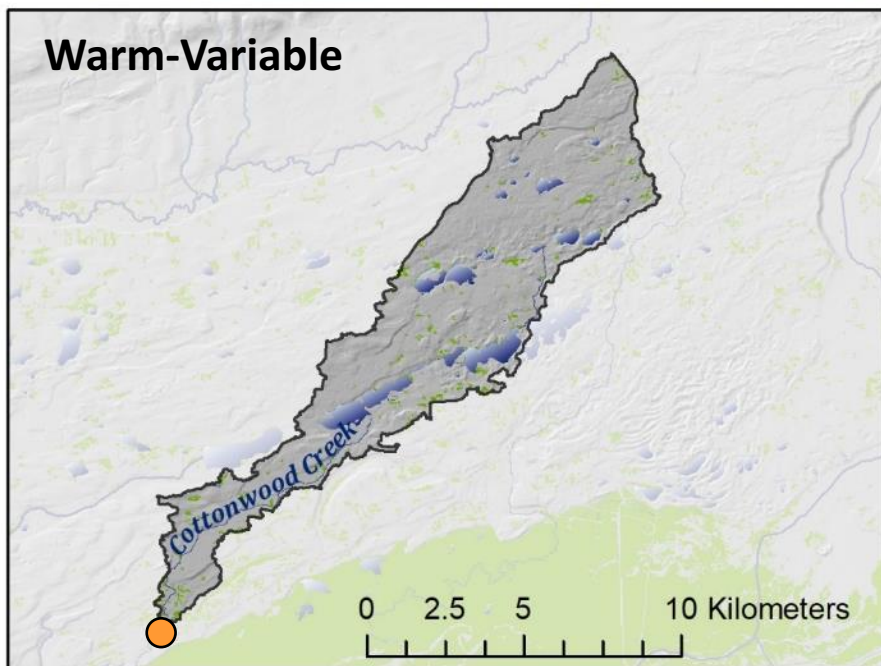
**Cold-Stable**



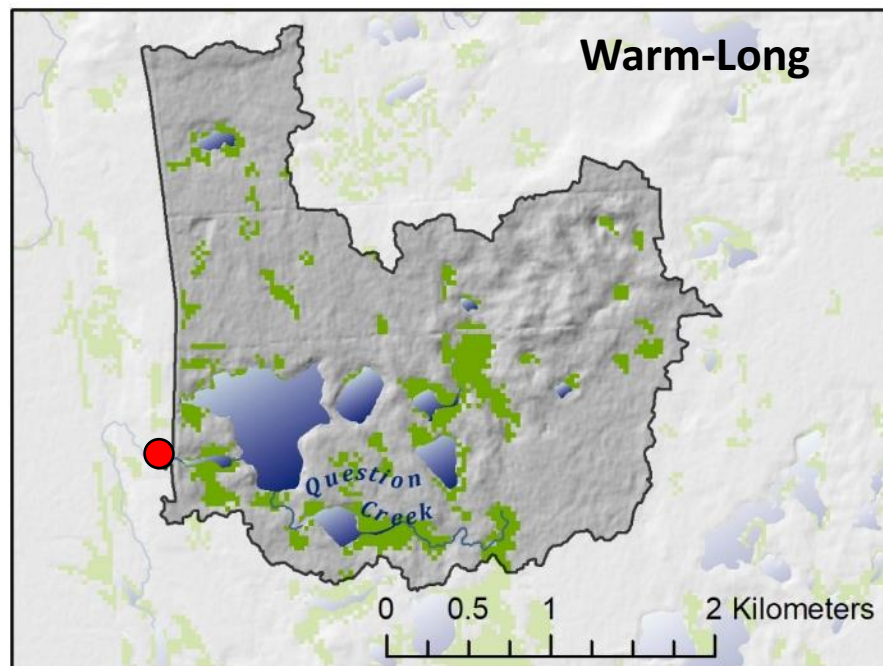
**Cold-Variable**



**Warm-Variable**

