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CIRES

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Introduction to the Ogmius Exchange

According to Sherwood Boehlert, Chair, House Science Committee, "Advancements in science and technology will be critical to the success of every mission of the Department of Homeland Security. Improving intelligence analysis, cybersecurity, border security and emergency response all will require the invention and deployment of new technologies, ranging from new software to make computer networks more secure to new standards to make emergency response communications equipment interoperable. Like the Cold War, the war on terrorism will be won as much in the laboratory as on the battlefield." 25 July 2002 (http://www.house.gov/science/hot/homeland/flr072502.htm).

As is frequently the case when decision makers confront complex and challenging problems, the science and technology community is being called upon to contribute to national goals related to homeland security. But connecting science and technology with decision making – in any context – is challenging. As George Brown, former Chair of the House Science Committee once wrote, "the path from scientific discovery to societal benefit is neither certain nor straight."

Scholars of the connections between science and policy have long used the phrases "science for policy" and "policy for science" to clearly distinguish the two-way connections between research and decision making. The former focuses attention on producing knowledge and technologies useful for those responsible for making decisions; examples might include the development of reliable, low-cost vaccines against bioterrorism, or detection systems for nuclear or biological weapons. The latter focuses on how the scientific enterprise itself is organized, supported, and evaluated, ultimately to produce useful knowledge and technologies. The nation's focus on homeland security has profound implications for both "policy for science" and "science for policy," as well as their inter-connections.

In this month's Exchange two distinguished participants in and observers of the nation's response to homeland security comment on issues of science, technology and security policy. The nation not only has great resources in science and technology, it also has resources for understanding and considerable experience in connecting science and technology and the needs of decision makers in a range of contexts. To borrow Representative Boehlert's metaphor, successful security policies will depend on effectively connecting what is done in the laboratory with what happens on the battlefield. Our exchange this month focuses on these connections.

For further reading:

- U.S. Commission on National Security/21st Century (http://www.nssg.gov./Reports/reports.htm).
- Making the Nation Safer: The Role of Science and Technology in Countering Terrorism (http://www.nap.edu/books/0309084814/html/).
- Homeland Insecurity, by Charles C. Mann (http://www.theatlantic.com/issues/2002/09/mann.htm).
- Possible Impacts of Major Counter Terrorism Security Actions on Research, Development, and Higher Education, a CRS Report for Congress (http://www.fas.org/irp/crs/RL31354.pdf).

Ogmius Exchange: Part I

Thoughts on Catastrophic Terrorism in America

Lewis M. Branscomb

The seven questions I am most often asked by fellow citizens and the media about the threat of catastrophic terrorism are:

- **What is the single most important message you have for us?**
- **Is the government going to protect us, as it does in wartime?**
- **Is there a solution that does make us safe?**
- **Why are we so vulnerable?**
- **What can we do to make the nation safer?**
- **Who is responsible for making us safer?**
- **Will we have to give up our civil liberties and become a police state to root out the terrorists?**

Here are my personal answers:

We will not be safe so long as there are terrorists bent on massive destruction in the U.S., but technology, correctly developed and deployed, can make the nation safer. Technology cannot make us safe.

The government is only beginning to shift from a Cold War approach to the use of science and technology for security to a new arrangement more appropriate to the new threats from terrorists. The new threat is not war; it has no beginning and no end. Even the enemy is largely unknown. The military-industrial complex -- so useful in the Cold War -- will be of marginal value in the new situation. The government will try, but it will not protect us from the threat of catastrophic terrorism. It can only make the terrorists' job harder.

Yes, there is a solution that preserves our democratic, free, and open way of life. But it requires drastic changes in our foreign policies, away from isolation, away from seeking an American hegemony, away from instigating conflict with nations our government calls evil. It requires a new policy that addresses our moral obligation to create a world that is less poor, less distressed, less environmentally damaged, a world that is less despotic and less driven by religious fanaticism. It will be very expensive, will take a very long time, and will depend on a much more sophisticated system of education and public information.

Meanwhile the terrorist threat will be with us a very long time. The terrorists did not create the vulnerabilities they exploit. Our competitive drive toward maximum economic efficiency creates new vulnerabilities every day. The elements of critical infrastructure on which we depend for our daily lives become more and more concentrated, more interdependent, and less redundant, as firms drive for greater efficiency. We will still be vulnerable long after El Qaeda is gone. We can reduce that vulnerability by restructuring our businesses and public facilities – and work to make the world a less ravaged and violent place.

