



Science You Can Use

*The Climate Change Research Program at
the
US Forest Service
Pacific Northwest Research Station*

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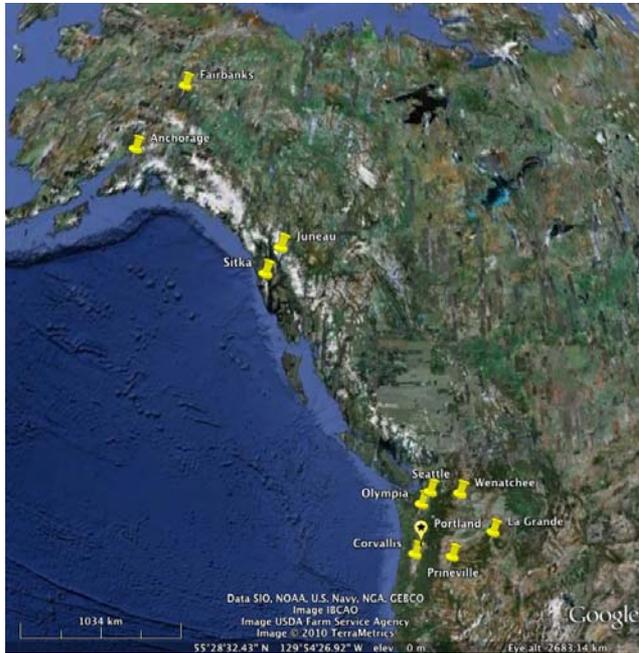


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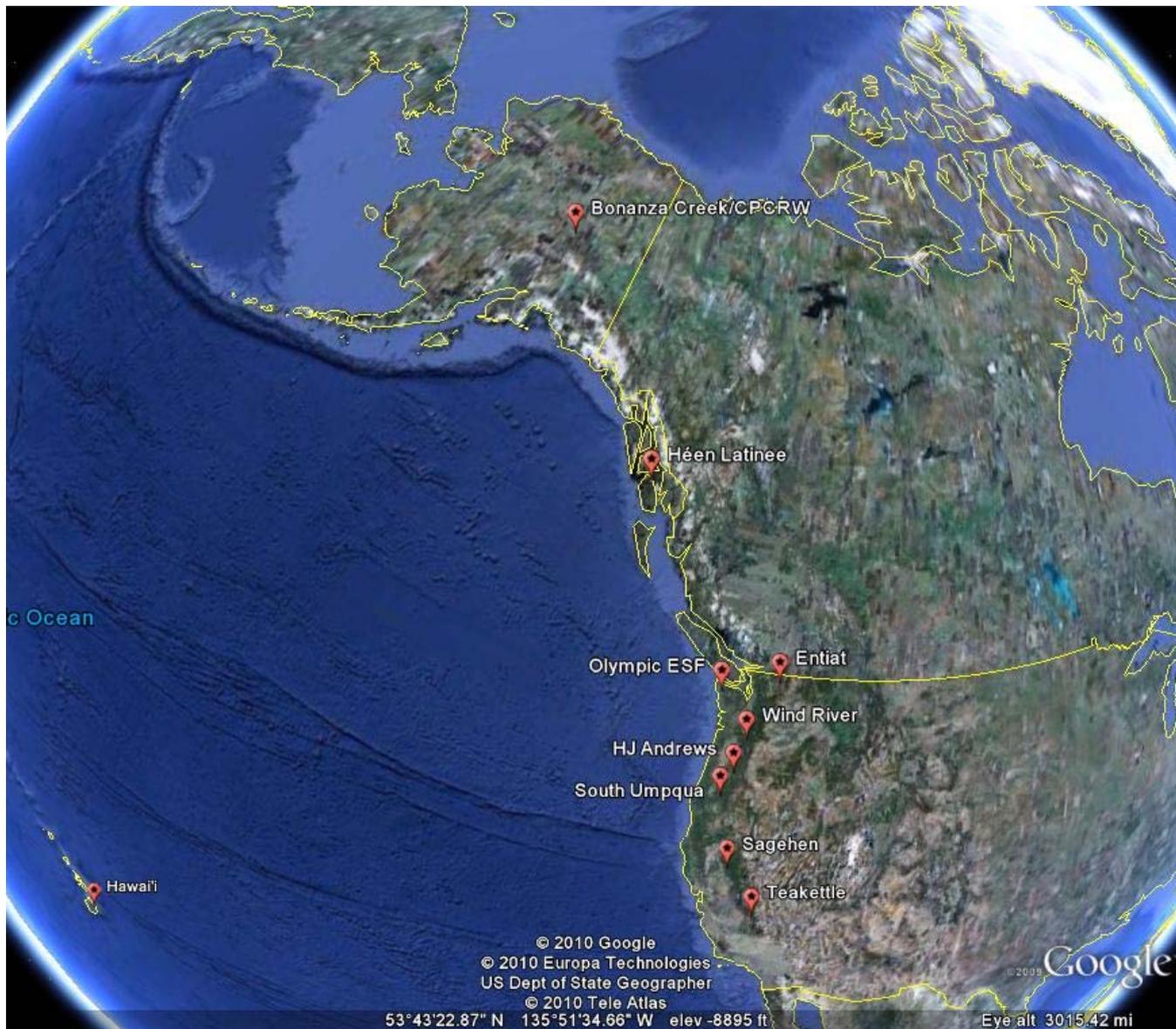


