Envisioning Future Imagery: Activities at CICS-MD

Patrick Meyers, Scott Rudlosky, Ralph Ferraro, Nai-Yu Wang

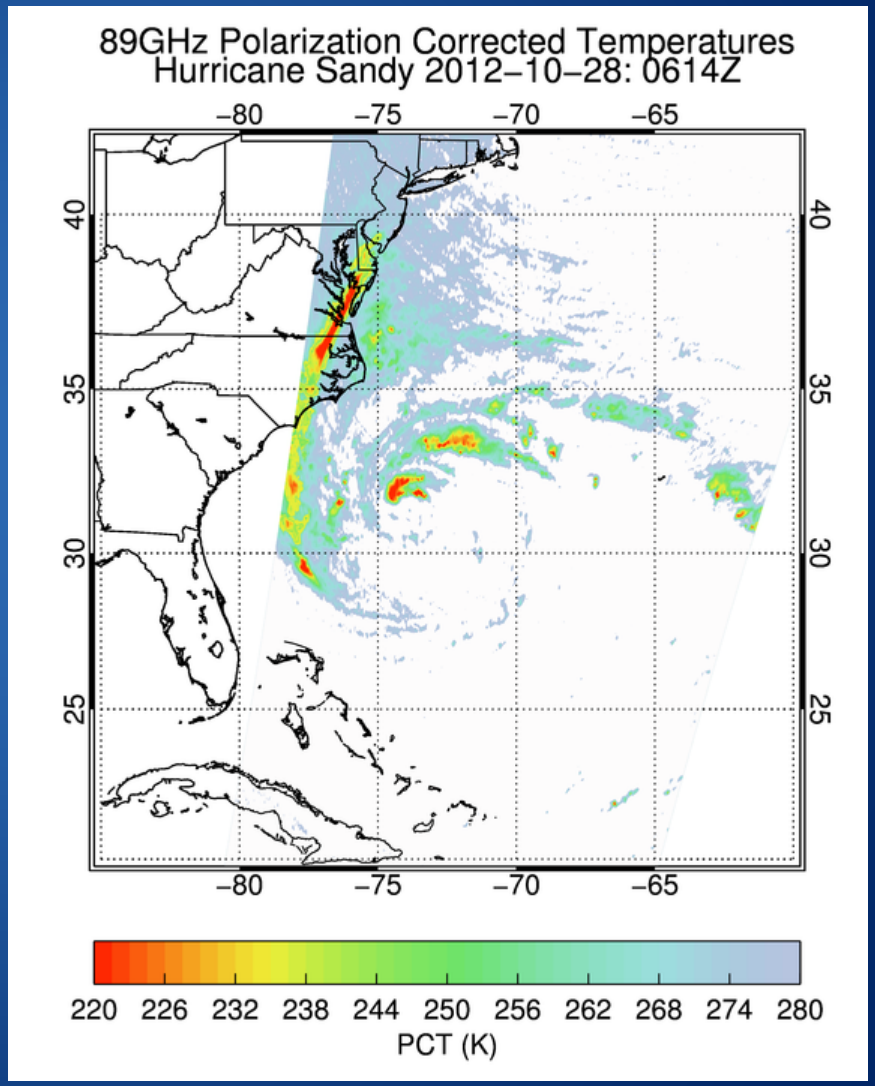
CoRP Symposium – 23 July 2013

Outline

- Merged products – Exploiting strengths
- Washington DC Lightning Mapping Array (DCLMA)
- Merging LMA with SRSO
- GLM Capabilities
- LEO Platforms

