Francis Lindsay, Ph.D., NASA, Goddard Space Flight Center
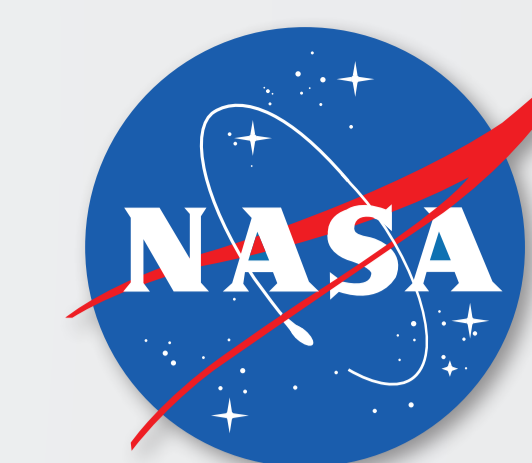**Jennifer Brennan**, NASA, ADNET Systems Inc., Goddard Space Flight Center
Joshua Blumenfeld, NASA, ADNET Systems Inc., Goddard Space Flight Center

National Aeronautics and
Space Administration

Enabling Communities in the Use and Application of NASA's Earth Science Data and Information Products: Interactive Webinars that Work

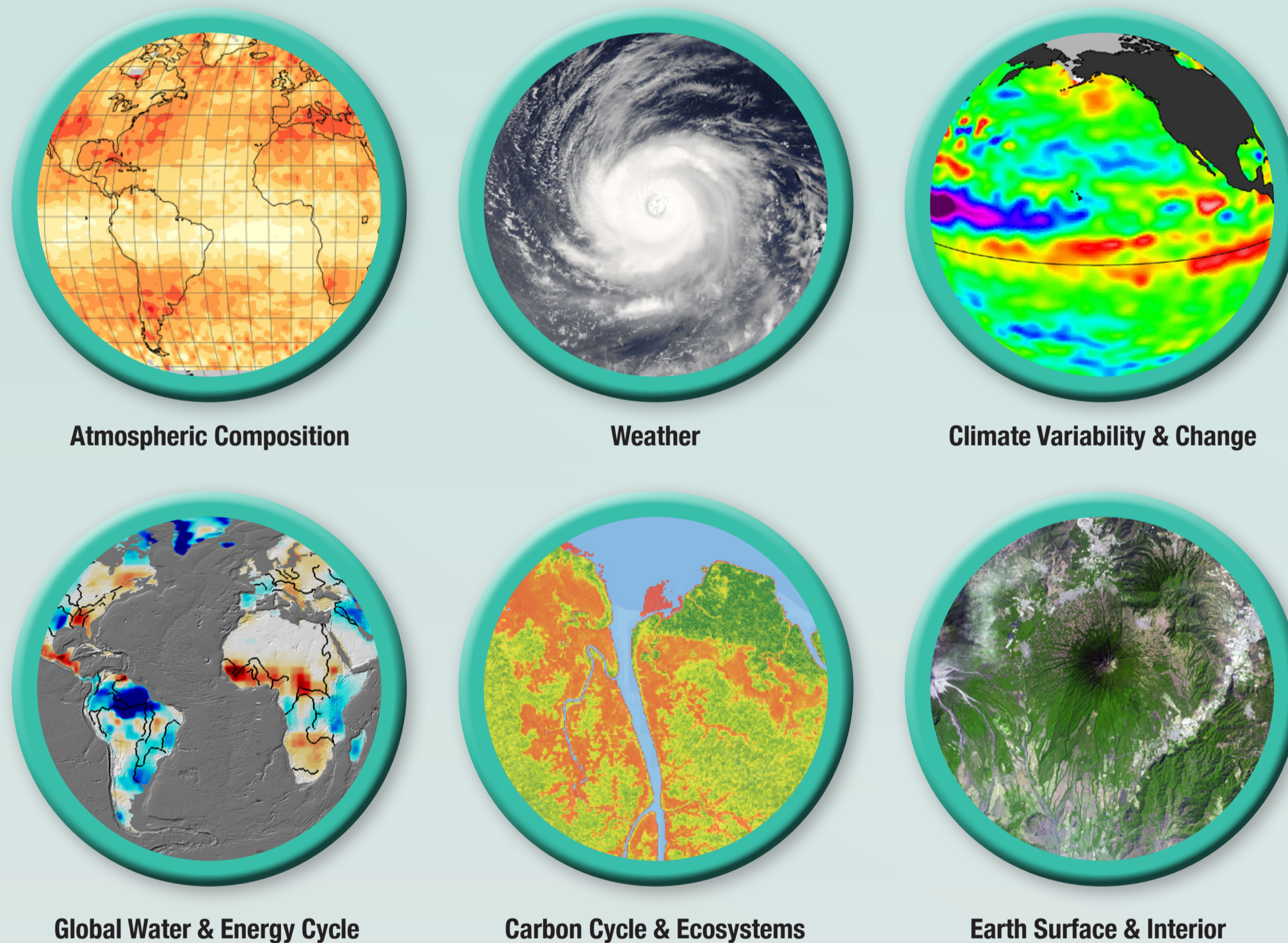## NASA's Earth Observing System Data and Information System
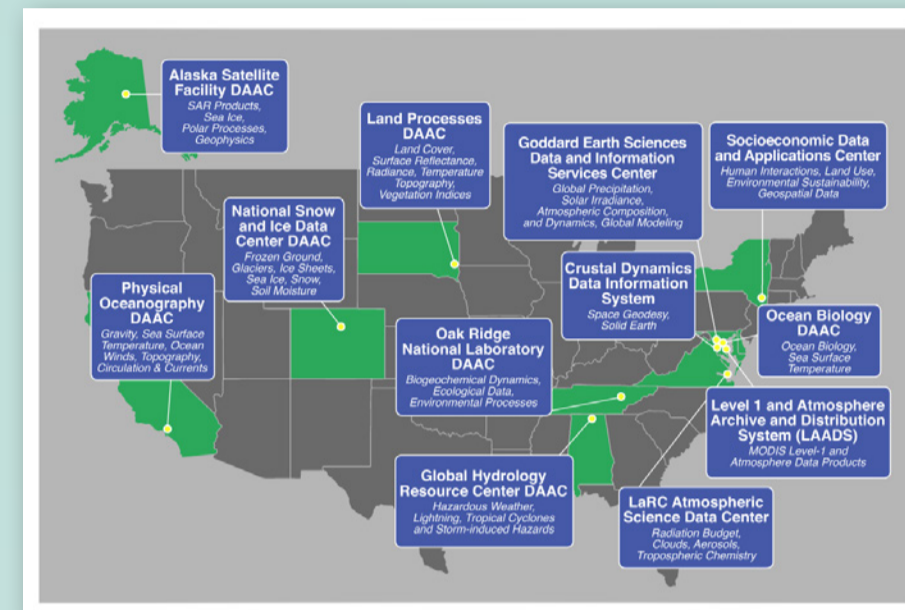
NASA's Earth Observing System Data and Information System (EOSDIS) provides end-to-end capabilities for managing NASA's Earth science data. These data represent some of the most complex and diverse Earth science data sets on the planet from various sources, including satellites, aircraft, field measurements, and numerous other activities within the Earth Science Division. Discipline-specific Distributed Active Archive Centers (DAACs) manage, archive and distribute these data as part of NASA's Earth Science Data Systems Program.

