

An aerial photograph of a city, likely Madison, Wisconsin, showing a large stadium on the left side. The stadium has a green field and a large 'W' logo on the right side. The city is densely packed with buildings and streets.

# RealEarth

## The SSEC Web Map Service

R. Dengel, D. Parker, S. Batzli,  
N. Bearson, D. Santek, Z. Ye

University of Wisconsin – Madison

2013 McIDAS Users Group Meeting  
Madison, WI  
9-10 Sept 2013

2013 Aircraft Survey UW

Questions????

A satellite image showing a mountain range with a large glacier on the left side. The text 'RealEarth' is overlaid in white.

# RealEarth

- System Updates
- New Data Types & Sources
- Mobile Devices
- Real-Time Demo

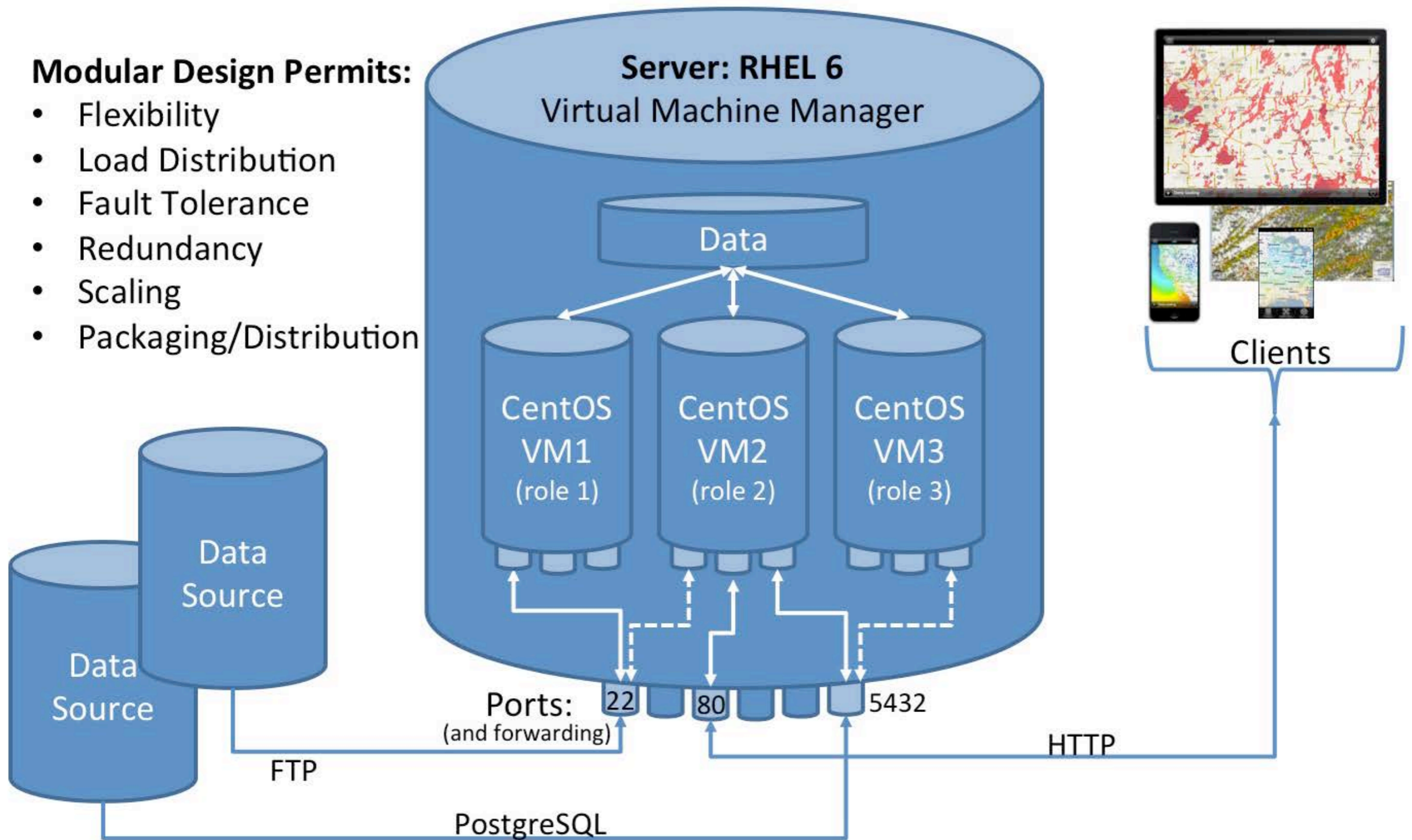
VIIRS True Color Rim Wildland



# VM Architecture

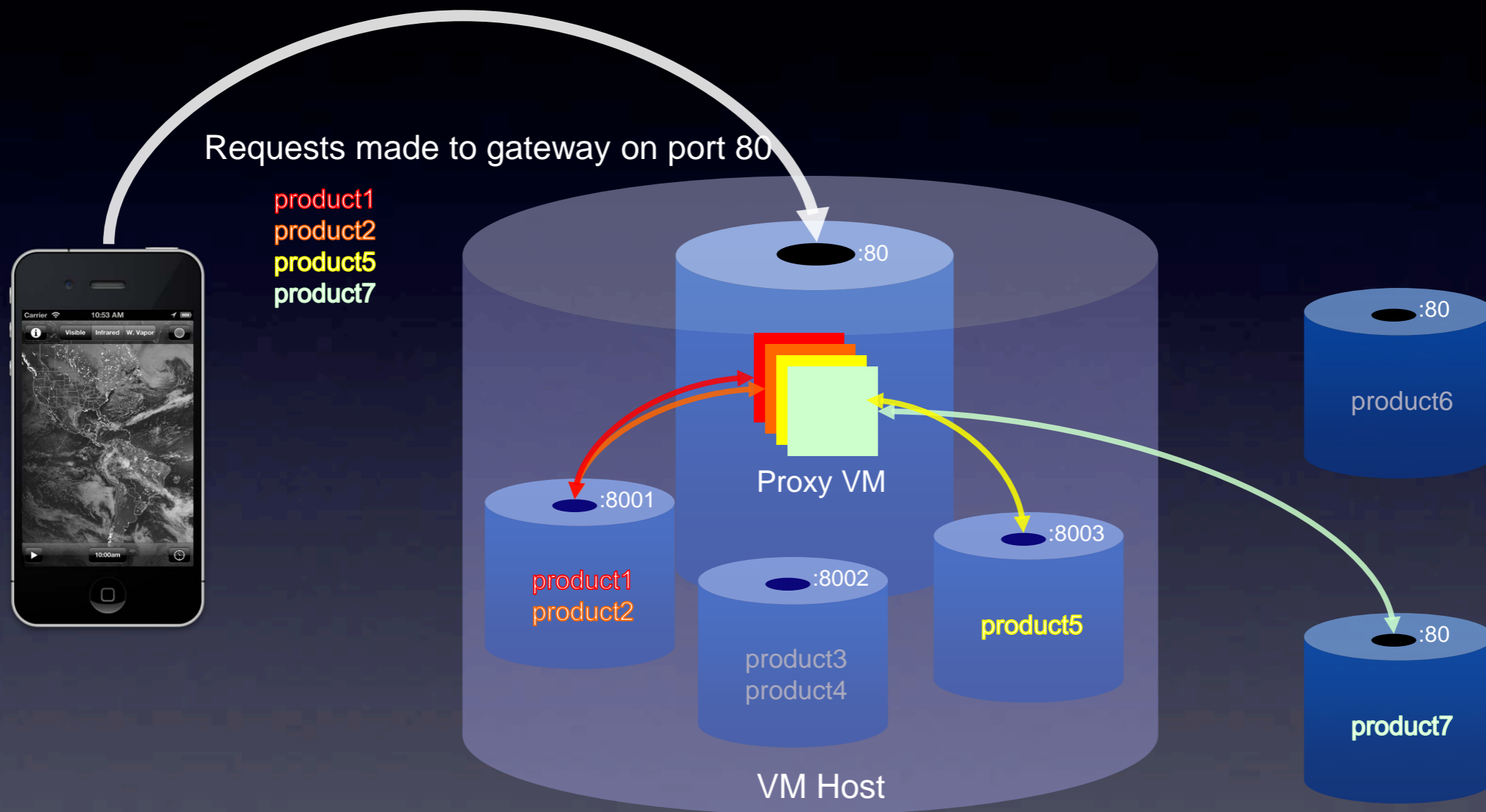
## Modular Design Permits:

- Flexibility
- Load Distribution
- Fault Tolerance
- Redundancy
- Scaling
- Packaging/Distribution





# Proxy to Other VMs



Proxy collects and combines information (tiles, shapes, metadata, etc) from the appropriate host and returns the result to the client

# Product Sharing

## THREDDS in McIDAS-V

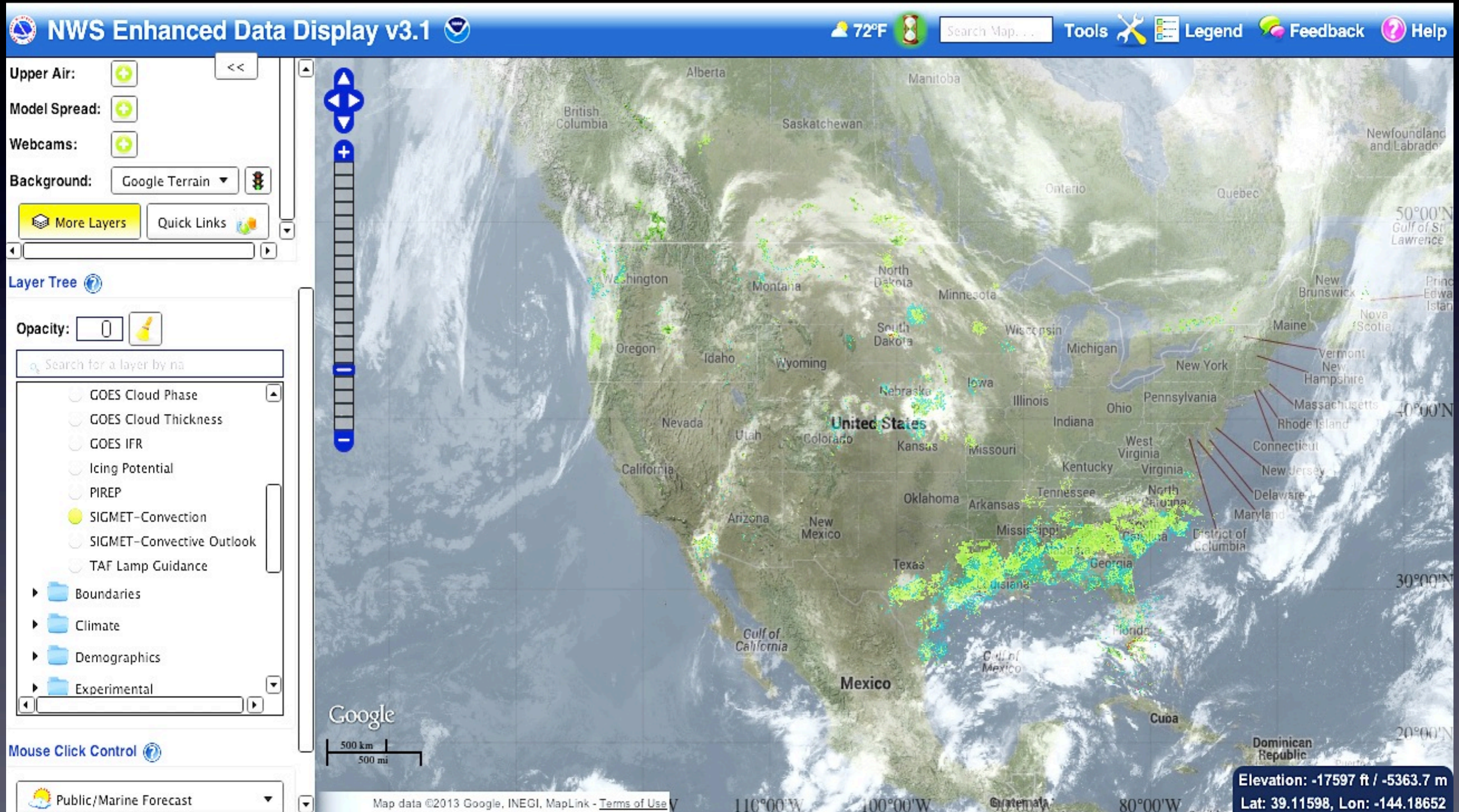
The image displays the McIDAS-V software interface, which is used for meteorological data visualization and analysis. The main window shows a satellite image of the Earth with a cyan-colored overlay representing a data product. The interface includes a menu bar (File, Edit, Display, Tools, History, Bundles, Window, Help) and a toolbar with various icons for navigation and analysis. A legend panel on the right lists the layers: Maps, globalir\_20130905\_160..., and Default Background Maps (North & Central America, World Political Boundaries, World Coastlines).

