



GCOM-W/AMSR2 PRECIPITATION EDR

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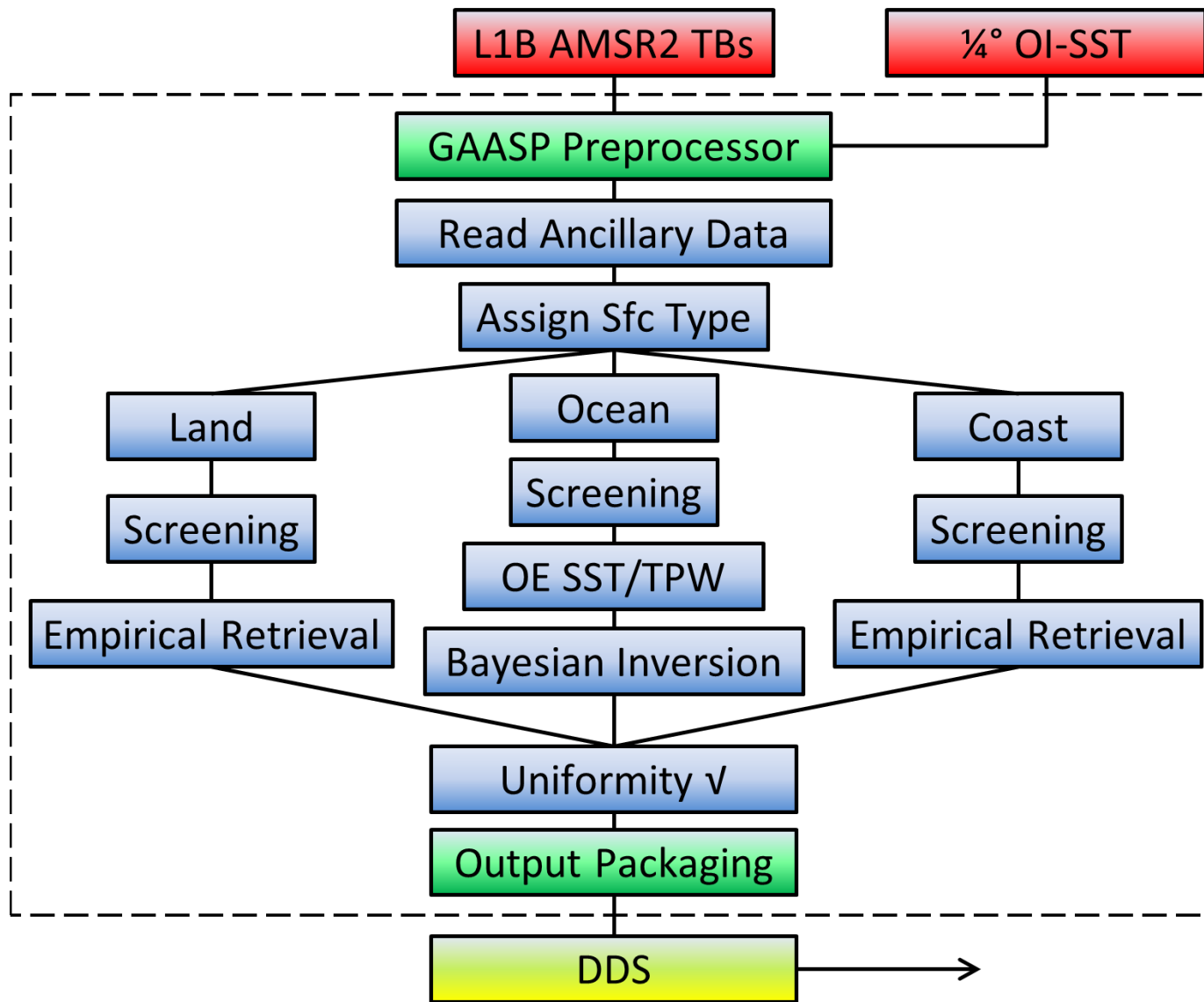
Outline

- Precipitation Team Members
- GPROF2010V2 Precipitation Algorithm Overview
- GCOM/AMSR2 Rain Product Overview
- GCOM/AMSR2 Readiness & Validation
- Path Forward
- Summary

Precipitation Team Members

PI	Organization	Team Members	Roles and Responsibilities
Patrick Meyers Ralph Ferraro	CICS-MD / NOAA/STAR		Development, Validation, Testing, and Monitoring
Tom King	IMSG	Letitia Soulliard	System Integration and Algorithm Transition

