Driving Earth Science Data

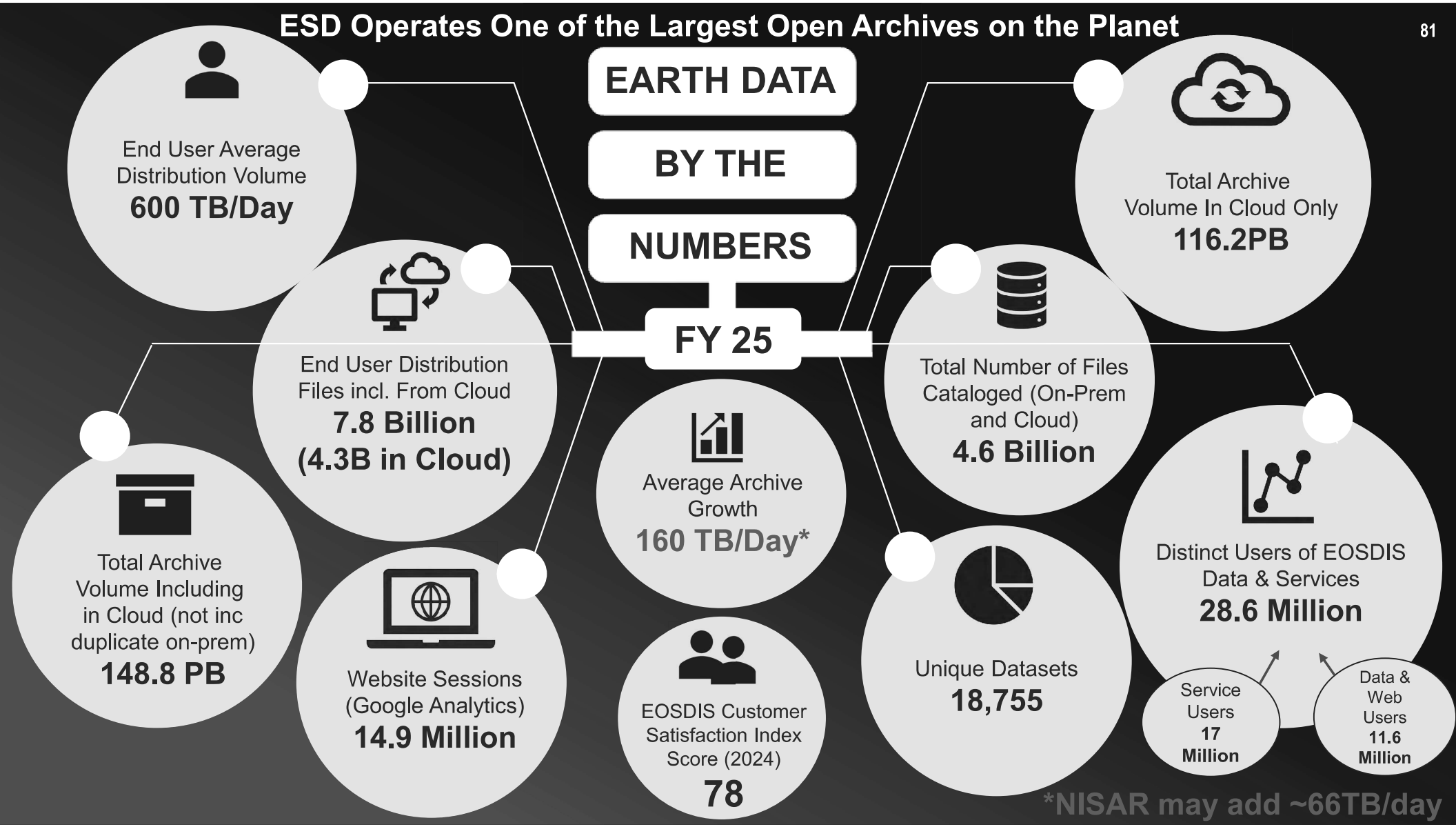
Earth Science Data Systems

Katie Baynes, Earth Science Data Officer

A Note on Data Systems Challenges

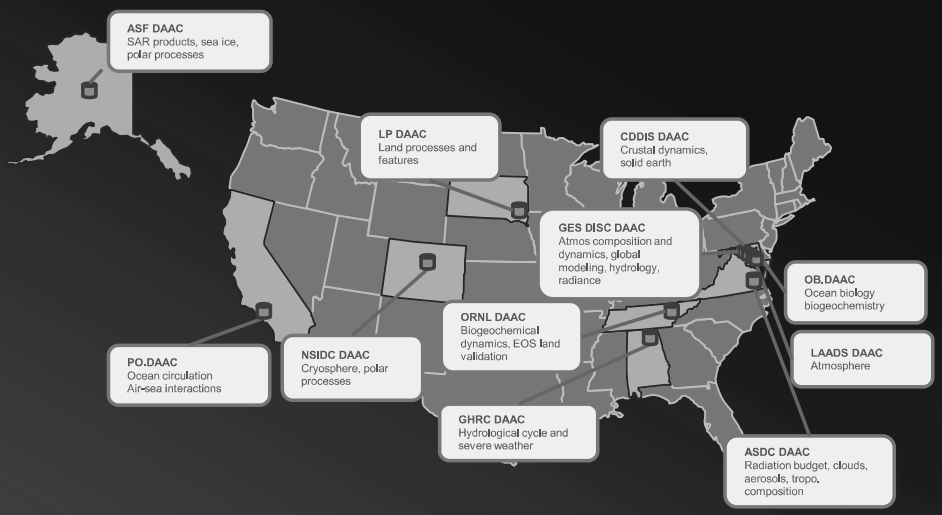
Data Systems is neither a grants nor mission-based element. A flat budget over time means that as data volumes and infrastructure costs grow (storage, distribution, processing, data services), there is less to work with year over year, making increased efficiencies vital.

ESD Operates One of the Largest Open Archives on the Planet



Data Systems Strategy

- **Focus on Core Data Systems mission**
  - Quality and Efficiency
  - Technological Evolution
  - Community Support and Open Science
- **Focus on:**
  - Ground-breaking science products
  - Foundational data products used by many different parts of the enterprise from research and modeling to applications
  - Near Real Time (NRT) products
- **Consolidation of DAACs from 11 independent locations to thematic science enabling teams (Study underway to inform planning)**
- **Structure data systems to support AI/ML and processing innovation**



From:
11 Geographically-Distributed Full Stack Archives (DAACs)

Evolving Earth Science User Support

To:
Thematic Support Teams:
no anchoring physical team locations, best support regardless of geography

Centralized services:
Cloud-based ingest, archive, distribution, metrics, and cataloging

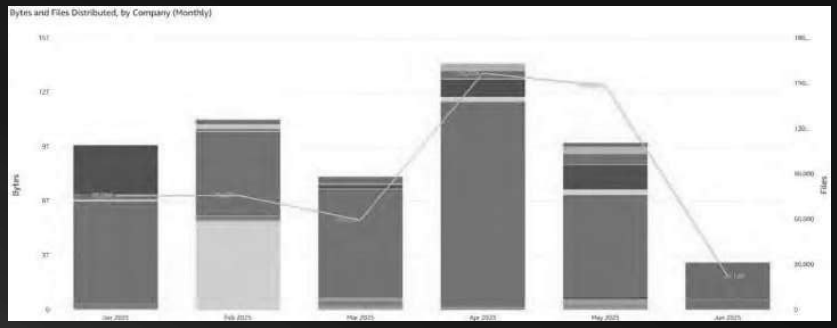
Science Enabling Teams (SETs) will empower innovative applications of NASA Earth Data by improving operational efficiency.

