

Jeffrey A. Karson

Professor of Geology

*Department of Earth Sciences, 204 Heroy Geology Laboratory
Syracuse University, Syracuse, NY 13244-1070
315-443-7976 (office); 315-443-2672 (Department office)
Jeffrey.Karson@gmail.com*

Academic Degrees

Ph.D. (Geology) State University of New York at Albany, 1977
M.S. (Geology) State University of New York at Albany (SUNYA), 1975
B.S. (Geology) Case Institute of Technology (Case Western Reserve University), 1972

Academic Positions, Affiliations & Awards

Professor, Department of Earth Sciences, Syracuse University, August 2006-present
Department Chair and Jessie Page Heroy Professor, Department of Earth Sciences, Syracuse University, 2007-2013
Professor, Division of Earth & Ocean Sciences, Nicholas School of the Environment & Earth Sciences, Duke University, 1996-2006
Department Chair, Department of Earth & Ocean Sciences, Duke University, 1996-2000
Research Fellow, Danish Lithosphere Center, 1994-2000
Adjunct Research Scientist, Lamont-Doherty Earth Observatory, 1992-2002
Professor, Department of Geology, Duke University, 1992-1996
Associate Professor, Department of Geology, Duke University, 1986-92
Associate Scientist, Department of Geology and Geophysics, Woods Hole Oceanographic Institution, 1984-86
Summer Faculty Fellow, Department of Geology & Planetology, Jet Propulsion Lab, California Institute of Technology, 1984 and 1985
Assistant Scientist, Department of Geology & Geophysics, Woods Hole Oceanographic Institution, 1980-84
Postdoctoral Scholar, Woods Hole Oceanographic Institution, 1979-80
Postdoctoral Fellow, University of Toronto, 1977-79
Research Assistant, Department of Geological Sciences, SUNY at Albany, 1976-77
Teaching Assistant, Department of Geological Sciences, SUNY at Albany, 1972-76

Professional Service

Scientific Community

Reviewer for scientific journals (*Nature, Nature Geoscience, Earth and Planetary Science Letters, Geochemistry, Geophysics and Geosystems, Geosphere, Geology, Tectonophysics*)
National Science Foundation, Ocean Sciences Division, Committee of Visitors proposal review process review panel, June 2015
Reviewer for National Science Foundation proposals (EAR, OCE)
Reviewer for proposals to other institutions (NERC, Keck Foundation, National Geographic Society, Newton Foundation)

Nominator for Distinguished Colleagues for Fellowships in GSA and AGU
Leader and Participant in scientific workshops & special sessions at meetings
Convener and Volume Editor, RIDGE Workshop on Magmatism and Faulting
University National Oceanographic Laboratories, Deep Submergence Science
Committee (2004-10)
NOAA Ocean Exploration Review Panel (2012)
NOAA Ocean Exploration *R/V Nautilus* Advisory Board (2009-2017)
Convener, Workshop on Remote Sensing of Ophiolites and the structure of oceanic crust
(1986)

University

Co-sponsor (with VPR Gina Lee Glauser), Fast-Forward, Operational Excellence,
Sponsored Programs Initiative, 2014-16
Syracuse University Recruiting Presentations (Pittsburgh & Cleveland), March 2016
Chief Human Resources Officer Search Committee, 2012
Syracuse University Lecture Series Advisory Board, 2007-15
Syracuse University Advance Program participant and supporter
North Carolina State University, Department of Marine, Earth & Atmospheric Sciences, External
Review Committee, 2006
Union College, Department of Geology, External Review Committee, 2007
Duke University Fulbright Program Reviewer, 2004-06
Duke University Science and Engineering Library Committee, August 2004-06
Duke University Library Council, August 2004-06
Duke University Ad Hoc Committee on Scientific Misconduct, 1999
Nicholas School of the Environment & Earth Sciences Faculty Council, 1996-99
Nicholas School of the Environment/Geology Department Merger Task Force, 1996
Duke University Academic Tenure & Promotions Committee, Co-Chair, 1995-96
Duke University Study Abroad Program Committee, 1988-92