The primary services provided by EOSDIS are data archive, management, and distribution; information management; product generation; and user support services. These services are managed by NASA's Earth Science Data and Information System (ESDIS) Project.

Science Focus Areas

To understand these natural and human-caused changes, NASA's Earth Science Division uses unique global observations from space, air, sea and on land. This data enables informed decision-making for agriculture, water and food security, urban planning, disaster preparedness and response, transportation, climate and weather, and myriad other things that benefit life on Earth. NASA's EOSDIS data sets support science discovery in each of the six focus areas.

Atmospheric Composition • Weather • Climate Variability & Change

Global Water & Energy Cycle • Carbon Cycle & Ecosystems • Earth Surface & Interior
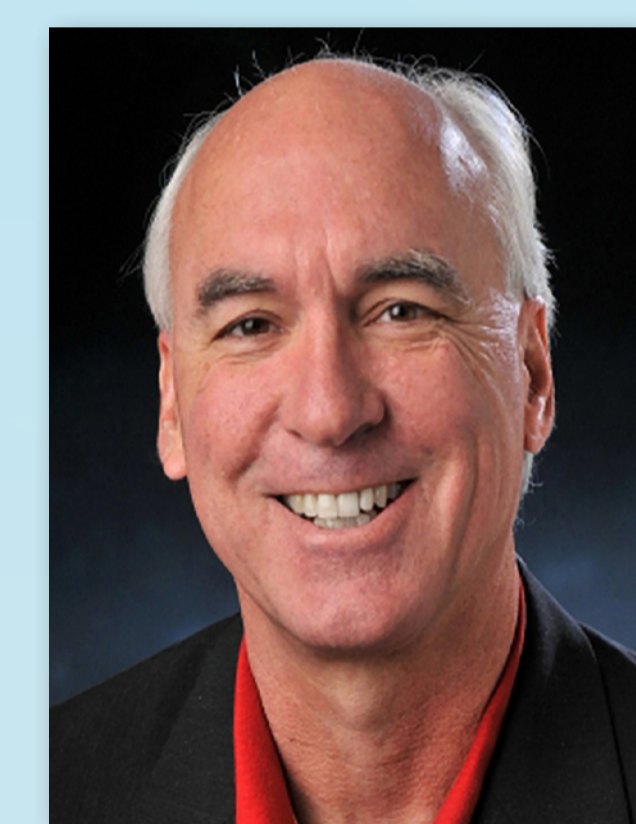
Science Applications