Satellite Trade-offs – Hurricane Sandy

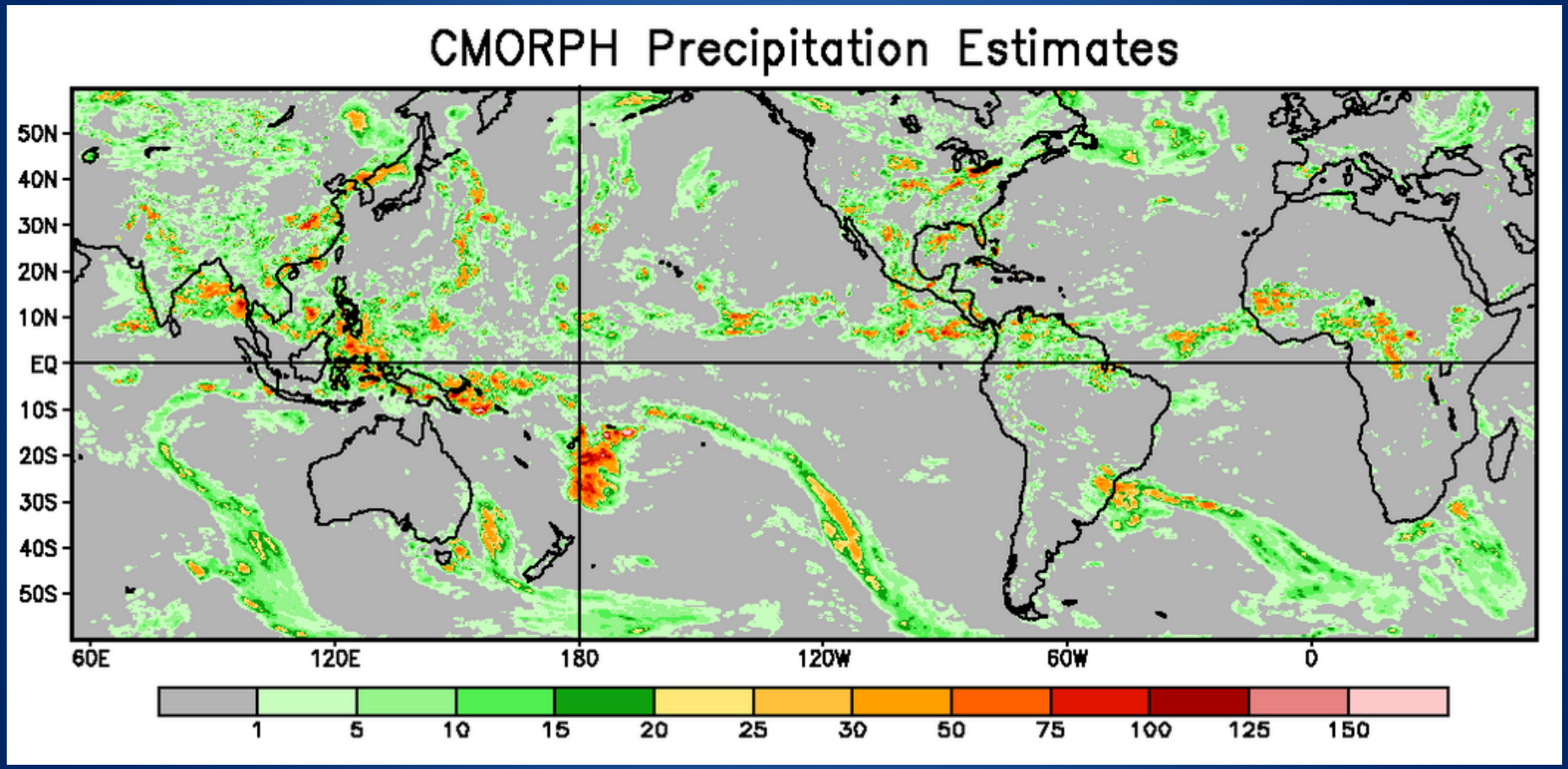
Source: NASA



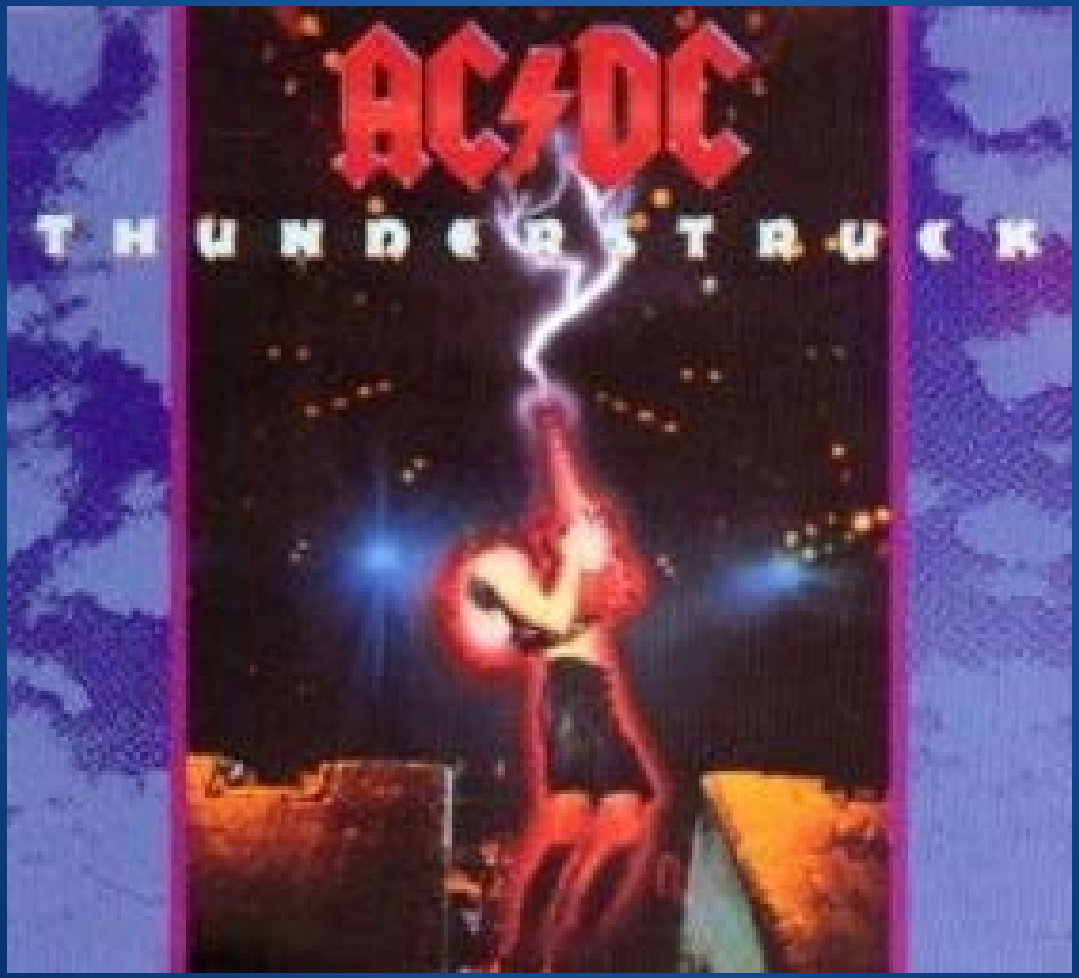
Pros and Cons

Platform	Strengths	Weaknesses
Geostationary Satellites	Rapid Refresh Rate CONUS Coverage Top of Atmosphere	Not Global Coverage Cloud Blocking (IR)
Polar Orbiters	Global Coverage All-Weather Low/Middle Atmosphere	3-4 Hour Refresh Rate
