



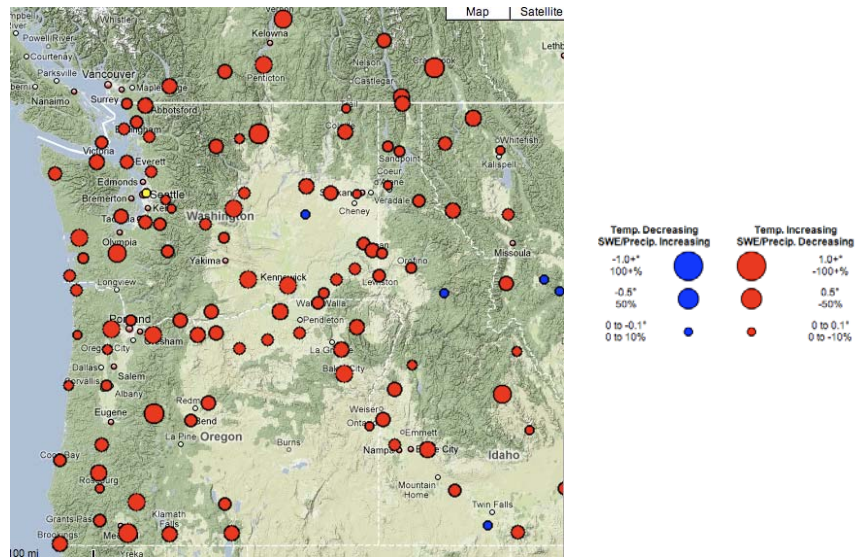
- the Oregon Climate Change Research Institute must assess, at least once each biennium, the state of climate change science as it pertains to Oregon
- physical, biological and social sciences

- 9 lead authors, OCCRI coordinated
- 70 + contributors from 4 OUS universities, state and federal agencies
- drew from peer reviewed literature and other climate assessments from WA (Climate Impacts Group) and CA (Climate Action Team)
- not a prescriptive or policy document
- link up to state adaptation framework (agency directors and workgroup)

Outline

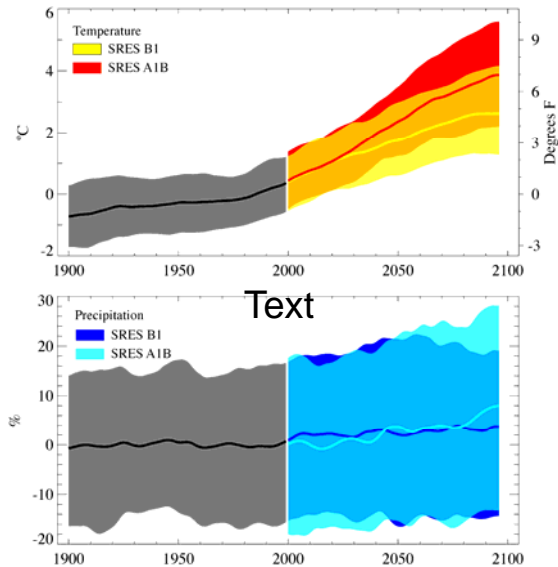
- Legislative summary
- Executive summary
- Chapter 1 - Climate
- Chapter 2 - Defining the problem & causes
- Chapter 3 - Freshwater resources
- Chapter 4 - Agriculture
- Chapter 5 - Vegetation
- Chapter 6 - Coasts and estuaries