The Applied Sciences Program promotes efforts to discover and demonstrate innovative and practical uses of Earth science data. The program supports applied research and applications projects that share Earth-observing information with public and private sector organizations. NASA's EOSDIS provides the value-added data sets and tools to make the use of these data easier to a broad applications user community including Capacity Building, Disasters, Ecological Forecasting, Health and Air Quality, Water Resources, and Wildfires.

Ecological Forecasting • Health and Air Quality • Water Resources • Wildfires

NASA Earthdata Webinar Series

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. Within the NASA Earthdata Webinar Series, each month we host Earth science data discovery and data access webinars that focus within a different Earth science discipline and showcase our Earth Observing System Data and Information System (EOSDIS) data, information, services and tools. EOSDIS uses a variety of tools to gather inputs from our broad user community. Each of these various tools target a particular segment of our users from large calls for inputs to specific technical issues and insights. These inputs from multiple sources including face-to-face meetings, advisory groups, workshops, webinars and others provide the depth and detail of insight. These inputs range from limited information from large numbers of users to those made by a few users but have significant detail to EOSDIS system elements. These are collected at regular intervals. Webinar topics are often determined from an analysis of these inputs. The purpose of the Earthdata webinar series is to facilitate two-way conversation with our diverse user communities worldwide with the objective being to increase awareness and usage of EOSDIS data, information, services, tools and technologies, and to better understand our users' needs. Since webinar series inception 103 webinars have been given to 8,976 participants.

Overview of Data Products
Operation IceBridge: Come Discover a Decade of Polar Data

NASA's Operation IceBridge is an airborne mission that collects a wide range of remote sensing measurements in the polar regions of the world. Since 2009, the Operation has flown multiple campaigns in both hemispheres, collecting observations and measurements over Greenland, Antarctica, Alaskan glaciers, and Antarctic and Arctic sea ice. The NASA National Snow and Ice Data Center (NSIDC) Distributed Active Archive Center (DAAC) is responsible for making this data available to the public, and does so through a variety of means. This webinar introduces the IceBridge mission and available data products, including some amazing imagery, and provides a live demonstration of the IceBridge Data Portal showcasing the key features and functionalities of the tool.