Ground-Based Systems (Radar, LMA, Gauges, etc)	Rapid Refresh Rate Serviceable “Surface Truth”	Non-Continuous Coverage Gauge Errors

CMORPH: IR + PMW

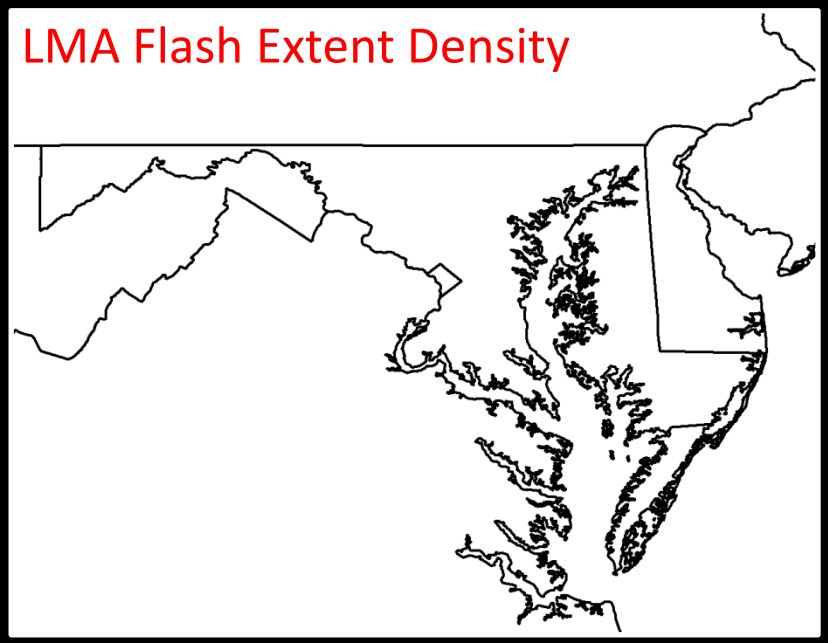


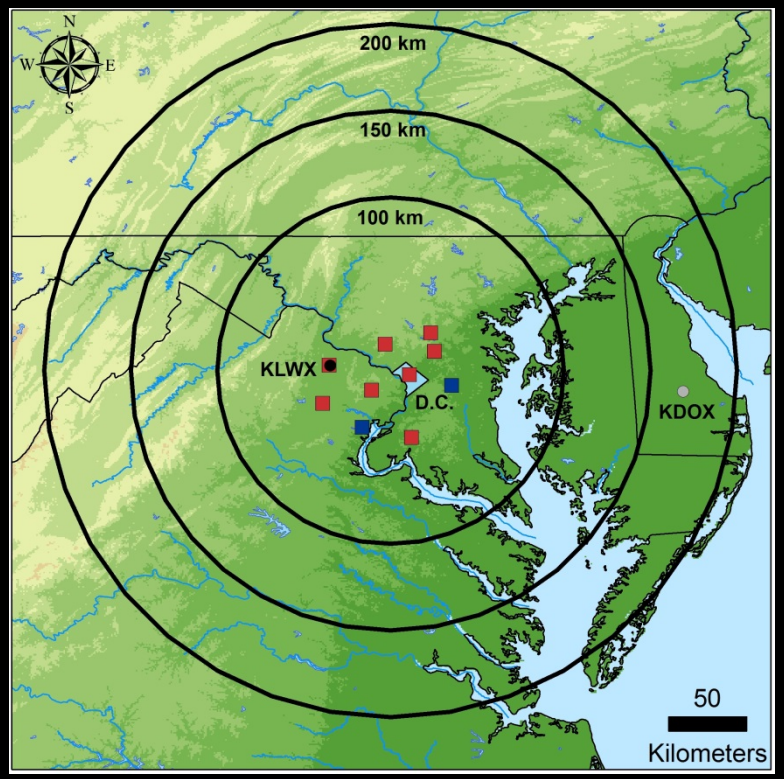
New Direction: Lightning

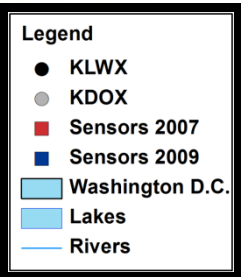


DC Lightning Mapping Array (DCLMA)

