

## EODN-IDMS

A distributed storage service for open access to Landsat data for natural resources and educational applications using GENI's flexible cloud infrastructure

**IU:** Ezra Kissel, Akshay Dorwat, Jeremy Musser, Prakash Rajagopal, Rohit Khapare, Joseph Cottam, Martin Swany

**UW-Madison:** Sam Batzli – Director, WisconsinView

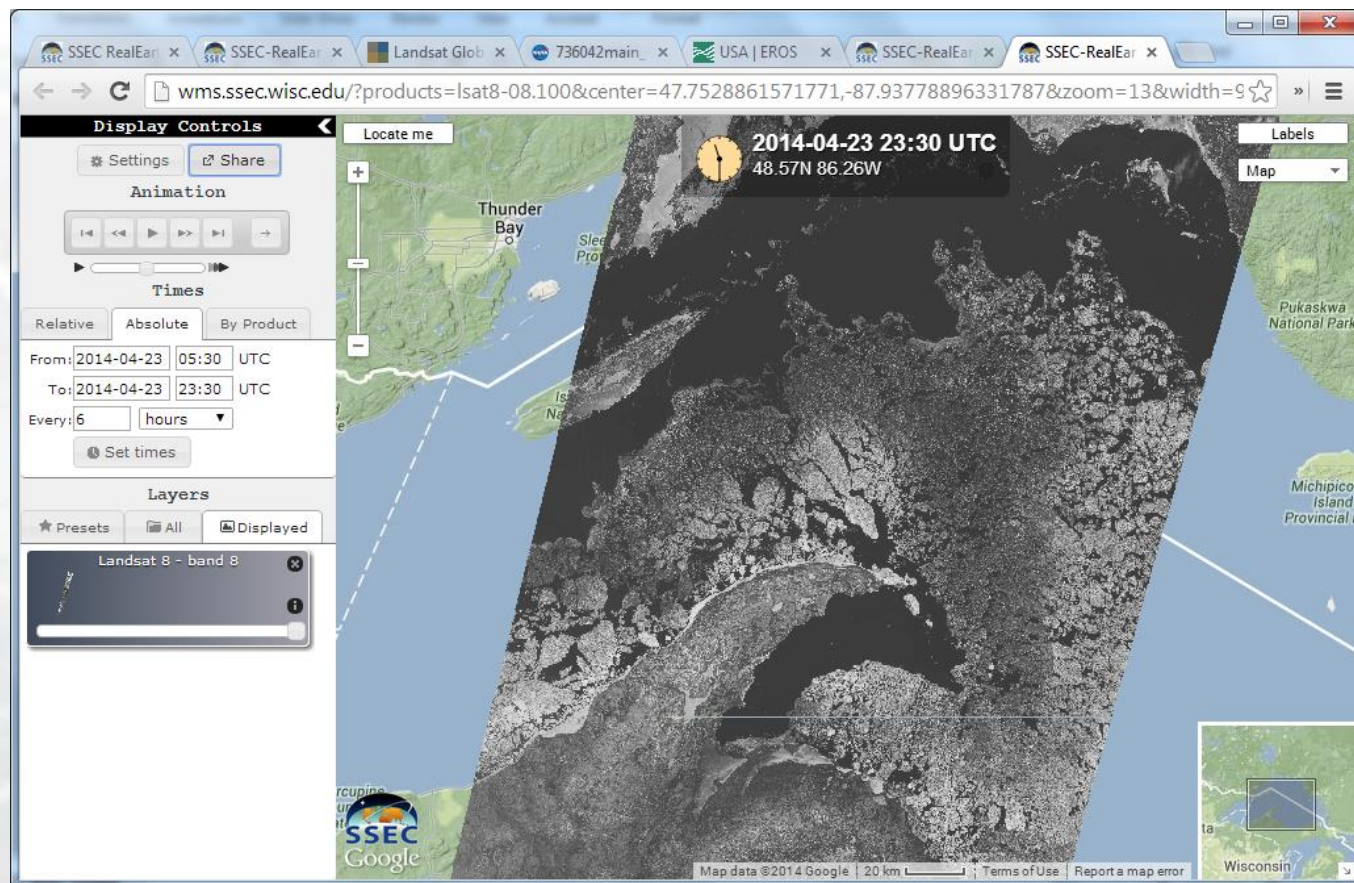
**SFASU:** Paul Blackwell – Exec. Comm., AmericaView