A lot can be done to make the nation safer from the threat of catastrophic terrorism. The government can help the Russians blend down their huge store of highly enriched Uranium to render it useless for making a fission weapon. New biological science can learn how to detect a biological attack earlier and can create new vaccines and antibiotics to cope with such an attack. The vulnerabilities that invite an attack on our system of electric power distribution can be greatly reduced. Cyber systems can be made much less vulnerable. Toxic chemicals in commercial storage and transportation can be much better protected. New buildings can be built to standards designed to withstand both fire and blast, and can have ventilators and filtration systems that stop and diagnose toxic gases. With new science arrays of sensors, thousands of times more sensitive that those we use today, can detect concealed explosives, toxic, and fissionable materials being moved through our transportation systems.

But who is going to do all this? The key problem is that 85 percent of the critical infrastructure of the nation is owned by the private sector. Aside from public facilities in cities and national monuments like the Statue of Liberty, this infrastructure constitutes the terrorists' primary targets. Industry is waiting for government to decide who does what, who pays for it, and how a competitive economy can be maintained while reducing those elements that while adding efficiency create serious vulnerabilities.

If it takes decades to bring about a less violent world, and if the technical fixes only make the terrorist's job harder but do not prevent catastrophic attacks, do we have to become a police state to root out the terrorists, who even now may be in our midst planning new destructions? There is a grave danger that politicians will use the threat of terrorist attack to justify other policies that in fact do not make us safer but rather do threaten our civil liberties. An excellent example is the abortive project proposed by the Attorney General called TIPS, in which large numbers of untrained citizens would be encouraged by government to report "suspicious" acts by their fellow citizens. Those my age will remember the McCarthy period when this happened, and the even worse experience in Stalinist USSR and in Nazi Germany, when children turned in their parents and parents turned in their neighbors.

The government needs to present a far more steady, competent and organized face to the American public. The current

Ogmius Exchange Continued

tendency to announce color-coded levels of danger, when there is little private citizens can do in response, the repeated announcements that terrorists might be using scuba divers in Seattle or truck bombs in tunnels in the East, only serve to do the terrorists' job for them. Government-induced anxiety and the claim that we are in a "war" with terrorism only serve to increase the political dangers of erosion of our constitutional rights. We are not at war with terrorism. Wars have defined enemies, defined battlefields and defined outcomes. This very serious threat to our security has none of these. It is much more insidious and dangerous to our future as a democracy than is a conventional war.

As we face this future, a determined electorate must get its priorities straight. We must take a new look at the world around us. The frustration and suffering of a majority of the world's people can no longer be ignored. We must undertake a long period of restructuring our economy and the facilities that support it to make them more resilient. Finally, and most important, we must be determined not to allow our own political leaders to erode the very freedoms we struggle to protect.

These views are my own, and should not be attributed to the National Academies of Science and of Engineering and the Institute of Medicine which sponsored the study of the Role of Science and Technology and Countering Terrorism, of which I was co-chair during the period from December 2001 to June 2002.

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Ogmius Exchange: Part II

Thoughts on Catastrophic Terrorism in America

Eugene Skolnikoff

It does not take much imagination to see the many ways in which science and technology can be used by terrorists, nor to realize their relevance to measures to protect against terrorism. That relationship has received much attention in the government, in the public, and in the scientific and engineering communities in the year since Sept. 11. Many fearful scenarios have been suggested, along with sober studies of the dangers we face. Much attention has been given to possible nuclear, biological or chemical threats, with parallel discussion of the need for technologies to detect or protect or mitigate the effects of such attacks if they occur. The agenda is long and has resulted in science and technology being given a reasonably prominent place in the new Department of Homeland Security (DHS).

We must recognize, however, that a modern technological society inevitably is a vulnerable society. We have come to depend on large-scale technological systems –energy, communications, transportation, financial networks, water and food distribution, among others– whose interruption would have highly disruptive effects. Vulnerability of the systems can be lessened, but not eliminated if the systems are to operate and serve their function. Moreover, that vulnerability can be attacked not only by sophisticated science or technology, but also by everyday technologies, as we saw so tragically a year ago.

