

# Exploitation of Satellites for Data Sparse Regions: Tampa Bay, FL High-Impact Sea Fog Event

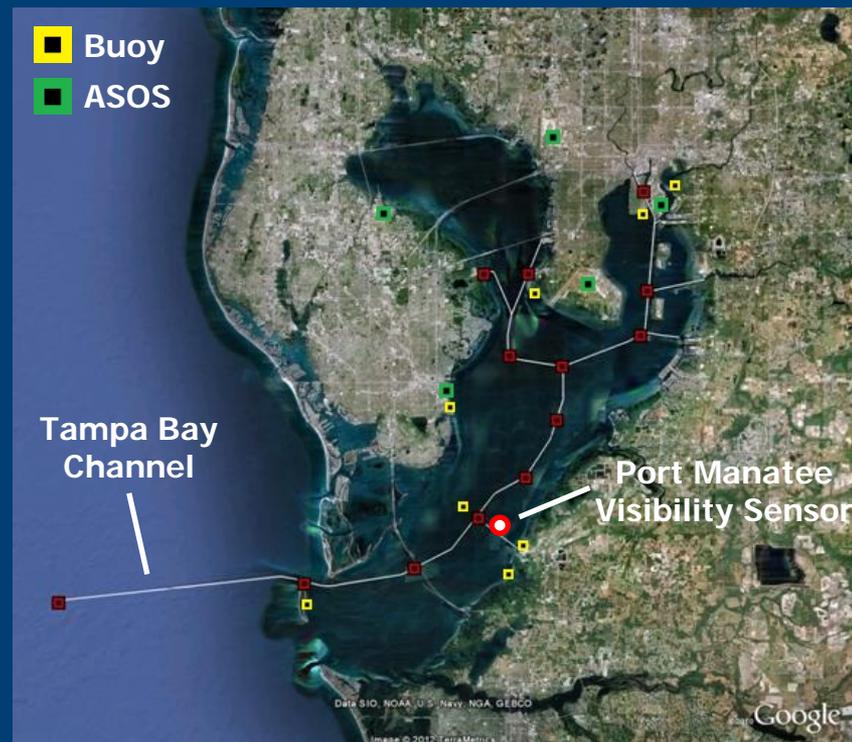
**Chad Gravelle**  
GOES-R Satellite Liaison  
CIMSS, University of Wisconsin-Madison  
NWS Operations Proving Ground

...with special thanks to the Tampa Bay, FL NWS Forecast Office,  
Mike Gittinger (ER Met), Rick Davis (ER Met), and Brian LaMarre (MIC)



# NWS Tampa Bay Pilot Project / Tampa Bay Area

- NWS Tampa Bay Pilot Project has objectives to collaborate with core partners and develop smoke/fog visibility forecasts.
- Tampa Bay's Ports:
  - Tampa (largest port in FL, 16<sup>th</sup> largest in U.S., 3 cruise terminals)
  - St. Petersburg
  - Manatee
- Channel Visibility Restrictions:
  - Cargo (Hazardous Material): < 3 mi
  - Cruise: < 1 mi
- Tampa Bay / Nearshore Waters Visibility Observations:
  - Port Manatee Visibility Sensor
  - Tampa Bay Harbor Pilot Reports