Ch. 1 Annual mean warming trends, 1920-2005



OWSC, www.climate.washington.edu/trendanalysis

Ch. 1



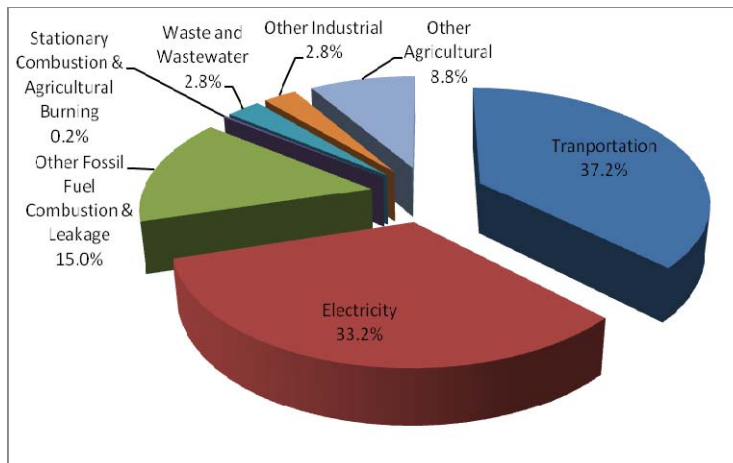
Mote and Salathé, 2010

Ch. 1

Seasonal changes

- Changes in precipitation equivocal fall, winter, spring
- More warming (and drier) in summer
- Likelihood of more extreme precipitation

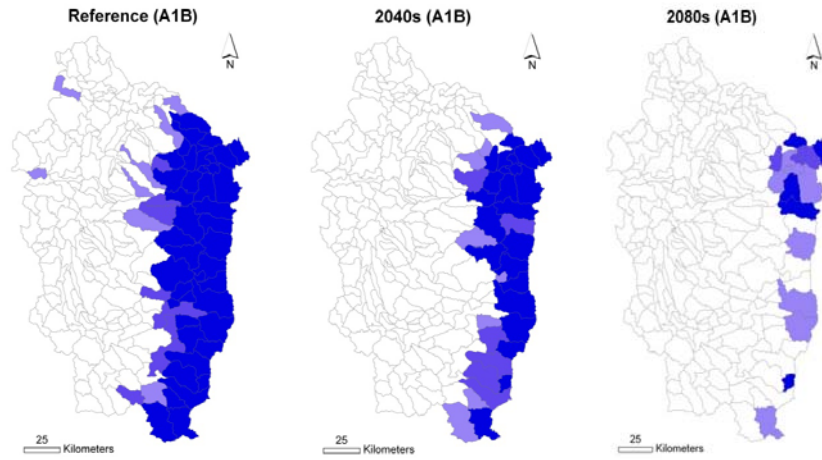
Ch. 2



Oregon Greenhouse Gas Inventory,
2010

Ch. 3

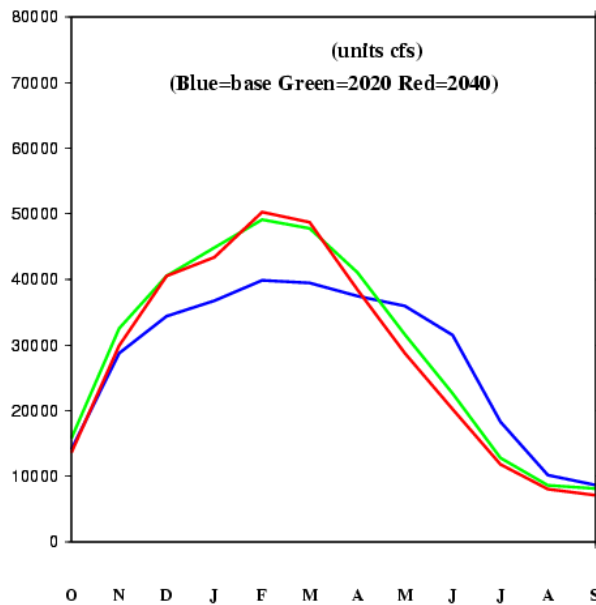
April 1 snow water equivalent in Willamette Basin



