EAR TO THE GROUND

The Division of Earth Science (EAR) is part of the Directorate for Geosciences (GEO) at the Natiional Science Foundation (NSF).

NSF 16-045

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IN THIS ISSUE

UPDATE FROM THE DIVISION DIRECTOR

As you know, funds for NSF awards come from American taxpayers. Our elected officials want to be sure the money is put to good purpose. The public wants to know what we discover and why it is important. There has never been a more pressing time for Earth scientists to communicate their work to a broad audience.

I'd like to ask all of you to help us to get the word out about the excellent science that you do, using the following strategies:

- Talk about your work to all kinds of audiences. Your engaging presentations increase public awareness about your science and the role of NSF funding. Take the opportunity to engage community groups, schools, and community leaders. Do it everywhere you can.

UPDATE FROM THE DIVISION DIRECTOR

- Let your NSF Program Officer know about your discoveries enabled by your NSF funding – we can spread the news through our communication outlets (Twitter, Facebook, impact statement for Congress, etc.).
- Have your university issue press releases about interesting discoveries and advances. Be sure to acknowledge NSF funding prominently near the top of the release.
- Make the message short and concise. Describe the impact of your work at the start the message. Consider the "so what?" and why should people care. You might frame the value of your research around one or more of NSF's three key points in our agency-wide communications strategy:
    - NSF-supported research is a primary driver of the U.S. economy;
    - NSF-supported research enhances our nation's security; and
    - NSF-funded discoveries help give the U.S. a competitive edge, both by advancing the frontiers of science and by training the next generation of scientists.

Such efforts are invaluable in communicating the value of the research you do with NSF support. An informed and knowledgeable public is more likely to support continued investments in basic science and discovery, which is good news for all of us.

AGU AWARDEES

Sonia Esperança and Robin Reichlin receiving the Edward A. Flinn III Award from AGU Executive Director Christine McEntee.

Edward A. Flinn III Award Winners

Sonia Esperança and Robin Reichlin received the 2015 Edward A. Flinn III Award at the AGU Fall Meeting Honors Ceremony, held on 16 December 2015 in San Francisco, California. The award honors "an individual or small group who personifies the Union's motto 'unselfish cooperation in research' through their facilitating, coordinating, and implementing activities."

CITATION

As program directors at the National Science Foundation (NSF) in the Division of Earth Sciences for the last 20 years, Robin Reichlin and Sonia Esperança have played an exceptionally important role in advocating for, nurturing, and supporting the research community in solid Earth sciences, through combined efforts in their respective fields of specialty (geophysics and geochemistry and petrology). They have achieved an unprecedented level of respect and admiration, as well as confidence and trust, from a highly discerning and typically critical research community.

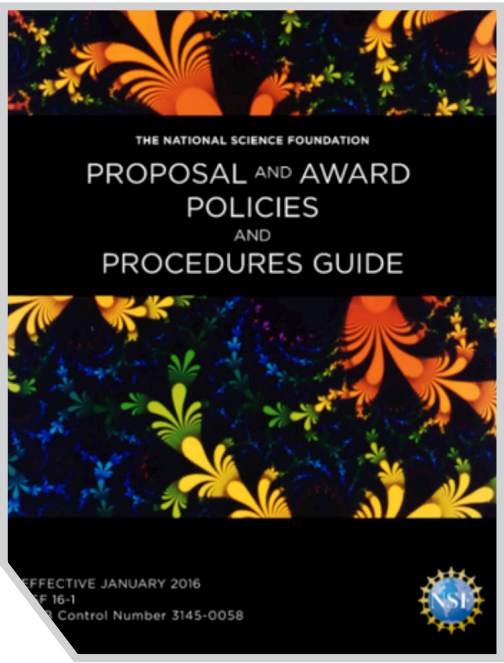
By carrying out their responsibilities as program directors with outstanding dedication, they have provided leadership for geochemistry and geophysics, exercising deep understanding of research quality and frontiers. Moreover, working as a team, Robin and Sonia have been instrumental in the development of key multidisciplinary infrastructure for geosciences that has changed the way in which we conduct our research. They have looked for ways to make new programs happen in the context of planning within NSF, often within a restricted fiscal climate, and have promoted workshops and meetings to refine the goals to make the cases convincing. In many situations, they have identified new research opportunities and laid the groundwork for new programs even before most of the research community was fully aware of them.