That ability to use any technology as a weapon is one of the "bedrock" attributes of science and technology: the fundamental characteristic that all scientific and technological knowledge can be used for beneficial or malign purposes; all knowledge is "dual-use."

There are other bedrock attributes also relevant to the terrorist threat. One is that knowledge inevitably spreads. Barriers can delay, but not prevent transfer of knowledge to those who seek it and have the competence and resources to assimilate and use it. Transfer may not be easy, often it is quite difficult, but cannot be permanently prevented.

Another attribute is that the most significant applications of a new technology may be far from the original intended purpose of its development. Especially so when synergisms among scientific disciplines and technologies give rise to applications not foreseen within the individual fields. The best example is the ubiquitous silicon-based chip, so essential to high-performance computers, that depends on material science, lithography, computer science, and other disciplines for its design and manufacture.

All of these and related factors ought to put a different face on attempts to limit the knowledge available to "rogue" states or potential terrorists, and on the agenda for research and development. Disquieting signals have been appearing from Washington indicating an intention to discourage or prevent the publication of research results that are seen as having possible application to terrorist weapons, and to limit the fields in which foreign students may be engaged. There are legitimate questions about whether there ought to be any restrictions applied to publication (e.g. the detailed design of nuclear weapons), but the recent difficult history, predating Sept. 11, of the implementation of rules for controlling unclassified information

Ogmius Exchange: *Eugene Skolnikoff Continued*

under the International Trade in Arms Regulations (ITAR) makes it clear that it would be unwise to leave such matters to government decision alone and to implementation by national security agencies. Under the ITAR, onerous impediments to research in the space sciences have been imposed in the name of non-proliferation. The issues surrounding non-proliferation are real and important, but the regulations have been implemented with little apparent understanding of the effects on the research community or of the consequent implications for national security. Though the effects have been primarily in space sciences so far, the ITAR lists other disciplines to which it could be applied.

Blanket restrictions on openness of information and on the participation of qualified foreign students will not prevent information from reaching undesirable hands. The research community does, however, have an obligation to understand what controls, if any, should be instituted, and how they might be implemented. The recent policy adopted by the American Society of Microbiologists to monitor questionable papers in the editorial review process may provide a viable model. But, broader restrictions on information or people would only serve to reduce the vitality of the research and development enterprise in the US, a vitality that will be essential to meet the broadened agenda posed by the terrorist threat.

That agenda now includes a range of goals, from frontier molecular biology on ways to detect and counter new disease pathogens to less sophisticated research on how the nation's vulnerabilities might be reduced or the effects of disruption minimized. The "simple" goals-- to improve the nation's public health system, or monitor the massive container traffic in the nation's ports, or build redundancy at reasonable cost in communications networks– may prove to be as important as the fundamental research in the laboratory. Whether esoteric research at the frontier or down-to-earth improvement and implementation of well-understood technologies is required, the quality of the R/D enterprise is essential. Over the years, we have learned what is essential to maintain that quality; we must not cripple it now through measures that superficially may appear appropriate but in fact are damaging to the resource we are trying to protect and ultimately will lessen rather than strengthen national security.

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Center Projects

"Science, Technology, and Security: Knowledge for the Post-9/11 World"

Security has assumed a much greater importance in the wake of the tragic events of 9/11. Scientific and technological knowledge and understanding are essential to enhance national security. Effective science and technology-based security policies depend critically upon assessing what knowledge is available, what knowledge is needed, and how decision makers might put that knowledge to effective use. The University of Colorado's four campuses have strong departments in science, engineering, and technology. In addition, the Front Range is home to several national laboratories, the National Center for Atmospheric Research, other major research universities, and the Air Force Academy.

