Examples of Possible Research Collaborations
Binational Perspectives on Gulf of Mexico Sustainability

Research Collaboration Opportunities
Goal: Support high quality projects in which advances in research and education could not occur without international collaboration. PIRE seeks to catalyze a higher level of international engagement in the U.S. science and engineering community.
Supports development of globally-engaged U.S. science and engineering students capable of performing in an international research environment at the forefront of science and engineering.

The IRES program supports active research participation by students enrolled as undergraduates or graduate students in any of the areas of research funded by the National Science Foundation.

IRES projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the IRES program.

Projects must involve U.S. students conducting research at foreign sites with appropriate foreign expert mentorship.

Projects are organized and proposed by U.S. institutions and U.S.-based Principal Investigators, who arrange the specific research topics, foreign site placements, appropriate foreign research mentorship, and necessary local resources, and then recruit and prepare U.S. students to participate in these experiences.

A key feature of IRES is that the primary research mentorship in-country must come from the researchers at the foreign host institution.
NSF 17-530
Track 1: FEW System Modeling: aims to significantly advance understanding of FEW systems with advanced modeling that investigates the functioning of coupled biotic, abiotic, engineered and social systems.

Track 2: Visualization and Decision Support for Cyber-Human-Physical Systems at the FEW Nexus: research, design, and implementation of new analytic algorithms that will (a) support real-time management, near-real time decision making, and longer term planning; and (b) provide a science basis to aid in policy generation for decision making

Track 3: Research to Enable Innovative System Solutions: develop and examine innovative solutions that address specific FEW system challenges and aim to enhance FEW systems’ resilience and sustainability. Research on innovative institutional, behavioral, and technological solutions—and the coupled-combinations of solutions – is needed.

To facilitate coordinating research activities between US and international partners, specific collaborative funding opportunities have been developed involving some international partners. [https://www.nsf.gov/od/oise/INFEWS/the_international_partnerships.jsp](https://www.nsf.gov/od/oise/INFEWS/the_international_partnerships.jsp)

- There are no specific international collaboration opportunities available under the INFEWS solicitation at this time. We hope that specific opportunities may be available in fiscal year 2018.
- Proposals that include international collaboration are welcomed by the INFEWS solicitation. Support for international partners should not generally be requested from NSF. Instead, the international partners should seek support from their own domestic or regional sources of funding. For more information see the INFEWS FAQ.
**NSF 15-509**

**Fundamental Research in STEM Education**

**STEM learning and STEM learning environments** - encourages the creative use of formal and informal STEM learning environments—including the full array of available and emerging materials, platforms, and learning opportunities—to ensure that all students have access to high quality, inspiring STEM learning and teaching to better prepare tomorrow’s scientists and engineers, as well as engage the public and youth living in an increasingly science-rich and technological world.

**STEM workforce development** - studies that will strengthen the research base that informs investments in STEM workforce preparation and development at all levels of education from K-12 to postdoctoral training. Evidence-based understanding of STEM education and training is needed with respect to STEM career pathways and transitions; academic and non-academic STEM careers; emerging practices and changing contexts of the STEM workforce; and the changing higher education climate and capacity for reforming STEM workforce development efforts.

**Broadening participation in STEM** - pursue fundamental research about what it takes to diversify and increase participation in STEM effectively, including research improves our understanding of how to build institutional capacity and informal learning environments that foster the untapped potential of **underrepresented minority groups in STEM fields**.
Support research collaboration between US scientists and scientists in developing countries as part of ongoing or new Plant Genome Research Program awards. The intent of DCC-PGR awards is to support collaborative research linking US researchers with partners from developing countries to solve problems of mutual interest in agriculture, energy and the environment, while placing US and international researchers at the center of a global network of scientific excellence.

The long-term goal of these collaborative research efforts is a greater and sustained engagement with developing countries in plant biotechnology research. In order to realize the full potential of biotechnology for the developing world, the technology must target crops grown locally in the developing countries and the traits that are most relevant to the local farmers and consumers. At the same time, proposals should meet the broad goals of the PGRP described in the current Program Solicitation. Of special interest are those research projects that build on prior PGRP investments and that tackle problems specific to crops grown in the developing world.

NSF funds may be used for:
- Travel expenses associated with the exchange visits
- Salaries for the developing country partners while they are at the US host laboratories
- Research-related expenses such as supplies that are necessary for the developing country partners’ research in the US host laboratory
- Research-related expenses for the US partners to conduct research in the partner’s home laboratory in developing countries
NSF Hydrologic Sciences (HS)

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<td><strong>Projects involving work in foreign countries:</strong></td>
<td>For studies in countries other than the United States, the project description should discuss, where appropriate, collaborations with scientists and students from the host country, and how these individuals will be involved in the project</td>
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**NSF 15-558**  
Program Focus: fluxes of water in the environment that constitute the water cycle as well as the mass and energy transport function of the water cycle. The Program supports the study of processes from rainfall to runoff to infiltration and streamflow; evaporation and transpiration; the flow of water in soils and aquifers; and the transport of suspended, dissolved, and colloidal components.