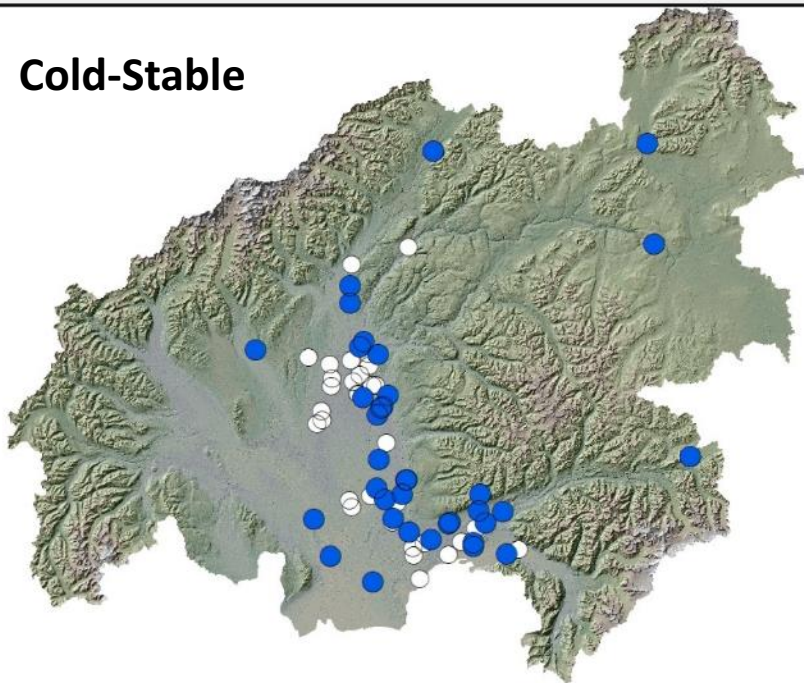


**Warm-Long**

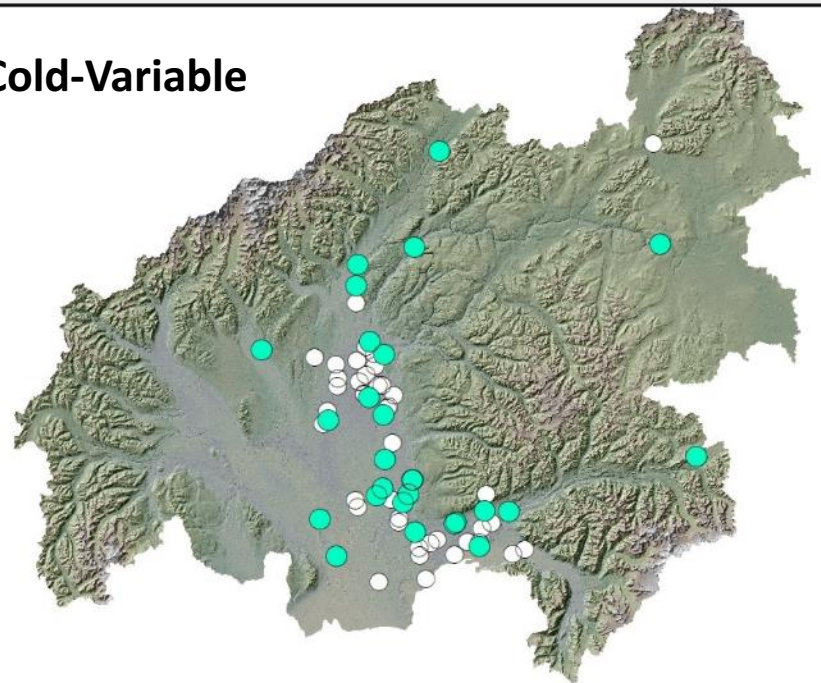




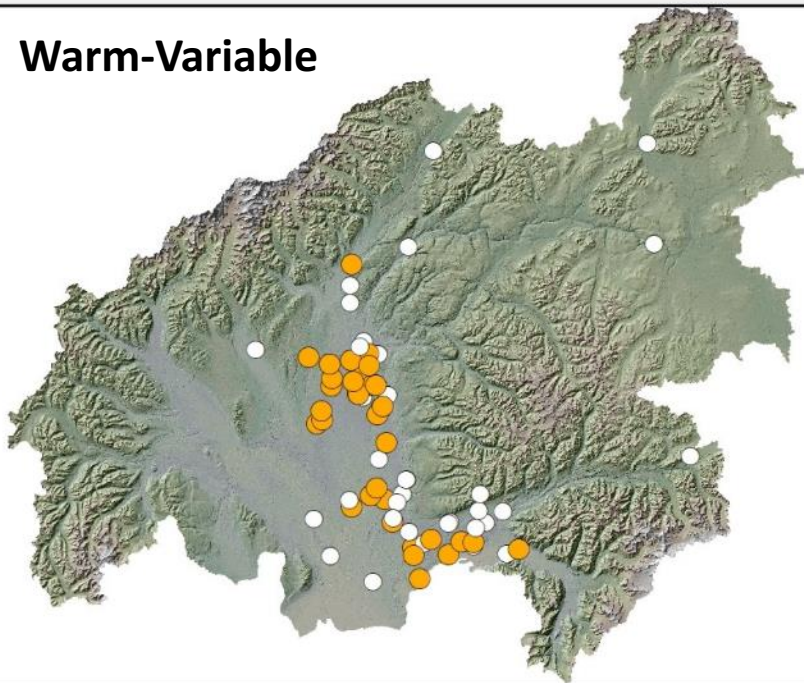
