Extent of Arctic sea ice has decreased by about 22% from 1979-2009

NSIDC
Trends in 20th Century Climate

- Material taken from the most recent IPCC report
  - What is the IPCC?
- Global Trends
- Regional Trends
- Pacific Northwest
- Summary

Puget Sound compared to Global Mean
Puget Sound compared to Global Mean

Temperature Trends by Station

154 stations with long records
Almost every station shows warming
Urbanization not a major source of warming

Temperature trends (°C per century), since 1920

Cooler Warmer
3.6 °F
2.7 °F
1.8 °F
0.9 °F
Precipitation Trends by Station

- 165 stations with long records
- Most stations becoming wetter – average increase of 2.9 inches (14%)...
- …however, it is more difficult to assess trends due to challenges in measuring precipitation

Trends in the Timing of Spring Runoff

Peak of spring runoff is moving earlier into the spring throughout western US and Canada

- Advances of 10-30 days between 1948-2000
- Greatest trends in PNW, Canada, and AK
- >30% of trends are statistically significant at the 90% level, especially in the PNW

Source: Cayan et al. (in review). "Changes in Snowmelt Runoff Timing in Western North America under a 'Business as Usual' Climate Change Scenario", submitted to Climate Change 3.27.03
Changes in Streamflow

As the west warms, Spring flows increase and Summer flows drop.

Trends in 20th Century Climate

- Material taken from the most recent IPCC report
- Global Trends
  - Global, annual averaged temperature has increase ~0.85°C (1.5°F) in past 100 years
  - Warmest in NH since at least 1000 years ago (limit of data for annual records)
- Regional Trends
  - More warming over land than ocean
  - More warming in high latitude than tropics
  - Warming at surface, aloft and in upper ocean
- Pacific Northwest
  - About 1°C warmer since 1920
  - About 15% wetter
  - Compared to 1950, Spring runoff is about 10-30 days earlier, and stream flow has increased in spring and decreased in summer