Steve Tanner
NASA IceBridge Data Manager,
NASA NSIDC DAAC
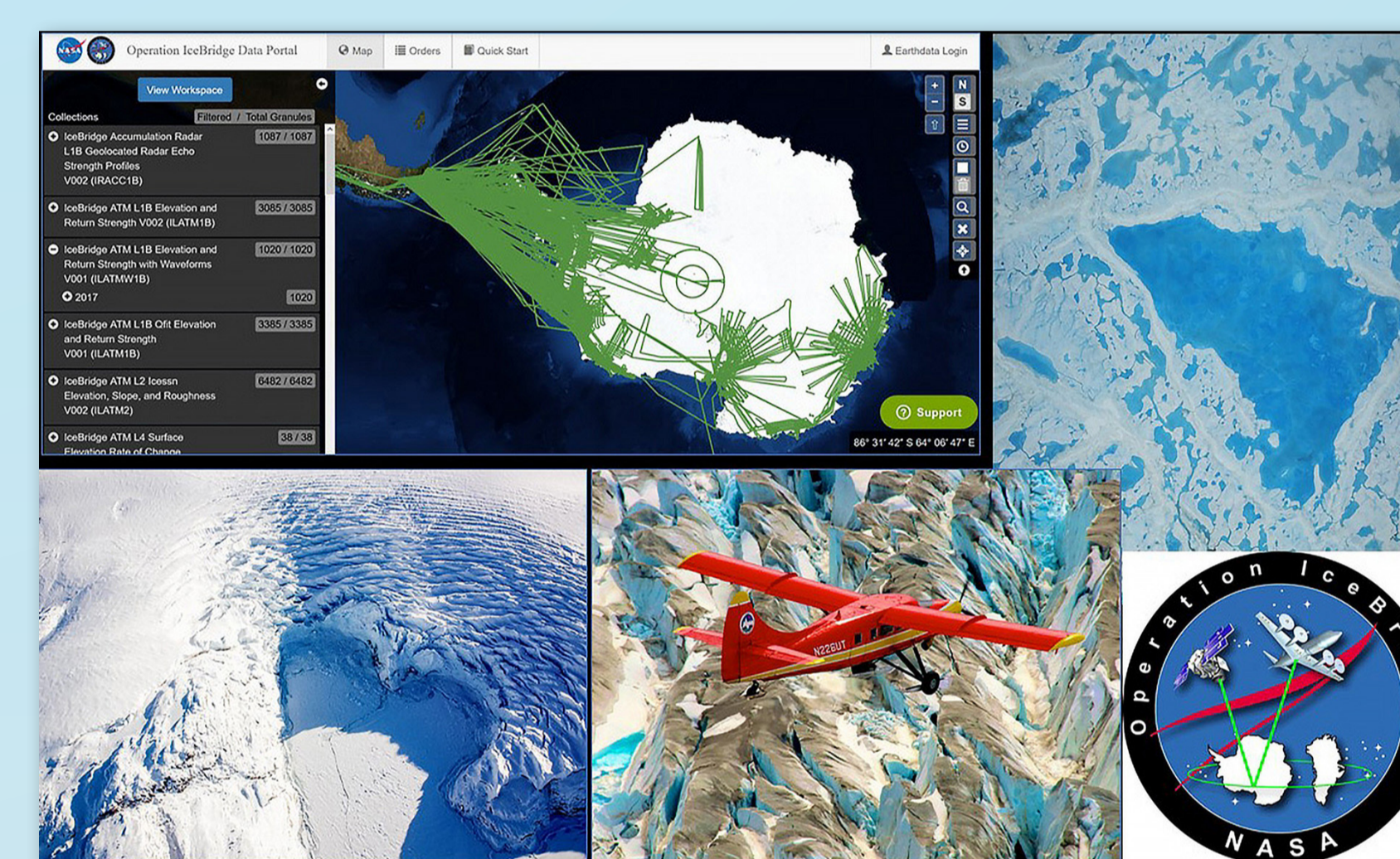
Data Discovery and Access Tools
ORNL DAAC MODIS and VIIRS Data Tools and Services at your Fingertips

The volume and complex format of the Moderate Resolution Imaging Spectroradiometer (MODIS) and Visible Infrared Imaging Radiometer Suite (VIIRS) data products often present challenges for researchers who are unfamiliar with remote-sensing data and formats. The Oak Ridge National Laboratory Distributed Active Archive Center (ORNL DAAC) has developed a suite of user-friendly tools that offer easy retrieval of the data products generated from these sensors. During this webinar, we introduce the features and capabilities of the Global Subsetting Tool, the Fixed Sites Subsetting Tool and the Web Services that provide access to user-specified subsets and visualizations of both VIIRS and MODIS land data products. Live demonstrations include how to integrate data delivered by the MODIS/VIIRS Web Service with user workflows as well as techniques for filtering the data based on custom data quality criteria. The workflows are demonstrated with R and Python within the Jupyter Notebook environment.