**Cold-Stable**



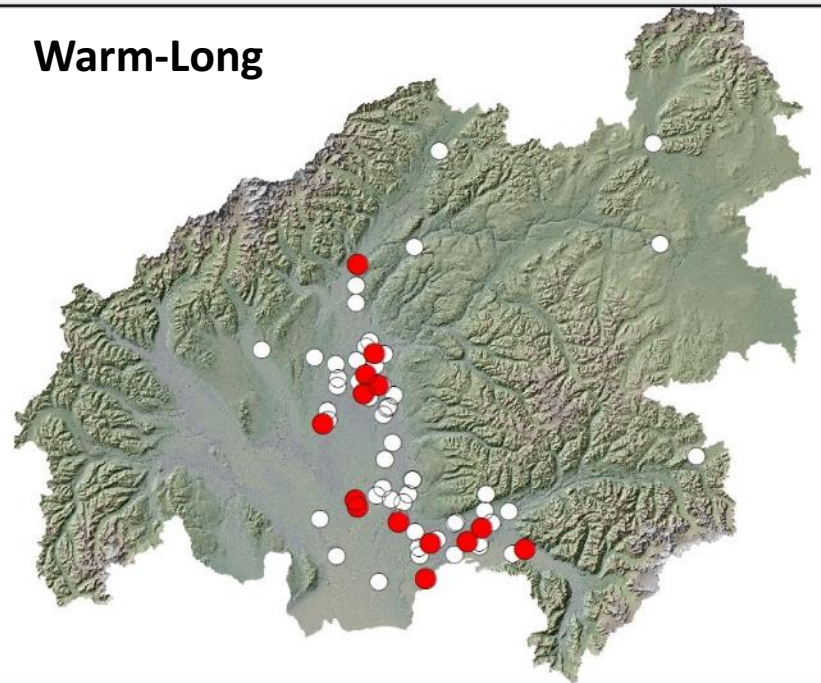
**Cold-Variable**



**Warm-Variable**

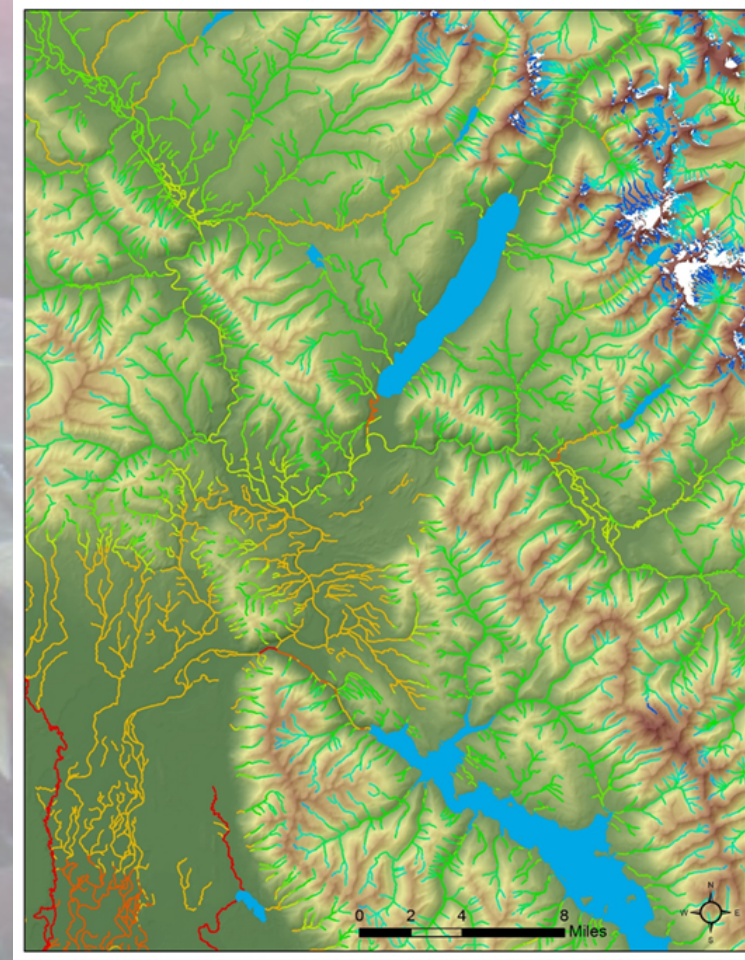
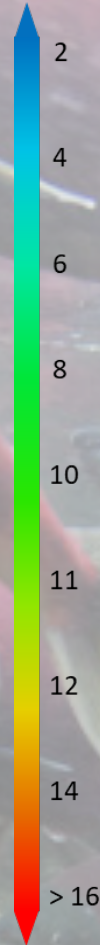