Examples of programs they have helped happen and sustain, among others, are Cooperative Studies of Earth's Deep Interior (CSEDI), Cooperative Institute for Dynamic Earth Research (CIDER), Computational Infrastructure in Geodynamics (CIG), Consortium for Materials Properties Research in Earth Sciences (COMPRES), and Meeting of Young Researchers in Earth Sciences (MYRES). Notably, they have played an important role in establishing the Frontiers in Earth System Dynamics program (FESD). The stewardship of these important programs and their many other community activities have benefitted a large segment of the Earth science community. Clearly, many individuals at NSF and in the community have helped all these programs come to life and be sustained. However, Robin and Sonia's contributions stand out for their exceptional ability to communicate with the community and help researchers articulate their needs, as well as identify the highest and scientifically most worthy initiatives, embrace them, and advocate for them at NSF.

In summary, Robin and Sonia have sustained excellence in NSF's geoscience programs and tirelessly advocated on behalf of the Earth sciences research community to develop new programs and open up new research opportunities. The Flinn Award is a fully deserved and modest recognition of their contributions.

—Barbara Romanowicz, University of California, Berkeley

REVISED NSF PROPOSAL & AWARD POLICIES & PROCEDURES GUIDE (PAPPG)



Any proposal submitted, or due, on or after January 25, 2016 should be submitted in accordance with the revised PAPPG, NSF 16-1 (which replaced NSF 15-1).

Part I, the NSF Grant Proposal Guide (GPG), contains NSF's proposal preparation and submission guidelines and is a must read before preparing your proposal.

Significant changes to the PAPPG include:

- Enforcement of 5 p.m. submitter's local time across all NSF funding opportunities;
- Implementation of NSF's Public Access Policy;
- Provision of Collaborators and Other Affiliations information as a new single-copy document, instead of as part of the Biographical Sketch;
- Submission of Biographical Sketches and Current and Pending Support separately for each senior personnel;
- Submission of proposal certifications by the Authorized Organizational Representative (AOR) concurrently with proposal submission;
- Electronic signature and submission of notifications and requests by the AOR only;
- Revision of timeframe for submission of final project reports, project outcomes reports and financial closure of awards to 120 days after the award end date; and
- Numerous clarifications throughout the document.

Make sure that you and your Sponsored Projects Office are familiar with these changes!

US-CHINA CRITICAL ZONE OBSERVATORY (CZO) TRIP

The National Natural Science Foundation of China and NSF jointly convened an international workshop in Guiyang, Guizhou Province, to improve the understanding of Critical Zone Observatory research between the two countries. Earth's Critical Zone, the thin surface layer from the top of the vegetation to the bottom of aquifers that sustains life and humanity, is under intensive pressure from rapid growth in human and livestock populations, changing consumption patterns, land use alterations, and climate change. Critical Zone Observatories established during the past eight years with support by the Division of Earth Sciences (EAR) investigate the complex interaction of rock, soil, water, air, organisms, and human management over broad temporal and spatial scales. The workshop, including two field trips, was attended by 18 U.S. scholars and EAR Division Director, Dr. Carol Frost, EAR Geobiology and Low Temperature Geochemistry program director, Dr. Enriqueta Barrera, and OISE Head of the China Office, Dr. Nancy Sung.

NSF EDUCATION PROGRAMS

NSF Programs for Education and Broadening Participation

The following is a comprehensive list of programs offered at NSF for activities related to education and broadening participation for different academic levels. If you would like to learn more about an individual program, search the solicitation listed next to it. Although some of these programs are offered on a short-time basis, several have been active for many years and the solicitations are renewed periodically. Remember that you can always find a list of recent awards made under a specific program by clicking on the appropriate link at the bottom of each program's page.