College

Syracuse University, College of Arts & Sciences, Science & Math Council, 2009-13
J.D. Steele Distinguished Chair (Physics Department) Review Committee, 2012
University Lectures Advisory Board, 2009-2014
Chair, Dean's Excellence Initiative Proposal Review Committee, 2011

Department

Chair, Curriculum Committee, 2017-present
Chair, Department of Earth Sciences, Syracuse University, 2007-13
Chair, Division of Earth & Ocean Sciences, NSEES, Duke University, 1996-2000
Successfully nominated 4 colleagues for university-level distinguished teaching and research
awards at Syracuse University
Successful proposals, searches, hires, and start-ups for 9 faculty members (Duke University and
Syracuse University)
Chair of faculty tenure & promotion and 3rd-year review committees
Managed numerous promotion and tenure cases and facilitated faculty retirements

Research Experience

- Field-based studies of faulting and magmatic construction in rift zones and transform faults in oceanic and continental terranes worldwide
- Extensive collaborations with geophysicists, petrologists and geochemists
- Oceanographic research cruises including extensive work with submarines (e.g., *DSRV Alvin*) and remotely operated vehicles; chief scientist on 10 major cruises
- Physical volcanology experiments with natural-scale experimental lava flows
- Use of Unmanned Aircraft Systems (drones) for imaging active and inactive lava flows and fault zones

Funding History by Topic

Major Grants Awarded as Principal Investigator or co-Investigator; does not include cost of ship time or use of submarines or remotely operated vehicles

Iceland

Rift Propagation, Transform Migration, and Microplate Tectonics in Iceland
\$380,025, NSF-OCE, 05/03/12-08/05/17

Structural Control of Hydrothermal flow: A Comparison Between the RIDGE2000 Sites and Iceland Spreading Centers
\$159,411, NSF-OCE, 08/19/09-04/07/09, with D. Curewitz (Syracuse)

Iceland Flexure Zones: Analogs for Mid-Ocean Ridge Spreading Centers
\$310,736, NSF-OCE, 07/29/04-02/11/08, with R. Varga (Pomona)

Ophiolites & Related Terranes

Tectonic, Magmatic and Hydrothermal Evolution of Ocean Floor Spreading at Macquarie Island
\$390,000, Antarctic-Australian Research Expedition (ANARE), 1/1/01-12/33/03, with G. Davidson (U of Tasmania)

Internal Structure of Uppermost Oceanic Crust Exposed on Macquarie Island:
Implications for Seafloor Spreading Processes
\$130,000, Antarctic-Australian Research Expedition (ANARE), 10/1/99-9/30/00

Remote Sensing Study of a Precambrian Suture Zone in Morocco
\$4,800, Duke University Research Council, 7/1/89-6/30/90

Structural Evolution of the Bou Azzer Ophiolite Complex, Morocco
\$1,185, Duke University Research Council, 7/1/87-6/30/88

Geological, Petrological, and Geochemical Study of the Ophiolitic Rocks of the Bay of Islands Region of Western Newfoundland
\$109,000, NSF-EAR, 4/1/81-3/31/83, with J. Casey and D. Elthon (U of Houston)

Structural and Petrofabric Studies of the Ultramafic/Gabbro Transition Zone in the Bay of Islands Ophiolite Complex, Western Newfoundland
\$37,674, NSF-EAR, 5/1/74-5/30/76, with J.F. Dewey (SUNYA, advisor)

Rifts & Rifted Margins

Geometry and Kinematics of Faulting and Dike Intrusion in the Tertiary East Greenland Rifted Margin
\$119,307, NSF-EAR, 6/1/95-5/31/97 (field program funded separately by the Danish Lithosphere Center- \$2M)

