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 16-013

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IN THIS ISSUE

Image Credit: USFWS (U.S. Fish and Wildlife Service).

"Islands of Four Mountains" in Alaska's Aleutian Islands of Alaska Fairbanks

UPDATE FROM THE DIVISION DIRECTOR

This past week EAR hosted three different groups of researchers who visited NSF to present program reviews or recommendations. One team reviewed the Global Seismic Network, which provides the major source of data for purposes ranging from earthquake detection to nuclear test monitoring. Another provided a mid-term review of the GeoPRISMS program, a cross-division program co-funded by the Ocean Sciences Division to study subducting and rifted plate margins. The third group provided community recommendations on future geophysical facility needs, a report that will help the division keep infrastructure and facility investments aligned with our evolving science. In these meetings, as in all similar presentations by members of our

UPDATE FROM THE DIVISION DIRECTOR (CONT,)

research community, I was impressed by the excellent thinking, the dedication, and the leadership exhibited by these scientists.

We all understand that NSF needs the scientific community to provide ad hoc reviews and serve on panels. Perhaps less well appreciated is the extent to which input from the community informs NSF of research trends, information that the agency needs in order to revise solicitations and programs in response to changing science needs. EAR serves our community better because of the selfless contributions of scientists like those that visited us last week.

To all of you who've helped us in this way, thank you. And to all who have the opportunity to help us in the future, thanks in advance for pitching in. We rely on you!

Carol Frost

DEAR COLLEAGUE LETTER: PREEVENTS

GEO released a Dear Colleague Letter on September 10th announcing the PREEVENTS (Prediction of and Resilience against Extreme EVENTS) funding opportunity. The goals of PREEVENTS are to (1) enhance understanding of the fundamental processes underlying natural hazards and extreme events on various spatial and temporal scales, as well as the variability inherent in such hazards and events; (2) improve models of natural hazards, extreme events, and their impacts on natural, social, and economic systems; and (3) enable development of new tools to enhance societal preparedness and resilience against such impacts. PIs who are considering a submission pursuant to this Dear Colleague Letter are strongly encouraged to contact the PREEVENTS Management Team (preevents@nsf.gov) and the program officer(s) responsible for the intended target GEO program(s).

See http://www.nsf.gov/pubs/2015/nsf15117/nsf15117.jsp for more information.

BROADER IMPACTS IN THE EARTH SCIENCES DIVISION (EAR) OF THE NATIONAL SCIENCE FOUNDATION (NSF)

The National Science Foundation (NSF) supports transformational science to benefit society. This overarching goal is addressed through NSF's two merit review criteria: intellectual merit and broader impacts. Given that society continually changes, individuals and institutions must continually reconsider, justify, and explain their role in society to remain relevant and competitive. Society does not accept the authority of science de facto. To gain influence on social issues and events, charismatic practitioners of science, and institutional support, are a must. This is the raison d'être of the NSF broader impacts.

The challenge of articulating compelling broader impacts in NSF proposals is not new. However, persuasive broader impacts are increasingly important both for science at large and for obtaining NSF funding in the current environment of intense competition. Given the nature of federally funded basic science, some projects will, perhaps unexpectedly, benefit society through the research itself. Some will need to integrate planned activities designed to achieve specific, desired societal outcomes. In the aggregate, these societally relevant advances and desired outcomes bolster the public's trust of science.

This article presents a high-level, portfolio analysis to help Earth Scientists conceptualize some of the multifaceted aspects of NSF broader impacts. The analysis is exploratory and does not provide focused conclusions. Rather, the intention is to stimulate thought within the research community on what the priorities should be for advancing the authority and influence of Earth Science in society.