Chang and Jung 2010

Ch. 3

Simulated Natural Flow in the Willamette River at the Columbia



Modeling: Alan Hamlet
Analysis: Kathie Dello

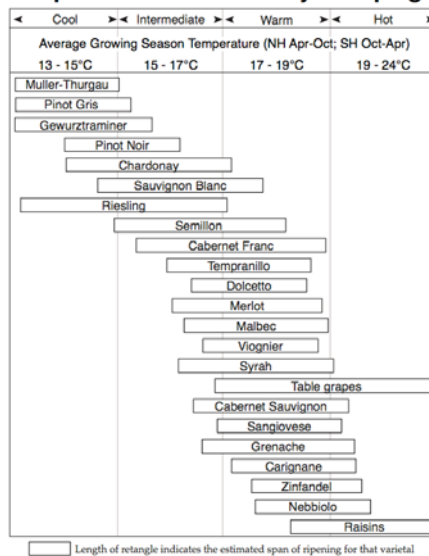
Ch. 4

agriculture in OR

- state is top producer of 15 US commodities
- agriculture makes up about 9% of OR ghg emissions
- Concerns: availability of water; weeds, insects
- Plus: longer growing season, more wine varieties

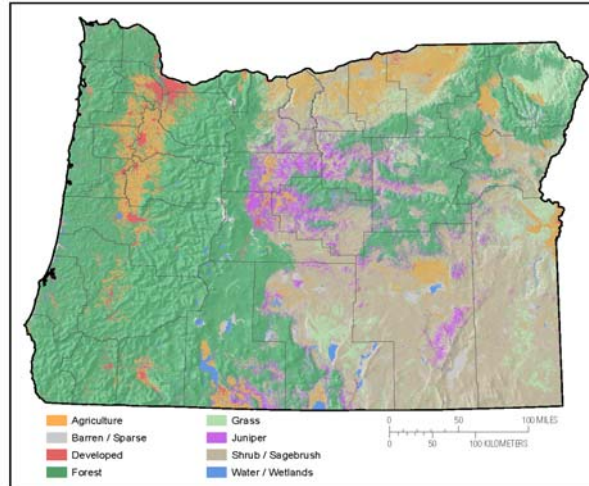
Ch. 4

Grapevine Climate/Maturity Groupings



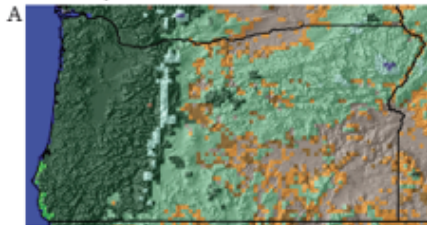
Jones et al. 2004

Land Cover in Oregon

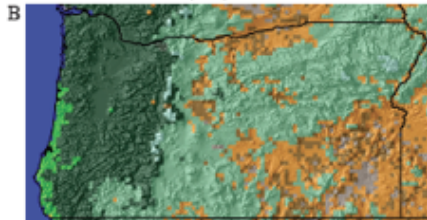


Ch. 5 Future Projections of Vegetation Type

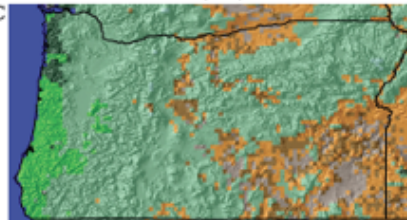
Vegetation Type PRISM, 1961-1990



B
CSIRO-Mk3.0 (B1), 2070-2099



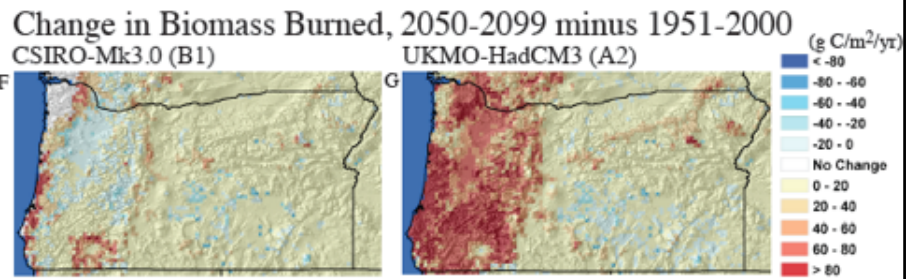
C
UKMO-HadCM3 (A2), 2070-2099



MAPSS, R. Neilson

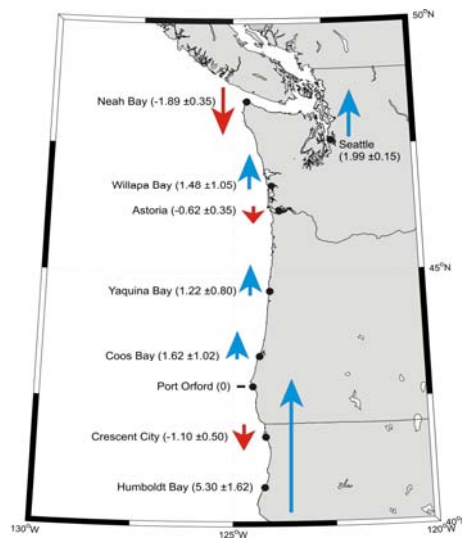
Ch. 5

changed in biomass burned



MAPSS, R. Neilson

Ch. 6



after Komar et al., 2010 (in press)

Ch. 6

Shoreline retreat and armoring, Rockaway



photo: Don Best

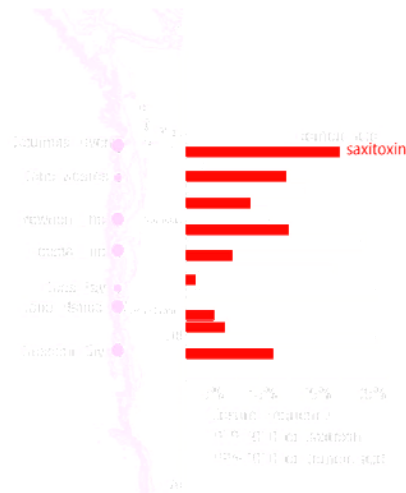
Ch. 7

observed species changes

- Could be natural variability or climate change
 - insects moving in from south of Oregon
 - frogs reproducing earlier in the year
 - land birds are shifting their distributions northward
 - freshwater fish losing habitats
 - humboldt squid appearing off OR coast

Ch. 7

algal blooms



Hixon et al., 2010

Economic risks

- *Global* estimates of costs 1-5% GDP
- Oregon: Reductions in snow and water supply
- Energy
- Agriculture: crop yield, water supply
- Forestry: Wildfire, insects, shifting species
- Riverine and coastal flooding
- Salmon, Health, Recreation (CLI report)

Ch. 9

