

Evaluating the hydrologic conditions for these past El Niño events reveals that during these times, surface water supply conditions improved in many parts of the United States, including the Southeast, Midwest, and Southwest. At the same time, the Pacific Northwest and other specific regions of the United States experienced below-average water supply conditions. This is consistent with the long-established linkages between ocean-atmospheric phenomena, El Niño, and streamflow (e.g., Katul and Zwieback, 1999; Toole et al., 2005).

Predicting El Niño responses is challenging. For example, in the upper Colorado River basin, mixed signals in streamflow and snowpack can be seen for past El Niño events. It is projected that Lake Powell and Lake Mead storage could increase between 5% and 48% in the next months if inflows are similar to those observed during three of the past similar El Niño years (1972–1973, 1982–1983, and 1986–1987) and could decrease by 21% if flows are similar to 2002–2003. Accurately predicting the behavior involves statistical calculations, and once correlations are found, changes to hydrologic characteristics in different regions of the United States can be forecasted. Using the Colorado River basin as an example, forecasted patterns and their implications can be evaluated.

Current and Past El Niño Years

Data for the current forecast and past El Niño years were obtained from the NOAA Climate Prediction Center (http://www.cpc.ncep.noaa.gov/). A region of the Pacific Ocean called the Niño 3.4 (5ºN–5ºS, 120º–170ºW) sea surface temperature (SST) anomalies is used as the indicator of El Niño conditions because it is heavily studied and used by NOAA in its forecasts (Figure 1). Currently, the combined storage of Lake Powell and Lake Mead is approximately 68% of full, a result of the prolonged drought of the past 10 years. Figure 3a summarizes natural flows at Lees Ferry, Ariz., that represent the contributions from the upper Colorado River basin. To evaluate what the 2009–2010 El Niño might mean on regional scales, it is helpful to examine one example. For Colorado River basin water supply, simulations were performed using the Bureau of Reclamation’s long-term planning model Colorado River Simulation System (CRSS), which incorporates the major reservoirs and produces monthly projections of Lake Powell and Lake Mead elevations. CRSS was run for 2 years starting in January 2010 by updating the reservoir initial conditions to reflect the Bureau of Reclamation’s most recent forecast for reservoir levels at the end of 2009, along with monthly natural streamflow (the gauged streamflow that had been corrected for the upstream effects of humans) from eight historic El Niño events.

To determine whether the 2009–2010 El Niño event was defined when the monthly historic Niño 3.4 conditions and forecasted 2009–2010 Niño 3.4 conditions had a coefficient of determination (R²) exceeding 90% and the test of the difference of the means did not exceed 50%. By using these tests, four historic El Niño events (1972–1973, 1982–1983, 1986–1987, and 2002–2003) were found to be similar to the forecasted 2009–2010 El Niño event.

Hydrologic Responses

Figure 2 presents the hydrologic response to the four historic El Niño events that look similar to the current El Niño. Through using six continental U.S. unimpaired streamflow stations (water years 1913–2002), and 323 western U.S. snowpack stations (1 April snow water equivalent) during the years 1901–2004 (see Toole et al., 2005; Master et al., 2006), scientists found that the Southeast, Midwest, and Southwest regions of the United States had increased yearly streamflow and the Pacific Northwest had decreased yearly streamflow (Figure 2a) during El Niño years. Decreased snowpack was also observed in Idaho, western Montana, northeastern Wyoming, and central Colorado during El Niño events (Figure 2b). The streamflow and snowpack were mixed in the Colorado and Utah portions of the upper Colorado River basin.

Case Study: Reservoirs in the Colorado River Basin

To evaluate the consequences of the 2009–2010 El Niño event, we examined one example. For Colorado River basin water supply, simulations were performed using the Bureau of Reclamation’s Colorado River Simulation System (CRSS), which incorporates the major reservoirs and produces monthly projections of Lake Powell and Lake Mead elevations. CRSS was run for 2 years starting in January 2010 by updating the reservoir initial conditions to reflect the Bureau of Reclamation’s most recent forecast for reservoir levels at the end of 2009, along with monthly natural streamflow (the gauged streamflow that had been corrected for the upstream effects of humans) from eight historic El Niño events.

Currently, the combined storage of Lake Powell and Lake Mead is approximately 68% of full, a result of the prolonged drought of the past 10 years. Figure 3a summarizes natural flows at Lees Ferry, Ariz., that represent the contributions from the upper Colorado River basin. Average flows during the 1972–1973, 1982–1983, 1986–1987, and 2002–2003 El Niño events were 100%, 139%, 125%, and 56%, respectively, of the average.

Using CRSS with these flows indicates that the combined storage at Lake Powell and Lake Mead at the end of 2011 could increase between 4.0 cubic kilometers (9%, equivalent to 3.2 million acre-feet) under 1972–1973 El Niño conditions and the projected 2009–2010 event (observed data are continuous curves, and the forecasted scenario is a dashed curve).
Large volcanic eruptions result from the ejection of magma transported from depth. How the magma is transported to the surface is one of the fundamental questions in understanding how a volcano works. A way to address this question is to explore the seismic structures of volcanoes.