For the Public – Informal Ed
- Advancing Informal STEM Learning *(AISL)* – NSF 15-593

Pre-K-12
- Discovery Research PreK-12 *(DRK-12)* – NSF 15-592

K-12 teachers and education at various institutional levels
- Robert Noyce Teacher Scholarship Program – NSF 15-530 – K-12 teachers and students
- NSF Scholarships in Science, Technology, Engineering, and Mathematics Program (S-STEM) – NSF 15-581
- GEO DCL - Research Experiences for Teachers (RET) - NSF 11-052

Undergraduate Level
- Research Experiences for Undergraduates *(REU)* – NSF 13-542
- Research in Undergraduate Institutions *(RUI)* – NSF 14-579 (incl. Research Opportunity Awards)
- Advanced Technological Education – NSF 14-577 – K-12 teachers
- Improving Undergraduate STEM Education: Education and Human Resources (IUSE: EHR) – NSF 15-585
- Improving Undergraduate STEM Education: Pathways into Geoscience (IUSE: GEOPATHS) – NSF 15-526
- Core Research Awards

Graduate Level
- NSF Graduate Research Fellowship Program *(GRFP)* – NSF 15-597 (+ Graduate Research Internship)
- NSF Research Traineeship Program *(NRT)* – NSF 15-542
- Core Research awards

Postdoctoral Level
- EAR postdoctoral fellow program *(EAR-PF)* – NSF 15-568
- Core Research awards

Early-Career
- Faculty Early Development Program *(CAREER)* – NSF 15-555
- Earth Sciences: Instrumentation and Facilities *(EAR-IF)* – NSF 15-516
- Core Research awards

Programs with a focus on broadening participation
- Advance: Increasing the Participation and Advancement of Women in Academic Science and Engineering

Careers (ADVANCE) – NSF 14-573
- Alliances for Graduate Education and the Professoriate *(AGEP)* – NSF 14-505
- Historically Black Colleges and Universities - Undergraduate Program *(HBCU-UP)* – NSF 15-552
- Tribal College and Universities Program *(TCUP)* – NSF 14-572

Partnerships for Geoscience Education (PAGES)
- Louis Stokes Alliances for Minority Participation *(LSAMP)* – NSF 15-594
- Improving Undergraduate STEM Education: Pathways into Geoscience *(IUSE: GEOPATHS)* – NSF 15-526
- GEO Opportunities for Leadership in Diversity *(GOLD)* – NSF 16-516

INSTRUMENTATION AND FACILITIES HIGHLIGHT

New Nanoscience Centers for Earth and Environmental Sciences

By Dr. Michael Hochella, Dr. David Mogk, and Dr. Katharine Maher

The Instrumentation & Facilities Program of the Division of Earth Sciences (EAR/IF), and the Directorate for Engineering at NSF, currently support three of the 16 National Nanotechnology Coordinated Infrastructure (NNCI) sites around the country that have geoscience concentrations. This NNCI network, which officially began in September of 2015, actually grew out of the National Nanotechnology Infrastructure Network (NNIN) that ran for the previous 11 years. Yet, the NNCI network marks the first time that geosciences and environmental science and engineering-related nanoscience and technology have been explicitly supported.

The potential for discovery and innovation within the Earth sciences using nanoscience and technology are enormous, and these Centers are available to assist users in these pursuits. Users working at the local, regional, and global scales, including land, continental, atmospheric, water, and biological components of any subfield within the Earth and environmental sciences and engineering are welcome. This includes enhancing our ability to apply nanoscience and nanotechnology to help solve challenges in far-reaching and critical issues in all of the Earth sciences, including climate change, Critical Zone research, ore deposits, paleoecology, paleontology, fault mechanics, fundamental aspects of mineralogy, geochemistry, petrology, and geophysics research, medical mineralogy and geochemistry, and so on. This goes far beyond analyzing targets at the nanoscale. It is just as importantly about understanding how chemical and physical behavior deviate from bulk behavior at the nanoscale, and how this can be used to understand (in terms of the science) and to innovate (in terms of the technology) processes that can be applied to one or more of these fields.

Indeed, the scientific world is now resolved to the fact that nanoscience is like math; it is fully relevant to all fields of science and technology. And it is making a tremendous difference in our scientific understanding in all fields of science and engineering. It has also accelerated interdisciplinary and even transdisciplinary pursuits. Critical issues in science are rarely "owned" by a single field anymore, and it is nanoscience and technology that are often linking fields together in incredibly productive ways, adding insights and solutions to important problems. Earth, atmospheric, and ocean sciences are primed to develop aggressively in these regards.