- The DCLMA has been operational with 8 sensors since late 2006 (two added in 2009)
- Provides insights into storm-scale processes
- Improves situational awareness during severe weather warning operations

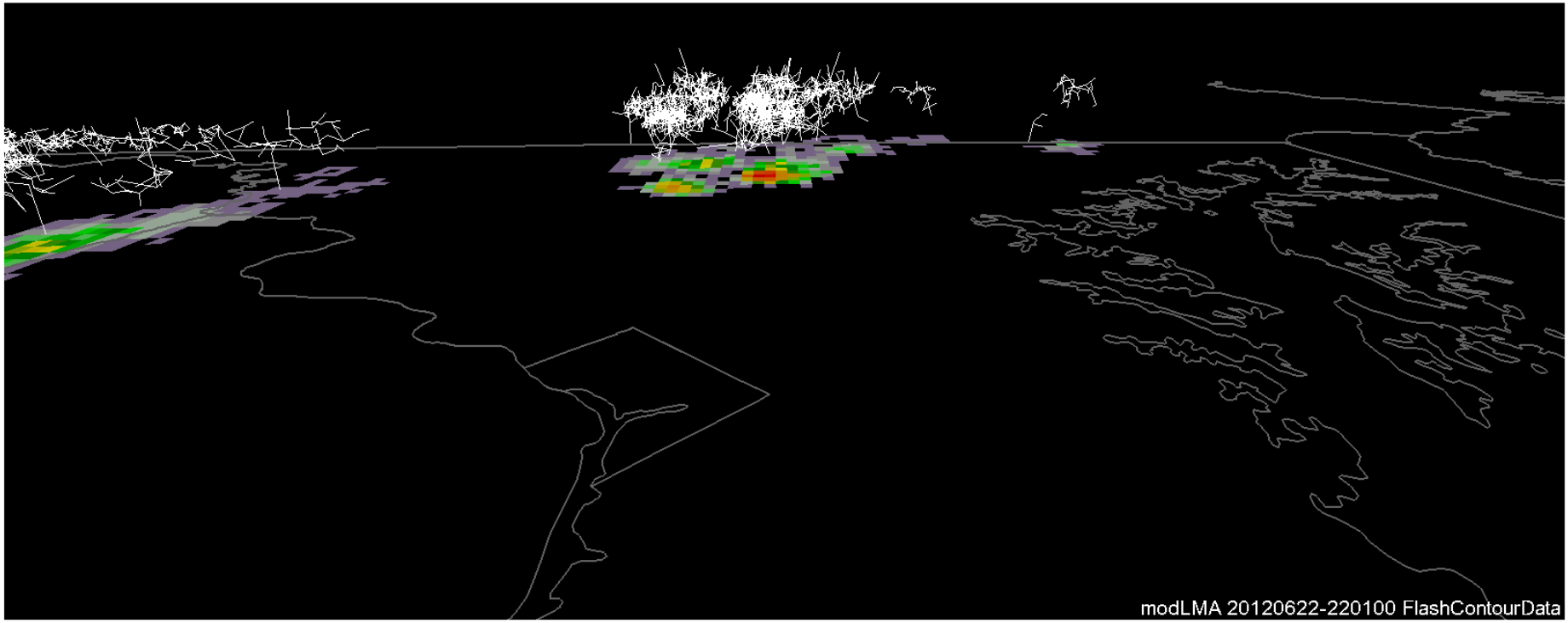






