

Boston 2001:

A GEO-ODYSSEY

November 1-10, 2001



Annual Meeting and Exposition

Call for Papers



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GSA Annual Meeting and Exposition

November 1–10, 2001

Boston 2001

A GEO-ODYSSEY

Premeeting Field Trips: November 1–4
Short Courses & Workshops: November 3–4
Presidential Address: November 4
Exhibits Open: November 4–7
Technical Program: November 5–8
Postmeeting Field Trips: November 9–10
Preregistration Deadline: September 28

Abstracts Deadlines:

Paper—July 17
Online—July 24

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The many aspects of Boston make it an exciting locale for GSA's first meeting of the new millennium: a historical past dating back to the origins of our country, a modern city with a sophisticated Old World flair, excellent convention facilities, and ready access to diverse geological features. Field trips will include a variety of excursions to view crystalline rocks of the Northern Appalachians; Pleistocene geology and geomorphology; coastal geology; hydrological and environmental reclamation sites, such as nearby Woburn of *A Civil Action* fame; and engineering geology that will feature Boston's new water supply tunnel and its downtown highway engineering marvel, known as the Big Dig. As the hub of American history, Boston is truly unrivaled. Colonial and Revolutionary Boston can be relived along the well-marked Freedom Trail from Boston Common to Old North Church with a side excursion to the USS *Constitution*, or "Old Ironsides."

Not to be missed along the way, Faneuil Hall and Quincy Market are as much a mecca for shoppers today as they were in the 1800s. Just west of Boston are historic Lexington and Concord, where the "shot heard round the world" was fired, Paul Revere made his legendary ride, and 19th century literary greats penned their famous works. To the south of Boston, Plymouth hosts replicas of the pilgrim village and the *Mayflower* and is, of course, home to Plymouth Rock (granitic gneiss)! While a historical presence permeates Boston, the city itself is modern and vibrant with an array of museums, theaters, shopping, and fine dining, and a world-class symphony. The Hynes Convention Center, located in the heart of the city, has been recently renovated and will serve us as an excellent site for the technical sessions with everything under one roof.

Our theme, A Geo-Odyssey, borrows liberally from the science fiction classics of Arthur Clarke and Stanley Kubrick and is appropriate for our science and the Geological Society at the start of the 21st century. An odyssey, as defined in Webster, is a "long wandering or voyage, usually marked by many changes in fortune; an intellectual quest." This at once puts into perspective both the history of our science and the opportunities that lie ahead. Here in New England, where the past is intimately tied to the present, we are mindful both of the roots of our science and our need to carry the quest into the future. Boston is the ideal place to begin this new era of geological discovery, and I invite you to join us in November 2001.

Chris Hepburn, General Chair

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PARDEE KEYNOTE SYMPOSIA

Invited Papers

The Pardee Keynote Symposia are made possible by a grant from the Joseph T. Pardee Memorial Fund.

The eight sessions that make up this year's Pardee Keynote Symposia are special events of broad interest to the geoscience community. They represent leading-edge topics in a scientific discipline or area of public policy, address broad fundamental issues, and are interdisciplinary. Selection was on a competitive basis. This year's eight Pardee Symposia were reviewed and accepted by the Annual Program Committee. **(All speakers are invited.)**

K1 Geobiology: Applications to Sedimentary Geology

Nora Noffke and Andrew H. Knoll, Harvard University, Cambridge, Mass.

Microorganisms influence sedimentary processes, and the geobiological signatures they impart provide potentially useful tools in reconstructions of paleoclimate and paleoenvironment. This session explores microbial processes in recent sediments and the distribution of geobiological signatures in time and space.

K2 Melt in the Crust and Upper Mantle: How Much, Where, for How Long, and What Significance for Geodynamics?

GSA Structural Geology and Tectonics Division; Geochemical Society; Mineralogical Society of America. Tracy Rushmer, University of Vermont, Burlington, Vt.; Michael Brown, University of Maryland, College Park, Md.; George Bergantz, University of Washington, Seattle, Wash.; Greg Hirth, Woods Hole Oceanographic Institute, Woods Hole, Mass.

This symposium brings together innovative scientists with backgrounds in petrology, geochemistry, rock properties, and tectonics to consider melt-related processes in the lithosphere. Speakers will address these processes at a variety of length scales, involving established and new techniques to give new insights into the role of melt during orogenesis.

K3 Nanogeology: The Application of Nanotechnology in Earth Sciences

Jaakko K. Putkonen, University of Washington, Seattle, Wash.

Emerging nanotechnology allows manufacturing of miniature devices that



Massachusetts coastline.

compute, move, sense their environment, and repair themselves. Potential applications for nanogeology include: ultra-small sensors and devices, including transducers for force, pressure, and chemical compounds; and molecular gears, motors, and actuators. Now is the time to plan for applications and shape the future with groundbreaking innovations.

K4 Ophiolites as Problem and Solution in the Evolution of Geological Thinking

GSA History of Geology Division; GSA Structural Geology and Tectonics Division; International Geology Division; Society of Economic Geologists; History of Earth Sciences Society. Sally Newcomb, retired, Silver Spring, Md.; Yildirim Dilek, Miami University, Oxford, Ohio.

Ophiolites are an important and controversial topic in geology, strongly linked to many earth processes of the seafloor, crust, and mantle. Studies of ophiolites have both reflected and advanced the methods and theories of geology for more than 200 years. This symposium will provide a forum to discuss the history and development of ideas, principles, and theories established in the geological sciences as a result of the investigations of ophiolites and ophiolitic rocks through time.

K5 The Emerging Discipline of Medical Geology

Institute for Earth Science and the Environment; Armed Forces Institute of Pathology; International Union of Geological Sciences; U.S. Geological Survey; COGENENVIRONMENT; IGCP #454; Swedish Geological Survey; Institute for Metal Biology.

Dennis Goldman, Geological Society of America, Boulder, Colo.; José A. Centeno, Armed Forces Institute of Pathology, Washington, D.C.; Peter T. Bobrowsky, International Union of Geological Sciences, Victoria, British Columbia, Canada; H. Catherine W. Skinner, Yale University, New Haven, Conn.

The emerging discipline of medical geology assesses the effects of static and dynamic earth science factors—natural and anthropogenic—on ecological and human health. Health issues related to earth science factors will likely affect each of us within our lifetime. More geoscientists need to become aware of the field and involved in research. This symposium will bring together geoscientists and medical professionals to increase the awareness of these impacts and the need and potential for research.

K6 The Future of Biogeochemistry: A Symposium in Honor of Harold C. Helgeson

Geochemical Society. Dimitri A. Sverjensky, Johns Hopkins University, Baltimore, Md.; Jan Amend and Everett L. Shock, Washington University, St. Louis, Mo.; Eric H. Oelkers, University of Paul Sabatier, Toulouse, France.

We wish to honor and celebrate Hal Helgeson's achievements in theoretical geochemistry, and particularly his current goals and projects bearing on the origin of petroleum, the biogeochemistry of proteins, and enzymes at high temperatures with this symposium. We hope to draw as many researchers as possible to the exciting research possibilities in areas that cross the boundaries of the geochemical and geological sciences.

K7 The Watershed Within: Scientific and Moral Reflections on Water in the 21st Century

Critical Issues Subcommittee of Geology and Public Policy; GSA Quaternary Geology and Geomorphology Division; Institute for Earth Science and the Environment. George W. Fisher, Johns Hopkins University, Baltimore, Md.

Water use and allocation are critical global policy issues. One-third of the world lives in areas subject to water stress. Discussions of water use must consider availability, human equity, and needs of both ecosystems and future generations. They require both a scientific understanding of water resources and a moral sense of how stakeholders value water and understand equity. This symposium will explore both the scientific and moral dimensions of global water issues.

K8 Water's Many Forms in the Solar System: Implications for Geology, Exploration, and Life

GSA Planetary Geology Division. Susan E.H. Sakimoto, University of Maryland, Baltimore County, Goddard Earth Science and Technology Center, Greenbelt, Md.; Tracy K.P. Gregg, The University at Buffalo, State University of New York, Buffalo, N.Y.

Our recent discoveries of the role of water in the solar system and our expanding understanding of environmental ranges conducive to life on Earth promise to drive planetary exploration and research in the coming decades. This session explores our current understanding of solar system water, recent solar system discoveries revolutionizing our understanding of the roles of water, their implications for environments amenable to life, and our capabilities and motivations for continued exploration.



Mesozoic dolerite dikes cutting Proterozoic Dedham Granite. Light gray xenolith of Proterozoic Westboro formation in upper left of photo. Saugus, Mass. Photo by Richard H. Bailey.

TOPICAL AND DISCIPLINE SESSIONS

Invited and Volunteered Papers

Topical Sessions

Following is a listing of all approved topical sessions. These sessions are topically focused with a mix of invited and volunteered papers. Sessions are designed to promote the exchange of interdisciplinary, state-of-the-art information. Authors can submit papers to a specific topical session and may choose up to three scientific categories. After each topical description below, names and numbers identify the categories as they appear on the abstract form. PLEASE SUBMIT ONLY IN THE MODE (oral or poster) AND CATEGORIES INDICATED in the description. An abstract submitted in the incorrect mode will be transferred automatically to a discipline session.

Online Abstracts Deadline: July 24

Please use the new online electronic abstract form found on the GSA Web site, www.geosociety.org. An abstract submission fee of \$15 for all students and \$25 for all others will be charged. (See page B16 for more information.)

Discipline Sessions

From the list found on the abstract form, you may choose up to three discipline categories you feel your abstract would fit best for organizing purposes. The Joint Technical Program Committee representatives organize the papers in sessions focused on disciplines—for example, environmental geoscience or mineralogy.

TOPICAL SESSIONS

T1 Arc Terranes in the Appalachians and Caledonides and their Role in Paleozoic Orogenesis

Paul Karabinos, Williams College, Williamstown, Mass.; James P. Hibbard, North Carolina State University, Raleigh, N.C.; Anke M. Friedrich, Caltech, Pasadena, Calif.

Tectonics; Geochemistry, Other; Petrology, Igneous

This session will bring together recent studies from a variety of disciplines that constrain the paleogeographic and tectonic reconstruction of arc terranes in the Appalachians and Caledonides. The arc terranes include the segments that make up Avalonia and the arcs that formed within Iapetus during the Paleozoic. Key questions to be addressed include the age and location of arc formation,

the age of arc accretion to continental margins, and correlation of arc terranes within the orogenic belt. ORAL

T2 Proterozoic Tectonic Evolution of the Grenville Orogen in Eastern North America

Richard Tollo, George Washington University, Washington, D.C.; Louise Corriveau, Geological Survey of Canada, Sainte-Foy, Quebec, Canada; M.J. Bartholomew, University of South Carolina, Columbia, S.C.

Precambrian Geology; Tectonics; Geochemistry, Other

This session focuses on the tectonic evolution of the Grenville orogen in eastern North America and on innovative approaches to deciphering the igneous, metamorphic, structural, and metallogenic history of Mesoproterozoic assembly and Late Neoproterozoic rifting. The timing and regional correlation of events and processes will be emphasized to bridge knowledge gaps within the eastern North American province, and to better understand the tectonic framework of mineralization and mineral resources. ORAL

T3 Focus on IGCP: Modern and Ancient Plate Boundaries and Orogens

GSA International Division; U.S. National Committee on the Geological Sciences; International Geologic Correlation Program projects 453, 426, 440, 436, 433. Suzanne M. Kay, Cornell University, Ithaca, N.Y.; Eldridge M. Moores, University of California, Davis, Calif.; Mark Cloos, University of Texas, Austin, Tex.

Tectonics; Petrology, Igneous; Geophysics/Tectonophysics/Seismology

Abstracts on continental and global scale perspectives comparing modern and ancient orogens and plate boundaries, particularly in the Americas, are invited. Contributions are encouraged on themes related to International Geologic Correlation Program (IGCP) projects 453—Modern and Ancient Orogens, 426—Granite Systems and Proterozoic Lithospheric Processes, 440—Rodinia Assembly and Breakup, 436—Pacific Gondwana Margins, and 433—Caribbean Plate Tectonics. ORAL and POSTER

T4 Crustal Architecture of Rifted Continental Margins

Webster V. Mohriak, Petroleo Brasileiro S.A., Rio de Janeiro, Brazil; Bruce R. Rosendahl, University of Miami, Miami, Fla.

Geophysics/Tectonophysics/Seismology; Remote Sensing/Geographic Information System; Quaternary Geology/Geomorphology

The session will be devoted to the analysis of geological and geophysical data acquired in Atlantic-type divergent continental margins, integrating state-of-the-art techniques in seismic imaging and interpretation of deep structures, potential field analysis (gravity and magnetics), and petroleum geology methods. Invited talks will cover a wide spectrum of sedimentary basins from conjugate margins in the Atlantic Ocean. ORAL and POSTER

T5 Melt in the Crust and Upper Mantle: How Much, Where, for How Long, and What Significance for Geodynamics?

GSA Structural Geology and Tectonics Division; Mineralogical Society of America; Geochemical Society. Tracy Rushmer, University of Vermont, Burlington, Vt.; Greg Hirth, Woods Hole Oceanographic Institute, Woods Hole, Mass.; Michael Brown, University of Maryland, College Park, Md.; George Bergantz, University of Washington, Seattle, Wash.

