MPS Seminar on

Global Centers

Use-Inspired Research Addressing Global Challenges in Climate Change and Clean Energy

NSF 23-557

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CSIRO
Australia's National Science Agency

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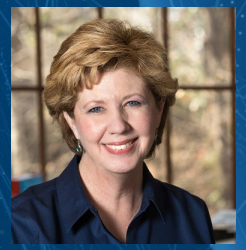
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MPS: Directorate of Mathematical and Physical Sciences

Division of Astronomical Sciences (AST)

Division of Chemistry (CHE)

Division of Material Research (DMR)

Division of Mathematical Sciences (DMS)

Division of Physics (PHY)

Office of Multidisciplinary Activities (OMA)

OMA works in partnership with the five MPS Divisions to respond more effectively to the excellence and creativity of the MPS communities, particularly to proposals that, because of their subject, scope, or multi-investigator or multidisciplinary nature, did not readily fit the existing MPS program structure.

NSF-led initiative in Partnership with International Funders

- National Science Foundation (NSF)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO)
- Natural Sciences and Engineering Research Council (NSERC) and Social Science and Humanities Research Council (SSHRC)
- UK Research and Innovation (UKRI)

Vision for the Global Centers Call

Climate change is a global threat that impacts the natural and human world

- Global Centers offer a bold vision for high impact, use-inspired basic research in Climate Change (CC) and Clean Energy (CE) science
- They leverage international partnerships on any area of NSF-funded science
- They address grand challenges with benefits to society
- Centers may be physical or virtual

Global Centers: Key Goals

Climate change is complex, and solutions require synergistic partnerships

- Tackle challenges that require involving more than a single institution or a single discipline
- Demonstrate how international collaboration will produce innovative research & education outcomes
- Identify who are the relevant stakeholders and how they will help drive the science research priorities
- Have a vision and strategy for potential growth, scaling up, and building a relevant community

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Selected MPS Topics of Interest

- Climate-driven air quality issues
- Decarbonization/Carbon Capture/Direct Air Capture
- Sustainable energy sources (e.g., wind-powered, hydro-power)
- Battery innovation and recycling
- Novel materials discovery and low temperature catalysts

Selected MPS Topics of Interest

- New computational and data science solutions, to help assess or mitigate community impacts and/or lead to technology developments
- Novel statistical and mathematical methods to pro-actively evaluate the associated climate-induced risks
- High resolution climate projections modeling & local/global impacts and concerns

Relevant Solicitations

- Design for Environmental Sustainability in Computing (DESC), NSF 23-532

Goal: address the substantial environmental impacts that computing has through its entire lifecycle from design and manufacturing, through deployment into operation, and finally into reuse, recycling, and disposal. DESC seeks to fund research that addresses environmental sustainability beyond energy efficiency alone.

Track 1: Implementation

Track 1 : Joint Funding opportunity with International Partners; 4-5 years; NSF will fund up to $5 million per award

FY23 Partner funding agencies:

Australia: CSIRO, AUD$7M

Canada: NSERC, CAD$15M; SSHRC, CAD$5M

United Kingdom: UKRI, £18M

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Track 1: Implementation

- Must involve the U.S. and at least 1 partner country; may involve other partner countries
- Research topics must be aligned with those identified by NSF and the funding partner agencies (see Solicitation Section II.D.1.c)
- Additional documentation needs to be submitted to funding partner agencies (Section II.D.1.c)
- NSF funds US-based researchers
- Foreign Funding partners (Australia, Canada, UK) fund their researchers

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Track 2: Community-driven Design

Track 2 : Community-driven, NSF-funded collaborations; 2 years, up to $250,000 per award

- Encourage development of international research collaborations
- Broaden participation: diversity of researchers, institutions, and stakeholders
- Identify areas of interest and potential partners for future research collaborations such as Global Centers Track 1

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Track 2: Community-driven Design

- Must address use-inspired research in climate change and/or clean energy
- Coordinate efforts to design a Global Center for the next NSF Global Centers competition
- May involve scientists and stakeholders from any country globally, notably those based in regions of the world disproportionately affected by climate change

Proposal Development

- Project Description (20 pages)
- Describe academic and non-academic partners and roles
- Describe partnerships that build on existing NSF investments (e.g., major facilities, etc.)
- Describe partnerships that broaden participation
- Articulate how the partnerships will be nurtured to build long lasting relationships
- Describe the metrics of success and planned evaluation

Who May Submit Proposals

No restrictions on who may serve as Principal Investigator (PI)

An individual may be listed as PI or co-PI on no more than one proposal

- *Institutions of Higher Education (IHEs)* - Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US.
- *Non-profit, non-academic organizations*: Independent museums, observatories, research laboratories, professional societies and similar organizations located in the U.S. that are directly associated with educational or research activities.