Overlaid on the main window is the "McIDAS-V - Data Explorer" window. This window is used for selecting and managing data sources. It features a "Catalog" field with the URL `http://wms.ssec.wisc.edu/mcv/?product=globalir` and a "Select File..." button. The "Browse" section is set to "Web Map Service" and shows a list of data products under the "SSEC WMS Product" category. The selected product is `globalir_20130905_160000`. To the right of the list is an "Image Bounds" map showing a world map with a red vertical line indicating the selected data's geographic extent. At the bottom right of the Data Explorer window, there is a button labeled "Add Source" and a note: "Press 'Add Source' to load the selected WMS layer".




# Product Sharing

## NWS: Enhanced Data Display






# Manager Product Editor

 **SSEC WMS Product Manager** wmsserv2.ssec.wisc.edu/prod  
load average: 1.35, 1.78, 1.81

---

**PIREP** 7m  
150 tiles in 41s (0.3s/t)  
*Pilot Reports*

**Edit npptcpm** ✕

 **npptcpm**  
*Pil*

**Naming**  
Name:   
Description:   
Categories:  (CSV)

**Timeliness**  
Animation Interval:  minutes  
Warn After:  minutes  
Model Data:

**Availability**  
Public:   
Released:

**Security**  
Restrict to IPs:  (CSV)

**Actions**

**Display**  
Data Type:   
Tile Type:   
Transparent Color:   
Processing:   
Tile Renderer:   
Canvas Marker: .js  
Max Zoom:   
Seed Policy:   
Show Legend:

**Data Retention**  
Keep:      
Static:

# Manager Product Editor

**SSEC WMS Product Manager** wmsserv2.ssec.wisc.edu/prod  
load average: 1.35, 1.78, 1.81

**PIREP** 7m  
150 tiles in 41s (0.3s/t)  
*Pilot Reports*

**Edit npptcpm**

**npptcpm**  
*Pil*

**Naming**  
Name: N. America True Color comp 1km (VIIRS, PM only)  
Description: N. America true Color comp 1km (VIIRS, PM only)  
**Categories:** VIIRS,Regional Imagery (CSV)

**Timeliness**  
Animation Interval: 90 minutes  
Warn After: 2880 minutes  
Model Data:

**Availability**  
Public:   
Released:

**Security**  
Restrict to IPs: (CSV)

**Actions**  
Rebuild Product   Rebuild Legend   Clean Cache   Delete Product

**Display**  
Data Type: Raster  
Tile Type: Color  
Transparent Color: 0 0 0  
Processing:   
Tile Renderer: /home/wms/data/mapfiles/renderers/  
Canvas Marker: /home/wms/www/html/js/markerGenerators/.js  
Max Zoom: 4  
Seed Policy: Do not seed  
Show Legend:

**Data Retention**  
Keep: 366 Files Hours Days  
Static:

[Save](#)



# Catagories

## Display Controls – Product Selection

The image displays a meteorological software interface. On the left is a 'Display Controls' panel with a 'Products' list. The 'All Products' and 'Hazards' items are circled in blue. The main area shows a map of the United States with a radar precipitation overlay. A legend at the bottom indicates 'SSEC/UCAR-CanAM Radar Precip Rate (Filtered)' with a color scale from 'Filtered' (purple) to 'Heavy' (red). The map shows a large yellow area in the Northeast and purple areas in the Southeast. A date and time stamp '2013-09-02 8:05pm' and coordinates '37.90N 86.69W' are visible at the top. An inset map of North America is in the bottom right corner.

**Display Controls**

Save my selections

Products

- All Products
- Hazards
- High Res
- Hurricane
- Landsat
- MODIS
- NASA
- NESDIS
- NSIDC
- NSSL
- Observations
- Polar Nav
- Precipitation
- Radar
- Regional Imagery
- Severe
- Static
- Targets
- VIIRS
- Winds
- Winter
- Wisconsin

2013-09-02 8:05pm  
37.90N 86.69W  
Link

SSEC/UCAR-CanAM Radar Precip Rate (Filtered)

Filtered - Light Heavy

Map data © 2013 Google, INEGI 200 km Terms of Use



# Catagories

## Display Controls – Product Selection

The image displays a weather application interface with a 'Display Controls' panel on the left and a radar map of the United States on the right.

**Display Controls Panel:**

- Save my selections:** A checkbox that is currently unchecked.
- Navigation:** A set of playback controls including buttons for previous, play, and next, along with a progress slider.
- Products:** A list of product categories with expandable arrows and status indicators (green plus for expanded, blue 'i' for collapsed).
  - All Products:** Selected and circled in blue.
  - Hazards:** Selected and circled in blue.
  - Global Earthquakes (10 min):** Status: collapsed.
  - RSAC Large Wildland Fires:** Status: collapsed.
  - Severe Wx Warnings:** Status: collapsed.
  - Hurricane Cone of Uncertainty:** Status: collapsed.
  - Hurricane Points:** Status: collapsed.
  - Hurricane Track:** Status: collapsed.
  - Volcanic Ash Advisories:** Status: collapsed.
- Map Style:** A dropdown menu currently set to 'Map'.
- Labels:** A checkbox that is currently checked.

**Map:**

- Location:** 2013-09-02 8:05pm, 37.90N 86.69W.
- Legend:** SSEC/UCAR-CanAM Radar Precip Rate (Filtered). The scale ranges from 'Filtered' (dark purple) to 'Light' (yellow) to 'Heavy' (red).
- Map Data:** ©2013 Google, INEGI. Scale: 200 km.



# Collections

## Display Controls – Product Selection

The image shows a web application interface for displaying satellite data. The main component is a map of the North Atlantic Ocean, showing the United States, Canada, and parts of Europe and Africa. The map is color-coded, likely representing sea surface temperature or chlorophyll-a concentration. A 'Locate Me' button is in the top left of the map area. A date and time stamp '2013-09-02 9:29am' and coordinates '59.71N 168.22W' are displayed in the top right. A 'Labels' dropdown menu is also visible. In the bottom right, there is a 'Show Legend' button and a scale bar for 1000 km. The bottom of the map area features the 'SSEC Google' logo and 'Map data ©2013 Google, INEGI, MapLink'.

On the left side, there is a 'Display Controls' panel. It includes a 'Save my selections' checkbox, navigation buttons (back, forward, home, search), and a 'Products' section. The 'Products' section has a star icon circled in blue, followed by 'All Products' and 'Displayed' buttons, and a 'Save As Favorite...' button. Below this, there are several product categories: 'AWC', 'CIMSS', and 'NESDIS'. Under 'NESDIS', three products are listed with preview thumbnails and status icons: 'Global Blended TPW (GPS) and WV', 'Global Blended TPW (PCT) and WV', and 'Global HydroEstimator and WV'. Other categories like 'NHC', 'SPC', and 'SSEC' are also visible at the bottom of the panel.



# Favorites

## Display Controls – Product Selection

The image shows a screenshot of a weather application interface. On the left, a 'Display Controls' panel is visible, featuring a 'Save my selections' checkbox (circled in blue) and a 'Products' list. The 'Products' list includes 'WatchWarn' (circled in blue), 'AIRMET', 'AMV', 'AWC', 'NSSL', 'NWS', 'POES', 'ROADS', 'SIGMET', 'SPC Convective Outlook Day1', 'SPC Convective Outlook Day2', 'SPC Fire Weather', 'Satellite Composite', 'Ship and Buoy', 'Static', 'VIIRS', 'WMS DEMO', and 'WildFire'. The main area displays a radar map of the New York region, showing precipitation intensity. Two weather alerts are overlaid on the map: 'Thunderstorm Watch Poly' (Issued: 09/02 19:20) and 'Thunderstorm Warning Poly' (Observed: 09/03 00:25, Expires: 09/03 01:15). A legend at the bottom indicates 'SSEC/UCAR-CanAM Radar Precip Rate (Filtered)' with a color scale from 'Filtered' to 'Heavy'. The map also shows a 'Locate Me' button, a 'Labels' dropdown, and a 'Map' dropdown. The date and time '2013-09-02 7:30pm' and coordinates '40.87N 76.40W' are displayed at the top right.



