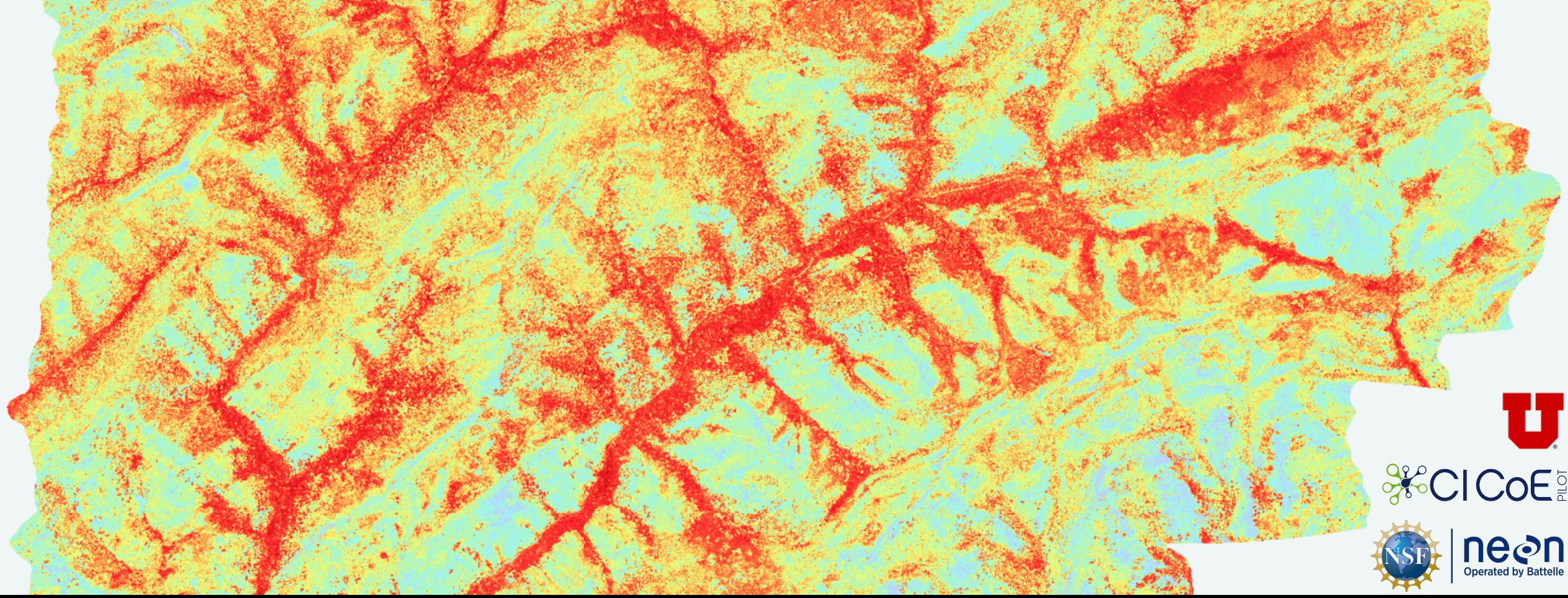


Interactive Access and Visualization of Large Scale Image Data

Steve Petruzza, Giorgio Scorzelli, Rob Ricci, Attila Gyulassy, Timo Bremer, Valerio Pascucci

Christine Laney, Chris Clark, Steve Jacobs, Jeremy Sampson, Dave Hulslander, Tom Gulbransen