One volcano that is well surveyed and instrumented through a variety of global positioning system and seismic networks is Japan’s Mount Asama. Because of this, scientists were able to conduct an active-source seismic experiment on this volcano with the goal of mapping volcanic conduits (see Figure 1).

Asama’s Eruptive History

Asama is known to have erupted explosively in 1108 and 1783, both with a Volcano Explosivity Index (VEI) of 5 according to models of tephra output based on stratigraphic studies. Recent eruptions of Asama include moderately sized events with VEI of 2 in 1973, 1982, 1983, and 2004 and minor events with VEI of 1 in 2008 and 2009. Asama has been well-instrumented and the data from these recent eruptions can be used to understand the magma pathways beneath this volcano. To address these questions, an active-source seismic experiment was conducted on Asama in October 2009. Using active-source seismic methods, scientists were able to conduct an active-source seismic experiment on this volcano with the goal of mapping volcanic conduits (see Figure 1).

Active-Source Seismic Experiment Confirms the Magma Pathway of Mount Asama, Japan

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During Asama’s active seismic experiment, scientists deployed temporary seismometers to obtain detailed data on the subsurface structure around the volcano’s magma pathway (Figure 1). Most of the seismometers were aligned along north-south and east-west profiles, allowing researchers to derive two-dimensional subsurface structures both perpendicular and parallel to the inferred dipping area. Five shots were located at the ends of the north-south and east-west profiles and the intersection of the two profiles (Figure 1). This experiment deployed Mark Products L22-D (natural frequency of 2 hertz) and GeoSpace GS-HD (natural frequency of 4.5 hertz) seismometers with an average spacing of 100–150 meters (Figure 1). A closer spacing of seismometers, placed only 50 meters apart on a section of the north-south profile adjacent to the dipping area, was used to obtain a finer image (Figure 1b). 
P Wave Velocity Structure
The obtained velocity structure clearly shows a high-velocity zone around the area of inferred diking during the 2004 eruptions (Figures 2b and 2d), leading researchers to interpret that the high-velocity zone is formed by the solidification of magma after repeated intrusions. This is supported by the solidification of magma intrusions both perpendicular and parallel to the magma pathway beneath Asama volcano (Figure 2d). The observed velocity structure is reliable, as the high-velocity zone is at most 1 meter [Zollo, A., et al., 2009], much thinner than the spatial resolution of the dike observed in the present analysis, which is about 1 kilometer. This implies that the magma pathway beneath Asama has likely been the same during different eruptive episodes. Also note that Figure 2 depicts the P-wave velocity structure for the north-south and east-west profiles, obtained from interpolations from first-arrival travel times. These interpolations fit well with observations (Figures 2a and 2c), endorsing the idea that the velocity structure is reliable.

Combining these results with natural earthquake locations and the electromagnetic structure measured through resistivity testing of Asama suggests that the intruded magma is blocked by a cap of stiff rocks but rather, repeating intrusions must have occurred in this zone, because the thickness of a dike formed by a single intrusion is at most 1 meter [Zollo, A., et al., 2009], much thinner than the spatial resolution of the dike observed in the present analysis, which is about 1 kilometer. This implies that the magma pathway beneath Asama has likely been the same during different eruptive episodes. Also note that Figure 2 depicts the P-wave velocity structure for the north-south and east-west profiles, obtained from interpolations from first-arrival travel times. These interpolations fit well with observations (Figures 2a and 2c), endorsing the idea that the velocity structure is reliable.

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A New Approach to Data Publication

in Ocean Sciences

Data are collected from ocean sciences activities that range from a single investigation to working in a laboratory to large teams of scientists cooperating on big, multinational, global ocean research projects. What these activities have in common is that all result in data, some of which are used as the basis for publications in refereed journals. However, two major problems regarding data remain. First, many data valuable for independent research, physics, chemistry, biology, and how the oceans operate and in the Earth system are never archived or made accessible to other scientists. Data underlying traditional journal articles are often difficult to obtain. Second, when scientists do contribute data to databases, their data become freely available, with little acknowledgment and no contribution to their career advancement. To address these problems, stronger ties must be made between data repositories and academic journals, and a "digital backbone" needs to be created for data related to journal publications.

Links Between Data Repositories and Academic Journals

The Scientific Committee on Oceanic Research (SCOR) and the International Oceanographic Data and Information Exchange (IODE) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) are discussing how to provide better access to ocean data through increased submission to approved, open, online resources. Such new infrastructure and new approaches to data publication could help scientists who observe the ocean and model its processes. Most important, it is now timely to:

• increase the availability of data used to create figures, tables, and other analyses in traditional journal articles;
• evidence linkages between data lodged in data centers and science publications, particularly "data briefs"; and
• encourage publishing of journals that specialize in "data publications" or "data briefs."

