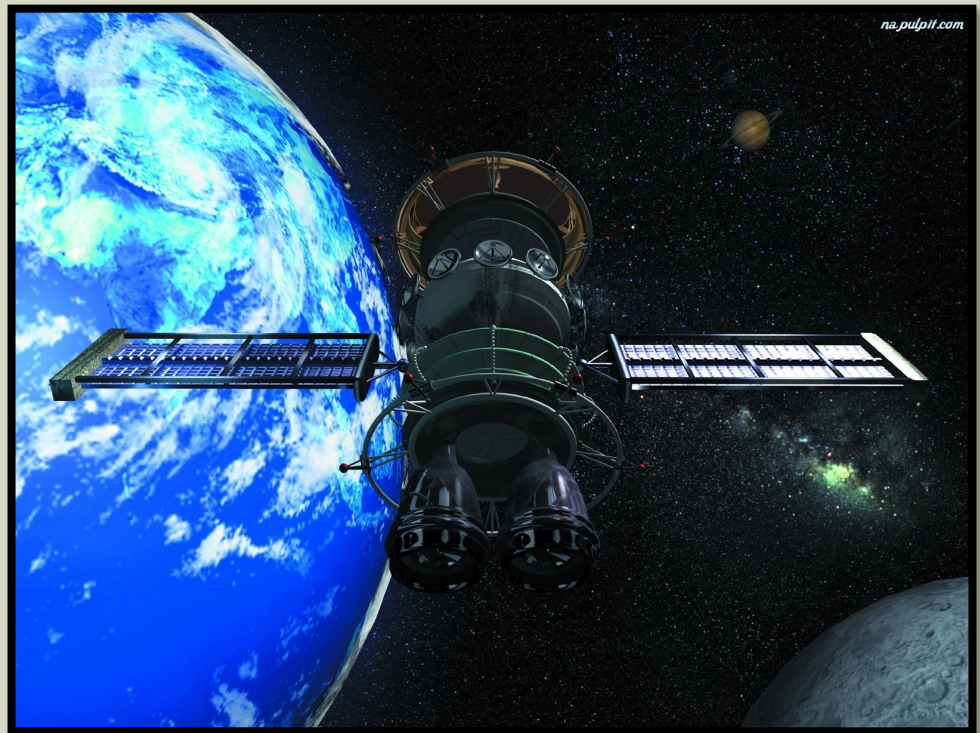


**VERIFICATION OF
PRECIPITATION ESTIMATES FOR
THE GODDARD PROFILING
ALGORITHM (GPROF)**

By: Kate
Sauter

WHAT IS GPROF?

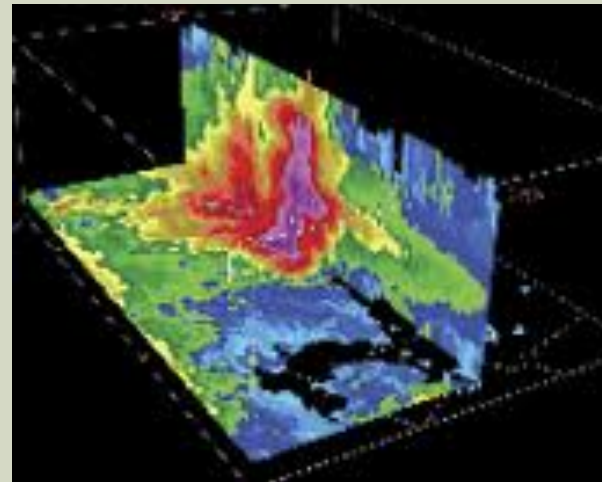
- Uses a statistical algorithm
- Uses SSMIS brightness temperature data.
- Multiple versions of GPROF.
- Works well over water, but we want to look at land.