About the PNW Research Station

- Part of USDA Forest Service Research and Development
- 11 Locations in Oregon, Washington, and Alaska
- 11 Experimental Forests
- 5 Fundamental Research Programs
 - Ecosystem Process and Function
 - Land and Watershed Management
 - Resource Monitoring and Assessment
 - Threat Characterization and Management
 - Goods, Services, and Values
- Western Wildland Environmental Threat Assessment Center
- Focused Science Delivery



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Our Context vis à vis Climate Change



We carry out fundamental and applied research to further basic understanding of ecosystems and how people use them, and we support land managers by providing science, synthesis, and interpretation



What changes in the function of forests and rangelands will be driven by changes in climate?

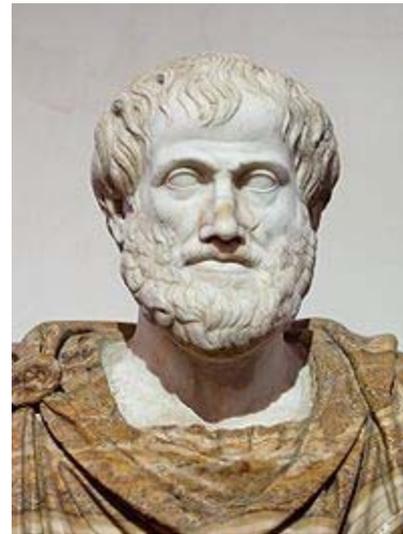
What management options are available to mitigate those impacts?



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Climate Change Program at PNW Station

Earth
Air
Fire
Water



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Main Foci of PNW Climate Change Research