**Supports studies examining**

1. the spatial and temporal heterogeneity of water and water-borne chemical fluxes and storages from local to global scales,
2. interfacial water fluxes and pathways among system compartments; and
3. how hydrologic processes couple to the critical zone via land-use change, climate variability and ecosystem function.
4. aqueous, colloidal and suspended geochemistry that is directly connected to hydrologic transport processes.

| **Intl collabs allowed** | | $250K-$750K |
|-------------------------|------------------|
| 2-4 yrs | **INFEWS** |
All four clusters within the Division of Environmental Biology (Population and Community Ecology, Ecosystem Science, Evolutionary Processes, and Systematics and Biodiversity Science) encourage the submission of proposals aimed at synthesizing a body of related research projects conducted by a single individual or a group of investigators over an extended period.

OPUS awards target investigators who have, over time, produced important papers from a series of related research projects, but have not yet integrated that series in a single synthesis. OPUS will fund single or multiple investigators to synthesize the body of work they themselves have generated. Funds requesting support for the production of new data or for synthesizing other investigators' research are not appropriate.

OPUS projects generally result in one or more products reflecting the synthetic activities. Products have been diverse, including papers, monographs, software, websites, books, films, and artistic interpretations.
Disciplinary and interdisciplinary research, doctoral dissertation research improvement grants (DDRIGs), and workshops are funded in the areas of judgment and decision making; decision analysis and decision aids; risk analysis, perception, and communication; societal and public policy decision making; management science and organizational design. The program also supports small grants that are time-critical (Rapid Response Research - RAPID) and small grants that are high-risk and of a potentially transformative nature (EArly-Concept Grants for Exploratory Research - EAGER).

- To assure that the proposal is appropriate for DRMS, the advisor of the doctoral student is strongly encouraged to contact one of the DRMS Program Directors by email prior to the preparation of the DDRIG proposal.
- DRMS DDRIG awards have a recommended maximum duration of 12 months.
- DDRIG awards are designed to cover expenses such as travel to the research site, special equipment, and participation fees.
- DRMS does not provide general stipends or cost-of-living support for DDRIG awards.
- Your DDRIG proposal's project description should be essentially a research design (statement of the research problem, literature review, hypotheses, research site, data to be collected, methods of analysis, and schedule).
- Outstanding DDRIG proposals specify how the knowledge to be created advances our theoretical understanding of the subject.
The Civil Infrastructure Systems (CIS) program supports fundamental and innovative research necessary for designing, constructing, managing, maintaining, operating and protecting efficient, resilient and sustainable civil infrastructure systems. Research that recognizes the role that these systems play in societal functioning and accounts for how human behavior and social organizations contribute to and affect the performance of these systems is encouraged. While component-level, subject-matter knowledge may be crucial in many research efforts, this program focuses on the civil infrastructure as a system in which interactions between spatially-distributed components and intersystem connections exist. Thus, intra- and inter-physical, information and behavioral dependencies of these systems are also of particular interest.

Topics pertaining to transportation systems, construction engineering, infrastructure systems and infrastructure management are a focus of this program. Research that considers either or both ordinary and disrupted operating environments is relevant. Methodological contributions pertaining to systems engineering and design, network analysis and optimization, performance management, vulnerability and risk analysis, mathematical and simulation modeling, exact and approximate algorithm development, control theory, statistical forecasting, dynamic and stochastic systems approaches, multi-attribute decision theory, advanced computing, and incorporation of behavioral and social considerations. Additional research of interest exploits data/information, and takes advantage of relevant technological advances, such as social media.
The NRI-2.0 program significantly extends this theme to focus on issues of scalability: how teams of multiple robots and multiple humans can interact and collaborate effectively; how robots can be designed to facilitate achievement of a variety of tasks in a variety of environments, with minimal modification to the hardware and software; how robots can learn to perform more effectively and efficiently, using large pools of information from the cloud, other robots, and other people; and how the design of the robots' hardware and software can facilitate large-scale, reliable operation.

In addition, the program supports innovative approaches to establish and infuse robotics into educational curricula, advance the robotics workforce through education pathways, and explore the social, behavioral, and economic implications of our future with ubiquitous collaborative robots.
The goal of the Integrated Earth Systems (IES) program is to investigate the interplay among the continental, terrestrial, and interior systems of the planet. The program provides an opportunity for collaborative, multidisciplinary research into the operation, dynamics, and complexity of Earth systems that encompass the core of the Earth through the surface. Innovative projects that explore new research directions beyond those typically considered by core programs of the Division of Earth Sciences (EAR) are encouraged. Investigations may include all or part of the continental, terrestrial and deep Earth at all temporal and spatial scales.