Data publications are short descriptions (as short as a few paragraphs of text), not interpretations, of data sets. They provide persistent pointers to the data in an approved data repository as well as references citable in papers that use the data, and in authors’ curricula vitae.

Getting Journals on Board

Several journals in the ocean sciences already welcome the publication of data. In the future, they include Marine Micropaleontology; Geochemistry, Geophysics, Geosystems; Ecology and Evolutionary Science; Data Science; and Oceanography. Other journals also acknowledge the benefits of data publication in the review process, through closer collaboration between data centers and journal editors.

Submission of data associated with journal articles is now handled in the following ways:

• Digital object identifiers (DOIs) have become an almost de facto requirement in some fields.
• Data publications are handled in the editorial process.
• Data sets are archived as part of traditional journal articles.

Journal publications, additional infrastructure in data management systems is required. Such infrastructure must be implemented with minimal costs to avoid impeding the publication process (see Figure 1). The "eReferee" technology developed by the digital library community delivers some of the functionality needed for this infrastructure. However, it does not provide added value—in terms of harmonization with other data in the system, quality control, and retrieval—enhanced—associated with the IODE network of national data centers. A workable compromise would be to use eReferee technology as "front-end" processes of data centers that store ingested data sets as "is" in the short term, as well as providing added value to data sets through existing data management infrastructure in the medium and long terms. This new infrastructure should improve the data publication process through greater collaboration between data centers and journal editors.

3COR and IODE are working with existing data centers, libraries, and journals to promote the development of the infrastructure required to provide ocean sciences publications with an effective "digital backbone." Other groups are also spearheading efforts to link academic journals to data repositories. Ongoing cooperative activities are along three lines:

1. The Marine Biological Laboratory/WHOI library is working with the U.S. Biological and Chemical Oceanography Data Management Office (BICO/WHOI) at WHOI on a pilot project on how libraries and data centers could work together to provide the digital backbone for traditional journal publications, ensuring that data sets have appropriate associated metadata and are easily accessible.

2. The British Oceanographic Data Centre is working on a pilot project to repackaged existing data holdings into data sets appropriate for assignment of persistent identifiers to provide a mechanism for concrete links to scientific publications.

The work flow diagram in Figure 1 will be reviewed as scientists, data managers, and journal editors gain experience from the pilot projects. Important questions raised by the ocean science community include the following:

• What should be the details of quality control in data centers? A simple action would be to ensure that submitted data are machine-readable. Other actions might be to ensure that data sets include a minimal set of metadata.
• What happens to data associated with articles that are not published? Such data may still be valuable to other scientists, and archiving should ensure that the data originator receives appropriate credit.
• What processes will be needed to ensure that data are archived, assigned a persistent identifier, and accessible before the associated paper is published? The timing surrounding the implementation of this process is especially important as publication times become faster and review drafts of papers become available through electronic publishing.

• What are the rights and responsibilities of data archives during the review process, in terms of data release, data protection, timing, etc.?

• What existing persistent identifiers should be assigned to data referenced in journal articles? Digital object identifiers (DOIs) have become an almost de facto standard in journal publishing, but other options exist. Whenever identifiers are used, the issue of the "least publishable unit" for assignment of an identifier must be tackled.

More details about the SCOR/IODE activity are available at http://www.iode.org/datapublishing. The authors welcome input on this topic from the geosciences community.
Earth Sciences Push Radiative Transfer Theory

The theories of radiative transfer and particle—particularly neutrons—transport are grounded in distinct microscopic physics that deals with the optical or particle dynamics. However, it is not practical to track every wave or particle in macroscopic systems, nor do all of these details matter. That is why, in the face of what are individual particles, are replaced by those of Surface Waters, Groundwaters; Reduction in Crop Yield; Transformation of Lowlands; Wind Erosion; Contamination of High-Elevation Ecosystems; Water Resources; and Integration among the Countries within the Region. The workshop presentations and discussions were covered, as was the modeling of regional processes in the mountains and development of recommendations for further advancing this knowledge in the form of a “message to decision makers.” The message states that mountain regions are particularly susceptible to observed and projected changes. Therefore, actions are urgently required to prevent hazardous impacts on ecosystems and societies and to develop viable adaptation strategies. The workshop stressed the need for much better environmental data exchange and integration among the countries within the region. Its major strategic recommendations for decision makers within regional gov- ernments, national and international agencies, and institutions that invest in regional development are to (1) promote a culture of evidence-based policy making, (2) promote capacity building and public awareness, (3) develop a high-elevation metatellurgical observation network and intensify the complex studies of high-elevation processes, and (4) invest more to improve the academic education system in Central Asian countries. The workshop was preceded by a sum- maries of early-career scientists of the region. The workshop presentations and statements can be found at http://esonet.org/meetings/Bishkek_2009.htm.