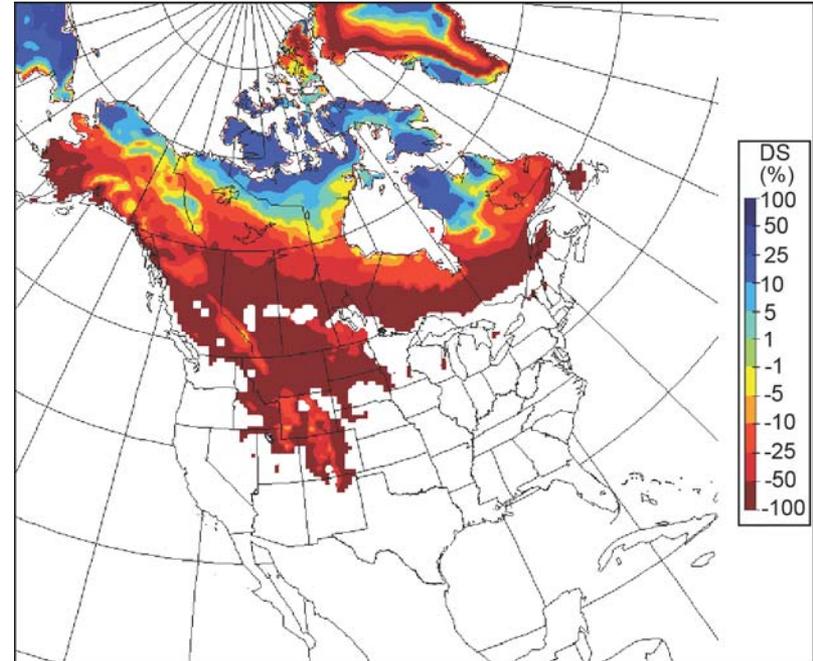
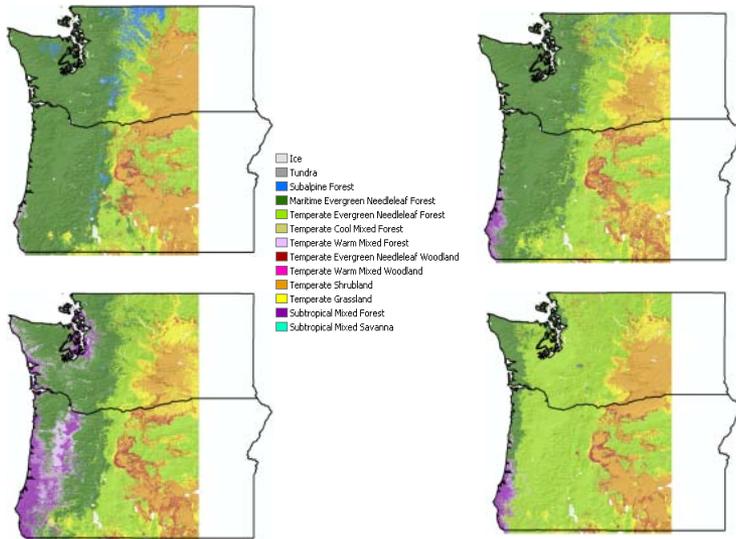
- *Translation of climate projections to the ground including vegetation succession trajectories*
- *Landscape Processes–Maintaining or Restoring Function*
- *Water*
- *Wildlife and Fish habitat*
- *Fire*
- *Insect and Disease dynamics*
- *Community and social dynamics*
- *Tribal concerns*
- *Ecosystem services and environmental economics*



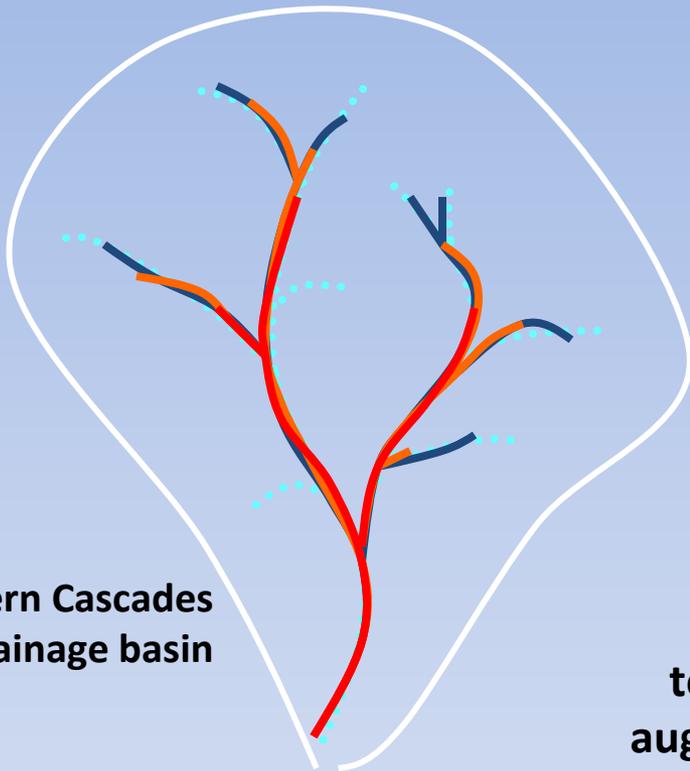
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Percentage change in March snow depth (2041-2070 vs. 1961-1990)

What's predicted to happen?



