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USGS and NPS: Science Partners In the Parks

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This special earth and water science issue of *Park Science* is just the latest display of the long-term partnership between the U.S. Geological Survey and the National Park Service. Actually, the partnership between us, between the national parks and the earth, water, and mapping sciences, began long before there was a National Park Service or a U.S. Geological Survey.

That early partnership was based very much on exploration and discovery. The beauty and exciting geology of the landscape were natural magnets that drew some of the nation's first geologists to map, study, and defend the Crown Jewels before they were added to the protected public domain.

Two of these early explorers and defenders of the not-yet national parks, Clarence King in Yosemite and John Wesley Powell in the Grand Canyon, carried out scientific investigations that would help build careers that made them the first and second directors of the USGS.

Our century-old partnership has grown steadily. Since the USGS was founded in 1879, hundreds if not thousands of USGS scientists have worked or studied in national parks at some time during their careers. I am personally proud to be part of that tradition. Several decades ago I worked for 2 years at the USGS Hawaiian Volcano Observatory in Hawaii Volcanoes NP, monitoring eruptions of Kalauea Volcano. Someday, when my turn as Director of USGS is done, I hope to return to my field studies of Sierra Nevada granites in Yosemite NP.

Why have earth scientists spent so much time in the national parks? Because that is where the earth has revealed some of its best science. To study volcanoes, one must go to volcano country. To study granites, one heads for granite mountains. Scientists are far from immune to the beauty of the parks, but what draws us is the challenge of describing and exploring the forces and processes that built and continue to shape volcanic islands and mountain chains.

We could get into a chicken and egg argument: which came first, the beauty or the science? Was it beauty or science that drew the first explorers, that made the winning arguments to convince the public, that laid the groundwork for establishment of the first parks?

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The right answer, of course, is both. Both the wonder of the beauty and the wonder of the science combined to make the first parks possible. And that natural partnership has lasted and must continue. I cannot imagine doing earth science without our national parks. I cannot imagine national parks thriving without good science.

As USGS Director, I can think of no better way to celebrate the accomplishments of the first 75 years of the National Park Service than to re-dedicate our partnership. As part of that re-dedication, Doyle Frederick, Associate Director of the USGS, and I had the pleasure earlier this year of sitting down with NPS Director Jim Ridenour and NPS Associate Director for Research Gene Hester to discuss ways of renewing and expanding the various understandings that formally bind our 2 agencies.

In follow-up sessions between our senior staffs, it was evident that our work together really needs no formal bind. I think we all were extremely pleased with reports of many joint projects underway and being discussed. It also is evident that our partnership continues to include the original elements of scientific description, interpretation, and discovery. But more and more our modern partnership is and must be expanding into 2 key areas:

- * We must work harder to help the NPS interpret and explain the earth, water, and geographic science of the parks. We scientists are good at telling one another about the magnificent science revealed in each park. We must learn to share that scientific story with the park visitor and thus help to enhance the visitor experience. In a way, we've been too selfish with our science. It's time to share better the wonders of park science by providing more assistance where needed to the NPS park interpretation program.

- * Perhaps even more important, our geologists, hydrologists, and cartographers need to work harder to share their science with park management and to provide information needed by management to make the best-informed decisions about protection and enjoyment of the parks. For our part, that means focusing on the information needed by park management and meeting the deadlines for supplying that infor-

mation. Not all science and not all scientists can meet these conditions, but we are moving in that direction.

USGS geologists, hydrologists, and cartographers are increasingly being asked to help park managers develop the data and knowledge that will repair or head off overuse and misuse of parks by the swelling number of visitors. Increasingly, the earth scientist is asked to provide the long-term perspective on the environmental conditions of the past and likely conditions and changes of the future.

The following articles provide a taste of the range of joint scientific efforts underway: modeling climate change, water temperature and biological productivity in Yellowstone Lake; sediment transport and beach erosion in Grand Canyon; natural resources and natural and manmade hazards in and around park borders; coastal geology and pollution; fossils on the public lands; and atmospheric emissions and biochemistry.

But these articles provide only a taste of the exciting science that USGS and NPS are conducting together in the national parks...only a taste of the expanding partnership between the managers and scientists of NPS and USGS. Looking to the future, I am particularly pleased that 3 of our newest major program initiatives--National Water Quality Assessment, National Geologic Mapping, and Accelerated Production of Digital Base Cartographic Data--are finding immediate appeal and application to NPS.

Like all good partners, we sometimes disagree on methods and answers. In fact, it is often hard for our own scientists to agree on a single answer. But that is the nature of science--to probe and challenge from different perspectives. As a bureau, we are working harder to develop a consensus response to tough questions in time to help park management do its job and make the necessary tough management decisions.

Few government agencies have accomplished as much in 75 years as the National Park Service. We at the USGS congratulate you. And we accept the challenge to work with you to help make the next 75 years equally productive. Our natural partnership is older than either of us. May it continue to prosper.