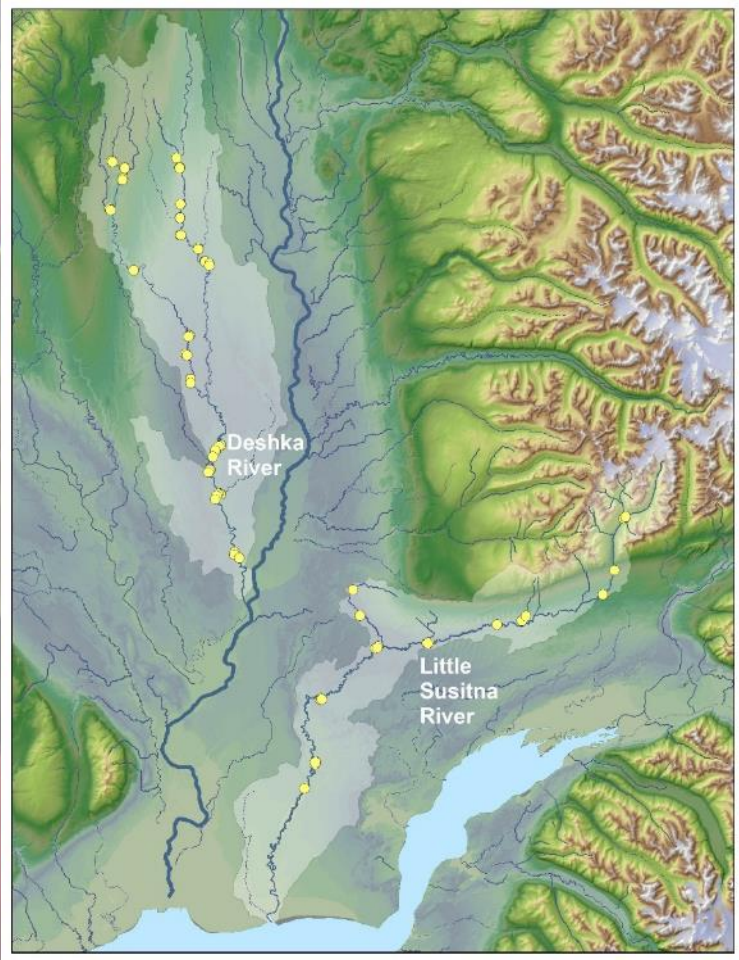


**Warm-Long**





# Linking Thermal Diversity to Salmon Habitat Use



(Jones et al. 2017)