

NASA's EOSDIS, Trust and Certification



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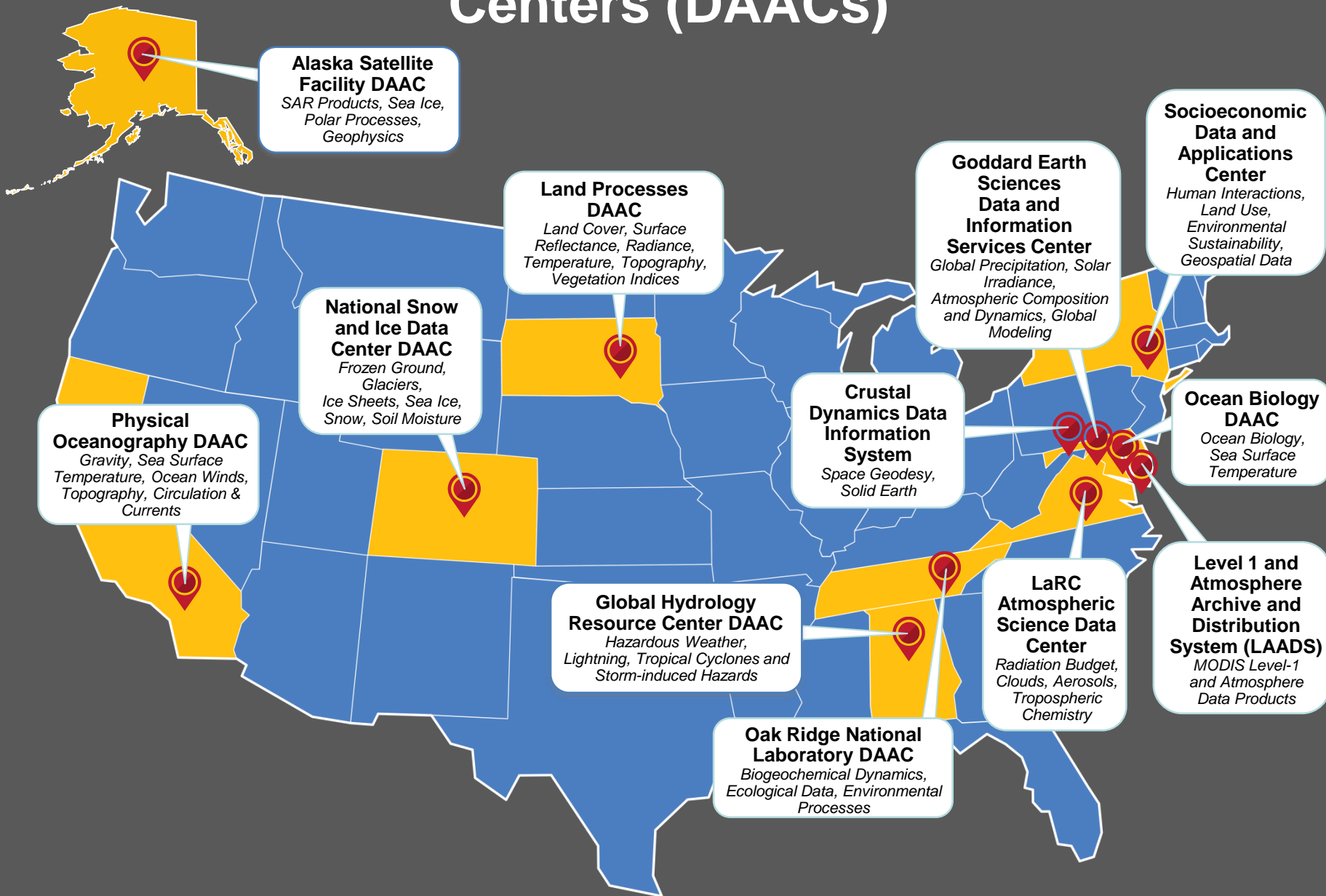


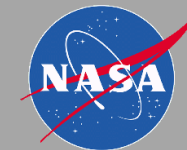
Earth Observing System Data and Information System (EOSDIS)