Recently there has been much discussion about climate change and global warming due to years of human use of fossil fuels such as petroleum and coal. Some have called for the development of renewable energy sources—such as wind, solar, wave and geothermal—to reduce our reliance on fossil fuels. In general, which of the following views best describes your opinion in this area?

Statement	% respondents agreeing
1. Do not know	1.6%
2. Climate change is not a problem; existing energy policies should be maintained.	25.6%
3. Climate change is a minor problem; only minor energy policy changes are needed to encourage the development of renewable energy sources.	9.4%
4. Climate change is a moderate problem; moderate energy policy changes are needed to encourage the development of renewable energy sources.	30.3%
5. Climate change is a serious problem; significant energy policy changes are needed to encourage the development of renewable energy sources.	33.2%

N=1,480

Borberg et al. 2009

key findings

- increases in annual temperature, warmer drier summers
- summer water supply will decrease
 - reduced snowpack, drier summers
- Oregon's most ghg intensive sector is transportation
- availability, quality and cost of water will be a limiting fact

key findings

- potential opportunities in the ag sector
- wildfire is projected to increase
- frequency and magnitude of coastal flooding events may increase
- many plant and animal species on land, freshwater and sea will shift their distributions
- changes to the marine environment, increased temps

moving forward

- we call for a more complete economic analysis of the impacts of climate change on Oregon's economy
- we're already experiencing impacts now
- measures for adaptation should be taken now
- OR Climate Change Adaptation Framework