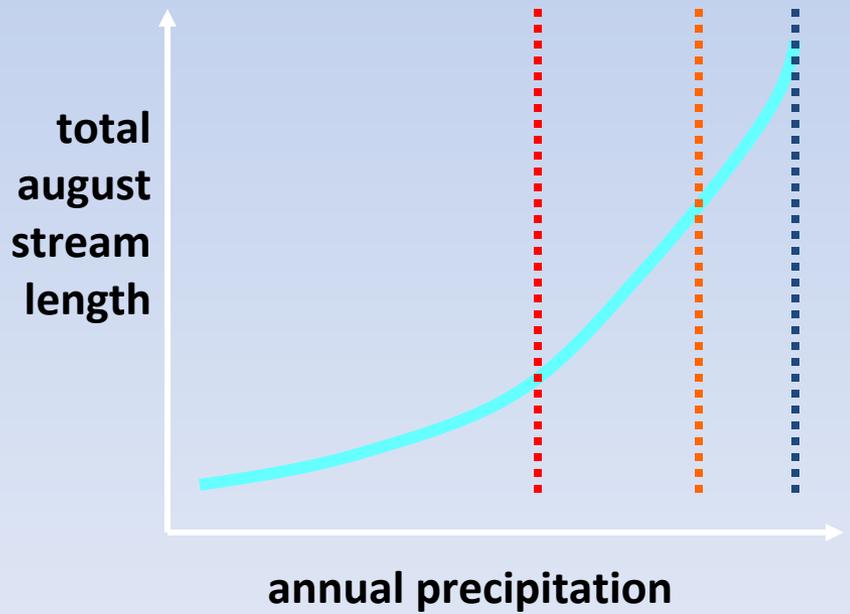
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wet year
average year
dry year

Western Cascades
drainage basin

Even a small reduction in low flow
discharge can result in a large
decrease in stream length