Supports topics that include continental systems; terrestrial or surficial Earth systems including physical, chemical, and biotic dimensions; linkages among tectonics, climate, and landscape evolution; the coupling of the Earth's climate, depositional and biotic systems; and global cycles that involve core and mantle processes.

This program will support the costs of US-based scientists and their students. International collaborators are encouraged to seek support from their respective funding organizations. Funding guidelines for involving international collaborators allow the following expenses to be included in the NSF budget: 1) Travel expenses for US scientists and students participating in exchange visits integral to the project; 2) Limited project-related expenses for international partners to engage in research activities while in the United States as project participants; 3) Project-related expenses for US participants to engage in research activities while abroad.
NSF: DCL  Request for Input on Federal Datasets with Potential to Advance Data Science

**NSF 17-049**
With this DCL, the CISE directorate is seeking input on the types of datasets that federal departments, agencies, and offices may possess and could make openly available for use in data science, including machine learning, research. In the longer term, planning grants may be made available in cases where well-defined efforts to publish specific government datasets in the open are described. Such projects may focus, for example, on various aspects of "data cleaning" that may be necessary to make the data openly accessible. Responses to this DCL should include the following information, for each distinct dataset:

- Submitter's name(s) and affiliation(s);
- Federal department/agency/office related to the dataset (if known);
- Information about the likely dataset, including:
  - What the dataset is about;
  - The type of data, e.g., structured/fielded data, unstructured text, image, video, etc.;
  - Approximate size of the data, in terms of the number of distinct "entries"/entities, as well as total bytes; and
  - How the data would be made available, e.g., via download from a server; physical media;
- Anticipated impact on data science, including machine learning;
- Potential scientific, engineering, and/or societal impacts that are anticipated by making the data available to data scientists and engineers.

**Deadline**
3/31/2017

**$50K annually**
(for staff support)
NOAA Strategic Plan Mission Goals

Climate Adaptation and Mitigation - strengthen scientific understanding of climate; monitor changes in the atmosphere, oceans, and land; produce climate assessments; develop and deliver climate services at global and regional scales; and increase public knowledge of climate change and its impacts

Weather-Ready Nation – provide relevant information can help create a society that is more adaptive to its environment; experiences fewer disruptions, dislocation, and injuries; and that operates a more efficient economy

Healthy Oceans – provide sustainable marine fisheries, habitats, and biodiversity within healthy and productive ecosystems

Resilient Coastal Communities and Economies - Comprehensive planning will help protect coastal communities and resources from the impacts of hazards and land-based pollution to vulnerable ecosystems by addressing competing uses, improving water quality, and fostering integrated management for sustainable uses. Geospatial services will support communities, navigation, and economic efficiency with accurate, useful characterizations, charts and maps, assessments, tools, and methods. Coastal decision makers will have the capacity to adaptively manage coastal communities and ecosystems with the best natural and social science available

Deadline
9/30/2017

$?
1 year

Start date
3-6 mths after award receipt
NSF 15-560
Supports innovative research into processes that shape and modify landscapes over a variety of length and time scales. The program encourages research that investigates quantitatively the coupling and feedback among such processes, their rates, and their relative roles, especially in the contexts of variation in climatic, biologic, and tectonic influences and in light of changes due to human impact.

Projects involving work in foreign countries: For studies in countries other than the United States, the project description should discuss, where appropriate, collaborations with scientists and students from the host country, and how these individuals will be involved in the project.
NSF 12-598

Supports

- basic research in the physics of the solid earth to explore its composition, structure, and processes from the Earth's surface to its' deepest interior.
- laboratory, field, theoretical, and computational studies (Topics include seismicity, seismic wave propagation, and the nature and occurrence of geophysical hazards; the Earth's magnetic, gravity, and electrical fields; the Earth's thermal structure; and geodynamics.)
- geophysical studies of active deformation, including geodesy, and theoretical and experimental studies of the properties and behavior of Earth materials.

Projects involving work in foreign countries: For studies in countries other than the United States, the project description should discuss, where appropriate, collaborations with scientists and students from the host country, and how these individuals will be involved in the project.
The goals of the Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) solicitation are to:

1. foster an interdisciplinary research community of engineers, computer and computational scientists and social and behavioral scientists, that creates new approaches and engineering solutions for the design and operation of infrastructures as processes and services;
2. enhance the understanding and design of interdependent critical infrastructure systems (ICIs) and processes that provide essential goods and services despite disruptions and failures from any cause, natural, technological, or malicious;
3. create the knowledge for innovation in ICIs so that they safely, securely, and effectively expand the range of goods and services they enable; and
4. improve the effectiveness and efficiency with which they deliver existing goods and services.