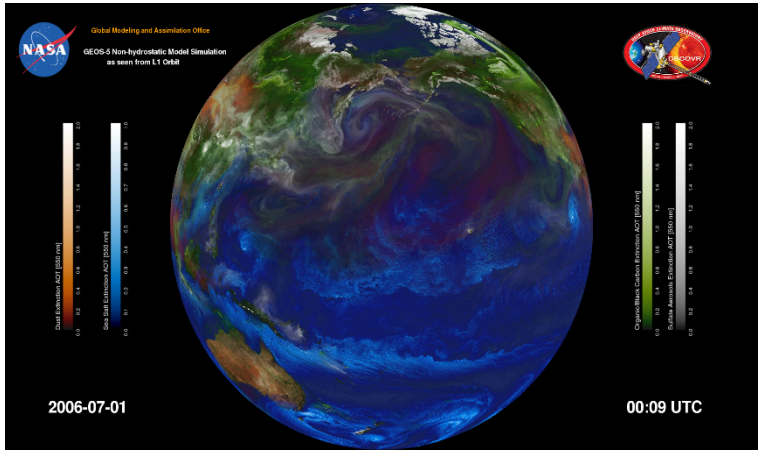
Managing massive image data

- A big challenge in different domains:
  - Simulations
  - High resolution acquisition devices (light sources, microscopes)
  - Drones/airborne/satellites
- Usability is often limited by network bandwidth and memory availability
- A possible solution:
  - Use multiresolution data layouts to access data more efficiently
  - Use streaming technologies to enhance the usability and flexibility of the visualization and analysis workflows

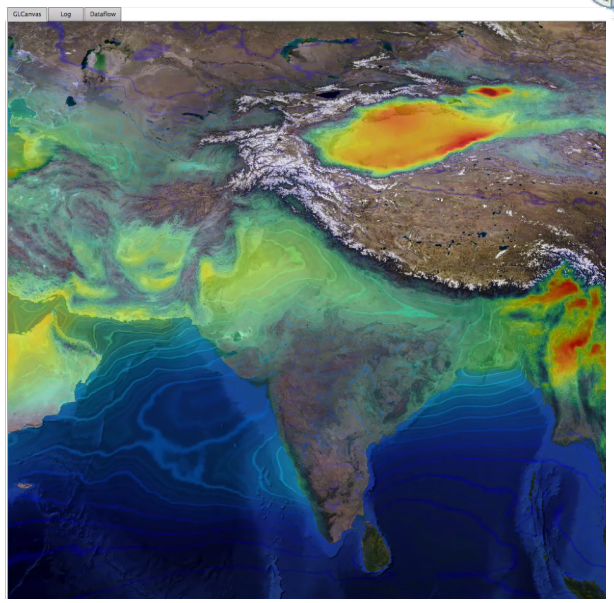
Scalable Deployment: Exploration of 3.5TB of Weather/Climate Data in Real Time