COMPARISON DATA

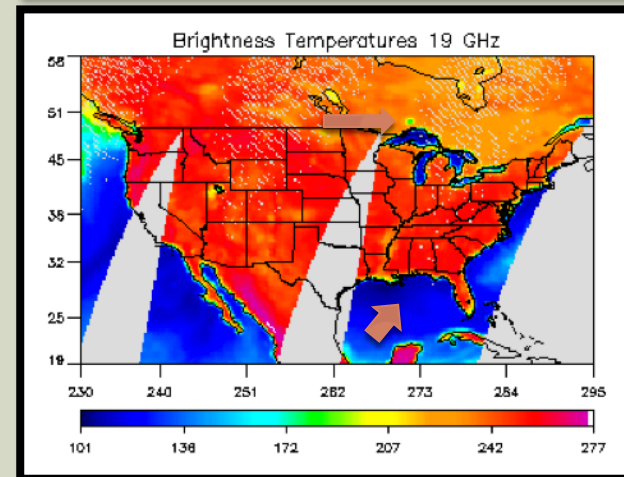
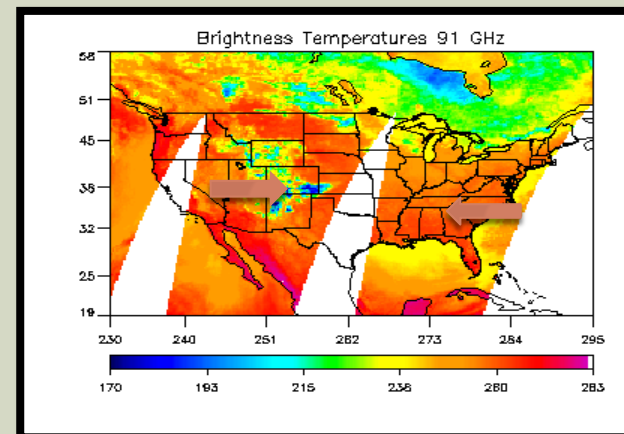
■ NMQ Data

- National Mosaic and Multi-Sensor Quantitative Precipitation Estimation
- Multi-radar, multi-sensor system.
- Used nine days in 2011



FEATURES MISINTERPRETED AS RAINFALL

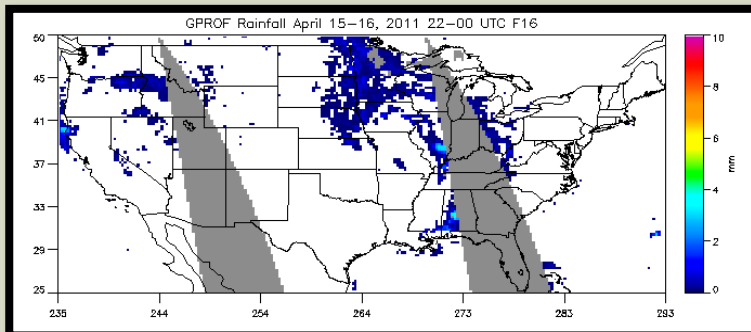
- Represents areas where there is ice aloft.
- Shows different land cover and vegetation types.
- Land has a higher temperature due to absorption
- Water has a lower T_b than the land due to microwave energy differences.