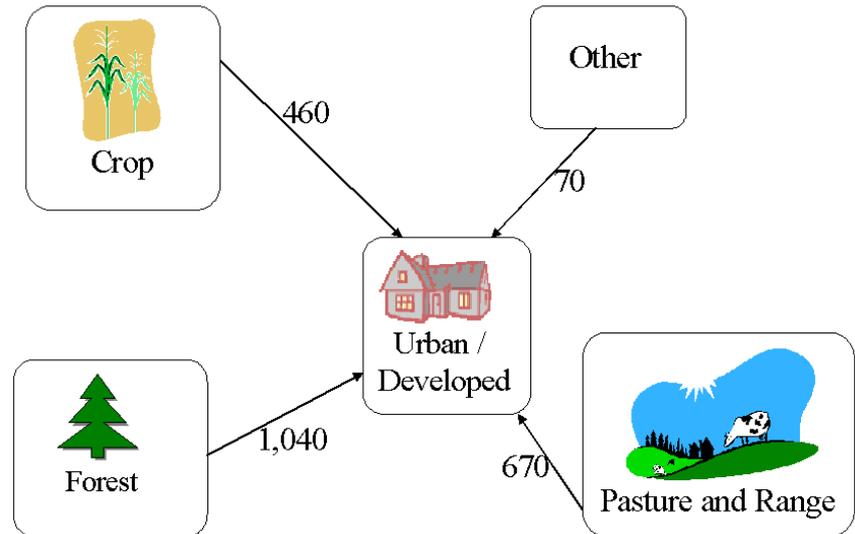


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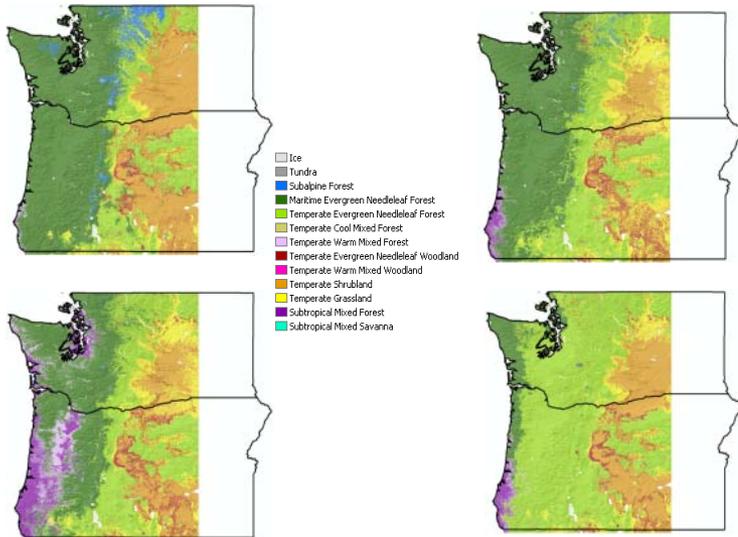
Increasing pressure on natural resources



Annual losses of open space to urban uses: 1997-2001



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Down-scaled Climate Models and Resulting Trajectories of Vegetation Succession



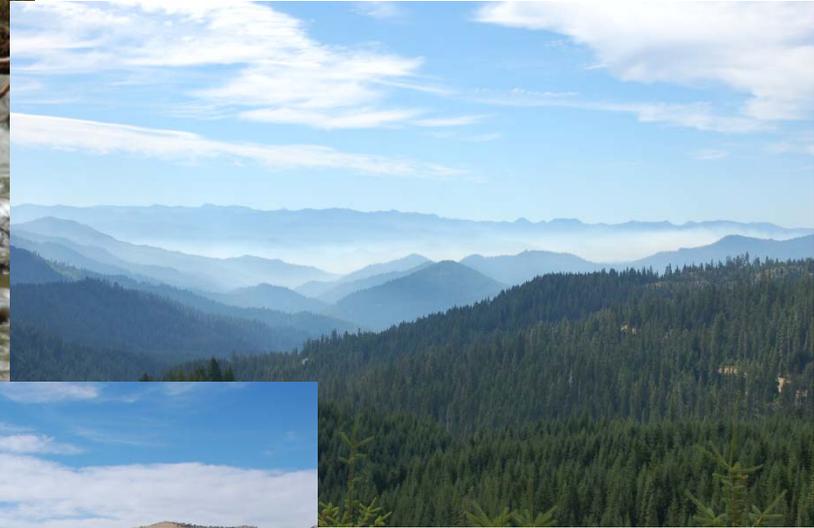
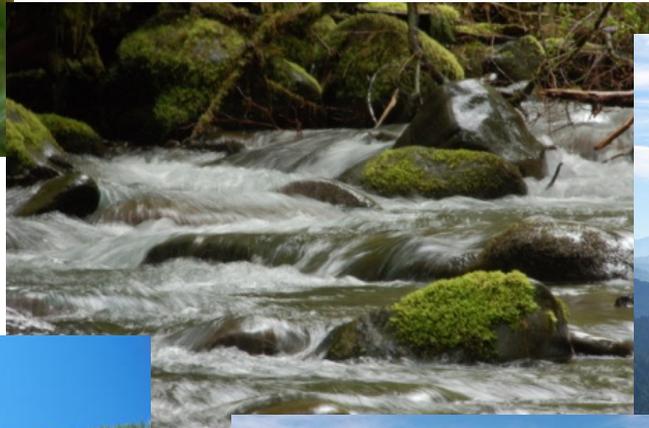
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Landscape Processes Maintaining or Restoring Function



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Water Cool, Clear Water

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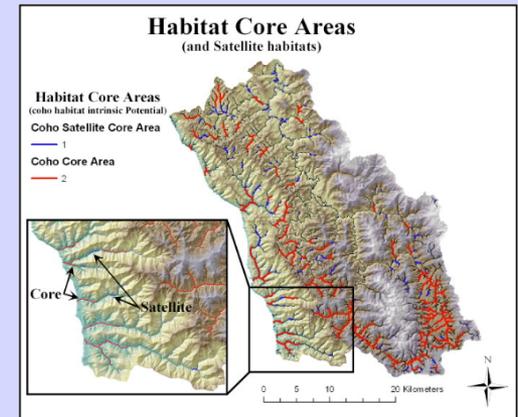
Where are the highest concentrations of habitat located?



