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NSF Data Management Requirements 101

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NSF Data Management Requirements 101



Data Management
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<http://georgiasouthern.libguides.com/data>



National Science Foundation (NSF)

- \$7.5 billion budget (FY 2016).
- Funds ~24% of all federally supported basic research conducted by America's colleges and universities.
- Awards ~12,000 limited-term grants annually, most to individuals or small groups of investigators.
- Funds specific research proposals judged the most promising by a “rigorous and objective” merit-review system...



National Science Foundation (NSF)

Composed of several disciplinary directorates, including:

- Biological Sciences
- Computer & Information Science & Engineering
- Engineering
- Geosciences
- Mathematical & Physical Sciences
- Social, Behavioral & Economic Sciences



Merit Review

Review criteria defined in *Grant Proposal Guide (GPG)*:

- **Intellectual Merit**: Potential to advance knowledge; and
- **Broader Impacts**: Potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

“When evaluating NSF proposals, reviewers will be asked to consider what the proposers want to do, why they want to do it, how they plan to do it, how they will know if they succeed, **and what benefits could accrue if the project is successful**. These issues apply both to the technical aspects of the proposal **and the way in which the project may make broader contributions**.”



Office of Science & Technology Policy (OSTP)

Memorandum, February 22, 2013

“The Administration is committed to ensuring that, **to the greatest extent and with the fewest constraints possible** and consistent with law and the objectives set out below, **the direct results of federally funded scientific research are made available** to and useful for the public, industry, and the scientific community. **Such results include peer-reviewed publications and digital data.**”

“The ... (OSTP) hereby directs **each Federal agency with over \$100 million in annual conduct of research and development expenditures** to develop a plan to support increased public access to the results of research funded by the Federal Government.”



NSF's Public Access Plan:

Today's Data, Tomorrow's Discoveries (Mar. 2015)

- Articulates NSF's roadmap for meeting OSTP's requirements, including:
 - Scope and definition of scholarly products covered (§2)
 - Requirements for peer-reviewed publications (§3.1)
 - Requirements for research data, including inclusion of a data management plan (DMP) with all applications (§3.2)
- Provides general requirements, which may be nuanced by the directorates, offices, etc. as appropriate for different research communities.
- All current requirements effective January 2016, with current versions of the [Grant Proposal Guide](#) (GPG) and [Award and Administration Guide](#) (AAG) reflecting these changes.



Research Data Defined

“As defined in the 2 CFR 200.315(e)(3): 5 “**the recorded factual material commonly accepted in the scientific community as necessary to validate research findings.**”

While the focus is on unclassified digital data as defined in the regulation, NSF understands that additional DMP guidance at the directorate, division, or program levels may include more nuanced criteria, appropriate to the scientific discipline and proposed activity...” (§2)

* Data management requirements are not limited to “interpreted” data appearing in finished publications, but include all data “**resulting from the research funded by the award, whether or not the data support a publication.**” (§3.2.3)



General Requirements

Sharing Policy:

“Investigators are expected to share with other researchers, at no more than incremental cost and within a reasonable time, the primary data, samples, physical collections and other supporting materials created or gathered in the course of work under NSF grants. **Grantees are expected to encourage and facilitate such sharing.**”



General Requirements

DMP Requirement:

“Proposals... **must include a supplementary document of no more than two pages labeled “Data Management Plan”.** This supplementary document should describe how the proposal will conform to NSF policy on the dissemination and sharing of research results.”



General Requirements

DMP Contents:

“This supplementary document **may** include:

1. the **types of data**, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project;
2. the **standards to be used for** data and metadata **format and content** (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies);
3. **policies for access and sharing** including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements;
4. **policies and provisions for re-use**, re-distribution, and the production of derivatives; and
5. **plans for archiving** data, samples, and other research products, **and for preservation** of access to them.”



General Requirements

Directorate-Level Guidance:

“If guidance specific to the program is not provided, then the requirements established in [Grant Proposal Guide, Chapter II.C.2.j](#) apply.”

