

PACIFIC NORTHWEST: CLIMATE IMPACTS GROUP

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2005 Workshop on RISA Science Policy

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Demand Side Assessment

- **Who are the major stakeholders for your RISA?**

The Climate Impacts Group (CIG) has cultivated close connections with public (federal, state, and local), private, and North American tribal groups and agencies responsible for managing the region's water, forest, fishery, and coastal resources. Below we list many of these entities.

Local Level

- Central Puget Sound Water Suppliers' Forum
- City of Tualatin, Oregon
- King County, Washington (County Council, Office of the Executive, Department of Natural Resources)
- Local watershed planning units (Washington State)
- Portland Water Bureau
- Puget Sound Clean Air Agency
- Puget Sound Energy
- Seattle City Council
- Seattle City Light
- Seattle Public Utilities
- Tacoma Power and Light
- Thurston County, Washington

State Level

- Alaska Department of Fish and Game
- California Department of Water Resources
- Idaho Department of Water Resources
- Oregon Department of Agriculture
- Oregon Department of Land Conservation and Development
- Oregon Department of Water Resources
- Puget Sound Action Team
- State Governor's Offices (Washington, Oregon, Idaho)
- State Legislatures (Washington, Oregon, Idaho)
- Washington Department of Agriculture
- Washington Department of Ecology
- Washington Department of Fish and Wildlife
- Washington Department of Health

- Washington Department of Natural Resources
- Washington Division of Emergency Management
- Washington State Office of Financial Management

Federal Level

- Bonneville Power Administration
- International Pacific Halibut Commission
- National Marine Fisheries Service [Northwest Fisheries Science Center and the Alaska Fisheries Science Center]
- National Oceanic and Atmospheric Administration, River Forecast Center
- National Park Service
- U.S. Army Corps of Engineers
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Congress, PNW delegation
- U.S. Department of Agriculture, Natural Resource Conservation Service
- U.S. Department of Energy, Pacific Northwest National Laboratory
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Geologic Survey

Tribal

- Columbia River Inter-Tribal Fish Commission
- Northwest Indian Fisheries Commission

Other

- BC Hydro (British Columbia, Canada)
- Idaho Power Company
- Northwest Power and Conservation Council
- Northwest Independent Power Producers Coalition
- National Wildlife Federation
- North Pacific Fisheries Management Council
- Oregon State University, Coastal Impacts
- Sustainable Development Research Institute, University of British Columbia
- University of Idaho
- PNW news media (print and broadcast)
- Wild Salmon Center
- Climate Solutions
- **What processes are used to include stakeholders in the research planning process, the research implementation process, and the research reporting process?**

Interviews and surveys of mid-level managers and senior scientists in natural resources agencies (planning, via assessment of stakeholder needs and knowledge).

Research consultancies (planning, via stakeholder/RISA negotiation of research problem definition; implementation, via consulting relationship; reporting).

Annual water resources planning workshops, occasional targeted workshops for forest/fish/coastal resources, and periodic climate change workshops aimed at upper level policy-makers (planning and reporting).

Informal contacts/discussion at conferences, meetings, in response to email/phone queries (planning and reporting).

- **How are stakeholder interactions evaluated?**

Overall attendance and repeat participation in workshops. Surveys after workshops. Periodic interviews (every 5 years to assess knowledge gain). Number/quality of incoming queries.

- **What has your RISA learned from the process of stakeholder interaction, and how have its decision processes changed as a result? (not sure how this question is different from #1 under ‘reconciliation’ below)**

Research priorities.