Tectonics; Remote Sensing/Geographic Information System; Geochemistry, Other

This symposium brings together innovative scientists with backgrounds in petrology, geochemistry, rock properties, and tectonics to consider melt-related processes in the lithosphere. Speakers will address these processes at a variety of length scales, involving established and new techniques to give new insights into the role of melt during orogenesis. ORAL and POSTER

T6 Evolution of the Precambrian Earth

GSA Geophysics Division; GSA Structural Geology and Tectonics Division. Walter Mooney, U.S. Geological Survey, Menlo Park, Calif.; Herwart Helmstaedt, Queen's University, Kingston, Ontario, Canada; Desmond E. Moser, University of Utah, Salt Lake City, Utah; Irina Artemieva, University of Uppsala, Sweden.

Geophysics/Tectonophysics/Seismology; Geochemistry, Other; Structural Geology

The evolution of the Precambrian Earth is an outstanding problem in the earth sciences: (1) What processes were active during the Precambrian? (2) What has been the crustal growth rate in the past 4.0 Ga? and (3) How does Precambrian subcrustal lithosphere form? Many new concepts have recently emerged from detailed geologic field studies, geophysical surveys, and geochemical analyses. This session will be a broad discussion of the evolution of the Precambrian. ORAL and POSTER

T7 The Proterozoic of the Eastern Midcontinent and Beyond

GSA Geophysics Division; Illinois Basin Consortium. James A. Drahovzal, Lexington, Ky.; John H. McBride, Illinois State Geological Survey and Dept. of Geology, Champaign, Ill.

Geophysics/Tectonophysics/Seismology; Petrology, Igneous; Remote Sensing/ Geographic Information System

Newly available conventional and deep seismic reflection data are changing our understanding of the Proterozoic architecture in the eastern and southern midcontinent of North America. Layered sequences of these areas will be examined, comparing them to similar Precambrian sequences in other parts of the world. Also examined will be their chronology, tectonics, and stratigraphy. ORAL and POSTER

T8 "Traces" of Soil Ecosystems through the Phanerozoic: New Insights into Terrestrial Paleoeology, Paleohydrology, and Paleoclimate

Stephen T. Hasiotis, Indiana State University, Terre Haute, Ind.; Marilyn D. Wegweiser, Ball State University, Muncie, Ind.

Paleontology/Paleobotany; Paleoclimatology/Paleoceanography; Geochemistry, Organic

Studies identifying and understanding organism-substrate and organism-organism interactions representative of ancient soil ecosystems that further our understanding of global changes in terrestrial paleoecology, and biogeochemical cycling and paleoclimates in the deep geologic past. Types of studies could include forms of integrated paleopedologic, geochemical, ichnologic, paleobiologic, sedimentologic, paleoecologic, and paleoclimatologic research. ORAL

T9 New Insights into Late Ordovician Climate, Oceanography, and Tectonics

GSA Sedimentary Geology Division. Michael C. Pope, Washington State University, Pullman, Wash.; Mark T. Harris, University of Wisconsin, Milwaukee, Wisc.

Public Policy; Volcanology; Paleoclimatology/Paleoceanography

A full understanding of the stratigraphic record of the Late Ordovician glaciation requires the integration of paleontology, stratigraphy, climate modeling, geochemistry, and oceanography. We encourage contributions dealing with the causal relations between the stratigraphic record, climate, oceanographic, or large-scale tectonic events during this period. ORAL and POSTER

T10 Holocene Climate Change: Seasonal Variability to Centennial Trends

Lisa Greer, University of Miami, Miami, Fla.; David Hodell, University of Florida, Gainesville, Fla.

Paleoclimatology/Paleoceanography; Planetary Geology; Public Policy

It is increasingly apparent that Holocene climate has been more complex and variable than once thought. Examples of Holocene climate change include: abrupt changes in regional evaporation and precipitation, decadal oscillations in ocean/atmosphere dynamics, and changes in seasonality as related to Holocene insolation. We seek presentations related to any aspect of Holocene climate change. ORAL

T11 Sulfur Cycling in Precambrian to Recent Ocean-Atmosphere Systems: A Session Honoring the Career of William T. Holser

Geochemical Society. Timothy W. Lyons, University of Missouri, Columbia, Mo.; Alan J. Kaufman, University of Maryland, College Park, Md.

Geochemistry, Aqueous; Geomicrobiology; Precambrian Geology

Sulfur isotopes record a complex interplay of environmental conditions in modern and ancient settings. This session will emphasize how recent studies of microbial pathways and new and refined analytical and modeling approaches have improved our ability to infer ancient environments using sulfur geochemistry. ORAL

T12 Stratigraphic Paleobiology

Paleontological Society. Steven M. Holland, University of Georgia, Athens, Ga.; Mark E. Patzkowsky, Pennsylvania State University, University Park, Pa.

Paleontology/Paleobotany; Public Policy; Paleoclimatology/Paleoceanography

Recent years have witnessed a renaissance in stratigraphy, with new insights into the genesis of the stratigraphic record. This new stratigraphy includes sequence stratigraphy, event stratigraphy, shell bed genesis, stratigraphic modeling, and improved quantitative techniques. This session will highlight those who have integrated these recent stratigraphic advances in their paleobiological research. ORAL

T13 Foraminifera: Barometers of the Biotic and Abiotic World

Cushman Foundation. Martin A. Buzas, Smithsonian Institution, Washington, D.C.;

Stephen J. Culver, East Carolina University, Greenville, N.C.

Paleoclimatology/Paleoceanography; Paleontology/Paleobotany; Marine/Coastal Science

This session will focus on the new and innovative uses of foraminiferal data to study climatic and oceanographic change, sea-level change, hurricane activity, earthquake precursors, and biotic response to such environmental changes. ORAL

T14 Partnerships in Paleontology: Involving the Public in Collaborative Research

Paleontological Society. Paul G. Harnik and Robert M. Ross, Paleontological Research Institution, Ithaca, N.Y.

Paleontology/Paleobotany; Geoscience Education; Geoscience Information/Communication

Research partnerships formed between paleontologists and members of the public are powerful tools for teaching scientific literacy and developing scientifically meaningful databases for use in answering critical questions in paleobiology. Contributions on projects in any phase of development are welcome, with particular interest in issues of data quality and learning assessment. ORAL

T15 Special Session in Honor of Half Zantop

Society of Economic Geologists. Helen N. Mango, Castleton State College, Castleton, Vt.; J. Bruce Gemmill, University of Tasmania, Hobart, Tasmania, Australia.

Economic Geology; Geochemistry, Other

This session presents the results of geological research conducted by former students and coworkers of Half Zantop and research done independently by other colleagues. One focus will be on epithermal ore deposits of Mexico, but contributions are also encouraged on diverse topics in economic geology and geochemistry including isotopes. ORAL

T16 Insects and Terrestrial Arthropods in the Fossil Record: Are So Many Really Represented by So Few?

Paleontological Society. Robert E. Nelson, Colby College, Waterville, Maine.

Paleontology/Paleobotany; Public Policy; Stratigraphy

Are insects, so abundant in today's world, really that rare in the fossil record, or have we simply not seen them? A session to be devoted to the diversity of terrestrial arthropod faunas from throughout the geologic column. ORAL and POSTER

T17 The Fossil Record of Fire: Recognition and Effects

Andrew C. Scott, Royal Holloway, University of London, Egham, Surrey, U.K.; Howard Falcon-Lang, Dalhousie University, Halifax, Nova Scotia, Canada

Sediments, Clastic; Paleontology/Paleobotany; Quaternary Geology/Geomorphology

Fire plays an important part in many of today's terrestrial ecosystems and has played an important role on Earth over the past 325 m.y. Many, however, are uncertain in recognizing charcoal and other evidence of fire or the effects of fire. These two issues are addressed and will be of interest to all working in the terrestrial and marine realms as well as those interested in paleoclimates and paleo-atmospheres. ORAL

T18 Radiometric Dating in a Sequence Stratigraphic Framework, Paleozoic through Cenozoic

W. Burleigh Harris, University of North Carolina, Wilmington, N.C.; Gerald R. Baum, Maryland Geological Survey, Baltimore, Md.; Paul D. Fullagar, University of North Carolina, Chapel Hill, N.C.

Stratigraphy; Geochemistry, Other; Paleontology/Paleobotany

Sequence stratigraphy is based on the principle that sequence boundaries everywhere are synchronous. Although numerous sequence stratigraphic studies have examined the lithostratigraphic and biostratigraphic aspects of depositional sequences, few have addressed radiometric dating. This session will examine radiometric dates within a depositional sequence framework. Issues to be addressed include the accuracy and precision of dates and the significance of sequence boundaries on a global scale. ORAL

T19 New Perspectives on the Character and Origin of Late Cretaceous–Cenozoic Sequences on the U.S. Atlantic Margin

Kenneth G. Miller, Rutgers, The State University of New Jersey, Piscataway, N.J.; Peter J. Sugarman, New Jersey Geological Survey, Trenton, N.J.; Nicholas Christie-Blick, Lamont-Doherty Earth Observatory of Columbia University, Palisades, N.Y.

Stratigraphy; Paleoclimatology/Paleoceanography; Sediments, Clastic

Sequences objectively subdivide the stratigraphic record, though effects of sea level, tectonics, and sediment supply are hotly debated. Recent acquisition of high-resolution

seismic reflection data and boreholes from the Atlantic and Gulf Coastal Plains and Bahamas provide a huge database that can be used to evaluate fundamental controls on the stratigraphic record. We seek broad examples from Late Cretaceous–Recent sequences on this margin that illustrate controls on sequence development. ORAL

T20 Near-Surface Stratigraphic Heterogeneity Beneath the Coastal Plain and Continental Shelf of Eastern North America: Spatial and Temporal Influences on Framework Geology, Processes, Sedimentation, and Morphology

M. Scott Harris, Coastal Carolina University, Conway, S.C.; Gerald H. Johnson, College of William & Mary, Williamsburg, Va.

Quaternary Geology/Geomorphology; Marine/Coastal Science; Stratigraphy

The framework geology of near-surface coastal plain and continental shelf deposits often shows that stratigraphic heterogeneity creates a strong influence on modern and ancient sedimentation patterns. Inclusion of heterogeneity as a standard subsurface model element in local and regional stratigraphic studies allows for better prediction and understanding of facies distribution and morphology. Abstracts on stratigraphic studies and application of the heterogeneity model are welcome. POSTER

T21 Recent Advances in Deep-Water Facies Models

GSA Sedimentary Geology Division; SEPM (Society for Sedimentary Geology) Sequence Stratigraphy Research Group. Art D. Donovan, BP, Houston, Tex.; Morgan D. Sullivan, ExxonMobil, Houston, Tex.

Sediments, Clastic; Stratigraphy; Geophysics/Tectonophysics/Seismology

Recent advances in seismic data quality and visualization techniques are providing geoscientists with an unparalleled opportunity to image deep-water reservoirs. This data, coupled with recent detailed outcrop studies, has led to a revolution in our knowledge of the stratigraphy, depositional processes, architectures, and facies models of deep-water deposits. ORAL

T22 Quaternary Stratigraphy in Glaciated Terranes: Techniques, Tools, and Mapping

GSA Quaternary Geology and Geomorphology Division. Kathy Goetz Troost, University of Washington, Seattle, Wash.; Richard C. Berg, Illinois State Geological Survey, Champaign, Ill.; Derek B. Booth, University of Washington, Seattle, Wash.

Planetary Geology; Public Policy; Engineering Geology

The goal of this poster session is to provide a forum for presenting the results of Quaternary stratigraphic efforts regardless of their origin—be it for cleanup of a contaminated site, evaluation of geologic hazards, or for producing quadrangle maps. We are interested in the analytical techniques and tools being used for identifying and/or correlating stratigraphic units, and in the methods being used for mapping stratigraphic units. POSTER

T23 Sediment-Hosted Lead-Zinc Deposits: Roles of Basin Evolution, Tectonics, and Geochemistry in Ore Genesis

Society of Economic Geologists. Donald F. Sangster, North Gower, Ontario, Canada; George P. Cole, Cominco American Incorporated, Spokane, Wash.; John F. Slack, U.S. Geological Survey, Reston, Va.

Economic Geology; Geochemistry, Aqueous; Remote Sensing/Geographic Information System

Recent studies have revealed new insights into the genesis of sediment-hosted lead-zinc deposits occurring in carbonate and clastic sedimentary rocks and their metamorphosed equivalents. Contributions are encouraged on the role of depositional, diagenetic, tectonic, magmatic, and geochemical processes, and on the absolute age and duration of mineralization in the formation of these diverse ore deposits. ORAL

T24 Dynamics of Sediments and Sedimentary Environments: A Session in Honor of John B. Southard

GSA Sedimentary Geology Division; SEPM (Society for Sedimentary Geology). Peter R. Wilcock, Johns Hopkins University, Baltimore, Md.; Chris Paola, University of Minnesota, Minneapolis, Minn.

Sediments, Clastic; Stratigraphy; Marine/Coastal Science

We welcome contributions spanning the range of topics John Southard worked on during his research career: sediment transport by currents, waves, mass flows, and wind; bed forms and primary sedimentary structures and

textures; and analytical geomorphology and clastic sedimentary geology. We also welcome broader contributions on the role of sediment mechanics in sedimentary geology, both from research and instructional perspectives. ORAL

T25 Geochemistry of Siliciclastic Materials: Provenance, Paleoclimates, and Plate Tectonic Settings

GSA Sedimentary Geology Division. Christopher M. Fedo, George Washington



View to south from East Point, Nahant, across Massachusetts Bay toward Boston. Rocks are early Cambrian strata injected by mafic sills and dikes. Nahant, Mass. Photo by Richard H. Bailey.