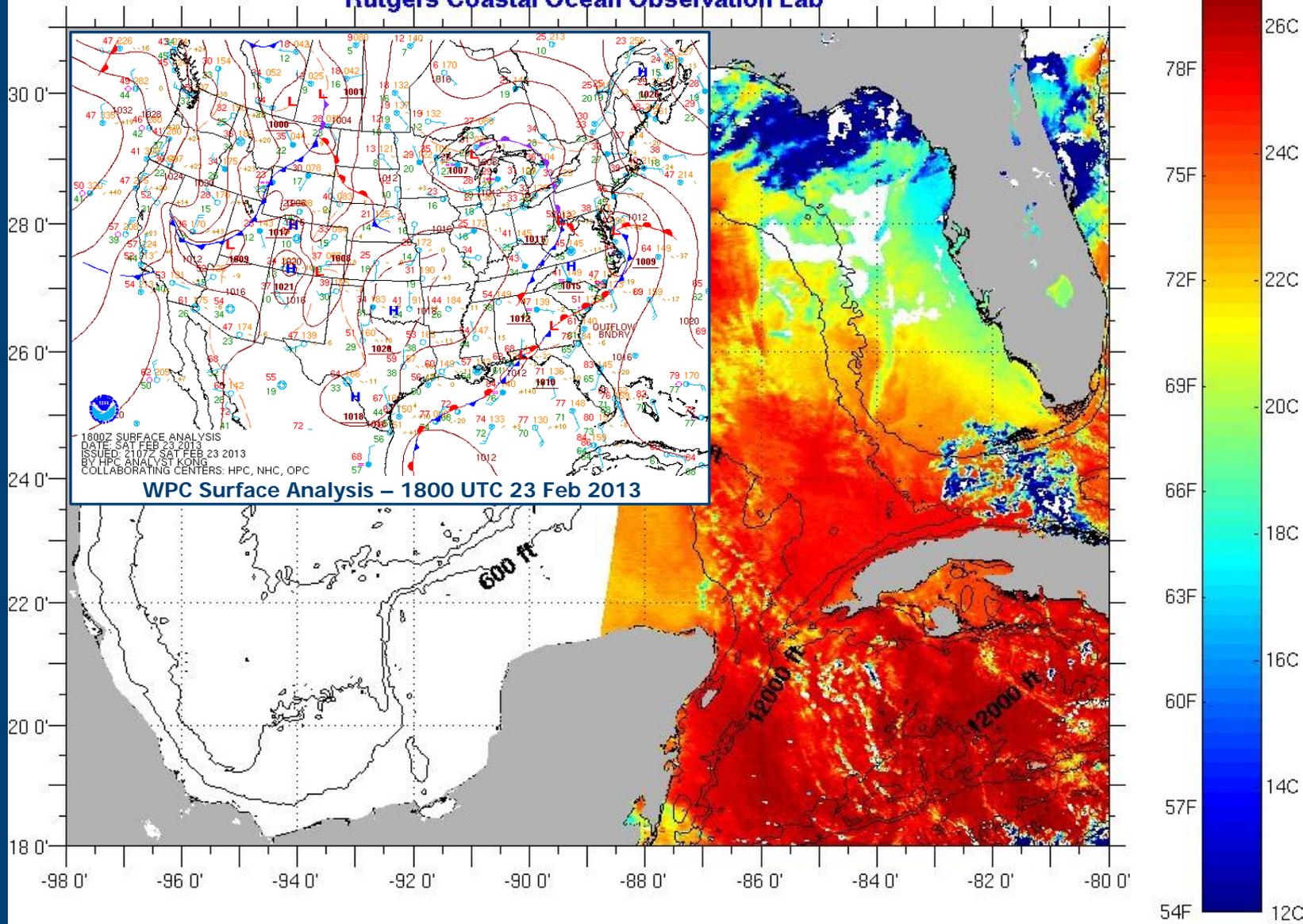




# Sea Fog "Setup"

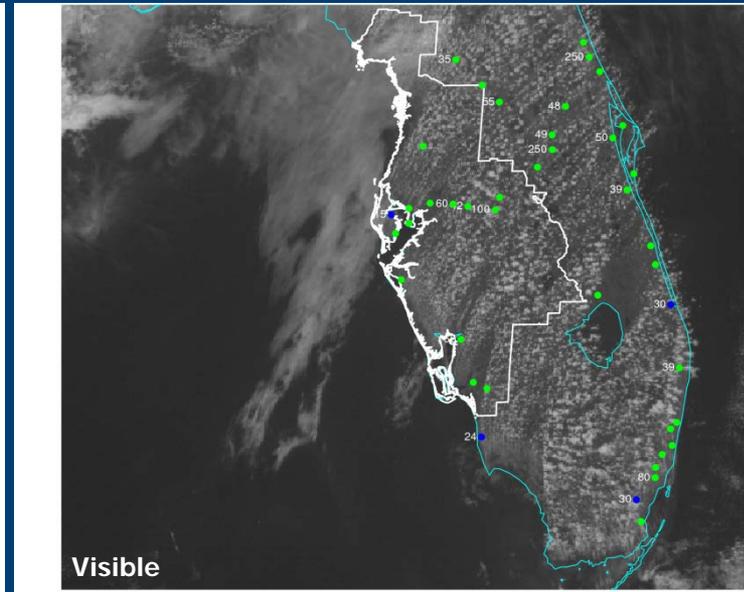
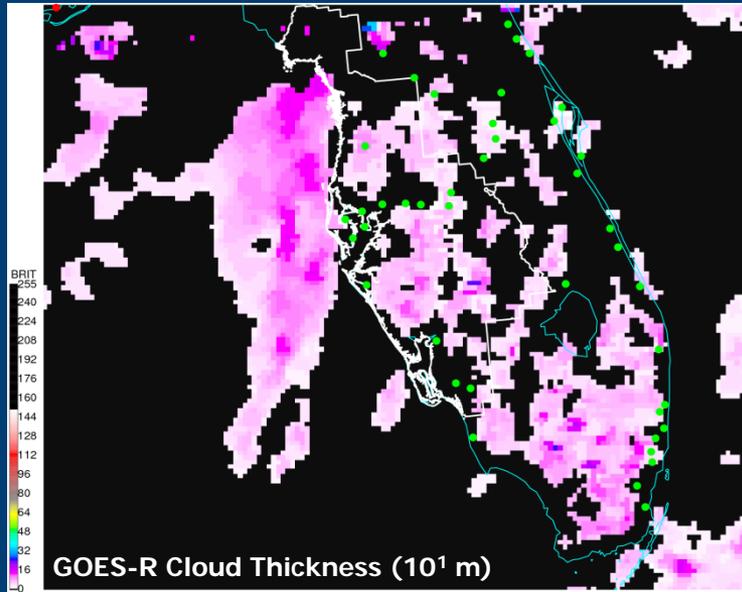