The Center for Science and Technology Policy Research is sponsoring a symposium on October 10 and 11, 2002 entitled "Science, Technology, and Security: Knowledge for the Post-9/11 World." This symposium seeks to foster new connections and dialogue among the wealth of local experts on how better to integrate scientific and technological research with decision making on issues ranging from computer security to bioterrorism. This symposium will bring together experts in the physical, natural, and social sciences to identify what we know, how to better use (and limit the misuse of) what we know, what we need to learn, and discuss issues and obstacles associated with each. The symposium will include working groups on topics such as bioterrorism, computer security, energy security, and critical infrastructure. The overriding objective is to make new and lasting connections among experts from the four CU campuses, NCAR, NOAA, NREL, NIST, University of Denver, Colorado State University, Colorado School of Mines, and the U.S Air Force Academy, as well as local and national security decision makers and experts. The Symposium is supported by the Alfred P. Sloan Foundation, the University of Colorado System, the University of Colorado at Boulder, Denver, and Colorado Springs, the University of Colorado Health Sciences Center, the University of Denver Graduate School of International Studies, and Colorado State University's Rocky Mountain Institute for Biosecurity Research.

For more information see the symposium website at:

http://sciencepolicy.colorado.edu/events/security_symposium_2002/.

Ogmius News
Robert Frodeman Joins the Center

Robert Frodeman (http://sciencepolicy.colorado.edu/homepages/rfrodeman) joins the Center as a Research Scientist. Bob specializes in environmental philosophy, the philosophy of technology, and the philosophy of science policy. His training includes a BA in history, an MS in the Earth sciences, and a PhD in philosophy (from Penn State). He has held positions at the University of Texas and the University of Tennessee, and has consulted for the US Geological Survey for the last nine years. In 2001-2002 Bob was the Hennebach Professor of the Humanities at the Colorado School of Mines, where he launched the New Directions Initiative (http://www.mines.edu/newdirections/), which has now relocated to the Center.

Bob is one of the principals of the Flatirons Outdoor Classroom Project (http://sciencepolicy.colorado.edu/flatirons/), a project at Flatirons Elementary in Boulder, Colorado, that consists of the creation of an interdisciplinary outdoor learning environment combining elements of science, art, social studies, and the humanities. The project has two parts. Part 1 focuses on the creation of an outdoor classroom space made up of the four elements listed above. Part 2 proposes the development of simultaneous and ongoing school curriculum projects to make full use of this unique space.

Bob also directs the Center's *Global Climate Change and Society Program* (http://sciencepolicy.colorado.edu/gccs/), where students explore the nature of scientific knowledge and the contribution that social scientific and humanistic perspectives play in public policy debates. He is the editor of *Earth Matters: the Earth Sciences, Philosophy, and the Claims of Community*, co-editor of the forthcoming set of essays *Nature Revisited*, and author of the forthcoming *Geo-Logic: Breaking Ground between Philosophy and the Earth Sciences*.

Ogmius News
Center 2001-2002 Annual Report is Now Available

The Center recently issued its 2001-2002 Annual Report, which summarizes the Center's accomplishments in its first year of operations. The report discusses the Center's research projects, educational opportunities, and outreach efforts, as well as presents highlights for all Center staff members. The report also includes the Center's Program Plan and By-Laws.

The Annual Report is available online in pdf format at http://sciencepolicy.colorado.edu/center_info/annual_report.pdf. Contact Ami Nacu-Schmidt at ami@cires.colorado.edu if you would like to have a hard copy version mailed to you.

Ogmius News
The Center for Science, Policy, & Outcomes Request for Proposals

The Program Committee of the Research Symposium with the Next Generation of Leaders in Science and Technology Policy requests proposals for papers from scholars and practitioners who have either received their PhD (or other terminal degree) no earlier than 1995 or who have completed all degree requirements with the exception of a thesis (ABD or equivalent).

The Research Symposium, to be held in Washington, DC on 22-23 November 2002, is funded by the National Science Foundation (award number SES-0135170). It is a collaborative project of the Edward J. Bloustein School of Planning and Public Policy at Rutgers University and the Center for Science, Policy, & Outcomes (CSPO) of Columbia University, and co-sponsored by the American Association for the Advancement of Science (AAAS).

The Research Symposium will address eight theme tracks in science and technology policy:

1. new history of science and technology policy;
2. R&D program analysis and evaluation;
3. expertise, advice, assessment, and evaluation;
4. science, technology, and human needs and values;
5. science, technology, and international issues;
6. science education, human resources, and workforce;
7. science and technology policy institutions and processes; and
8. science, technology, and the public.

Authors whose proposals are accepted will receive travel funding to attend the workshop and will be given an honorarium

Ogmius News Continued

of $750 upon presentation of a completed paper, to be published in a multi-authored volume from the Research Symposium. Senior scholars and practitioners will be invited to serve as discussants.

