

2009 MEDALS & AWARDS

GSA PUBLIC SERVICE AWARD

Presented to Bruce F. Molnia



Bruce F. Molnia
U.S. Geological Survey—Reston

Citation by John F. Shroder Jr.

Bruce Molnia began his career way back in the 1960s when he first majored in geology at Harpur College at the State University of New York in Binghamton. He was one of Don Coates' advisees and early students in geomorphology, which was that most seminal time when Don and later Marie Morisawa were first implementing what is now the preeminent Binghamton Geomorphology Symposia in North America. Some of that early enthusiasm for sedimentologic geomorphology seems to have rubbed off on Bruce, because he went from SUNY – Binghamton to Duke for a Masters Degree in marine geology in 1969, and a Ph.D. in marine geology from the University of South Carolina in 1972 where he did a dissertation on marine geology and Pleistocene ice rafting in the eastern North Atlantic. This training led Dr. Molnia eventually to conduct more work on glacial, marine, and coastal environments in equatorial, temperate, sub-polar, and polar regions for the next 37 years. As a research geologist at the US Geological Survey (USGS), for much of this time, Bruce Molnia has been keenly interested in glacial processes, impacts of changing climates, shallow marine geology, glacial-marine sedimentation, and the use of remote sensing to investigate these phenomena.

Dr. Molnia's first job out of the doctoral gate was as a Visiting Professor of Geology at Amherst College and Mt. Holyoke, which must have given him a taste for educating

students before he joined the US Geological Survey in 1974, because he has held several adjunct professorships, with Cal State – Northridge, the University of Idaho, and most recently, Duke University, on his list of adjunct academic postings ever since. The USGS meanwhile has been his home through thick and RIFing thin, with many interesting projects to occupy his energies over the past decades.

For example, Bruce started off as a marine geologist at Menlo Park where he was the Chief of Projects on Environmental Studies of the eastern Gulf of Alaska and North Aleutian Shelf. This work involved planning, management, participation in, and analysis of results from marine geological and geophysical research projects and cruises to the Gulf of Alaska, Bering Sea, and Alaskan coastal zone environments. The research topics included analysis of the geology of the Alaskan continental margin, interpretation of coastal and offshore processes, remote sensing, assessment of offshore U.S. marine mineral resources, definition and indication of marine geohazards, sea-floor mapping, production of side-scan sonar mosaics, and investigation of glacial–marine sedimentary processes.

Then in 1983-1985 Dr. Molnia moved into the heartland where he became the Supervisory Physical Scientist and Deputy Chief for Data Production and Distribution of the USGS Earth Resources Observation Systems (EROS) Data Center in Sioux Falls, SD. There he managed the activities of 100 employees involved in digital mapping, as well as the processing and distribution of satellite imagery and aerial photographs. In addition he was responsible for the acquisition and management of large digital geochemical and geophysical data bases (RASS and NURE), evaluation of new remote sensing technologies and instrumentation such as Side looking Airborne Radar (SLAR), the Large Format Camera (LFC), video data storage, etc.), and in marketing and public awareness of USGS remote sensing programs and products.

From South Dakota in 1985, Dr. Molnia moved east to Reston, VA, where the USGS first loaned him to the National Research Council (NRC) of the National Academy of Sciences in Washington, DC. Here he managed and directed activities of the NRC's national advisory group on polar research where he was responsible for initiating, planning, organizing, and conducting studies utilized by federal agencies, Antarctic treaty nations, the Scientific Committee on Antarctic

Research (SCAR) and private foundations. In addition he was also responsible for the activities of the NRC Committee on Permafrost, Committee on Glaciology, Committee on Remote Sensing of Ice and Snow, Committee on Polar Ocean Research Platforms, and Committee on Arctic Solid-Earth Geosciences. At the USGS meantime, he was also Special Assistant to the Chief.

This work led in 1987 to Dr. Molnia's appointment to the International Programs Office of the Chief Geologist in Reston where he coordinated international activities; supervised a staff of 15 international program personnel; organized three international workshops on ocean pollution and Arctic contamination; developed new programs and implemented agreements; represented the USGS and Department of the Interior (DOI) on interagency committees on environment, Arctic policy, global change, Antarctic environmental protection, international data management, and federal government response to Hurricane Mitch; and directed a climate-change-oriented Alaskan glacier research project. His research interests at this time were climate change, coastal and shallow marine processes, fiord and glacial-marine sedimentation, temperate glaciers, remote sensing, synthetic aperture radar (SAR), and use of multi-media for outreach and information distribution. While in this office, he worked his way through as Acting Chief, Deputy Chief, Chief of International Environmental Studies, and finally as Chief of International Polar Programs.

Then in 1999-2003, Dr. Molnia was detailed by DOI to the 107th Congress in the office of Congressman Curt Weldon as a Senior Legislative Fellow to organize and operate a caucus focused on ocean policy issues. The caucus was co-chaired by Representatives Tom Allen (D-ME), Sam Farr (D-CA), Jim Greenwood (R-PA), and Curt Weldon (R-PA). In this capacity Molnia organized numerous workshops, *International Ocean Sciences Day*, *House Ocean Policy Development Day*, and *Capitol Hill Oceans Week* to raise the visibility of ocean issues.

Thereafter to the present time at the USGS, Bruce Molnia has continued as a Research Geologist of the Earth Surface Processes Team, where he maintained his interests in climate change, coastal and shallow marine processes, fiord and glacial marine sedimentation, temperate glaciers, remote sensing, synthetic aperture radar (SAR), and use of multi-media for outreach and information distribution.

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In his service to the Geological Society of America over the years, Bruce Molnia served as the Forum Editor of *GSA Today*, where he wrote more than 100 science policy articles as monthly columns over the ten years from 1990 to 2000. He has also served as a Councilor to GSA for a time.