- **RealEarth**: Delivering Near Real-time Remote Sensing Content to Mobile Devices & Browsers
- Supports atmospheric **science** and meteorology **research** communities (and the **public**)
- A way to **overlay** different data products and **share** visualizations
- **EODN-IDMS** makes **RealEarth** better by making land imagery available faster



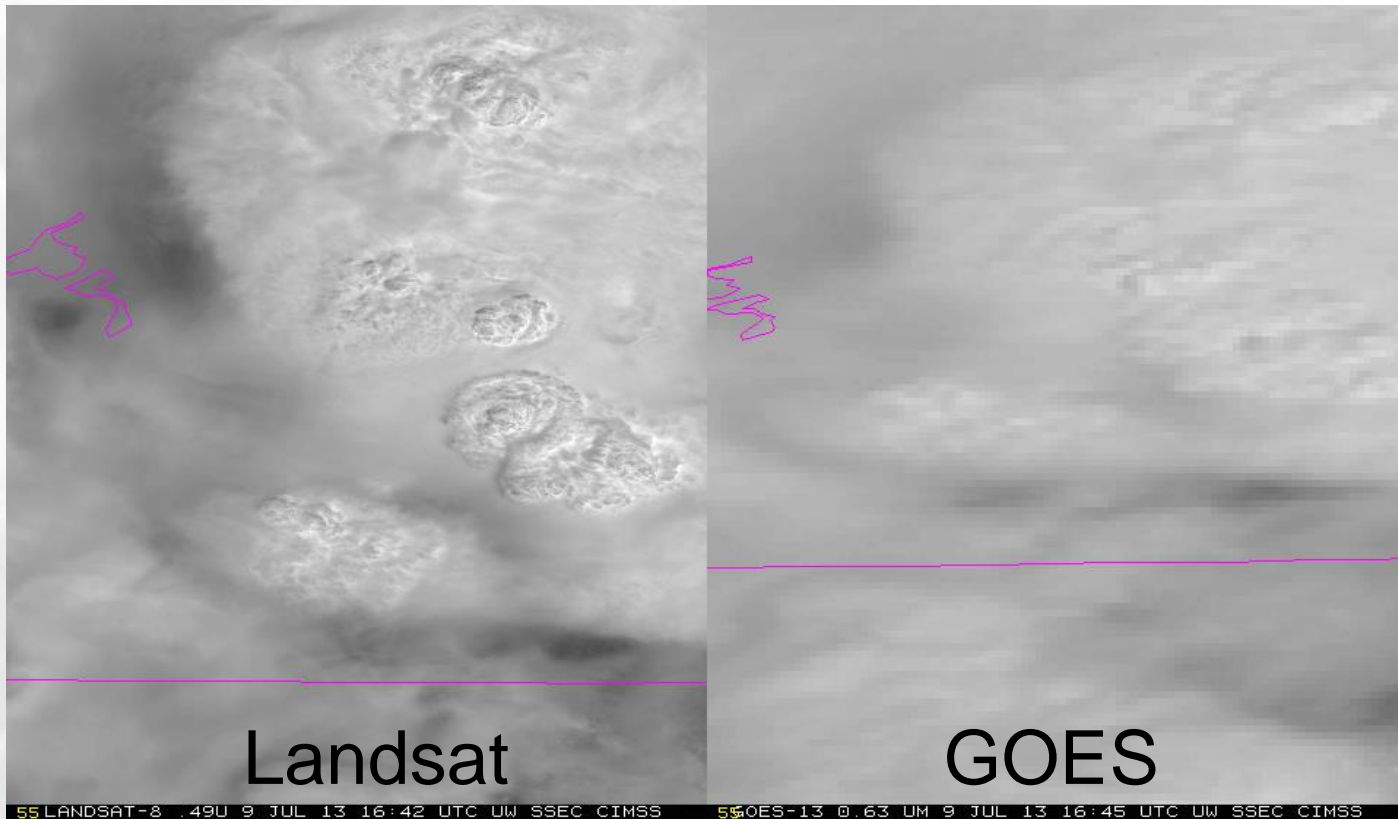
# Landsat imagery for Weather?