Rain Rate Retrievals



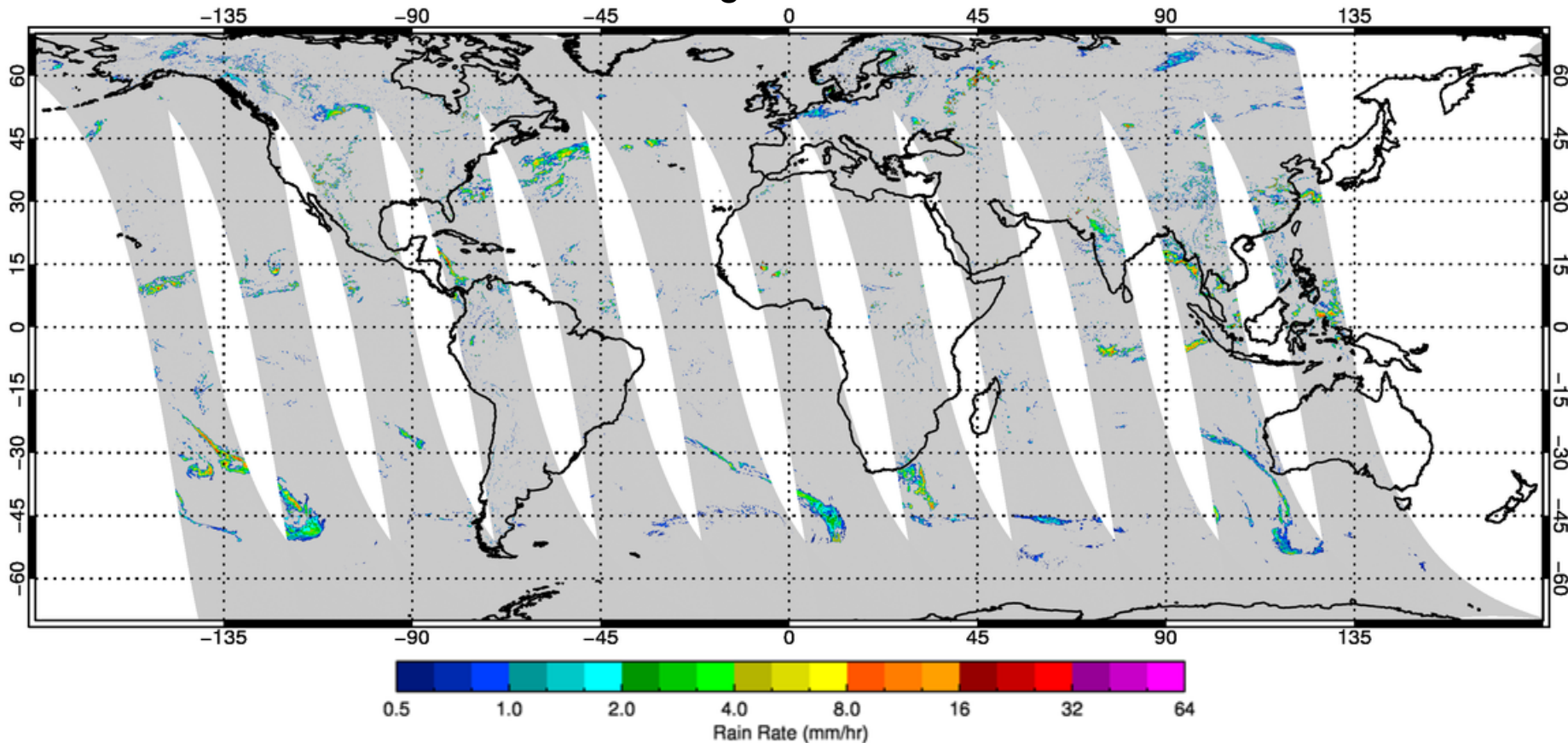
JPSS Requirements - GCOM Precipitation Type/Rate

EDR Attribute	Threshold	AMSR2 EDR
Applicable conditions		Delivered under "all weather" conditions
Horizontal cell size	5 km land (89 GHz FOV); 10 km ocean (37 GHz FOV size); 5-10 km sampling	5.0 km (land); 10 km (ocean)
Mapping uncertainty, 3 sigma	< 5 km	~2.5 km
Measurement range	0 – 50 mm/hr	0 – 75 mm/hr
Measurement precision	0.05 mm/hr	0.01 mm/hr
Measurement uncertainty	2 mm/hr over ocean; 5 mm/hr over land	1.3 mm/hr (ocean) 3.6 mm/hr (land)
Refresh	At least 90% coverage of the globe about every 20 hours (monthly average)	91% every 20 h
Precipitation type	Stratiform or convective	Convective rain rate
Latency	25 minutes	8 min