The CRISP solicitation seeks to fund projects likely to produce new knowledge that can contribute to making ICI services more effective, efficient, dependable, adaptable, resilient, safe, and secure, taking into account the human systems in which they are embedded. Successful proposals are expected to study multiple infrastructures focusing on them as interdependent systems that deliver services, enabling a new interdisciplinary paradigm in infrastructure research. To meet the interdisciplinary criterion, proposals must broadly integrate across engineering, computer, information and computational science, and the social, behavioral and economic sciences.
**NSF Sedimentary Geology and Paleobiology (SGP)**

**Deadline**
Anytime

**$250K-$350K annually?**

**Intl collabs allowed**

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**NSF 16-536**

**Goals of these projects are:**

1. stimulate synergistic activities and teams of multi-disciplinary scientists to address critical questions about Earth-Life interactions in Deep Time and
2. enable collaborative projects on the sedimentary crust involving stratigraphy, sedimentology, paleontology, proxy development, calibration and application studies, geochronology, and modeling at appropriately resolved scales of time and space to understand the major linked events of environmental, climate and biotic change.

**Supports studies of:**

1. the changing aspects of life, ecology, environments, and biogeography in geologic time based on fossil organisms;
2. all aspects of the Earth's sedimentary lithosphere – its insights into the geological processes and rich organic and inorganic resources locked in rock sequences;
3. the science of dating and measuring the sequence of events and rates of geological processes as manifested in Earth's past sedimentary and biological (fossil) record;
4. the geologic record of the production, transportation, and deposition of modern and ancient physical and chemical sediments; and
5. understanding Earth's deep-time (pre-Holocene) climate systems.

**Projects involving work in foreign countries:** For studies in countries other than the United States, the project description should discuss, where appropriate, collaborations with scientists and students from the host country, and how these individuals will be involved in the project
PD 08-1698

- DS supports research that addresses developmental processes within the domains of cognitive, social, emotional, and motor development across the lifespan by working with any appropriate populations for the topics of interest including infants, children, adolescents, adults, and non-human animals.
- The program also supports research investigating factors that affect developmental change including family, peers, school, community, culture, media, physical, genetic, and epigenetic influences.
- Additional priorities include research that: incorporates multidisciplinary, multi-method, microgenetic, and longitudinal approaches; develops new methods, models, and theories for studying development; includes participants from a range of ethnicities, socioeconomic backgrounds, and cultures; and integrates different processes (e.g., memory, emotion, perception, cognition), levels of analysis (e.g., behavioral, social, neural), and time scales.
PD-98-1320

• Supports research designed to improve the understanding of the processes and institutions of the U.S. economy and of the world system of which it is a part.

• Strengthens both empirical and theoretical economic analysis as well as the methods for rigorous research on economic behavior.

• Supports research in almost every area of economics, including econometrics, economic history, environmental economics, finance, industrial organization, international economics, labor economics, macroeconomics, mathematical economics, and public finance.

• The program places a high priority on broadening participation and encourages proposals from junior faculty, women, other underrepresented minorities, Research Undergraduate Institutions, and EPSCoR states.

• The program also funds conferences and interdisciplinary research that strengthens links among economics and the other social and behavioral sciences as well as mathematics and statistics.

• The Doctoral Dissertation Research Improvement Grants funding opportunity is designed to improve the quality of dissertation research.
**NSF 15-514**  
**Fields of study:**

- **Crime, Violence and Punishment**
- **Economic Issues:** Research explores the significance of property rules or contracts in legal disputes, claims in social welfare states, and the role of law in labor and migration policies.
- **Governance:** Research examines the deployment of law, including conceptions of what counts as law both cross-nationally and over time. Inquiry in this area addresses how rules have been understood, and the varying format that governing takes in local, regional, national and transnational settings.
- **Legal Decision Making:** Research examines how people and institutions make decisions in the context of particular rules or statutes, and the values revealed in those decisions concerning pressing public issues or criminal justice processes. Research also examines how law is interpreted and reinterpreted by individuals, and how expectations concerning the law influence how people claim rights and responsibilities.
- **Legal Mobilization and Conceptions of Justice:** Research assesses how and when people understand their challenges as legal problems, how individuals choose among systems to pursue justice, how individuals or groups access justice systems and how well individuals and groups understand justice.
- **Litigation and the Legal Profession:** Research addresses the mutual constitution of the legal professions and the world in which they work, and assesses the influence of these professions on public policies and practices. Research also investigates the various forms of litigation and legal services available to people, professionals' understanding of their ethics and responsibility, and issues regarding equity in participation in the profession.