- Interest in relationship between land surface features and weather
  - Such as: ground fog, wildfires, cloud patterns, ice coverage, hail swaths...
  - Visualize the imagery together for discovery



# Landsat imagery for Weather?

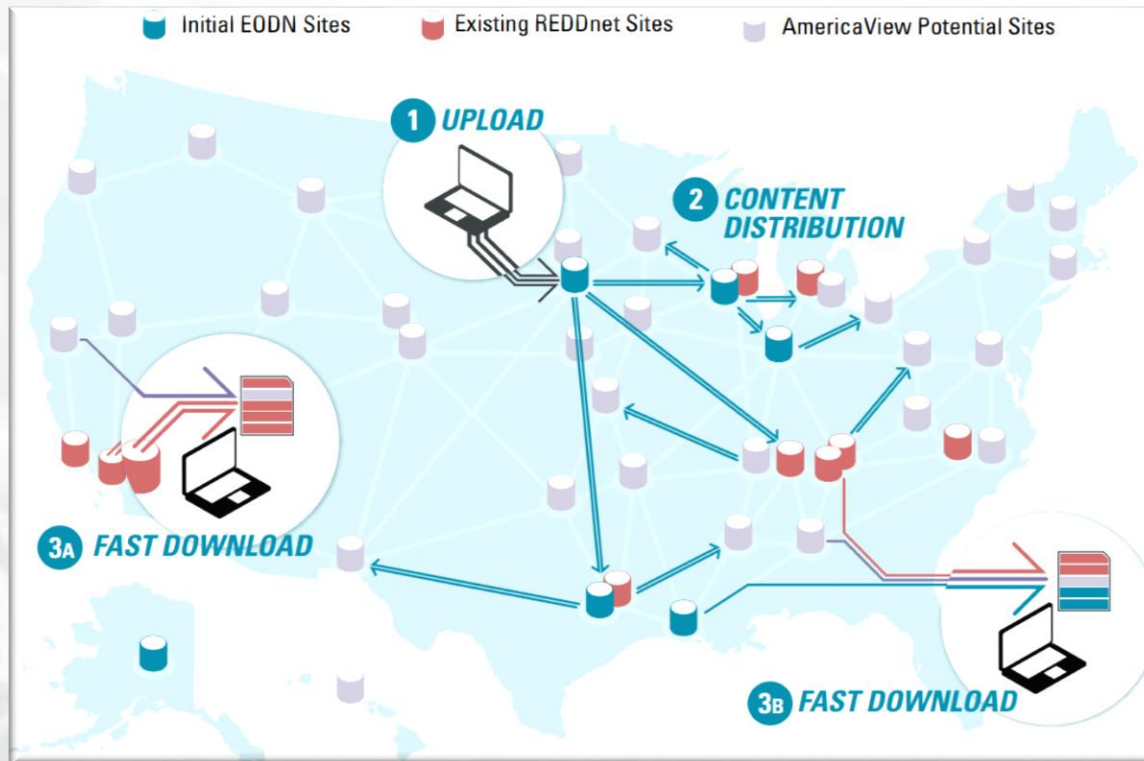
- **Landsat data:**
  - Low temporal resolution (16 days)
  - High spatial resolution (15m-30m)
  - High latencies (24hr +)
  - Low spatial coverage (185km)
- **Weather data:**
  - High temporal resolution (15 min)
  - Low spatial resolution (1km pixel)
  - Low latencies (30min for polar orbiter)
  - Whole hemispheric coverage



- Latency
  - Weather imagery: low; land imagery: high
- How to Enhance Access to Landsat Imagery?
  - Bypass shopping cart approach
  - Stage imagery at locations for quick access
- Answer: data logistics (EODN-IDMS)