University, Washington, D.C.; Grant M. Young and H. Wayne Nesbitt, University of Western Ontario, London, Ontario, Canada; J. Michael Palin, Australian National University, Canberra, Australia.

Sediments, Clastic; Paleoclimatology/Paleoceanography; Tectonics

Geochemical studies involving major and trace elements and isotopes in siliciclastic materials provide critical data on the evolution of the lithosphere, hydrosphere, biosphere, and atmosphere, and about Earth's regulating mechanisms and large-scale processes. We encourage contributions dealing with the geochemistry of weathering, investigations of modern and ancient detrital sedimentary materials, isotopic methods of provenance determination, and compositional changes resulting from diagenesis. ORAL

T26 Geochemistry of Organic-Rich Sediments from Estuaries, Continental Shelves, Basins, and Upwelling Zones

John F. Bratton, U.S. Geological Survey, Woods Hole, Mass.; Jennifer L. Morford, Woods Hole Oceanographic Institution, Woods Hole, Mass.

Geochemistry, Other; Marine/Coastal Science; Sediments, Clastic

Organic-rich sediments are deposited in many types of marine settings. The steep geochemical gradients that exist within these sediments have hampered efforts to understand the geochemistry of their solid and pore-water phases. Presentations in this session will explore relevant technical and theoretical advances in areas of sediment geochemistry such as stable isotopes, organic

biomarkers, authigenic minerals, geomicrobiology, redox-sensitive metals, and radionuclides. ORAL and POSTER

T27 Evaporite Systems: The Geology, Paleontology, and Biology of Evaporite and Near-Evaporite Systems in Both Terrestrial and Extraterrestrial Environments

NASA Astrobiology Institute–Johnson Space Center. Susan J. Wentworth, Lockheed Martin, NASA–Johnson Space Center, Houston, Tex.; Penny A. Morris, University of Houston—Downtown, Houston, Tex.

Geomicrobiology; Paleontology/Paleobotany; Sediments, Carbonates

Studies of evaporites and near-evaporites (including samples transitional from evaporites to saline or fresh-water environments) from Earth, Mars, and/or meteorites. Types of studies could include, but are not restricted to geology, geomicrobiology, mineralogy, paleontology, biology, remote sensing, and geochemistry. ORAL and POSTER

T28 High-Resolution Investigations of the Morphodynamics and Sedimentary Evolution of Estuaries

Jasper Knight, University of Ulster, Coleraine,

U.K.; Duncan FitzGerald, Boston University, Boston, Mass.; Christopher K. Sommerfield, University of Delaware, Lewes, Del.

Marine/Coastal Science; Quaternary Geology/Geomorphology; Sediments, Clastic

This session will focus on the morpho-sedimentary evolution of estuaries using high-resolution geophysics, field observations, and numerical modeling. Aspects considered will include long- and short-term changes in sediment budgets, sedimentary processes and estuary dynamics, and the role of infrequent high-magnitude events such as storms. ORAL

T29 Linking Sediment Dynamics and Stratigraphy in Modern-Holocene Estuaries

GSA Sedimentary Geology Division. Christopher Sommerfield, University of Delaware, Lewes, Del.; Rocky Geyer, Woods Hole Oceanographic Institution, Woods Hole, Mass.

Marine/Coastal Science; Quaternary Geology/Geomorphology; Stratigraphy

Estuarine sedimentary deposits provide high-resolution records of hydrologic and oceanic processes on multiple temporal and spatial scales and are therefore valuable natural recording systems. This session considers mechanisms of sediment deposition, erosion and strata formation in estuaries toward rational interpretation of sedimentary archives. Presentations will span a gamut of observational and modeling studies of sedimentary processes and environments in modern-Holocene estuarine systems. ORAL

T30 Anoxia and Black Shale Deposition

D. Jeffrey Over, State University of New York, Geneseo, N.Y.; Frank Etensohn, University of Kentucky, Lexington, Ky.

Stratigraphy; Paleoclimatology/Paleoceanography; Sediments, Clastic

Several models have been proposed for the origin of organic-rich shales. The roles of basin stratification and productivity with regard to water depth, tectonic setting, oxygen levels, and sedimentation are still controversial and make this an interdisciplinary problem. The session will bring together workers to update and propose ideas related to the development of anoxia. ORAL

T31 The Margins of Reefs and Carbonate Platforms

GSA Sedimentary Geology Division; SEPM (Society for Sedimentary Geology). Edward L. Winterer, Scripps Institute of Oceanography, La Jolla, Calif.; Robert N. Ginsburg, University of Miami, Miami, Fla.

Sediments, Carbonates; Sediments, Clastic; Stratigraphy

A focus on controversial aspects including cross-margin correlations and facies changes; aggradation or progradation vs. antecedent topography; early vs. burial diagenesis; sea level vs. tectonics; margin truncation; application of sequence stratigraphy; preferential location of ore and hydrocarbon. ORAL



Conglomerate at base of Pennsylvania Pondville Formation; largest boulders are about one meter in diameter. Canton, Mass. Photo by J. Christopher Hepburn.

T32 America's Coastal Crisis—Providing the Geoscience Information/Communication Needed to Conserve and Protect Coastal Resources

GSA Quaternary Geology and Geomorphology Division. S. Jeffress Williams, U.S. Geological Survey, Woods Hole, Mass.; Shea Penland, University of New Orleans, New Orleans, La.

Environmental Geoscience; Geoscience Education; Economic Geology

All coastal states are experiencing widespread erosion and other hazards (storms, sea-level rise, subsidence). Most hazards result from natural processes, but many regions face increased risk due to unwise development and man-made alterations. Projections show that population growth and development in the coastal zone will continue at the same time that hazards increase. To educate the public about the long-term implications of this looming crisis, credible geoscience information is important. ORAL and POSTER

T33 Coastal Erosion Programs: Collaborative Geologic Research in Action

Harry Martin Jol, University of Wisconsin, Eau Claire, Wisc.; Sandy Vanderburgh, University College of the Fraser Valley, Abbotsford, Ontario, Canada.

Marine/Coastal Science; Stratigraphy; Public Policy

Coastal Erosion Programs are to provide solid technical data and analysis about the local and regional coastal systems to local communities and agencies who, armed with the information, can tackle land use decisions with a regional perspective. This session will report on the variety of data sets collected and resulting geological interpretations and models. ORAL

T34 Coastal Geology of the National Parks

GSA Sedimentary Geology Division. Rebecca L. Beavers, National Park Service, Denver, Colo.; Suzette M. Kimball, U.S. Geological Survey, Kearneysville, W.Va.

Marine/Coastal Science; Sediments, Clastic; Public Policy

The National Park Service manages 7,310 miles of coastline with unique natural and cultural resources. These lands provide research sites for numerous geologic studies, but communication of this research to park managers is needed to effectively manage these areas and preserve these resources for future generations. Abstracts on coastal research in National Parks and adjacent lands as well as applications of geologic research to ecosystem management, interpretation, and education are encouraged. ORAL and POSTER

T35 Diffusive Transport Processes in the Subsurface

GSA Hydrogeology Division. Thomas B. Boving, University of Rhode Island, Kingston, R.I.; John E. McCray, Colorado School of Mines, Golden, Colo.

Hydrogeology; Geochemistry, Aqueous; Environmental Geoscience

In materials of very low permeability (e.g., clay layers) diffusion may be the dominant transport process. It is therefore not surprising that diffusive transport has received much attention, for example, concerning the safe disposal of radioactive wastes or the fate and transport of contaminants and tracers. For predicting the fate and transport of diffusing compounds, a detailed understanding of diffusion processes and the experimental methods to measure diffusion parameters is essential. ORAL

T36 Uncertainty in Vadose Zone Flow and Transport Prediction

GSA Hydrogeology Division. Michael J. Nicholl, University of Idaho, Moscow, Idaho; Robert M. Holt, University of Mississippi, University, Miss.

Hydrogeology; Engineering Geology; Environmental Geoscience

In the vadose zone, geologic heterogeneity combines with a myriad of highly nonlinear processes to create a complex hydrologic regime that we are just beginning to understand. This session will consider sources of uncertainty that limit our ability to predict flow and transport in the vadose zone. Potential sources of uncertainty include: property measurement, large-scale characterization, long-term monitoring, numerical simulation, and underlying conceptual models. ORAL

T37 Recent Advancements in Aquifer Hydraulics and Their Applications to Aquifer and Vadose Zone Characterization, Remediation, and Dewatering

GSA Hydrogeology Division. Hongbin Zhan, Texas A&M University, College Station, Tex.; Vitaly A. Zlotnik, University of Nebraska, Lincoln, Nebr.

Hydrogeology; Environmental Geoscience; Engineering Geology

Methods of the aquifer and vadose zone characterization include aquifer tests by the horizontal and vertical wells, slug tests, borehole flow-meter tests, dipole-flow tests, air permeameters, and other methods. This session solicits papers on new developments in aquifer hydraulics, including new well types, testing methods, and the applications to aquifer and vadose zone characterization, remediation, and dewatering. ORAL

T38 Flow and Transport in Fractured Aquifers—From Field Characterization to Model Construction

GSA Hydrogeology Division. Todd Halihan, Oklahoma State University, Stillwater, Okla.; David A. Benson, Desert Research Institute, Reno, Nev.

Hydrogeology; Engineering Geology; Environmental Geoscience

Although recent advances such as fracture pattern analysis, borehole imaging, and fracture-flow models have enhanced the field characterization and modeling of fluid flow in fractured rocks, effective integration of field results and model development remains

difficult, due to the highly heterogeneous nature of fractured rocks. This session focuses on approaches and case studies to bridge the gap between field characterization and model development. ORAL

T39 Geochemistry of Karst Waters: A Window on Hydrogeology and Biota

J.B. Martin, University of Florida, Gainesville, Fla.; C. Groves, Western Kentucky University, Bowling Green, Ky.

Hydrogeology; Geochemistry, Aqueous; Sediments, Carbonates

The physical behavior of karst aquifers can commonly be determined on the basis of the chemical composition of the karst water. Similarly, the distribution and health of microscopic and macroscopic fauna living in the subsurface depends on the chemical composition and contaminant distribution in karst aquifers. This symposium solicits papers on natural chemical and isotopic tracers that provide new and novel ways to understand the hydrogeology and biology of karst aquifers. ORAL

T40 Isotopic Tracers and Thermal Anomaly Data as Constraints on Groundwater Flow Patterns and Climate History within Sedimentary Systems

GSA Hydrogeology Division. Maria Clara Castro, University of Michigan, Ann Arbor, Mich.; Mark A. Person, University of Minnesota, Minneapolis, Minn.

Hydrogeology; Paleoclimatology/Paleoceanography; Economic Geology

Isotopic tracers such as ^4He , ^{14}C , heat flow anomalies, and stable isotopes of groundwater in sedimentary systems permit qualitative information and quantification of vertical leakage rates and provide constraints on the hydraulic conductivity of aquifers and confining units. Used in conjunction with numerical models, tracers provide additional constraints on water and mass transport rates, subsurface flow patterns, and paleoclimatic information. We invite papers that emphasize these themes. ORAL and POSTER

T41 Groundwater Availability Modeling

GSA Hydrogeology Division. Robert E. Mace, Texas Water Development Board, Austin, Tex.; Bridget R. Scanlon and Alan R. Dutton, University of Texas, Austin, Tex.

Hydrogeology; Environmental Geoscience; Public Policy

This session will focus on the use of numerical groundwater flow models to evaluate the current and future availability of water in

regional aquifers. We invite presentations that focus on various aspects of regional groundwater availability modeling including conceptual modeling, recharge, hydraulic parameters, surface water-groundwater interaction, and the integration of groundwater modeling with policy and planning. ORAL

T42 Groundwater Discharge to Estuaries

GSA Hydrogeology Division; National Ground Water Association. Thomas E. McKenna, Delaware Geological Survey, Newark, Del.; Jonathan B. Martin, University of Florida, Gainesville, Fla.

Hydrogeology; Marine/Coastal Science; Environmental Geoscience

Groundwater discharge to an estuary can represent a significant component of the water budget for an estuary's watershed. This session encourages papers on the chemistry and physics of groundwater discharge to coastal estuaries. Discharge to lakes or oceans will be considered if the paper includes innovative techniques applicable to an estuarine environment. ORAL

T43 Iron in Sedimentary Aquifers: Biological, Chemical, and Physical Controls on Iron Mobility

GSA Hydrogeology Division; SEPM (Society for Sedimentary Geology). Janet S. Herman, University of Virginia, Charlottesville, Va.; Isabelle M. Cozzarelli, U.S. Geological Survey, Reston, Va.; Marjorie A. Chan, University of Utah, Salt Lake City, Utah.

Hydrogeology; Sediments, Clastic; Geochemistry, Aqueous

Iron mobility in modern and ancient sedimentary deposits is linked to the presence of organic compounds. We seek improved understanding of the physical, chemical, and biological processes influencing iron. Hydrogeologists dealing with the fate of organic contaminants in aquifers, geochemists studying diagenesis in unconsolidated surficial deposits, and sedimentologists inferring the cementation history of ancient clastic sediments will engage in a discussion about iron in sedimentary aquifers. ORAL

T44 Hydrology and Hydrogeology of Extreme Environments

GSA Hydrogeology Division. W. Berry Lyons, Ohio State University, Columbus, Ohio.

