

Pacific Northwest Climate Decision Support Consortium

Oregon State Univ. - Boise State Univ. - Univ. of Idaho - Univ. of Oregon - Univ of Wash.

ID-OR-WA Extension - OR Sea Grant

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Pacific Northwest Climate Decision Support Consortium (CDSC)

Introduction After 15 years at UW, the new RISA for the Pacific Northwest is, as of September 2010, the OSU-led Climate Decision Support Consortium (CDSC). The CDSC will focus on providing information and tools for making decisions about landscape and watershed management in a changing climate. We use the definition of decision support systems provided in a recent NRC report (2009:37): “decision support systems ... include the people and organizations that develop ... products and services, as well as the knowledge, information, products, and services [themselves].” The CDSC is a consortium of three multi-university organizations: The Oregon Climate Change Research Institute (OCCRI), including Oregon State University (OSU) and the University of Oregon (UO); Idaho’s project on Water Resources in a Changing Climate (WRCC), funded by NSF’s Office of Experimental Program to Stimulate Competitive Research (EPSCoR), including University of Idaho (UI) and Boise State University (BSU); and the University Extension Services from Idaho, Oregon, and Washington including Oregon Sea Grant.

Stakeholders include 11 federal agencies that have formed a regional partnership around climate change called the Climate Change Consortium (C3), the water resources agencies of the three states, other state agencies that deal with climate-sensitive issues, and three major urban water utilities. The CDSC will continue such stakeholder involvement through the following activities:

- forming a research agenda around the needs of stakeholders;
- assembling needed expertise to address key questions;
- designing decision support tools to translate the research answers into practical applications;
- generalizing the results of those tools for other applications

Applied Research Using the “knowledge-to-action networks” created through CDSC activities, the research conducted under the auspices of the CDSC will naturally reach a wide audience and achieve applicability in these critical climate-sensitive decisions, in a region where stakeholders are paying close attention to climate change and incorporating it into decisions. Examples of decisions for which stakeholders have expressed a need for scenarios of future climate, hydrology, and land cover include:

- protecting critical habitat for endangered and threatened species
- evaluating the future risk of wildfire especially in wildland-urban interfaces, and how ecosystems would recover after a fire or a drought in a future climate
- diagnosing landscape-related hazards including flooding and landslides
- developing and evaluating climate adaptation strategies
- coastal hazards including changing storm intensity, sea level rise, and effects on wetlands

Research approach We have brought together natural, physical, and social scientists, education and outreach specialists, modelers, resource managers, planners, and practitioners across the region through existing networks and by knitting together new capabilities and partners. For example, at OSU alone, more than 50 faculty are working on issues related to climate science; this is augmented by expertise in the consortium universities as well as co-located federal laboratories at OSU (e.g., NOAA, USFS, USGS, EPA). The strengths of a collaborative approach include access to this depth and diversity of intellectual, financial, and institutional resources; increased ability to address complex issues introduced by stakeholders; strengthened capacity to

