



US Forest Service R&D PNW Research Station

Project Title: A Toolkit for Adapting to Climate Change on Western National Forests: Incorporating Climate into Resource Management and Planning

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Project Description: In June 2008, scientists from the Pacific Northwest, Pacific Southwest, and Rocky Mountain Research Stations were awarded funds from the Forest Service Global Change Research Program to develop and evaluate a set of decision-support tools and reference materials that will incorporate climate-change considerations into decision-making on western national forests, as well as be broadly relevant to other managers, policy-makers, and scientists. We are developing adaptation management resource materials in multiple formats, conducting replicate case studies on three national forests and affiliated national parks to develop and evaluate decision support for adaptation to climate change, extending case-study results for broader applications across diverse landscapes and ownerships, and intensively developing the U.S. Forest Service Climate Change Resource Center (CCRC) Web site.

The PNW Research Station is responsible for case studies on Olympic National Forest and Olympic National Park, (collaboratively with U.S. Geological Survey and the National Park Service). We are also developing simulations of future climate, climate change effects on vegetation, and uncertainty for all three case-study regions.

To move forward on this project, we are working on simulations and adaptation, and developing projects jointly with Olympic National Forest staff. The first phase of simulations of nine dynamic ecosystem scenarios, at 800-m resolution, for vegetation change, carbon balance, hydrology, and disturbance for Olympic and Tahoe National Forests is done. The University of Washington Climate Impacts Group is compiling information for assessment of climate change effects at Olympic National Forest.

Videoconferences brought together scientists and resource managers from the Olympic, Tahoe, and Shoshone National Forests to discuss climate change scenarios and their uncertainty. The results of the first phase of the Olympic National Forest case study have been shared with 12 national forests in the Pacific Northwest Region, with 2 national forests and regional staff in the Northern Region, and at several regional and national meetings.

Project Deliverables:

Presentations

- Numerous presentations on the Olympic National Forest case study for scientific and management audiences.

- Numerous presentations on climate change adaptation to national forests, U.S. Fish and Wildlife Service, U.S. Geological Survey, Environmental Protection Agency, scientific conferences, and resource manager workshops.

Web site

- Climate Change Resource Center: <http://www.fs.fed.us/ccrc>

Publications

Halofsky, J.; Furniss, M.; Joyce, L.; Kerns, B.; Millar, C.; Neilson, R.; Peterson, D. Lessons learned for managing U.S. Forest Service wildlands during a science-management think-tank retreat: The H.J. Andrews Climate Workshop. Ecological Applications. In preparation.

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Joyce, L.A.; Blate, G.M.; Littell, J.S.; McNulty, S.G.; Millar, C.I.; Moser, S.C.; Neilson, R.P.; Peterson, D.L. In press. Managing for multiple resources under climate change. Environmental Management.

McKenzie, D.; Peterson, D.L.; Littell, J. 2009. Global warming and stress complexes in forests of western North America. In: Bytnerowicz, A.; Arbaugh, M.J.; Riebau, A.R.; Andersen, C., eds. Wildland Fires and Air Pollution. The Hague, Netherlands. Elsevier: 317-337.

Peterson, D.L.; Halofsky, J.; Johnson, M.C. [In press]. Managing and adapting to changing fire regimes in a warmer climate. In: McKenzie, D.; Miller, C.; Falk, D., eds., *The Landscape Ecology of Fire*. New York: Springer Verlag.

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Project Outcomes

Managers of forest land in the western United States, as well as other managers, policymakers, and scientists, will have a set of decision-support tools and reference materials to help them incorporate climate-change considerations into decision-making.