The Earth Science Data and Information System Project: Strategies for Improving Earth Science Data Literacy

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Introduction

The improvement of scientific literacy across the public can take on a myriad of forms and activities. The vast archives of NASA's Earth science data, as one example, reflect the agency's ongoing commitment to producing the highest quality data, services and tools that enable our understanding of Earth's interrelated systems for the benefit of society. The focus of this poster is to explore and reveal the specific strategies the NASA Earth Science Data and Information System (ESDIS) Project uses to support our very large and diverse user communities' access to and understanding of these science data and services.

NASA's EOSDIS

For more than 30 years, NASA's Earth Observing System Data and Information System (EOSDIS) has provided long-term measurements of our dynamic planet. The thousands of unique data products in the EOSDIS collection come from a variety of sources including the International Space Station, satellites, airborne campaigns, field campaigns, in situ instruments, and model outputs. These data are managed by NASA's Earth Science Data and Information System (ESDIS) Project, and are archived at and distributed by discipline-specific Distributed Active Archive Centers (DAACs) to a diverse worldwide user community. Our diverse user community includes many types of users, such as expert Earth science researchers, users developing applications for societal benefit, educators at all levels, and the public curious about the Earth. We currently serve more than 3 million data users every year.

Enabling Tools & Services

Webinars

A webinar is a web-based seminar (presentation, lecture, workshop) that is transmitted over the Web using video conferencing software. A key feature of a Webinar include interactive elements that allow for the ability to give, receive and discuss information in real-time. The purpose of the Earthdata webinar series is to facilitate two-way conversations with our diverse user communities worldwide to increase awareness and usage of EOSDIS data, information, services, tools and technologies, and to better understand our users' needs. NASA Earthdata Webinars show users how to: discover and access NASA Earth science data; learn how to use a variety of data products and tools across the Earth science disciplines; search, access, and visualize data using a variety of tools and programming languages such as R and Python, and related software. Since webinar series inception in May 2013, 132 webinars have been given to over 9,900 participants.

Social Media

EOSDIS uses social media as another way to increase scientific literacy and awareness of NASA Earth science data, information, services and tools. We leverage a digital media strategy as another communication mechanism to reach our diverse user communities worldwide with information and updates regarding EOSDIS. Through social media, we aim to increase traffic to, awareness of and usage of the NASA Earthdata website as well as the DAAC discipline-specific websites. This communication channel enables the possibility to increase engagement with our various audiences, and to foster a two-way conversation.

Data Recipes & Tool Kits

Data recipes are step-by-step instructions that have been developed to discover, access, subset, visualize, and use our data, information, tools, and services. Recipes cover many different data products and different processing languages and software. Data Toolkits are designed as entry points to access NASA Earth science data resources organized by topic. They contain links to datasets, tutorials and how-tos, feature articles and Data User Profiles, as well as other useful information.

Impacts & Results

The diversity of approaches to engaging our many millions of users has proven effective as our metrics reveal increasing numbers of users and interaction with our data system tools and services. Independent reviews made each year to many thousands of our current users provide direct evidence of their satisfaction with EOSDIS and the overall user experience.