# Times

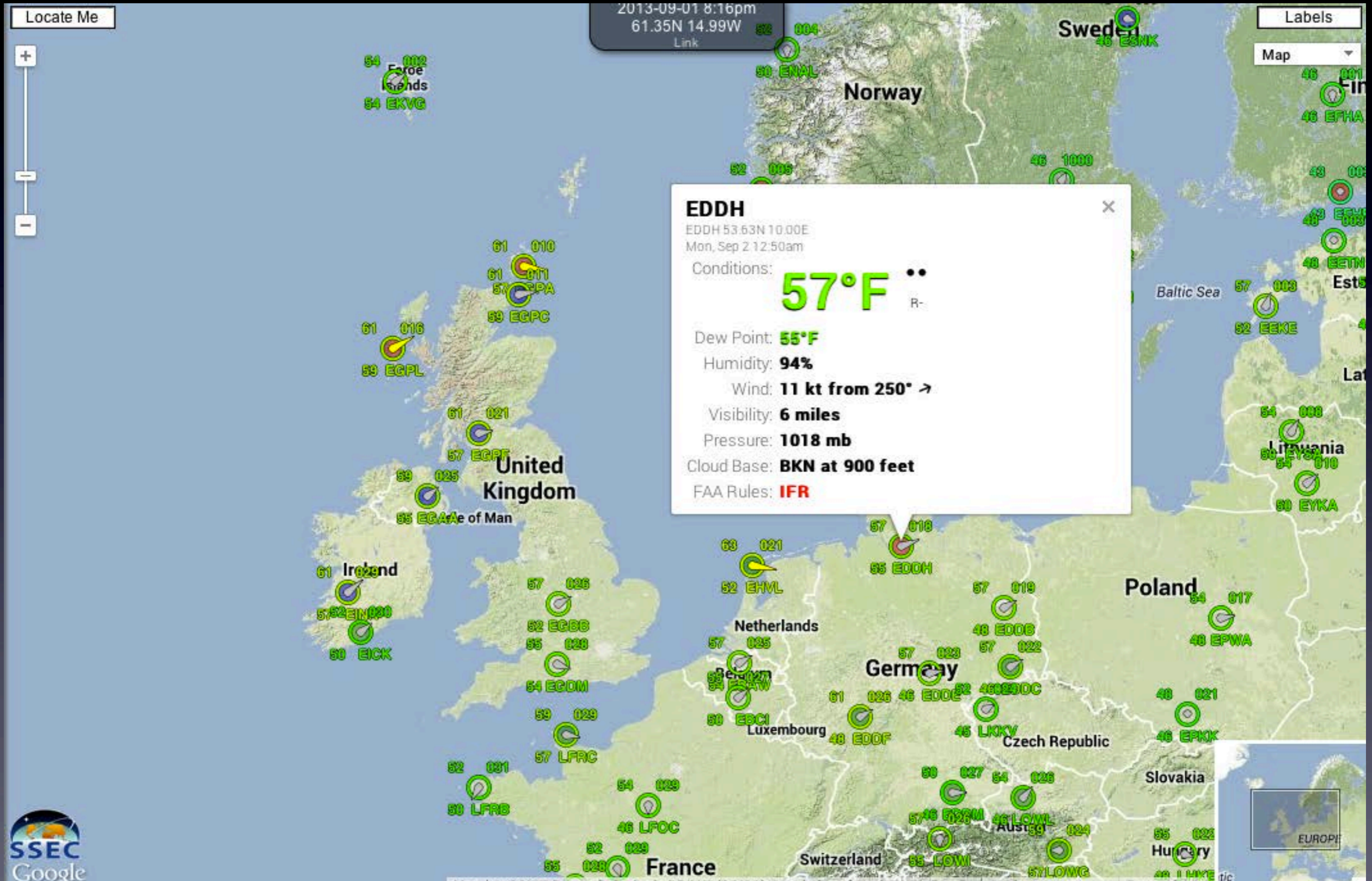
## Animation Time Controls

The image displays a software interface for meteorological data visualization. On the left, a 'Display Controls' panel is shown, with the 'Animation' section highlighted by a blue circle. This section includes playback controls (stop, play, fast forward, fast reverse) and a 'Times' sub-section. The 'Times' section has three tabs: 'Relative', 'Absolute', and 'By Product'. Under 'Relative', there are fields for 'From:' (set to 'Now'), 'To:' (set to 'Now'), and 'Every:' (set to 'minutes'). A 'Set times' button is located below these fields. Below the 'Times' section is a 'Layers' section with buttons for 'Favorite', 'All', and 'Displayed'. Two layers are visible: 'NEXRAD Phase' and 'Global IR Composite', each with a small preview image and a horizontal slider.

The main area of the interface is a map of North America, showing a satellite-style background with overlaid meteorological data. The map is centered on the United States. A date and time stamp in the top right corner reads '2013-09-04 6:00pm' and '39.10N 158.38W'. A 'Locate Me' button is in the top left. The map includes labels for various geographical features like the Gulf of Alaska, Gulf of California, and Gulf of Mexico. At the bottom of the map, there are two color-coded legends: 'Global IR Composite' (ranging from 0% to 100%) and 'NEXRAD Phase' (ranging from 0% to 100%). A scale bar at the bottom right indicates '1000 km'. The SSEC logo and 'Google' are visible in the bottom left corner of the map area.

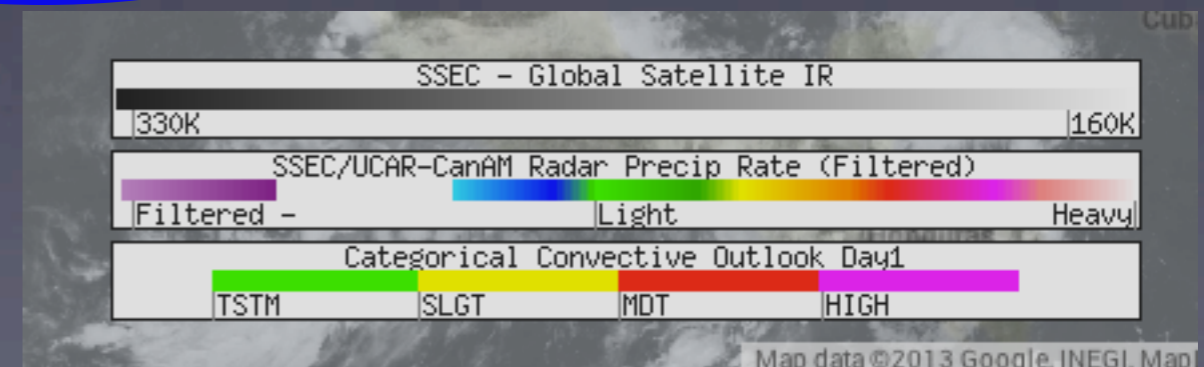
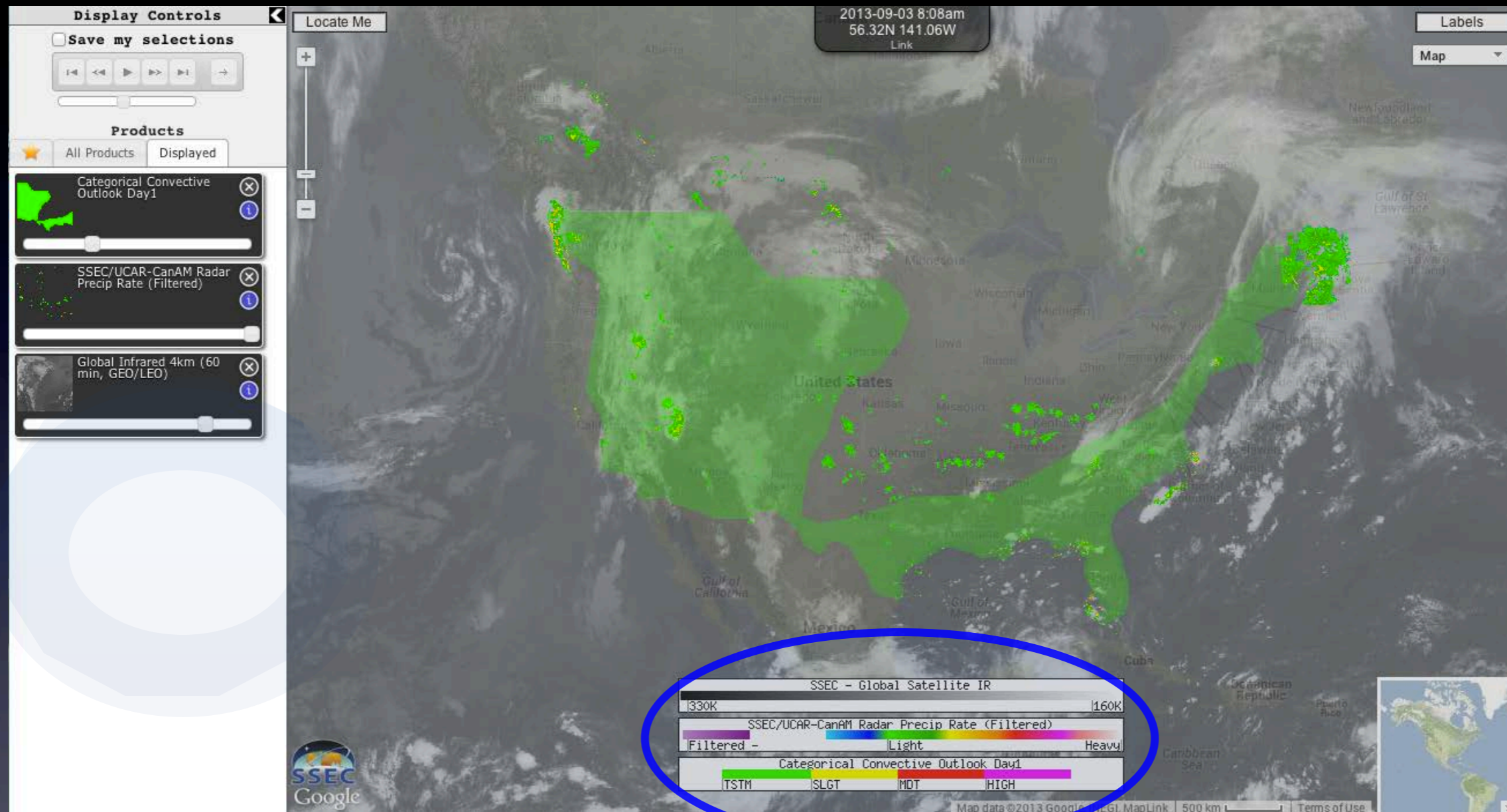