The purpose of the Research Symposium is to:

1) introduce the members of this "next generation" to each other, forging intellectual and social links that will persist over time;
2) introduce the "next generation" to more senior scholars and practitioners, subjecting new thinking to the discipline of experience and practice, and informing traditional perspectives and practice with fresh research and styles of analysis;
3) create a more coherent agenda among this "next generation" that represents both sound scholarship and relevant research; and
4) collect and disseminate the scholarship of this "next generation" group for a wider audience to appreciate.

Dissemination:

Program Committee co-chairs Guston and Sarewitz will edit a multi-authored volume, to be submitted for publication to Columbia University Press for its new series "The Transforming Force: Science and the Making of the Future" (series editors Barry Bozeman and Richard Rhodes). The volume may also include the work of alternates or others.

The Center for Science, Policy, & Outcomes will maintain a website for the project http://www.cspo.org/nextgen.

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Ogmius News
Stanford Energy Modeling Forum

Center Research Affiliate Subhrendu Gangopadhyay (http://sciencepolicy.colorado.edu/homepages/subhrendu) gave a talk at the Stanford Energy Modeling Forum (EMF)'s annual meeting in Snowmass, Colorado on August 5th, 2002, entitled "Climate Change Implications for Ground Water Systems."

The Energy Modeling Forum was established in 1976 to provide a structured forum within which energy experts from government, industry, universities, and other research organizations could meet to study important energy and environmental issues of common interest.

Center Educational Opportunities
Monthly Forum for SPGrads

The Center hosts a monthly forum for graduate students and early-career scientists interested in issues of science and technology policy called SP Grads. The speaker at the September 20 SP Grads meeting was Doug Walker of Boulder-based CommunityViz (http://www.communityviz.com/).

The following is an abstract of his talk:

CommunityViz is decision-support software that has been created by The Orton Family Foundation to help people make informed, collaborative decisions about their communities and their land. The tool seeks to help communities through the process of agreeing on values, understanding choices, analyzing and experimenting with alternatives, understanding holistic impacts, reaching decisions, and following up on actions and plans. Serving as a decision-making exploratory model, CommunityViz makes extensive use of maps, charts, and realistic 3D models as a common language for communication and collaboration. In my remarks I would hope to use one or two real-world examples of how CommunityViz has been used to launch a dialogue about how communities are making planning decisions, what problems we see, what CommunityViz is trying to do to help, and what still needs to be done. Possible drill-down topics of interest to me, at least, are how to present scientific models to the public and how the public decision-making process does, or should, unfold.

Recent Publications

Flood Damage in the United States, 1926-2000: A Reanalysis of National Weather Service Estimates

Pielke, R.A., Jr., Mary W. Downton, and J. Zoe Barnard Miller, 2002: Flood Damage in the United States, 1926-2000: A Reanalysis of National Weather Service Estimates. Boulder, CO: UCAR.

Flood damage continues to increase in the United States, despite extensive flood management efforts. To address the problem of increasing damage, accurate data are needed on costs and vulnerability associated with flooding. Unfortunately, the available records of historical flood damage do not provide the detailed information needed for policy evaluation, scientific analysis, and disaster mitigation planning. To address this problem the authors reanalyzed flood damage estimates collected by the National Weather Service (NWS) between 1926 and 2000. Their report, as well as the reanalyzed estimates, are available online at:

http://www.flooddamagedata.org.

Job Opportunities

AAAS Science and Technology Policy Fellowships, 2003-04

Scientists and engineers are invited to apply for one-year science and technology policy fellowships in Washington, DC, beginning September 2003. Fellows serve in the Congress and several executive branch agencies including the U.S. Environmental Protection Agency, the U.S. Food and Drug Administration, the U.S. Department of Agriculture, the U.S. Agency for International Development and the U.S. Department of State.

These programs are designed to provide each Fellow with a unique public policy learning experience and to bring technical backgrounds and external perspectives to decision-making in the U.S. government.

Applicants must be U.S. citizens and must have a Ph.D. or an equivalent doctoral degree by the application deadline (January 10, 2003) from any physical, biological or social science, any field of engineering or any relevant interdisciplinary field. Individuals with a master's degree in engineering and at least three years of post-degree professional experience also may apply. Federal employees are ineligible. Stipends begin at $56,000.