Detailed Study of Deltaic Facies in East African Rift Lakes
\$30,000, SEPRO (A Group of 6 Oil Co. Sponsors), 4/1/91-3/31/93
(Structure and tectonics portion of much larger grant) with T. Johnson and C. Scholz (Duke)

Upper Crustal Extension in the Turkana Rift: 3-D Geometry and Kinematics of Small-Magnitude Extension in East Africa
\$109,969, NSF-EAR, 3/1/90-8/31/92

Tectonic Study of the Rukwa-Malawi Rift, East African Rift System
\$11,650, National Geographic Society, 4/1/86-3/31/87

Geologic Transect of the Southern Turkana Rift, East African Rift System
\$4900, Duke University Research Council, 7/1/86-6/30/87

Marine Geology & Geophysics

Collaborative Research: Alvin and Sentry investigation of the internal structure of abyssal hills on the edge of the Juan de Fuca plate, \$430,785, NSF-OCE, 6/1/18-5/31/20, with N. Hayman (UTIG) and A.J. Horst (Oberlin) (pending)

Structure and Composition of Superfast Crustal Structure Exposed at Pito Deep,
\$610,132, NSF-OCE, 1/1/03-12/31/05, with E. Klein (Duke), R. Hey (U of HI), D. Naar (USF), and J. Gee (SIO)

Investigation of a new class of hydrothermal systems: The Lost City Hydrothermal Field: A peridotite-hosted, off-axis system at 30°N on the Mid-Atlantic Ridge
\$303,087, NSF- OCE, 4/1/02-3/31/05, with D. Kelley and others (U of WA)

Accomplishment Based Renewal: Geometry and Kinematics of Upper Crustal
Construction at Mid-Ocean Ridges: Supplement for Paleomagnetic Studies of Upper
Crustal Rocks from Hess Deep
\$ 35,000, NSF-OCE, 10/1/01-9/30/02, subcontract to College of Wooster (R. Varga)

Supplement to: Eastern Atlantis Ridge-Transform Intersection High: Oceanic Analog
to a Continental Core Complex?- for interactive cruise web site
\$30,000, NSF- OCE, 10/1/00-9/30/01, with D. Blackman (SIO)

Accomplishment Based Renewal: Geometry and Kinematics of Upper Crustal
Construction at Mid-Ocean Ridges
\$ 350,000, NSF- OCE, 1/1/00-12/31/03

Near-Bottom Geological and Geophysical Investigation of an “Oceanic Core Complex”: Eastern
Atlantis Ridge-Transform Intersection Massif
\$264,505, NSF- OCE, 3/1/99-12/31/02, with D. Blackman (SIO) and D. Kelley (U of
WA)

Jason/Medea & Alvin Investigation of the Uppermost Oceanic Crust at Hess Deep
\$ 310,498, NSF-OCE, 9/1/98-8/31/01, with E.M. Klein (Duke) and S.D. Hurst (U of IL)

Laser Surface Mapping System for Quantitative Orientation and Morphologic Data
from *Alvin* and ROVs
\$217,336, NSF- OCE, RIDGE, and ODP, 6/1/98-5/31/99

Continuation of Digital Processing and Geological Interpretation of Sonar Images from Major
Submarine Scarps: Blanco Trough and Kane Fracture Zone
\$86,848, NSF-ODP, 6/1/94-5/31/96, with J. Delaney (U of WA) and F. Spiess (SIO)

Structural Evolution of Lower Crustal and Upper Mantle Rocks Exposed on the Median Valley
Walls of the MARK Area
\$20,249, JOI/USSSP, 4/1/94-3/31/95

Drilling in the Western Wall of the MARK Area: ODP Leg 153 (co-chief scientist)
\$42,800, Ocean Drilling Program, 1/1/93-10/31/96