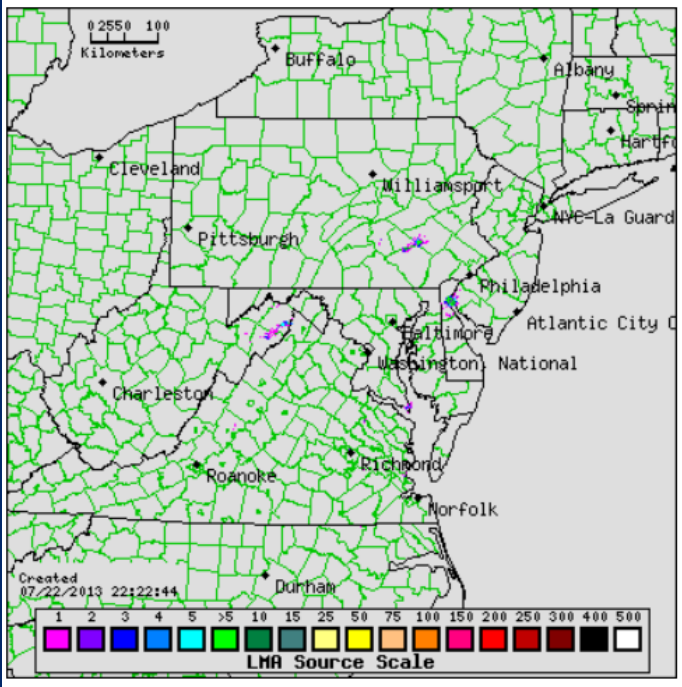
Research Mode – 3D Visualization

- Bladensburg Microburst – *22 June 2012*

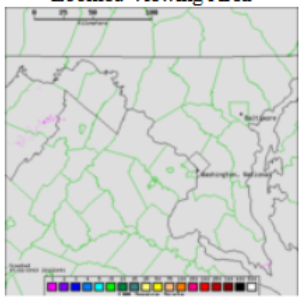


DCLMA Web Interface

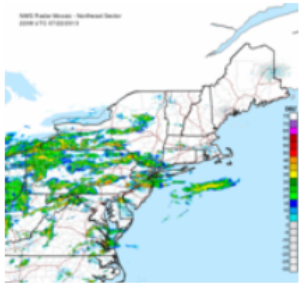