—Paul Gibbons, University Corporation for Atmospheric Research/National Climate Data Center, Arvada, CO; E-mail: pgroisma@ucar.edu; and Vladimir Aizen, University of Illinois, Moscow

Improving Environmental Projections in the High Mountains of Northern Eurasia

The northern Eurasia high mountains, particularly in dry regions of Central Asia, are critically important because they are the source of the water supply for the densely populated lowlands. These regions are critically important because they are the source of the water supply for the densely populated lowlands. These regions are highly vulnerable to climatic and environmental changes. Global warming, current and future expected retreat of seasonal snow cover and glaciers, and changes in precipitation pattern and type significantly affect river runoff, permafrost, and ground- water. Moreover, the majority of mountain regions in northern Eurasia are characterized by growing anthropogenic pressure that causes harmful feedback, including desertification of lowlands, wind erosion, contamination of the atmosphere, surface waters, and groundwater, reduction in crop yields, and increasing human mortality rates.

Compounding these problems are socio-economic changes brought about as a result of seasonal snow cover and glaciers, and changes in precipitation pattern and type significantly affect river runoff, permafrost, and groundwater. Moreover, the majority of mountain regions in northern Eurasia are characterized by growing anthropogenic pressure that causes harmful feedback, including desertification of lowlands, wind erosion, contamination of the atmosphere, surface waters, and groundwater, reduction in crop yields, and increasing human mortality rates.

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ABOUT AGU

A Crash Course in Science Radio Reporting

This past summer, 5 weeks after defending my doctoral dissertation, I traded my lab bench and my lab scrubs for a reporter’s recorder and a microphone, and I headed west. As a graduate student at Yale University, I spent 5 years in the laboratory, doing research on how to use a recorder, a microphone, and the lab bench to transmit complex scientific information to the general public. Science reporters at media outlets including newspapers, magazines, and radio stations have a predilection for that route but to give scientists the tools to explain science to the public.

As a graduate student at Yale, I completed a crash course in journalism. During a 3-day orientation for early-career AGU members and graduate students from the University of Oregon, I was taught the basics of journalism (how to write a catchy introduction, how to find solid ideas, and so forth). When I showed up at KUNC, I had no idea how to be a reporter, a microphone user, or the editing software to piece together a radio story, but I learned quickly.

In my first day, I started writing, and I produced a "tape" and "copy" news story (audio clip from an interview plus text) for the news program host to read on air. A few days later, I produced my own "wrap" during which I read text and melded it with the audio clip. It was exciting to hear myself on the radio for the first time. After that, I moved on to reporting feature stories and daily news spots.

Despite my inexperience, the news director treated me pretty much like any other reporter. I was able to do daily science stories, super spots (15 minutes instead of typical minute-long dales), and features (4 minutes). The most exciting aspect of reporting was the breadth of stories I covered on topics as diverse as alternative energy to genetic testing of children. Positive feedback on that story confirmed the value of doing it in the listener with an entertaining anecdote, and showing that scientific issues can have personal meaning.

I came to this fellowship believing that communicating science to the public is incredibly important—science touches most aspects of our daily lives, from climate change to health. I returned home with a strong understanding of how to do that type of reporting.

I got exactly what I had hoped for from my summer at KUNC. I had the chance to see what the daily life of a reporter is like. I discovered that I love the fast-paced exposure to many different areas of research, and that I am passionate about bringing science and science radio series at Adirondack Community College in Queensbury, N. Y., where I am currently teaching a 2-credit class on freelancing opportunities in science communication, and reporting. In August, I opened for a full-time position as a science reporter.

—Erika Schielke, Adjunct Instructor, Adirondack Community College, Queensbury, N. Y. E-mail: Erika.schielke@gmail.com

Biogeosciences

Biogeosciences Student and Post-Doctoral Opportunities

The University of Tennessee in Knoxville has a number of opportunities in the general area of microbial geobiology. Particular topics include:

• Using high spatial resolution geochemical and water data to constrain the short-term functioning of microbial metabolisms.
• Characterizing diverse microbial communities using independent microbiology with analytical geochemistry and microbial geochemistry.

Interested parties should contact Associate Professor Ian Ainsworth (iansworth@utk.edu) or Assistant Professor Dave Fike (dfike@utk.edu). Graduate applications can be submitted via the Graduate School by February 22, 2010. For postdoctoral applications, all applications should be submitted directly to the above addresses.

Postdoctoral Fellowship in Wind Energy

Desert Research Institute/The Desert of Atmospheric Sciences

The Desert Research Institute in Reno, Nev., invites applications to work in the rapidly growing area of Renewable Energy Geo-physicists and geoscientists are sought in the areas of atmospheric sciences, or engineering with experience required in one of the following areas: wind energy studies, wind system modeling, atmospheric and mesoscale modeling, climate data analysis and validation using numerical models.