A broad group of people in the Division of Earth Sciences (EAR) contributed to an effort to examine the many types of broader impacts carried out by the Earth Sciences community. They examined broader impacts in proposals using key words and phrases (Table 1). They used word clouds to visualize this information at the Division (Figure 1) and Program (Figure 2) levels. It is clear from this analysis which types of activities dominate the EAR broader impacts portfolio (Figure 1A). One question to consider is whether more diversification of broader impacts activities could reduce the risk of the Earth Sciences being perceived as weaker than other sciences or even irrelevant as society changes. A potential future scenario for EAR with more diversification is depicted in Figure 1B. In this scenario, EAR resources would support a more balanced portfolio of broader impacts activities across the Division.

All of the broader impacts activities reflected in the word clouds are arguably important. However, it is not EAR's intention that they should all be contained within a single project. Indeed, proposals mentioning larger numbers of these terms had lower success rates, potentially reflecting their less focused plan. From 2007-2012 in EAR, for example, 92% of declines vs. 76% of awards mentioned at least one of the key words or phrases describing the "advance discovery and understanding while promoting teaching, training, and learning" category; 55% of declines vs. 41% of awards mentioned the "broaden participation of underrepresented groups" category; 93% of declines vs. 77% of awards mentioned the "enhance infrastructure for research and education" category; 71% of declines vs. 56% of awards mentioned the "broad dissemination to enhance scientific and technological understanding" category; and 51% of declines vs. 39% of awards mentioned the "benefits to society" category.

Relative to other categories, the "broaden participation of underrepresented groups" category received less than half as much emphasis in final reports as in awards, based on term abundances (Figure 3). Such a large difference may imply that the proposed activity was implemented, but was not included in the final report (either mentioned in an earlier report or not reported at all), or that the broader impacts activity was not implemented. At the Directorate level, the percentage of awards from 2007-2012 that mentioned the "broaden participation of underrepresented groups" category was lower in the Geosciences Directorate (37%) than in the other 7 research directorates at the NSF (range 50% - 71%). This is not a statistic that would help the Geosciences stand out favorably with society.

Broadening participation of underrepresented groups is fundamental to the NSF mission. To maintain public trust, broadening participation needs to be implemented and reported on in a spirit consistent with the proposed activities. If in the majority of cases it is not, that is a problem that warrants careful attention. A final question to consider is whether the low representation of minorities among Earth Science faculty diminishes the authority of Earth Science and its influence. Does it limit the potential to attract top talent into the Earth Sciences from large sectors of the United States population?

Broader Impacts Category	Example key Words and Phrases
Advance discovery and understanding while promoting teaching, training, and learning	• Graduate Student (61%) • Postdoc (40%) • K-16 (0.7%) • Student Assessment (0.3%)
Broaden participation of underrepresented groups	• Minority (20%) • Female (18%) • Native Hawaiian (0.3%) • TCU (0.6%)
Enhance infrastructure for research and education	• Collaboration (57%) • International (42%) • Multi-user Facility (3.3%) • Education Platform (0.1%)
Broad dissemination to enhance scientific and technological understanding	• Database (29%) • Museum (15%) • Diverse Media (0.1%) • Radio Show (0.1%)
Benefits to society	• Hazards (25%) • Economy (20%) • Policy Tool (0.1%) • Public Participation (0.1%)

Table 1. Broader impacts categories with example key words and phrases. In the actual analysis, 100 key words and phrases were used to depict the range of broader impacts in the Earth Sciences (EAR) portfolio. The percentage of awards in EAR from 2007-2012 that mention each key word or phrase is shown.

Figure 1.
Broader impacts in the National Science Foundation's Earth Sciences Division showing: (A) the historical broader impacts portfolio represented by the raw abundance of terms in the project description of awards submitted from 2007-2012, and (B) a hypothetical future portfolio showing greater diversification of activities represented by the common logarithm of the raw abundances.