Real-Time Monitoring



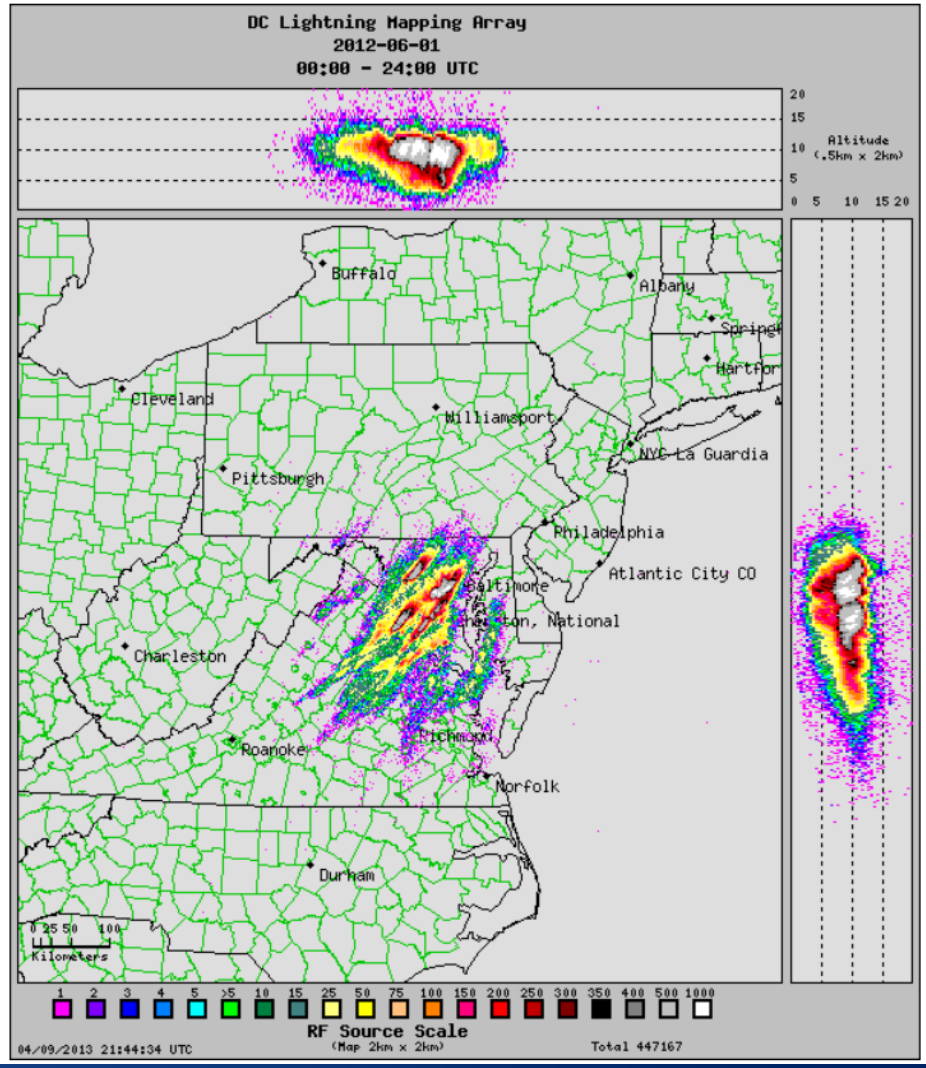
Zoomed Viewing Area



NWS Radar Mosaic



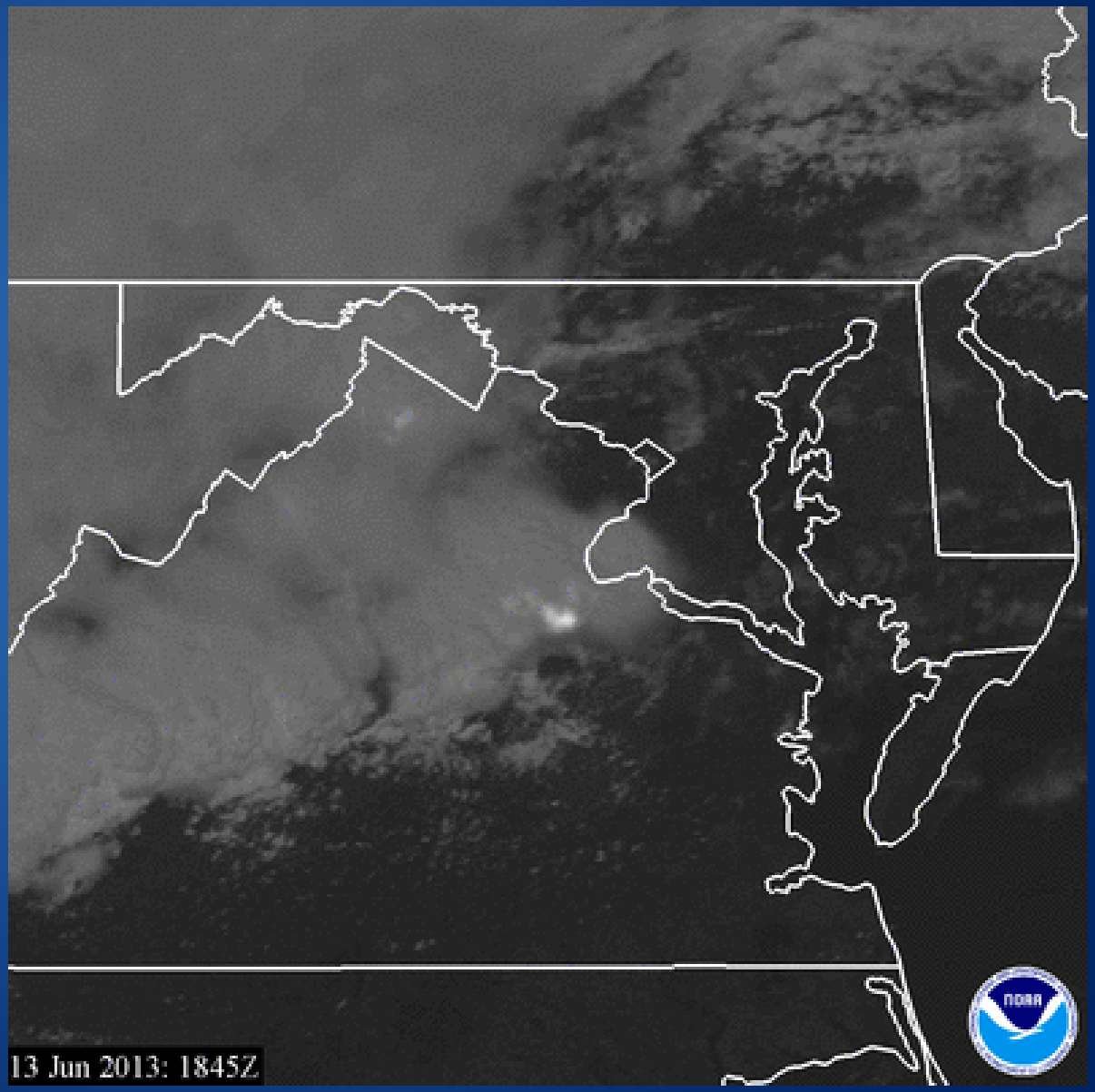
Daily Summaries



Available at:
branch.nsstc.nasa.gov/PUBLIC/DCLMA/

