



Prospectus for the Past Climate Variability and Impacts (PCVI) clearinghouse at the Mountain Prairie Information Node

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Overview- The Past Climate Variability and Impacts (PCVI) clearinghouse will support a greater understanding of climate-ecosystem interactions by providing a missing linkage between existing paleoenvironmental data resources and a diverse group of scientists, managers, and educators who do not currently utilize these resources. Well-organized and accessible information related to long-term climatic variability and its impacts on physical and biological systems is essential for the sustainable management of western landscapes and resources. Paleoclimatic and paleoecological records are especially important for our understanding of climate-ecosystem interactions because they provide:

- Bounds for the range of natural climate variability and climate-related processes in a region
- Baselines for detecting future change and assessing its potential impacts
- Insights on processes operating over long timescales (decades to centuries or more) not captured by observational studies

Paleoenvironmental information is, however, difficult for most biologists, natural resource managers, educators and stakeholders to obtain and interpret. Though the NOAA National Climatic Data Center (NCDC, <http://www.ncdc.noaa.gov/paleo/paleo.html>) and others have made great strides in placing paleoenvironmental records on the World Wide Web, these existing resources serve primarily as data archives and offer little content that can be easily accessed by those outside the paleo-science community. Data are often organized by proxy type with little interpretive information regarding the nature and quality of the information, and the geographical extent of the record. Instead, a citation is typically provided for the paper in which data were originally published, which may not contain detailed interpretive information. The primary goal of these previous efforts has been to provide research-quality data resources. Data enhancements, additional metadata, and tools for display and analysis that would make paleoenvironmental information more useful and applicable to a broad range of users are typically not provided.

Through the creation of a regional clearinghouse for paleoenvironmental information and resources, the PCVI would fill this gap in the transfer of paleoenvironmental data to broader uses and applications. More specifically, through a web-based interface, this project would make available paleoclimatic and paleoenvironmental resources, as well as scientific expertise on the implications of past and future climate-ecosystem dynamics, in a way that is useful and relevant to scientists, educators and land managers. This approach would work in concert with the USGS, NPS and NOAA Paleoclimatology Branch to provide a valuable resource for

understanding long-term environmental variability, and providing an improved context for assessing the effects of both global change and management actions.

Objectives- The overarching goal of this NBII paleoenvironmental project is to make paleoclimatic and paleoecological data and information more applicable to state and federal resource/land managers, scientists, and educators. The project will contribute to the understanding and management of biological resources by providing:

- Web-based access to paleoclimatic and paleoecological data, along with interactive graphing and analysis tools
- Interpretative information and metadata to help users assess the applicability of data to management
- Links to additional resources and tools, such as instrumental climate and analysis web sites
- A point of contact for scientists, land managers, stakeholders, and educators

Approach- The PCVI clearinghouse will be housed with the NBII Mountain Prairie Information Node (<http://mpin.nbii.org>) and will achieve these objectives by:

- Developing partnerships within agencies that generate, archive and use data
- Linking a broad group of stakeholders to existing paleoenvironmental resources on a regional level (the “clearinghouse function”)
- Combining the data “clearinghouse function” with scientifically-based information on implications for biological resources and ecosystems
- Developing web-based tools that enable managers, stakeholders, educators and scientists to create their own customized synthesis products

Development and Scope- Initially this project will focus on the development of a PCVI clearinghouse covering the northern Rockies, including Glacier National Park and the Greater Yellowstone Ecosystem (GYE). Targeted users will include decision-makers, managers, planners, scientists, and educators with institutions such as the NPS, Rocky Mountain Network and Greater Yellowstone Network Inventory & Monitoring programs, the USDA National Forest Service, US Fish & Wildlife Service, the USGS, the states of Montana, Wyoming, and Idaho, and national and international researchers. The PCVI, in turn, will provide a platform for the exploration and development of data transfer and synthesis tools. The northern Rockies – GYE region provides the ideal location for a pilot PCVI project because of:

- High levels of interest among land managers, stakeholders, educators and scientists
- A large body of existing paleoenvironmental data for the region
- The region’s high national and international profile

This pilot project would proceed in two distinct phases. Phase I would involve the creation of basic data and information-transfer tools and rely heavily on a web-based GIS interface. Phase II

would involve the development of interpretive products aimed at specific user groups (e.g. land managers or educators) and the implementation of additional web-based technologies allowing users to create customized synthesis products. Phase I could be completed in the first year of the project. Phase II would begin in year two of the project and continue as users and new datasets and technologies dictate. As the project matures, new regional PCVIs can be added (e.g. Black Hills, and short grass prairies) under the model developed for the Rocky Mountain Network and GYE.

Recent Activities- Key events in the development of the PCVI project have included:

- Creation of a working group within CIRMOUNT (Consortium for Integrated Climate Research in Western Mountains; <http://www.fs.fed.us/psw/cirmount/>) aimed at making paleoenvironmental data more accessible and applicable to resource managers. The creation of a PCVI was among the first formal recommendations of this working group (March 2005).
- Convening of a special workshop to bring climate scientists, NPS and USDA Forest Service personnel together for a discussion of climate variability and climate-change impacts (Pray, Montana, March 2005). Again, one of the key outcomes of this workshop was a recommendation for USGS and NOAA to explore ways to make data on long-term environmental variability more accessible to natural resource managers.

Required Actions- Initial development of the PCVI concept will require support of the NBII program and technical and programmatic partnership with the NBII Mountain Prairie Information Node. A small annual operational budget of \$50K is requested to support a part-time project manager, initial web development, and related project activities.

Over time the PCVI would leverage these base funds with partners to acquire additional funding and continue to increase the scope and success of the project. The USGS, NPS, NOAA, and Montana State University are key initial partners. The following individuals will serve as the primary points of contact and will lead project direction and support in coordination and partnership with the NBII Mountain Prairie Information Node:

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Lisa Graumlich	Big Sky Institute, Montana State University, Bozeman, Montana State University, Bozeman, Montana
Connie Woodhouse	NOAA Paleoclimatology Branch, National Climatic Data Center, Boulder, Colorado
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