Finally, Dr. Bruce Molnia has authored, coauthored, or edited more than 200 articles, abstracts, maps, and books, as well as several CD-ROMS. Books that he has authored include: *Glaciers of Alaska*, *Glacial-Marine Sedimentation*, *Alaska's Glaciers*, and the Alaska chapter of the *Satellite Image Atlas of the Glaciers of the World*.

In sum, Dr. Molnia's mix of work on environmental issues on oceans and glaciers reflects his consuming interests in serving the public with the best of information from our geoscience world. Dr. Bruce Franklin Molnia much deserves the recognition given him in the GSA Public Service Award.

Response by Bruce F. Molnia

Thank you all! I am both pleased and humbled to receive GSA's Public Service Award, an award created to honor the Shoemakers.

Gene Shoemaker significantly influenced the path my career has taken and the methods I use. As a young graduate student, I saw Gene Shoemaker's rephotography of Grand Canyon sites originally photographed by John Wesley Powell's 1868 expedition. The sheer power contained in each pair of his 'before and after' images fueled the development of my thinking about landscape evolution, especially glacier change. They helped me understand how dynamic Earth can be and the rapidity of Earth processes. More than 250,000 photographs later, I am still awe struck by the power that a pair of sequential images contributes to the visual documentation of our changing planet.

To quote Robert Frost, "Two roads diverged in a wood, and I — I took the one less traveled by, And that has made all the difference."

I am standing here tonight because my career has taken frequent detours down Frost's "road less traveled by." Many of these career detours placed me in situations where I was able to materially enhance the public's understanding of the Earth sciences and serve decision-makers in applying science and technology to public affairs and public policy. Combining science and policy, along with outreach and education, is a career path that I highly recommend to all of you.

My first significant career detour occurred in 1973 when I left my neophyte

academic career to become the Bureau of Land Management's (BLM) first west coast oceanographer. My role at BLM was to gather information about sea floor geology, petroleum potential, and marine environmental hazards, that could be synthesized to provide an information baseline for Federal decision makers who would then decide when, where, and what Outer Continental Shelf (OCS) areas would be leased. This was my first experience combining science and policy and it made me understand that a significant audience existed for Earth science information beyond the world of refereed journals.

Later, I moved to the USGS where I conducted marine geological and geophysical site surveys and environmental assessments in Gulf of Alaska and Bristol Bay OCS lease areas. In these surveys, the results of our investigations were the information on which the decisions to lease were made.

These investigations also permitted me to perform up-close and personal investigations of glacier and fiord process and glacial marine sedimentation in one of Earth's highest sedimentation rate areas. Published in 1983, *Glacial Marine Sedimentation*, an 844-page synthesis of the glacial-marine environment, is one significant result of these investigations.

In 1985, the USGS loaned me to the National Research Council to temporarily replace the Executive Director of the Polar Research Board. During my 2½ year detail, Board committee's produced reports on the future of Arctic marine geophysics, the need for new US icebreakers, and US Antarctic research in the 21st century. In 1986, my Arctic geophysics committee made the first US scientific delegation visit to the Soviet Union in more than a decade.

Later, I represented USGS and Department of the Interior (DOI) interests in a broad array of issues ranging from regulating mining activities in Antarctica to understanding the extent of contaminants in the Arctic. I organized three international workshops, held in 1993, 1995 and 1997, that focused on Arctic contamination and produced many new insights into radioactive waste dumping and contamination in the Arctic marginal seas.

During the 1990s, I served as the U.S. representative to the International Arctic Environmental Data Working Group and as web master for the State Department, when the US hosted the Arctic Council. Both efforts resulted in increased international cooperation and the development of successful multi-national projects.

Many of you first encountered me as the result of discussions that I had with

former GSA Director Mike Wahl in the late 1980s. These discussions focused on making our Society more relevant and on how to elevate the Society's newsletter into a more information-rich publication. The result was the birth of *GSA Today* and my agreement to serve as its Forum Editor. I held this position for nearly a decade and authored more than 120 *GSA Today* articles that focused on key Earth sciences and public policy issues.

In 1994, I testified before the U.S. House of Representative Merchant Marine and Fisheries Subcommittee on Russian dumping of nuclear waste in the Arctic marginal seas. There, I met Congressman Curt Weldon, a Republican from Pennsylvania, who had a strong interest in and an excellent working knowledge of ocean pollution issues. In 1998, DOI detailed me to the Congressman staff, where as a Senior Legislative Fellow, I organized and operated the bipartisan House Oceans Caucus.

Since then, my focus has been on understanding the response of temperate glaciers in Alaska and Afghanistan to changing climate. *Glaciers of Alaska*, published in 2008, synthesized not only my research, but also information collected by more than 250 other investigators concerning the post-Little Ice Age behavior of more than 1,000 Alaskan glaciers. At more than 500 pages and a weight of more than 2 kilograms, it is not only an excellent reference, but also a very effective door stop.

To come full circle, my current research involves rephotography of Alaskan glacier landscapes, using historical images from the 19th and early 20th century. The goal is to provide unequivocal, unambiguous, visual documentation of the effects of changing climate and to share this information as broadly as possible. One pair of these images has been reproduced more than 500 times and even appears on refrigerator magnets and postcards. Another dozen are the basis of a National Center for Atmospheric Research (NCAR) game designed to raise public awareness about climate change.

Like many of my previous journeys down the "road less taken" this one has also been successful in materially enhancing the public's understanding of the Earth sciences and significantly serving decision-makers in the application of scientific and technical information in formulating public policy.

I thank GSA for recognizing the fruits of my unconventional career journey.