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Diversity, Equity, Inclusion, and Access

- Broadening participation and stakeholder engagement are key values to be integrated into the design of the Centers and the research objectives.
- Prioritize scientific questions that include a diversity of individuals in the scientific enterprise
- Diversifying the research workforce through a variety of approaches that support sustainable inclusion in the workplace (e.g., citizen science, partnerships, community engagement)

NSF Merit Review Criteria

Intellectual Merit (IM): the potential to advance knowledge

Broader Impacts (BI): the potential to benefit society and contribute to the achievement of specific, desired societal outcomes

Proposal & Award Policies and Procedures Guide (PAPPG 23-1) Chapter III.A.2

Solicitation-Specific Review Criteria

- **Interdisciplinarity**: How will the Center utilize interdisciplinary and/or convergence approaches?
- **Use-inspired**: What are the foreseeable societal benefits of the research outcomes?
- **International**: Why is the international partnership required? Roles of the foreign partners?
- **Stakeholders**: Roles of the multi-sector stakeholders (e.g., academia, private & public sectors, communities)?
- **DEIA**: How will DEIA be integrated into the research and education efforts?
- **Vision for growth**: Strategy for building a relevant community?

Supplementary Documentation

Specific to Global Centers proposals (in addition to PAPPG 23-1 requirements):

- Letters of collaboration (2 pages each)
- Student Mentoring Plan for the U.S. undergraduate and graduate students
- Foreign Collaborator, Organization & Funding Information (Track 1)
- Project Management Plan (3 pages)
- Safe and Inclusive Work Environment Plan (if off-campus research, 2 pages)

Foreign collaborators: Bio-sketches & Budget

Track 1 proposals must provide:

- Biographical sketches of all participating investigators affiliated with a foreign organization in partner countries (NSF format)
- A detailed budget for the funds requested by the foreign collaborators from partner funding agencies in Australia, Canada, UK
- If missing budget: Return without review
- Details in Solicitation Section V.A.8: “Supplementary Documentation”

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NEW: Safe & Inclusive Working Environments

If off-campus or off-site research:

- Data/information/samples being collected off-campus or off-site, e.g., fieldwork and research activities on vessels and aircrafts
- Must submit a Plan for Safe and Inclusive Work Environments (2 pages)
- Replaces the required plan associated with the certification in Chapter II.E.9 of the PAPPG 23-1
- Details in solicitation Section V.A.8

Funding Foreign Organizations or Individuals

"NSF rarely provides direct funding support to foreign organizations [...]

However, where the proposer considers the foreign organization or foreign individual's involvement to be essential to the project and proposes to provide funding through the NSF budget, they must explain why support from the foreign counterpart's in-country resources is not feasible and why the foreign organization or foreign individual can carry out the activity more effectively than a U.S. organization."

PAPPG 23-1 Chapter I.E.2

Program Timeline

- **Due date for all full proposals: May 10, 2023**

  10 May: Track 1 submission deadline

  12 April – 10 May: Track 2 submission window
- **June – July**: NSF Merit Review Process for all proposals
- **July**: ranking completed, funding partners finalize Track 1 portfolio; NSF finalizes Track 2 portfolio
- **August – September:** First awards in FY2023

Upcoming Office Hours

(all times Eastern)

1. 28 April 2023 2:00 – 3:00 p.m.
2. 2 May 2023 3:30 – 4:30 p.m.

Thank you!

Add Questions to Q&A

globalcenters@nsf.gov

NSF Global Centers homepage

https://beta.nsf.gov/funding/opportunities/global-centers-gc

International Funding Partners Webpages

- https://www.csiro.au/GlobalCenters
- https://www.nserc-crsng.gc.ca/Innovate-Innover/NSF-NSF/index_eng.asp
- https://www.ukri.org/opportunity/global-centers-in-clean-energy-and-climate-change

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