

[Proto-Examples of Data Access and Visualization Components of a Potential Cloud-Based GEOSS-AI System](#) [1]

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Abstract:

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Once a research or application problem has been identified, one logical next step is to search for available relevant data products. Thus, an early 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. The need or desirability for some data format internal to the system should be evaluated. Another early component would be one that facilitates browsing/visualization of the data, as well as some basic analyses.

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.

1. Reorganizing data archived as time-step arrays to point-time series ("data rods"), as well as leveraging the NASA Simple Subset Wizard (SSW), to significantly increase the number of data products available, at multiple NASA data centers, for production as on-the-fly (virtual) data rods. SSW's data discovery is based on OpenSearch. Both pre-generated and virtual data rods are accessible via Web services.
2. Developing Web Feature Services to publish the metadata, and expose the locations, of pre-generated and virtual data rods in the GEOSS Portal and enable direct access of the data via Web services. SSW is also leveraged to increase the availability of both NASA and non-NASA data.
3. Federating NASA Giovanni (Geospatial Interactive Online Visualization and Analysis Interface), for multi-sensor data exploration, that would allow each cooperating data center, currently the NASA Distributed Active Archive Centers (DAACs), to configure its own Giovanni deployment, while also allowing all the deployments to incorporate each other's data. A federated Giovanni comprises Giovanni Virtual Machines, which can be run on local servers or in the cloud.

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