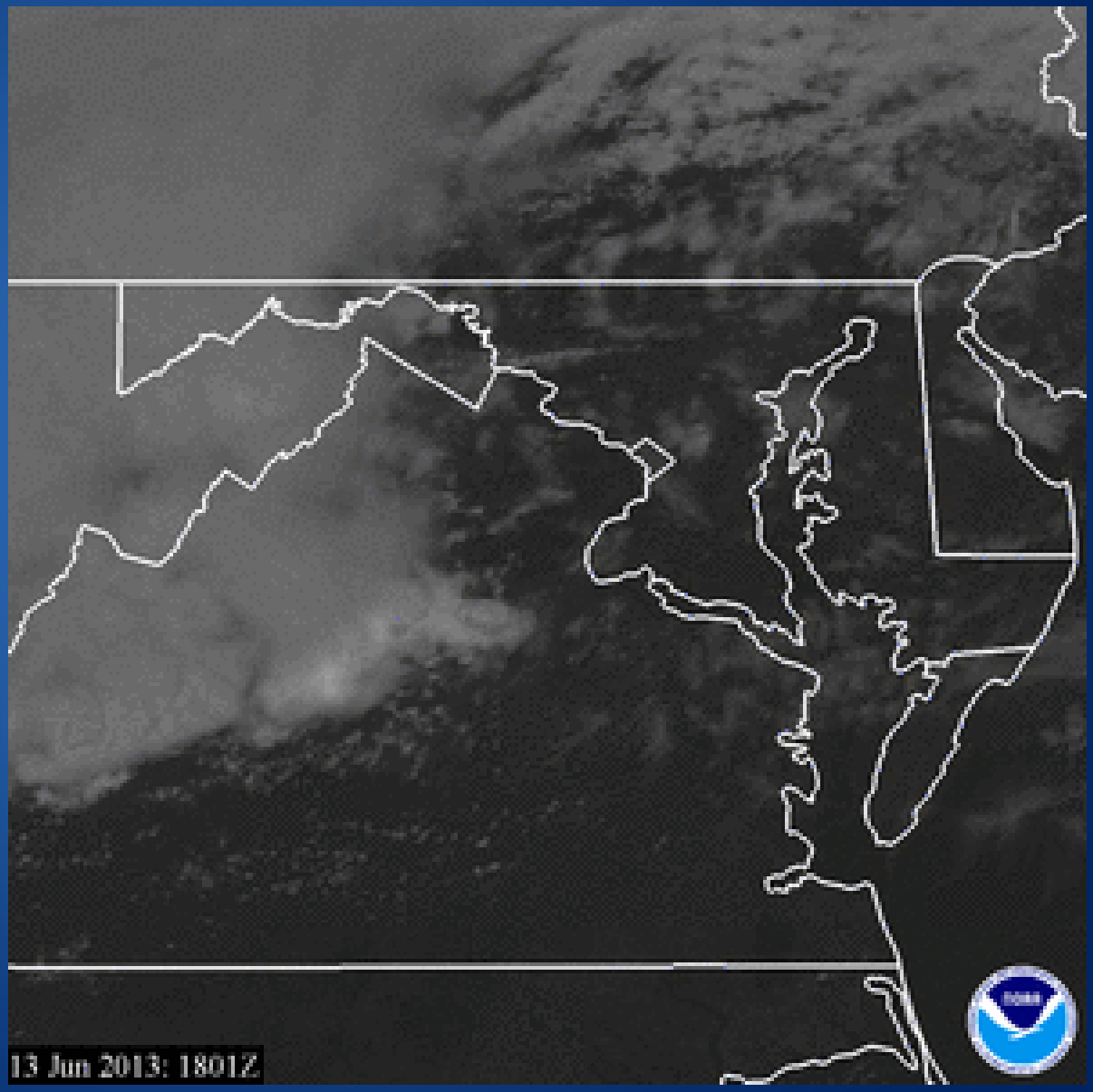
Mid-Atlantic Tornados – 13 June 2013

- "Shuttle-View"
- Super Rapid Scan
- DCLMA Flashes
  - Lightning Jumps

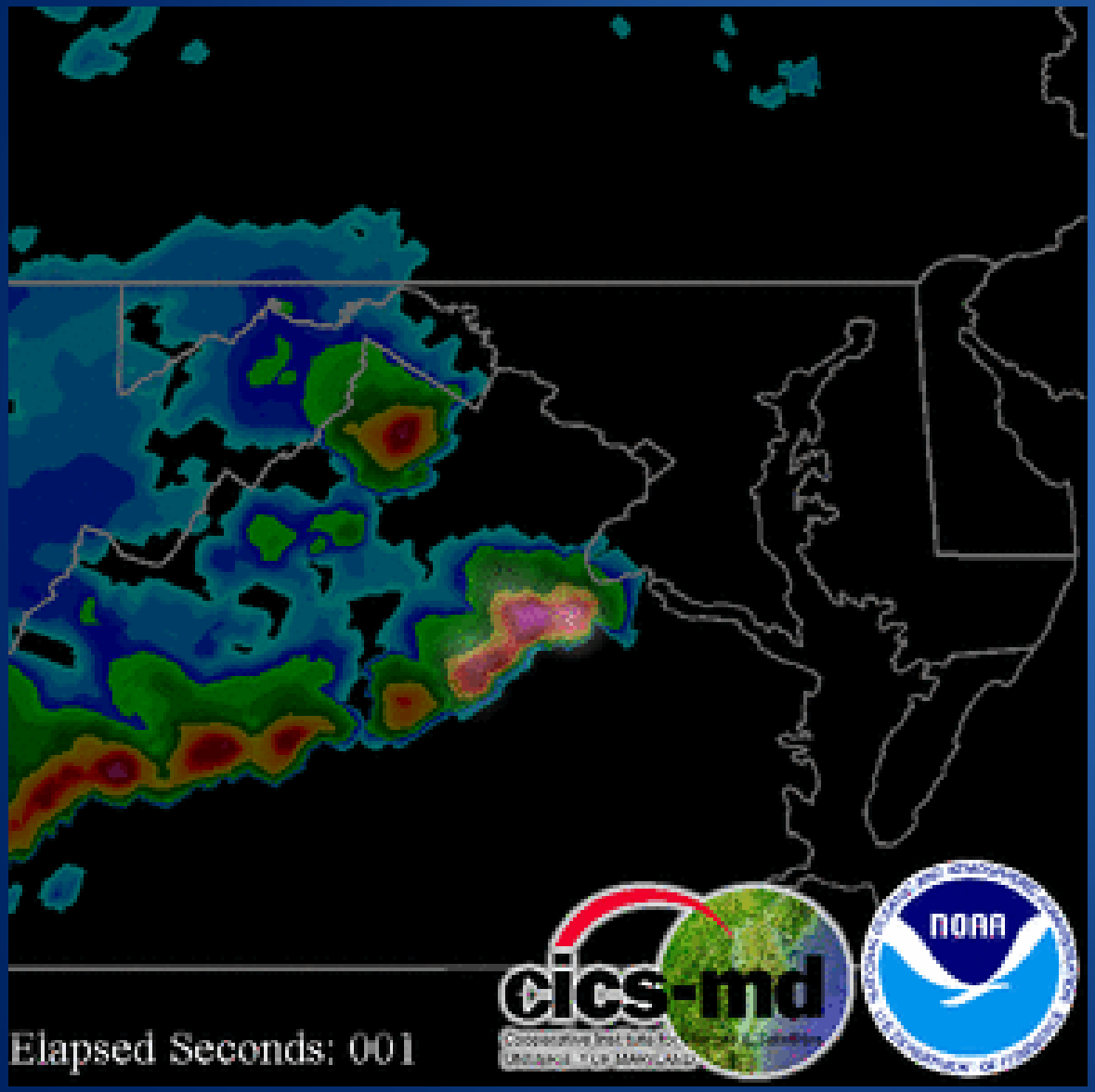


Geostationary Lightning Mapper (GLM)