- Ensuring that research results in information useful to stakeholders requires some up-front understanding of the decision context, but stakeholders cannot be relied on to define research agenda (asking them what they want will only get you so far). For example, in 1995 the water resources management community knew little about the predictability of climate variations or associated water resources impacts and, as was later determined, even less about the potential impacts of anthropogenic climate change. It was clear that simply developing pilot water resource forecasting methods in an academic setting would not produce the desired outcome, i.e., their use by water managers. In addition to the development of improved forecasting methods, a well-coordinated outreach effort was required to (1) introduce the water management community to the potential role of interannual climate forecasts in water resources management, and (2) to facilitate the transfer of information from the research context to one of practical water management applications.
- Because CIG’s institutional analysis indicated that the regional water resources management system has a much lower capacity to respond to the threat of droughts than to the threat of floods, CIG focused much of its research on projecting and responding to drought-like conditions and outreach on preparing for droughts and emphasized the drought-related impacts of anthropogenic climate change. Because management inflexibility was shown to increase the region’s vulnerability to droughts, CIG has focused its research and outreach on ways to use climate information to increase flexibility. Finally, because regional vulnerability to drought is increased by a fragmented management structure, CIG has worked to engage and inform stakeholders from all user groups about using climate information.
- Some activities undertaken in response to requests from stakeholders include: an investigation of climate influences on Puget Sound coho salmon for the Washington State Department of Fish and Wildlife, an analysis for the Washington State Department of Ecology of the ways in which coastal planners use climate information in their long-range planning, expert briefings on climate impacts for state and federal resource management agencies and legislative bodies.

Spatial scale. CIG learned that the spatial scale of interest is neither the Pacific Northwest nor the Columbia River basin, but the individual watershed. Moreover regional differences in climate sensitivities and resource constraints mean that research and outreach need to be targeted to different sub-regions of the PNW. As a result, we hold several parallel water resources planning workshops at different locations around the region each fall, with the content tailored to each location, and have expanded CIG's research scope to include hydrologic modeling of the smaller-scale urban water systems west of the Cascade Mountains.

- **How did you develop your process for eliciting stakeholder needs/wants?**

We began by interviewing representatives from organizations that were judged likely to use, or able to benefit from the use of, climate information in operational decisions. Much of the information obtained from these interviews about the extent of understanding and (lack of) utilization of climate information shaped CIG’s subsequent research and outreach strategies.

Interviewees and other identified members of the user community were invited to CIG's annual meetings wherein the team presented research results and proposed future work and asked to provide feedback on the team's approach and findings. In order to facilitate personal, less formally structured communications between the research team and the regional community, the meetings were also used to introduce the "targeted" users to the specific CIG team members working in their area of interest.

In July 1997, CIG hosted a workshop on "The Impacts of Global Climate Change on the PNW", in order to initiate a dialogue with regional stakeholders concerning potential impacts of future human-caused climate change on the PNW, important regional vulnerabilities, and strategies for adaptation. In addition to the public agencies already engaged by the regional assessment project, the expanded group of stakeholders targeted for this workshop included city and state elected officials, the business community, and the public (represented by non-governmental organizations). CIG teamed up with the Northwest Council on Climate Change, a local organization focused on public education concerning climate change, in order to utilize that group's established contacts with elected officials, the business community, and the public. Targeted members of the user community were asked to assume leadership roles at the workshop (as discussion facilitators or rapporteurs) to simulate their engagement with the topic. Many of these targeted stakeholders have since become active members of CIG's user community.

Throughout the years, CIG team members have expended significant effort behind the scenes to foster and maintain informal relationships with the user community. As a result of contacts made through the above-mentioned interviews, annual meetings, and workshops, as well as on-going networking efforts, team members have many opportunities for eliciting stakeholder needs and/or wants. In addition, stakeholders now initiate conversations with CIG on potential research projects which sometimes result in formal research consultancies.

Supply Side Assessment

- **Briefly describe the research agenda for your RISA.**

The **Climate Impacts Group (CIG)** is an interdisciplinary research group studying the impacts of natural climate variability and global climate change ("global warming") on the U.S. Pacific Northwest (PNW). The CIG's research focuses on four key sectors of the PNW environment: water resources, aquatic ecosystems, forests, and coasts.

The Climate Impacts Group (CIG) is working to further our understanding of the patterns and predictability of regional climate variability, the influence of climate variation on the Pacific Northwest (PNW) environment and its institutions, and strategies for increasing societal resilience to climate. CIG's research is fundamentally organized around an analysis of PNW climate, augmented by an examination of regional socioeconomic systems. Our advancing understanding of regional climate – the patterns of its variability in both space and time, the predictability of those variations, and the projections of future changes in climate – helps us to focus our research on those components of life in the PNW that are likely to be most affected by climate fluctuations and on information that could be incorporated into decision making. The examination of regional eco- and human systems subsequently narrows the field to points where ecological sensitivity and human sensitivity coincide.

