

PNWHO Workshop Summary

February 24-25, 2005

I. Setting

Over 40 people attended the two-day workshop at Oregon State University. Participants were presented with the overall objectives of the Pacific Northwest Hydrologic Observatory proposal, as well as with detailed summaries of five constituent science themes: climate variability and change; flow regime; hydroecology; big river processes, and sustainability implications. These themes were viewed through a proposed hydrologic region framework based on hydrologic character tied to geology and climate and organized by water-availability basins—watersheds used by the State of Oregon to account for water use and demand.



Participant input was solicited through: question and answer periods following presentations; through comment post-its and cards; surveys; and, most importantly, through break-out groups, group reports, and full-group discussions.

II. Take-Home Messages

Certain over-arching themes resonated with the participants throughout the workshop, including:

- Among the proposal's strongest points were the benefits of this location (especially the "twinning" observations of the Willamette and Deschutes basins); the exploration of hydro-regions; and attention to big rivers.
- The proposal seemed to lack an overall unifying element—something to pull all the themes, research questions, and spatial framework together into an understandable and compelling whole.
- One of the most compelling aspects of the proposal is its twinned observations of the Willamette and Deschutes basins. As-presented, the proposal short-changes observations in the Deschutes, dramatically undercutting the value of the proposal. Participants were adamant that the proposal needed to "Do the Deschutes."
- If there is a size-constraint imposed on proposals by NSF, maintaining the two-basin structure is preferred over scoping down to a sub-area within one basin.
- The research questions posed weren't bold enough to catalyze transformative science.
- The proposal and research questions needed to be less about the Northwest as a place, and more about the transferable science opportunities that could be pursued in this place.
- The research questions need to be "elevated"—i.e., more powerfully and simply articulated—to capture the essence and value of what's being proposed.
- The hydrologic region framework was promising and intriguing, but it needs to be more explicitly and directly established as a central organizing element for the proposal—a driver for the hypotheses and data investment strategy.
- The value of hydrologic regions must be verified and tested, and this needs to be incorporated into the proposal.
- The proposal needs to more clearly distinguish between the infrastructure it will build for observation and the data it will generate, versus what will be done by visiting investigators.
- The proposal needs to do a better job recognizing that both basins are managed systems and that human dynamics occupies a gradient as striking as physical phenomena.
- The proposal needs to better acknowledge and display the tremendous knowledge-base in both basins resulting from recent and on-going work—to harvest the human capital.
- The proposal development team needs to work more closely with partners and stakeholders as the proposal is refined.

III. Additional comments

Workshop participants were thoughtful and generous in terms of feedback. A number of—but clearly not all—comments are displayed below to illustrate the range of thinking.

- The proposal would benefit from more attention to remote sensing
- Sediment, contaminants and water quality considerations seem lacking
- Attention to groundwater seems scant
- Involvement of big urban centers such as Portland and Bend is an important design consideration for the science plan and for outreach and education.
- Adding to length of record through historical (e.g., tree ring) analysis is important.
- Consider effects of human systems on climate and hydrology
- More direct incorporation of role of reservoirs
- What is the role PNWHO can play as data clearinghouse?
- Consider developing a matrix describing which physical processes are at work at different scales and use to inform cross-linkages.
- Refine the 3-D matrix (the “cube”) of stores, hydro-regions, and hypotheses/themes to identify which data need to be collected and how.
- Floodplains of “big rivers” help set the proposal apart
- We need a far better understanding of what’s below the surface
- Terrestrial systems warrant more attention in the proposal.
- Consider: comparing what’s important to measures with the uncertainty associated with our current knowledge may yield data investment priorities.
- Observatories are all about how community can do its science better with improved instrumentation. Need to be clear how HO will enable science because the instrumentation is there.
- Don’t let the 10K km² limit hamstring the science.
- All planning is local—there is a need to focus on ways to inform local decision-making.
- Need high sample density in areas with greater proximal differences.
- Dashed – show/visualize accumulation of data for regions, coded by type (water quality, precip., streamflow, etc.) to reveal where gaps are.
- Installed-instrument-base plus campaign-style strategies provide extra high density data when needed.
- Re-frame ‘hydroecology’ through focus on biogeochemistry—biogeochemistry is an integrator of ecology.
- Temperature is cheap and useful – take advantage of it.
- Water quantity is the issue in the Deschutes, while water quality is the issue in the Willamette.
- Consider explicit treatment of vegetation change on water storage/flux.
- How does the ‘predicted’ change in frequency and magnitude of P play into research questions on climate variability and flow regimes?
- If serious about outreach and education, consult School of Education and Extension to get a sense of issues and effective methods.
- An LTHO should contribute to possible/likely policy/political changes (e.g., big (interstate, international) water transfers; possible demise of ESA; hydropower needs; NPDES and pollution control; water budget to include re-use, irrigation, sewage discharge, etc.)
- ET: much info for crops, but much more needed for natural vegetation.
- Too much focus on natural disturbance (fire), but not enough on human (logging, urbanization, roads...)
- It’s not clear how the research themes/questions address immediate concerns of decision-makers and industries (mostly concerned about clean/high quality water).
- Consider determining effectiveness of outreach and educational techniques as an HO research objective.
- Proposal may benefit from new theme/question specifically dealing with fire ecology
- Can we predict spatial patterns of flow? Can we predict sensitivity to change on flow regions?
- How do rivers relate to their watershed? To their floodplain? Considering ‘natural’ processes & human activities.

IV. Next Steps

The PNWHO Team indicated it would keep workshop participants informed about evolving National Science Foundation expectations and deadlines (e.g., when the proposal RFP is expected to issue), share future refinements of the proposal, and follow-up individually on the great ideas and penetrating critiques shared during the workshop.