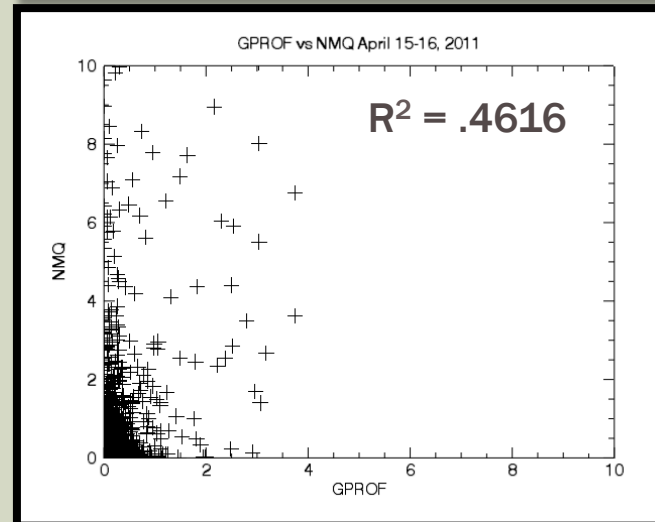
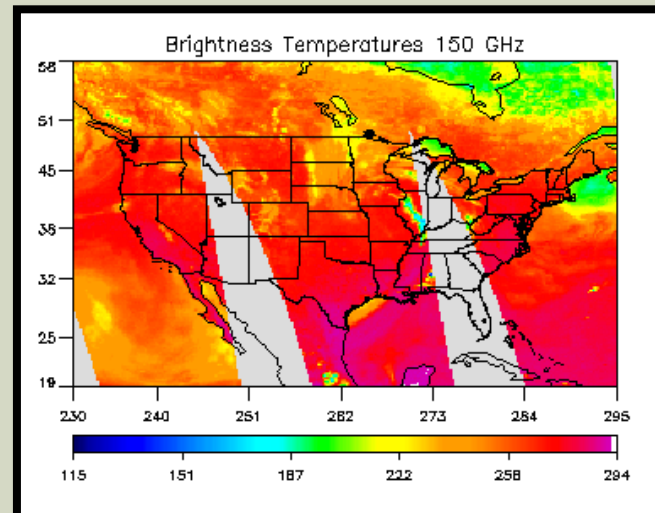
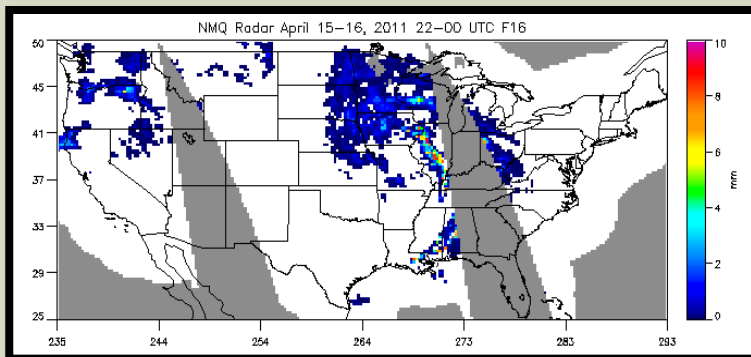
VERIFICATIONS

- April 15th, 2011
- Has precipitation in the correct location.
- Misses high rainfall rates.