Correlation of Geologic and Seismic Structures in the Southern MARK Area: Surface
Manifestations of Active Normal Faulting on the Mid-Atlantic Ridge
\$297,350, NSF-OCE, 3/1/93-12/31/96

Crack Structure of Seafloor Outcrops Based on Analysis of Digital Images
\$66,773, ONR, 1/1/92-9/30/93
with S.D. Hurst (Duke)

Rock Magnetic Properties and Paleomagnetism of Upper Crustal Sections of the East Pacific
Rise at Hess Deep

- \$18,360, NSF-OCE, 7/1/91-6/31/92
(nominal P.I. for postdoctoral investigator S.D. Hurst)
- Variations in Tectonic Extension Along Slow-Spreading Ridge Axes
\$20,500, ONR, 10/1/89-12/31/91
- A New Approach to the Study of Episodic Accretion on the Mid-Atlantic Ridge: Interpretation & Sampling of Crustal Sections at the Kane Transform Based on a Complete Outcrop Map
\$92,673, NSF-OCE, 7/1/90-12/31/92, with J. Delaney (U of WA) and F. Speiss (SIO)
- Structural Study of Fast-Spread Oceanic Crust Exposed in the Walls of Hess Deep
\$93,643, NSF-OCE, 1/1/90-7/31/91, with P. Lonsdale and J. Natland (SIO)
- Site Survey of Potential Drill Sites at the Kane Fracture Zone and Adjoining Ridge Segment
\$9,330, JOI, Inc. (SC from URI), 3/1/86-6/31/86
- An Investigation of the Seismic Variability of the Oceanic Moho
\$99,830, NSF-OCE (funded in full but returned due to departure of P.I's from submitting institution), with T Brocher (WHOI)
- Combined Petrological, Geochemical, and Structural Study of the Mid-Atlantic Ridge 23-24°N Latitude Using ALVIN and ANGUS
\$92,853, NSF-OCE, 2/15/86-7/31/88
- Submersible Investigation of the Clipperton Transform: Tectonic Manifestations of a Fast-Slipping Plate Boundary
\$91,937, NSF-OCE (SC from URI), 1/1/85-12/31/86, with P.J. Fox (URI) & K. Macdonald (UCSB)
- Site Survey of Potential Drill Sites In and Near the Kane Fracture Zone
\$42,206, JOI. Inc., 8/1/84-6/30/86
- Deformation Microstructures in Mafic Rocks from the Oceanic Crust
\$86,589, NSF-OCE, 1/1/83-12/31/84
- A Cooperative Investigation of Hydrothermal and Geological Processes at the TAG Hydrothermal Field, Mid-Atlantic Ridge 26°N
\$81,002, NSF-OCE, 3/15/82-2/28/84, with W. Bryan, G. Thompson & M. Mottl (WHOI)
- Seismic Reflection Profiling with a Deep-Towed Vertical Hydrophone Array
\$52,492, NSF-Ocean Sciences, 1/1/81-12/31/82, with T. Brocher (WHOI)
- Petrogenesis and Geochemical Evolution of Deep Oceanic Crust
\$144,948, NSF-OCE, 2/1/81-1/3/82

Manned Submersible and Photographic Investigation of Deep Crustal Stratigraphy and Structure in the Kane Fracture Zone, Mid-Atlantic Ridge at 24°N
\$190,290, NSF-OCE, 3/1/80-2/22/81, with W. Bryan and G. Thompson (WHOI)

The Oceanographer Transform Fault (35°N, 35°W): The Structure and Dynamics of a Transform and Adjacent Ridge Axis
\$146,202, ONR, (subcontract from LDGO/SUNYA), 1/1/80-12/31/83, with P.J. Fox (SUNYA)

Lava Project & Education

Analog lava flows for scientific and artistic displays
\$10,000, The Center for Craft, Creativity & Design, with Robert Wysocki (SU Sculpture Program), 3/17-6/18