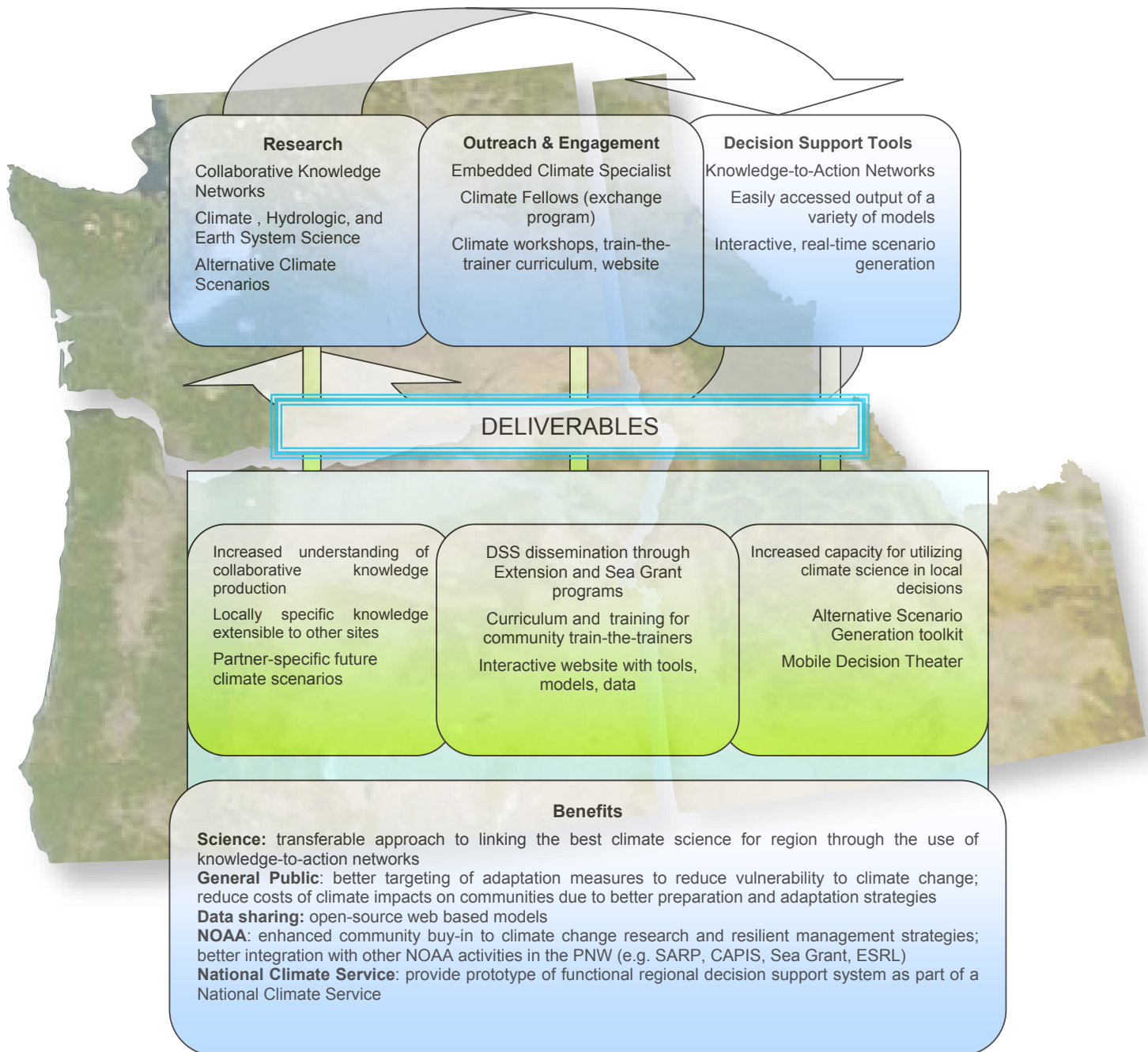


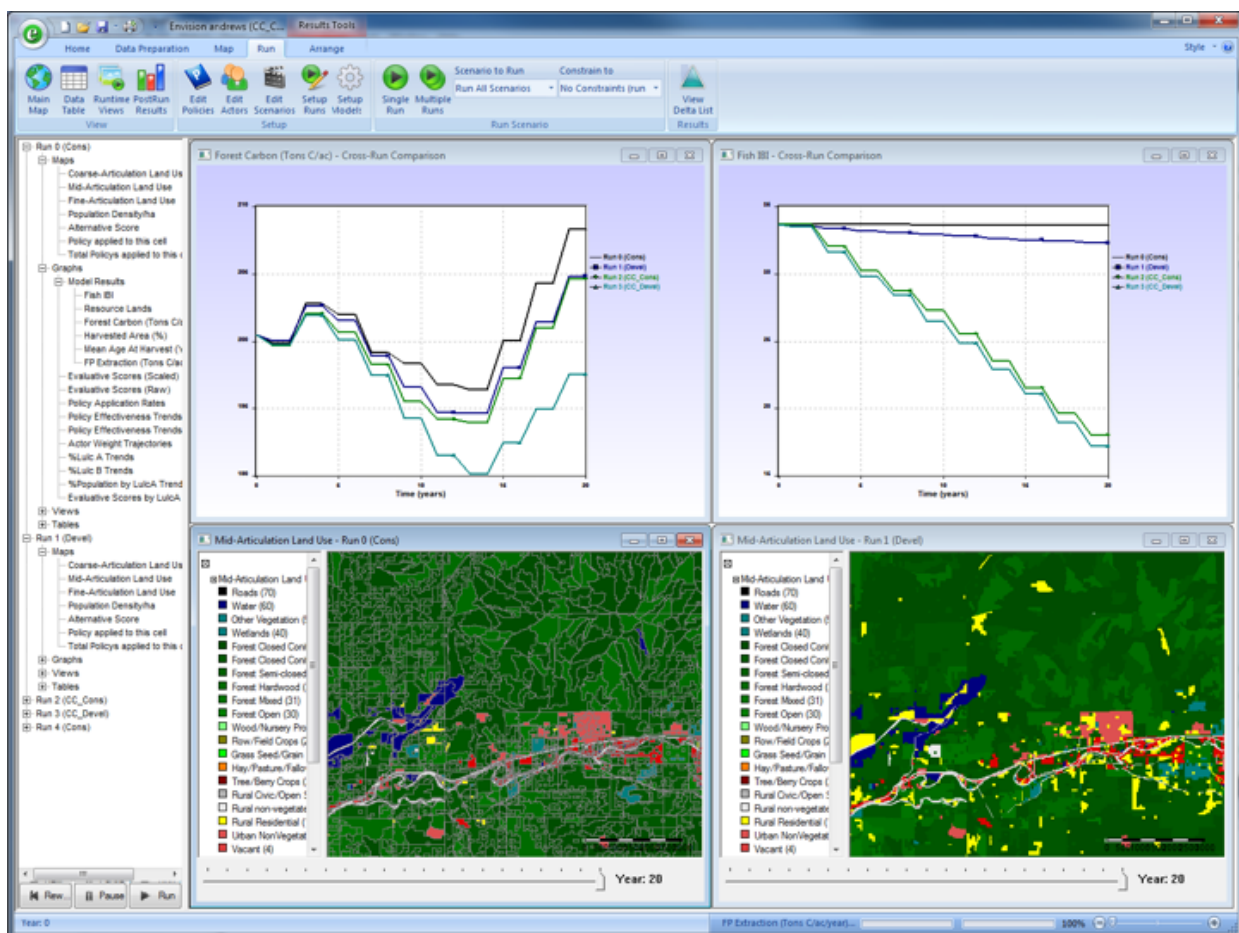
Figure 1: CDSC Decision Support System

deliver new knowledge products in a timely fashion; and significant buy-in by stakeholders across the region.

Because we propose to develop a true decision-support system for the PNW, our research agenda will develop organically through the process of collaboration with our partners. Questions will be posed not only by university-based researchers but also by stakeholders; indeed, the very development process of our proposal included an elicitation of research questions from

stakeholders about their needs for information to guide decisions. We have three, interdependent scientific objectives that drive the organization of the CDSC:

1. Build collaborative teams of researchers and stakeholders as partners in co-producing knowledge that can be used to develop integrated climate-resilient strategies for landscape and watershed management in the PNW.
2. Synthesize and integrate state-of-the-art climate, hydrologic, and other earth system science into a decision support system. This includes new regional climate scenarios that OCCRI is developing, using thousands of regional model simulations run on volunteers' personal computers (see link at occri.net)
3. Develop a framework for interactively envisioning future scenarios that are usable in many decision settings, using an "explore-then-test" approach, an alternative scenario generator called *Envision* (see screen shot below), and a mobile Decision Theater.



Fundamental to our approach is the concept that social agents make decisions in response to information as well as their internal value systems, societal pressures resulting from the emergence of scarcities, and perceptions of the responsiveness of various policies to their goals. *Envision* provides a framework for examining and simulating the coupled interactions and cyclical feedbacks among human actions, policy effects and landscape productions.

Outreach activities will include (a) a community-level engagement and learning process led by a *Regional Extension Climate Specialist* (RECS) with the backing of Extension and Sea Grant lead-