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ACKNOWLEDGMENT OF NSF SUPPORT (AAG CHAPTER VI.E.4)

Throughout the year, NSF Program Officers have an opportunity to make their way to various conferences and annual meetings to meet our investigators and hear the latest outcomes in our fields of research. It is at these times that we become aware that some posters or presentations based on awards funded by NSF do not acknowledge that support. Many investigators (and their students) may not be familiar with their grantee obligations, as described in the NSF Award and Administration Guide (AAG). The AAG is the document that contains the guidance on administration of awards made by NSF and provides critical content regarding the rights and responsibilities associated with receiving an NSF award. According to the AAG, acknowledgement of NSF support is expected for any publication (including Web pages) resulting from NSF awards. NSF support must also be acknowledged orally, in interviews to the media such, as radio, television and news magazines. The AAG suggests language to be used in acknowledging support and providing a disclaimer to indicate that the findings are the sole responsibility of the investigators. The NSF logo may be used in disseminating these results and several images can be downloaded from the website provided below. We also remind everyone that costs of communicating with the public and press to announce the results and accomplishments of an NSF supported project are allowed expenses in a grant.

Once a publication is released, grantees are responsible for assuring that the cognizant NSF Program Officer has access to an electronic copy of the paper labeled with the award number and any other appropriate identification of where it was published. NSF Program Officers have great interest in reading these papers and documenting outcomes from their program to other stakeholders internally and externally. The next issue of the AAG, to be release in January 2016, contains additional requirements regarding making results of NSF funded research broadly available to the public for any awards made under the new guide. We strongly urge our community to peruse the following sites for more detailed information on these items.

Award and Administration Guide (AAG):

http://www.nsf.gov/pubs/policydocs/pappguide/nsf15001/aag_print.pdf

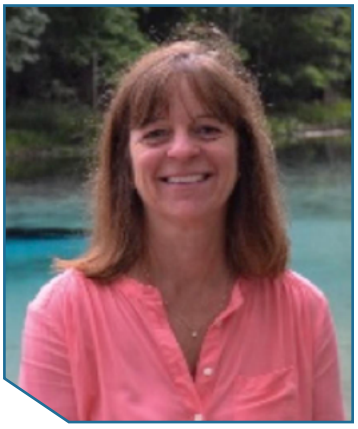
Use of the NSF Logo: https://www.nsf.gov/policies/logos.jsp

Public Access to Results of NSF funded research:
http://www.nsf.gov/news/special_reports/public_access/

Sonia Esperanca, Program Director, EAR – Petrology and Geochemistry, sesperan@nsf.gov

STAFF NEWS — EAR WELCOMES

Dr. Thomas Burbey joined Hydrologic Sciences this past summer as a Program Officer. He is an Associate Professor at Virginia Tech in physical hydrogeology with expertise in regional aquifer system analysis, and regional groundwater flow modeling. His research efforts pertains largely with the use of stress-strain signals for characterizing aquifer properties and deep reservoirs used for CO2 sequestration. Dr. Burbey's expertise lies in three-dimensional aquifer deformation and flow modeling by incorporating InSAR (synthetic aperture radar) and GPS techniques for quantifying land subsidence (vertical and horizontal) and its relation to aquifer storage and hydraulic conductivity at the local and regional scales. He also has done extensive work on characterizing aquifers in fractured-rock environments including the use of barometric loading and earth tides for fracture characterization and more broadly on how geologic structure can lead to compartmentalization of fractured rock systems. Fault characterization using deformation signals in 3D is also a newer approach that is being used to better understand fault mechanics. Dr. Burbey has also developed management models with the aim of predicting effects of various water-use scenarios.



Dr. Wendy Graham joined Hydrologic Sciences this past summer as a Program Officer. She is the Carl S. Swisher Eminent Scholar in Water Resources in the Department of Agricultural and Biological Engineering at the University of Florida, and is also Director of the University of Florida Water Institute. She graduated from the University of Florida with a Bachelor's degree in Environmental Engineering. Her PhD is in Civil Engineering from the Massachusetts Institute of Technology. Dr. Graham conducts research in the areas of hydrologic modeling and data assimilation; impacts of agricultural production on surface and groundwater quality; karst conduit network evolution and its controls on water and solute fluxes, flow paths and travel times to springs; and reducing risk and increasing resilience of public water supply to climate change and variability. In her role as Director of the UF Water Institute she coordinates campus-wide interdisciplinary research, education and outreach programs designed to develop and share new knowledge, and to develop and encourage the implementation of new technology and policy solutions needed to ensure a sustainable water future.