Lava Flow Demonstrations for SU Undergraduate Classes
\$3000, Co-curricular Funds, CAS Dean's Office, 10/16-5/17

Environmental Monitoring and Geoscience Surveying Applications for sUAS at Syracuse University
\$35,322, NY Upstate Revitalization Initiative and SU Office of Research, 11/16-4/17 with faculty from The College of Arts & Sciences, LC Smith School of Engineering, and the Maxwell School of Citizenship & Public Affairs

Lava Flow Demonstrations for SU Undergraduate Classes
\$4000, Co-curricular and i-Learn Funds, CAS Dean's Office, 10/15-5/16

Constraining Processes in Natural and Experimental Lava Flows
\$44,000, Keck Geology Consortium, 6/12/15-6/11/16

Lava Flow Demonstrations for SU Undergraduate Classes
\$3000, Co-curricular and i-Learn Funds, CAS Dean's Office, 10/14-5/15

RAPID Investigation of Active Fissure Eruptions, Holuhraun, Iceland
\$16,506. NSF-EAR, Petrology & Geochemistry, 11/03/14-11/02/15

Calibrating Natural Basaltic Lava Flows with Large-Scale Lava Experiments
\$44,000, Keck Geology Consortium, 6/15/14-6/14/15

Lava Flow Demonstrations for SU Undergraduate Classes
\$3000, Co-curricular and i-Learn Funds, CAS Dean's Office, 10/13-5/14

The Syracuse University Lava Project: Going to the Next Level in Science, Art, Education & Outreach
\$150,000 (infrastructure and program support), May 2013, with Robert Wysocki (Syracuse University Sculpture Program)

Lava Flow Demonstrations for Undergraduate Earth Science Classes
\$2000, Co-curricular Funds, CAS Dean's Office, 9/112-5/13

The Syracuse University Lava Project (initial funding)
\$20,000, Syracuse University Central Administration (multiple sources), June
2010, with Robert Wysocki (Syracuse University Sculpture Program)

Extending the Scope of Geological Field Trips with Computers
\$89,600, FIPSE (Fund for the Improvement of Post-Secondary Education) 8/1/91-7/31/93,
with S.D. Hurst and R.D. Perkins (Duke)

Graduate & Postdoctoral Research Supervision

M.S. Theses Supervised

Duke University

- Istvan Barany**, 1987. Basaltic Breccias of the Clipperton Fracture Zone: Sedimentation and Tectonics in a Fast-Slipping Oceanic Transform
- Jennifer R. Brown**, 1987. Variations in Volcanic Processes along the Median Valley of the Mid-Atlantic Ridge 22°50'N to 23°40'N
- Alec T. Winters**, 1988. Extensional Faulting in the MARK Area
- Walter H. Wheeler IV**, 1989. Livingstone Mountains Border Fault System, Lake Nyasa (Malawi), East Africa: A Case Study of an Oblique-Slip Rift Basin Border Fault from Onshore and Subsurface Perspectives (with B.R. Rosendahl)
- Wendy J. Graber**, 1991. Geology of a Late Proterozoic Intra-Arc Basin, Kelaa des Mgouna Inlier, Anti-Atlas, Morocco
- Sarah E. Bigger**, 1993. Tectonics of the Eastern Third of the Kane Transform Fault, Mid-Atlantic Ridge, 23°38'N Latitude: An Up/Down-Looking Sonar Perspective
- Tyler Clark**, 1998. Structure and Stratigraphy of the Deep River Basin, NC: Border Faults and Accommodation Zones (with P.E. Malin)
- Sarah Tougas**, 1998. Structural Analysis of East Pacific Rise Crust Exposed in the Hess Deep Rift: Constraints on Crustal Accretion at Fast-Spreading Ridges
- Carrie Lee**, 2002. The Internal Structure of the Sheeted Dike Complex at the Hess Deep Rift : Implications for Spreading Processes Beneath the Fast-Spreading East Pacific Rise
- Peter Rivizzigno**, 2002. The Major Lake Fault Zone: An Oblique Spreading Structure Exposed in the Macquarie Island Ophiolite, Southern Ocean
- Melissa Cardwell Dowland**, 2003. Structural Evolution of the Blönduós Flexure Zone, Northern Iceland
- Lindsay Morgan Chutas**, 2007. Structures in Upper Oceanic Crust: Perspectives from Pito Deep and Iceland

