



# Open Science at NASA: Implementation and Lessons Learned

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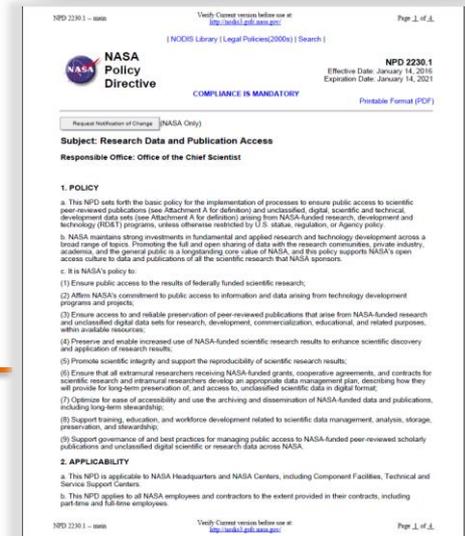
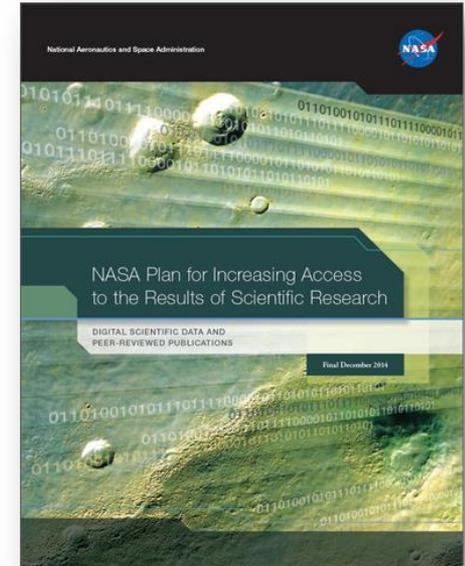
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# Agency Progress

- In February 2013, the Office of Science & Technology Policy (OSTP) directed 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.
- The Agency developed the *NASA Plan for Increasing Access to the Results of Scientific Research in December 2014*.
- NASA Policy Directive NPD 2230, Research Data and Publication Access was finalized in January 2016.
- A website portal of NASA data information was created as a “one-stop shop”. It includes the plan/NPD, FAQs, links to training videos as well as links to NASA datasets.
- NASA repository for peer reviewed publications is located at PubSpace

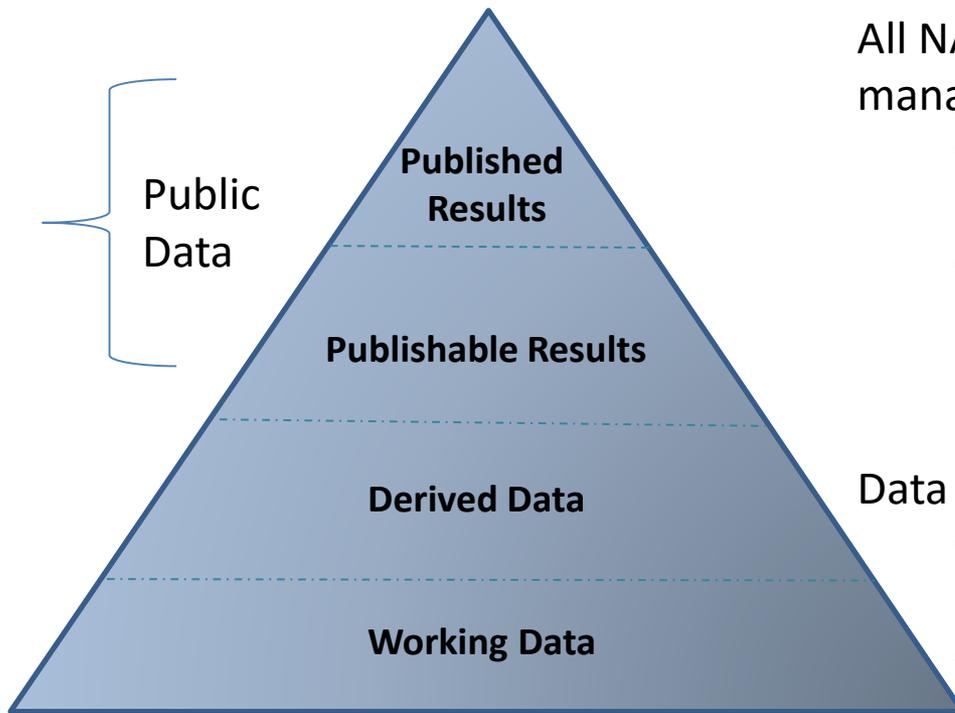
*“Effective data management has the potential to increase the pace of scientific discovery and promote more efficient and effective use of government funding and resources.” (Excerpt from the NASA Plan)*





# NASA Public Data Access Policy

NASA's policy has always been to make scientific data available; the OSTP policy prompted NASA to search for ways to make it easier to access and search



- Working Data: Raw experimental data (experiments, simulations)
- Derived Data: Working data that have been analyzed or processed
- Publishable Results: Data ready for publication with uncertainty estimates
- Published Results: Reviewed by NASA and published in a journal, book, etc