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**Deadline**  
8/1/2017  
1/16/2018

**Research**  
$66K  
Con/Wksp $50K  
Con/Wksp apply 6 mths in advance (anytime)
NSF Prediction of and Resilience against Extreme Events (PREEVENTS)

**NSF 16-562**
Seeks to address these issues by supporting projects that will
- 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 (does not fund research on anthropogenic hazards)
- improve our capability to model and forecast such hazards and events

**Track 1: Conferences**
Proposals may be submitted for conferences that will foster development of interdisciplinary or multidisciplinary communities required to address complex questions surrounding natural hazards and extreme events

**Track 2: Research**
Address both primary targets described above, but which may extend beyond what is typically supported by GEO “core” programs due to the scope, scale, and/or complexity of the problem to be studied or approaches to be used; because the problem requires a multidisciplinary approach spanning multiple GEO programs or divisions; or for other similar programmatic reasons. *Track 2 proposals may not request support for generation or collection of new data and/or measures, but may request support for analysis, synthesis, and/or modeling efforts that use existing data and/or measures.*
**NSF 11-581**

- Development of cyberinfrastructure for the geosciences
- Community-driven development and implementation of databases; tools for data integration, interoperability, and visualization; software development and code hardening; and data-intensive/new computing methodologies that support the enhancement of geosciences research and education activities.

**Proposals will:**

- Identify the targeted user community(ies); describe how the proposed activity has grown out of, and engaged this/these user community(ies); and discuss how it addresses its/their unmet needs.
- Demonstrate an awareness and understanding of existing informatics infrastructure and developments both within the geosciences community and in the computational sciences, as well as other fields that impact the proposed work.
- Provide plans for the integration and compatibility of the proposed geoinformatics platform(s) within existing geoinformatics activities and networks, where appropriate.
- Develop metrics that can be used to monitor and evaluate quantitatively how the resulting product is likely to be used and its potential impact on the targeted community and science.
- Include a management plan that estimates potential out-year sustainability costs (operations, maintenance, and other support costs) and presents a robust sustainability plan.
- Adopt open source and platform-independent development principles whenever possible
- Address scalability in terms of expanding user capacity.
- Involve computational scientists and/or industry partners, as appropriate, as co-investigators, collaborators, and/or consultants.

**Deadline**

7/1/2017

**$450K-$1M annually**
The Petrology and Geochemistry Program supports basic research on the formation of planet Earth, including its accretion, early differentiation, and subsequent petrologic and geochemical modification via igneous and metamorphic processes. Proposals in this program generally address the petrology and high-temperature geochemistry of igneous and metamorphic rocks (including mantle samples), mineral physics, economic geology, and volcanology. Proposals that are focused on the development of analytical tools, theoretical and computational models, and experimental techniques for applications by the igneous and metamorphic petrology, and high temperature geochemistry and geochronology communities are also invited.

Projects involving work in foreign countries: For studies in countries other than the United States, the project description should discuss, where appropriate, collaborations with scientists and students from the host country, and how these individuals will be involved in the project.
The IMEE program supports fundamental, multidisciplinary research on the impact of hazards and extreme events upon civil infrastructure and society.

**Four core emphasis areas**

- **Mitigation** - analysis of structural and non-structural mitigation effectiveness, local capacity building for risk reduction, and social and physical vulnerability analyses.
- **Preparedness** - studies on warning and risk communication, evacuation, multi-hazard emergency planning, and the effectiveness of pre-disaster planning.
- **Response** - examine such issues as infrastructure interdependencies and cascading disasters, innovation and improvisation in emergency management, and the use of new communication technology and social media in emergency management.
- **Recovery** - examine linking disaster recovery to the mitigation of future disasters, resilience metrics and models, resilience of interdependent infrastructure processes and systems, and social factors related to economic recovery and resilience.
Program Goals
• advance knowledge about the processes that force and regulate the atmosphere’s synoptic and planetary circulation, weather and climate,
• sustain the pool of human resources required for excellence in synoptic and global atmospheric dynamics and climate research

Research topics
• theoretical, observational and modeling studies of the general circulation of the stratosphere and troposphere; synoptic scale weather phenomena; processes that govern climate;
• the causes of climate variability and change; methods to predict climate variations;
• extended weather and climate predictability;
• development and testing of parameterization of physical processes;
• numerical methods for use in large-scale weather and climate models;
• the assembly and analysis of instrumental and/or modeled weather and climate data;
• data assimilation studies;
• development and use of climate models to diagnose and simulate climate and its variations and change.
PD 98-1620
Supports research on all aspects of geology and geophysics of the ocean basins and margins

The Program includes:
- Structure, tectonic evolution and volcanic activity of the ocean basins, the continental margins, the mid-ocean ridges, and island arc systems
- Processes controlling exchange of heat and chemical species between seawater and ocean rocks
- Genesis, chemistry, and mineralogic evolution of marine sediments
- Processes controlling deposition, erosion and transport of marine sediments
- Past ocean circulation patterns and climates and
- Interactions of continental and marine geologic processes
### NSF Chemical Oceanography

**PD 98-1670**

- Supports research into the chemical components, reaction mechanisms, and geochemical pathways within the ocean and at its interfaces with the solid earth and the atmosphere.
- Major emphases include: studies of material inputs to and outputs from marine waters; orthochemical and biological production and transformation of chemical compounds and phases within the marine system; and the determination of reaction rates and study of equilibria.
- The Program encourages research into the chemistry, distribution, and fate of inorganic and organic substances introduced into or produced within marine environments including those from estuarine waters to the deep sea.