Rupesh Shrestha
Remote Sensing Scientist,
NASA ORNL DAAC
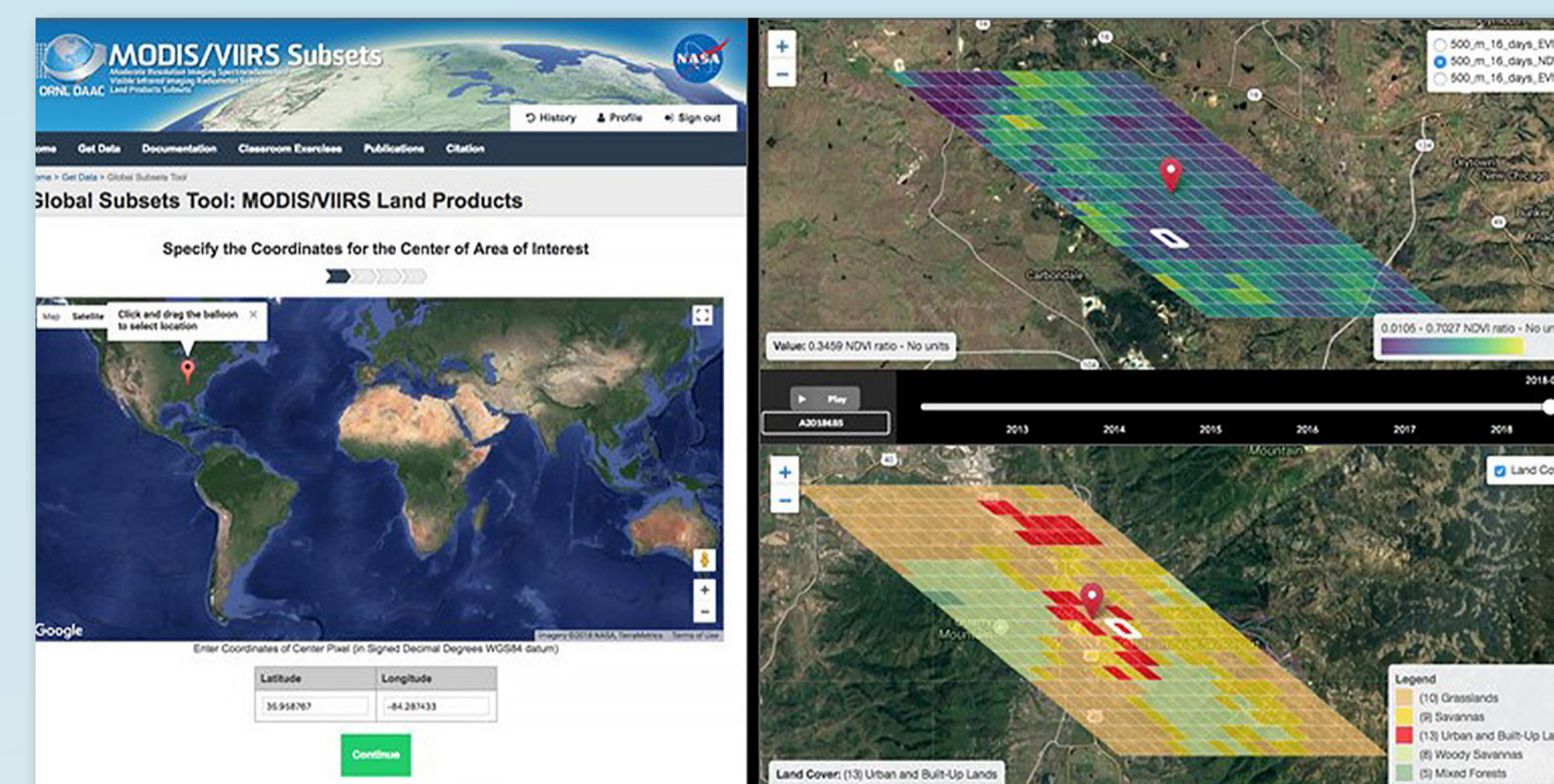
Near Real-Time Capabilities
Discover NASA's Fire Information for Resource Management System (FIRMS)

A key resource for wildland firefighters and managers around the world is NASA's Fire Information for Resource Management System (FIRMS), which is part of the NASA's Earth Observing System Data and Information System (EOSDIS). NASA FIRMS provides MODIS and VIIRS-derived active fire /hotspot data in easy to use formats. It was originally designed to get data in to the hands of natural resource managers, who don't have the time, or expertise to process the original HDF files. FIRMS services include a fire map, WMS and WMS-Time web services, file downloads (SHP, CSV, KML) and an email alert service, which notifies users of fires in or around their area of interest.