Syracuse University

- Aleece F. Nanfито**, 2011. Rift-Parallel, Strike-Slip Faulting in Iceland: Kinematic Analysis of the Gljufurá Fault Zone
- Matthew T. Kissane**, 2012. Investigations into Lava Flow Morphology, Using Field-Scale Basalt Flows
- Keegan T. Runnals**, 2015. Multiple Generations of Faulting: A Kinematic Analysis of the Lagerfljót Region, Northeast Iceland
- James A. Proett**, 2015. Enigmatic Rift-Parallel, Strike-Slip Faults Around Eyjafjörður, Northern Iceland

Ph.D. Dissertations Supervised

Duke University

- Kevin P. Hefferan**, 1992. Oblique Collision and Syn-Orogenic Basin Development in a Pan-African Suture Zone, Anti-Atlas Mountains, Morocco
- Nico R. Mliga**, 1994. Depositional Environments, Stratigraphy and Hydrocarbon Potential of the Rukwa Rift Basin, Southwest Tanzania
- Walter H. Wheeler IV**, 1994. Structural Studies of Transform Fault Tectonics and Rift Basin Formation Along the Western Branch of the East African Rift System
- Dengliang Gao**, 1997. Seafloor Geology at the Eastern Intersection of the Mid-Atlantic Ridge and the Kane Transform (23°40'N): A New Perspective from Side-Scan Sonar Image Analysis
- Róisín M. Lawrence**, 1998. Paleomagnetic Studies of the Geometry and Kinematics of Faulting at the Slow-Spreading Mid-Atlantic Ridge (MARK Area)
- Daniel Curewitz**, 1999. Investigations of Faulting, Magmatism, and Hydrothermal Activity in Extensional Environments
- Elizabeth A. Williams**, 2004. The Structural History of the Atlantis Massif, an Oceanic Core Complex at 30°N on the Mid-Atlantic Ridge

Syracuse University

- Drew L. Siler**, 2011. Structure and Kinematics of Segment-Scale Crustal Accretion Processes in Iceland and Implications for Analogous Mid-Ocean Ridge Systems
- Andrew J. Horst**, 2013. Structure and Accretion at Mid-Ocean Ridges with High Magma Supply: Perspectives from Seafloor Escarpments and Iceland
- Christopher J. Sant**, current. Dynamics and Morphology of Large-Scale Experimental Lava Flows
- James A. Farrell**, current. Kinematics of Regional Strike-Slip Faulting in Iceland: Implications for Spreading at Mid-Ocean Ridges and Rifted Margins

Member of many M.S. thesis and Ph.D. dissertation committees at Duke and Syracuse Universities as well as in the following institutions: Université Cadi Ayyad, Marrakech Morocco (6 M.S., 3 Ph.D.), Woods Hole-MIT Joint Program (5 Ph.D.), Danish Lithosphere Center (2 Ph.D.), Université Paris VI (1 Ph.D.), University of Washington (1 Ph.D.), University of North Carolina-Chapel Hill (1 Ph.D.); University of Natal (1 M.S.); University of Iceland (1 Ph.D.).