We examine how climate variations and human choices have interacted in the past to produce societal impacts. We then use this information to develop projections of future climate impacts. By specifying the processes through which natural variations in regional climate were manifested as impacts on natural and human systems, and by understanding the role that human choices played in determining these impacts, we establish a basis for suggesting how the same systems may respond to future climate change. By evaluating how human systems can adapt to better cope with or respond to climate variability, we can suggest how these same systems might adapt to future climate change.

- **How does your RISA set its own research priorities?**

The crucible for making those decisions is the Principals' Group of sub-group leaders which functions as the executive committee of the team. The group meets regularly, at least quarterly and whenever circumstances demand. The team also goes through a formal strategic planning exercise every five years.

We consider: the state of knowledge relative to the regional climate system, linkages to sectoral impacts via environmental sensitivities, the level of understanding achieved within and across sectors, and input from the large group of stakeholders about their needs and desires based on their participation in workshops and partnerships and on their responses to our quinquennial surveys of the community. We look for missing pieces and disconnections in the flow of information from climate forecasts to regional resource managers and we focus our efforts in these problem areas. We also use the feedback from our outreach program to understand where these kinds of problems are from the resource manager's perspective and attempt to balance academic research needs with those of the water resources management community.

We have also made considerable efforts to maintain an equitable balance between climatically distinct parts of the region (east and west of the Cascades, for example) and between different kinds of water resources systems (e.g. hydropower vs. urban water supply vs. irrigated agriculture). Because of limited resources, this balance has been challenging to maintain in that we are constantly confronted with the tradeoffs between our desire to create more depth in one area of research and our desire to provide broader coverage of issues that are important to different constituents in the region.

The planning is as comprehensive in scope as we can make it with decisions about priorities based on available funding.

- **How has this agenda evolved over the duration of the RISA? What new projects have been started that were not anticipated at the beginning of the RISA? What projects have been terminated, and why?**

Evolution.

- Changing (ever finer) spatial scale of analysis.
- Planned progression of emphasis from climate, to impacts on natural systems, impacts on human systems, and response strategies.
- Planned progression of focus on exclusively natural climate variability to both climate variability and anthropogenic climate change.

New projects. Many, including

- Large scale patterns of salmon production and their relationship to the PDO,
- Connections between tree growth and regeneration and the PDO,
- Research to support development of decision support tools tailored for specific management needs at relatively small spatial scales,
- Snow-hydrology,
- Water markets & institutions for coping with water shortages.

Temporarily terminated. Pilot studies of climate impacts on the coastal zone and on human health (due to lack of funding).

- **In your RISA, what is the balance between research on new subjects, and assessment/compilation of existing knowledge? How is this balance determined?**

At the start of the RISA project as well as any new research effort, we perform a literature review and overall assessment of existing knowledge on the topic. The RISA quickly reaches the limits of knowledge concerning climate impacts on PNW resources, requiring research in each individual sector (climate, water resources, forest ecosystems, marine ecosystems) for advancement. Simultaneously, two members of CIG focus on integrated assessment. The balance is reflected in the proportion of sub-group leaders responsible for research (6) and for integrated assessment (2).

- **Please describe the specific ways that knowledge is disseminated from your RISA. How would you assess the relative importance of various dissemination mechanisms, such as peer-reviewed publications, other types of publications, web-based presentations, public fora, etc.?**

Peer-reviewed publications. CIG-generated reports and white papers (gen. distributed at meetings and via CIG website). Commissioned reports and white papers (delivered to (sometimes distributed by) client and via CIG website). Web site (overview of role of climate in PNW natural resources, climate impacts, research results, forecasts, climate outlook; papers, presentations). List-serve. Quarterly newsletter (email). CIG-hosted meetings and workshops. Presentations, guest lectures, briefings for public meetings, government agencies, conferences, classes, and special events. Participation in/organization of scientific meetings/workshops. Consultancies and technical assistance. Work with the media. Academic courses at UW. Weekly seminar series. Email queries. Technical review of climate impacts reports/studies.

