Land Processes Distributed Active Archive Center (LP DAAC)

25th Anniversary Recognition
“A Model for Government Partnerships”

LP DAAC “History and a Look Forward”

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NASA’s Grand Challenge
EROS Press Conference August 28, 1990
NASA’s Grand Challenge 1990

- Dr. Fisk – “the earth is in trouble, we need to monitor what the human impacts are on the whole earth cycle (ocean, atmosphere, land and ice).
- For the first time in earth’s history, man can change how the earth evolves.”
- So it is vital to understand planet earth and the long term changes for dealing with and influencing Earth man’s induced changes.
- Global means the monitoring needs to be done from space.

*Dr. Fisk was the Associate Administrator for Space Science and Applications at NASA*
NASA’s Grand Challenge 1990

- *Federal agencies are working together on the President’s Office of Science and Technical Policy (OSTP) Committee on Earth Science to develop an integrated, comprehensive and long term program for regional to global scale changes and to understand the effects of Climate Change on the Earth and its coupling of systems.*

- NASA will provide data (satellite systems) for researchers to understand and predict these changes and enable an ability for policy makers to mandate changes in energy budgets without jeopardizing the global economy.

*Dr. Fisk was the Associate Administrator for Space Science and Applications at NASA*
So, with NASA’s history of studying our solar system and beyond; NASA is now turning its knowledge and resources to the Earth

NASA’s response is Mission to Planet Earth

- A series of satellites; Earth Observing System (EOS)
- With a goal to understand, and an ability to predict man’s changes to the earth
- And do it over a long period of time (sustainable), to arm policy makers with sound recommendations for the global benefit (children/grandchildren and beyond)
NASA’s Plans from Twenty-five Years Ago (1990)

- Many new data sets would be needed and created; several complementary to Landsat missions
- A significant increase in data volume and variety and that centers of experienced science discipline were needed
- Recognized that this type of research would need a new data system to be built:
  - Earth Observation System Data and Information System (EOSDIS)
- NASA needed to partner with the USGS to fulfill the objectives of building the large data system
  - Found a home for the EOS Land Processes data at the Earth Resource Observation and Science Center
- **prefix** *peta* indicates the fifth power of 1,000 and means $10^{15}$ in the **International System of Units** (SI).

- 1 Petabyte: 5 years of EOS data (at 46 mbps)
- 2 Petabytes: All US academic research libraries
LPDAAC Number of Files Distributed by Country (FY00-15)

- **Rest of World**
  - Files Distributed (Millions): 117.8

- **Top Ten Countries**
  - Files Distributed (Millions): 313.1
    - Belgium: 10.0
    - Netherlands: 10.4
    - France: 11.5
    - Brazil: 13.0
    - Canada: 17.1
    - Russia: 20.7
    - Germany: 27.6
    - UK: 50.7
    - Japan: 51.6
    - China: 74.2

- **USA**
  - Files Distributed (Millions): 10.0
  - Files Distributed (Millions): 10.4
  - Files Distributed (Millions): 11.5
  - Files Distributed (Millions): 13.0
  - Files Distributed (Millions): 17.1
  - Files Distributed (Millions): 20.7
  - Files Distributed (Millions): 27.6
  - Files Distributed (Millions): 50.7
  - Files Distributed (Millions): 51.6
  - Files Distributed (Millions): 74.2

Note: The data represents the number of files distributed by country over the fiscal years 2000-2015.
It takes a Team!

“The team can be proud of it's early initiatives and successes in online search, browse and order systems, development and implementation that served such a critical and highly visible role in early developments of NASA’s Earth Observation System Data and Information System (EOSDIS).”

(Lyn Oleson) 1st Land Processes DAAC Manager 1991 - 1998
A petabyte is a lot of data:
- 1 PB is 20 million four-drawer filing cabinets full of text
- 1 PB is 13.3 years of HD-TV video
- 1.5 PB is the size of 10 billion photos on Facebook
This is a partnership that works very well!
Our roles and responsibilities are well understood
NASA and USGS share a common mission/vision which can be characterized as "contributing to the understanding of a changing Earth."
  - With that, our Earth Observing programs are global in scope, so reaching out to the broadest global user community is fundamental to our success.
  - Therefore, NASA and USGS provide land imaging data to anyone, anywhere, anytime, at no cost to the user.

Another way to state the obvious is:
  - “The USGS and NASA are putting satellite imaging data at the public’s finger-tips, allowing USGS and NASA to share their rich resources with more people than ever before.”
Questions???
ESDIS/LP DAAC Highlights

- Over the last 15 years
  - 11 PB of data has been distributed
  - To over 830,000 users, 130,000 discrete users in any year
  - More than 90% of the distribution was of MODIS sensor products
- 57% of the data distributed went to U. S. researchers or application users
- 13% of the data distributed went to U. S. government users
- 16% of the data distributed went to U. S. academia users
- Total archive size is currently 2 PB +
- On average LP DAAC annually distributes 2+X the size of the archive
- 56% of the users are from foreign countries
- Over the last 10 years, LP DAAC data distribution has increased by 6 fold
  - During this same period – distribution increased 4 X for U. S. users
  - During this same period - # of foreign users increased 20 X
  - During this same period – # of U. S. users increase 7 X

- There is a very bright future for the LP DAAC on into the future!
- Enjoy the day and please ask questions to our talented and outgoing staff!