CUAHSI Update

CONSORTIUM OF UNIVERSITIES FOR THE ADVANCEMENT OF HYDROLOGIC SCIENCE

February, 2003

Core Proposal Submitted to NSF

The first follow-on proposal was submitted to the National Science Foundation on February 12, 2003. The proposal requests funding for

- A "Paper Prototype" of a Hydrologic Observatory in the Neuse River basin, North Carolina. This seven-month study is led by Ken Reckhow, Duke University.

- Development of a Hydrologic Synthesis Center, modeled on the National Center for Ecological Analysis and Synthesis (NCEAS) at Santa Barbara, CA. Neil Grigg (Colorado State University) will chair the working group to determine the optimal configuration for such a facility. In addition, funding was requested to hold an open competition for the first of the synthesis topics during the first year of the project.

- Core staff at CUAHSI's Washington Office, including full-time Executive Director, Business Manager, and Communications Specialist, and a part-time President.

The Project Summary is attached to this newsletter. Copies of the full proposal are available on request to CUAHSI.

Reviews of the proposal are expected by early April, 2003.

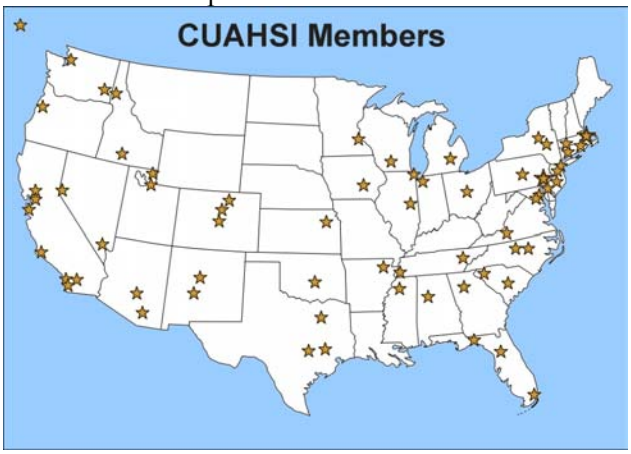
In its final stages of preparation by the Standing Committee on Hydrologic Information Systems is the kick-off proposal for hydrologic informatics. This proposal is being submitted to the Geoinformatics Initiative of NSF.

Important Dates

May, 2003—Planning Workshop on Hydrologic Synthesis Facility
June, 2003—Interim Workshop on Observatory Prototype
August, 2003—Solicitation of Proposals for initial Synthesis Topic
October, 2003—Award of Synthesis Topic
November, 2003—Final Workshop on Observatory Prototype
December, 2003—Fall AGU meeting with special session on Hydrologic Observatories Prototype Design and Board of Directors meeting
January, 2004—Solicitation of Proposals for Planning Grants for Hydrologic Observatories
February, 2004—Award of Planning Grants

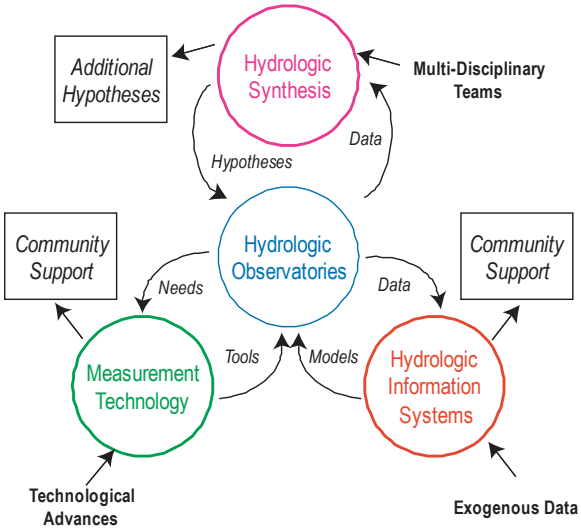
Contacting CUAHSI

Check out the CUAHSI website at http://www.cuahsi.org for the latest news of CUAHSI-sponsored activities, board meetings, and information from the standing committees. You may also contact Marshall Moss, President, (memoss@comcast.net) or Rick Hooper, Executive Director, (rhooper@cuahsi.org) with specific questions. CUAHSI has established a Washington office at the American Geophysical Union; this office may be reached at 202-777-7302. Until the office is fully staffed, however, e-mail remains the preferred mode of contact.