The three geo-/enviro-related sites in the NNCI national network of centers includes the Virginia Tech National Center for Earth and Environmental Nanotechnology Infrastructure (www.nce2ni.ictas.vt.edu), the Montana Nanotechnology Infrastructure at Montana State University (website under construction), and NNCI Site @ Stanford (http://nanolabs.stanford.edu). These sites are designed to provide leading edge laboratories and instrumentation to facilitate external scientific and engineering users in academia, government, and companies. A very wide range of state-of-the-art facilities, instrumentation, and expertise in geo- and environmental science and engineering nanoscience and technology are available and at low cost to outside users. Prior knowledge and expertise in nanoscience and technology are not required.

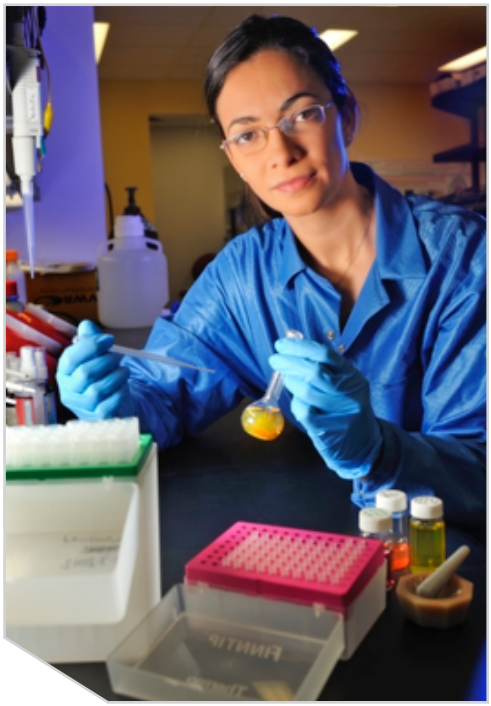
Please visit the websites, and/or send an e-mail directly to:

Michael Hochella (nce2ni@vt.edu**)** - Virginia Tech

David Mogk (mogk@montana.edu) - Montana State

University Kate Maher (kmaher@stanford.edu) - Stanford

Prof. Mitsu Murayama (foreground) and Prof. Bill Reynolds (standing) instruct a post-doctoral user in high resolution TEM techniques at the Virginia Tech center.



Dr. Nina Vance, Deputy Director of the Virginia Tech center, is an expert in nanoparticulate contaminants in both atmospheric and aqueous states.

STAFF NEWS

Uebonda "Denise" McGee attended The University of Phoenix to pursue her degree in Information Technology. She began working with NSF in March of 2008 in The Division of Molecular and Cellular Biosciences (MCB). She is an extrovert who enjoys working for a team-oriented organization that promotes science. As a Program Specialist for GEO/EAR, Denise will bring a wealth of knowledge in proposal processing, customer service, travel, panel support and other activities to enable this Division to meet its responsibilities. In her spare time she enjoys listening to music, reading books, and shopping

Dr. Paul Cutler has moved to the Division of Polar Programs as a Program Director in the Antarctic Sciences section. He spent five years with Earth Sciences, responsible for the Geomorphology and Land-use Dynamics program, and was involved with several other programs as well as serving stints as acting Section Head and Division Director. Paul had this to say - "with a background in glaciology and a love of all things cold, the opportunity to work full time in the U.S. Antarctic Program was one that I could not miss. There are plenty of fascinating surface processes going on down South, and I look forward to seeing familiar names on proposals coming to Polar Programs." He vowed to remain a resource to EAR colleagues as he is still on the same floor of the NSF building.