AMSR2 Precipitation Output

GPROF2010 Rain Rates for GCOM/AMSR2

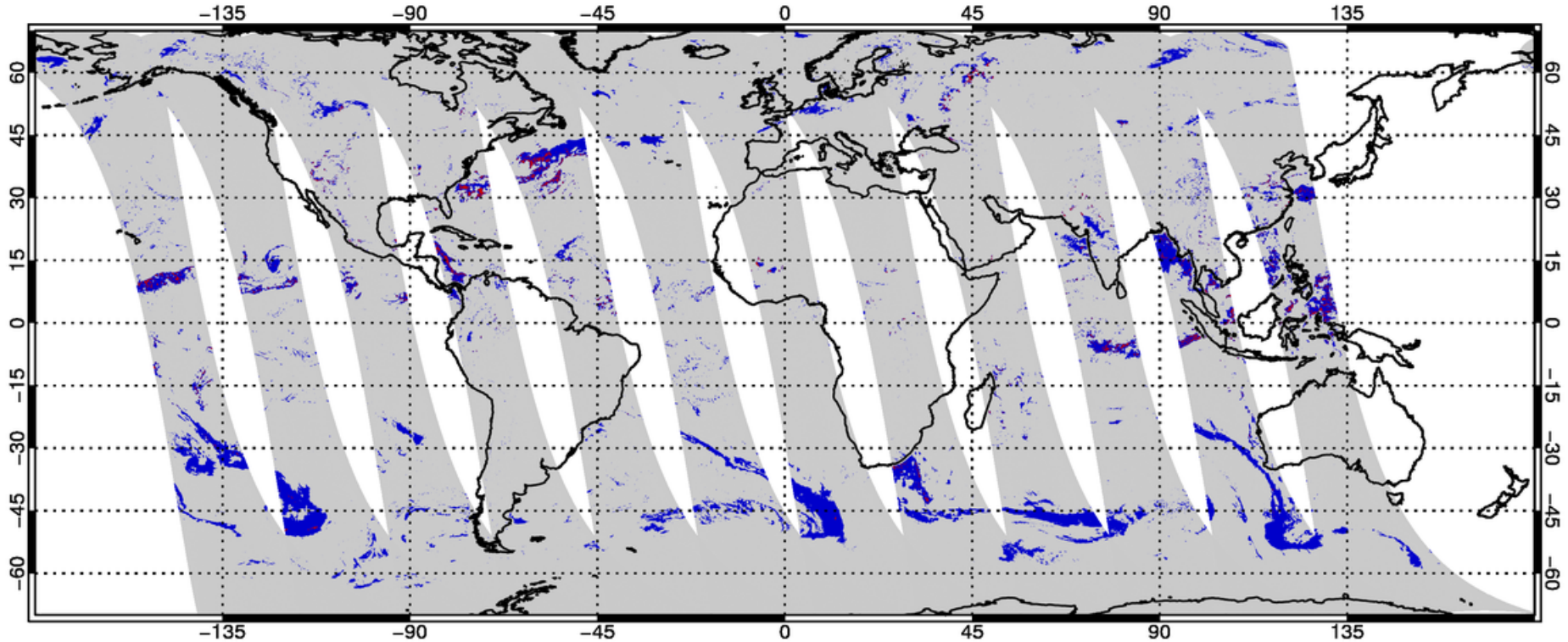
August 3rd, 2016



AMSR2 Precipitation Output

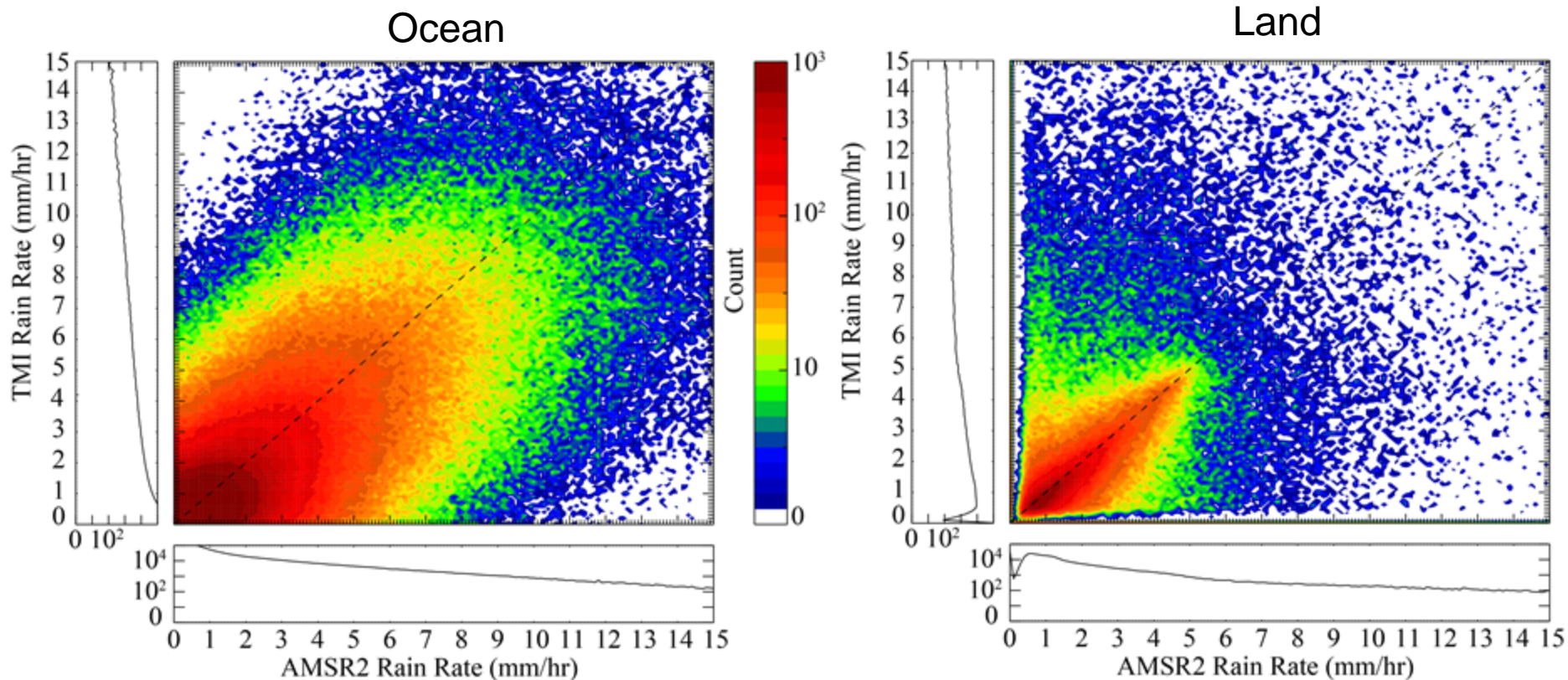
Convective/Stratiform Precipitation Separation