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Supports topics associated with the structure and movement of the ocean, with the way in which it transports various quantities, with the way the ocean's physical structure interacts with the biological and chemical processes within it, and with interactions between the ocean and the atmosphere, solid earth and ice that surround it.
PD 98-1650
Supports research in marine ecology broadly defined: relationships among aquatic organisms and their interactions with the environments of the oceans

Deadline
8/15/2017
The PAC program funds theoretically motivated research on a wide-range of topic areas focused on typical human behavior. The aim is to enhance the fundamental understanding of perceptual, motor, and cognitive processes and their interactions. Central research topics for consideration by the program include (but are not limited to) vision, audition, haptics, attention, memory, reasoning, written and spoken language, motor control, categorization, and spatial cognition. Of particular interest are emerging areas, such as the interaction of sleep or emotion with cognitive or perceptual processes and the epigenetics of cognition. The program welcomes a wide range of perspectives, such as individual differences, symbolic computation, connectionism, ecological, genetics and epigenetics, nonlinear dynamics and complex systems, and a variety of methodologies including both experimental studies and modeling. The PAC program is open to co-review of proposals submitted to other programs both within the Social, Behavioral, and Economic Sciences Directorate and across other directorates.

See: Dear Colleague Letter: Stimulating Integrative Research in Computational Cognition (NSF 16-122)
**NASA: ROSES Ocean Biology and Biogeochemistry**

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**NNH16ZDA001N-OBB**

Focuses on describing, understanding, and predicting the biological and biogeochemical regimes of the upper ocean, as determined by observation of aquatic optical properties using remote sensing data, including those from space, aircraft, and other suborbital platforms. Additionally, NASA Ocean Biology and Biogeochemistry research addresses changes in Earth’s carbon cycle and ecosystems using space-based observations in order to improve understanding of the structure and function of global aquatic ecosystems, their interactions with the atmosphere and terrestrial systems, and their role in the cycling of the major biogeochemical elements.

EXPARTS program will

1. create a predictive understanding of both the export of organic carbon from the well-lit, upper ocean (or euphotic zone) and its fate in the underlying twilight zone (depths of 500 m or more), where a variable fraction of that exported organic carbon is respired back to CO2;

2. generate a new, detailed understanding of ocean carbon transport processes and pathways linking phytoplankton primary production within the euphotic zone to the export and fate of produced organic matter in the underlying twilight zone using a combination of field campaigns, remote sensing, and numerical modeling; and

3. establish mechanistic relationships between remotely sensed signals and carbon cycle processes, thereby ensuring the ability of the NASA oceanographic community to successfully achieve the scientific goals associated with its future satellite missions.
Projects funded through the FMCCRCCA are for activities that:

1. Provide better scientific information on the status of coral reef fisheries resources, critical habitats of importance to coral reef fishes, and the impacts of fishing on these species and habitats;

2. Identify new management approaches that protect coral reef biodiversity and ecosystem function through regulation of fishing and other extractive uses; and

3. Incorporate conservation and sustainable management measures into existing or new Federal fishery management plans for coral reef species.

The role of NOAA in the FMCCRCCA is to help identify potential projects that reduce impacts of fishing on coral reef ecosystems, strengthen the development and implementation of the projects, and assist in coordination of these efforts with Federal, state, territory or commonwealth management authorities and various coral reef user groups.
Collaborative projects of up to 2 years in duration that synthesize ocean acidification information at a regional scale (e.g. Large Marine Ecosystem, large estuary or collection of small estuaries, and state or collection of states in US waters) to determine where societal vulnerabilities to ocean acidification exist or are emerging, in order to provide actionable information for marine resource decision makers. This funding opportunity will not support the collection of new chemical or ecological observations or species response data. Social science data collection is permitted.

**Option 1: Regional Vulnerability Assessment.** Proposals submitted under this option should develop a regional vulnerability assessment of human communities to OA, and can include both data synthesis activities and stakeholder meetings/workshops. *Projects may last up to 2 years in duration and not exceed $350k/yr.*

**Option 2: Data Synthesis.** Proposals submitted under this option should focus only on conducting data syntheses that are relevant to a regional vulnerability assessment of marine ecosystems and/or human communities to OA. *Projects may last up to 2 years in duration and not exceed $200k/year.*

**Option 3: Workshop that Builds Towards a Regional Vulnerability Assessment.** Proposals submitted under this option should propose a larger workshop or series of small meetings that informs regional vulnerability assessments of human communities to OA. The workshops should identify research needs/gaps in the region that are needed before a vulnerability assessment can be completed. *Projects may last up to 12 months in duration and not exceed $100k/yr.*
CPO's strategy addresses challenges in the areas of:
1.) Weather and climate extremes, 2.) Climate impacts on water resources, 3.) Coasts and climate resilience, 4.) Sustainability of marine ecosystems, and 5.) Changing atmospheric composition and its impacts.

