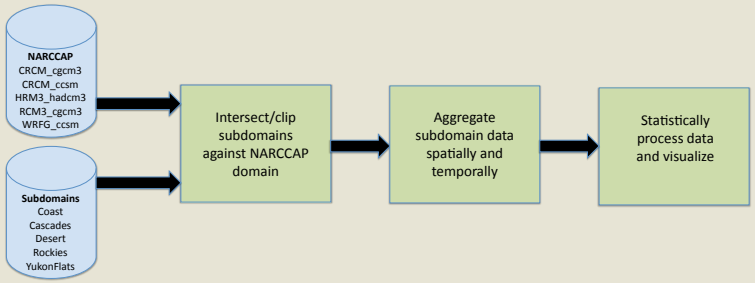
Climate Change Impact Assessment for Surface Transportation in the Pacific Northwest and Alaska

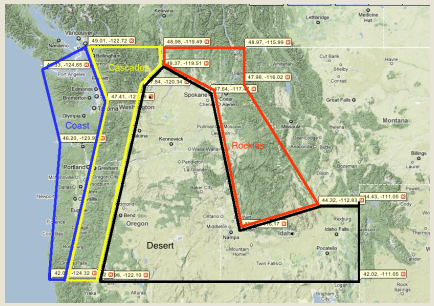
Darrin Sharp, Oregon Climate Change Research Institute, dsharp@coas.oregonstate.edu
NARCCAP Users Workshop, April 7-8, 2011, Boulder, CO

Objective: Conduct a preliminary assessment of the risks and vulnerabilities climate change poses to the surface transportation infrastructure system in the Pacific Northwest and Alaska region.

The **general process** is as shown below:

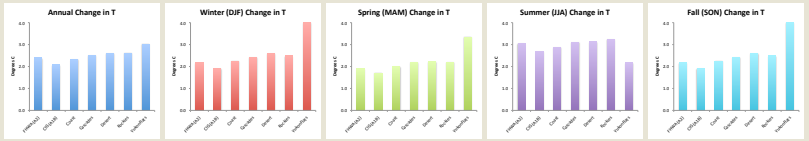


Subdomains were chosen so as to highlight regional differences and to take best advantage of NARCCAP coverage:

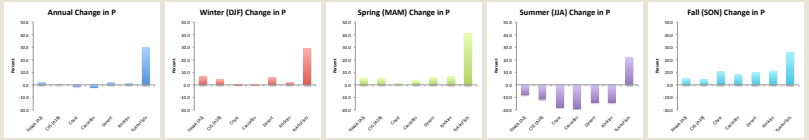


Selected Preliminary Results:

Change in Temperature (T), mid 21st century – 20th century base period, NARCCAP subdomains compared to two other Pacific Northwest regional assessments. FHWA and CIG used downscaled GCM results. NARCCAP results are the mean of 5 RCM-GCM combinations, A2 emissions. Temperature > 0 indicates a warmer future.

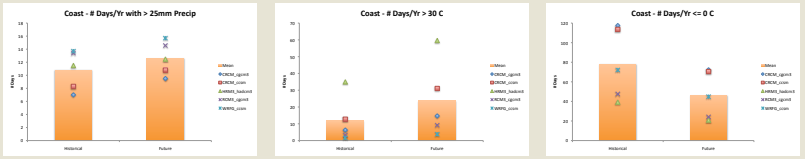


Change in Precipitation (P), percent, mid 21st century – 20th century base period. Percent > 0 indicates a wetter future.



FHWA = Federal Highway Administration, "Highways and Climate Change", 2009, http://www.fhwa.dot.gov/hep/climate/climate_effects/index.cfm
CIG = Climate Impacts Group at the University of Washington, "The Washington Climate Change Impacts Assessment", 2009

Changes in "Extreme" Temperature and Precipitation.



Preliminary Conclusions:

- NARCCAP results are broadly consistent with previous GCM based regional analyses; with important subregional differences
- NARCCAP may be able to provide useful subregional climate change impacts data for evaluation of transportation infrastructure
- Additional work is required for normalizing "historic" and "future" periods, and emissions scenarios