August 3rd, 2016

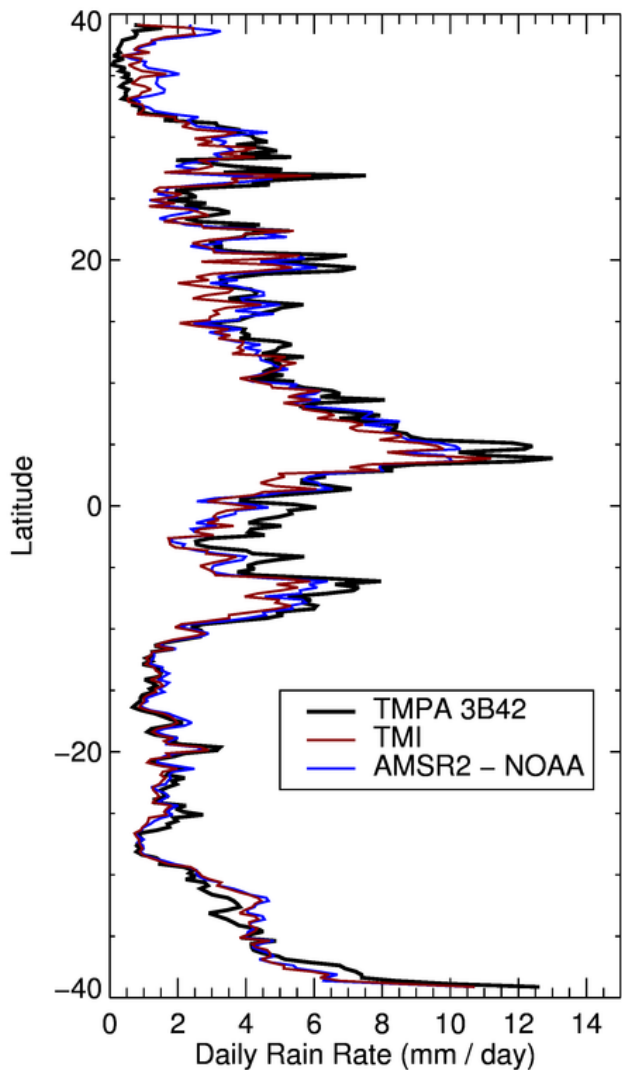


Validation - Instantaneous

GCOM-W vs. TMI Collocated Observations



Validation - Instantaneous



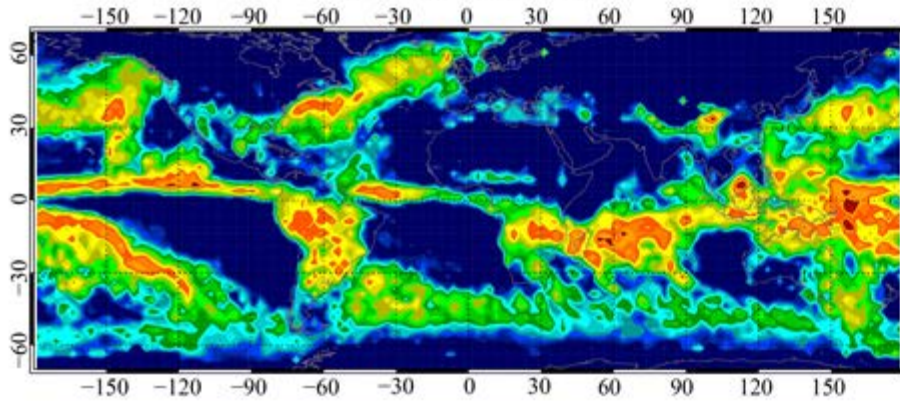
Instantaneous Rain Rate RMSD
relative to TRMM Products

RMSD (mm/hr)	Land	Ocean	Overall
Requirements	5.0	2.0	–
TMI & TMPA	3.1	1.2	1.6
AMSR2 & TMI	3.6	1.2	1.8
AMSR2 & TMPA	3.1	1.4	1.9

