NEWS

Experimental Multi-University Graduate Class in Volcanology

PAGE 198

Graduate students in volcanology need a wide variety of scientific and cultural perspectives to become proficient at understanding volcanoes and their moods. With this in mind, a six-university consortium in Earth hazards organized an advanced graduate class on supereruptions during the 2006 winter semester.

The Earth Hazards (EHaz) university consortium consists of Michigan Technological University (Houghton, Mich.), the University at Buffalo (N.Y.), McGill University (Montreal, Quebec, Canada), the University of Waterloo (Waterloo, Ontario, Canada), Universidad Nacional Autónoma de México (UNAM; Mexico City), and the Universidad de Colima (Colima, Mexico), and it is funded by the U.S. Department of Education and counterpart agencies in Mexico and Canada as part of the North American Free Trade Agreement.

The six universities combined the expertise of all their faculties and invited outside experts to participate in order to better expose students to a wide range of scientific issues and problems, many of which were new to the students.

The course focused on caldera supervolcanoes. The topics and lectures were organized from 'bottom up,' beginning with melt generation, transport, and accumulation in the crust. The class then looked at shallow magma chambers and associated calderas, which are the surface manifestations. Continuing upward, pyroclastic flow emplacement and welding were examined, followed by coignimbrite ashes, and atmospheric and climatic impacts. The class concluded by assessing hazards for these large systems.

This approach gave professors and students a unique view into supervolcano systems, and it highlighted current gaps in our understanding of such systems. The discussions allowed a wide range of opinions and ideas to be presented and debated. The class attracted weekly discussion leaders from the whole of volcanology: Stephen Sparks (Bristol University, U.K.), Stephen Self (Open University, Milton Keynes, U.K.), Bob Wiebe (Franklin and Marshall College, Lancaster, Pa.), John Eichelberger (University of Alaska, Fairbanks), John Stix (McGill University), Peter Lipman (U.S. Geological Survey (USGS), Menlo Park, Calif.), Shan DeSilva (University of North Dakota, Grand Forks), Michael Sheridan (University at Buffalo), William Rose (Michigan Technological University), Joop Varekamp (Wesleyan University, Middletown, Conn.), Alan Robock (Rutgers University, New Brunswick, N.J.), Hugo Delgado (UNAM), and Dave Hill (USGS, Menlo Park). In addition, the group is planning a field trip to the Long Valley (California) and Yellowstone (Wyoming) calderas in May and June to link theoretical and field aspects of supervolcano systems.

Perhaps the most unique feature about this course was the way in which sessions were organized. For example, Web-based videoconferencing software (from Marratech, http://www.marratech.com/) allowed individuals to take the class from any location, including all six campuses, by way of a fast Internet connection. Marratech can facilitate videoconferencing among multiple users (typically five to 10) using a 'whiteboard' for common viewing of graphic materials such as PowerPoint or PDF files. The software has proven robust and stable when it is used in 90-minute discussion sessions. The class has a different speaker each week, who submits in advance a selected reading and a PowerPoint lecture. The students read and review these materials, meet for planning question materials, and then have discussion with the week's speaker, all via the Web.

Overall, the format of the class allowed the teaching of an advanced topic much more holistically than could be achieved on only one campus. Students in the class especially appreciated the chance to interact with well-known volcanologists from around the world, who exposed them to the latest scientific material from a variety of expert sources. Because the class was a much larger and more diverse group than would be expected from a course held at any single campus (about 50 students instead of five to 10 on a single campus), the discussions were quite diverse, reflecting the different cultures and backgrounds of the different universities. Speakers for the class were eager participants who already had current readings and PowerPoint lectures that are adaptable to the course without huge effort, and the discussion format of the group Web sessions did not require that speakers modify existing research lectures.

Costs for the course were minimal, as there was no cost associated with inviting each speaker to campus due to the videoconferencing approach. In addition, the paperwork for course credits was handled through the individual university infrastructures.

The consortium is planning to conduct another class in spring 2007, with the theme of volcano instability, that will build on this initial experience. The context of the class and the materials provided by the lecturers are available from http://www.geo.mtu.edu/~raman/EHazSuperEruption.html

The success of this program highlights how this approach likely will become more commonplace as people discover the potential to exchange scientific ideas through networking with different groups in diverse geographic locations.

—WILLIAM I. ROSE, Michigan Technological University, Houghton, E-mail: raman@mtu.edu; and JOHN STIX, McGill University, Montreal, Quebec, Canada.

Bill Would Expand U.S. Drought Monitoring

PAGE 198

The collection and dissemination of drought information would be centralized within the U.S. National Oceanic and Atmospheric Administration (NOAA) under a newly proposed bill, which received support at a 4 May hearing before the U.S. House of Representatives Science Subcommittee on Environment, Technology, and Standards.

The economic costs of drought average $6 to $8 billion each year in the United States, according to NOAA. The effects of prolonged drought include extreme wildfire conditions, water restrictions, and reduced crop yields.

The National Integrated Drought Information System (NIDIS) Act of 2006, H.R. 5136, would give NOAA $12–18 million per year between 2007 and 2012 to create a drought monitoring and forecasting system that could provide users with better early warnings of drought.

Chester Koblinsky, director of NOAA's Climate Program Office, said that the agency is already developing an implementation plan and has laid out three basic steps: (1) improve observations, such as soil moisture and ground water networks, and consolidate the data and its delivery through internet portals; (2) conduct research, improve analyses, forecasts, and decision support, and build pilot projects in critical areas; and (3) expand the pilot projects into a national system. NOAA estimates that full implementation would take five to six years, Koblinsky said.

However, the success of NIDIS depends on the system effectively working with other areas of government that collect information used to monitor and forecast drought. Koblinsky noted that there is a dearth of soil moisture sensors and that there is concern