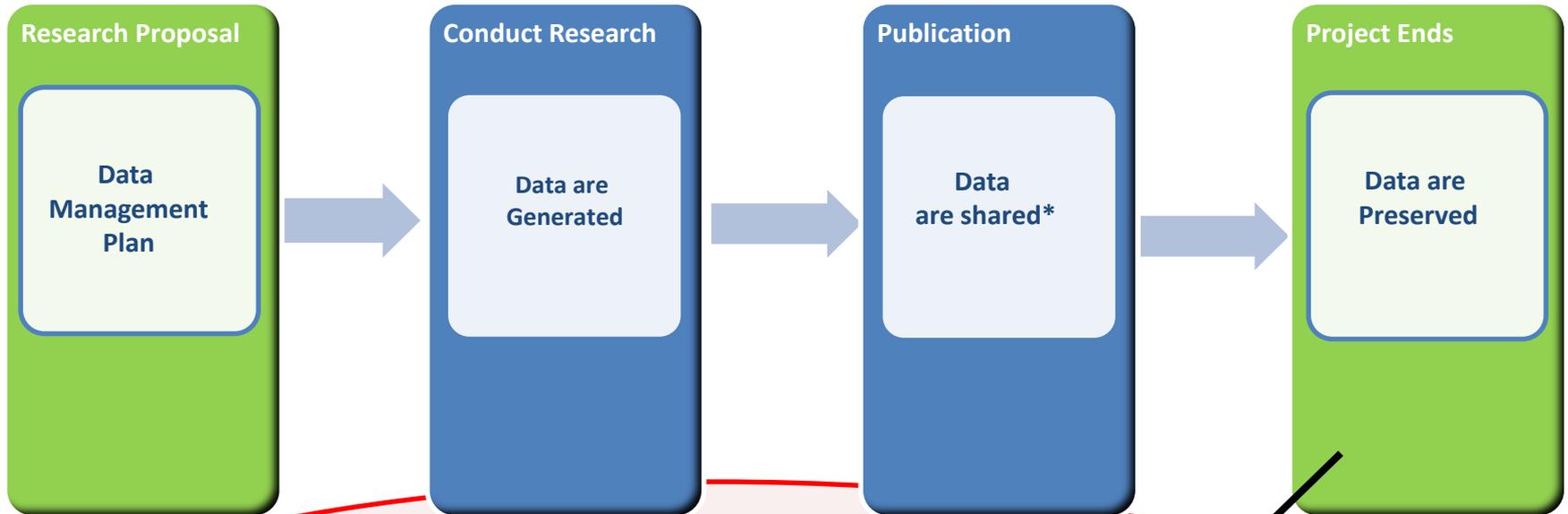
All NASA's research solicitations require a data management plan (DMP)

- DMP is not counted in the overall proposal page count
- DMP must be included in the proposal and identify where the data will be housed

Data repository

- Primary repository for research data is a NASA approved data archiving center
- On case by case basis other data centers or venues may be considered

# NASA Research Data “Lifecycle”





# NASA-Funded Research Results

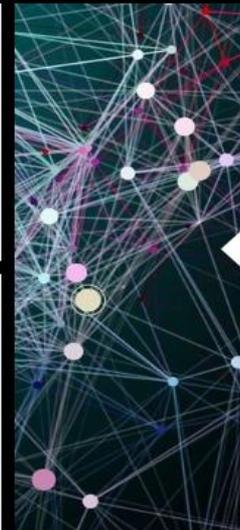
[Home](#)[Data Management Plan](#)[PubSpace](#)[NASA's Data Portal](#)[FAQs](#)[NASA Public Access Feedback](#)

## Related Topics

[All Topics A-Z](#)

## Public Access to Results

NASA has developed an agency plan, and associated policy, outlining a framework for activities to increase public access to scientific publications and digital scientific data resulting from NASA-funded research.

[NASA's Data Portal](#)[Training Videos](#)[OSTP Policy](#)

## Data Management Plan

NASA-funded extramural and intramural researchers receiving grants, cooperative agreements, and contracts for research are required to follow NASA's policy to develop data management plans as part of their NASA funding proposals. Their plans must describe how they will provide for long-term preservation of, and access to, their unclassified scientific data in digital format in NASA-approved repositories.



## PubSpace

NASA-funded authors and co-authors deposit copies of their peer-reviewed scientific publications and associated data into NASA's publication repository, PubSpace.

[Science Mission Directorate](#)[Space Technology Mission Directorate](#)[Human Exploration and Operations Mission Directorate](#)[Aeronautics Research Mission Directorate](#)



# Nongovernment Interest in Open Science\*

The findings of medical research are disseminated too slowly

- “ON JANUARY 1st the Bill & Melinda Gates Foundation - The research it supports (~ \$4B US) for scientific endeavors, must, when published, be freely available to all.
- On March 23rd it followed this up by announcing that it will pay the cost of putting such research in one particular repository of freely available papers.
- It means papers reporting Gates-sponsored research cannot be charged for. No pay walls. No journal subscriptions. That is not a new idea, but the foundation’s announcement gives it teeth. It means recipients of Gates’ largesse can no longer offer their wares to journals such as Nature, the New England Journal of Medicine or the Proceedings of the National Academy of Sciences, since reading the contents of these publications costs money” (The Economist)



# Lessons Learned

- Challenge coordinating among 20 federal agencies even though it was a requirement from the Executive Office of the President
- It is difficult to create a database
- It is expensive to maintain a database
  - Infrastructure
  - Manpower
- It requires commitment that relevant parties comply and provide notice of new data sets
- After four years, we are still working through some of these challenges

Value to NASA is that all peer reviewed publications will be held in a single repository and more easily available to the public at no charge



# Research Data & Publication Websites

- NASA Policy Directive: Research data and Publication access  
<https://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPD&c=2230&s=1>
- NASA Data Information  
<https://www.nasa.gov/open/researchaccess>
- NASA PubSpace  
<https://www.ncbi.nlm.nih.gov/pmc/funder/nasa/>