IMPROVING EARTH SCIENCE DATA LITERACY

NASA's Earth Science Data and Information System Project (ESDIS)
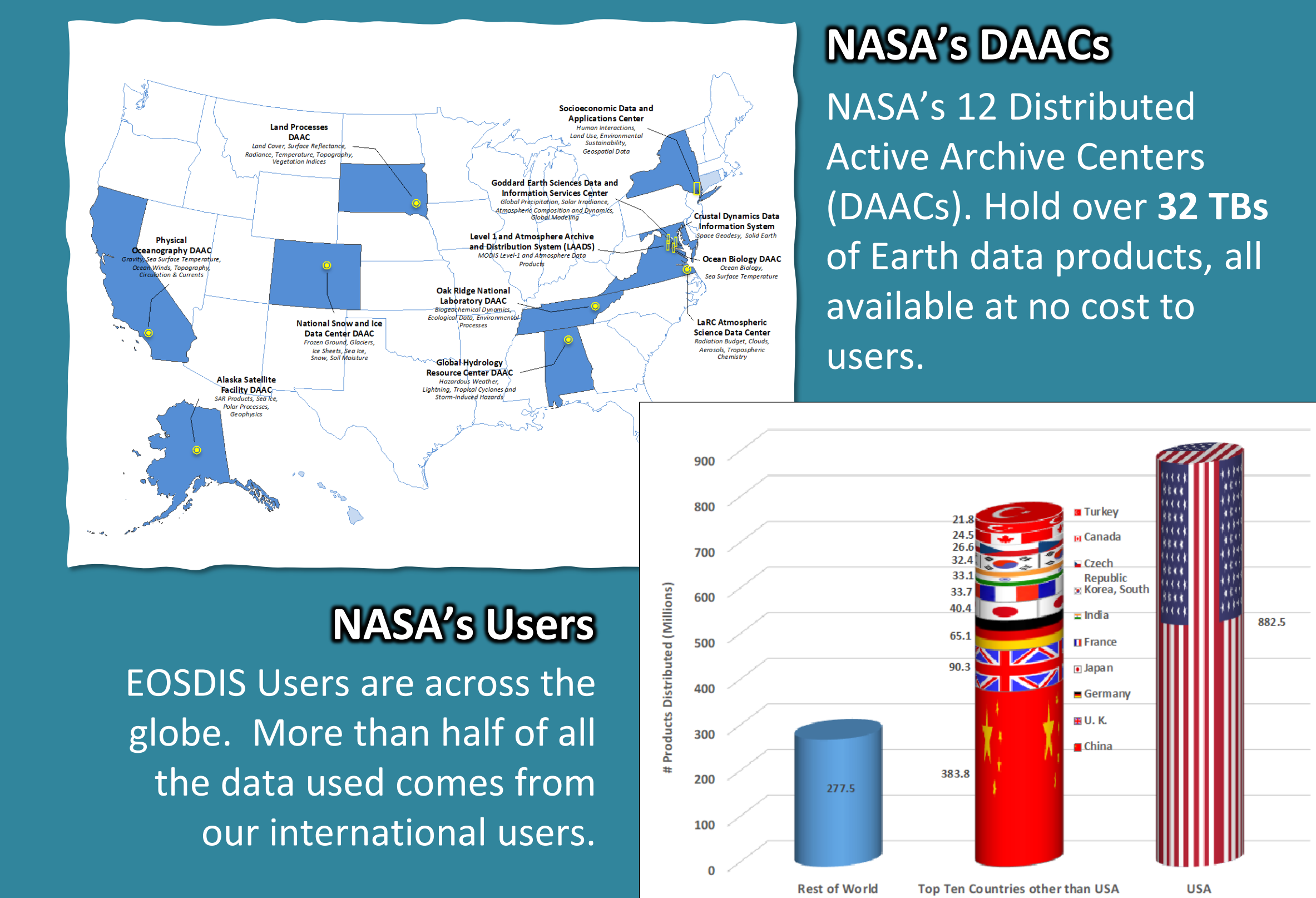
Strategies for Improving Data Literacy

KNOW the DATA
As Earth science data becomes more complex and diverse, the information system staff must maintain a high-level of data knowledge including methods of collection, fit for use, formatting and structure as well as sources of data error and anomalies. Knowledge must be continuously updated.

KNOW the USERS
The provider must know well the user communities to where these data are delivered and used. Knowledge of the uses of the data, needs for updating or collection of new observations, and best methods for finding and accessing data are all needed by the information system.

ENABLE FEEDBACK
Knowledge of the users is key but this knowledge needs to be tied to active pathways for users to provide insights and comments back to the provider. The iterative relationship allows for positive changes to be made to the overall data system and ensures that users continue to interact with systems built for their needs.

CONNECT to USERS
Engagement of user communities through direct interaction, surveys, team meeting and workshops, brings community insights and abilities into the data system. The information system must support the development of community-based tools and services intended to work with the Earth science data.

Can't hang around?
Take some of these links with you!
... or contact us your questions and comments @ francis.Lindsay-1@nasa.gov