Project Summary

Because of the critical dependence of human society on a reliable source of water and its needs for protection from floods, hydrology evolved primarily in response to demands for engineering solutions to water-resources problems. Recent decades have demonstrated that such a tool-driven approach is not capable of addressing the larger and more complex issues that are facing society today. Hydrologic science—a more comprehensive understanding of the roles that water plays—is needed. The Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) was formed in June 2001 to prepare a science plan to advance understanding of the hydrosphere and its interactions with the atmosphere, geosphere and biosphere. In the succeeding 18 months, a science agenda has been formulated that identifies the interfaces between the traditional hydrologic boundaries of the land surface and atmosphere, the land surface and groundwater, and groundwater and surface water, as well as at disciplinary boundaries between hydrology and the environmental and earth sciences. In general, there is a paucity not only of understanding at these interfaces, but also of data needed to develop the required understanding. Solving these 'interface' problems requires multidisciplinary approaches applied at substantially larger spatial scales than traditional hydrologic studies. By attacking these problems in a coordinated manner, substantial synergies will be found both scientifically as the various hydrologic disciplines are brought to bear on the problem and economically as data, information systems, and instrumentation can be shared by the community. The plan identifies structural impediments to the conduct of such research and advocates four mutually supportive elements to overcome these impediments: 1) a network of hydrologic observatories, 2) an information system, 3) a measurement technologies program, and 4) a hydrologic synthesis facility. Furthermore, hydrologic science will not advance adequately based on research alone; education and outreach will be required, and demonstrations of the applicability of the research will have to be conveyed to the user community. To do so, CUAHSI also envisions programs in education and outreach and in research applications. To move beyond the planning stage, this proposal seeks funding to initiate two key programs (observatories and synthesis) and to establish a professionally staffed headquarters to support CUAHSI operations. Other program elements will be initiated by separate proposals as indicated in the science plan.



Because this scale of coordinated research has not been attempted before by the hydrologic science community, it is proposed to begin with a prototypical

design of a single hydrologic observatory. Hydrologic observatories are central to most of the program elements. The CUAHSI science agenda was distilled into four 'program drivers'—questions that are sufficiently specific to serve as the basis of an experimental design. These drivers will be applied sequentially to a specific river basin to test whether significant scientific and economic synergies will result from using a single study basin. To be fully successful, the observatory should be able to address not only the program drivers, but also serve as a platform to answer a broad range of research questions with only modest additional resources. The Neuse River, North Carolina, has the appropriate size (approximately 10,000 square kilometers) and diversity of physiography and land cover to provide a meaningful test of the concept. Relevant ongoing data-collection activities within and surrounding the basin will serve as the base upon which additional data needs will be superimposed during the design process. The prototype will provide the first reliable cost estimates for operating a hydrologic observatory. A design team of 10 scientists, both local to the basin and from across the country, are proposed to carry out this exercise. Sufficient resources are requested to allow substantive data analysis: the exercise is not simply developing a 'wish list' of core data. By mixing local and non-local scientists, an additional test of the concept will be conducted: can a design process be developed that will allow testing of a consistent set of hypotheses in widely varying hydrologic settings? Past attempts to make comparisons among basin-scale multidisciplinary studies have achieved mixed results. For the hydrologic observatories, such inter-site comparability not just of data, but of scientific approaches, will be crucial.

The second proposed activity is to initiate a hydrologic synthesis facility, envisioned as a place where hydrologists from various disciplines can come together conveniently and at low marginal cost to tackle central problems in the field. A workshop to design the facility and funding for an initial synthesis project (including a competition for its selection) are proposed.

To support these activities, a headquarters support staff, consisting initially of an Executive Director, Business Manager and Information Specialist, is proposed. This is the minimum staffing required to coordinate the proposed activities, which will include providing meeting and logistic support, publications services, as well as personnel and procurement services as facilities become operational.

The proposed activities will permit hydrologic science to make fundamental advances by providing facilities with capabilities currently unavailable to the community. These activities have been chosen to provide the greatest return on investment to move hydrologic science to a new plane of understanding. The benefits to society of improved hydrologic understanding are manifold, including more reliable forecasting of conditions and management of water resources.