ership in the region; (b) an *annual PNW Climate Science Conference*, started in 2010, that features a range of research results, applications, and agency perspectives; (c) *agency-specific joint workshops* to effect continuous improvement in agency programs by enhancing the skills and competency of agency professionals.

PUMA CDSC is already leading a multi-RISA effort to support the Water Utility Climate Alliance (WUCA) as five of its members, large municipal water utilities, undertake new efforts to evaluate their sensitivity to climate change. WUCA staff lead David Behar of San Francisco Public Utility Commissions termed this effort “Piloting Utility Modeling Applications” or PUMA. Utilities’ concerns include effects of climate change on urban water supply and demand, and in some cases effects of changing extreme precipitation on reliability of stormwater, wastewater, combined sewer overflows, and attendant water quality matters. The involved RISAs and corresponding WUCA members are CDSC (Portland, OR and Seattle), CNAP (San Francisco), SECC (Tampa Bay Water), and CCRUN (New York City). The PUMA effort has already formed a Modeling Advisory Committee of subject matter experts and scheduled a workshop for San Francisco, December 1-3.

DoI CSC In September 2010, the US Department of the Interior announced that a partnership between OSU and UW will be the hosts of its Northwest Climate Science Center, one of 8 such centers being established across the nation. The Center, which will consist of federal and university staff and will be split roughly equally between OSU and UW (with a cyberinfrastructure component at UI), will bring together expertise in climate science, ecology and impacts assessment, and information technology. It will serve as a resource for federal agencies in providing necessary science in advising policy decisions pertaining especially to managing species, habitats, and ecosystems and would be attentive to the needs of state agencies, non-governmental organizations and others. Dr. Mote is co-director of the CSC, and a full-time program director will coordinate the activities of both the CSC and the CDSC. The federal director and administrative staff of the CSC will be co-located with OCCRI/CDSC personnel at OSU.