GPROF
Rainfall



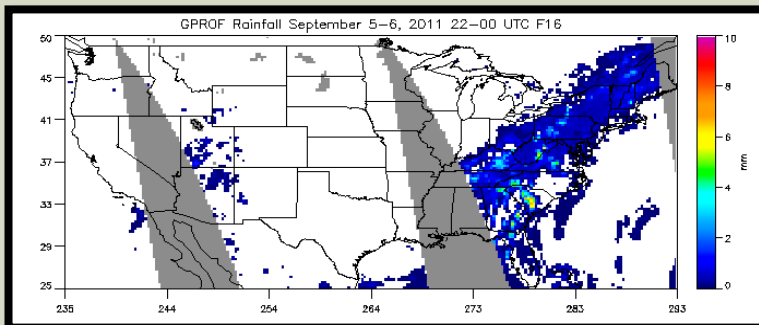
NMQ
Radar



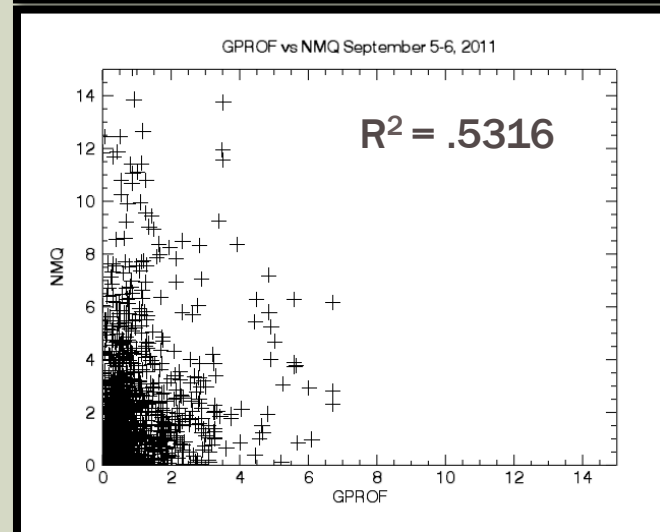
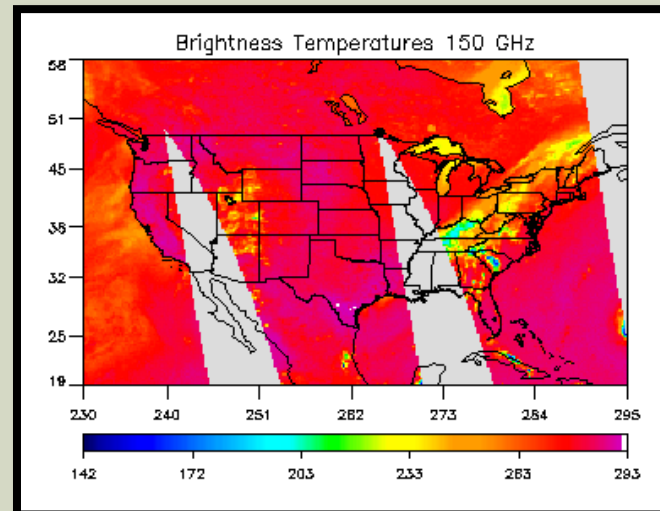
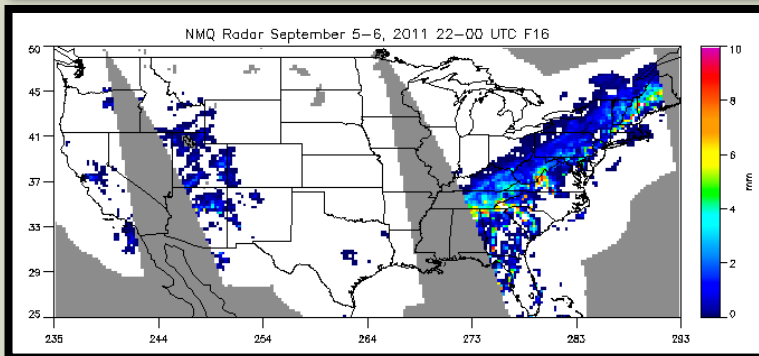
VERIFICATIONS

- September 5th, 2011
- Lacking high precipitation intensity
- Central United States is well retrieved.