Postdoctoral Investigators Supervised

Duke University

Stephen D. Hurst (Senior Research Programmer, University of Illinois) Duke University, 1995-2002, Supported by grants from NSF, ODP, ONR
Digital field trips, digital image analysis, HD expedition

Nicolas W. Hayman, (Research Scientist, University of Texas, Institute for Geophysics) Duke University, 2003-2007)

Syracuse University

Daniel Curewitz (Lecturer, Syracuse University) Syracuse University, 2008-2011,
Supported by NSF grants, structural controls on hydrothermal systems in Iceland and the mid-ocean ridge system

Aisha R. Morris (AAAS Congressional Fellow; Director RESSES, UNAVCO), Syracuse University, 2009-2011, supported by Alliance for Graduate Education and the Professoriate Postdoctoral Fellowship, volcanic processes on Earth and Mars

Online Resources

Lupima, L. and D. Sollosi, Homemade Lava Flows Fuse Science with Art on Video, *Eos* 98, Published on 29 June 2017.

<https://eos.org/articles/homemade-lava-flows-fuse-science-with-art-on-video>

Karson, J.A., D.J. Fornari, D.S. Kelley, M.J. Perfit, and T.M. Shank, *Discovering the Deep: A Photographic Atlas of the Seafloor and Oceanic Crust*, Cambridge University Press (electronic version, slide shows and video clips):

<http://www.cambridge.org/us/academic/subjects/earth-and-environmental-science/oceanography-and-marine-science/discovering-deep-photographic-atlas-seafloor-and-ocean-crust?format=HB>

Orange is the new black (lava): The Syracuse University Lava Project, AGU Volcanology, Petrology & Geochemistry Division Website, Spotlight on Research, 11/14-present: <http://vgp.agu.org/orange-is-the-new-black-lava/>

MOOC: *The Subject is Lava* (launched 4/14): <http://syracuseU.coursesites.com>.

Syracuse University Lava Project: <http://lavaproject.syr.edu>

This website and associated Vimeo videos are used widely in classes ranging from introductory geology to petrology and volcanology worldwide. It has attracted **>300 MILLION VISITS AND DOWNLOADS** in the past 3 years.

Syracuse University Faculty Website: <http://asfaculty.syr.edu/pages/ear/karson-jeff.html>

Pito Deep Cruise 2005: <http://www.nicholas.duke.edu/pitodeep/index.html>

Lost City Cruise 2003: <http://www.lostcity.washington.edu>

Lost City NOAA Exploration: <http://oceanexplorer.noaa.gov/explorations/05lostcity>

Hess Deep Expedition: <http://www.nicholas.duke.edu/hessdeep/hessdeep.html>

Macquarie Island: <http://www.aad.gov.au/stations/macca>

Publications

Books and Edited Volumes

Karson, J.A., D.J. Fornari, D.S. Kelley, M.J. Perfit, and T.M. Shank, *Discovering the Deep: A Photographic Atlas of the Seafloor and Oceanic Crust*, Cambridge University Press, 2015.

Winner of the 2016 *Prose Award for Earth Sciences*, this book is a major compilation of new images (and interpretations) of outcrops of oceanic basement rocks obtained from submersible craft and remotely operated vehicles. The first of its kind, this book documents and illustrates the current state of knowledge of the oceanic crust and serves as an authoritative educational resource both (electronically and in print) for the next generation of marine scientists.

www.cambridge.org/discoveringthedeep

Buck, W.R., P.T. Delaney, J.A. Karson, and Y. Lagabriele, *Faulting and Magmatism at Mid-Ocean Ridges*, 348 pp., American Geophysical Union, Geophysical Monograph 106, 1998.

Collectively, the 12 review papers in this volume constitute one of the first comprehensive overviews of a new generation of investigations of mid-ocean ridge spreading centers and oceanic crust.

Karson, J.A., M. Cannat, D.J. Miller, and D. Elthon, D., eds., *Proceedings of the Ocean Drilling Program, Scientific Results, 153*, 577 pp., Ocean Drilling Program, College Station, TX, 1997.

This edited volume contains 25 peer-reviewed articles and 7 data reports on post-cruise investigations of several drill cores into the oceanic crust during a major oceanographic research cruise on the Mid-Atlantic Ridge.

