**Directorate for Geosciences – Division of Atmospheric & Geospace Sciences (NSF-GEO/AGS)**

**Products of Research**

Describe the types of data and products that will be generated in the research, such as physical samples, space and/or time-dependent information on chemical and physical processes, images, spectra, final or intermediate numerical results, theoretical formalisms, computational strategies, software, and curriculum materials.

* Give a short description of what "data" and "data collection" will mean in your research. Include the size or amount of data produced each year (if not known, provide an estimate). Make sure to mention what type of data is being produced; where and when the data will be produced. Consider if your data is new observational data, new results from models, data generated from previous observations or models, physical samples, software, curriculum materials, etc. *Consider these questions*:
  + What data will be generated in the research?
  + What data types will you be creating or capturing? (e.g. experimental measures, observational or qualitative, model simulation, processed etc.)
  + How will you capture or create the data?
  + If you will be using existing data, state that fact and include where you got it.
  + What is the relationship between the data you are collecting and the existing data?
  + Approximately, how much data will be produced each year?

**Data Format**

Describe the format in which the data or products are stored (e.g. hardcopy logs and/or instrument outputs, ASCII, XML files, HDF5, CDF, etc). What metadata will be part of the data sets produced?

* Explain the specific format of your data. Make sure to include in your description why you are using the formats you have specified—discipline or domain standards, open source, widespread usage, etc. Describe the metadata that will be necessary for accessing your data. Think about what information "interested parties outside of your laboratory" would need to use your data (this is also known as "metadata"). *Consider these questions*:
  + 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?

**Access to Data and Data Sharing Practices and Policies**

Describe your plans for providing access to data, including websites maintained by your research group and contributions to public databases. If maintenance of a web site or database is the direct responsibility of your group, provide information about the period of time the web site or database is expected to be maintained. Also describe your practice or policies regarding the release of data&#8212;for example whether data are available before or after formal publication and the approximate duration of time that the data will be kept private. Describe your policies (where applicable) for protection of propriety data, privacy and confidentiality, intellectual property, or other rights or requirements.

* Describe how you will make the data available to other researchers, as well as to the general public. Consider what data will be available (and in what formats) and where (on your website, available via ftp download, via e-mail, or another way). Please keep in mind that you are expected to adequately provide responses for both how you plan on making your data accessible without a specific request from a researcher, and how you will be able to provide data to the public. Make sure to mention how long the data will be kept private before making it available, and if different data products will be available on different schedules (e.g. raw data vs. processed data). Use this section to also explain policies for the protection of proprietary data, issues of privacy and confidentiality, and intellectual property as their impact on the dissemination of your data. *Consider these questions*:
  + How and when will you make the data available?
  + What are your plans for providing access to your data? (on your website, available via ftp download, via e-mail, or another way)
  + What file formats will be used for data sharing?
  + How long will the original data collector/creator/principal investigator retain the right to use the data before opening it up to wider use?
  + How long do you expect to keep the data private before making it available? Explain if different data products will become available on different schedules (Ex: raw data vs processed data, observations vs models, etc.)
  + Are there ethical and privacy issues? If so, how will these be resolved?
  + Who will hold the intellectual property rights to the data and how might this affect data access?
  + If applicable, what have you done to comply with your obligations in your IRB Protocol?
  + How long will/should data be kept beyond the life of the project?

**Policies and Provisions for Re-Use, Re-Distribution and Production of Derivatives** Describe your policies regarding the use of data provided via general access or sharing. If you plan to provide data on a website, will the site contain disclaimers, or conditions regarding the use of the data in other publications or products? If the data or products are copyrighted, how will this be noted on the website?

* Explain how the policies you outline in the section above can be applied to the re-use and re-distribution of your data. Identify who will be allowed to use your data, how they will be allowed to use your data and whether or not they will be allowed to disseminate your data. If you will be restricting access, use or dissemination of the data, you must explain how you will codify and communicate these terms. *Consider these questions*:
  + Will any permission restrictions need to be placed on the data?
  + What and who are the intended or foreseeable uses/users of the data?

**Archiving of Data**

Describe whether and how data will be archived and how preservation of access will be handled. For example, will hardcopy logs, instrument outputs, and physical samples be stored in a location where there are safeguards against fire or water damage? Is there a plan to transfer digitized information to new storage media or devices as technological standards or practices change? Will there be an easily accessible index that documents where all archived data are stored and how they can be accessed? If the data will be archived by a third party, please refer to their preservation plans (if available).

* This portion of the Data Management Plan asks the researcher to provide a long-term strategy for archiving and preserving the data from the research described in the proposal. *Consider these questions*:
  + What is the long-term strategy for maintaining, curating and archiving the data?
  + How long do you expect the data be available after the funding for the project has ended?
  + Which archive/repository/central database/ data center have you identified as a place to deposit data?
  + What procedures does your intended long-term data storage facility have in place for preservation and backup?

Also consider these questions about the data and associated information that will be deposited:

* + What data will be preserved for the long-term?
  + What transformations will be necessary to prepare data for preservation/data sharing?
  + What metadata/documentation will be submitted alongside the data or created on deposit/transformation in order to make the data reusable?
  + What related information will be deposited (e.g. references, reports, research papers, fonts, the original bid proposal, etc.)?