GPROF
Rainfall



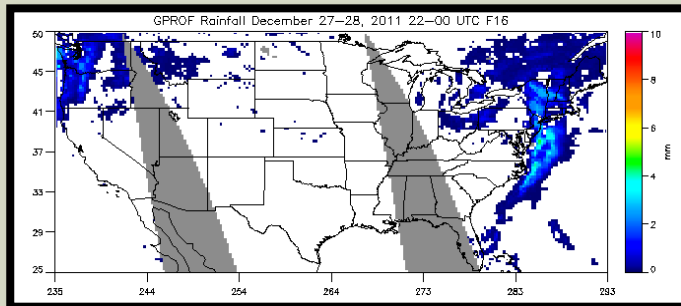
NMQ
Radar



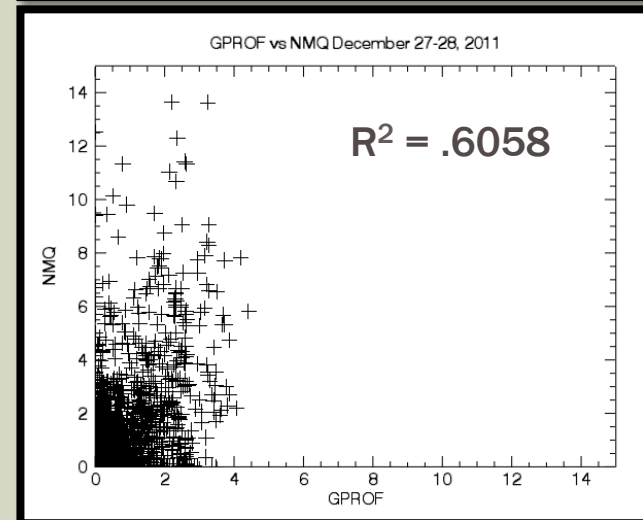
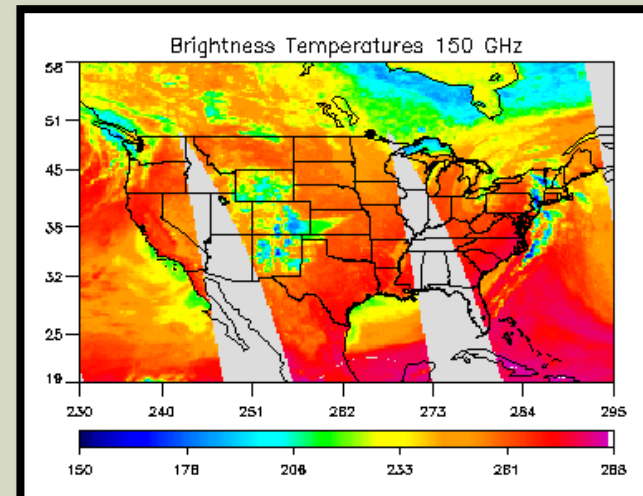
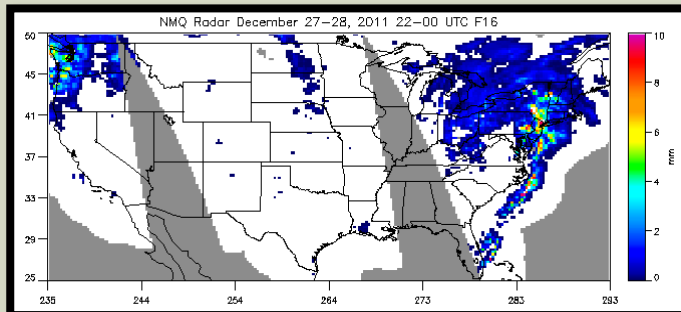
VERIFICATIONS

- December 27th, 2011
- Misses the precipitation in the Dakotas and Nebraska. (Frozen)
- Recognizes precipitation in Northeast corner, but misses the frozen precipitation.

GPROF
Rainfall



NMQ
Radar



RESULTS

	Correlation GPROF vs. NMQ	% Rain in NMQ	% Rain in GPROF	% No Rain in NMQ	% No Rain in GPROF	% Missing Data NMQ	% Missing Data GPROF
April 15, 2011	.4616	10.08 %	7.82 %	61.27 %	75.74 %	28.65%	16.44%
September 5, 2011	.5316	11.86 %	13.98 %	58.81 %	68.26 %	29.34%	17.75%
December 27, 2011	.6058	16.69 %	15.25 %	56.44 %	68.53 %	26.88%	16.23%

CONCLUSIONS

■ Strengths:

- Location of liquid precipitation
- Non-precipitating ice clouds and surfaces are not retrieved as rain



■ Weaknesses:

- Weighting on the rain rates
- Recognizing frozen precipitation

FUTURE WORK

- Changing the weighting in order to show higher rainfall rates.
- Frozen precipitation is currently not retrieved well.
- GPM Satellite launch is scheduled for February 2014.



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