Cannat, M., J.A. Karson, D.J. Miller, et al., eds., *Proceedings of the Ocean Drilling Program, Initial Reports, 153*, 798 pp., Ocean Drilling Program, College Station, TX, 1995.

This volume records the primary data collected on drill cores by shipboard scientists during a 2-month long drilling cruise on the Mid-Atlantic Ridge.

Refereed Publications by Topic
(complete listing)

Marine Geology & Geophysics

2010-present

- Szitkar, F., Tivey, M.A., Kelley, D.S., Karson, J.A., Früh-Green, G.L., and Denny, A., Magnetic exploration of a low-temperature ultramafic-hosted hydrothermal site (Lost City, 30°N, MAR), *Earth Planet. Sci. Lett.*, 461, 40-45, 2017.
- Worman, S.L., Pratson, L.F., Karson, J.A. and Klein, E.M., Global rate and distribution of H₂ gas produced by serpentinization within oceanic lithosphere, *Geophys. Res. Lett.*, 43, 12, 6435-6443, doi:10.1002/2016GL06906612, 2016.
- Horst, A. J., R. J. Varga, J. S. Gee, J. A. Karson, Diverse magma flow directions during construction of sheeted dike complexes at fast- to superfast-spreading centers, *Earth Planet Sci. Let.*, 408, 119-131, 2014.
- Karson, J.A., K.L.C. Bell, A.F. Nanfito, D. Joyce, M. Cunha, J. Cristobo and E. Manhon, In search of serpentinization on Gorrington Bank, in Bell, K.L.C., K. Elliot, C. Martinez and S.A. Fuller, eds., New Frontiers in Ocean Exploration: The *E/V Nautilus* and NOAA Ship *Okeanos Explorer* 2011 Field Season, *Oceanography*, 25 (1), supplement, 38-39, 2012.
- Horst, A.J., R.J. Varga, J. Gee and J. Karson, Paleomagnetic constraints on constructional deformation of superfast-spread oceanic crust exposed at Pito Deep Rift, *J. Geophys. Res.*, 116, B12103, doi:10.1029/2011JB008268, 2011.
- Christeson, G.L., J.A. Karson, and K.D. McIntosh, Mapping of seismic layer 2A/2B boundary above the sheeted dike unit at intermediate-spreading crust exposed near the Blanco Transform, *Geochemistry, Geophysics, Geosystems (G-Cubed)*, 11, Q03015, doi: 10.1029/2009GC002864, 2010.

2000-2009

- Hayman, N.W. and J.A. Karson, Faulting and hydrothermal alteration in superfast spread crust of the East Pacific Rise exposed at Pito Deep, *G-cubed* 10, Q02013, doi:10.1029/2008GC002319, 2009.
- Pollock, M.A., E.M. Klein, J.A. Karson and D.S. Coleman, Compositions of dikes and lavas from the Pito Deep Rift: Implications for accretion at superfast spreading centers, *Journal of Geophysical Research* 114, B03207, doi:10.1029/2007JB005436, 2009.
- Heft K., K.M. Gillis, M.A. Pollock, J.A. Karson, E.M. Klein, Constraints on the nature of axial

hydrothermal systems from the sheeted dike complex exposed at Pito Deep, *G-Cubed 9* (5), Q05007, doi:10.1029/2007GC001926, 2008.

Varga, R.G., A. Horst, J.S. Gee and J.A. Karson, Direct evidence from anisotropy of magnetic susceptibility for lateral melt migration a superfast spreading centers, *G-Cubed 9* (8), Q08008, doi:10.1029/2008GC002075, 2008.

Christeson, G.L., K.D. McIntosh and J.A. Karson, Inconsistent correlation of seismic layer 2a and lava layer thickness in oceanic crust, *Nature 445*, doi:10.1038/nature05517, 2007.

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