Hydrogeology; Geochemistry, Aqueous; Environmental Geoscience

This session will focus on hydrologic responses in extreme environments like polar regions, deserts, and very high rainfall alpine settings. Papers dealing with both long-term

data sets and extreme events are encouraged. The geochemical and biogeochemical consequences of extreme hydrologic events will also be considered in this session. ORAL

T45 Borehole Geophysical Analysis Techniques for the Definition of Aquifer Properties

Hydrogeology Division. Frederick L. Paillet, Littleton, Colo.; Allen M. Shapiro, U.S. Geological Survey, Reston, Va.

Hydrogeology; Geophysics/
Tectonophysics/Seismology; Environmental Geoscience

Groundwater model applications are limited by the need to specify aquifer parameters and boundary conditions. This session will focus on new and emerging borehole geophysical methods and novel interpretations of borehole geophysical data that can be applied in the estimation of aquifer dimensions, parameters, and boundary conditions, and such properties as anisotropy and heterogeneity that influence fluid movement and chemical migration. ORAL

T46 Applications of Sedimentology and Geophysics in Hydrogeology

GSA Hydrogeology Division; GSA Sedimentology Division. David W Hyndman, Michigan State University, East Lansing, Mich.; Sarah Kruse, University of South Florida, Tampa, Fla.; Gary Stephen Weissmann, Michigan State University, East Lansing, Mich.

Hydrogeology; Public Policy; Geophysics/
Tectonophysics/Seismology

Sedimentological and geophysical studies aimed at improving hydrogeological models through better characterization of aquifer properties or resolution of hydrostratigraphic units. We encourage contributions from carbonate and clastic environments, as well as vadose and saturated zone studies. ORAL

T47 Developing Countries Session: Sustainable Groundwater Management in Developing Countries for Protecting the Quality and Quantity of Groundwater

Association of Geoscientists for International Development (AGID). Shrikant Daji Limaye, President, AGID, and Vice-President (Asia), International Association of Hydrogeologists, Poona-Pune, India.

Hydrogeology; Environmental Geoscience

Papers for this session should deal with laboratory or fieldwork related to groundwater development programs for irrigation and/or domestic water supply from geoscientists in developed countries and developing countries. ORAL and POSTER

T48 Application of Geochemistry to Understanding Groundwater-Surface Water Interactions

GSA Hydrogeology Division. James M. Thomas, Desert Research Institute, Reno, Nev.; Timothy P. Rose, Lawrence Livermore National Laboratory, Livermore, Calif.

Geochemistry, Aqueous; Hydrogeology;
Environmental Geoscience

Abstracts are invited for studies that use geochemical and isotopic data to help understand groundwater-surface water interactions and associated geochemical processes. Topics may include, but are not limited to, recharge and infiltration processes, river and lake hydrology, and artificial recharge. ORAL

T49 Novel Approaches to Tracing Groundwater Flow Systems and Aquifer Processes: Applications of Isotopic and Trace Element Data

GSA Hydrogeology Division. Kevin H. Johannesson, Old Dominion University, Norfolk, Va.; Alan E. Fryar, University of Kentucky, Lexington, Ky.

Hydrogeology; Geochemistry, Aqueous;
Environmental Geoscience

Improvements in analytical techniques and instrumentation have facilitated significant advances in the study of in situ tracers, such as Sr-isotopes, U-series isotopes, ⁴He, and trace elements, within groundwater systems. These tracers can provide investigators with powerful tools for examining groundwater flow systematics and aquifer processes. This session will present a forum for addressing the most recent developments in application of in situ tracers in groundwater studies. ORAL

T50 High-Resolution Geochemical Bioarchives: Recognition of Signals and Implications for Evolution, Paleocology, and Paleoclimatology

Paleontological Society. David H. Goodwin, University of Arizona, Tucson, Ariz.; Stephen A. Schellenberg, University of California, Santa Cruz, Calif.

Paleontology/Paleobotany; Paleoclimatology/
Paleoceanography; Geochemistry, Other

Paleontological studies are increasingly focusing on high-resolution elemental and isotopic records preserved in the ontogenetic growth histories of fossil organisms. These high-resolution geochemical studies are changing and improving our understanding of ancient life and environments. This session will highlight the current understanding of these geochemical bioarchiving systems

and their research applications in evolution, paleobiology, paleoecology, and paleoclimatology. ORAL

T51 Novel Applications of Bulk and Compound Specific Stable and Radiogenic Isotopes for the Solution of Problems in Organic Geochemistry

Michael H. Engel, University of Oklahoma, Norman, Okla.; Kai-Uwe Hinrichs, Woods Hole Oceanographic Institution, Woods Hole, Mass.

Geochemistry, Organic; Geomicrobiology;
Paleoclimatology/Paleoceanography

Advances in analytical techniques and instrumentation provide new opportunities for assessment of the distribution of stable and radiogenic isotopes of elements (C, H, N, O, S) that comprise organic matter in geological materials. While the focus is on novel applications, we intend to cover a variety of topics, including recent and ancient sediments, ecosystems, climates, and fossil fuels. ORAL

T52 Geologic Research and Projects for Understanding 21st Century Engineering Geology

GSA Engineering Geology Division; Association of Engineering Geologists. Duane A. Eversoll, University of Nebraska, Lincoln, Nebr.

Engineering Geology; Environmental
Geoscience; Geoscience Education

New technology and the fast-changing world dictate the way engineering geologists view and complete their work. This poster session will encourage presentations by scientists and students from a wide variety of engineering geology disciplines to present their case histories, research projects, plans, or studies to expand awareness of engineering geology in today's world. POSTER

T53 Geology and Tunneling: Case Histories

GSA Engineering Geology Division; American Rock Mechanics Association. Herbert H. Einstein, Massachusetts Institute of Technology, Cambridge, Mass.; Judy Ehlen, USA Engineer Research & Development Center, Alexandria, Va.

Engineering Geology; Hydrogeology;
Structural Geology

Geology plays a major role in tunneling, particularly in unfavorable environments, such as fault zones, high water inflow, and highly deformable rock or soil conditions. Hence, geologic conditions represent a major cost factor in tunneling. The importance of geology to tunneling will be illustrated using case histories. ORAL

T54 Case Histories in Site Characterization

GSA Engineering Geology Division; Association of Engineering Geologists. Judy Ehlen, USA Engineer Research & Development Center, Alexandria, Va.; Allen Wayne Hatheway, Retired Professor of Geological Engineering, University of Missouri, Rolla, Mo.

Engineering Geology; Structural Geology; Quaternary Geology/Geomorphology

scale quarry landscapes, extraction technology, quarry implements, the relationship between mines and quarries and subsistence sites and quarries in a social context. ORAL

T56 Geology Applied to Gas Works Site Characterization

GSA Engineering Geology Division; Association of Engineering Geologists. Allen Wayne Hatheway, Retired Professor of Geological Engineering, University of Missouri, Rolla, Mo.; Dennis Unites, Atlantic

Hudec, University of Windsor, Windsor, Ontario, Canada; Terry R. West, Purdue University, West Lafayette, Ind.

Engineering Geology; Environmental Geoscience; Geophysics/Tectonophysics/Seismology

Rock is a widely used construction material. Geologists and petrographers who apply geologic techniques in their analyses study suitability of construction materials, their sources, and completed structures. Quarries, gravel pits, mines, and the engineering structures built from these materials, are investigated using field and lab techniques. The session will allow researchers to exchange fresh ideas in the fields of resource management and material properties and durability. ORAL

T58 Construction and Geology of the Massachusetts Water Resources Authority Tunnel, Eastern Massachusetts

Mario Carnevale, Hager Geoscience, Waltham, Mass.; Stephen B. Mabee, University of Massachusetts, Amherst, Mass.

Engineering Geology; Hydrogeology; Quaternary Geology/Geomorphology

The Massachusetts Water Resources Authority (MWRA) has just completed construction of the 28 km long MetroWest Water Supply Tunnel connecting the Wachusett Reservoir in central Massachusetts with the Metropolitan Boston water supply distribution system. This topical session will discuss the design, construction, geological, and hydrogeological aspects of the tunnel. Individuals participating in scientific investigations in the MWRA tunnel or other large tunnel projects around the world are invited to submit abstracts. ORAL

T59 Rheological Effects of Fluid-Rock Interactions at Depth: From Experimental Constraints to Interpretations of Field Observations

GSA Structural Geology and Tectonics Division; GSA Geophysical Division. Tim Wawrzyniec, University of Texas, Austin, Tex.; Jane Selverstone, University of New Mexico, Albuquerque, N.Mex.

Quaternary Geology/Geomorphology; Stratigraphy; Geophysics/Tectonophysics/Seismology

Recent advances in experimentation and field-based analyses indicate that a minor change in fluid chemistry may result in rapid, permanent, or transient shifts between ductile and brittle deformation mechanisms. We encourage contributions from experimental and applied petrology, microstructural studies,



Granite boulder in Proterozoic Roxbury Formation; Squantum member. This rock, thought for many years to be a tillite, is now interpreted to be a submarine debris flow deposit. Squaw Rock Park, Squantum, Mass. Photo by Richard H. Bailey.

Site characterization is the basis for professional practice in engineering geology, providing the foundation for optimal design preparation for all manner of engineered works. Skilled practitioners will discuss their experiences and the methods and techniques they use to meet the three-dimensional location and definition demands of the practicing engineering geologist. ORAL

T55 The Geologic and Human Landscape of Prehistoric Mines and Quarries

GSA Archaeological Geology Division. Philip C. LaPorta, City University of New York, The Graduate Center, New York, N.Y.

Archaeological Geology; Quaternary Geology/Geomorphology; Economic Geology

This session focuses on the broad characterization of prehistoric mine and quarry development in relation to geologic and human landscapes. Contributions may touch on any aspect of the mining experience—e.g., plate tectonic and geologic controls on mine and quarry distribution and development, large-

Environmental Services/GEI, Colchester, Conn.

Engineering Geology; Environmental Geoscience; Hydrogeology

Gas works wastes are of the most difficult facing site remediation specialists. Forms are both solid and liquid; VOCs (volatile organic compounds), SVOCs (semivolatle organic compounds), cyanides, metals, sulfur compounds, and various bases. Of the liquids, we face floaters, sinkers, and mixers; cosoluble or comiscible, or both. Lifetimes of many of the contaminants are geologic in length and all of the physical and chemical properties react to the character of the geologic host materials. ORAL

T57 Evaluation of Sources, Aggregates, Quarries, Construction Materials, and Engineering Structures Using Field and Laboratory Techniques

GSA Engineering Geology Division; Association of Engineering Geologists. Peter P.

field-based kinematic studies, fluid-inclusion studies of shear-zone rocks, and studies of rheologic changes associated with boiling fluids. ORAL and POSTER

T60 Rock Slope Stability in Surface and Underground Excavations

GSA Engineering Geology Division; Association of Engineering Geologists. Chester Watts, Radford University, Radford, Va.; Terry R. West, Purdue University, West Lafayette, Ind.

Engineering Geology; Structural Geology; Geophysics/Tectonophysics/Seismology

Excavations in a rock mass are affected by rock and rock-mass properties. Subsurface investigations in rock are used to predict behavior of a rock mass when excavation occurs. Deterministic and probabilistic analyses are conducted, including orientation of the excavation and discontinuities, pore pressures, earthquakes, external loads, and rock strength. Analytical techniques and case history evaluations related to rock slope stability will be considered for this session. ORAL

T61 Natural Arsenic in Groundwater: Science, Regulation, and Health Implications

GSA Hydrogeology Division. Stuart Rojstaczer, Duke University, Durham, N.C.; Stephen Peters, University of Michigan, Ann Arbor, Mich.

Geochemistry, Aqueous; Hydrogeology; Public Policy

This session will focus on recent advances in scientific understanding of natural arsenic in groundwater and their implications for environmental regulation and human health. Papers dealing with arsenic geochemistry, the hydrogeology of regions with naturally occurring arsenic in groundwater, epidemiology of arsenic exposure, and environmental regulations pertaining to arsenic in groundwater are encouraged. ORAL and POSTER

T62 Munitions: Sources, Fate, and Transport

U.S. Army Environmental Center. Bonnie Packer and Ira May, U.S. Army Environmental Center, Aberdeen Proving Ground, Md.

Environmental Geoscience; Geochemistry, Other; Geophysics/Tectonophysics/Seismology

The military has a growing need to resolve questions about the environmental impact of munitions in and around firing ranges. This session covers source definition, including: geophysical techniques; relative contribution of duds, partial detonations, and full detonations; explosive fate and transport modeling; and site

characterization from military ranges. ORAL

T63 Contributions of High-Resolution Geophysics to Understanding Neotectonics and Seismic Hazard

GSA Geophysics Division. John H. McBride, University of Illinois at Urbana-Champaign, Champaign, Ill.; William J. Stephenson, U.S. Geological Survey, Denver, Colo.

Geophysics/Tectonophysics/Seismology; Neotectonics/Paleoseismology; Quaternary Geology/Geomorphology

With the improved availability of high-resolution geophysical techniques, detailed detection and 3-dimensional mapping of subsurface neotectonic deformation have become areas of increased research emphasis. Seismic reflection and other methods are being used successfully to reveal previously unknown geologically active structures in areas of seismic hazard. This session will emphasize the use of high-resolution geophysics in areas where detection of subsurface structure is of societal importance. ORAL

T64 Nothing Ventured, Nothing Gained: Geology and Risk Assessment in the 21st Century

GSA Engineering Geology Division; Association of Engineering Geologists. William C. Haneberg, Haneberg Geoscience, Port Orchard, Wash.; Scott F. Burns, Portland State University, Portland, Ore.