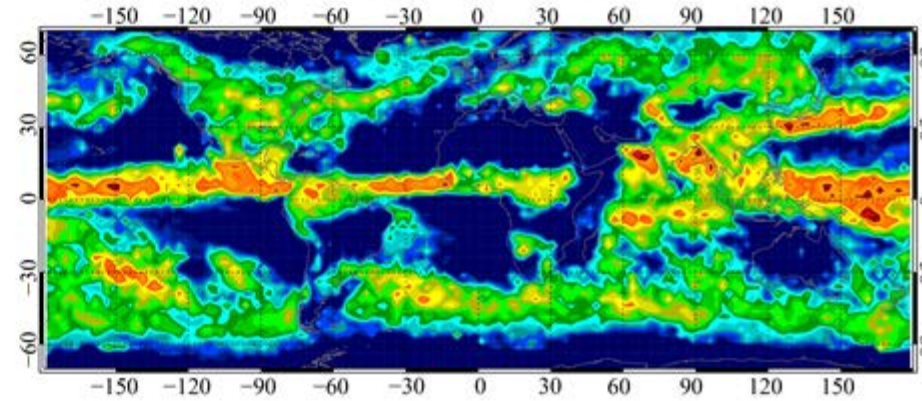
Validation - Seasonal

GCOM-W vs. GPCP Monthly Precipitation

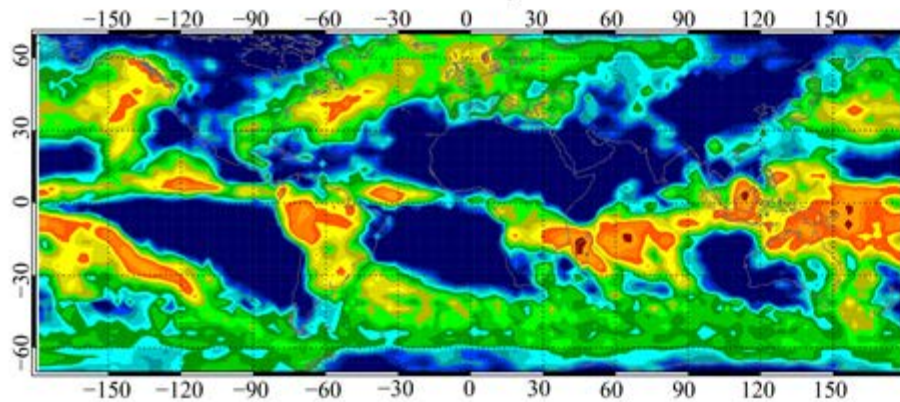
AMSR2 - January 2015



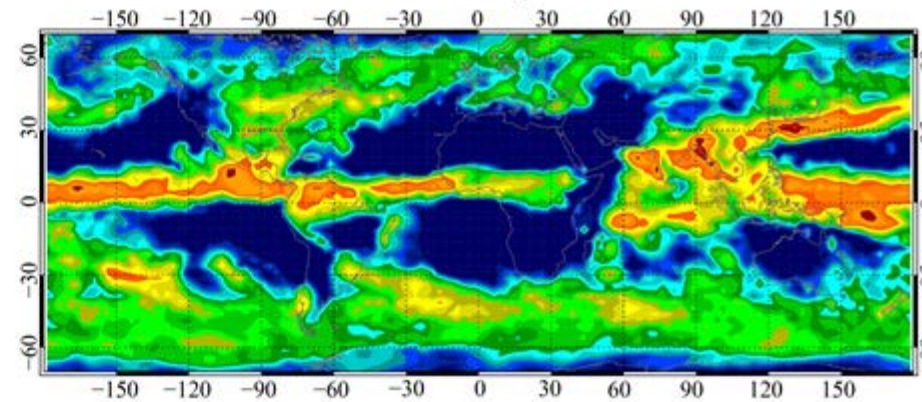
AMSR2 - July 2015



GPCP January 2015



GPCP - July 2015



NOAA Operational GCOM-W1 AMSR-2 Products Maps

Map Types

- Daily
- Realtime
- Storms

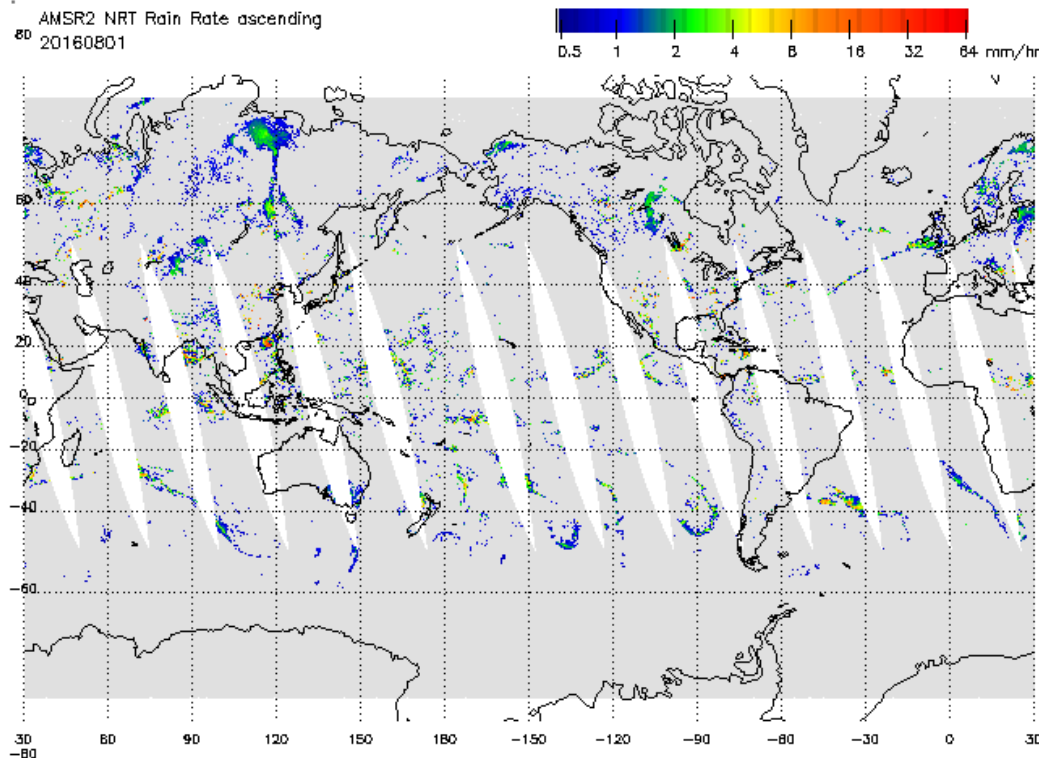
Products

- BTs GPs
- CLW SSW **RR** SST TPW

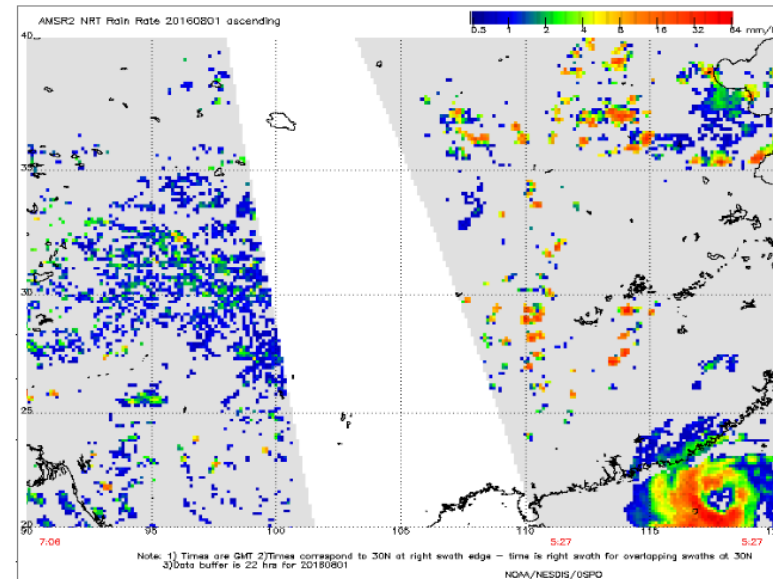
Available Dates

- 2016-08-03
- 2016-08-02
- 2016-08-01
- 2016-07-31
- 2016-07-30
- 2016-07-29
- 2016-07-28