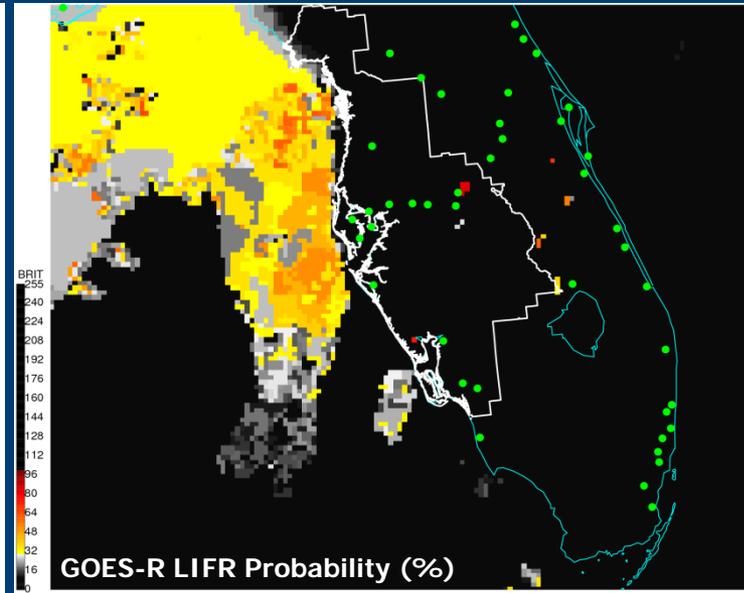
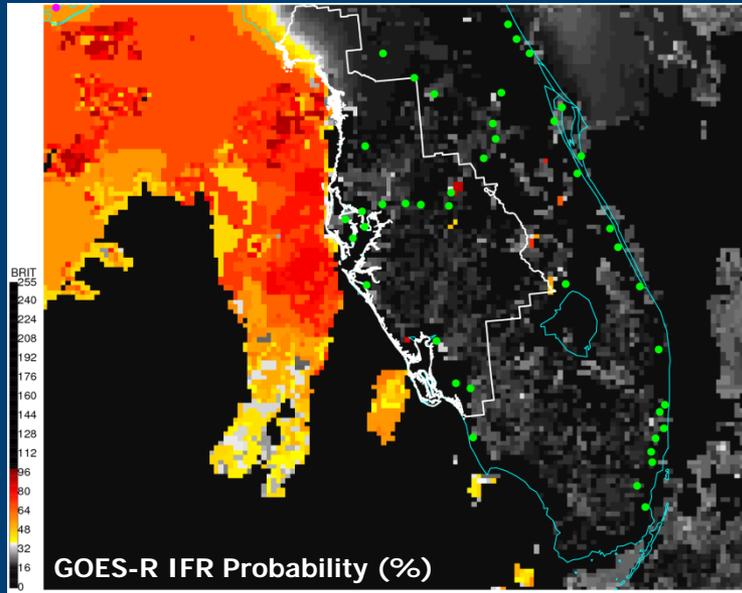
NOAA-18 Sea Surface Temperature: February 23, 2013 0821 GMT