Applicants should submit a letter of interest demonstrating how the candidate’s qualifications and interests meet the position for a postdoctoral position in terrestrial ecosystem and biosphere modeling in the Laboratory of Terrestrial Ecosystem Sciences.

The University of Utah is seeking a Postdoctoral Fellow to work in the expanding area of biogeochemistry using numerical models. The successful candidate will be involved in collaboration with paleoecologists, plant ecologists, and ecologists to understand the role of climate change in shaping plant distribution patterns. The postdoctoral fellow will work in one or more of the areas of biogeochemistry focusing on the role of climate change in shaping plant distribution patterns.

Interested candidates should contact December 1, 2009, and field experience in related research areas.

Additional information may be directed to Dr. Simon Cari (scari@utk.edu).

Position vacancies are also available for postdoctoral positions in terrestrial ecosystem and biosphere modeling in the following areas:

• Using high spatial resolution geochemical and water data to constrain the short-term functioning of microbial metabolisms.
• Characterizing diverse microbial communities using independent microbiology with analytical geochemistry and microbial geochemistry.

Interested parties should contact Associate Professor Ian Ainsworth (iansworth@utk.edu) or Assistant Professor Dave Fike (dfike@utk.edu). Graduate applications can be submitted via the Graduate School by February 22, 2010. For postdoctoral applications, all applications should be submitted directly to the above addresses.

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Interested candidates should contact
doctoral scientist to pursue research in the areas of numerical modeling of coupled hydrodynamic, biogeochemical, and microbiological processes at the intraporespace to multi-pore scales for porous and fractured media. The goal of the project is to understand how coupled physical-biogeochemical processes influence the transport and transformation of ecologically relevant species, in intact tree trunks. The post-doc will be responsible for developing coupled subsurface-biosphere models and developing data assimilation algorithms to ingest data into the models to improve their predictions. Applications (Resumes and Statement of Qualifications) must be received on the USGS Online Recruitment System (USORS) before midnight Eastern Time on the closing date. For more details on desired qualifications and the complete position description see http://www.usgs.gov/jobs. To be considered for this position, you must meet the education requirements for the hydrologist series. Our on-line vacancy announcement contains additional information regarding these requirements and other qualifications. Applications (Resumes and Statement of Qualifications) must be received on the USGS Online Recruitment System (USORS) before midnight Eastern Time on the closing date. Applications are due by January 15, 2010.

Assistant, Associate, and/or Senior Scientist

The Biological Diversity Institute invites applications for one or more tenure track or tenured positions at the level of Assistant, Associate, or Senior Scientist. There are regular full-time positions and there are eligible for benefits. We seek exceptional candidates from the biological, mathematical and physical sciences to complement our existing interdisciplinary strengths in oceanography and marine ecology. Both theoretical and empirical approaches are welcome.

Conditions in all areas are open to apply; research topics of particular interest include:

Climate Change: Scientists who conduct research on the effects of climate change (including ocean acidification) on populations, communities, and ecosystems, especially in the context of large-scale climate change and biogeochemical feedbacks.

Population Genetics: Scientists who work in genetics to address questions about the structure, dynamics, conservation, or biogeography of marine populations.

The University of Utah values candidates who have experience working in settings with students from diverse backgrounds, and possesses a strong commitment to improving access to higher education for historically underrepresented populations.

Postdoctoral Positions in Seismology, Georisk, and Geodynamics of the Yellowstone Hotspot at the University of Utah. The Department of Geology and Geophysics at the University of Utah invites applications for one or more Postdoctoral fellowships in seismology (GPS, InSAR, etc.) focused on understanding the geodynamics of the Yellowstone hotspot. We are especially interested in scientists to conduct research on this active volcanic-tectonic system including earthquake sources, wave propagation, and homogenous studies, process models of GPS and InSAR, crustal deformation data, and mantle magmas systems. We seek candidates with a focus on both applications of geodynamic models and on a strong understanding of the theoretical and empirical aspects of the system.

The University of Utah seeks candidates who have experience working in settings with students from diverse backgrounds, and possesses a strong commitment to improving access to higher education for historically underrepresented populations.

The U.S. Geological Survey (USGS) seeks candidates for the full-time position of Senior Science Advisor for Water Quality. This is a PL position (Salary Grade 05). The position will be supporting the U.S. Geological Survey’s mission of providing science in support of water resource management. The successful candidate will join an interdisciplinary group of faculty and students from the University of Florida and the College of Engineering at the University of Alaska to pursue research in the areas of hydrology and biogeochemistry.

To be considered for this position, you must meet the education requirements for the hydrologist series. Our on-line vacancy announcement contains additional information regarding these requirements and other qualifications. Applications (Resumes and Statement of Qualifications) must be received on the USGS Online Recruitment System (USORS) before midnight Eastern Time on the closing date. Applications (Resumes and Statement of Qualifications) must be received on the USGS Online Recruitment System (USORS) before midnight Eastern Time on the closing date. Applications are due by January 15, 2010.