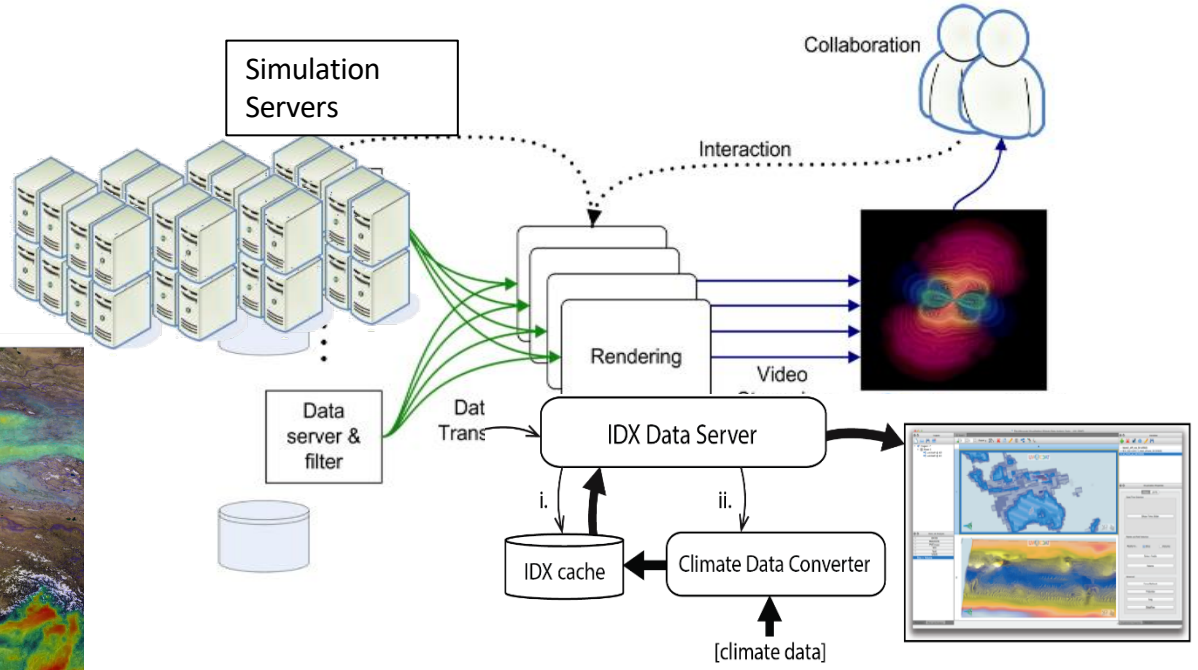
Workflow

- *Data creation*
- *Data Management*
  - Processing
  - Analysis
  - Visualization



- 7km GEOS-5 “Nature Run”
- 1 dataset, 3.5 PB
- theoretically: openly accessible
- practically: precomputed pics