# Canvas Marker Generators





# Labels

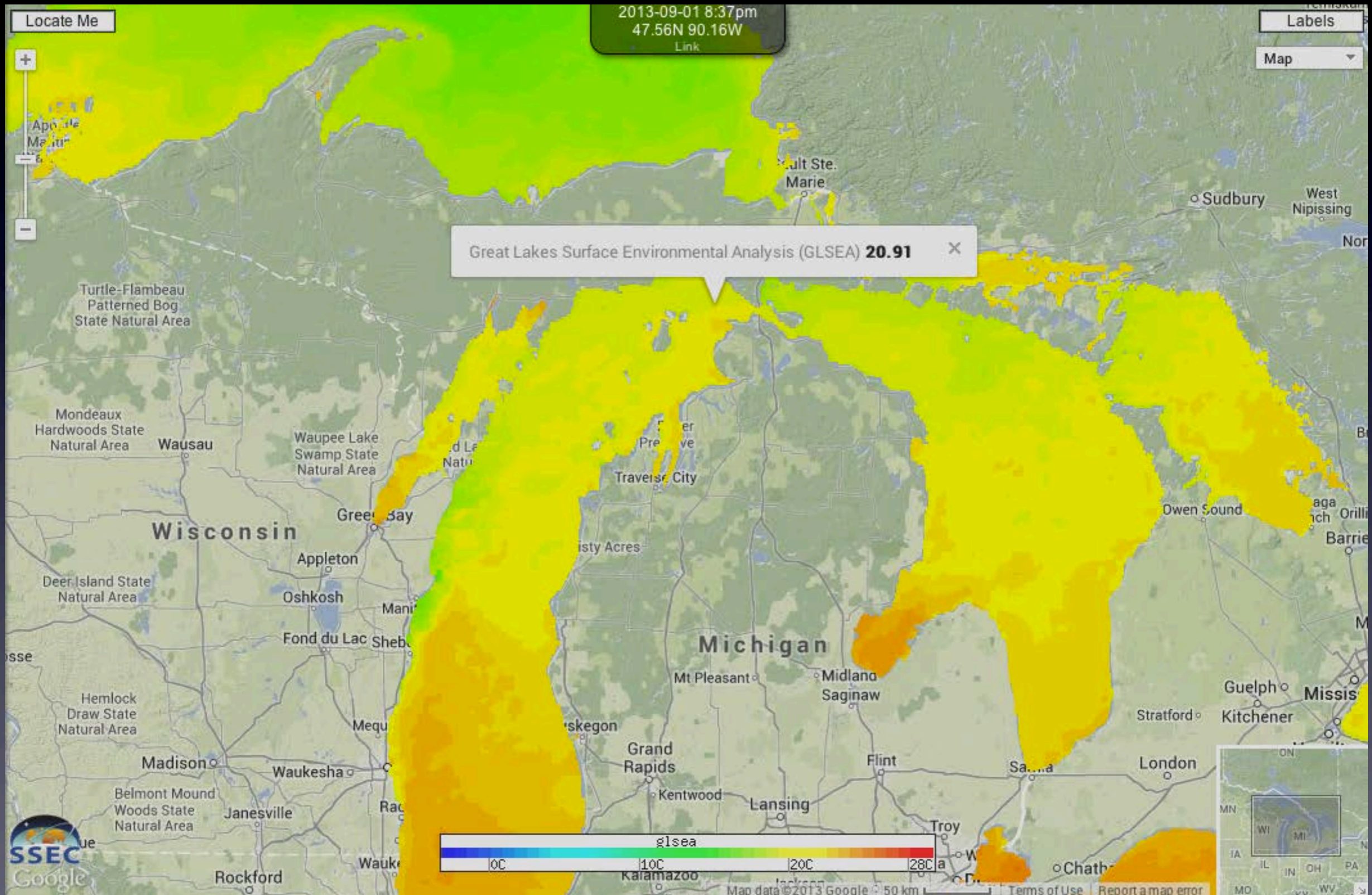








# Data Probe





# ADDE ingest

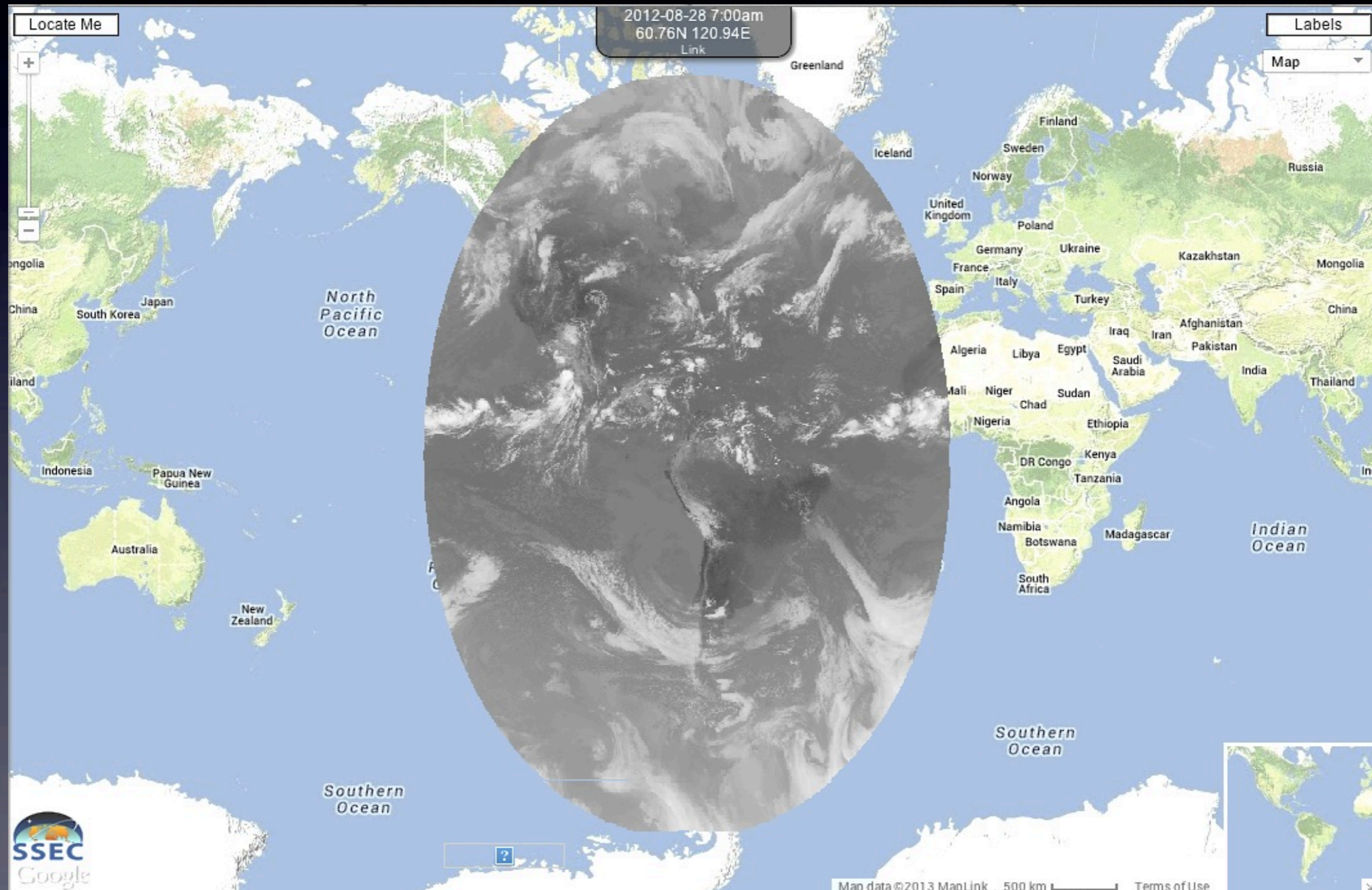
User uploads a text file (myimage.adde) that contains

....

- Address > GEOARC.SSEC.WISC.EDU
- Group > AGOES13
- Descriptor > FD
- IMGCOPY args > BAND=4 SIZE=SAME RES=4 ...
- IMGREMAP args > PRO=RECT LAT=0 74 RES=4 ...