Diane Davies
NASA LANCE Operations Manager
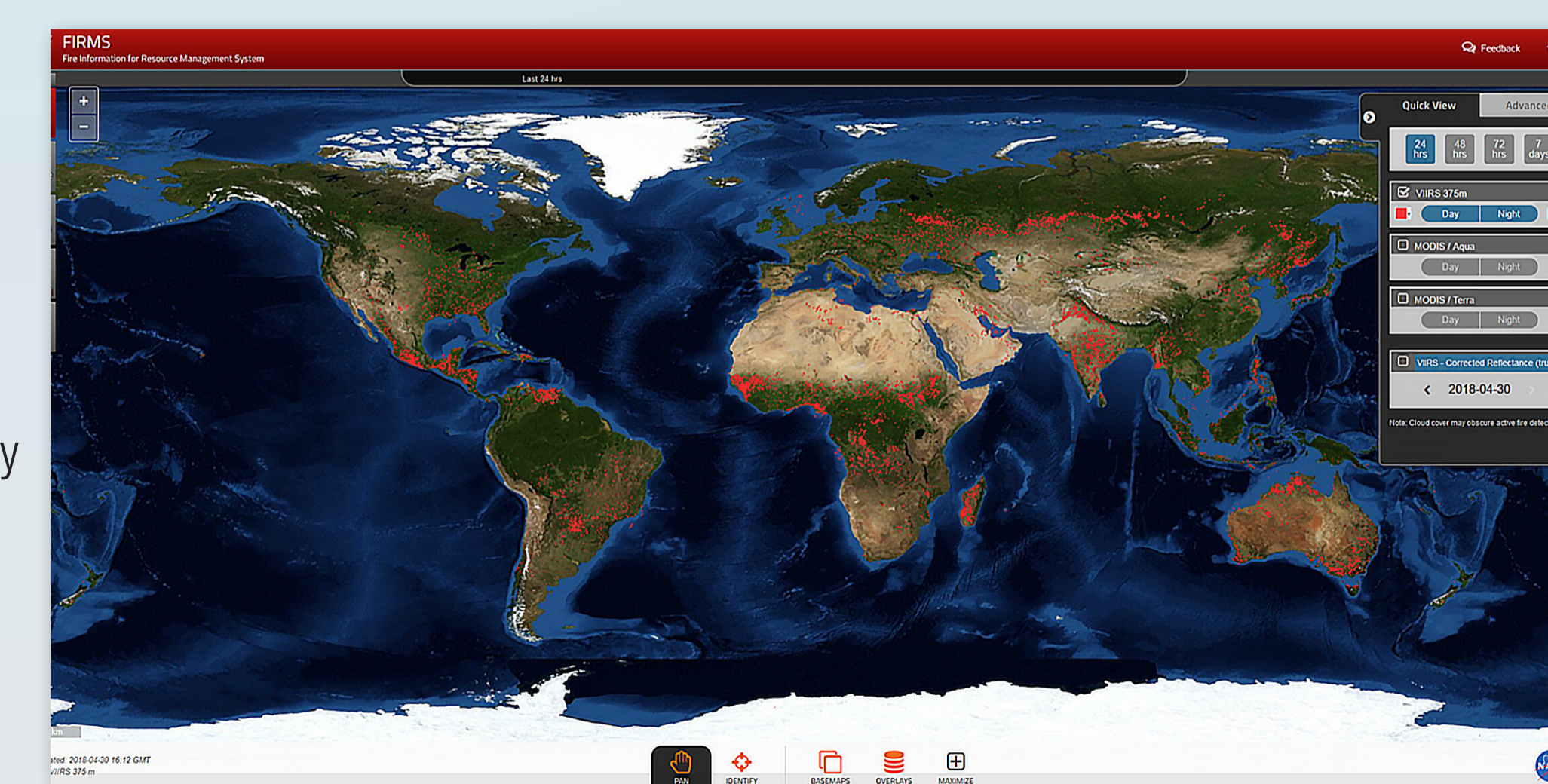
This webinar provides a brief explanation of the data sources, an overview of the FIRMS services including how to download the data and how to sign up for email alerts. The webinar highlights some of the new features recently added to the fire map as well as discuss some of the caveats that should be considered when using the data available through FIRMS.
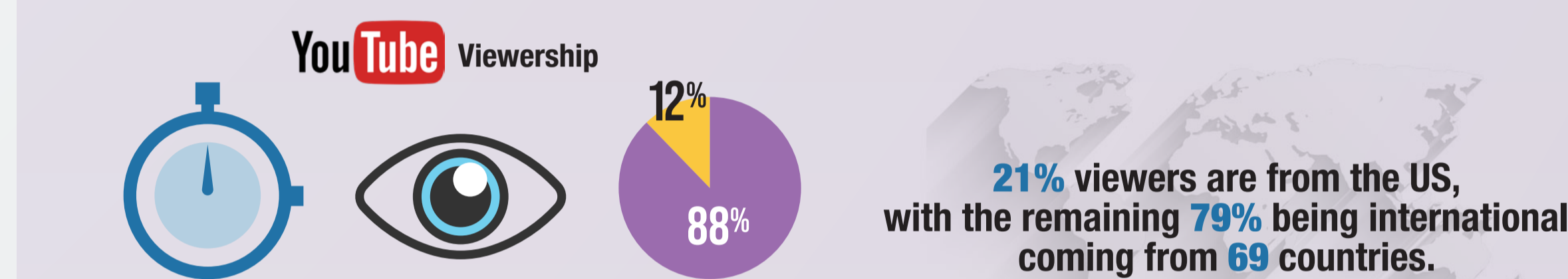
FY 2018 Highlights

In FY 2018, **18** webinars were held on a variety of topics to include data product overviews and discovery and access demonstrations for NASA ocean biology data, physical oceanography data, cryospheric data, atmospheric data and land processes data products. In FY 2018, there were **1,184** participants in our webinar series.

User Community/Participants
Live Webinars:

When examining participation metrics for all webinars held in FY 2018, we found that **54.3%** are US participants and **45.7%** are international participants*, coming from over **100** countries. Over **60%** of participants have attended **5** or more webinars since webinar series inception at the end of May 2013.