CPO supports research that is conducted across the United States and internationally.

CPO supports competitive research through three major program areas:
1. Climate Observations and Monitoring (COM);
2. Earth System Research and Modeling (ESRM); and
3. Climate and Societal Interactions (CSI).

The seven competitions covered by this Announcement are as follows:
1. COM - Ocean climate information and products
2. COM - Global change climate indicators and data products for assessment
3. AC4 - Synthesis Research: Urban Emissions and Emissions from O&G Sector
4. CVP - Observing and Understanding Processes Affecting the Propagation of Intraseasonal Oscillations in the Maritime Continent Region
5. MAPP - Advancing drought understanding, monitoring and prediction
6. MAPP - Research to explore seasonal prediction of coastal high water levels and changing living marine resources
7. COCA – Supporting Resilient Coastal Communities in a Changing Climate
NOAA-OAR-OER-2017-2004970

OER’s overarching objective is to investigate and document poorly known and unknown ocean areas through interdisciplinary exploration, and to advance and disseminate knowledge of the ocean’s physical, geological, chemical, biological, and archaeological environments.

Findings from projects and expeditions are anticipated to result in new baseline characterizations; provide better scientific understanding of the processes on U.S. continental margins and the deep ocean; offer new insights into climate variability and marine ecosystems; reveal new or unconventional energy, mineral, biological, and archaeological resources; help identify hazards resulting from extreme events such as submarine volcanic eruptions, earthquakes and tsunamis; and deliver technology advancements that will increase observational capabilities in the ocean.

2017 Research Themes
- Exploration of physical, chemical and biological environments and processes within the oceanic water column below ~200m;
- Exploration of geological, physical, and biological environments as well as biogeochemical processes associated with seamounts;
- Novel or innovative technologies and methodologies that could increase the pace and scope of ocean exploration, especially exploration of the water column, seamounts, and archaeological sites; and
- Proposals focused on the discovery and exploration of historically significant submerged marine heritage sites, features and artifacts associated with WWII.
Emphasis is to be directed toward continued development of the established CMS pilot studies, acquisition, field sampling, quantification and development of prototype Monitoring Reporting and Verification (MRV; aka Measurement, Reporting and Verification) system capabilities which can provide transparent data products achieving levels of precision and accuracy required by current carbon trading protocols. NASA is also looking to advance previously initiated CMS work that will substantially contribute to the above activity. Successful applicants will become members of the NASA CMS ST.

- Studies to produce and evaluate prototype monitoring, reporting and verification system approaches and/or calibration and validation data sets for future NASA missions
- Studies that address research needs to advance remote sensing-based approaches to monitoring, reporting, and verification (e.g., quantification of forest degradation; independent assessment of the accuracy of airborne remote sensing observations of biomass and carbon stocks; use of airborne flux observations and satellite remote sensing, as alternative methods for quantifying net carbon emissions/storage).
- Studies that build upon, extend, and/or improve the existing CMS products for biomass and flux resulting from NASA’s first phases of CMS pilot studies
- Studies that can evaluate and enhance national reported carbon emissions inventories from bottom-up estimates from various sectors of emissions within the United States, and have the potential to be applied to reported national inventories from other nations.
Research-Practice Grants (2017)

- Grants will support the development of research and practices that focus on the human dynamics of resilience. Specifically, we are interested in projects that enhance community resilience and well-being by accounting for the influence of social, cultural, and health factors on a community's capacity to adapt and thrive as part of efforts to mitigate and respond to the adverse impacts of climate change, severe weather, and major environmental disasters.

- These grants support scientifically-sound research and practice projects that will develop and test information and strategies that can be used immediately by the public, public agencies, educators, community groups, policymakers and other decision makers and individuals to guide actions and plans.

- Proposed projects should bring together researchers, practitioners, and users of the information and strategies generated so that all relevant perspectives inform possible approaches to advancing the science and practice.

- Projects must be hypothesis-driven and seek to improve both the science and the practice.
The Partnerships for Enhanced Engagement in Research (PEER) program is a competitive awards program, supported by the United States Agency for International Development (USAID) and implemented by the U.S. National Academies of Sciences, Engineering, and Medicine (NAS), that invites scientists in developing countries to apply for funds to support research and capacity-building activities on topics of importance to USAID and conducted in partnership with U.S. Government (USG)-supported and selected private sector partners.