For application instructions and further information about the AAAS Science and Technology Policy Fellowship Programs, contact:

1200 New York Avenue, NW
Washington, DC 20005
Phone: (202) 326-6700
E-mail: science_policy@aaas.org
Web: http://fellowships.aaas.org

Underrepresented minorities and persons with disabilities are encouraged to apply.

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ogmius-admin@sciencepolicy.colorado.edu

and include the following information:

- *Name*
- *Organization*
- *Email Address*
- *Interests & Needs*
- *How you heard about Ogmius*

Job Opportunities
The Leonard Rieser Research Fellowship

The Board of Directors of the Educational Foundation for Nuclear Science, publisher of the Bulletin of the Atomic Scientists, created the Leonard M. Rieser Research Fellowship in 1999. Leonard Rieser (1922 - 1998) was an outstanding scientist, professor of physics, leader, and mentor. He was a vocal advocate for the peaceful resolution of conflict, and served as the Chair of the Educational Foundation's Board of Directors from 1984 - 1998. Leonard was also a champion of young people, their ideas, and their efforts to build a more peaceful world. The Leonard M. Rieser Research Fellowship honors the belief Leonard had in the ability of the next generation to play a critical role in the resolution of persistent global security problems.

Fellowship Overview

The Fellowship will annually provide one-time awards of $2,500 to between three and five undergraduate students seeking to explore the connections between science, global security, and public policy (science students are especially encouraged to apply). It will be presented to students whose academic interests, extracurricular activities, and career aspirations demonstrate an interest in the role of scientists in formulating public policy and in addressing global security policy challenges.

Students selected to receive the Leonard M. Rieser Research Fellowship will be announced in the Bulletin of the Atomic Scientists, with a description of each Fellow's academic interests and project plans.

Eligibility and Application

Any undergraduate student studying at a U.S. college or university is eligible to apply for the Leonard M. Rieser Research Fellowship. The Fellowship may be used over the course of one year to support academic research or professional development, in the United States or abroad. The Fellowship will be paid in two payments of $1,250—one made at the commencement of the Fellowship, and the second upon its conclusion following the receipt of a project report and receipts. Specifically, the Fellowship could be used for the following purposes:

- To provide a stipend for an otherwise unpaid full-time internship;
- To provide for housing or a per diem for research conducted out of town;
- To underwrite the cost of travel or transportation to support academic research;
- For participation in or travel to professional conferences where the Fellow presents academic research;
- To underwrite the production costs of a special project, ranging from the making of a documentary film to laboratory work.

Students must supply the following materials when applying for the Fellowship:

- A completed application form. The form is available online as a PDF (http://www.thebulletin.org/fellows/rieser.pdf) or Microsoft Word document (http://www.thebulletin.org/fellows/rieser.doc), or by writing to the address below.
- An 800-1,000 word narrative proposal describing the applicant's intended use of the Fellowship. Students will be asked to provide substantiation of the viability of the proposed project in the form of official letters of confirmation for internships, research at proposed institutions, acceptance to conferences, etc.
- A 1-page (single-spaced) personal essay, explaining how the applicant would benefit from the Fellowship and the experience being proposed
- Two letters of recommendation from relevant faculty members at the applicant's college or university

Selection for the Fellowship will be based upon the applicant's demonstrated interest in the fields of international affairs; global security policy; or science and public policy. While students are encouraged to be creative and imaginative in their use of the Fellowship, they are also encouraged to be realistic in the viability of the proposed project.

Application Deadlines and Notification

Application materials for the Leonard M. Rieser Research Fellowship must be received no later than **March 3, 2003**. Letters of notification to all applicants will be mailed on or around **April 7, 2003**.

The Leonard M. Rieser Research Fellowship
Attn: Stephen Schwartz
Educational Foundation for Nuclear Science
6042 South Kimbark Avenue
Chicago, IL 60637-2806

Job Opportunities

CIRES Western Water Assessment Managing Director

The Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado at Boulder has an immediate opening for a Research Associate. The National Oceanic and Atmospheric Administration (NOAA) under its Office of Global Programs (OGP) developed the Regional Integrated Sciences and Assessments (RISA) program for research and development to improve climate information and its use in the Interior West and in other regions (the Northwest, Southwest, California and Florida). The NOAA-CIRES Western Water Assessment (WWA) began in 1999 and involves a team of over 30 scientists and students at the University of Colorado and NOAA's Climate Diagnostic Center.