“Sew” habitat patches together (20 – 200 m scale) using thresholds for

- habitat quality*
- habitat size*
- habitat proximity*

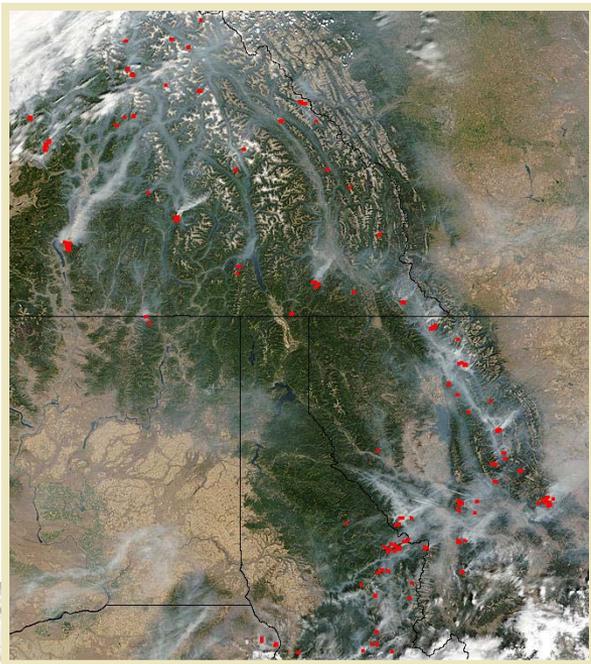
to create habitat “core areas” or “anchor habitats”



Wildlife and Fish Habitat



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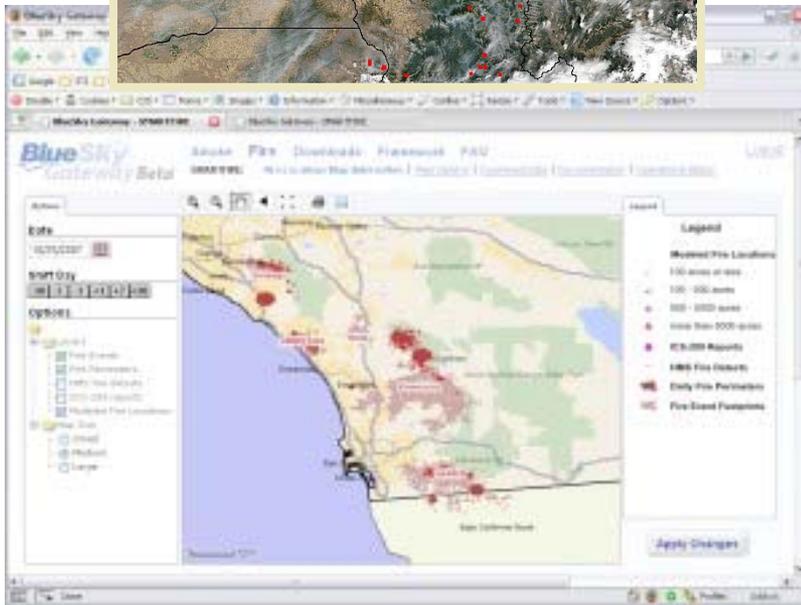


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Fire Effects

Smoke Modeling and Forecasting



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Insects and Disease



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What changes in the function of forests and rangelands will be driven by changes in climate?

Community Dynamics

What management options are available to mitigate those impacts?



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Changes in Ecosystem Services



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