YouTube Viewership

187,545 Total Watch Time (Minutes) • 41,584 Views • 88% viewers are Male, 12% Female

21% viewers are from the US, with the remaining **79%** being international coming from **69** countries.
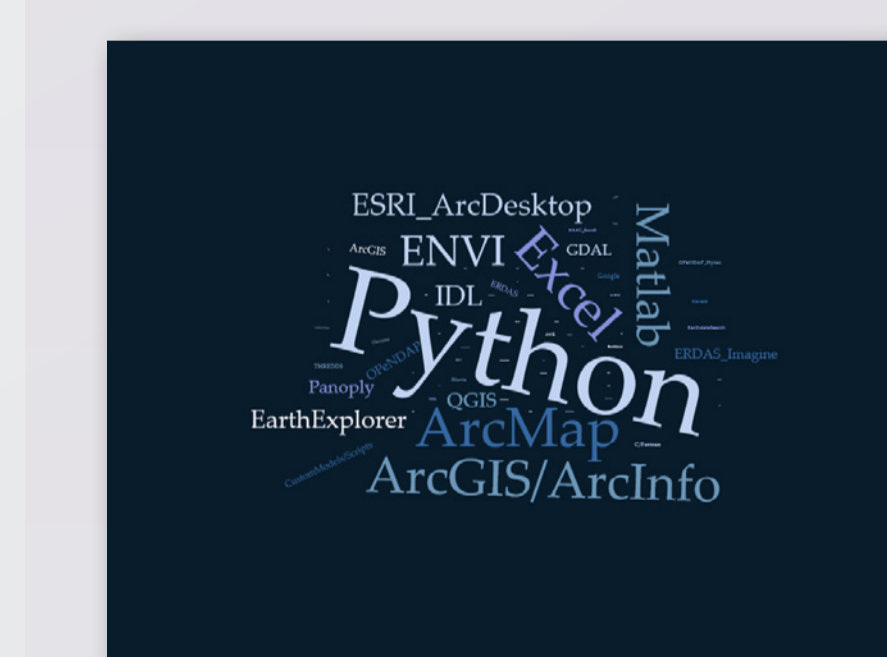
Key Metrics

During FY 2018 our total videos were 141, to include not only data discovery and access webinars, but also close to 30 short data recipes or data "how-to". Our videos were in 742 playlists (up 34% since FY 2017), received 620 shares, and our YouTube Channel increased by 808 subscribers (up 46.4% over FY 2017)

Top Ten Most Watched Webinars FY 2018 (10/1/17 - 9/30/18)
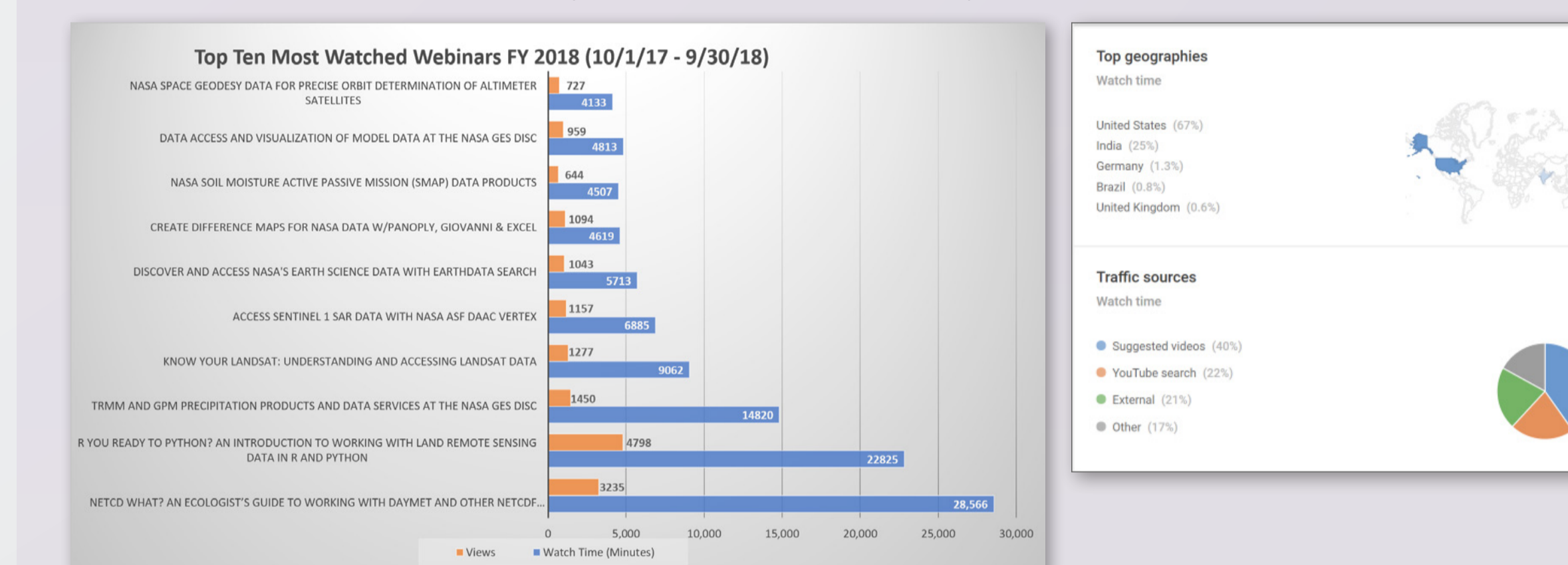
Feedback

