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# Proto-Examples of Data Access and Visualization Components of a Potential Cloud-Based GEOSS-AI System

NASA/Goddard Earth Sciences Data and Information Services Center (GES DISC)

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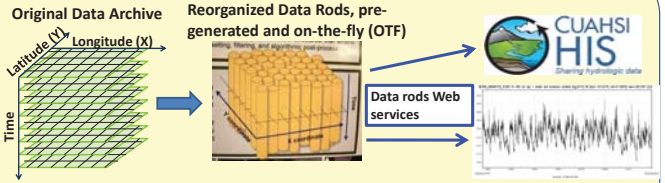
***A possible future configuration of these components***

## Motivation

- One component of a potential GEOSS-AI system, in the continuum between observations and end point research, applications, and decision making, would be one that enables transparent data discovery and access by users. Such a component might be effected via the system's "data agents."
- Presumably, some kind of data cataloging has already been implemented, e.g., in the GEOSS Common Infrastructure (GCI).
- Both the agents and cataloging could also leverage existing resources external to the system.
- The system would have some means to accept and integrate user-contributed agents.
- Another component would be one that facilitates browsing/visualization of the data, as well as some basic analyses, i.e., "visualization agents."
- Three ongoing projects at the NASA Goddard Earth Sciences Data and Information Services Center (GES DISC) provide possible proto-examples of potential data access and visualization components of a cloud-based GEOSS-AI system.

## Proto-examples of GEOSS-AI Components

### Data Rods Project



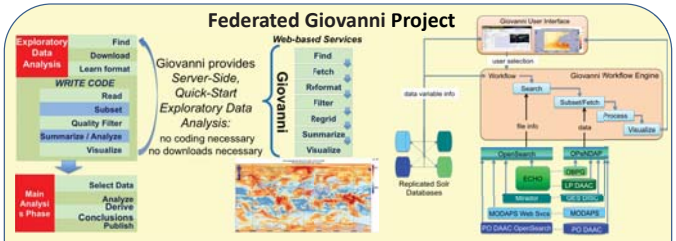

Removed longstanding barrier to accessing NASA data (i.e., accessing archived time-step array data as point-time series) for selected variables of the North American and Global Land Data Assimilation Systems (NLDAS and GLDAS, respectively) and other NASA data sets.

### Data Rods via GEOSS Project


Leveraging GEOSS and as part of GEOSS Water Services Project, to help provide access to data rods for non-NASA users.

More … GC11C-0569

### Federated Giovanni Project




Giovanni currently provides Web-based exploratory analysis for GES DISC data. Federated Giovanni extends this to 4 other EOSDIS Data Centers.

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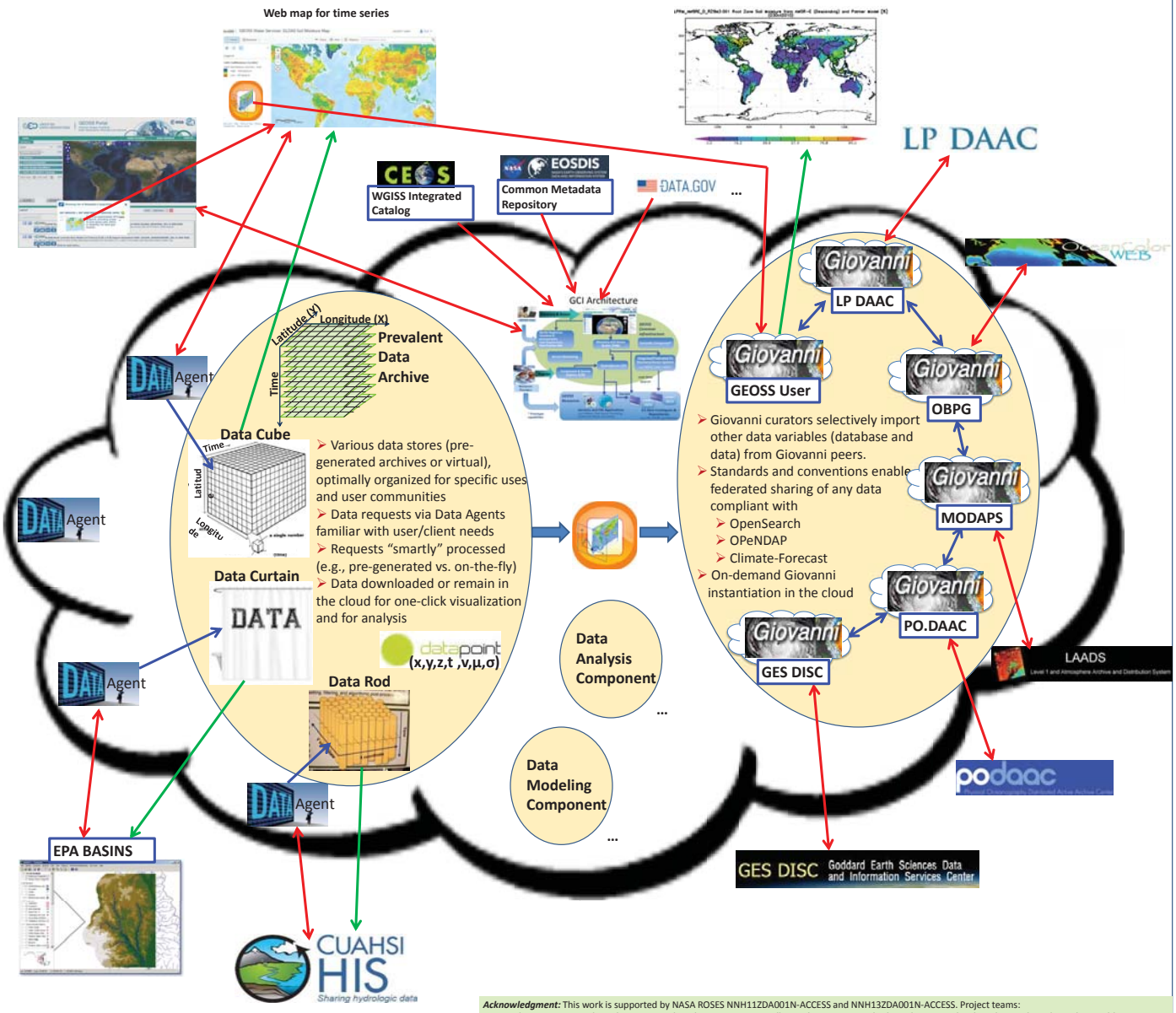
## Notional Configuration of GEOSS-AI Components