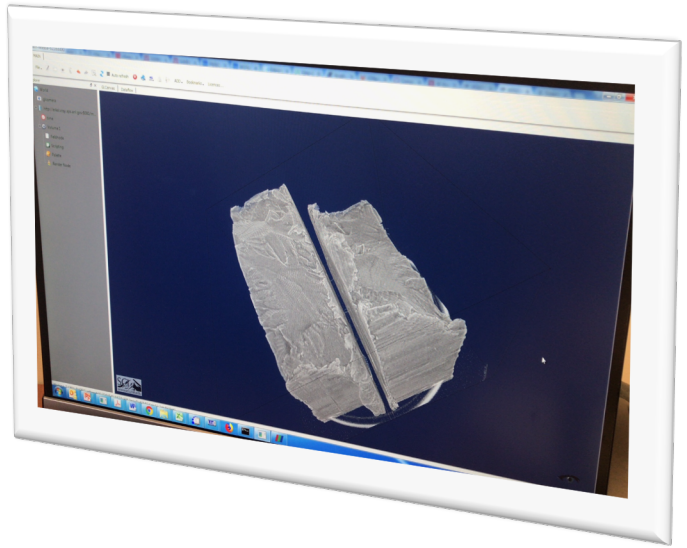


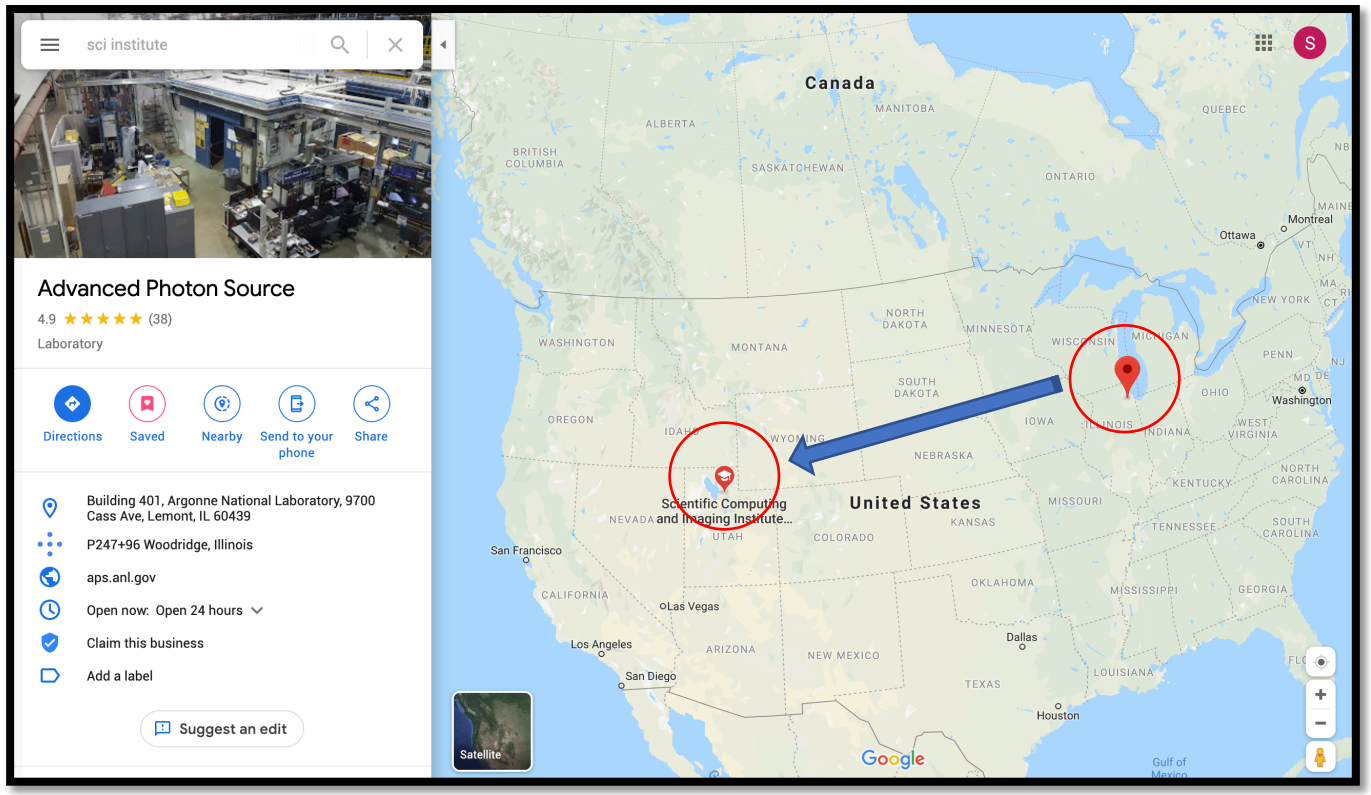


Distributed Resources

- 3.5 PB of *data store in NASA*
- *Primary ViSUS server in LLNL*
- *Secondary ViSUS server in Utah*
- *Clients connect remotely*
- *Work without additional HPC resources*

High Performance Data Movements for Real-Time Access to Large Scale Experimental Data (Dockerized server)