# ADDE ingest

.... which creates a RealEarth Layer called myimage





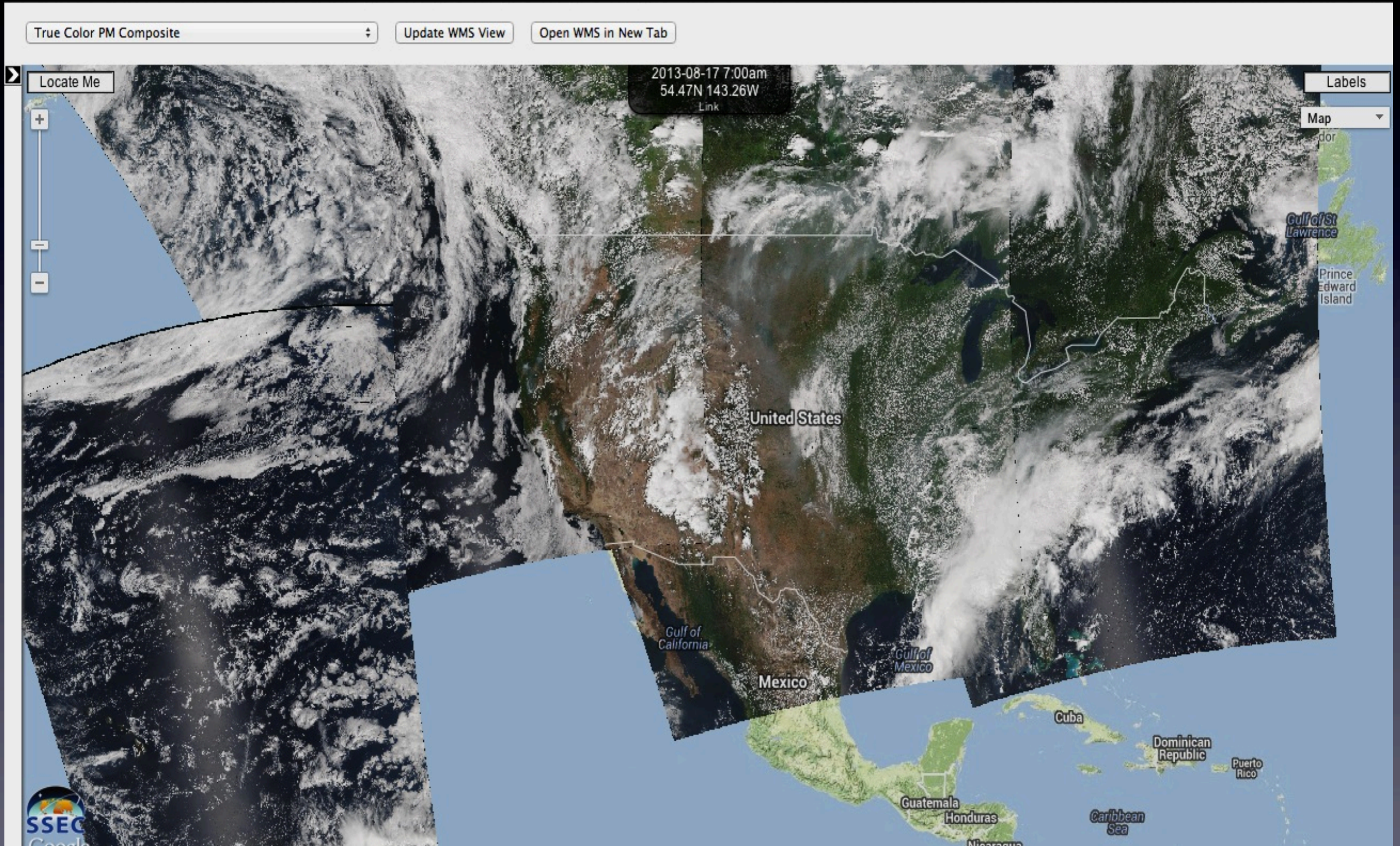
# RealEarth

## New Data Types and Sources



# VIIRS

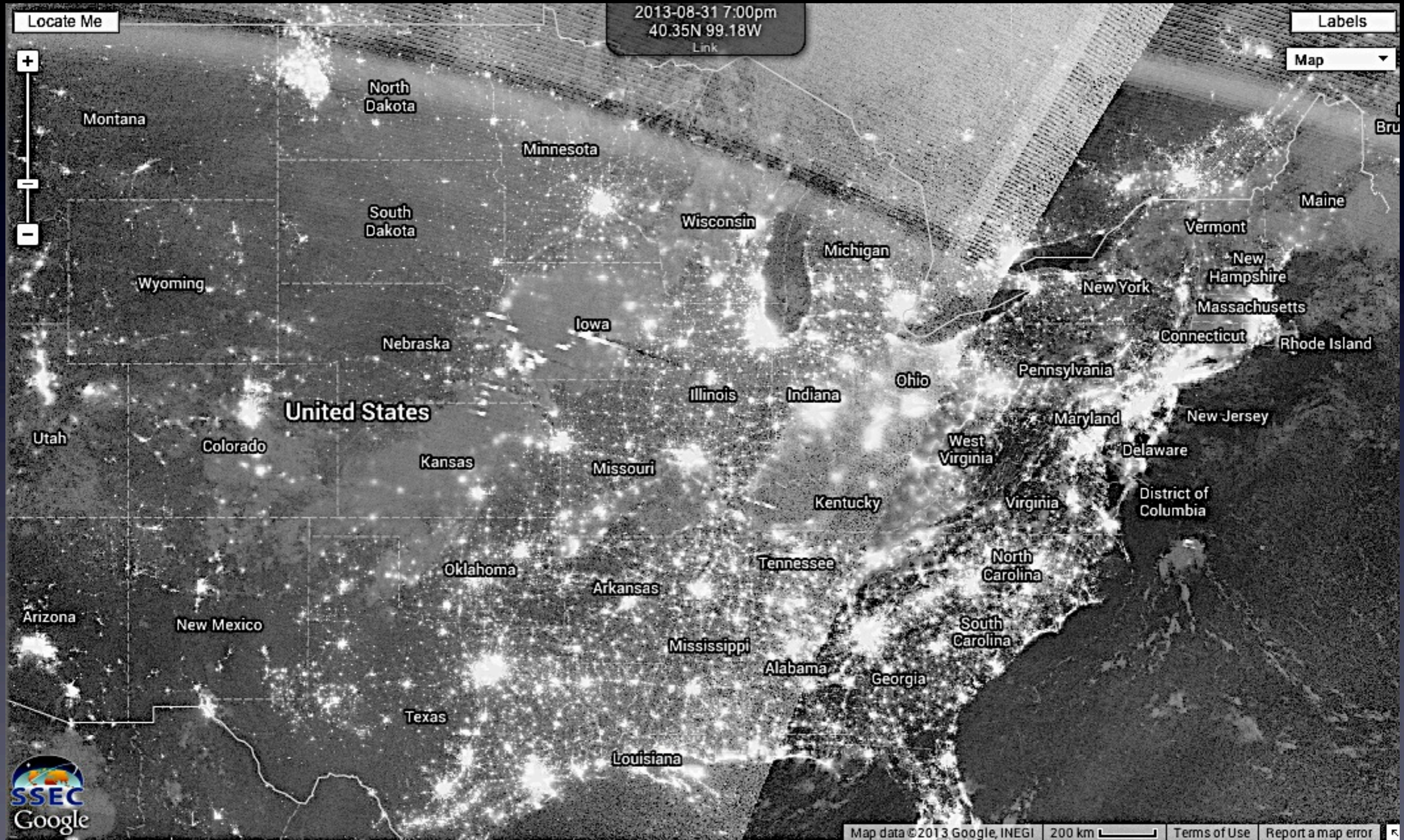
## CIMSS/CSPP: Swath Composites





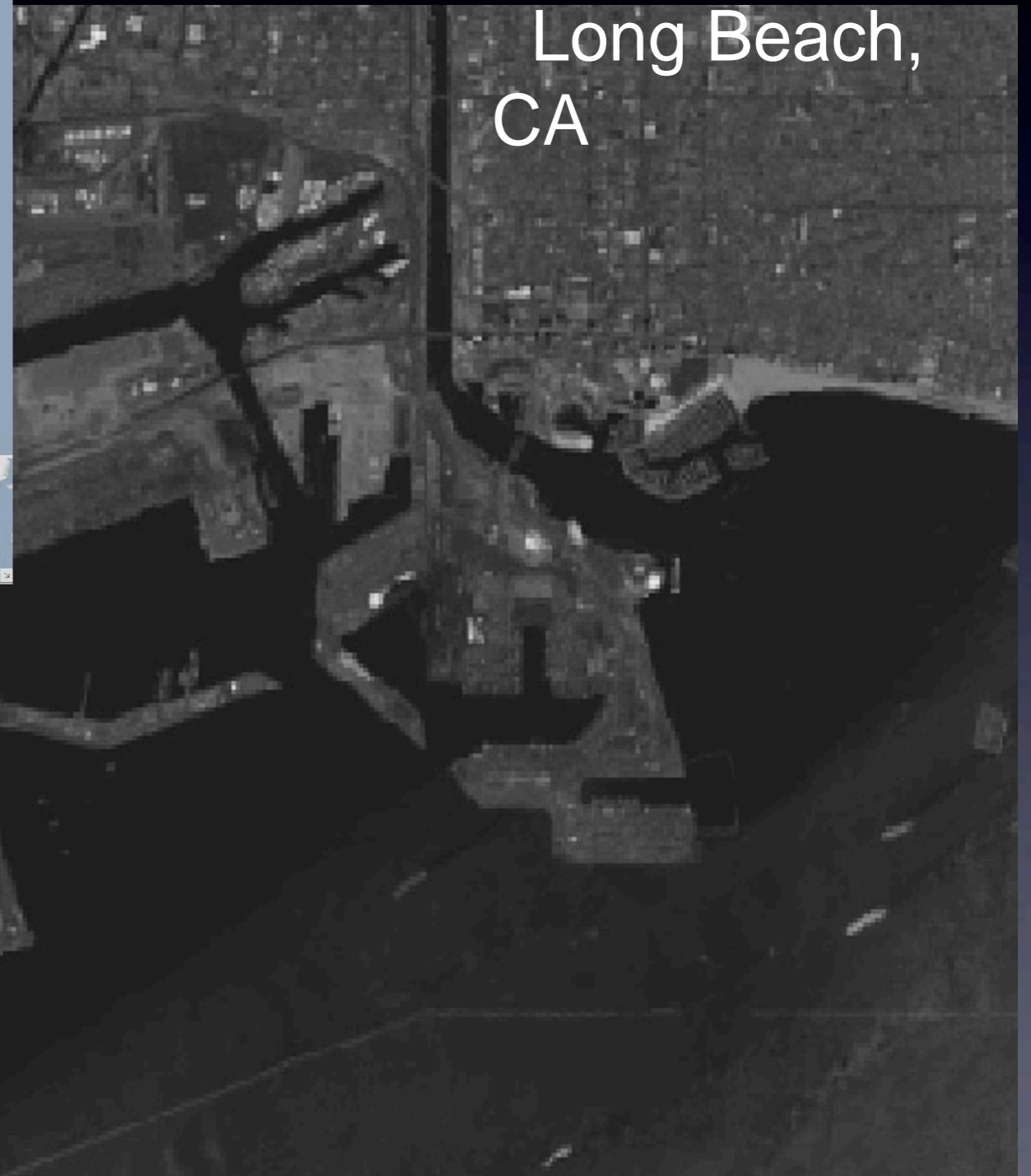
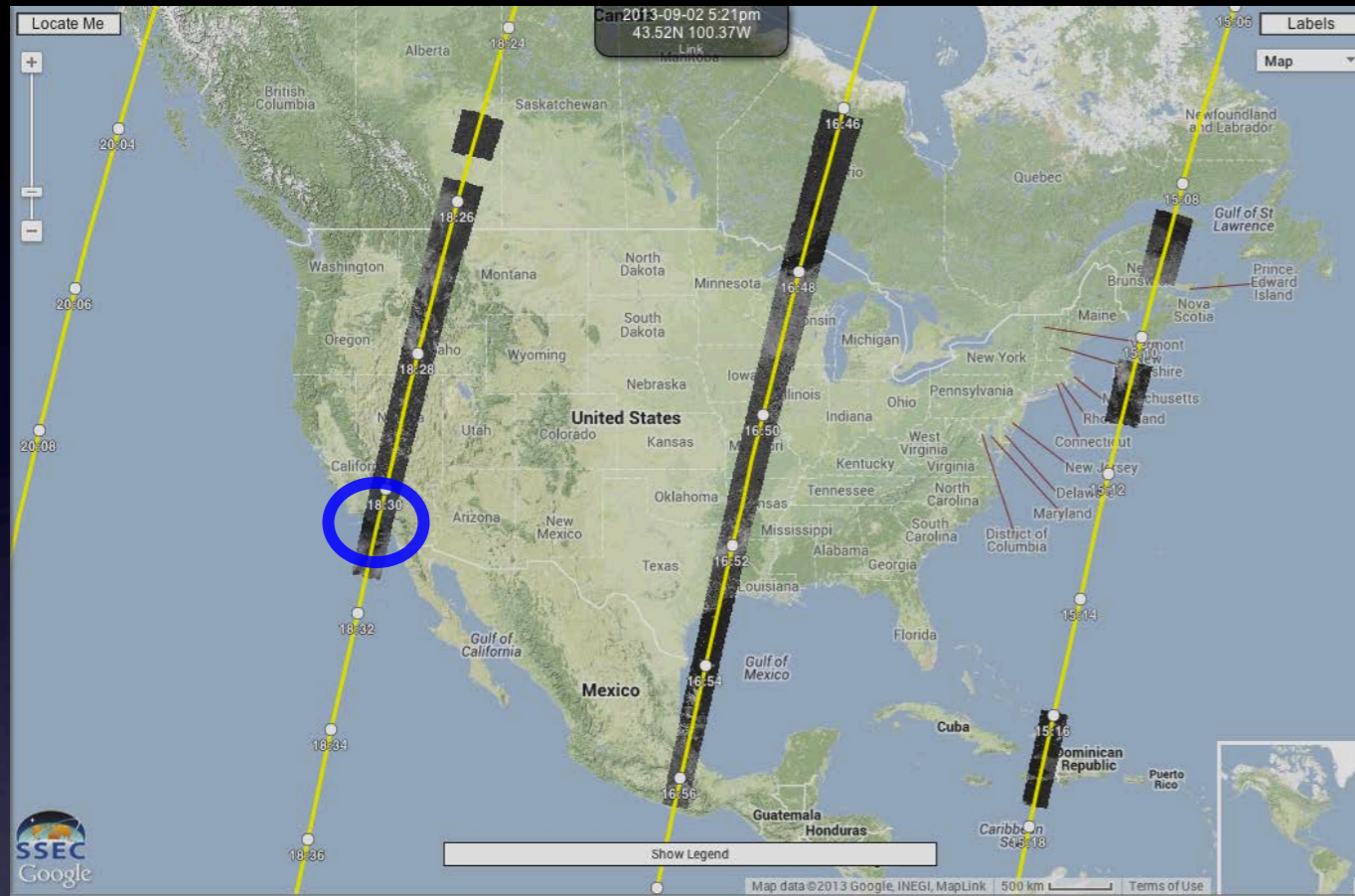
# VIIRS