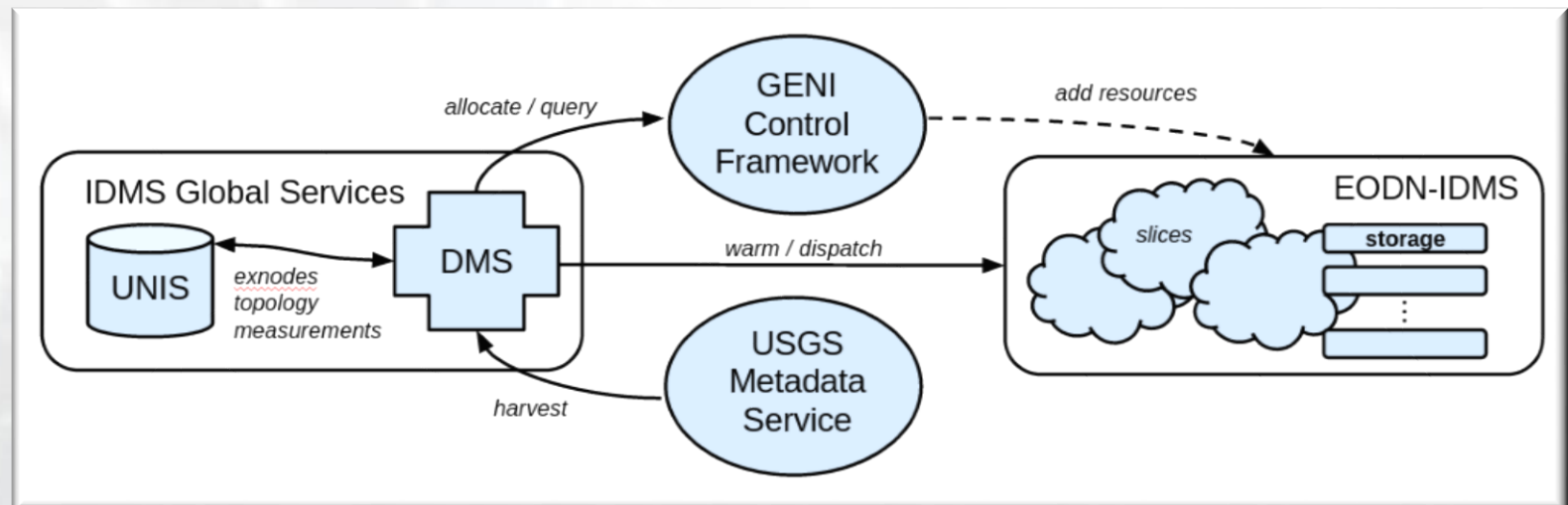
# Earth Observation Depot Network (EODN)