Dr. Amy P. Chen joined NSF as a Presidential Management STEM Fellow/Geoscientist in September, 2015. Prior to NSF she taught geology courses for a year as a Dissertation Fellow/Lecturer in Middle Tennessee State University. Amy received her PhD from Macquarie University (Australia), BS and MS from University of Minnesota-Twin Cities, and spent time in Munich, Germany as a Fulbright Fellow. She previously worked at the Institute for Rock Magnetism as well as National Center for Earth Surface Dynamics. She will be broadly engaged in EAR program analysis, planning and management, merit reviews, communication and outreach.

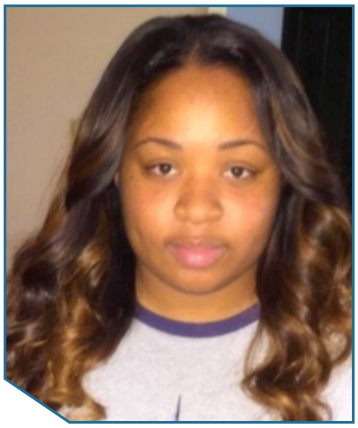
Jessamin Straub joins NSF this September as the new Science Assistant in the Deep Earth Processes Section (DEP) of the Division of Earth Sciences. In her previous position, she was an intern with the Coastal Sustainability Studio at Louisiana State University. Jessamin was working with scientists, architects, and designers in order to visualize and communicate the pressing issues facing coastal Louisiana. She recently graduated from Coastal Carolina University with a B.S. in Marine Science and a minor in Environmental Science. In her undergraduate research, she analyzed bathymetry data for shapes and sizes of bedforms in the Duplin River, Georgia, in order to estimate net sediment transport in fluvial and tidal systems. Through her extensive coursework and research, she gained experience with quantitative geophysical and geological sampling methods, in order to better communicate with the broader scientific research community. Her focus lies in the connection between science and policy, especially in developing vital policy to solve important coastal, ocean, and environmental issues. After she completes her appointment with NSF, Jessamin plans to attend graduate school in order to further her research and skills. She is very excited to start working for the Deep Earth Processes Section, and to help further the mission of NSF.

EAR FAREWELLS

Dr. Jack Sharp worked for a year as a Program Officer in Hydrologic Sciences. He had this to say - "I want to express my thanks to the NSF and particularly the EAR folks for a memorable year. Carol Sarp and I enjoyed our time in Arlington and getting to know all on the NSF staff.

I was also impressed with dedication of the staff towards advancing science. A healthy mix of permanent staff and rotating scientists is essential as the field of play in science is constantly evolving. It was fascinating to learn about the NSF solicitation and proposal review processes, but it was difficult to not be able to fund so many promising proposals. I thought the proposals that were awarded during my stint were all very solid and the review process generally fair and rigorous, but exciting new advances are often serendipitous. Finally, it is true you can't find really great BBQ in the DC area – so when you come to Austin, we'll try it Texas style."

Dr. Janet Herman has returned to the University of Virginia in Charlottesville after her year as a Program Officer in Hydrologic Sciences. In the first six weeks after leaving NSF, she presented a research paper at the Goldschmidt Conference in Prague, Czech Republic, traveled twice to Boulder, Colorado, in service to the Geological Society of America, and returned to teaching. Her mixed undergraduate-graduate seminar is focused on "The environmental consequences of shale gas production," a topic about which she gained current knowledge during her time at NSF. Another seminar includes 18 first-year students, and the topic being explored is "Water: How we use it and abuse it." This seminar is a tremendous opportunity to meet in a small class of brand-new college students to explore a complex issue that is central to their lives and yet largely unconsidered in their programs of study. Prof. Herman is using the long history of the University of Virginia this semester by teaching in Pavilion VIII (constructed ~1820), and taking her students on a walking tour of a stormwater-management feature on Grounds, the Dell Pond (constructed ~2008). Note how the students are all paying rapt attention to their instructor.