Engineering Geology; Environmental Geoscience; Public Policy

Risk is a function of the probability that an event will occur and the consequences of its occurrence. How do geologists contribute to risk assessment in environmental remediation, natural hazard mitigation, and resource exploration? Is there a fundamental qualitative difference between risk posed by human activity versus natural processes? How do real and perceived risks differ? Interdisciplinary case histories and descriptions of novel approaches are encouraged. ORAL

T65 Erosion of Non-Lithified Sediments: Observations and Models from Millimeter to Hillslope Scales

GSA Quaternary Geology and Geomorphology Division. Jaakko K. Putkonen, University of Washington, Seattle, Wash.

Quaternary Geology/Geomorphology; Sediments, Clastic; Environmental Geoscience

Recent developments in digital data collection, instrumentation and proliferation of high-end personal computers warrant a broad review of the state of the art of field instrumentation and modeling of surface erosion. A recently



Paul Revere Statue and Old North Church
As the oldest church building in Boston (1723), this is where the two lanterns were hung before Paul Revere embarked on his midnight ride: "One if by land, two if by sea."



established cosmogenic surface exposure dating has also provided a wealth of data on erosion rates. ORAL and POSTER

T66 Coal Systems Analysis: A New Approach to the Understanding of Coal Formation, Coal Quality and Environmental Considerations, and Coal as a Source Rock for Hydrocarbons

GSA Coal Geology Division; U.S. Geological Survey. Peter D. Warwick and Robert C. Milici, U.S. Geological Survey, Reston, Va.

Coal Geology; Economic Geology; Sediments, Clastic

Coal geology has many disciplines, but an integrated model (such as a petroleum system) that defines the interaction of these components has not been developed as a scientific tool. In this session, we seek to identify and classify the geologic factors that control coal formation and distribution, coal quality, coal as a source rock and reservoir for hydrocarbons, and coal as a potential reservoir for sequestering unfriendly environmental gasses. ORAL

T67 Archaeological Geology and the Pleistocene-Holocene Transition

GSA Archaeological Geology Division. Vance T. Holliday, Madison, Wisc.; Rolfe Mandel, University of Kansas, Lawrence, Kans.; Christopher L. Hill, Montana State University, Bozeman, Mont.

Archaeological Geology; Planetary Geology; Paleontology/Paleobotany

This session focuses on Late Quaternary paleoenvironmental changes connected with the last glacial-interglacial transition as reflected in physical (geologic) and biotic (paleontologic) records and their relationship with the archaeological record from this same time interval. ORAL

T68 Old World Archaeology and Quaternary Environments

GSA Archaeological Geology Division. Paul Goldberg, Boston University, Boston, Mass.; Christopher L. Hill, Montana State University, Bozeman, Mont.

Archaeological Geology; Planetary Geology; Paleontology/Paleobotany

This session will emphasize important connections between the archaeological record from the Old World and geological and/or paleobiological records, which are used to infer paleoenvironmental conditions on regional, local, and site-specific scales. ORAL

T69 Geobiography: Life Histories of Geologists as a Way to Understand How Science Operates

GSA History of Geology Division; History of Earth Sciences Society. Michele L. Aldrich, Hatfield, Mass.; Alan E. Leviton, California Academy of Sciences, San Francisco, Calif.

History of Geology; Geoscience Education; Geoscience Information/Communication

Speakers will describe the life and career of a geoscientist (or a group of them for collective biography) to demonstrate how biography enhances our understanding of the evolution of geological knowledge over time. ORAL and POSTER

T70 Ophiolites as Problem and Solution in the Evolution of Geological Thinking

GSA History of Geology Division; GSA Structural Geology and Tectonics Division; International Geology Division; History of Earth Sciences Society. Yildirim Dilek, Miami University, Oxford, Ohio; Sally Newcomb, retired, Silver Spring, Md.

History of Geology; Tectonics; Petrology, Igneous

This session provides a forum to discuss the history and development of ideas, principles, and theories about the origin and the occurrence of ophiolites and ophiolitic rocks. In addition, speakers will address in a historical perspective the scientific and philosophical questions in various disciplines of geology that have been raised as a result of ophiolite studies over 200 years. ORAL and POSTER

T71 Prospecting for Humor in a Geological Vein: Mining a Renewable Resource

Raymond Pestrong, San Francisco State University, San Francisco, Calif.; Richard Lambert, Skyline College, San Bruno, Calif.

Geoscience Education; Geoscience Information/Communication; History of Geology

Geology is a serious subject full of important, occasionally earthshaking information. But with such opportunities for perceptive puns, meaningful metaphors, and adventurous alliteration, who has not stooped to the base level of a good joke to drive home a salient point? We welcome presentations that explore this neglected region. Was yours the field trip from hell? Does your lecture on Love waves leave them rolling in the aisles? Help us map unexplored territory with a humorous perspective. ORAL

T72 Geoscience Information: A Dynamic Odyssey

Geoscience Information Society. Michael Mark Noga, Massachusetts Institute of Technology, Cambridge, Mass.; Barbara J. DeFelice, Dartmouth College, Hanover, N.H.

Geoscience Information/Communication;
Geoscience Education; Public Policy

The last decade has brought about major changes in the format and delivery of geoscience information. The positions of those who publish, collect, catalog, manage, and preserve geoscience information have changed also. This session focuses on the dynamic nature of geoscience information and its impact on the geoscience community. ORAL

T73 Databases to Knowledge Bases: The Informatics Revolution

Association of American State Geologists. Walter S. Snyder, Boise State University, Boise, Idaho; Herman B. Zimmerman, National Science Foundation, Arlington, Va.; M. Lee Allison, Kansas Geological Survey, Lawrence, Kans.

Geoscience Information/Communication;
Public Policy; Remote Sensing/Geographic Information System

Everything digital; everything on the web. Web-based analysis software and tutorials will allow researchers to seamlessly access data nodes in a distributed geolibrary of digital geoscience data through any portal, integrate disparate data sets, and develop models and customized products online. How are earth scientists taking advantage of new opportunities? ORAL

T74 Geoinformatics: Extracting Knowledge from the Rock Record Through Construction of Disciplinary Databases and Information Networks

A.K. Sinha, Virginia Polytechnic Institute and State University, Blacksburg, Va.

Geoscience Information/Communication;
Remote Sensing/Geographic Information System; Precambrian Geology

Geoinformatics is an emerging research frontier, which focuses on using information technology tools to better understand the dynamics of earth systems. Abstracts related to all earth science disciplines are welcome, particularly those related to information integration. The primary objective of the session is to demonstrate the new research and educational opportunities through the development of a fully integrated national geosciences information network. POSTER

T75 Applications and New Opportunities in Geologic Remote Sensing

GSA Geophysics Division. G. Randy Keller, University of Texas, El Paso, Tex.; Simon J. Hook, Jet Propulsion Laboratory, Pasadena, Calif.

Remote Sensing/Geographic Information System; Geophysics/Tectonophysics/Seismology; Geoscience Information/Communication

After more than 10 years of relative stagnation, the last few years have experienced an explosion in the quality and variety of remote sensing data. Also, these data and the software to process and analyze them are much more available than in the past. Demonstrating that this situation is a tremendous opportunity for geoscientists is the focus of this session. ORAL and POSTER



Brewster spit leading to Great Brewster Island. Position of spit is controlled by an underlying ridge of glacial till. Boston Harbor, Mass. Photo by Peter S. Rosen.

T76 Geology in the National Parks: Research, Mapping, Education, and Interpretation

Bruce Heise and James F. Wood, National Park Service, Lakewood, Colo.

Geoscience Education; Environmental Geoscience; Precambrian Geology

This session will address the role National Parks have played and continue to play in the geosciences. Presentations are invited on geologic research and mapping in parks, the use of parks as outdoor classrooms, and historical perspectives on past geologic investigations. ORAL

T77 Increasing Student Engagement in Geoscience Courses Through Information Technology: A Component of Enrollment Management

National Association of Geoscience Teachers. John C. Butler, University of Houston, Houston, Tex.; Warren Huff, University of Cincinnati, Cincinnati, Ohio.

Geoscience Education; Geoscience Information/Communication; Petrology, Metamorphic

Enrollment management must include retention as an integral component. Engaging students in academics early in their college careers is often assumed to automatically take place upon enrollment. Experiences suggest that this is true if and only if the student is actively engaged in the courses in which they enroll. Multimedia and the Internet are two information technology components that have a potential for enhancing engagement, not just serving as a distribution mechanism for course content. ORAL

T78 Academic Training of Engineering Geologists from a Practitioner's Perspective

GSA Engineering Geology Division; Association of Engineering Geologists. Terry R. West, Purdue University, West Lafayette, Ind.; Duane A. Eversoll, Nebraska Geological Survey, Lincoln, Nebr.

Engineering Geology; Geoscience Education; Public Policy

Training of engineering geologists involving engineering geology practitioners is an important phase for learning and teaching. This session will provide a forum for practitioners and academic consultants who train and teach engineering geologists to present their experiences. Curriculum, specialties, preferred education level (B.S., M.S., or Ph.D.), field experience, research area, and other pertinent items will be considered. ORAL

T79 Innovative Approaches to Undergraduate Teaching of Oceanography

National Association of Geoscience Teachers. Jill M. Whitman, Pacific Lutheran University, Tacoma, Wash.; Karen Grove, San Francisco State University, San Francisco, Calif.

Geoscience Education; Marine/Coastal Science; Public Policy

Many geoscience departments offer oceanography courses for their majors and/or for nonscience majors. Instructors face many challenges, including diverse preparation of students, balancing skills with content, preparing future science-literate citizens,

access to innovative technology, and providing hands-on experiences in non-coastal settings. We welcome examples of creative strategies that engage students through lecture, lab, and other activities, with demonstrated evidence of success. ORAL

T80 Models and Approaches to Teaching Geology to Pre- and In-Service Teachers

National Association of Geoscience Teachers. Matthew Nyman, University of New Mexico, Albuquerque, N.Mex.; Michelle Hall-Wallace, University of Arizona, Tucson, Ariz.

Geoscience Education; Geoscience Information/Communication

The increasing importance of geology in secondary science education requires development of new content and methods courses. This includes development and implementation of meaningful curriculum appropriate for secondary science classes, including field-based exercises. This session will focus on new models and approaches to teaching geology to pre- and in-service teachers providing a forum for active discussion and exchange of ideas. ORAL

T81 Strategies for Promoting Active Learning in Large Entry-Level Courses

National Association of Geoscience Teachers. R. Heather Macdonald, College of William & Mary, Williamsburg, Va.; Richard Yuretech, University of Massachusetts, Amherst, Mass.

Geoscience Education

This session will address ways to transform the learning environment in entry-level geoscience courses with moderate to large enrollments through innovations that improve student learning, engage students actively during class time, and promote critical thinking. Topics might include instructional or assessment strategies, inquiry-based activities at different technological levels, and investigative projects. Strategies that promote the education of prospective K–12 teachers are encouraged. ORAL

T82 Models of Successful Undergraduate Research Programs in the Geosciences

Council of Undergraduate Research: Geosciences Division. Edward C. Hansen, Hope College, Holland, Mich.; Virginia L. Peterson, Western Carolina University, Cullowhee, N.C.

Geoscience Education; Environmental Geoscience; Geoscience Information/Communication

Successful undergraduate research projects have many forms. This session will highlight

successful research collaborations with undergraduate students in the geosciences. Contributions to this session should address the elements, advantages, challenges, and/or outcomes of successful research collaborations with undergraduates that can provide ideas for colleagues developing or continuing such projects. POSTER

T83 Sigma Gamma Epsilon Student Research Poster Session

Sigma Gamma Epsilon. Donald W. Neal, East Carolina University, Greenville, N.C.; Charles J. Mankin, Oklahoma Geological Survey, Norman, Okla.

Sediments, Clastic; Hydrogeology; Petrology, Metamorphic

Undergraduate and graduate students are encouraged to share the results of their research activities by way of poster presentation. POSTER

T84 Recreating Undergraduate Majors and Curriculum—Approaches for a New Century

National Association of Geoscience Teachers. Duncan Foley, Pacific Lutheran University, Tacoma, Wash.

Geoscience Education; Geoscience Information/Communication; Public Policy

Many geoscience departments are implementing or considering alternative models for undergraduate majors. Some surveys of the needs of geoscience graduates stress content-specific courses; others emphasize skills such as writing and critical thinking. Papers are welcomed for this session that discuss changes individuals or departments have made or are considering. Papers are also encouraged that will stimulate discussion by suggesting new strategies and models for undergraduate preparation. ORAL

T85 The Coming Revolution in Earth and Space Science Education

National Association of Geoscience Teachers; National Earth Science Teachers Association. Edward E. Geary, Colorado State University, Fort Collins, Colo.; Frank W. Ireton, Science Systems and Applications, Inc., Lanham, Md.

Geoscience Education; Public Policy; Geoscience Information/Communication

Dynamic changes are taking place in earth and space science education at all grade levels, in all parts of the country. This session will highlight some of these changes, the forces behind these changes, and lay out a preliminary “blueprint for change” that will help to guide earth and space science education reform efforts during the next decade. ORAL and POSTER

T86 What Can I Do with a Major in the Geosciences? Advising Students in Future Career Decisions

National Association of Geoscience Teachers. Laura A. Guertin, University of Colorado, Boulder, Colo.

Geoscience Education; Geoscience Information/Communication; Petrology, Metamorphic

From undecided majors to graduating seniors in the geosciences, students can be heard asking the question, “What can I do with a major in the geosciences?” This session will address various methods and activities of departments to prepare and inform students for what is possible beyond the undergraduate degree. Ideas for submission may include outside speakers as career mentors, the department Web site as a career resource, a geoscience career day, and assessment of advising tools. POSTER

T87 Fossil Fuel on Federal Land

GSA Coal Geology Division; U.S. Geological Survey; GSA International Division. Leslie F. Ruppert and Peter D. Warwick, U.S. Geological Survey, Reston, Va.