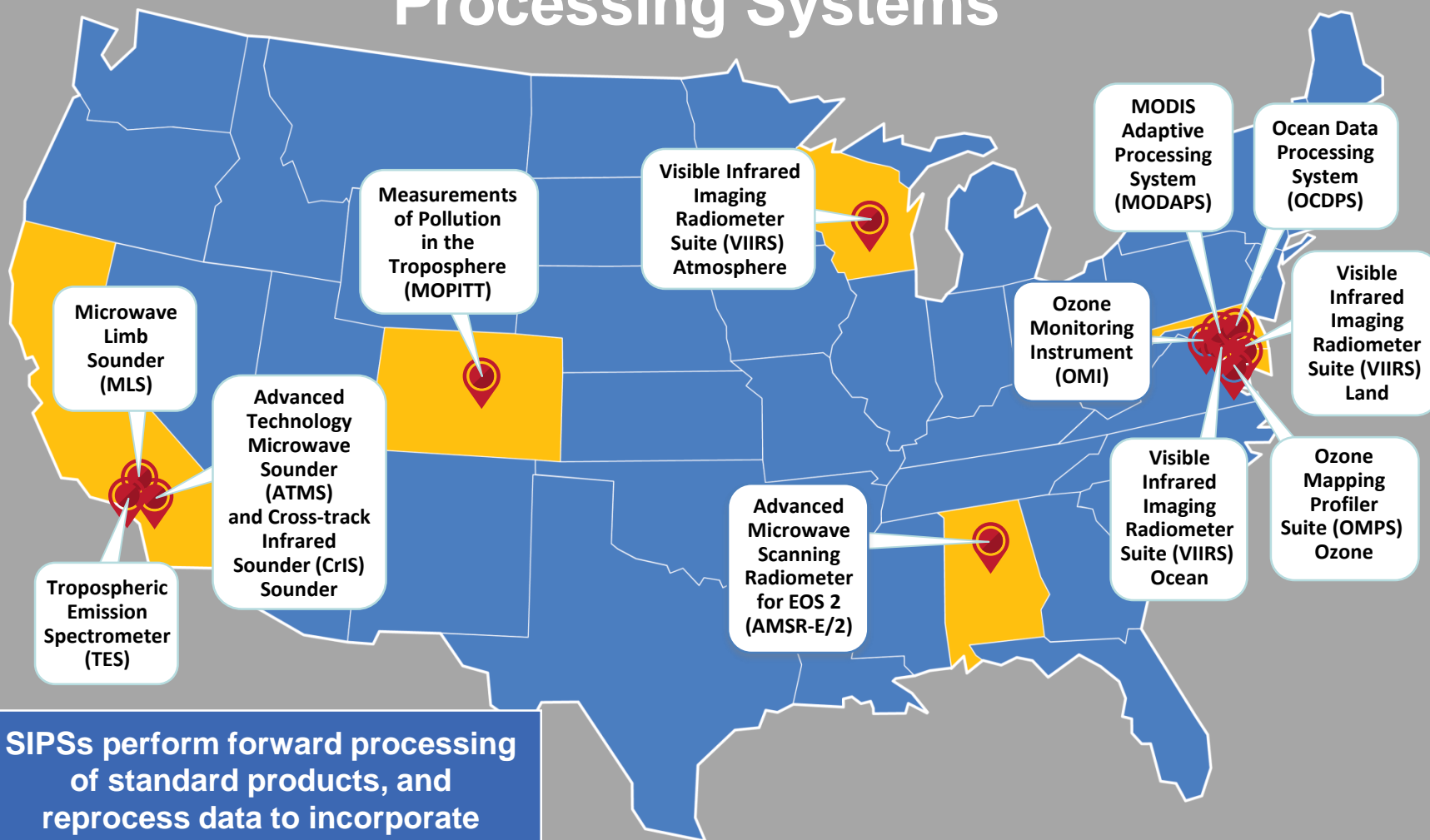
- **Operating since August 1994**
- **Designated by Federal Government**
 - **legally bound by Circular A-130 (Managing Federal Information as a Strategic Resource) and the Federal Records Act**
 - **Must follow NIST and NARA regulations**
 - **NASA Procedural Requirements (NPR 7120.5) govern details of Program/Project Management**
- **Provides end-to-end capabilities for managing NASA's Earth science data.**
 - **Science Operations**
 - ❖ **Science data processing**
 - ❖ **Data management**
 - ❖ **Interoperable distributed data archives**
 - ❖ **On-line data access services**
 - ❖ **Earth science discipline-oriented user services**
 - **Network Data Transport to distributed system elements**

Distributed Active Archive Centers (DAACs)





Science Investigator-led Processing Systems



SIPs perform forward processing of standard products, and reprocess data to incorporate algorithm improvements.

Session Questions and “Quick” answers



- What certification process did you use for your use case?
 - ICSU/World Data System (most recently)
- Why was this certification process selected?
 - Recommendation in 2012 by Bernard Minster (Member, Earth Science Subcommittee of NASA Advisory Committee) and request by Martha Maiden (NASA HQ Program Executive for Earth Science Data Systems)
- What were the pros and cons as a result of using the identified certification process?
 - Pros
 - Provides opportunity for self-examination
 - Relatively easy process given the rigor with which the system and its data centers have been developed and managed
 - Cons
 - One more review and certification in addition to regular internal and external reviews

