

# NASA Data Strategy Update

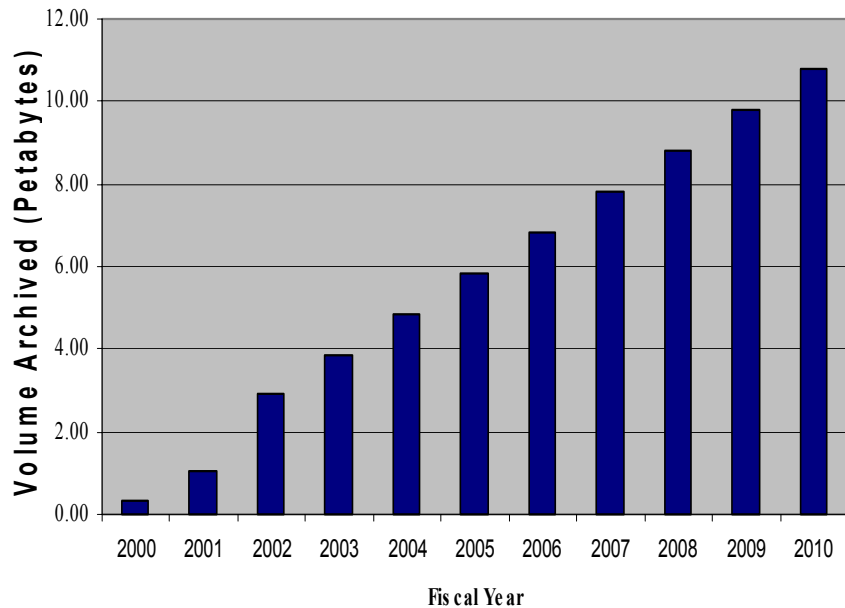
- EOSDIS: now in research operations, and providing operating information for future operational Earth observation systems in the NPOESS era
- SEEDS: NASA strategy for data and information systems and services evolution
- SEEDS starts now: REASoN CAN and SEEDS Precipitation Processing System Prototype
- SEEDS evolving EOSDIS: From Missions to Climate Measurements for NPOESS Preparatory Project (NPP)

# NASA is Meeting a Growing Demand for Earth Science Data and Information

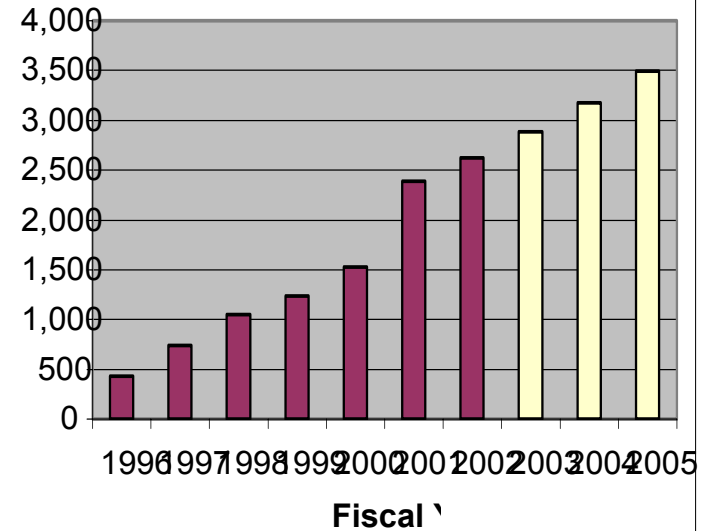
Ingesting, processing, and archiving an unprecedented volume of climate and Earth science data.

NASA is benchmarking capabilities and processes for handling the capacities for future operational needs (e.g., NPOESS).

### Explosive Growth in Archive Volume



### Distinct Users S



NASA provides access to Earth system science data, information, and services to millions of unique users.

Over the next decade, NASA will ensure the timely delivery of Earth Science information at an affordable cost by evolving to a more open, distributed set of data systems and service providers.