Coal Geology; Economic Geology; Public Policy

As the price of fuel increases and energy shortages make headlines, politicians debate the use of federally owned energy resources. However, the development of energy resources may result in rapid depletion and increased public concern of environmental degradation of public lands. This session will review the current estimates of the fossil fuel resources available on federally owned land (including offshore resources) in the United States, Canada, and Mexico

SEG Special Session

Iron-Oxide(-Copper-Gold) Systems—Deposit Studies to Global Context

Sun., Nov. 4. (Morning and afternoon sessions.) *Sponsored by Society of Economic Geologists.* This session focuses on characteristics and origins of these diverse types of hydrothermal deposits, including relationships to magmatic, tectonic, and climatic processes. The emphasis will be on Proterozoic deposits in Circum-Atlantic terranes (including Brazil, the Baltic, and southern Africa), and Phanerozoic deposits of the Cordillera, particularly in the Andes. Information: Mark D. Barton, Department of Geosciences, University of Arizona, Tucson, AZ 85721, (520) 621-8529, fax 520-621-2672, barton@geo.arizona.edu.

HOW TO SUBMIT YOUR ABSTRACT

Abstract deadlines: July 17 for paper submissions; July 24 for online submissions

Submit Electronically—It's Easy!

GSA is using a new abstracts management system that offers many improvements over our previous system and promises to make the entire process of submitting abstracts easier. Here are a few advantages of the system:

- You can resume making a submission if you lose your Internet connection before you are finished.
- You can immediately inspect your submission online, and you can revise your password-protected abstract as necessary up until the published abstract submission deadline date.
- Each author and co-author is provided (by e-mail) with a record of the abstract identification number and password. Up until the deadline date, abstracts can be accessed from any Internet connection, making collaborative authoring more convenient.
- The new system supports the submission of complex abstracts that contain subscripts, superscripts, italic and boldface type, tables, Greek letters, and equations.

Log On

To submit your abstract, go to www.geosociety.org and click on the "Submit an Abstract" button.

Scientific Categories

Determine if your paper would fit neatly under one of the topical sessions. If it doesn't, please submit your abstract for inclusion in the general discipline sessions. The available choices are:

Archaeological Geology
Coal Geology
Economic Geology
Engineering Geology
Environmental Geoscience
Geochemistry, Aqueous
Geochemistry, Organic
Geochemistry, Other
Geomicrobiology
Geophysics/Tectonophysics/Seismology
Geoscience Education
Geoscience Information/Communication
History of Geology
Hydrogeology
Marine/Coastal Science
Mineralogy/Crystallography
Neotectonics/Paleoseismology
Paleoclimatology/Paleoceanography

Paleontology/Paleobotany
Petrology, Experimental
Petrology, Igneous
Petrology, Metamorphic
Planetary Geology
Precambrian Geology
Public Policy
Quaternary Geology/Geomorphology
Remote Sensing/Geographic Information System
Sediments, Carbonates
Sediments, Clastic
Stratigraphy
Structural Geology
Tectonics
Volcanology

Presentation Modes

Select your preferred mode of presentation: oral, poster, or either (no preference).

- **Oral Mode**—This is a verbal presentation before a seated audience. The normal length of an oral presentation is 12 minutes, plus three minutes for discussion. Projection equipment consists of two 35 mm projectors, one overhead projector, and two screens. Requests for video projection and computer display will be addressed on a case-by-case basis. You may put your request for any special audiovisual equipment on the abstract form.
- **Poster Mode**—Each poster session presenter is provided with two horizontal, freestanding display boards approximately 8' wide and 4' high. Precise measurements will appear in the Speaker Guide, which will be posted on the GSA Web site (www.geosociety.org) in September. The speaker must be at the poster booth for at least two of the four presentation hours.

Papers for discipline sessions may be submitted in either oral or poster mode. Papers for topical sessions are to be submitted *only* in the mode noted in the session description. If a topical abstract is submitted in the incorrect mode, the abstract will be transferred automatically to a discipline session.

Title and Keywords

Pick a title for your paper, and select up to five keywords.

Authors

Have available the name and contact information for all of the authors. Please include their phone numbers and e-mail addresses.

Word Limit and Format

Keep abstracts to 300 words or fewer. The online abstract management system will reject abstracts that exceed 320 words. Since your

word processor might count words differently than this system, we suggest that you assume 300 words is the target length.

You may include a table or an image with your abstract, but understand that the image and table will affect the number of words allowed in your abstract. Taken together, the words and images should take up no more space than would be occupied by roughly 300 words alone.

Check the spelling of the abstract's text and title using your own word processor. Then read it again and make sure that it is something the whole world should see. (We won't check or edit it for you.)

Add an extra line between paragraphs or they will run together when displayed. You can do this while typing (before copying) or after you have pasted the copy.

Abstract Fee

Once the abstract is in place, a window to submit payment will appear. The nonrefundable submission fee is \$15 for all students, \$25 for all others.

SUBMITTING AN ABSTRACT ON PAPER

If you do not have access to the Internet, you'll need to submit an abstract on a paper form. Paper forms for the 2001 Annual Meeting can be obtained from the technical program assistant, Heather Chotvacs, hchoivacs@geosociety.org, (303) 447-2020, ext. 115.

YOU MAY PRESENT ONLY ONE VOLUNTEERED ABSTRACT

- Please submit only one *volunteered* abstract as speaker or poster presenter in topical and/or discipline sessions. This helps avoid speaker-scheduling conflicts and gives everyone an equal opportunity to be heard. **Multiple submissions as speaker-presenter will result in rejection of all abstracts.**
- This limitation does not apply to, nor does it include, *invited* contributions to keynote symposia or topical sessions.

JOINT TECHNICAL PROGRAM COMMITTEE (JTPC) WILL FINALIZE PROGRAM IN MID-AUGUST

The JTPC selects abstracts and determines the final session schedule. Speakers will be notified in early September. The JTPC includes representatives from those GSA Associated Societies and Divisions participating in the technical program. The GSA Council approved the JTPC technical program chairs.

FIELD TRIPS

The northern Appalachians provide a spectacular laboratory for the study of ancient tectonic processes, and several field trips will focus on various aspects of Appalachian orogenesis. Other trips will focus on the dynamic New England coastline and recent attempts to decipher the complex history of Quaternary sea level change. Trips in the urban setting of the greater Boston area will provide glimpses into the numerous challenges associated with groundwater contamination and engineering geology.

Trip destinations range from the immediate Boston area to the rugged coast of Maine, the White Mountains of New Hampshire to the Berkshires of western Massachusetts, and many points in between. Most trips start and end in Boston. Air travel plans that include a Saturday night stay-over can substantially offset field trip costs. Please note: The weather in early November may be a factor in trips in New England.

The following list is tentative and subject to change. Further details will be given when registration for the meeting begins in June. For more information, contact the trip leader or the 2001 field trip co-chairs Dave West, Dept. of Geology, Earlham College, Richmond, IN 47374, (765) 983-1231, fax 765-983-1497, westd@earlham.edu, and Dick Bailey, Dept. of Geology, Northeastern University, Boston, MA 02115, (617) 373-3181, fax 617-373-4378, r.bailey@ninet.neu.edu.

Premeeting Trips

Quaternary Sea-level Change and Coastal Evolution in Eastern Maine

Thur.–Sun., Nov. 1–4. *Cosponsored by GSA Quaternary Geology and Geomorphology Division.* Joseph T. Kelley, Dept. of Geological Sciences, University of Maine, Orono, ME 04469-5790, (207) 581-2152, fax 207-581-2202, jtkelley@maine.edu; Dan Belknap; Duncan FitzGerald; Jon Boothroyd. Max.: 45. Cost: \$325. Begins in Bangor, Maine; ends in Boston.

Rare Element Granitic Pegmatites of Northern New England

Fri. and Sat., Nov. 2–3. Carl Francis, Harvard Mineralogical Museum, 24 Oxford St., Cambridge, MA 02138, (617) 495-4758, fax 617-495-8839, francis@eps.harvard.edu. Max.: 21. Cost: \$230.

The Notches: Bedrock and Surficial Geology of New Hampshire's White Mountains

Fri.–Sun., Nov. 2–4. *Cosponsored by GSA Quaternary Geology and Geomorphology*

Division and GSA Structural Geology and Tectonics Division. Timothy T. Allen, Dept. of Geology, Keene State College, Keene, NH 03435-2001, (603) 358-2571, fax 603-358-2257, tallen@keene.edu; John W. Creasy; Thompson Davis; J. Dykstra Eusden; Brian K. Fowler; Woodrow B. Thompson. Max.: 39. Cost: \$250.

The Science Behind A Civil Action

Sat., Nov. 3. *Cosponsored by GSA Hydrogeology Division.* Scott Bair, Dept. of Geological Sciences, The Ohio State University, Columbus, OH 43210, (614) 292-0069, fax 614-292-7688, bair.1@osu.edu; Maura Metheny; Terry Lahm; Jack Guswa; John Drobinski; Chuck Myette; Kip Solomon. Max.: 30. Cost: \$80.

The Founders of American Geology: A Visit to their Tombs and Favorite Exposures

Sat. and Sun., Nov. 3–4. *Cosponsored by GSA History of Geology Division.* Gerald M. Friedman, Brooklyn College and Graduate Center, CUNY, P.O. Box 746, Troy, NY, 12181-0746, (518) 273-3247, fax 518-273-3249, gmfriedman@juno.com. Max.: 20. Cost: \$190.

Geological, Geochemical, and Environmental Aspects of Metamorphosed Black Shales in Maine

Sat. and Sun., Nov. 3–4. Charles V. Guidotti, Dept. of Geological Sciences, University of Maine, Orono, ME 04469-5790, (207) 581-2153; fax 207-581-2202, guidotti@maine.maine.edu; Mark Van Baalen. Max.: 30. Cost: \$190.

Avalonian through Alleghanian Tectonism in Southeastern New England

Sun., Nov. 4. *Cosponsored by GSA Structural Geology and Tectonics Division.* Daniel Murray, Dept. of Geosciences, University of Rhode Island, Kingston, RI 02881, (401) 874-2197, fax 401-874-2190, dpmurray@uri.edu; Rachel Burks; Sharon Mosher; Nasir Hamidzada. Max.: 40. Cost: \$70.

The Science Behind A Civil Action

Sun., Nov. 4. See description for Sat., Nov. 3, trip.

Geochronology and Geochemistry of the Shelburne Falls Arc and the Taconian Orogeny in Western New England

Sun., Nov. 4. *Cosponsored by GSA Structural Geology and Tectonics Division.* Paul Karabinos, Dept. of Geosciences, Williams College, Williamstown, MA 01267, (413) 597-2079, fax 413-597-4116, paul.m.karabinos@williams.edu; J. Christopher Hepburn. Max.: 28. Cost: \$70.

Quaternary Environments and History of Boston Harbor, Massachusetts

Sun., Nov. 4. *Cosponsored by GSA Quaternary Geology and Geomorphology Division.* Patrick Colgan, Dept. of Geology, Northeastern University, Boston, MA 02115, (617) 373-4381, fax 617-373-4378, pcolgan@lynx.neu.edu; Peter Rosen. Max.: 40. Cost: \$70.

N-Y-F Pegmatites in the Avalon Terrane of Southeastern New England

Sun., Nov. 4. Carl Francis, Dept. of Earth & Planetary Sciences, Harvard University, Cambridge, MA 02138-2902, (617) 495-4758, fax 617-495-8839, francis@eps.harvard.edu; Michael Wise. Max.: 22. Cost: \$70.

Concurrent with the Meeting

Aspects of the Urban Geology of Beacon Hill and Vicinity, Boston, Massachusetts: In Memory of James V. O'Connor—A Walking Tour.

Sun., Nov. 4. *Cosponsored by GSA History of Geology Division, GSA Engineering Geology Division, and National Association of Geoscience Teachers.* James W. Skehan, Dept. of Geology & Geophysics, Boston College, 140 Commonwealth Ave., Chestnut Hill, MA 02467-3809, (617) 552-8312, fax 617-552-2462, skehan@bc.edu. Max.: 20. Cost: \$20.

Cobblestones, Puddingstone, and More: Boston's Use of Stone as an Essential Urban Element—A Walking Tour

Tues., Nov. 6. Dorothy Richter, Hager-Richter Geoscience, Inc., 8 Industrial Way, Ste. D-10, Salem, NH 03079, (603) 893-9944, fax 603-893-8313, dorothy@hager-richter.com; Gene Simmons. Max.: 20. Cost: \$20.

Petrology and Field Relations at Pine Hill, Medford, Massachusetts

Tues., Nov. 6. Martin E. Ross, Dept. of Geology, Northeastern University, Boston, MA 02115, (617) 373-3176, fax 617-373-4378, m.ross@ninet.neu.edu. Max.: 40. Cost: \$40.

Engineering Geology of the Big Dig Project (Boston Central Artery Project)

Wed., Nov. 7. *Cosponsored by GSA Engineering Geology Division.* Dan Bobrow, Parsons Brinckerhoff, 63 Walnut Court, Stoughton, MA 02072-4159, (617) 951-6228, fax 617-951-0897, djbobrow@bigdig.com; Charles Daugherty. Max.: 35. Cost: \$80.