With a flat budget and growing infrastructure costs (storage, distribution, processing, and data services) NASA Earth data must grow efficient. This need, coupled with the growing applications of NASA Earth Data for industries such as agriculture, energy, finance, and more.

Past Distributed Data Access and Archive Centers (DAACs) were narrowly scoped to a mission or topics, and limited to a physical location, while SETs will be organized around ESD's new thematic spheres and use the cloud to nationally leverage our best data assets with our best users and thinkers.

The SET transition study team is preparing three potential courses of action and a landscape analysis report to best assess how to set up the new SETs as we move away from the physical-location limited DAAC system. This assessment will focus on risks, readiness, and feasibility of options.

SETs will align with the new R&A spheres.



74% of US-based Fortune 100 companies have used NASA Earth Science data, totaling over 774 million files in the last 14 years

Goals for Evolution of Science Investigator Led Processing Systems (SIPS)

- Ensure long-term stewardship and continuity of foundational Earth system data
- Evolve legacy SIPS functions for processing and archival
- Prioritize transparency, traceability, and sustained data availability
- Support mission transitions, algorithm updates, and reprocessing
- Establish a forward-looking, scalable architecture for efficient data delivery
- Maintain NASA's role as a provider of trusted, authoritative Earth science data

Discussion

- What are the science and applications opportunities that are enabled by the SETs?
- What are the benefits to this approach?
- What are the concerns that ESD should be aware of as we formulate and mature this new approach?