# SEEDS Overview

Formulation Charter - Establish a strategy for the evolution of the Earth Science Enterprise network of data systems and service providers over the next decade that:

- Ensures the timely delivery of Earth Science information at an affordable cost.
- Fully engages the community on data management issues, objectives, and solutions.
- Addresses recommendations from NewDISS Strategy Document.
  - Unifying Framework - How to introduce greater flexibility and responsiveness into the science data and information products standards, processes, and infrastructure?
  - Technology Infusion - How to leverage information technologies that exist or are being developed by other agencies/commercial sector?
  - Management - How to establish a more broadly based network of science and applications providers of products and services to address the ESE strategic science objectives?
- Formulation effort recognizes the need
  - to strengthen current capabilities,
  - to incorporate new requirements: new technologies, new science, and science results for applications
- Supports the Research, Education, Applications Solutions Network (REASoN) Cooperative Agreement Notice
- Integrated Precipitation Processing System is SEEDS Prototype
- See <http://lennier.gsfc.nasa.gov/seeds/index.html> for additional SEEDS information.

## REASoN CAN Objective

- The CAN solicits proposals that will afford *solutions* for utilization of NASA assets and capabilities by:
  - providing data products and/or information systems and services capabilities in support of the goals and objectives of the research, applications, and education strategies of NASA's Earth Science Enterprise (ESE);
  - developing, where necessary, advanced data systems technologies integrated into a project (solution) that addresses the above objectives.
  - applying principles from the Strategic Evolution of ESE Data Systems (SEEDS) regarding community involvement, product life cycle planning, and standards and interfaces for interoperability and exchange of data and information;
  - supporting ongoing SEEDS efforts through Working Groups for Standards and Interfaces, Technology Infusion, Architecture and Reuse, and Metrics Planning and Reporting;
  - contributing to benchmarking solutions that serve society through integration of Earth science measurements, models and decision support systems.

## CAN Objective (cont.)

**Projects supported by this CAN will provide data and data products and/or information systems and services capabilities to:**

***(Research)*** Improve accessibility by the NASA science community to, and accuracy of: a) data and data products, including selected geophysical parameters of Earth observations constructed from multiple sources; and, b) efforts that more effectively integrate and fuse sources for geophysical parameters that may not be directly observed;

***(Applications)*** Provide data products and tools for resource management and policy decision support in applications of national importance, and provide decision makers with interactive access to dynamically updated knowledge of the Earth system; and,

***(Education)*** Address needs of the educational community particularly with respect to timely and ready access to Earth and environmental data to promote math, science and geography in K-12 education, and earth system science in graduate and post graduate education.

# CAN Timeline

- Proposals due 11/26/02
- Mail reviews 2/13/03
- Panels 4/8-11/03
- Selection May-June '03

# Precipitation Processing System (SEEDS Prototype)



Data Production System:  
Closely working federation of national and  
international partners

# Global Precipitation Measurement Mission Architectural Guidelines

- Don't view as a single-point mission
- Conceived as a rolling-wave of capabilities
  - Satellites/instruments added, deleted, replaced as required
  - Partners added, deleted, replaced as required
  - Data streams added, deleted, replaced as required
- Data system scalable to handle rolling-wave mission concept
  - Focused on precipitation question rather than a specific mission
  - Minimum and definable costs for increase, replacement, deletion
  - No built-in software and architecture limitations on scalability
  - Ability of other partners to tie into data and services



# Precipitation Processing System Approach

- Architecture based (Stocker – Chief Architect)
- Large Scale Reuse from TRMM
  - Entire Architecture reused
  - Database structure reuse
  - Other large-scale design and code reuse
- *Cooperation Based*
  - Partners contributing processed data from their systems
  - Partners perhaps contributing “system-wide” tools
  - GHCC a part of the overall system
  - GV processing systems part of the overall system
  - Regional distribution centers part of the overall system
- Tools based approach to facilitate component isolation, extensibility and portability
  - Like TSDIS but more extensive
  - Multiple sources of tools anticipated
- Industry Standards based interactions
  - XML
  - Perhaps XML-SOAP based services interactions to facilitate
  - Facilitate contributor independences while encouraging broader interactions
- Science Discipline Centers (funded through science or other initiatives) – Evolved from TRMM
  - External entities at Universities or international locations
  - Focused on specific aspects of the overall precipitation research
  - Leading and acknowledged role in the precipitation community
  - Continuous and high speed, server level interactions with the Precipitation Processing System
  - Provide services and data products beyond the standard GPM products

# Systematic Measurements from NPP