- Various data stores (pre-generated archives or virtual), optimally organized for specific uses and user communities
- Data requests via Data Agents familiar with user/client needs
- Requests "smartly" processed (e.g., pre-generated vs. on-the-fly)
- Data downloaded or remain in the cloud for one-click visualization and for analysis

- Giovanni curators selectively import other data variables (database and data) from Giovanni peers.
- Standards and conventions enable federated sharing of any data compliant with
  - OpenSearch
  - OPeNDAP
  - Climate-Forecast
- On-demand Giovanni instantiation in the cloud

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Web map for time series

GEOSS User

LP DAAC

OBPG

MODAPS

PO.DAAC

Giovanni

Virtual Machines

Giovanni

CEOS

WGISS Integrated Catalog

Giovanni

GES DISC

Agent

Agent

EOSDIS

Common Metadata Repository

DATA.GOV

Giovanni

Virtual Machines

GEOSS User

Giovanni

Virtual Machines

PO.DAAC

Giovanni

Virtual Machines

MODAPS

Giovanni

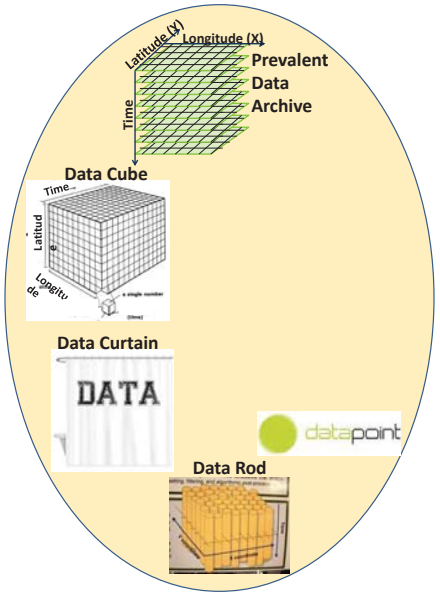
Virtual Machines

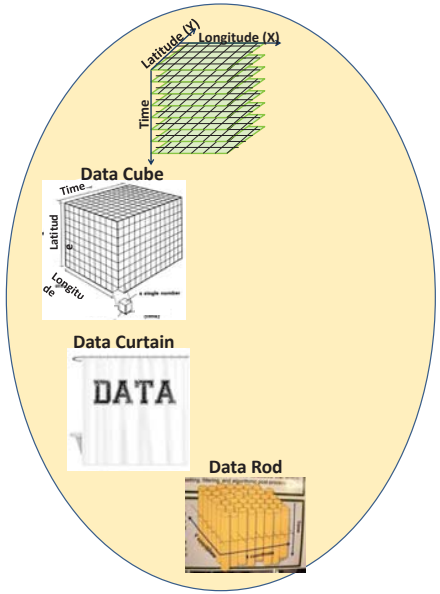
OBPG

Giovanni

Virtual Machines

LP DAAC




GVM (LP DAAC)

GVM (OBPG)

GVM (MODAPS)

GVM (PO.DAAC)

Giovanni-4 (GES DISC)

Data Modeling Component

Data Analysis Component

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