Geology of East Point, Nahant, Massachusetts

Wed., Nov. 7. Martin E. Ross, Dept. of Geology, Northeastern University, Boston, MA 02115, (617) 373-3176, fax 617-373-4378, m.ross@ninet.neu.edu; Richard H. Bailey. Max.: 40. Cost: \$40.



Geology, Groundwater Contamination, and Groundwater Remediation at the Massachusetts Military Reservation (MMR), Cape Cod

Wed., Nov. 7. Rudolph Hon, Dept. of Geology & Geophysics, Boston College, 140 Commonwealth Ave., Chestnut Hill, MA 02467-3809, (617) 552-3640, fax 617-552-2462, hon@bc.edu; Francis Fedele; Martin Acker; Peter Dillon. Max.: 24. Cost: \$55.

Postmeeting Trips

Deformation, Metamorphism, and Granite Assent in Western Maine

Thur.–Sun., Nov. 8–11. *Cosponsored by GSA Structural Geology and Tectonics Division.* Gary Solar, Dept. of Earth Sciences, State University of New York, College at Buffalo, Buffalo, NY 14222, (716) 878-4900, solargs@bscmail.buffalostate.edu; Mike Brown; Paul Tomascak. Max.: 33. Cost: \$350.

Geology of Mount Monadnock, New Hampshire

Fri., Nov. 9. *Cosponsored by GSA Structural Geology and Tectonics Division.* Peter Thompson, Dept. of Earth Sciences, University of New Hampshire, Durham, NH 03824, (603) 862-2649, fax 603-862-2649, pj3@hypatia.unh.edu. Max.: 25. Cost: \$55.

Geology and Water Supply Development at the Massachusetts Military Reservation (MMR), Cape Cod

Fri., Nov. 9. Peter Dillon, Foster Wheeler Environmental Corporation, 470 Atlantic Ave., Boston, MA 02210, (508) 563-7792, fax 508-563-7844, pdillon@fwenc.com; Rudolph Hon; Boyd Allen; Francis Fedele; Kent Gonser. Max.: 24. Cost: \$55.



Engineering geology of the Big Dig project (Boston Central Artery Project)

MetroWest Water Supply Tunnel Project

Fri., Nov. 9. *Cosponsored by GSA Engineering Geology Division.* Mario Carnevale, Hager Geoscience Inc., 174 Lexington St., Waltham, MA 02452-4644, (781) 893-9700, fax 781-893-8465, mcarnevale@hagergeoscience.com; Jutta Hager. Max.: 50. Cost: \$65.

Recent Developments in the Study of the Neoproterozoic Boston Bay Group

Fri., Nov. 9. Richard H. Bailey, Dept. of Geology, Northeastern University, Boston, MA 02115, (617) 373-3176, fax 617-373-4378, r.bailey@nunet.neu.edu; Margaret D. Thompson; Benjamin H. Bland. Max.: 40. Cost: \$50.

Metamorphism of a Fold-Thrust Belt in the Hinterland of the Alleghanian Orogen in Southern New England

Fri. and Sat., Nov. 9–10. *Cosponsored by GSA Structural Geology & Tectonics Division.* Robert P. Wintsch, Dept. of Geological Sciences, Indiana University, Bloomington, IN 47405, (812) 855-4018, fax 812-855-7899, wintsch@indiana.edu; Michael J. Kunk; John N. Aleinikoff. Max.: 30. Cost: \$170.

The Taconic Questions: Revisiting the Scenes of the Great American Controversies

Fri. and Sat., Nov. 9–10. *Cosponsored by GSA History of Geology Division.* Paul Washington, Dept. of Geosciences, University of Louisiana, Monroe, LA 71209, (318) 342-1898, gewashington@ulm.edu. Max.: 40. Cost: \$170.

Prehistoric Bedrock Quarries of the Central Appalachians

Fri.–Sun., Nov. 9–11. Philip La Porta, La Porta & Associates, 116 Bellvale Lakes Rd., Warwick, NY 10990, (845) 986-7733, fax 845-988-9988, philiplaporta@cs.com. Max.: 20. Cost: \$280.

Society of Economic Geologists Field Trips

Zinc and Iron Deposits of the Adirondack Mountains and New Jersey Highlands

Tues.–Sat., Oct. 30–Nov. 3. *Sponsored by Society of Economic Geologists.* John F. Slack, U.S. Geological Survey, MS 954, Reston, VA 20192, (703) 648-6337, fax 703-648-6383, jfslack@usgs.gov; Craig A. Johnson, U.S. Geological Survey, MS 963, Denver, CO 80225, (303) 236-7935, fax 303-236-4930, cjohnso@usgs.gov; Michael P. Foose, U.S. Geological Survey, MS 954, Reston, VA 20192, (703) 648-6333, fax 703-648-6383, mfoose@usgs.gov. James M. McLelland, Dept. of Geology, Colgate University, Hamilton, NY 13346, (315) 824-7202, fax 315-824-7831, indian@telenet.net. Begins and ends in Boston. Includes underground visits to the Balmat mine (New York) and the Sterling Hill mine (New Jersey). Max.: 42. Cost: \$TBD. Includes transportation, all meals, accommodations (double occupancy), and guidebook.

Environmental Geochemistry and Mining History of Massive Sulfide Deposits in the Vermont Copper Belt

Thur.–Sat., Nov. 8–10. *Sponsored by Society of Economic Geologists.* Jane M. Hammarstrom, U.S. Geological Survey, MS 954, Reston, VA 20192, (703) 648-6165, fax 703-648-6383, jhammars@usgs.gov; Robert R. Seal II, U.S. Geological Survey, MS 954, Reston, VA 20192, (703) 648-6290, fax 703-648-6383, rseal@usgs.gov. Begins and ends in Boston. Includes surface visits to the Elizabeth and Ely mines (Vermont). Max.: 30. Cost: \$TBD. Includes transportation, all meals, accommodations (double occupancy), and guidebook.

COURSES, WORKSHOPS, AND FORUM

GSA-Sponsored Short Courses

Preregistration deadline: September 28

Registration information and course descriptions will be published in the June issue of *GSA Today*. For additional information, contact Edna Collis, Meetings Department, GSA headquarters, ecollis@geosociety.org, or see GSA's Web site, www.geosociety.org.

Application of Thermochronometry to Tectonics

Sat. and Sun., Nov. 3–4. *Cosponsored by GSA Structural Geology and Tectonics Division.* T. Mark Harrison, Marty Grove, and Oscar M. Lovera, University of California at Los Angeles; Peter K. Zeitler, Lehigh University. Fee: \$540, students \$520. C.E.U. 1.6.

Micromorphology of Glacigenic Sediments

Sat. and Sun., Nov. 3–4. *Cosponsored by GSA Quaternary Geology and Geomorphology Division.* John Menzies, Brock University; Jaap J.M. van der Meer, Queen Mary College, University of London; James Rose, Royal Holloway, University of London. Fee: \$420, students \$400. C.E.U. 1.6.

Applications of Environmental Isotopes to Watershed Hydrology and Biogeochemistry

Sun., Nov. 4. *Cosponsored by GSA Hydrogeology Division.* Carol Kendall and Thomas Bullen, U.S. Geological Survey, Menlo Park. Fee: \$330, students \$310. C.E.U. 0.8.

Management and Leadership Skills for Geoscience Department Chairs and Institute Directors

Sun., Nov. 4. *Cosponsored by National Association of Geoscience Teachers.* Lee J. Suttner, Indiana University; Sheila Moore, Training Concepts, Chattanooga, Tenn. Fee: \$260, students \$240. C.E.U. 0.8.

Mobilization of Metals from Fossils Fuels: Impacts to the Environment and Human Health

Sun., Nov. 4. (Half-day, afternoon course.) *Cosponsored by GSA Coal Geology Division.* Robert B. Finkelman, Allan Kolker, and Leslie Ruppert, U.S. Geological Survey, Reston. Fee: \$190, students \$170. C.E.U. 0.4.

Practical Geoscience Ethics: Elements, Examples, and Education

Sun., Nov. 4. (Half-day, afternoon course.) *Cosponsored by American Institute of Professional Geologists and GSA Engineering*

Geology Division. David M. Abbott Jr., consultant, Denver; John W. Williams, San Jose State University. Fee: \$200, students \$180. C.E.U. 0.4.

Tectonics and Topography: Crustal Deformation, Surficial Processes, and Landforms

Sun., Nov. 4. *Cosponsored by GSA Structural Geology and Tectonics Division.* Dorothy Merritts, Franklin and Marshall College; Roland Burgmann, University of California at Berkeley. Fee: \$275, students \$255. C.E.U. 0.8.

Other Courses and Workshops

Registration and information can be obtained from the contact person listed for each course.

Sequence Stratigraphy for Graduate Students

Sat. and Sun., Nov. 3–4. *Cosponsored by British Petroleum (BP) and ExxonMobil Exploration Company.* Information: Art Donovan, BP Upstream Technology Group, (281) 366-5198, donovaad@bp.com; Morgan Sullivan, ExxonMobil Upstream Research Company, (713) 431-7184, morgan.d.sullivan@exxon.sprint.com.

Stable Isotope Geochemistry

Sat. and Sun., Nov. 3–4. *Sponsored by Mineralogical Society of America (MSA).* Information: MSA Business Office, 1015 18th St. NW, Ste. 601, Washington, D.C. 20036-5212, (202) 775-4344, fax 202-775-0018, business@minsocam.org; or visit the MSA Web site, www.minsocam.org.

Brachiopods

Sun., Nov. 4. *Sponsored by Paleontological Society.* Information: Sandy Carlson, Geology Dept., University of California, Davis, CA 95616, (916) 752-0350, fax 916-752-0951, carlson@geology.ucdavis.edu; Michael Sandy, Dept. of Geology, University of Dayton, OH 45469-2364, (937) 229-3432, fax 937-229-2889, sandy@neelix.udayton.edu.

Technical Writing for Results

Sun., Nov. 4. *Sponsored by National Ground Water Association (NGWA).* Information: NGWA, 601 Dempsey Road, Westerville, OH 43081, (800) 551-7379, fax 614-898-7786. Visit NGWA's home page, www.ngwa.org.

Practical Application of XRF Techniques to the Analysis of Geological Materials

Mon., Nov. 5. *Sponsored by Mineralogical Society of America (MSA).* Information: MSA Business Office, 1015 18th St. NW, Ste. 601, Washington, D.C. 20036-5212, (202) 775-4344, fax 202-775-0018, business@minsocam.org, or visit the MSA Web site, www.minsocam.org.

Geology, Public Lands, and You

Date to be determined. *Cosponsored by the Institute for Earth Science and the Environment, the Bureau of Land Management, the National Park Service, and the USDA Forest Service.* Information: Katie KellerLynn, (303) 447-2020, ext.194, kkellerlynn@geosociety.org. Learn the differences among federal land management agencies and their missions. Learn what YOU



Cliff of late Wisconsinian till in an eroded drumlin. Peddocks Island, Boston Harbor, Mass. Photo by Peter S. Rosen.

need to know about gaining access to your special areas of geologic interest in national parks, national forests, and Bureau of Land Management lands. Get pointers on conducting research and getting permits on different types of public lands. Take a crash course in National Environmental Policy Act (public input to agency decisions). Learn how YOU can influence management of public lands and resources.

Forum

Digital Forum

Wed., Nov. 7. *Sponsored by Geoscience Information Society.* Information: Adonna Fleming, James A. Michener Library, University of Northern Colorado, Greeley CO 80639, (970) 351-1530, fax 970-351-2963, acflemi@unco.edu.

Special Workshop

Surviving Academia: From Getting the Job to Winning Tenure

Sun., Nov. 4, 8 a.m.–5 p.m. *Sponsored by Association for Women Geoscientists.* Faculty: Donald I. Siegel, Syracuse University; Suzanne O'Connell, Trinity College and Wesleyan University.

This workshop constitutes a no-holds-barred review of what it takes to win an academic job and keep it. Segments in the course include how to: maximize the chances of winning an academic job, from the application process to the interview; write a publishable scientific paper or acceptable scientific proposal; and teach effectively at undergraduate and graduate levels.

Most of all, the workshop provides critical mentoring for both male and female graduate students and current junior faculty on how to maximize chances of earning tenure and promotion once they enter academia.

The concepts and materials provided in this course are largely derived from a series of very popular lectures Donald I. Siegel prepared for the Syracuse University Future Professorate Program. The mentoring that Siegel and O'Connell will provide will also be very useful to M.S. students and Ph.D. students moving into government or industry employment. The concepts for success are the same.

Limit: 50. Fee: \$20; includes course manual and lunch. Preregistration required. For information and registration: Donald I. Siegel, Dept. of Earth Sciences, 307 Heroy Geology

Laboratory, Syracuse University, Syracuse, NY 13244-1070, (315) 443-3607, disiegel@mailbox.syr.edu.

Panel Discussion

Tenure and Promotion: Letting the Cat Out of the Bag

Sun., Nov. 4, 11 a.m.–1 p.m.
Sponsored by Association for Women Geoscientists.

Limit: 100. No Fee; includes lunch. Preregistration required. For information and registration: Mary Anne Holmes, 214 Bessey Hall, Geosciences Dept., University of Nebraska—Lincoln, Lincoln, NE 68588-0340, (402) 472-5211, fax 402-472-4917, mholmes2@unl.edu, or visit the AWG Web site, www.awg.org.