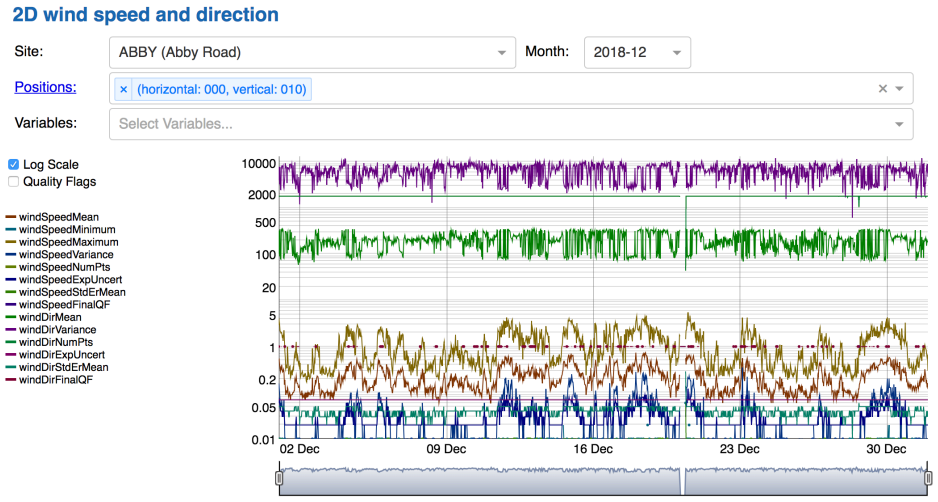


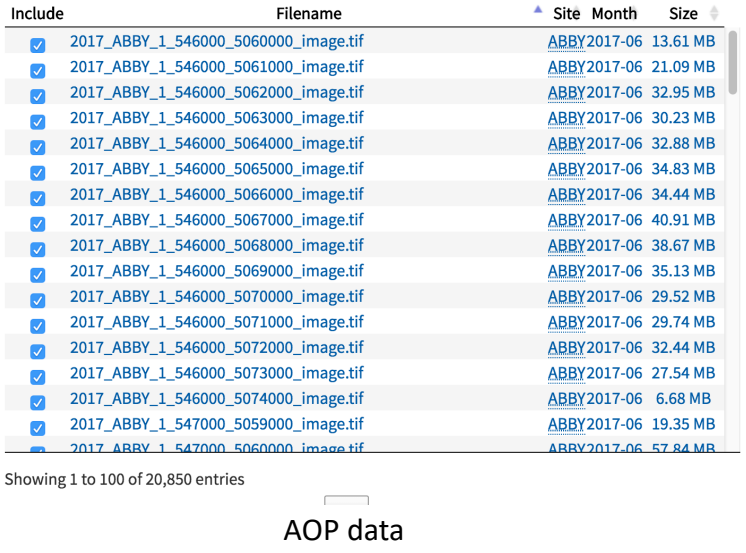


- Using a desktop client
  (or a webviewer)
  Prof. Ashley Spears was able to see the data being acquired at APS
  from her office at the University of Utah

NEON AOP data

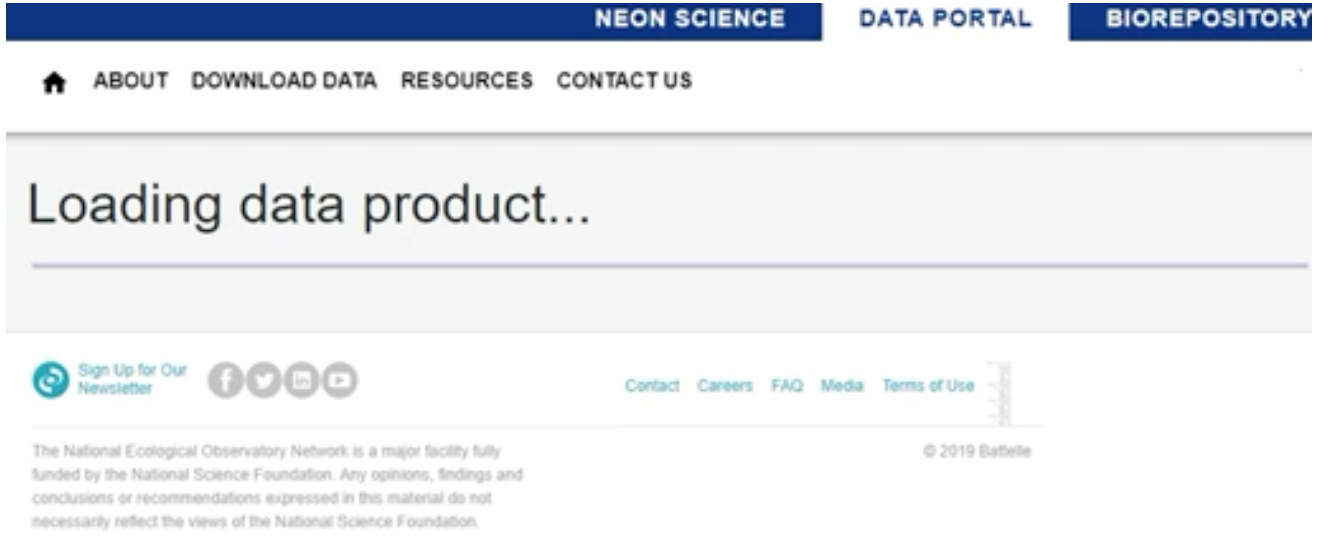
- NEON has a large amount of data that is shared with the community through their **data portal**
- There exist **APIs** to download those data in bulk
  (per site, per year, per data product, now also by area)
- For some data, such as sensor measurements, the portal provides an **interactive** navigation system
- For others, like **Airborne Observation Platforms data**, there is a long list of image files…
- There is a need to present all AOP data interactively, where the users can preview, navigate, and select/access/download the data they need





AOP data

Integration with NEON data portal



https://www.youtube.com/watch?v=09DWwEhUlWc