During FY 2018 ten of the twelve webinars had optional polling questions that asked participants what type of tools, programming languages or web services they used/ preferred to use with their Earth science data. This word cloud shows the relative weight of the ~1,000 responses that were received during webinars that spanned the Earth science disciplines.

During FY 2018, 87% of those participants who ranked our NASA Earthdata webinars for effectiveness in addressing the user's research/ applications provided either an Excellent or Very Good rating. Effectiveness rankings range from Excellent, Very Good, Good, Fair and Poor. There were no responses in the Poor ranking category.
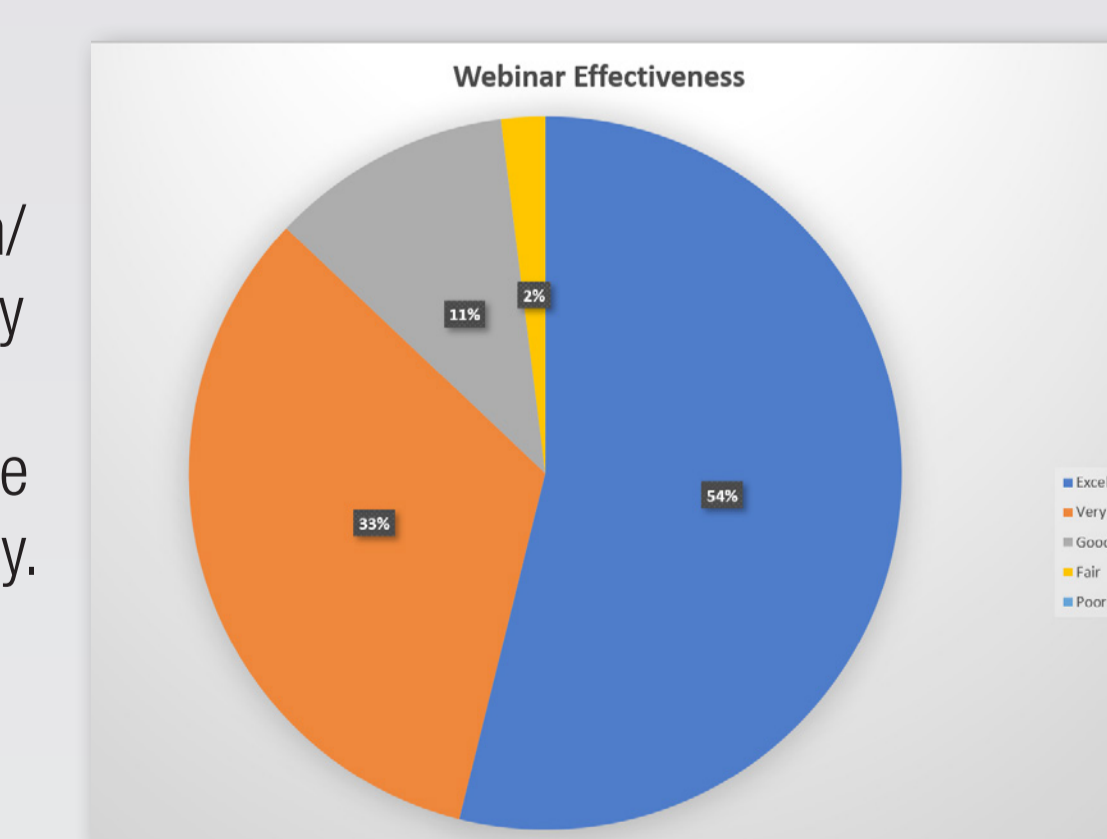
Webinar Effectiveness

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Need Tips on How to Discover, Access, and Use NASA Earth Science Data? Find webinars, short video "how-to's," and data recipes on our YouTube channel http://www.youtube.com/c/NASAEarthdata

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