Relative importance. Peer-reviewed publications are indispensable foundation for credibility of our work. Less technical interpretations of the same material (reports and white papers) are essential for communicating with many of our stakeholders. CIG-sponsored workshops and invited briefings are an enormously important component of our knowledge dissemination. Newly revamped web-site is a very important resource for communicating within group and with stakeholders.

Reconciliation/Managing Ecology of S&D

- **In what ways have considerations of supply for research shaped the evolution of your research agenda?**

For a project to be undertaken by CIG scientists it must be work that will move science forward (rather than simply applying old methods to a slightly different case study), i.e., be scientifically interesting.

We certainly consider/are constrained by the supply of research from NCEP (climate prediction capabilities) and global climate modelers (e.g., GCM projections of anthropogenic climate change (shifts in means and variability)).

- **What tensions have arisen between stakeholder needs, demands, and expectations, and the scientific capabilities and priorities of the RISA? How have those tensions been addressed or resolved?**

Tensions (how addressed).

- Push to ever smaller spatial scale vs. resolution of climate information and degree of financial support for research. (Use case studies to develop methods and demonstrate feasibility of working at smaller scale, focus on case studies with broad applicability, look for local support for work.)
- Demand for fine scale, precise, deterministic forecasts to enable maximization of resource utilization vs. limits of predictability and understanding. (Change focus of research and outreach from prediction to resilience.)
- Demand for research on coastal systems, irrigated agriculture, and human health vs. funding support. (Still looking for funding.)
- **How does your RISA evaluate the appropriateness of stakeholder needs (e.g., from the standpoint of public/private sector roles and responsibilities)?**

We refuse to engage in proprietary work and require openness of information/data produced in research. Favor research with potential for wider application rather than one-off case studies.

- **How are stakeholders identified? Which stakeholder groups are most important in influencing your RISA research agenda? Why? Which stakeholder groups are least important? Why?**

CIG began by identifying the entire suite of resource management agencies in the PNW, i.e., municipal, state, regional, tribal, and federal resource management agencies dealing with water resources, forest resources, fisheries, and/or coastal management. For tractability, the team planned to focus first on public and tribal agencies, then on private organizations. We chose not to target environmental organizations due to their different focus and the fear that their involvement would prevent candid dialogue with resource managers, private industry, and elected officials. Since this initial assessment, CIG has added to its stakeholder list by continued networking, still seeking resource management and planning entities whose operations are likely to be affected by climate variability or

climate change. We focus on stakeholders with a wide reach, i.e., those that represent or provide a conduit to a larger group and those likely to be early adopters of new climate information (in order to develop case study information for use by other stakeholders).

- **How does your RISA evaluate its research planning process?**

Periodic external reviews. Internal assessments by principals group and periodic strategic planning.

- **What lessons in the process of the reconciliation of supply of and demand for science are relevant to the broader implementation of the CCSP?**

Research about climate variability and future climate change is purely an academic exercise, unless the results are useful for, and used in, decision making and long-range planning. Research must be grounded in the issues and time frames salient to specific decisions and/or decision makers.

Demand for scientific information is strongly a function of the biogeophysical and socioeconomic characteristics of a specific location. Scientific research therefore needs to be specifically tailored to the specific conditions and concerns of that context.

A mutually satisfactory research and outreach agenda requires finding the overlap between stakeholder needs (decision calendars, context, management purview) and scientifically interesting/tractable problems.

Stakeholders are never interested in global warming only--the time scales of interest must range from seasonal-to-interannual to decadal time scales.

A research program focused on providing useful information to stakeholders needs strategies for providing (in an operational sense) the ultimate products developed by the research, so as to prevent overtaxing research teams (or converting them from research to operations).

In order for a research group to have credibility with stakeholders, it needs to have demonstrated itself to be a stable and dependable entity over a significant time period in the past (5+ years) *and* projected into the future.

The only way to deliver useful information to stakeholders is by sustained engagement with these stakeholders. Operations that do not take this sustained engagement as a guiding principle will surely fail.