Ascending Pass



Zoomable Sectors

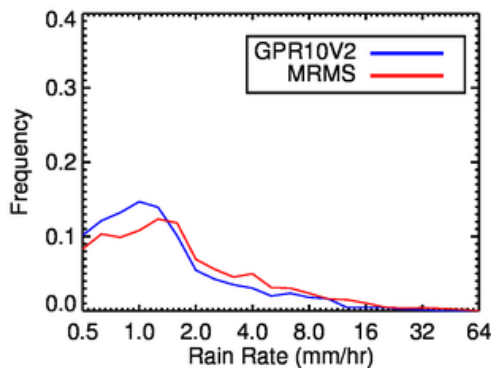
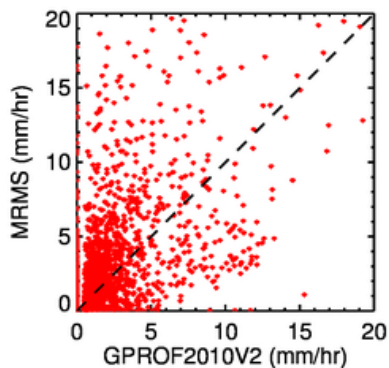
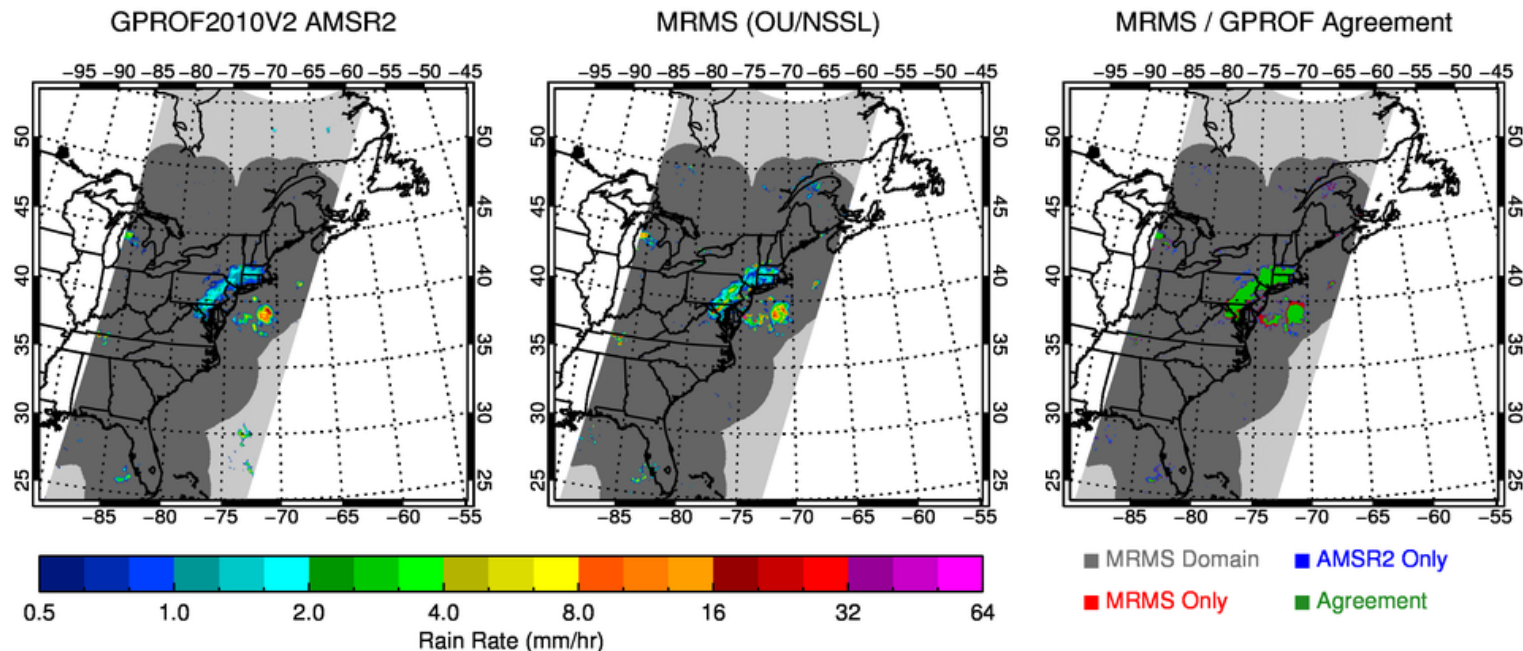


Typhoon Nida (Aug 1st 2016)