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Applications should include a cover letter stating research and teaching interests, a CV, contact information of three references, and one reprint as specified in the call to Professor Kirsten Grimm (kirsten.grimm@unavco.org).

Applicants should email a cover letter stating research and teaching interests, a CV, contact information of three references, and one reprint as specified in the call to Professor Kirsten Grimm (kirsten.grimm@unavco.org). Review of applications will begin January 9, 2010, and proceed until a suitable candidate is identified.

Applicants should submit their application via the Postdoctoral Faculty Jobs page at http://jobsatcu.com and reference job posting #808580. For full consideration, all application materials, including 4 names of references, should be received by January 5, 2010.

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Space Physics

Assistant Professor, The Colorado Center for Lunar Dust and Atmospheric Studies: The Laboratory for Atmospheric and Space Physics at the University of Colorado at Boulder invites applications for a postdoctoral position at the Assistant Professor level to start in August 2010. The successful candidate will have experience in or more of the following areas are encouraged to apply: plasma diagnostics, spacecraft experiments, space hardware development for electromagnetic fields, plasmas and wave experiments. The successful candidate will develop an independent research program focused on understanding the nature of geoscientist whose research and teaching strengths complement the existing departmental strengths in geosciences. Appointment is expected to develop an independent research program using techniques and computer models to test hypotheses. Further information about the department and the University. The initial appointment will begin August 1, 2010. Applications will be accepted until the positions are filled. Applications should be submitted using the Faculty Jobs page at http://jobs.unr.edu. Applications will be considered until August 31, 2010.

Assistant Professor, The Colorado Center for Lunar Dust and Atmospheric Studies: The Laboratory for Atmospheric and Space Physics at the University of Colorado at Boulder invites applications for a postdoctoral position at the Assistant Professor level to start in August 2010. The successful candidate will have experience in or more of the following areas are encouraged to apply: plasma diagnostics, spacecraft experiments, space hardware development for electromagnetic fields, plasmas and wave experiments. The successful candidate will develop an independent research program focused on understanding the nature of geoscientist whose research and teaching strengths complement the existing departmental strengths in geosciences. Appointment is expected to develop an independent research program using techniques and computer models to test hypotheses. Further information about the department and the University. The initial appointment will begin August 1, 2010. Applications will be accepted until the positions are filled. Applications should be submitted using the Faculty Jobs page at http://jobs.unr.edu. Applications will be considered until August 31, 2010.

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Join a leading Australian university

Professor (Hydrogeology) [REF: 2097]

J O I N  A T E A M  O F  M I L L I O N S

Professor (Hydrogeology) [REF: 2097]

J O I N  A T E A M  O F  M I L L I O N S

Professor (Hydrogeology) [REF: 2097]

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Professor (Hydrogeology) [REF: 2097]

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Professor (Hydrogeology) [REF: 2097]

J O I N  A T E A M  O F  M I L L I O N S

Professor (Hydrogeology) [REF: 2097]
Applicants must have a significant track record in climate-related research and, ideally, experience with publishing. Candidates must be able to demonstrate a good understanding of the challenges faced by researchers, policy makers and other interested parties in understanding the complex mechanisms and impacts associated with our changing climate.

Associate Editors

You will have a Ph.D. in a related discipline with demonstrable research achievements. Though postdoctoral experience is preferred (not required) emphasis will be placed on broadly trained applicants with demonstrated ability to develop, establish or maintain active research careers. The successful candidates will therefore be currently engaged in research and will need to have an extensive publications track record. The successful candidates will therefore be currently engaged in research and will need to have an extensive publications track record.

Applicants for the Chief Editor position should send a CV, a statement (1500 words maximum) that encapsulates their vision for the journals content, competitive position and longer term development, and a brief cover letter detailing their salary expectations and explaining their interest in the post.

Applicants for the Associate Editor positions should send a CV (including their class of degree and a brief account of their research and other relevant experience), a News & View style piece (500 words or less) on a recent paper from related literature, and a brief cover letter detailing their salary expectations and explaining their interest in the post.

Applications should be sent to Diem Pham, HR Assistant at landrecruitment@macmillan.co.uk. Applicants should clearly mark their submissions the reference number. Incomplete applications will not be considered.

Closing date: 4th January 2010

nature Publishing group

National Publishing Group, the publisher of nature, is pleased to announce the launch of Nature Climate Change. This international monthly journal will launch in 2010 providing comprehensive coverage on nature and scientific- and impacts-based research relating to the Earth's changing climate.

Nature Climate Change will publish research crossing both natural and social sciences and will strive to forge and synthesise interdisciplinary research. The journal missions will be to unify the reporting of research related to the understanding, and impacts, of Climate Change as well as putting the latest research into a wider social and political context.

We require a dynamic Chief Editor and two Associate Editors, based in our London offices, who are able to develop and establish Nature Climate Change as the essential publication covering research into the Earth's changing climate. The ideal candidates will play a leading role in the accessibility of research, published in the journal, and its visibility in related research communities as well as the mainstream media and public.