Brittany Gardner, a program assistant student intern in the EAR division of Geosciences is leaving for graduate school. She has provided program support for the entire administrative team. Not only has Brittany been pursuing the goals of the organization but she has also been an effective contributor towards the advancement of EAR's mission. Brittany has continuously produced high-quality and reliable reports. Although Brittany has been a returning intern since 2013, it is time for her to succeed in other areas. After recently graduating from Bennett College with a B.A. in Journalism and Media Studies, she will be attending the University of North Carolina Greensboro this fall to pursue her graduate studies in Liberal Arts. Brittany has gained a wide range amount of professionalism and experience with administrative knowledge. She has demonstrated her ability to learn quickly, adapt to any environment, technologies and request. With everything Brittany has learned from NSF she plans to use it as a tool of success for her journey through graduate school.

Passing of **H. Richard Lane**

The Earth Sciences and EAR have lost a dear friend and colleague. Dr. H. Richard "Rich" Lane passed away on October 16. For the past 18 years, Rich was an integral member of the EAR, GEO and NSF family, serving as program director for the Sedimentary Geology and Paleobiology Program, as well as helping lead the Advancing Digitization of Biodiversity Collections Program, Coastal SEES Program, and Genealogy of Life Program.

Rich's passion for all areas of Earth Science, and in particular Sedimentology and Paleobiology, was infectious. Rich was a natural at looking forward and seeing new research opportunities. Many collaborations have grown from Rich's ability to bring people together. Rich fought tirelessly to enhance the resources available to the Sedimentology and Paleobiology research communities and he left a robust and innovative SGP Program. A program for which he was the chief architect.

Prior to joining NSF, Rich was the Manager of Technical Services at Amoco Production Company for 28 years. He earned his M.S. and Ph.D. degrees in Geology from the University of Iowa.

Beyond degrees and programs, Rich will be remembered for his easygoing ways and friendly manner, as well as his always-positive outlook. In the face of serious health issues these last few months, Rich still came in to NSF to do what he loved: shepherding progress in the geosciences areas he knew so well. He was an important ambassador for GEO and EAR and, more importantly, a wonderful person.

ROTATOR REVIEWS

NSF offers a chance for scientists, engineers, and educators to join us as temporary program directors - called rotators. Rotators make recommendations about which proposals to fund; influence new directions in the fields of science, engineering, and education; support cutting-edge interdisciplinary research; and mentor junior research members. As a rotator, you will be in a prime position to collaborate with others and increase your visibility as you survey the entire breadth of U.S. and international science, engineering, and education in real time. In addition, as a temporary program director, you can retain your ties to your current institution and return to it with new insights and experience for your team. The following letters are from rotators that worked in the Earth Sciences Division describing their experience working at NSF.

Dr. Hailiang Dong, Rotating Program Director for Geobiology & Low Temperature Geochemistry (GG):

"I am pleased to share my experience with you. I have been lucky to have this opportunity to serve our GG community in the past year and half. During my time here, I have learned a great deal from my job and have expanded my professional network. Our proposals are very interdisciplinary and it is a challenge to find good reviewers and panel members, but it is also an opportunity to learn cutting edge science and to work with many program directors here within NSF. My most enjoyable moments are when our funded colleagues send us a newly published journal article to share their excitement. I want to take this opportunity to thank you all for your service to our program either as an ad-hoc reviewer or as a panel member or both.