<http://www.ospo.noaa.gov/Products/atmosphere/gpds/>

Routine Swath Validation

AMSR2 & MRMS Precipitation Rate – GPROF2010_20160729–0704UTC



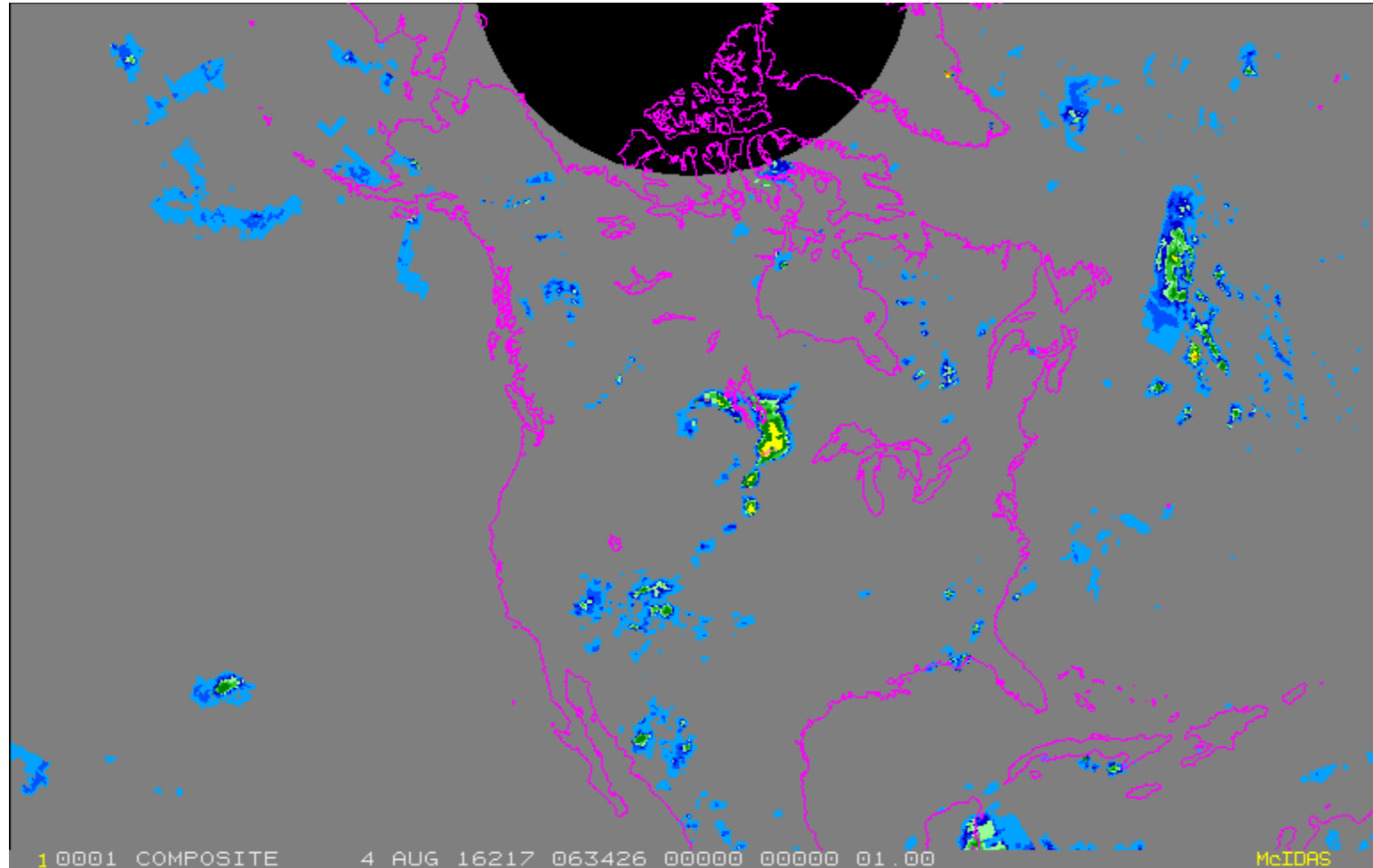
Reference Statistics

RMSD : 4.91 mm/hr
 r : 0.48
 POD : 70.0%
 FAR : 12.1%

<http://cics.umd.edu/ipwg/index.html>

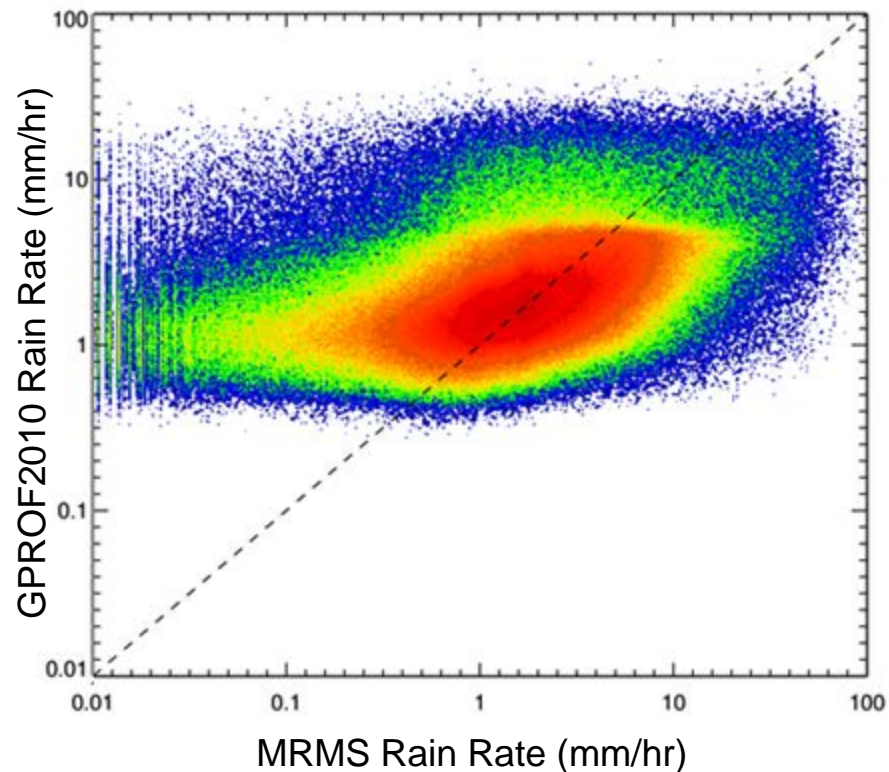
Level 3 Users

- NESDIS Operational Blended Rain Rate Product (Below)
- Ensemble Tropical Rainfall Potential (eTRaP)
- Working on incorporation into CMORPH