Chief Editor

Ref: NPG/104/09

Associate Editors

Ref: NPG/110/09

You will have a Ph.D. in a related discipline with demonstrable research achievements. Though postdoctoral experience is preferred (not required) emphasis will be placed on broadly trained applicants with demonstrated ability to develop, establish or maintain active research careers. The successful candidates will therefore be currently engaged in research and will need to have an extensive publications track record. The successful candidates will therefore be currently engaged in research and will need to have an extensive publications track record.
Applied for and received a relevant assistantship, students are urged to
choose a career and study an advanced degree.

Post Doctoral Fellow

Embry-Riddle Aeronautical University located in Daytona Beach, Florida invites applications for the position of Post Doctoral Fellow. This position is available in the Marine Sciences Research Laboratory at the University. Initial appointment will be for a one year period.

The successful candidate will be involved in electro-optical research systems development, calibration, and field operations at spa/

Research Positions in Seismology at ETH Zurich

The Swiss Seismological Service (SED) at ETH Zurich is increasing its research capacity in the domain of induced seismology related to geothermal systems. The SED is opening up to three research positions with the possibility of a junior (postdoc) or senior level appointment. The focus of the group will be on the development of a comprehensive analysis of processes in geothermal reservoirs and their interaction with the environment. The successful candidate will work closely with the SED and the Department of Earth Sciences.

Candidates must have a PhD in geophysics, engineering or a related field. Experience in one or several of the following is highly desirable: Network seismology, geotechnical engineering, risk analysis, forecast, seismotectonics, induced seismicity, seismology, geothermal energy, static seismology and earthquake physics. English and German are working languages at SED. Senior staff members are expected to participate in teaching at undergraduate and graduate levels.

For more detailed information, please contact Dr. N. Deichmann or Prof. S. Wiemer (deichmann@wmi.ethz.ch). The selection process starts immediately and will continue until the positions are filled.

Max-Planck-Institut für Meteorologie

The Max Planck Institute for Meteorology (MPM) is a research institute for climate and energy science. It is located in Hamburg, Germany. The Max Planck Institute for Meteorology contributes to the European Project "Climate Change - Learning from the Past" (PastPine). With respect to the research programmes we have an open position for a Postdoc in paleoclimates / carbon cycle modelling. In the project, we are focusing on understanding global biogeochemical feedbacks between climate and the carbon cycle through interdisciplinary (physical, chemical, and biological) processes. The successful candidate will work on the project by performing and analyzing high-resolution simulations at the Earth System. The successful candidate will work closely with the PastPine team and have the opportunity to contribute to the European Project "Climate Change - Learning from the Past" (PastPine). With respect to the research programmes we have an open position for a Postdoc in paleoclimates / carbon cycle modelling. In the project, we are focusing on understanding global biogeochemical feedbacks between climate and the carbon cycle through interdisciplinary (physical, chemical, and biological) processes. The successful candidate will work on the project by performing and analyzing high-resolution simulations at the Earth System. The successful candidate will work closely with the PastPine team and have the opportunity to contribute to the European Project "Climate Change - Learning from the Past" (PastPine). With respect to the research programmes we have an open position for a Postdoc in paleoclimates / carbon cycle modelling. In the project, we are focusing on understanding global biogeochemical feedbacks between climate and the carbon cycle through interdisciplinary (physical, chemical, and biological) processes. The successful candidate will work on the project by performing and analyzing high-resolution simulations at the Earth System. The successful candidate will work closely with the PastPine team and have the opportunity to contribute to the European Project "Climate Change - Learning from the Past" (PastPine). With respect to the research programmes we have an open position for a
Ocean Dynamics and Prediction Research
Naval Research Laboratory
The Naval Research Laboratory has opened for Ph.D. researchers to push forward the frontiers of coastal ocean forecasting. Problems that must be addressed cover a broad spectrum of physical processes including wave and current interactions, sediment transport, and coastal processes, with particular interest in the effects of climate change on the coastal ocean. The successful candidate must hold a Ph.D. degree in oceanography or a related field. Applications are especially invited from US institutions (non-US citizens to http://www.nrlmry.navy.mil/1515/). Additional information: Phone: (703) 704-4273; fax: (703) 704-3242; or contact Dr. Jerry Danabas (jerry.danabas@nrl.mil).

Professor/Associate Professor
in Tropical Meteorology
at the University of Bergen, Norway
The Geophysical Institute invites applications for a professor/associate professorship in tropical meteorology.
Closing date: 1 January 2010.
For full details and to apply see http://www.ub.de/rutling or contact Proff. H. M. Roed (hamm@ub.de) for further information.