Session Questions and “Quick” answers



- Where were the key outcomes?
 - ESDIS Project is a Network Member of WDS
 - 10 of 12 DAACs are Regular Members of WDS
 - Potentially broader visibility (difficult to measure – no specific metrics to assess incremental change that resulted by the certification)
 - Participation in ICSU/WDS/CODATA sponsored meetings (SciDataCon; WDS Forum)
- What are the next steps?
 - WDS and Data Seal of Approval (DSA) certification have merged
 - Recertification every 3 years

A Little History (1 of 5)



- **EOSDIS Advisory Panel (early to mid-1990's)**
 - adhere to a flexible, distributed, portable, evolutionary design;
 - distribute data products by appropriate high-bandwidth communication or other media;
 - operate prototypes in a changing experimental environment
- ◆ **NASA response:**
 - Distributed architecture with DAACs
 - Version 0 working prototype
- **DAAC User Working Groups (on-going)**
 - Science discipline community input to DAAC performance
- ◆ **NASA response:**
 - Implemented process for adding community-developed tools, services and datasets to the DAACs

A Little History (2 of 5)



■ NRC Review (1995)

- “Responsibility for product generation and publication and for user services should be transferred to a federation of partners selected through a competitive process open to all”

- <http://www.gcrio.org/USGCRP/LaJolla/appF.html>

◆ NASA response:

→ Working Prototype Earth Science Information Partners (ESIP) Federation

■ EOSDIS Review Group (1997)

- Recommended “an adaptive approach which will be less centralized, giving more responsibility to the PIs”

◆ NASA response:

→ PI-led Science Investigator-led Processing System (SIPSs)

■ NRC Review of DAACs (site visits 1997-1998)

- Committee on Geophysical and Environmental Data, National Research Council – Report ISBN: 0-309-52102-5 (1999)
- Detailed recertification activity

A Little History (3 of 5)



■ New Data and Information Systems and Services (NewDISS) Strategy Team (1998 - 2002)

- Report:

- https://earthdata.nasa.gov/sites/default/files/field/document/ND_Reprt_0.pdf

- Six recommendations

- Clearly define components
 - Employ Infrastructure providing NASA-private sector liaisons
 - Employ competitive processes to select components
 - Empower science investigators for data system development, processing archiving and distribution
 - Apply lessons learned from WP-ESIP Federation
 - Charter transition team

- ◆ NASA response:

- Core and Community Data Systems (Core: EOSDIS with DAACs; Community: REASoN projects → ACCESS & MEaSURES)

- ESIP Federation

- Earth Science Data System Working Groups (ESDSWG, 2004)

A Little History (4 of 5)



- **Earth System Science and Applications Advisory Committee (ESSAAC) Subcommittee on Information Systems and Services (ESISS, 2003)**
 - ◆ **NASA response:**
 - Initiated annual American Consumer Satisfaction Index (ACSI) surveys through CFI, an independent organization
- **Evolution of EOSDIS Elements Study Team/ Technical Team (2005)**
 - **Developed “EOSDIS 2015 Vision”**
 - EEE Study Team (2005) Evolution of EOSDIS Elements, Study Team Briefing to NASA.
<http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20090003203.pdf>
 - ◆ **NASA response:**
 - First step implementation during 2006-2008 – reallocated functions, simplified system, increased automation, improved services, reduced operations costs
 - Vision tenets continue to be used as a checklist to assess progress of on-going improvements

A Little History (5 of 5)



- **Evolution of EOSDIS Elements Study Team/ Technical Team (2005)**
 - **Developed “EOSDIS 2015 Vision”**
 - **EEE Study Team (2005) Evolution of EOSDIS Elements, Study Team Briefing to NASA.**
<http://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20090003203.pdf>
 - ◆ **NASA response:**
 - **Implementation during 2006-2008 – reallocated functions, simplified system, increased automation, improved services, reduced operations costs**
 - **Vision tenets continued to be used as a checklist to assess progress of on-going improvements**
- **NASA Technology and Capabilities Assessment Team (TCAT, 2014)**
 - **Evolution and Efficiency Team Recommendations**
 - **Consider advancing current efforts to achieve efficiencies across DAACs, including cloud computing, open source software , and dataset interoperability**
- **EOSDIS Review Team (2015)**

Independent Survey of Customer Satisfaction



- **As a result of the 2003 Panel Review, ESDIS was requested to conduct an Independent Survey of DAAC performance and customer satisfaction.**
 - **Survey contract was awarded to the CFI Group that runs the American Customer Satisfaction Index.**
- **For 13 years, EOSDIS consistently exceeded the Federal Government average**
- **Ratings in the mid to upper 70s are considered “very good/world class” by the rating organization, the CFI Group**
- **2016 Survey results based on 7,133 responses**
<https://earthdata.nasa.gov/about-eosdis/performance/american-customer-satisfaction-index-reports>
- **Comments in surveys help define DAAC system improvements**

EOSDIS ACSI History