## CIMSS/CSPP: Day Night Band



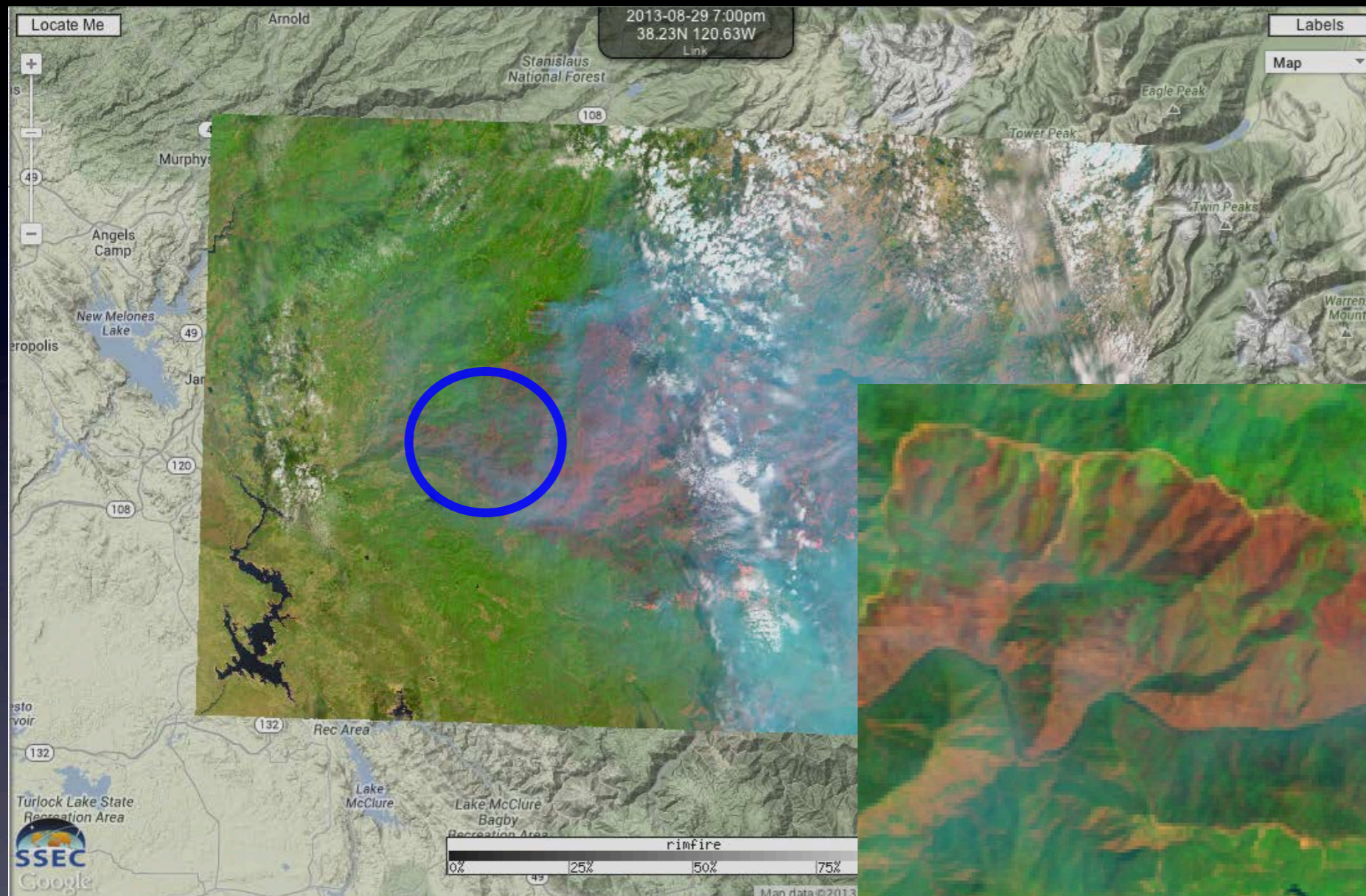


# Landsat 8 USGS: Granual Composites





# Landsat 8 USGS: Multi-channel Composites

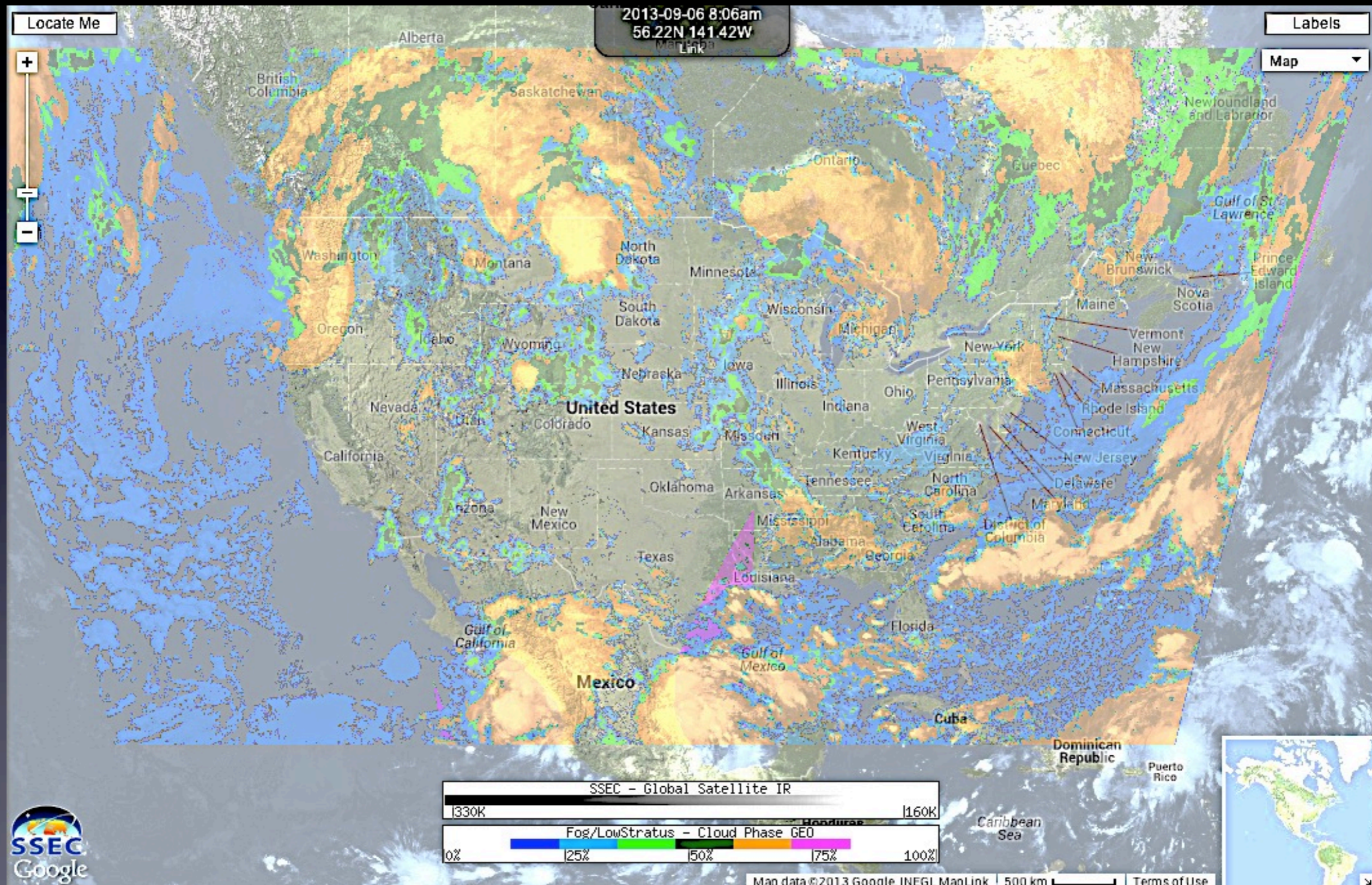


Bands 7,5,3 = RGB



# FLS

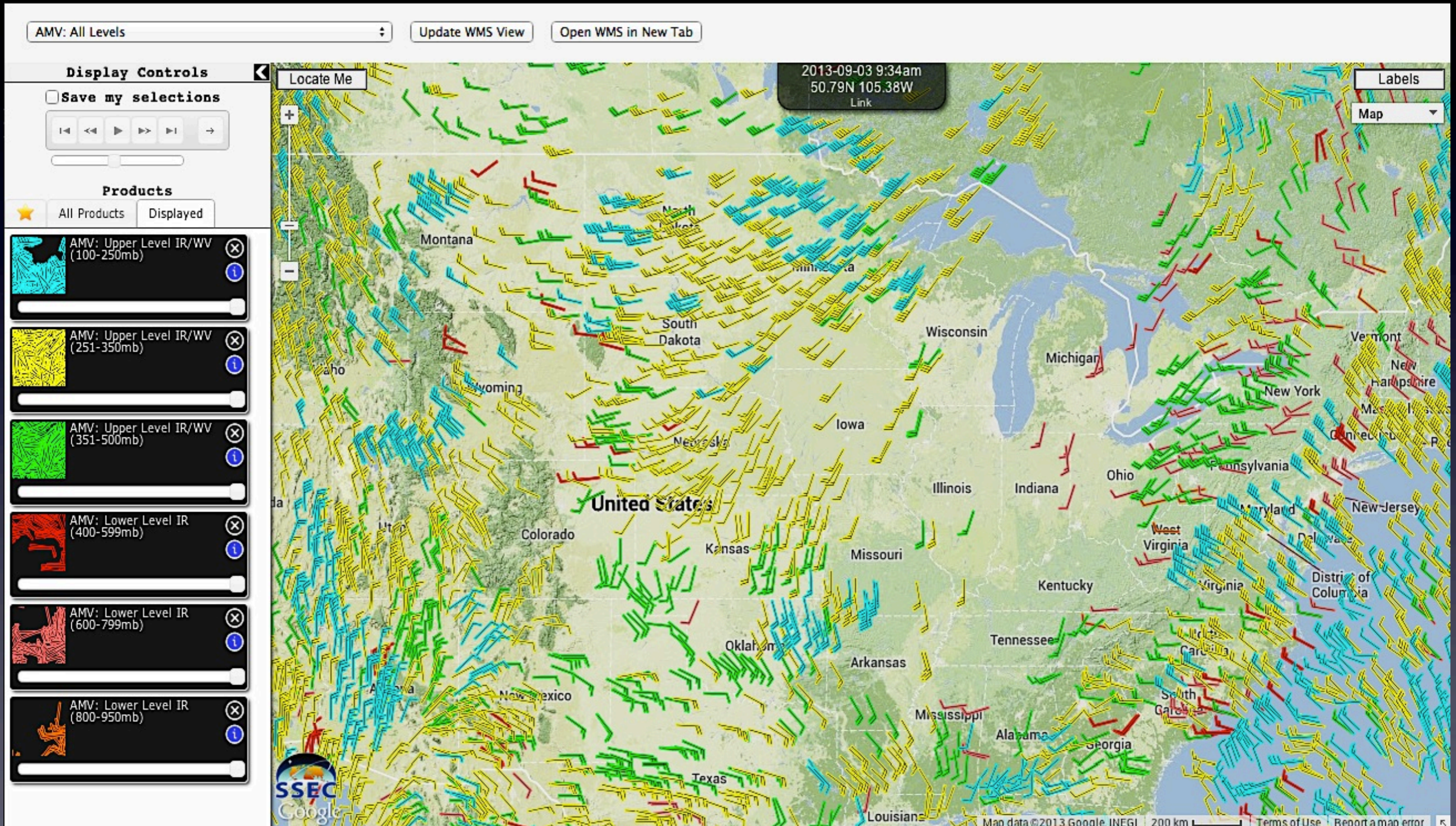
## CIMSS: Fog and Low Stratus





# AMV

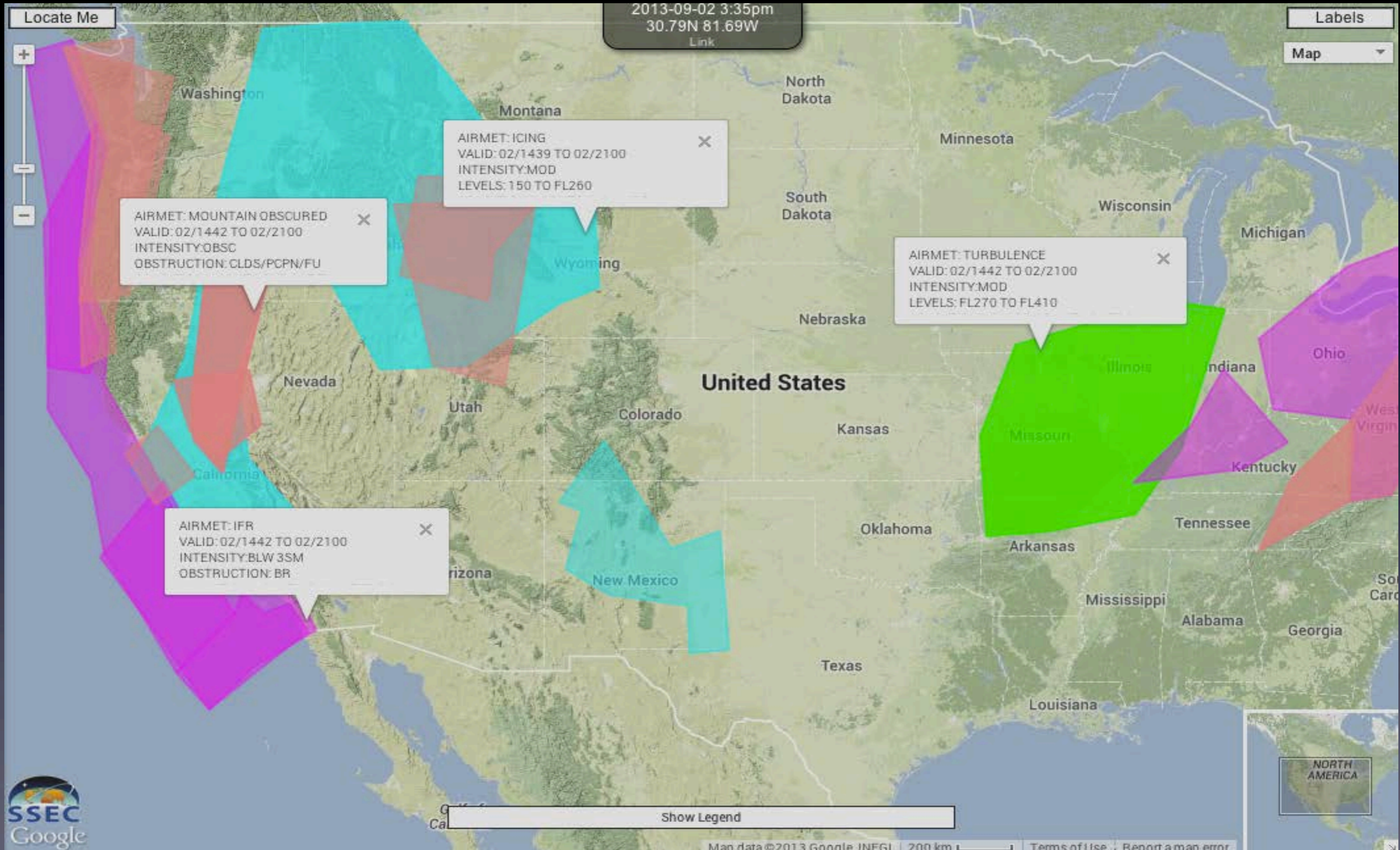
## CIMSS: Atmospheric Motion Vectors





# AIRMET

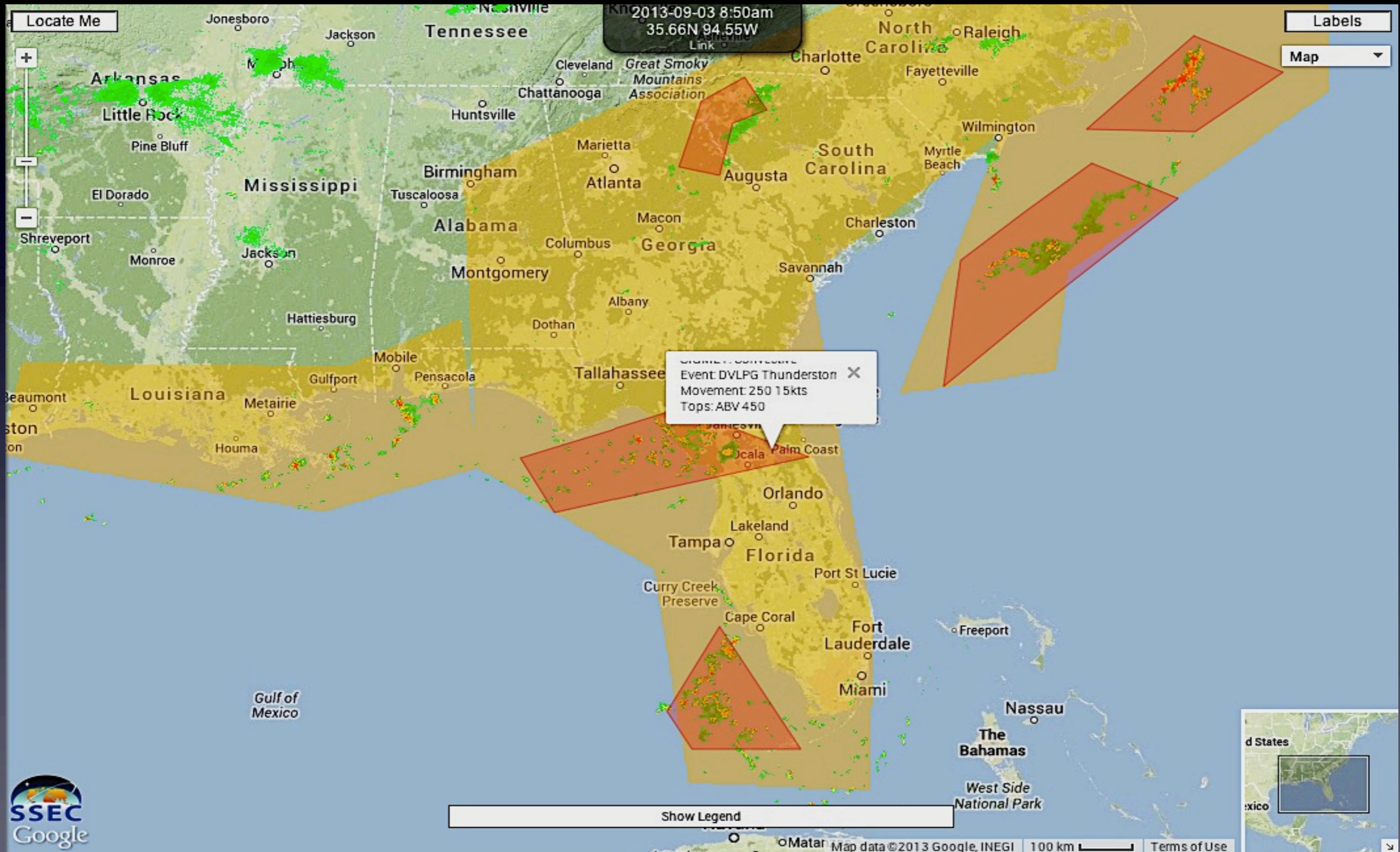