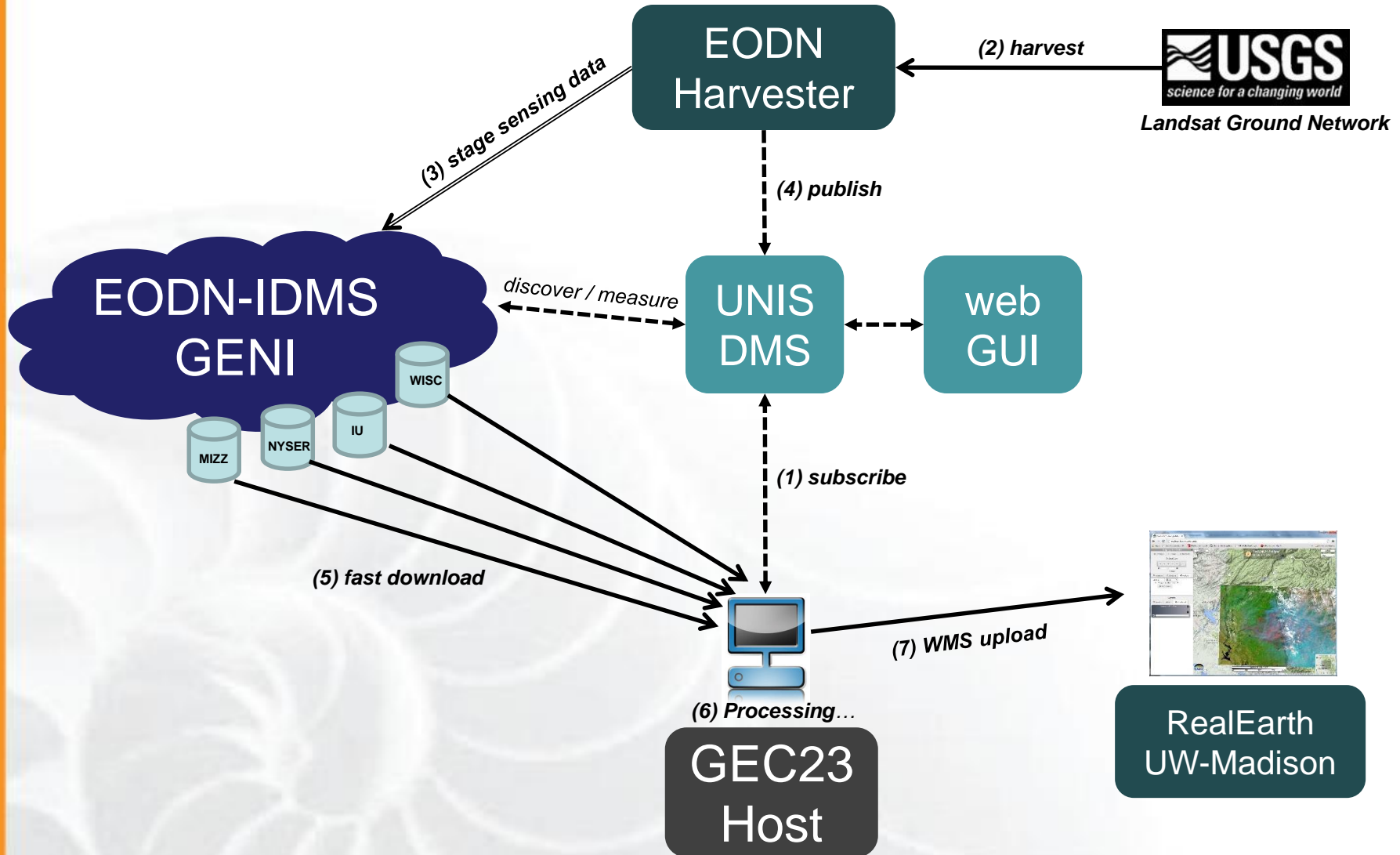
- Addresses the deployment concerns in enabling open access to remotely sensed data from a wide range of public, private, and commercial sources
- Built in part with the NSF-funded Data Logistics Toolkit (DLT)
- Deployed on a volunteer basis by AmericaView members in conjunction with existing REDDnet resources



# Intelligent Data Movement Service (IDMS)

- IDMS extends EODN to work on GENI
  - Uses common DLT storage components with additional software
- Makes use of dynamic and geographically diverse storage and networking resources across aggregates
  - Uses GENI CF to create additional storage based on demand
- Users may opt-in via GENI slices or R&E network access







## Today:

- GENI enables on-demand, local storage acting as “fast caches” for time-sensitive data in EODN-IDMS
- Reduced time to acquire and expose new high-resolution map data for RealEarth users
- Shared vision has driven rapid development and cross-collaboration between the EODN, DLT, and IDMS projects
  - Prototyping a functional, long-lived service for the remote sensing community

## Future:

- Upload and publish processed data sets for broader use (reduce duplicated effort)
- Tighter integration with existing and widely-used map-based browsers and USGS metadata query systems

## Thank you!

Ezra Kissel      [ezkissel@indiana.edu](mailto:ezkissel@indiana.edu)

Sam Batzli      [sabatzi@wisc.edu](mailto:sabatzi@wisc.edu)

<http://groups.geni.net/geni/wiki/sol4/IDMS> (Tutorial)

<http://data-logistics.org/>

<http://americaview.org/>

<http://realearth.ssec.wisc.edu>