“If a specific program solicitation provides guidance on preparation of data management plans, such guidance must be followed.”



General Requirements

Collaborative Proposals & Subawards:

“Simultaneously submitted collaborative proposals and proposals that include subawards are a single unified project and **should include only one supplemental combined Data Management Plan**, regardless of the number of non-lead collaborative proposals or subawards included.”



General Requirements

DMP Review:

“A valid Data Management Plan **may include only the statement that no detailed plan is needed, as long as the statement is accompanied by a clear justification.**

Proposers who feel that the plan cannot fit within the limit of two pages may use part of the 15-page Project Description for additional data management information. Proposers are advised that the Data Management Plan must not be used to circumvent the 15-page Project Description limitation.

The Data Management Plan **will be reviewed as an integral part of the proposal, considered under Intellectual Merit or Broader Impacts or both, as appropriate for the scientific community of relevance.**”



General Requirements

Data Deposit and Citation:

“Data that underlie the findings reported in a journal article or conference paper **should be deposited in accordance with the policies of the publication and according to the procedures laid out in the DMP** included in the proposal that led to the award on which the research is based...

All data resulting from the research funded by the award, whether or not the data support a publication, **should be deposited at the appropriate repository as explained in the DMP**. Metadata associated with the data should conform to community standards and the requirements of the host repository. At a minimum, **data elements should include acknowledgement of NSF support as well as the award number and appropriate attribution.**”



General Requirements

Embargos and Protected Classes:

Practices governing use of embargos and delayed data release vary widely across the research communities supported by NSF and **should be discussed as part of the DMP.**

For large-scale projects that are supported primarily to generate data for community use, **the timing of release will be part of the award terms and conditions** and clearly stated in the public award abstracts.

NSF recognizes that **some classes of data**, particularly those that relate to human subjects, education, personally identifiable information, national security, or proprietary interests, **may be subject to restrictions. Such restrictions must be described in the DMP** and changes addressed in annual and final reports.



General Requirements

Associated Costs:

“NSF allows proposers to request funds for the ”costs of documenting, preparing, publishing or otherwise making available to others the findings and products of the work conducted under the grant. This generally includes the following types of activities: reports, reprints, page charges or other journal costs (except costs for prior or early publication); necessary illustrations; **cleanup, documentation, storage and indexing of data and databases; development, documentation and debugging of software; and storage, preservation, documentation, indexing, etc., of physical specimens, collections or fabricated items**” (see [Grant Proposal Guide, Chapter II.C.2.g.vi.\(b\)](#)).



Basic DMP Elements...

1. Types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project.

- What data will be generated in the research?
- What data types will you be creating or capturing?
- How will you capture or create the data?
- If you will be using existing data, state this and include how you will obtain it.
- What is the relationship between the data you are collecting and any existing data?
- How will the data be processed?
- What quality assurance & quality control measures will you employ?



Basic DMP Elements...

2. Standards to be used for data and metadata format and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies).

- Which file formats will you use for your data, and why?
- What form will the metadata describing/documenting your data take?
- How will you create or capture these details?
- Which metadata standards will you use and why have you chosen them? (e.g. accepted domain-local standards, widespread usage)
- What contextual details (metadata) are needed to make the data you capture or collect meaningful?



Basic DMP Elements...

3. Policies for access and sharing; Provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements.

- How will you make the data available? (Include equipment, systems, expertise, etc.)
- When will you make the data available?
- What is the process for gaining access to the data?
- Will access be chargeable?
- How long will the original data collector/creator/principal investigator retain the right to use the data before making them available for wider distribution?
- Are there any embargo periods for political/commercial/patent reasons?
- Are there ethical and privacy issues? If so, how will these be resolved?
- What have you done to comply with your obligations in your IRB Protocol?
- Who will hold the intellectual property rights and how might this affect access?



Basic DMP Elements...

4. Policies and provisions for re-use, re-distribution, and the production of derivatives.

- Will any permission restrictions need to be placed on the data?
- Who is likely to be interested in the data?
- What and who are the intended or foreseeable uses the data?