AWC: Icing, Turbulence, IFR & MTOS





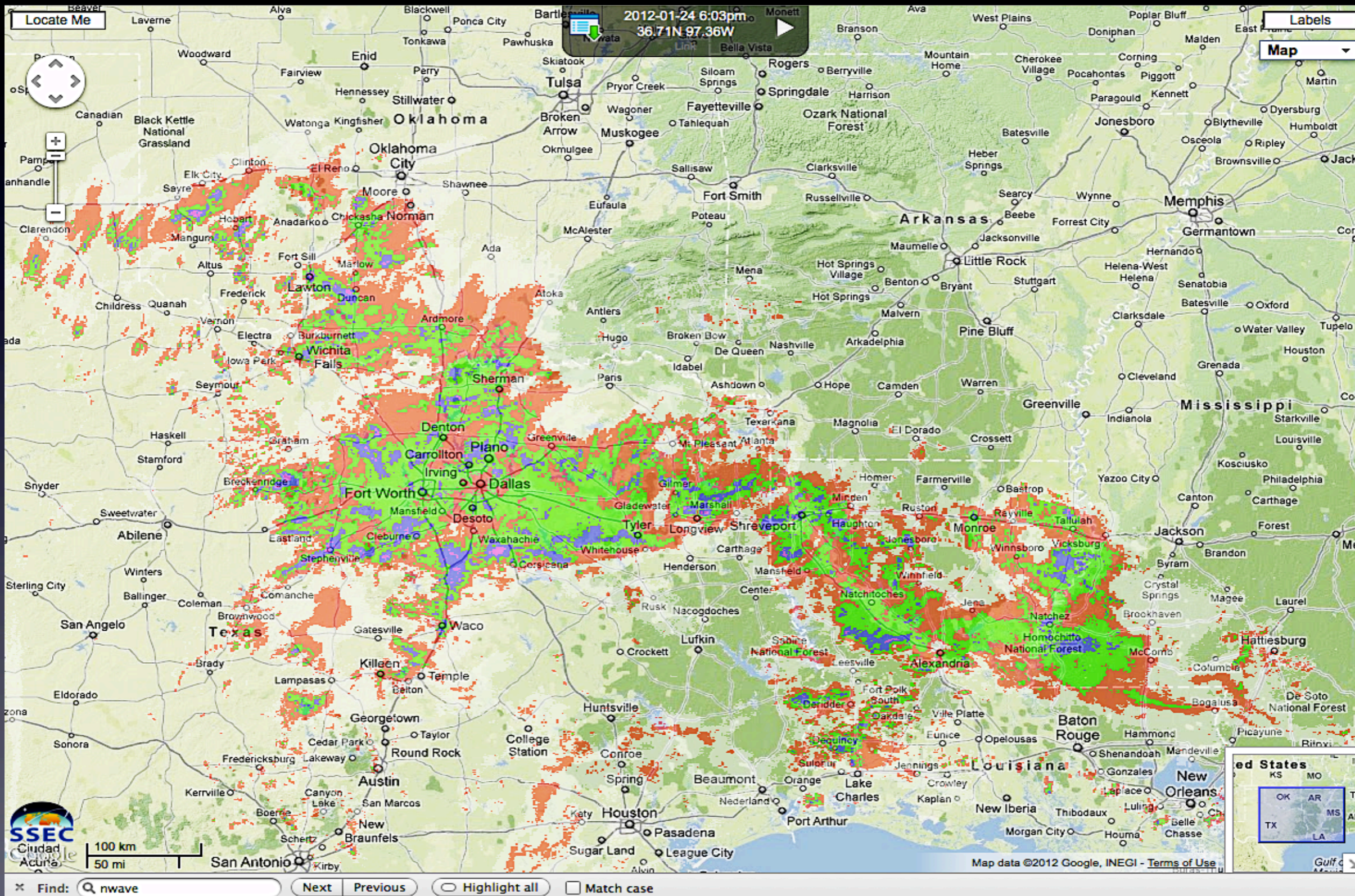
# SIGMET

## AWC: Outlook & Convective





# NSSL

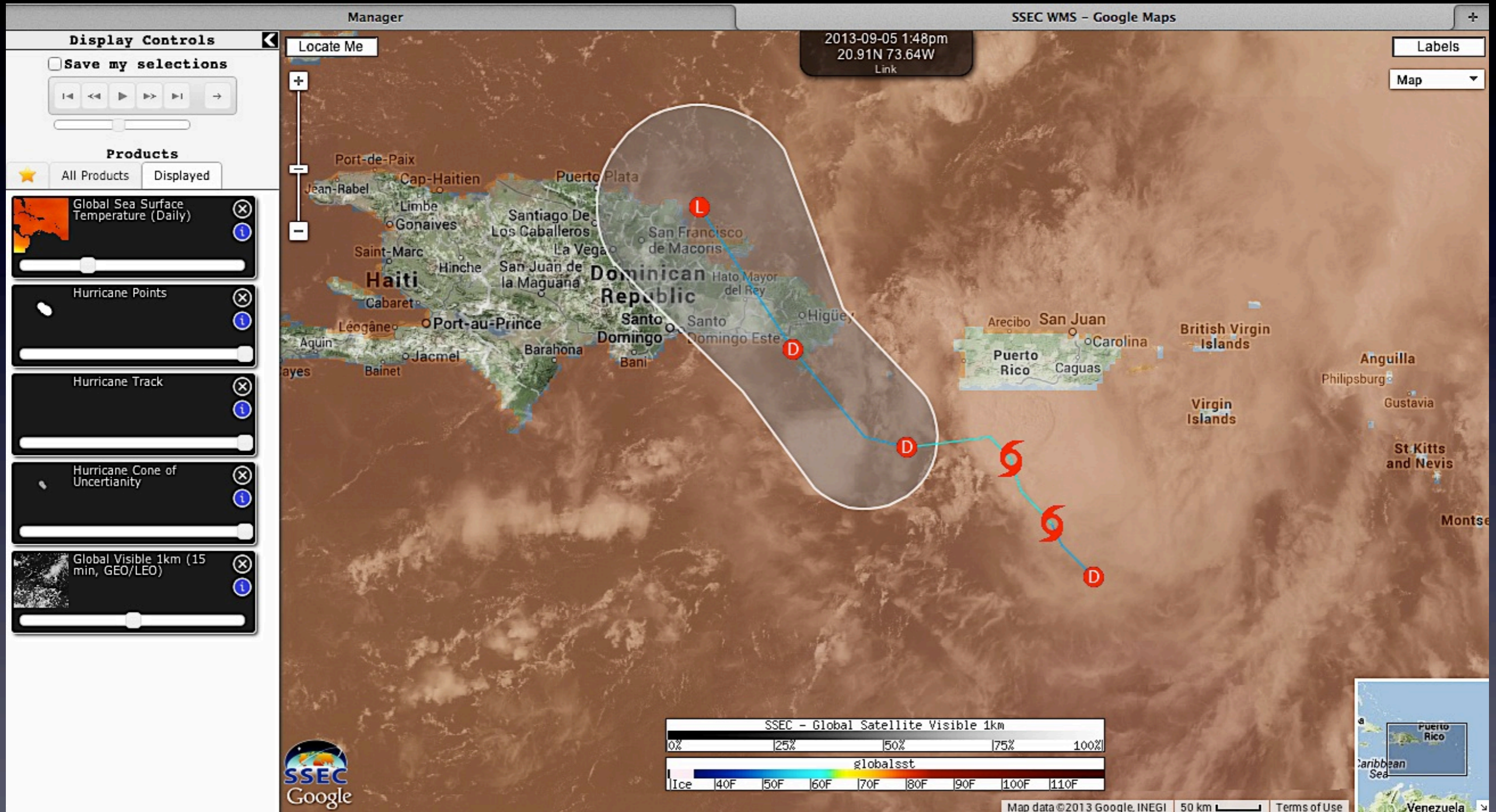






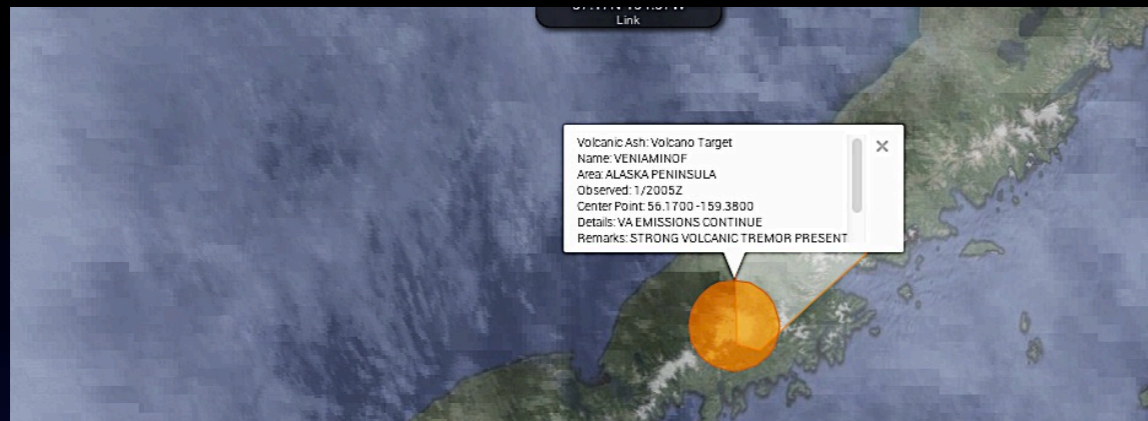


# NHC

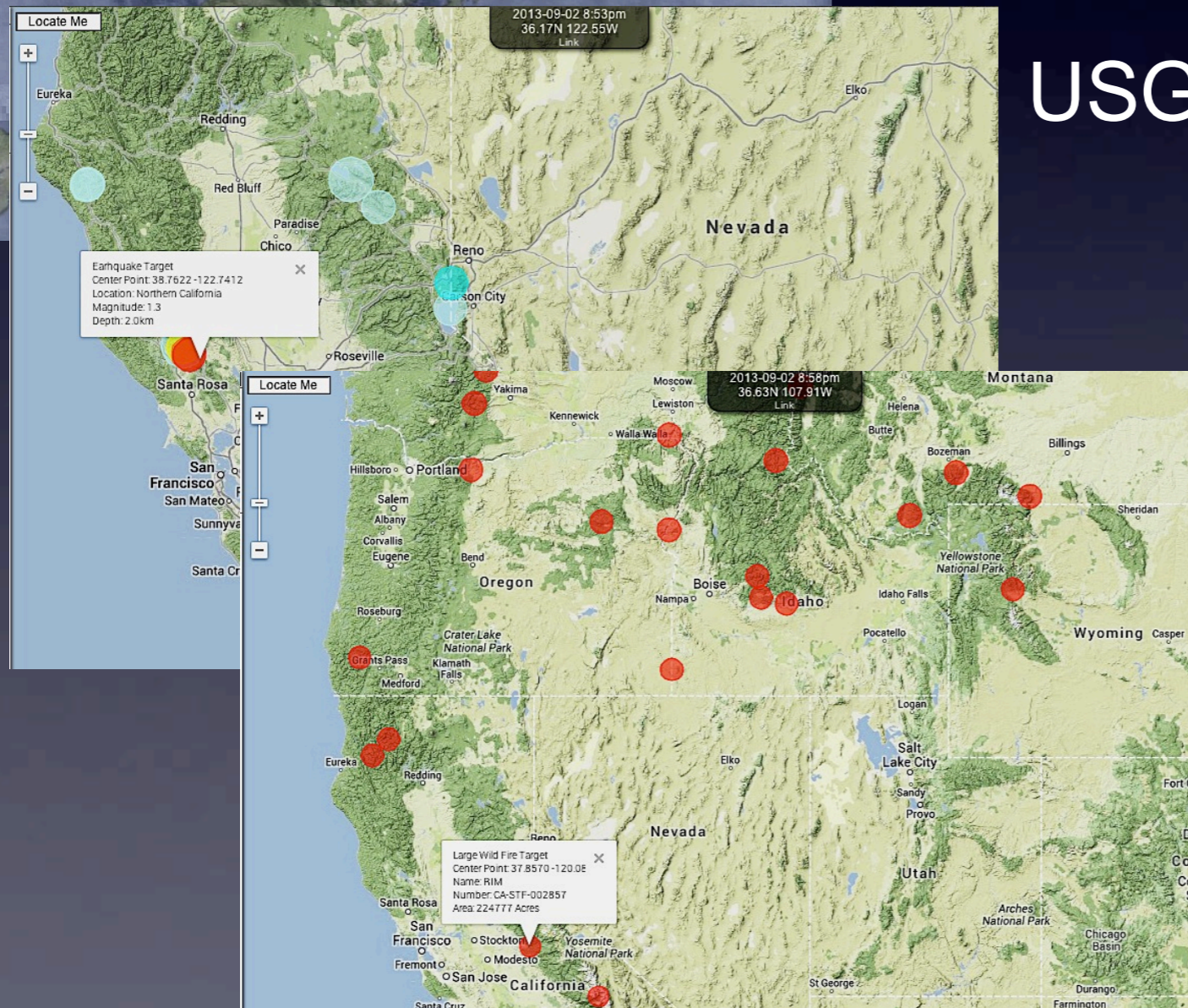




# Hazards



VAAC: Volcanic Ash  
Advisories



USGS: Earthquakes

RSAC: Wildland Fires



# RealEarth Mobile Devices



# WxSat

- Global composites of Visible, Infrared and Water Vapor images
- Full native resolution
- Products produced by SSEC Data Center
- Can expand to include other RealEarth Layers





# WxSat

- Simple way for anyone to explore global composite imagery
- Leverages RealEarth Web Map Service
- iPhone and iPad
- .....AND .....





# WxSat

- .... Android Version is right behind
- Duplicates functionality and contents
- Beta release first quarter of 2014





# RealEarth Real Time Demo