- GOES-R Era
- Free to public!
- 8 km lightning density
- Still apparent lightning jumps



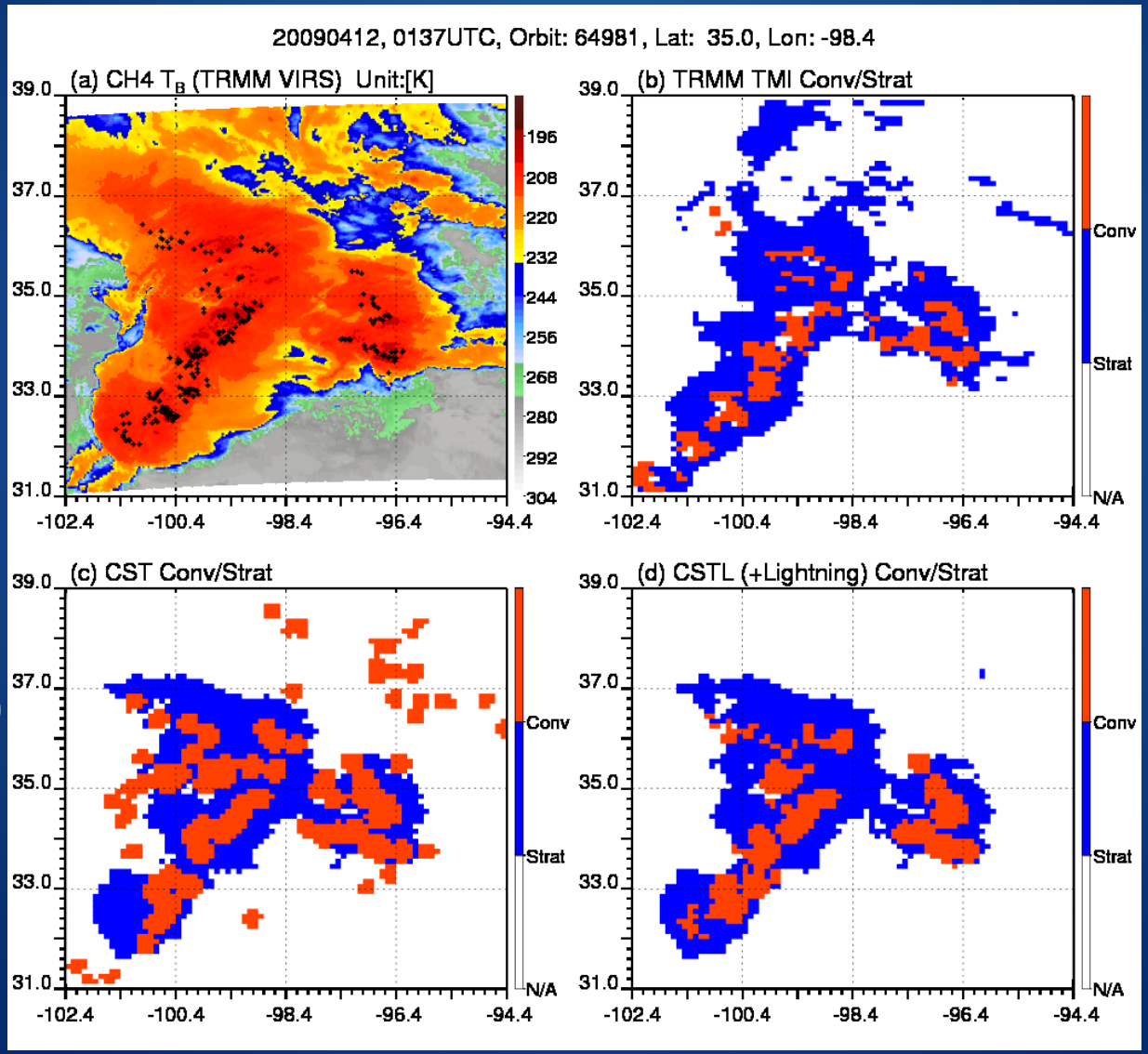
Fusion with Microwave Radiometers



- Validation of Conv / Strat
- Incorporate into rain algorithm

Improving IR Rain Rates

IR Tbs



PMW
(Conv/Strat 10 mm/hr)

IR Rain Only
(Conv/Strat)

IR Rain + Lightning
(Conv/Strat)

What's Next?

- Exploit Strengths, Minimize Weakness
- GOES-R Era – Hit the ground running
- Identify potential users – Demonstrate value