Supports scientists in developing countries to apply for funds to support research and capacity-building activities on topics of importance to USAID and conducted in partnership with U.S. Government-funded and selected private sector partners.
### NSF Cultivating Cultures for Ethical STEM (CCE STEM)

**Deadline**
2/15/2017

$600K-5 yr
$400K-3 yr
Avg $275K

**URM focus**
Intl collabs allowed

**Ed**

**NSF 15-528**

Supports research that explores the following:

- ‘What constitutes ethical STEM research and practice, and which cultural and institutional contexts promote ethical STEM research and practice and why?'
- Factors one might consider include: honor codes, professional ethics codes and licensing requirements, an ethic of service and/or service learning, life-long learning requirements, curricula or memberships in organizations (e.g. Engineers without Borders) that stress social responsibility and humanitarian goals, institutions that serve underrepresented groups, institutions where academic and research integrity are cultivated at multiple levels, institutions that cultivate ethics across the curriculum, or programs that promote group work, or do not grade.
- Do certain labs have a ‘culture of academic integrity’?
- What practices contribute to the establishment and maintenance of ethical cultures?
- How can these practices be transferred, extended to, and integrated into other research and learning settings?

Successful proposals typically have a comparative dimension, either between or within institutional settings that differ along these or other factors.

Proposals including international collaborations are encouraged when those efforts enhance the merit of the proposed work by incorporating unique resources, expertise, facilities or sites of international partners. The U.S. team's international counterparts generally should have support or obtain funding through other sources.
USDA-NIFA-AFRI-005942

Supports activities that reduce greenhouse gas emissions, increase carbon sequestration in agricultural and forest production systems, and prepare the nation's agriculture and forests to adapt to variable climates.

The long-term outcome for this program is to:

- reduce the use of energy, nitrogen fertilizer, and water by ten percent
- increase carbon sequestration by fifteen percent through resilient agriculture and forest production systems.

In order to achieve this outcome, this program will support multi-function Integrated Research, Education, and/or Extension Projects and Food and Agricultural Science Enhancement (FASE) Grants.
NASA seeks proposals that will improve and exploit the capability of Earth Observing Satellites to remotely sense water quality from space. NASA encourages proposals that also assess the impacts of water quality on ecosystem and habitat health.

2.2 Techniques to improve remote sensing of water quality
   - 2.2.1 Atmospheric corrections
   - 2.2.2 Improving understanding of the link between optical and water-body properties

2.3 Employing remotely sensed water quality information to understand watershed dynamics and the impact on nearshore ecology and ecosystem health in the Arctic.

2.4 Algorithm refinement to assess harmful algal blooms across North America
Cities and communities in the U.S. and around the world are entering a new era of transformational change, in which their inhabitants and the surrounding built and natural environments are increasingly connected by smart technologies, leading to new opportunities for innovation, improved services, and enhanced quality of life. The goal of this Smart & Connected Communities (S&CC) solicitation is to support strongly interdisciplinary, integrative research and research capacity-building activities that will improve understanding of smart and connected communities and lead to discoveries that enable sustainable change to enhance community functioning. Unless stated otherwise, for the purposes of this year’s solicitation, communities are physical, geographically-defined entities, such as towns, cities, or incorporated rural areas, consisting of various populations, with a governance structure and the ability to engage in meaningful ways with the proposed research.

Successful S&CC projects are expected to pursue research and research capacity-building activities that integrate multiple disciplinary perspectives and undertake meaningful community engagement, and to include appropriate and robust evaluation plans for assessing activities and outcomes. To meet the multidisciplinary criterion, proposals must meaningfully integrate across both social and technological research dimensions.
NSF 2017 Nexus of Food, Energy and Water Systems (INFEWS) Funding Opportunity on Nitrogen, Phosphorus, and Water

**NSF 17-013 - DCL**

Through this Dear Colleague Letter (DCL), issued by the Divisions of Chemistry (CHE) and Materials Research (DMR) in the Directorate for Mathematical and Physical Sciences and the Division of Chemical, Bioengineering, Environmental and Transport Systems (CBET) in the Directorate for Engineering, the NSF aims to specifically focus on advancing knowledge of the nitrogen and phosphorus cycles; the production and use of fertilizers for food production; and the detection, separation, and reclamation/recycling of nitrogen- and phosphorus-containing species in and from complex aqueous environments.

In FY 2017, the topics of interest in INFEWS: N/P/H2O include innovative, fundamental research

1. advance catalytic methods for the reduction of dinitrogen to ammonia that permit reductions in the energy requirements for fertilizer production;
2. develop new sensing modalities that will lead to field-deployable, inexpensive, and environmentally and energetically sustainable sensors for real-time monitoring of nitrogen- or phosphorus-containing species as they move, via agricultural run-off, to other water systems;
3. develop methods for the selective and efficient detection, sequestration/separation, and recycling of nitrogen and phosphorous species from water (For proposals submitted to CHE, proposals should focus on gaining an understanding of the supramolecular recognition and binding of environmentally-relevant nitrogen- and phosphorus-containing species.); and
4. develop new materials to optimize the availability of N and control the utilization of P while managing effluents within the context of sustainable energy and preservation of our natural resources.

The challenges at the food, energy, and water nexus are frequently international, and experts around the globe have relevant expertise and resources. Proposals including international collaboration are encouraged when those efforts enhance the merit of the proposed work. The U.S. team’s international counterparts generally should have support or obtain funding through their own national or regional sources.