Rutgers Coastal Ocean Observation Lab





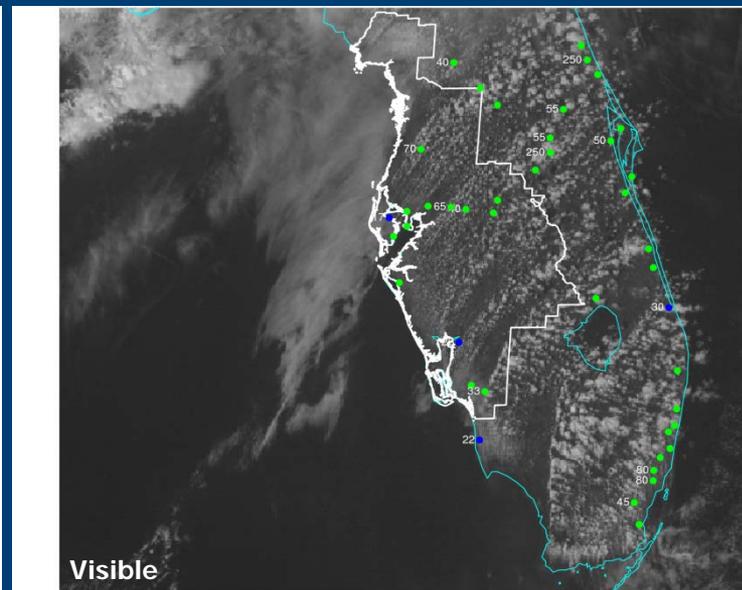
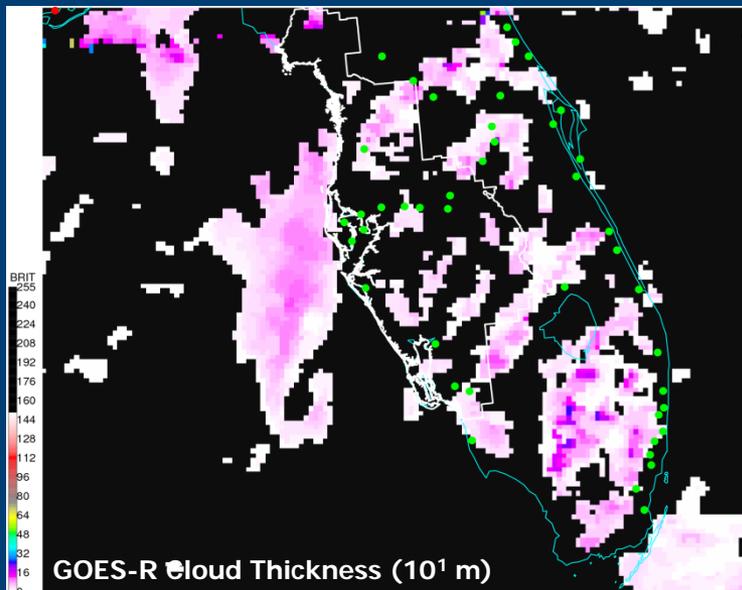
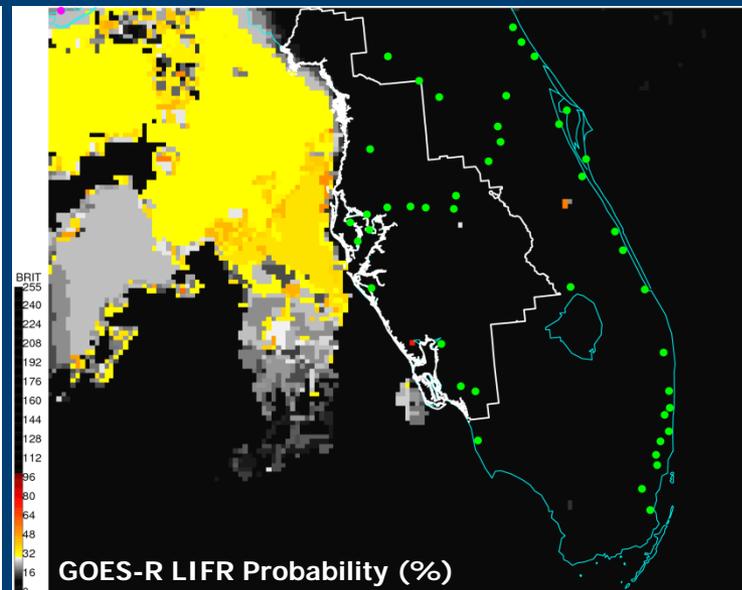
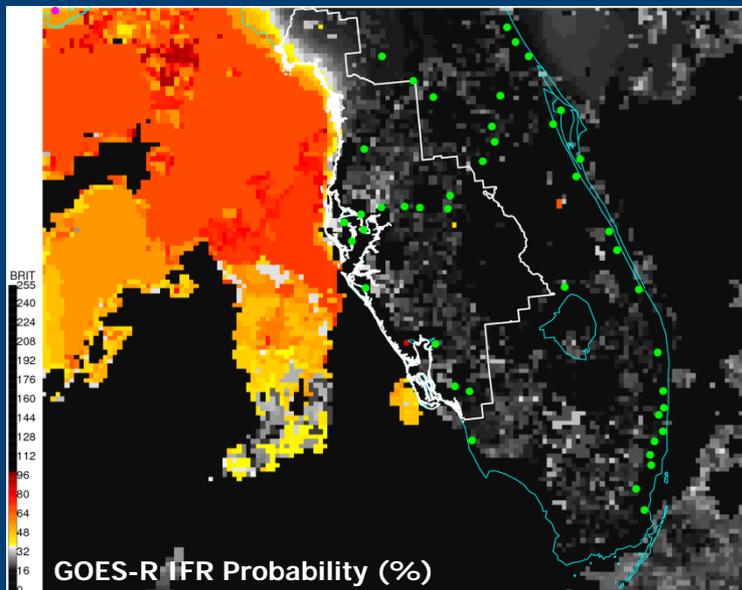
# Event Timeline: 1815 UTC 23 February 2013



Port Manatee Visibility Sensor Observation: 11.8 mi (Courtesy of USF Coastal Ocean Monitoring & Prediction System)



# Event Timeline: 1945 UTC 23 February 2013



● Port Manatee Visibility Sensor Observation: 9.8 mi



# Event Timeline: 1950 UTC 23 February 2013

FXUS63 533  
WHUS72 KTBW 231950  
MWWTBW

URGENT - MARINE WEATHER MESSAGE  
NATIONAL WEATHER SERVICE TAMPA BAY RUSKIN FL  
250 PM EST SAT FEB 23 2013

...DENSE FOG DEVELOPING OVER THE EASTERN GULF WATERS...