Sincerely,
Hailiang"

Dr. Shemin Ge, Rotating Program Director for Hydrologic Sciences (HS):

"I personally gained tremendously from my 2 years at NSF. I enjoyed the intellectually stimulating environment and the interactions I had with people in HS, EAR, GEO, across the Foundation, and other federal agencies. I am very appreciative the opportunity. My only regret is that we had to decline many good proposals. That said, I have to admit that the two-year period was a challenging, time management wise, because of the heavy workload and many activities I was involved in at NSF while maintaining my research at home institution. From that perspective, I feel rotators' work is a true commitment and service to the community. Acknowledging rotators' contribution and influence inside and beyond NSF is much appreciated.

More importantly, the article will encourage people to consider rotator positions. Getting more well-qualified people to apply is the right priority. Thanks and keep up the great work, I hear many positive changes in EAR.

Sincerely,
Shemin"

NEW SURVEY FOR PROPOSERS AND REVIEWERS

Background

From time to time, NSF has administered surveys of the members of the research community that seek to learn about their experiences with the merit review process (see, for example, McCullough, 1989). The information gathered in such a survey helps NSF to serve better both those who submit grant proposals to NSF and those who undertake the task of reviewing such proposals. In the terminology used by the Office of Management and Budget (OMB), this is a "customer satisfaction survey."

In 2007, NSF fielded a large-scale survey, the "NSF 2007 Proposer Survey". This was developed by the Impact of Proposal and Award Management Mechanisms (IPAMM) Working Group. Results of the 2007 survey are described in the "Final Report of the IPAMM Working Group", published as NSF 07-45 (National Science Foundation, 2007).

The FY 2015 NSF budget request to Congress included a plan to update the 2007 survey and stated that, "NSF will engage an external party to conduct surveys of NSF reviewers, investigators, and panel moderators to assess workload, the impacts of the technologies used, and the quality of feedback provided to proposers."

Since 2007, the frontiers of science have continued to evolve, there has been a growth in the numbers of both single-investigator and collaborative research projects proposed to NSF, and there have been changes both to NSF's proposal submission system and to the technologies used to support the review process. The 2015 survey, entitled "Satisfaction of Investigators and Reviewers with the Merit Review Process," seeks to understand how these factors have affected NSF investigators and reviewers. This feedback will be available for use by NSF as it works to make the review process more effective, maintaining the quality of the review process while minimizing the burden on proposers and reviewers and exploring the value of potential technological enhancements.

The 2015 Survey

The directorate for Office of Integrative Activities (OIA) has partnered with Insight Policy Research (Insight) to develop and deploy the 2015 survey. The contractor has expertise in survey design, survey administration, and analysis. Using the IPAMM survey and the description of the merit review process in the report on NSF's Merit Review Process in FY 2014 (National Science Board, 2014) as an initial starting point, the contractor received input and feedback from staff across NSF associated with the Merit Review Working Group. The survey has also been reviewed by two of NSF's survey statisticians who provided valuable feedback used by Insight to improve further the clarity of the questions.

Insight conducted a test of the clarity of a draft of the survey questions with a set of NSF staff, primarily rotators who had recently joined as program officers or Senior Executive Service staff, and made changes based on the feedback received. Insight subsequently created an online version of a draft of the survey which was then taken by a new set of recently arrived rotators to provide information on the average time required to complete the survey, which turned out to be under 30 minutes.

The survey contains about 100 questions but respondents will not see all of the questions. Which later questions are seen depends on the responses to earlier questions. For example, some questions determine whether a respondent was a participant in a specific merit review pilot. Only individuals that participated in the pilot will see questions related to that pilot. Responses are provided by clicking radio buttons (or, in a few cases, by entering a number); the survey does not ask respondents to provide text answers.

The survey asks reviewers and investigators about their experiences with and perceptions of NSF's merit review process. The survey participants will be individuals who have submitted proposals to and/or reviewed for NSF in the past few years. The participant group will cover all of the academic disciplines that receive awards from NSF, embrace a broad spectrum of research and educational organizations, and represent many different demographic groups. Participants will first receive an email from NSF that invites them to take part in the survey. A few days later, participants will receive an email from Insight that contains a link to the online survey. Insight will collect the survey data on behalf of NSF. Insight and NSF will analyze the data jointly.