Nominations being taken for the 2001 Michel T. Halbouty Distinguished Lecturer

The GSA Foundation is pleased to announce the establishment of the Michel T. Halbouty Distinguished Lecturer Fund, which provides an honorarium for a Halbouty Distinguished Lecturer at GSA annual meetings. The fund was established to select a top lecturer in broad, overarching topics of natural resources (water, land, energy, and minerals). Abstracts of the usual sorts, such as ones concerning a particular ore deposit model, a local water quality problem, or the discovery of a new gas field may not be appropriate. The subject needs to be a broad one.

The GSA Joint Technical Program Committee and Annual Program Committee invite any GSA member and especially the topical session convenors in the resources area to nominate a lecturer for the 2001 GSA Annual Meeting in Boston. Nominations for the Michel T. Halbouty Distinguished Lecturer are currently being collected. The form is located at www.geosociety.org/meetings/2001/halboutyform.htm. **Deadline for nominations is May 1, 2001.** The winner of this award will be notified by the end of May 2001.

GSA K–16 Education Program

Join us in Boston for exciting and informative workshops for K–12 educators, junior college instructors, college professors, pre-service instructors and graduate students. A full slate of workshops is scheduled for Saturday and Sunday. The wide range of topics includes plate tectonics, planetary geology, use of new technology, and pedagogy. Check the June issue of *GSA Today* for complete workshop listings. Preregistration is recommended to assure your spot in these popular sessions.

Graduate-level recertification credits from the Colorado School of Mines will be offered for workshop participation and all technical sessions, based on contact hours and written summaries of activities. Details will be available on-site at the workshops. Contact Diana Stordeur for more information at dstordeur@geosociety.org.

Registration

Preregistration Deadline: Friday, September 28, 2001

Cancellation Deadline: Friday, October 5, 2001

You'll be able to register online beginning in June at www.geosociety.org. Registration forms and information will also be available in the June issue of *GSA Today*.

Make plans now to take advantage of the June registration opportunity. Registration is required for events, which will fill quickly. Plus, you'll save a considerable amount on registration fees if you

register early. If you are not a member and would like registration forms and further information, contact GSA Member Services, member@geosociety.org.

One-day registration will be available on-site Sunday through Thursday. Guest and spouse registrations do not include technical session access.

Meeting registration fees have not been established as we go to print.

Not a GSA Member? NOW is a Great Time to Join

You'll save a substantial amount on your Annual Meeting registration by becoming a GSA member—more than enough to cover the cost of membership dues. Take a look at the numbers (example uses fees from the 2000 Annual Meeting).

Professional Nonmember preregistration meeting fee:	\$335.00
Professional Member preregistration meeting fee:	\$260.00
Difference:	\$ 75.00
Dues and application fee, GSA Professional Membership:	\$ 50.00
You come out ahead by:	\$ 25.00!

Not convinced? If you pay the nonmember registration rate for the meeting, you can sign up for a free membership for 2002 when you get to Boston. It's your choice!

For more information, please contact

Member Services at GSA headquarters, member@geosociety.org, 888-443-4472, or (303) 447-2020, ext. 774.



Dave Stephenson to Serve as Acting Executive Director

Dave Stephenson has agreed to serve as acting executive director for GSA until September while a search is conducted for a new executive director. Stephenson was president of GSA in 1995 and president of the American Geological Institute in 1999. He has always been a strong supporter of GSA. Stephenson is currently vice-president and Wyoming office manager of S.S. Papadopoulos & Associates, Inc. He previously ran his own consulting firm, South Pass Resources, Inc. Stephenson also was a professor of hydrogeology at the University of Wisconsin at Madison for 14 years.

Stephenson brings wide experience in the geosciences to GSA and is very familiar with GSA programs and initiatives. He will be working closely with GSA's officers and staff during this time of transition. About his new role, Stephenson says, "As acting executive director, my greatest service to the Society would be as a focal point for communication between headquarters staff, Executive Committee members, Council members, Section and Division officers, plus the membership at large. In that capacity, until a permanent executive director can be installed, I hope to be an effective resource, not merely a placeholder." Stephenson is an excellent person to provide GSA leadership as an acting executive director; we are very pleased that he has accepted this position.

Students: Start Planning Now to Attend Boston 2001, A Geo-Odyssey

GSA Annual Meetings are a great deal for students. You'll enjoy full access to every part of the meeting at a discounted rate. Hear about the latest research conducted by scientists from all over the country and the world. Make contacts in a friendly atmosphere, explore options for your future, and meet your fellow students and future colleagues.

But wait! There's more!

Travel Grants Help Get You There

The GSA Foundation has awarded \$4,500 in grants to each of the six GSA Sections. The money, when combined with equal funds from the Sections, is used to help GSA undergraduate Student Associates and graduate Student Members travel to GSA meetings. For information and deadlines, contact your GSA Section secretary.

Cordilleran: Bruce A. Blackerby,
(559) 278-2955, bruceb@csufresno.edu

Rocky Mountain: Kenneth E. Kolm,
(303) 273-3932, kkolm@mines.edu

North-Central: Robert F. Diffendal Jr.,
(402) 472-7546, rfd@unl.edu

Northeastern: Stephen Pollock,
(207) 780-5380, pollock@usm.maine.edu

South-Central: Elizabeth Y. Anthony,
(915) 747-5483, eanthony@geo.utep.edu

Southeastern: Donald W. Neal,
(252) 328-4392, neald@mail.ecu.edu

The Student Assistant Program Helps Pay the Bills

When you work as a student assistant during the meeting, you can get reimbursed for your registration fees and even earn a free Abstracts with Programs book. Look for more information about the Student Assistant Program in upcoming issues of *GSA Today* or call 1-800-472-1988, ext. 184.

The President's Student Breakfast Fuels Day One

Of all the events geared toward students at the Annual Meeting, the GSA President's Student Breakfast is among the most popular. Traditionally held on Monday morning, this complimentary buffet breakfast is sponsored by ExxonMobil and hosted by GSA. It's a chance to meet students from around the world and to chat with GSA officers while they serve you orange juice and coffee. More than 600 students attended last year—be sure to join us in Boston!

Planning for Your Future...

...in Academia

The Graduate School Information Forum lets undergraduate students planning to obtain advanced degrees meet one-on-one with representatives from graduate schools around the country. An informal setting provides a unique venue for discussing interests and exploring programs. A list of participating schools will appear on GSA's Web site at www.geosociety.org and in future issues of *GSA Today*.

...in the Business World

GSA's Employment Interview Service is the most extensive program of its type. At the Summit 2000 meeting in Reno, 52 employers used the service during the process of filling more than 120 positions. GSA staff scheduled 497 interviews with those employers who rented interview booth space; other employers utilized the message exchange service to connect with applicants. More services include bulletin boards with job and opportunity postings, and informal seating available for spur of the moment interviews or discussions. Another notable aspect of the program is the chance to participate in individual or small-group discussions with volunteers who provide personalized help with resume writing and offer insights on job searches and trends in different areas of the geoscience job market.

For more information, contact nwilliams@geosociety.org, or look for information and forms on the GSA Web site, www.geosociety.org. Applicants should plan to have employment service registration materials to GSA headquarters by September 15, 2001, to make full use of the interview service.

...or in Government

The Geology in Government Mentor Program for undergraduate and graduate students features a panel discussion (with interaction from the audience) of representatives from four governmental agencies. Topics include: current and anticipated future roles for geoscientists within their particular government segment; discussion of interesting or highly visible geoscience projects currently in process; and current and future job opportunities within their agency. It's free to students and lunch is provided. Due to limited seating, registration will be required. Date and location to be announced.

Event Planners: Take Note!

Have you been corralled, convinced, or coerced into organizing a business meeting, social event, or alumni reception at the GSA Annual Meeting in Boston? We'd like to help you! To get the arrangements under way, complete the following steps:

Step 1. Start now.

Step 2. Go to www.geosociety.org.

Step 3. Click on "Meetings," and look for the Space Request Form.

Step 4. Choose one: Complete the form online or download the pdf version, print it out, and fax it to GSA at 303-447-0648.

Thank You!

Join the Crowd



at the GSA Exhibit Hall

Have you got a product to sell? A school or program to promote? A new service to unveil? The GSA Annual Meeting is a great place to showcase what your business or organization offers the geoscience community. The Exhibit Hall opens with a popular welcoming party on Sunday evening and the crowds keep visiting the hall all meeting long.

Join more than 150 organizations offering the latest in scientific instrumentation; field supplies and gear; geological publications; laboratory services; gems and minerals; and information on geoscience associations and earth science programs at various institutions. You can find out more about our 2001 exhibitors by visiting www.geosociety.org/meetings/2001/exhibits.htm.

Boston is one of GSA's most popular meeting venues. You can look forward to reaching an estimated 7,000+ attendees, including influential scientists and key decision-makers from the geoscience community. Develop new customers, increase your sales, and educate current and potential customers on your products and services.

We are projected to *sell out*, so reserve space now by contacting Brenda Martinez, Exhibit Sales Coordinator: GSA Headquarters, (303) 447-2020, ext. 138, bmartinez@geosociety.org. Go to our Web site, www.geosociety.org, and download the Boston Prospectus with application, which outlines the benefits and procedures for applying for booth space.

Public Policy and Beyond

Interested in the process behind the politics?

Ever wonder who puts the planning into the policy?

Want to find out how to get a permit to access public lands?

There's no better place to get the scoop than Boston, an historic hotbed of political action.

The Institute for Earth Science and the Environment will hold workshops and

seminars in conjunction with the Bureau of Land Management, the National Park Service, and the USDA Forest Service on a variety of public policy, funding, and resource planning topics. Plus, Rachel Sours-Page, the 2000–2001 GSA–USGS Congressional Science Fellow will give her final report on earth science at work in our nation's capital.

Be sure to put aside some time in your annual meeting schedule for these valuable events. Look for complete information in the June issue of *GSA Today*.

Meet the Next Generation of Graduate Students at GSA's Graduate School Information Forum

Here's a chance for representatives from your school to meet face to face with prospective students in the relaxed, informal setting of the Exhibit Hall at the Boston meeting.

We'll promote your school in the 2001 Annual Meeting technical program, published in the October issue of *GSA Today*, and in the on-site meeting program, distributed to every meeting attendee. You'll have a choice of holding your forum for all or any combination of days the Exhibit Hall is open (from one day to all three days).

If your school is interested in participating, contact Brenda Martinez, Exhibit Sales Coordinator, GSA Headquarters, (303) 447-2020, ext. 138, bmartinez@geosociety.org.

Employers: Let the GSA Employment Service Bring Applicants to You!

Reap the benefits of GSA's database of job-seeking geoscientists by signing up to use the GSA Employment Service. You specify the educational and professional experience requirements and the types of expertise your applicants should have, and we'll take it from there. Plus, when you rent interview space at the GSA Annual Meeting, our staff will schedule interviews for you, and you'll have access to a message center, photocopying services, and more. For information and costs, contact Nancy Williams, nwilliams@geosociety.org, or look for information and forms on the GSA Web site, www.geosociety.org.

Wanted: ✓

Technical Program Chair for the 2003 GSA Annual Meeting

The search is on for the Technical Program Chair for the 2003 GSA Annual Meeting in Seattle, Washington. If you are interested in serving as chair, or if you know someone who would be effective in this capacity, visit GSA's Web site at www.geosociety.org/meetings/chairnom.htm or contact the GSA Meetings Department for a nomination form at (303) 447-2020, ext. 190. Nominations are due July 15, 2001.

The Technical Program Chair has the final responsibility for the entire technical program. Review and acceptance of keynote and topical session proposals happens during January and February 2003, and scheduling of all sessions, in conjunction with Joint Technical Program Committee (JTTC) representatives, occurs in July through August of 2003. The 2003 chair will serve on the Annual Program Committee from 2002 to 2004. This committee meets twice a year, usually in March and again in August.

The Technical Program Chair must be a GSA member with a broad perspective on the geological sciences, and must be efficient, organized, fair-minded, flexible, and committed to organizing a dynamic meeting. Experience in scheduling a technical program (such as membership on the JTTC in the past five years) is helpful but not required.

Wanted:

Hot Topics Chair for the 2002 GSA Annual Meeting in Denver

The Annual Program Committee is seeking a Hot Topics Chair for the 2002 Annual Meeting in Denver. The Hot Topics Chair arranges for spirited debates or controversial, lively discussions during lunchtimes at the annual meeting.

If you or someone you know is interested in the latest issues facing the geosciences, this is a great opportunity to get involved and help shape the Hot Topics schedule for 2002. If you are interested in serving, or if you know someone you think would be an effective, energetic Hot Topics chair, visit GSA's Web site at www.geosociety.org/meetings/chairnom.htm or contact the **GSA Meetings Department** at (303) 447-2020, ext. 190, for a nomination form. Nominations are due July 15, 2001.

Visit GSA's Web site at

www.geosociety.org/meetings/chairnom.htm

or contact the **GSA Meetings Department** at (303) 447-2020, ext. 190, for a nomination form. Nominations are due July 15, 2001.

GSA Needs Help for Annual Meetings

GSA Apparel—Own Your Own!



Keep warm while in the field or on campus with our cozy pullovers and vests made by Timberline in easy-care, 100% polyester fleece. Available in nine colors.

Perfect when the day calls for business casual attire, our classic long-sleeve denim shirt is a wardrobe must-have. Made of 100% cotton, it just gets softer and softer!

Choose from four colors of short-sleeve polo-style shirts that are great for work, study, or play. Reasonably priced T-shirts are available in black and white.

To view selection, prices, and colors, visit the **Member Services** section of the GSA Web site at www.geosociety.org. Sizes are available from small to extra-extra large; some sizes in certain items are sold out.

You can place your order by contacting **Member Services** at 1-888-443-4472.