The objectives of the WWA project are to:

1) understand the sensitivity of the user community to multiple stresses, the feasibility and environmental implications of various coping strategies, and the residual vulnerability of different groups when coping strategies fail;
2) develop issue-specific partnerships with climate-sensitive groups to examine the needs and barriers to the use of hydro-climate information and products; and
3) share findings on regional information needs with the federal and state agencies responsible for the operational development and delivery of hydro-climate information and products, and develop partnerships these agencies to improve the quality, relevance, use, and, ultimately, the value of operational hydro-climate products.

Research is stakeholder-driven. Research focuses on the decision-making processes of the individuals, groups, and organizations that have responsibility for managing water resources, as well as those who use the water, and those responsible for its treatment and the protection of the aquatic environment. Collectively, this diverse set of individuals, groups, and organizations represent the WWA "user community." By understanding the decision-making processes, the stresses, and the constraints of this community, WWA researchers can develop hydro-climate products that meet user needs, allowing the user community to make more informed decisions.

Duties:

- Contact Point. The WWA Managing Director will serve as the primary contact point for scientists and organizations interested in participating in WWA research. This will involve spending time discussing WWA research with outside individuals, and either providing outside individuals with information/products, or directing them to the WWA Team member(s) who can best help them.
- Presentations. The WWA Managing Director will be part of a team responsible for making presentations to outside groups (e.g., the Colorado Water Conservation Board, the Colorado River Water Conservation District), and at scientific meetings.
- Public Outreach. The WWA Managing Director will assist in providing content for WWA press releases, and be on hand to answer questions of immediate concern from both journalists and the general public.
- Rapid Response. During unusual regional events (e.g., the 2002 drought), provide critical information on expected stresses and potential responses to both stakeholders and congressional and State leaders.
- Governmental Relations. The WWA Managing Director will assist WWA team leaders providing all information required by NOAA-OGP program management, and material supporting congressional requests for increased funding.
- Develop content for the WWA web site and monthly newsletter. The WWA Managing Director will be responsible for providing content for the WWA web site, and ensuring the web site is up-to-date and well suited to the needs of the WWA user community. The Managing Director will also be responsible for soliciting and providing content for the WWA monthly newsletter.
- Workshops. The WWA Managing Director will play a primary role in developing the content, soliciting participation, and organizing the logistics of occasional WWA workshops.
- Writing proposals and reports. The WWA Managing Director will provide support in coordinating, writing, and editing WWA proposals and annual reports.
- Organizing and chairing team meetings. The WWA Managing Director will have primary responsibility for organizing and chairing monthly team meetings. This includes developing an agenda for the meetings, organizing speakers, and summarizing the meetings.
- Budget. The WWA Managing Director will be responsible for overseeing the WWA budget, and ensuring that non-CIRES personnel and external contractors are paid in a timely manner. The Managing Director will also be responsible for soliciting and providing budget updates to the WWA Management Team, and answering budget-related questions from WWA team members.

Job Opportunities Continued

Requirements

- Ph.D. in a closely related field.
- Experience with project management.
- Sound knowledge of hydro-climatic variability and its societal impacts, and familiarity with interdisciplinary research projects.
- The successful candidate will also have strong organizational skills, knowledge of graphics and word processing packages.
- Excellent written and oral communication skills.

For further information about this position, please contact Dr. Martyn Clark (e-mail: clark@vorticity.Colorado.edu).

The position will be filled as a Research Associate at the University of Colorado, and will be eligible for employee benefits, including 22 days of vacation per year. The review of applications will start immediately and continue until the position is filled.

To apply email Jobs@cires.colorado.edu or, mail or fax (303.492.1149), resume, salary history and a list of three references to:

CIRES Human Resources
Job Code PL-2
216 UCB
Boulder, CO 80309-0216

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For more information please visit the Western Water Assessment's Website at:
http://sciencepolicy.colorado.edu/wwa/.

Western Water Assessment

About Us

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