Ph.D. Student.
Student must hold a Ph.D. degree in oceanography, geochemistry, geology, geophysics, or related field and have experience in research involving the use of Raman spectroscopy. Applications are especially invited from US institutions (non-US citizens to http://www.nrlmry.navy.mil/1515/). Additional information: Phone: (703) 704-4273; fax: (703) 704-3242; or contact Dr. Jerry Danabas (jerry.danabas@nrl.mil).

Graduate Stipends in Ocean and Earth Sciences
The Department of Ocean, Earth & Atmospheric Sciences at Old Dominion University awards stipends to doctoral students admitted to the graduate program for Fall 2010. We grant degrees in ocean and earth sciences (M.S.) and oceanography (Ph.D.), both feature specialization in physical, geological, chemical, and biological fields. Our faculty and students carry out research projects that range geographically from the Arctic to the Antarctic and from micro-to-macro scales. ODU operates a research vessel, the RVV Fly Slower, in lower Chesapeake Bay and on the mid-Atlantic coast. Our graduates have found employment in federal, state, and local governments, consulting, and private industry. Our program provides opportunities to work with interdisciplinary teams on real-world problems at the cutting edge of science and technology.

Additional information: http://ocean.odu.edu/earthsci/index.html or contact Prof. Fred Dobbs, OES, Old Dominion University, 4600 ODU Blvd., Norfolk, VA 23529, e-mail: fdobbs@odu.edu. Start your on-line application at http://admissions.odu.edu/old/ ODU Graduate: Apply online.

Geologist Postdoctoral Fellow
The 2005 Energy Frontier Research Center (EFRC) for Nanoscale Control of Biological CO2 in the Department of Energy (DOE) is currently seeking the postdoctoral fellowship. This position is funded by the NSF's Research Experience for Undergraduates (REU) Program. Applications are especially invited from US institutions (non-US citizens to http://www.nrlmry.navy.mil/1515/). Additional information: Phone: (703) 704-4273; fax: (703) 704-3242; or contact Dr. Jerry Danabas (jerry.danabas@nrl.mil).

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School of Ocean and Earth Science

Lectureships/Senior Lectureships/Readerships in Physical Oceanography and Earth Science

The School of Ocean and Earth Science invites applications for Lectureships in Physical Oceanography and Earth Science (equivalent to a tenure-track assistant professor). Appointment at Senior Lecturer/Reader level (equivalent to associate professor) may also be possible. We seek to recruit several Lecturers in both physical oceanography and Earth science to take our research and teaching to a new level of intellectual achievement and excellence. We are interested in recruiting both early-career individuals with growing international reputations for research excellence and with the ambition to become international leaders in their field, and established mid- and Readers.

Physical Oceanography | Ref: 4039-09-E

NODC envisage a high level of physical oceanography, bringing together around 60 staff and research students. Ongoing and new research over the next few years will encompass major projects to study and monitor the Atlantic meridional overturning circulation, the Southern Ocean to the Arctic, ground-breaking experiments to investigate mixing and submesoscale processes in the Southern Ocean, and pioneering mode studies of ocean dynamics and the ocean's role in the wider Earth system. These projects and leadership to underpin a strong portfolio of research and education. We invite applications from individuals in areas of physical oceanography and related areas of ocean remote sensing, including both model-based and observational studies and ranging from the coastal zone to the deep ocean.

Earth Science | Ref: 4038-09-E

Research in Earth Science at NODC is underpinned by world-class facilities in geochronology, geophysics, palaeoceanography and sedimentary geochemistry. We seek to complement our existing strengths by recruiting individuals who creatively apply observational, experimental, numerical modelling and theoretical approaches in any areas across the full spectrum of Earth Science. We are particularly interested in applicants with a research focus on Earth surface processes or petroleum geology.

The application deadline for these posts is Monday 6 February 2012 at 12 noon.

Candidate Evaluation for the above positions

You must have a PhD at the time of appointment and a proven ability to publish innovative, high-quality research. Emphasis will be placed on your track record of publications and grants. It is also critical to be at a career stage and your ability to develop a dynamic, externally funded research program with an international profile. We welcome your application if you pursue fundamental research or if you have the potential to develop applied research and closer links with industry. You will have a commitment to excellence in undergraduate education, including field training in oceanography or earth science and a desire to engage in doctoral student supervision by capitalizing on the opportunities provided by national and international field programs.

Application Process

Enquiries should be directed to Prof. Tim Minshull, Head of the School of Ocean and Earth Science, email: tm.minshull@noc.soton.ac.uk

When applying for the above positions, please apply via www.jobs.soton.ac.uk quoting the relevant reference number in all correspondence. Please also submit a curriculum vitae, concise statements of research interests and aspirations and teaching philosophy and interests, and the names and contact details of at least three referees with an electronic copy to Prof. Minshull.

We offer highly competitive salaries and benefits package - including pension scheme and generous holiday allowance. There is also access to excellent sport and leisure facilities and the opportunity to develop your career in a friendly and professional environment.

At the University of Southampton we promote equality and value diversity.