Dear Colleague Letter: Update to the Division of Earth Sciences (EAR) Data and Sample Policy

July 14, 2023

Dear Colleague:

This Dear Colleague Letter announces an update to the Division of Earth Sciences (EAR) Data and Sample Policy, which applies to EAR proposals submitted after 90 days from publication of this DCL and until the policy is updated or replaced. The updated EAR Data and Sample Policy and an updated set of resources for this policy are available at this link: https://www.nsf.gov/geo/geo-data-policies/ear/index.jsp.

Earth Scientists increasingly rely on access to and reuse of data and samples originating from a variety of sources, including through research supported by the NSF Division of Earth Sciences (EAR) in the Directorate for Geosciences (GEO). Public access to data and samples promotes equity in research and education, enables the use of cutting-edge data driven techniques, and expands the benefit of NSF research investments. Adherence to open, inclusive, and transparent research practices, including those articulated through the FAIR Guiding Principles (Findable, Accessible, Interoperable, and Reusable)\(^1\) and the CARE Principles for Indigenous Data Governance (Collective Benefit, Authority to Control, Responsibility, Ethics)\(^2\), is critical for maximizing the value of data, samples, and other research products supported through EAR awards.

Since 2011, NSF has required that all proposals include a Data Management Plan (DMP) describing plans for managing and sharing the products of NSF-funded research.\(^3\) The EAR Data and Sample Policy articulates EAR-specific expectations for the content of DMPs, including requirements for when and how data and samples must be made publicly accessible after collection. This policy was last updated in April 2018. Since then, there has been increasing recognition of the importance of open data and sample sharing. For example, the 2020 National Academies of Sciences, Engineering, and Medicine (NASEM) Report, A Vision for NSF Earth Sciences 2020-2030: Earth in Time, noted that "FAIR data standards will improve the longevity, utility, and impact of EAR-funded data."\(^4\) In 2022, a
memorandum published by the Office of Science and Technology Policy (OSTP) directed federal agencies to increase requirements leading to free, immediate, and equitable access to federally funded research.\textsuperscript{5} Also in 2022, Congress enacted the CHIPS and Science Act,\textsuperscript{6} which directed NSF to strengthen data management policies, including the requirement that DMPs describe plans for specimen management (as applicable). In 2023, OSTP announced the Year of Open Science to promote open and equitable research practices in federally supported science.\textsuperscript{7} Also in 2023, NSF published an updated Public Access Plan 2.0, which describes NSF’s approach to achieving the goals of the OSTP memorandum and the federal Year of Open Science.\textsuperscript{8}

Motivated by these developments, this DCL announces the release of an updated EAR Data and Sample Policy, which seeks to clarify several aspects of the EAR Data and Sample Policy and expected contents of the DMP.

The updated EAR Data and Sample Policy provides definitions of "data" and "samples" while acknowledging differences across disciplines:

- **"Data"** types to be addressed in the DMP include, but are not limited to: observational, experimental, analytical, and model outputs; derived and compiled datasets; software and code; educational materials; and any other relevant digital products resulting from the project.
- **"Sample"** types to be addressed in the DMP include, but are not limited to: physical samples and collections; drilling cores; specimens; and any other relevant physical, chemical, and/or biological materials resulting from the project. (For purposes of the EAR Data and Sample Policy, sample-derived digital products are considered "data.")

The updated EAR Data and Sample Policy also strengthens certain requirements for the sharing of data and samples resulting from EAR award support:

- All data and sample metadata underlying peer-reviewed scholarly publications resulting from EAR support must now be made publicly accessible at or before the time of publication, and no later than two (2) years after completion of data collection or generation, via appropriate long-lived FAIR-aligned repositories. Expected timelines for data collection or generation may vary by data type and should align with appropriate disciplinary expectations.
- All new data collected via continuing observations, large-scale community projects, or RAPID awards must now be made accessible as close to the time of initial collection as is practicable.
- The DMP must now identify appropriate long-lived FAIR-aligned repositories for all types of data and samples to be collected. *Data available upon request* is not acceptable.
EAR acknowledges the possibility of future NSF-wide data and sample policy updates, such as in response to the 2022 OSTP memorandum and the CHIPS and Science Act. Although the current EAR Data and Sample Policy is designed to be consistent with these expected policy changes, EAR will monitor whether further changes to the EAR Data and Sample Policy are needed.

**APPLICABILITY OF POLICY**

The updated EAR Data and Sample Policy supersedes the existing policy and applies to EAR proposals submitted after 90 days from publication of this DCL and until the policy is updated or replaced. These EAR Data and Sample Policy guidelines are intended to augment but not replace the guidance specified in the NSF Proposal & Award Policies & Procedures Guide (PAPPG) Chapter II.D.2.i(ii) and specific program solicitations. In any perceived conflict, the PAPPG or the solicitation will take precedence as appropriate for the proposal. Questions concerning NSF policies for data and sample management and sharing should be directed to the programs to which principal investigators anticipate submitting proposals.

Sincerely,

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Assistant Director for Geosciences

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3 NSF has announced its intent to retitle "Data Management Plans (DMPs)" as "Data Management and Sharing Plans (DMSPs)." This DCL applies to both current DMPs and expected future DMSPs.


5 White House Office of Science and Technology Policy (August 25, 2022), Ensuring Free,
Immediate, and Equitable Access to Federally Funded Research.  

6 Pub. Law No. 117-167, Secs. 10354-10355, "Research Reproducibility and Replicability" and "Biological Research Collections".
