



National Science Foundation
Directorate for Mathematical & Physical Sciences (MPS)
Division of Astronomical Sciences (AST)

Advice to Principal Investigators (PIs) on the Data Management Plan (DMP)

The NSF Proposal and Award Policies and Procedures Guide ([PAPPG](#)) requires, in all submitted proposals, a supplementary document of no more than two (2) pages describing a Data Management Plan (DMP) for the proposed research. Fastlane will not permit submission of a proposal that is missing the DMP. The DMP should preserve and disseminate appropriate parts of the investigator's intellectual merit products and their broader impact plan.

The goal of this note is to provide suggestions for implementation of the long-standing NSF policy on Dissemination and Sharing of Research Results, which may be found in the PAPPG, Section XI.D.4.

The AST encourages data sharing to promote research productivity. Several scientists have written detailed suggestions on effective methods for sharing astronomical data. A useful guide, with links to valuable resources, is [Ten Simple Rules for the Care and Feeding of Scientific Data](#) by A. Goodman *et al.* (2014).

Below the AST division highlights aspects appropriate for astronomy programs. We emphasize, however, that the contents of the DMP are subject to the standard merit review process by panels and/or ad-hoc reviewers. Investigators should write the DMP with merit review in mind.

1. Products of the Research

Describe the types of data and products that will be generated in the research, such as images of astronomical objects, spectra, data tables, time series, theoretical formalisms, computational strategies, software, and curriculum materials.

2. Data Format

Describe the format in which the data or products are stored (e.g., ASCII, html, FITS, HD5, Virtual Observatory-compliant tables, XML files, etc.). Include a description of any metadata that will make the actual data products useful to the general researcher. Where data are stored in unusual or not generally accessible formats, explain how the data may be converted to a more accessible format or otherwise made available to interested parties. In general, solutions and remedies should be provided.

3. Access to Data and Data Sharing Practices and Policies

"Access to data" refers to data made accessible to an interested party without the need for an explicit request from the interested party. Describe your plans, if any, for providing such general access to data, including websites maintained by your research group, and contributions of your data to public databases. If maintenance of a web site or database is the direct responsibility of your group, provide information about the period you plan to maintain the

web site or data base. Note that data taken at national or private observatories may already be accessible through a public archive (perhaps after a standard proprietary period). Various forms of data (e.g., FITS images and tables, HD5 or other data tables) also may be deposited with published articles in the AAS journals and other journals. Attention should be paid to making accessible data sets that are products of well--defined surveys. Also describe your practice or policies regarding the release of data, for example whether data are posted before or after formal publication.

“Data sharing” refers to the release of data in response to a specific request from an interested party. Describe your policies for data sharing, including, where applicable, provisions for protection of privacy, confidentiality, intellectual property, national security, or other rights or requirements. It is preferred that all data products be made available without requiring a special request to investigators.

4. Policies for Re--Use, Re--Distribution, and Production of Derivatives

Describe your policies regarding the use of data provided via general access or sharing. For example, if you plan to provide data and images on your website, will the website contain disclaimers, or conditions regarding the use of the data in other publications or products? If the data or products (e.g., images) are copyrighted (by a journal, for example), how will this be noted on the website?

5. Archiving of Data

Describe whether and how data will be archived and how preservation of access will be handled. If the data will be archived by a third party (e.g., national observatory or journal), please refer to their preservation plans if available. Special attention should be taken to selecting institutional sites that are expected to have a reasonably long lifetime.

6. Software

Providing software to read and analyze scientific data products can greatly increase value of these products. Investigators should use one of many software collaboration sites, like [Github.com](https://github.com). These sites enable code sharing, collaboration and documentation at one location.

The DMP should contain information on how the data will be managed but must not be used to circumvent the 15-page Project Description limitation by discussing other aspects of planned research. In some cases, the DMP may contain a statement such as “a data management plan is not relevant to the proposed activities”; such statements should be explained by the investigator.

The preceding guidelines are not intended to replace the guidance given in the PAPPG. In any perceived conflict, the PAPPG will take precedence.