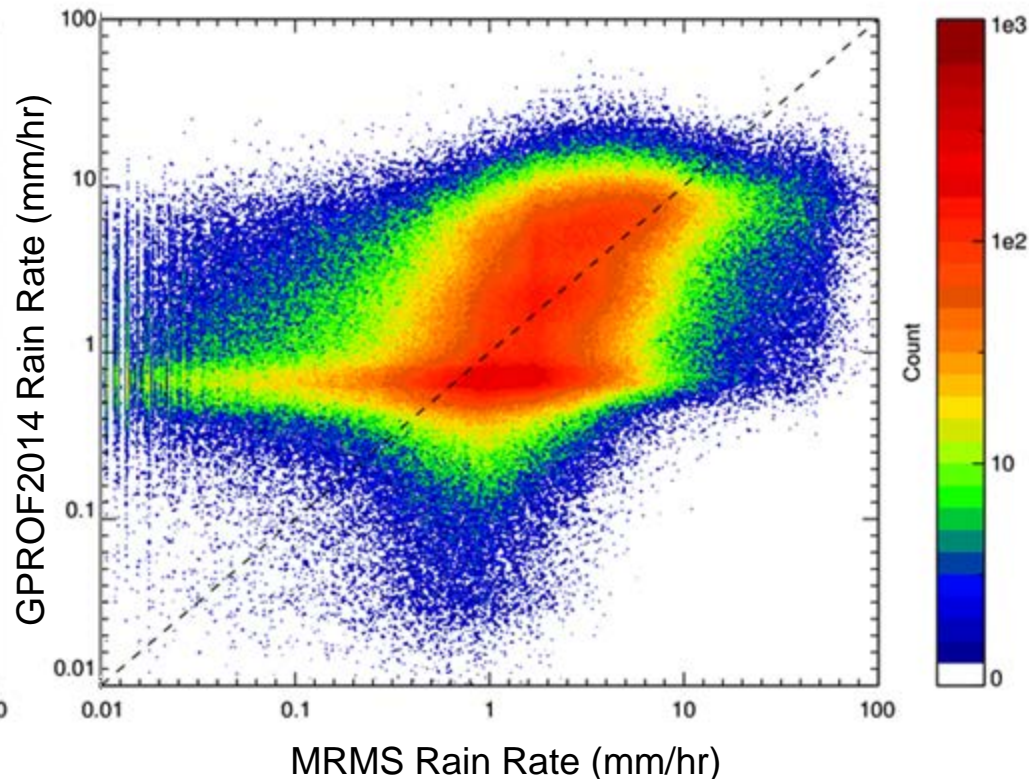
Looking Ahead: Evaluating GPROF2014

GPROF2010 - Land



- Empirical Retrieval
- Continuation from AMSR-E algorithm

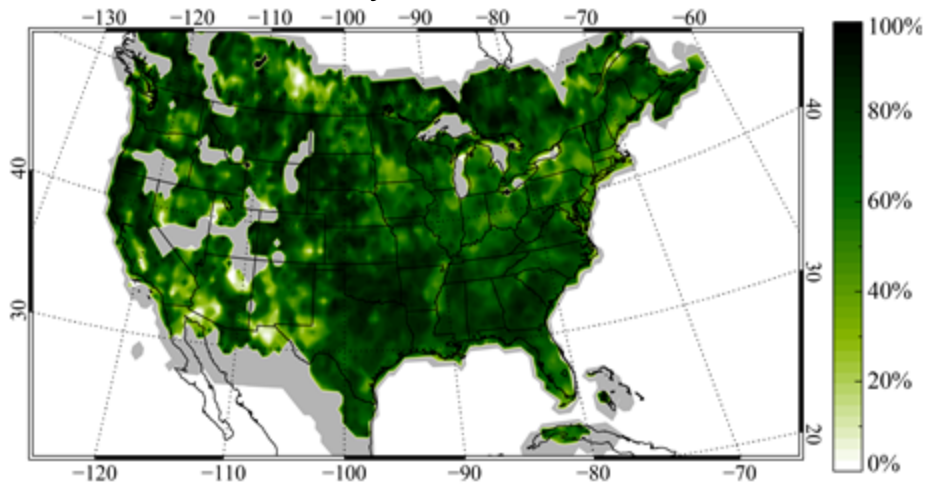
GPROF2014 - Land



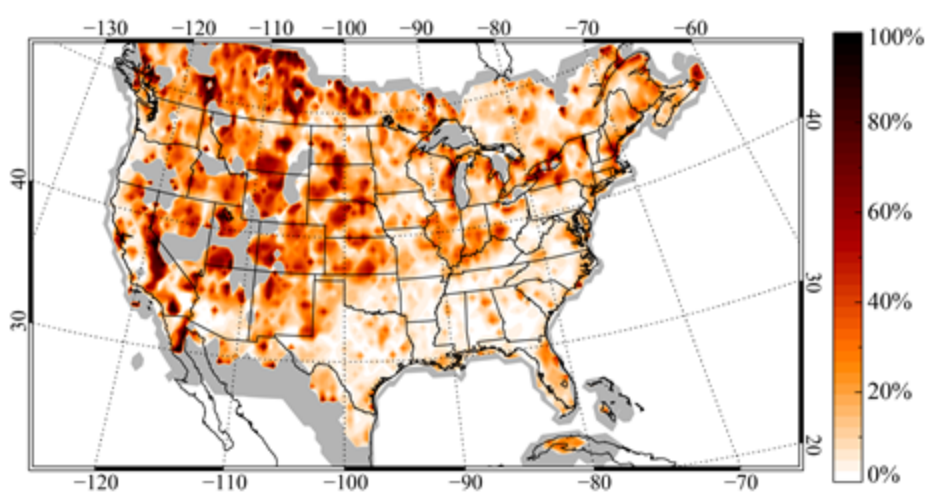
- Fully Bayesian Scheme
- Collaboration with NASA/GPM
- Still under development/testing

Issues to Address / Future Improvements

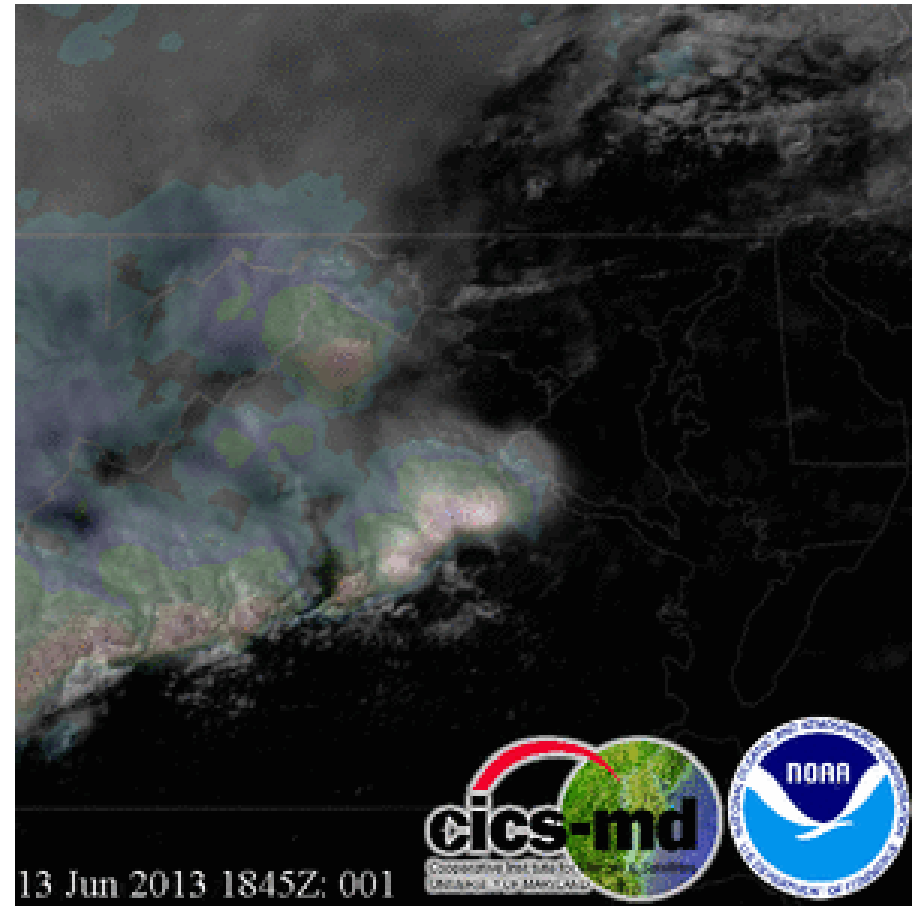
Probability of Detection



False Alarm Ratio



Incorporate Multi-Sensor Inputs



Summary

- GCOM-W/AMSR2 rain rate computed with GPROF2010
- Rain Rate EDR meets JPSS reqs.
- Routine monitoring by OSPO and CICS-MD/IPWG
- Address night-time surface cooling in screening procedures
- Explore GPROF2014 as algorithm replacement
 - Collaboration with NASA