Basic DMP Elements...

5. Plans for archiving data, samples, and other research products, and for preservation of access to them.

- What is the long-term strategy for maintaining the data?
- Which archive/repository/database have you identified to deposit the data?
- What procedures does your intended long-term data storage facility have in place for preservation and backup?
- How long will/should data be kept beyond the life of the project?
- What data will be preserved for the long-term?
- What transformations will be necessary to prepare data for preservation?
- What metadata/ documentation will be submitted alongside the data or created on deposit/ transformation in order to make the data reusable?

Directorate-Level Requirements

Search DMPTool's DMP Requirements Library:

The screenshot shows the DMPTool website interface. At the top, there is a navigation bar with links for Home, My Dashboard, DMP Requirements (highlighted), Public DMPs, News, Help, Contact Us, About, and Log Out. Below the navigation bar, the user is logged in as Jeffrey Mortimore. The main content area displays the Georgia Southern University logo and name, along with links to the Data Management Services Website and Contact Data Management Services. A secondary navigation bar includes links for My Dashboard, My DMPs, Create New DMP, Review DMPs, DMP Templates, Institution Profile, and My Profile. The main heading is "DMP REQUIREMENTS". Below this, there is a search box and a "Search" button. A filter section shows tabs for A - F, G - L, M - S, T - Z, and All. The main content is a table with four columns: Template, Funder, Funder Links, and Sample Plans (if available). The table lists several DMP templates from various funders, including the Alfred P. Sloan Foundation, National Science Foundation, and Department of Energy (DOE).

| Template | Funder | Funder Links | Sample Plans (if available) |
|---|-----------------------------|---|-----------------------------|
| Alfred P. Sloan Foundation | Alfred P. Sloan Foundation | Alfred P. Sloan Foundation | |
| BCO-DMO NSF OCE: Biological and Chemical Oceanography | National Science Foundation | NSF OCE Sample and Data Policy, May 2011 (PDF) NSF GEO Data Policies | |
| Department of Energy: Generic | Department of Energy (DOE) | Policy for Digital Research Data Management | |
| Department of Energy: Office of Science | Department of Energy (DOE) | DOE Statement on digital data management | |

<https://dmptool.org/guidance>



DMPTool & Example DMPs

For DMPTool or to use the library's generic DMP template, visit the Data Management Services Guide at:

<http://georgiasouthern.libguides.com/data/DMPTool>

For Sample DMPs, see our collection at:

<http://georgiasouthern.libguides.com/data/exampleDMPs>

Data Management Services @ Henderson Library

GEORGIA SOUTHERN UNIVERSITY **ZACH S. HENDERSON LIBRARY**

Zach S. Henderson Library / LibGuides / Data Management Services / Overview

Data Management Services: Overview

Enter Search Words Search

- Overview
- Data Management Planning
- Collecting and Working with Data
- Curating and Sharing Your Data
- Links, Workshops, Training and Tools

Get Help Now!
Contact Jeffrey Mortimore, Discovery Services and Data Curation Librarian.

Publish Your Data
Studies show that sharing your research data increases your impact. Partner with the library to take your data public, through Digital Commons @ Georgia Southern, OpenICPSR, or whatever data repository best fits your data.

Upcoming Workshops
See our current schedule of spring

Data Resources & Services throughout the Research Lifecycle

Plan & Propose
To get the most out of your data, plan early how you will collect, use, and share it. Many funders now require data management plans (DMPs), and many publishers require that data be made publicly available.

- See our guide to data management planning
- See funder and publisher data requirements
- Use DMPTool, an online tool for creating DMPs
- Download our generic DMP template and outline
- See example DMPs
- Read our DMP FAQs

Create & Collect / Analyze & Assure
Ensure that you are following best practices while actively collecting, caring for, and analyzing your data. Host, secure, and share your "working" data in Digital Commons @ Georgia Southern during the active phase of

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graph TD; A[Plan & Propose] --> B[Create & Collect]; B --> C[Analyze & Assure]; C --> A;
```

<http://georgiasouthern.libguides.com/data>