Survey Results

The results of the survey will be provided to NSF by Insight, together with some preliminary analysis. NSF will prepare a preliminary internal report on the outcomes of the survey and anticipates including some of the results of the survey in the FY 2016 Report on the National Science Foundation's Merit Review Process. During FY 2016, Insight and NSF will work together to develop a more complete analysis of the survey data.

References

McCullough, J., (1989) "First Comprehensive Survey of NSF Applicants Focuses on Their Concerns about Proposal Review." Science, Technology and Human Values, 14, 78-88.

National Science Board, (2014) "Report to the National Science Board on the National Science Foundation's Merit Review Process: Fiscal Year 2014." NSB-2015-14.

National Science Foundation, (2007) "Final Report of the Impact of Proposal and Award Management Mechanisms (IPAMM) Working Group." NSF 07-45.

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UPCOMING JOB ANNOUNCEMENTS

Program Officer, Geobiology and Low-Temperature Geochemistry Program
https://www.usajobs.gov/GetJob/ViewDetails/418576600

Program Officer, Geobiology and Low-Temperature Geochemistry Program
https://www.usajobs.gov/GetJob/ViewDetails/418575900

UPCOMING DEADLINES AND TARGET DATES

Geophysics	(NSf 12-598)	Full Proposal Target Date: Full Proposal Target Date:	December 2, 2015 June 1, 2016
National Science Foundation Research Traineeship Program (NRT)	(NSF 15-542)	Letter of Intent Deadline Date: Full Proposal Deadline Date:	December 22, 2015 February 22, 2016
Petrology and Geochemistry	(NSF 15-557)	Full Proposal Target Date: Full Proposal Target Date:	January 11, 2016 July 8, 2016
Tectonics	(NSF 14-609)	Full Proposal Target Date: Full Proposal Target Date:	January 11, 2016 June 27, 2016
EAR Postdoctoral Fellowships	(NSF 15-568)	Full Proposals Accepted:	January 12, 2016
Major Research Instrumentation Program: (MRI)	(NSF 15-504)	Full Proposals Accepted:	January 13, 2016
Innovation Corps Sites Program (I-Corps Sites)	(NSF 14-547)	Full Proposals Accepted:	June 14, 2016
GeoPRISMS Program	(NSF 15-564)	Full Proposal Target Date:	July 15, 2016
Faculty Early Career Development Program (CAREER)	(NSF 15-555)	Full Proposal Deadline Date:	July 22, 2016
International Research Experience for Students (IRES)	(NSF 12-551)	Full Proposal Deadline Date:	August 16, 2016

UPCOMING DEADLINES AND TARGET DATES

Earth Sciences: Instrumentation & Facilities	(NSF 15-516)	Full Proposals Accepted:	Anytime
Experimental Program to Stimulate Competitive Research: Workshop Opportunities (EPS-WO)	(NSF 12-588)	Full Proposals Accepted:	Anytime
Facilitating Research at Primarily Undergraduate Institutions	(NSF 14-579)	Full Proposals Accepted:	Anytime
Geobiology & Low-Temperature Geochemistry	(NSF 15-559)	Full Proposals Accepted:	Anytime
Geomorphology & Land-use Dynamics	(NSF 15-560)	Full Proposals Accepted:	Anytime
Grant Opportunities for Academic Liaison with Industry (GOALI)	(NSF 12-513)	Full Proposals Accepted:	Anytime
Hydrologic Sciences	(NSF 15-558)	Full Proposals Accepted:	Anytime
Science of Learning Centers (SLC)	(PD 07-7278)	Full Proposals Accepted:	Anytime
Sedimentary Geology and Paleobiology	(NSF 15-561)	Full Proposals Accepted:	Anytime
Software Infrastructure for Sustained Innovation	(NSF 15-553)	Full Proposals 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 ddomansk@nsf.gov

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