JOB ANNOUNCEMENTS

A vacancy announcement for a permanent Program Director in EarthScope has recently been released

https://www.usajobs.gov/GetJob/ViewDetails/427827100

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UPCOMING DEADLINES AND TARGET DATES

Innovations at the Nexus of Food, Energy and Water Systems (INFEWS) [N]	(NSF 16-524)	Full Proposal Deadline	March 22, 2016
Genealogy of Life 2016 (Golife)	(NSF 16-522)	Full Proposal Deadline	March 23, 2016
Industry/University Cooperative Research Centers Program (I/UCRC) [N]	(NSF 12-504)	Letter of Intent	May 9, 2016
Geophysics (PH)	(NSF 12-598)	Full Proposal Deadline	June 1, 2016
Innovation Corps Sites Program (I-Corps Sites) [N]	(NSF 14-547)	Full Proposal Target Date	June 14, 2016
Tectonics	(NSF 14-609)	Full Proposal Deadline	June 27, 2016
Petrology and Geochemistry (CH)	(NSF 15-557)	Full Proposal Deadline	July 8, 2016
Industry/University Cooperative Research Centers Program (I/UCRC) [N]	(NSF 16-504)	Full Proposal Deadline	July 11, 2016
GeoPRISMS Program	(NSF 15-564)	Full Proposal Deadline	July 15, 2016
Faculty Early Career Development Program (CAREER) [N]	(NSF 15-555)	Full Proposal Deadline Full Proposal Deadline Full Proposal Deadline	July 20, 2016 July 21, 2016 July 22, 2016
International Research Experiences for Students (IRES) [N]	(NSF 12-551)	Full Proposal Deadline	August 16, 2016
Advancing Digitization of Biodiversity Collections (ADBC)	(NSF 13-576)	Full Proposal Deadline	October 14, 2016
Paleo Perspectives on Climate Change (P2C2)	(NSF 15-576)	Full Proposal Deadline	October 17, 2016
East Asia and Pacific Summer Institutes for U.S. Graduate Students (EAPSI) [N]	(NSF 13-593)	Full Proposal Deadline	November 10, 2016
Integrated Earth Systems (IES)	(NSF 15-600)	Full Proposal Deadline	November 14, 2016
EarthScope	(NSF 15-578)	Full Proposal Deadline	November 15, 2016
Geophysics (PH)	(NSF 12-598)	Full Proposal Deadline	December 7, 2016

UPCOMING DEADLINES AND TARGET DATES

National Science Foundation Research Traineeship (NRT) Program	(NSF 16-503)	Letter of Intent	December 9, 2016
Earth Sciences: Instrumentation and Facilities (EAR/IF)	(NSF 12-516)	Full Proposals Accepted	Accepted Anytime
Experimental Program to Stimulate Competitive Research: Workshop Opportunities (EPS-WO) (EPS-WO) [N]	(NSF 12-588)	Full Proposals Accepted	Accepted Anytime
Facilitating Research at Primarily Undergraduate Institutions (RUI) and Research Opportunity Awards (ROA) [N]	(NSF 14-579)	Full Proposals Accepted Deadlines vary by program; Contact cognizant program officer	Accepted Anytime
Geobiology and Low-Temperature Geochemistry (GG)	(NSF 15-559)	Full Proposals Accepted	Accepted Anytime
Geomorphology and Land-Use Dynamics (GLD)	(NSF 15-560)	Full Proposals Accepted	Accepted Anytime
Hydrologic Sciences (HS)	(NSF 15-558)	Full Proposals Accepted	June 16, 2015
Sedimentary Geology and Paleobiology (SGP)	(NSF 15-561)	Full Proposals Accepted	Anytime
Grant Opportunities for Academic Liaison with Industry (GOALI) [N]	(NSF 12-513)	Supplement Full Proposals Accepted	Accepted Anytime Accepted Anytime
Science of Learning Centers (SLC)[N]	(NSF 15-568)	Full Proposal Deadline	Accepted Anytime
Sedimentary Geology and Paleobiology (SGP)	(NSF 15-561)	Full Proposal Deadline	Accepted Anytime
Software Infrastructure for Sustained Innovation - S2I2 (SI2-S2I2)[C]	(NSF 15-553)	Full Proposal Deadline	Accepted Anytime

Proposal & Award Policies & Procedures Guide (PAPPG), (NSF 15-1) has been issued and became effective on December 26, 2014.

@NSF_EAR : Earth Science news from the Division and beyond
@NSF : News and highlights from all directorates at NSF
@EarthScopeInfo: News, updates, and fun facts from the EarthScope Office
@GeoPRISMS: News and updates from the GeoPRISMS Office

The Division of Earth Sciences
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This newsletter is designed to share information about NSF's Division of Earth Sciences.
If you have comments or questions, please contact David Domanski at DDomanski@nsf.gov

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