NASA's Earthdata Site

ESDIS Webinars

Getting Started Guide
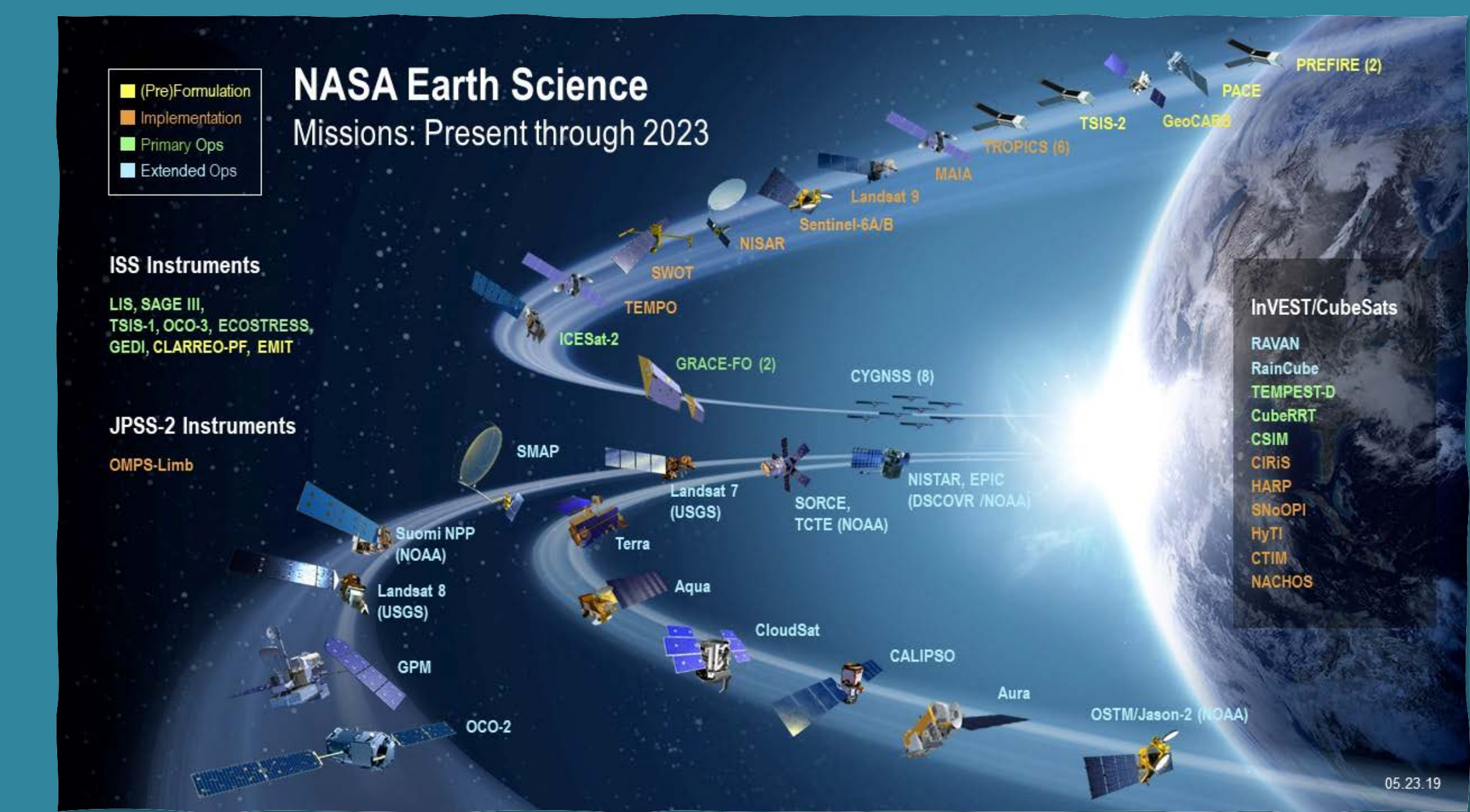
A current view of NASA's Earth Observing Satellites and Space-based Platforms (ISS), and Small Sats. The data held by ESODIS come from these current and many other decommissioned satellites.

NASA's DAACs
NASA's 12 Distributed Active Archive Centers (DAACs). Hold over **32 TBs** of Earth data products, all available at no cost to users.

NASA's Users
EOSDIS Users are across the globe. More than half of all the data used comes from our international users.

Examples from Our Approaches

TOP 5 Webinars in 2019
1. R you Ready to Python? An Introduction to Working with Land Remote Sensing Data in R and Python (webinar), Engagement: 37,780 impressions, 4,445 Views and 330 hours of watch time
2. NASA Earthdata (Beta) Search Tutorial (video tutorial), Engagement: 9,001 impressions, 3,990 Views and 133 hours of watch time
3. Introduction to Geospatial Analysis in R (webinar), 13,363 impressions, 3,216 Views and 265.8 hours of watch time
4. Visualizing Data Using Panoply: Longitude-Latitude Plots (video tutorial) Engagement: 10,530 impressions, 3,089 views, 75.2 hours of watch time
5. NetCD what? An Ecologist's Guide to Working with Daymet and other NetCDF formatted Data (webinar), Engagement: 30,607 impressions, 2,986 views and 409 minutes of watch time

We leverage various campaigns at NASA to further bolster our users knowledge of specific forms of Earth science research and applications. Targeted data sets and tools are featured.

Uses of multiple social media platforms enables reach into user communities unfamiliar with our data and services.

Focused guides for users to begin using Earth science data as well as find useful tools for specific user communities.

FRESHWATER AVAILABILITY

NEW DATA TOOLKIT
FRESHWATER AVAI

EXPLORE NA
https://earthda