.WARM HUMID AIR MOVING OVER THE COOLER GULF WATERS  
WILL RESULT IN DENSE FOG THROUGH AT LEAST SUNDAY  
MORNING.

GMZ830-241200-  
/O.NEW.KTBW.MF.Y.0003.130223T2100Z-130224T1200Z/  
TAMPA BAY WATERS-  
250 PM EST SAT FEB 23 2013

...DENSE FOG ADVISORY IN EFFECT UNTIL 7 AM EST SUNDAY...

THE NATIONAL WEATHER SERVICE IN TAMPA BAY RUSKIN HAS  
ISSUED A DENSE FOG ADVISORY...WHICH IS IN EFFECT UNTIL  
7 AM EST SUNDAY.

\* VISIBILITY: VISIBILITIES ARE EXPECTED TO DROP TO LESS  
THAN A MILE LATER THIS AFTERNOON AND CONTINUING THROUGH  
TONIGHT.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

A DENSE FOG ADVISORY MEANS VISIBILITIES WILL FREQUENTLY BE  
REDUCED TO LESS THAN ONE MILE. INEXPERIENCED MARINERS  
SHOULD AVOID NAVIGATING IN THESE CONDITIONS.

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NWS Tampa Bay Facebook Post – 2200 UTC

**Weather-Ready Nation**  
National Oceanic and Atmospheric Administration

**Dense Fog Advisory Rest of The Afternoon Through Tonight**

Area of Sea Fog

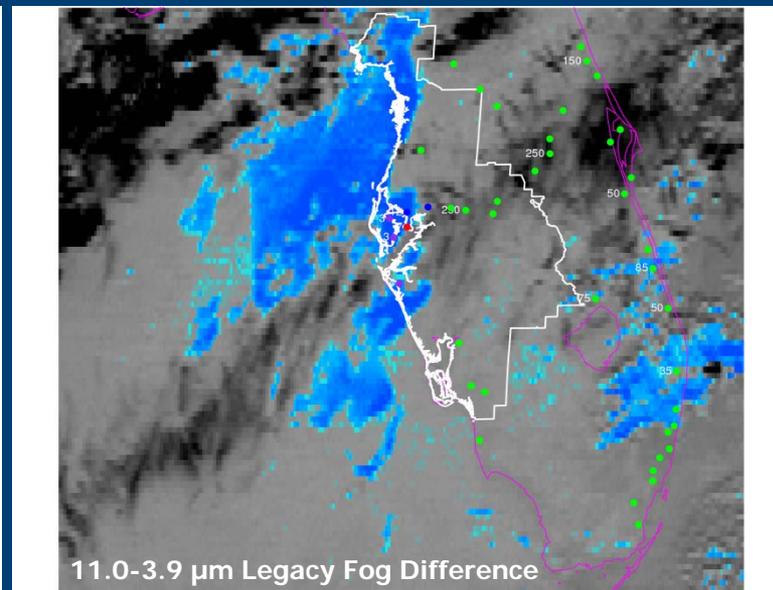
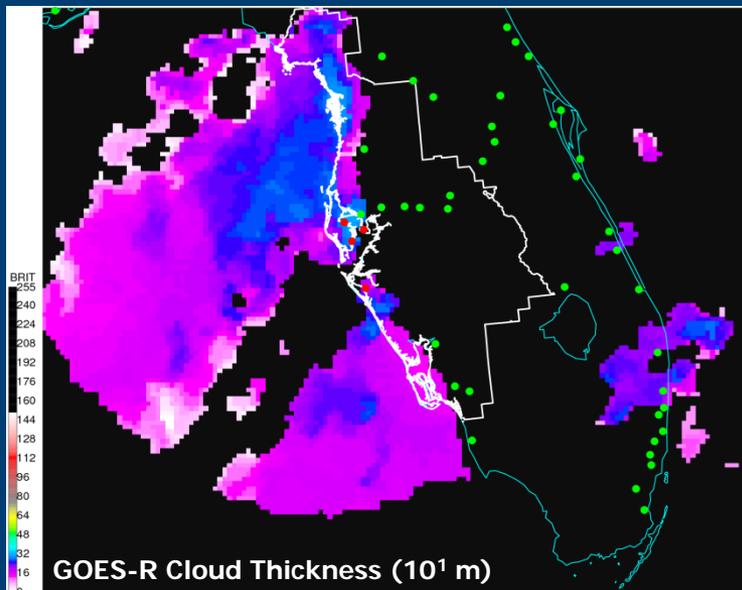
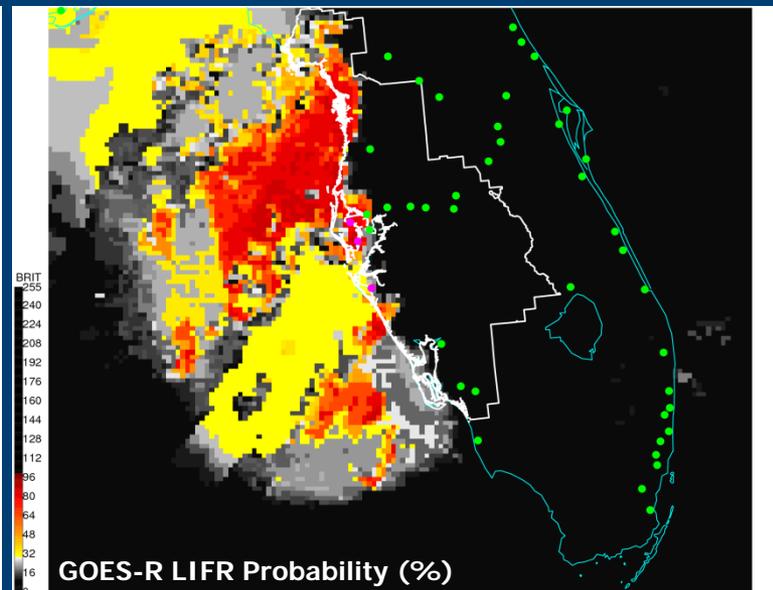
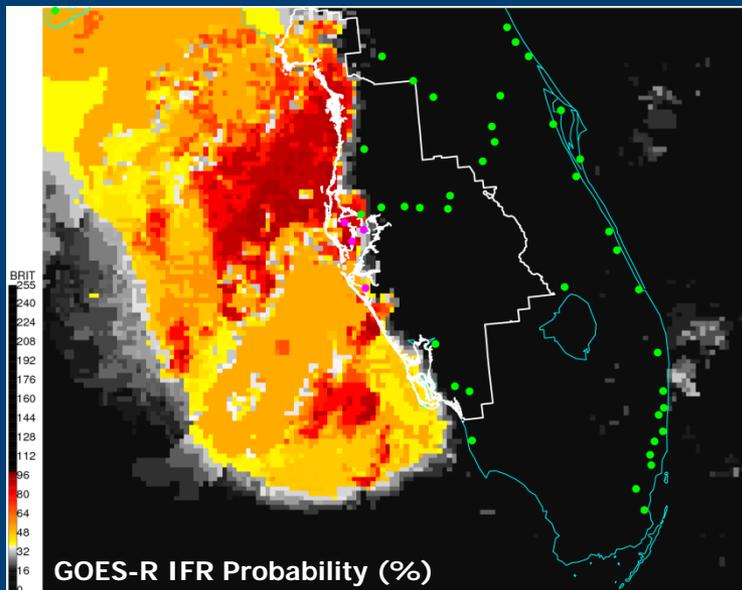
St Pete Beach

GOES-EAST VISIBLE - FEB 23 13

• Over 30 shares and 4400 views in 4 hours



# Event Timeline: 0015 UTC 24 February 2013



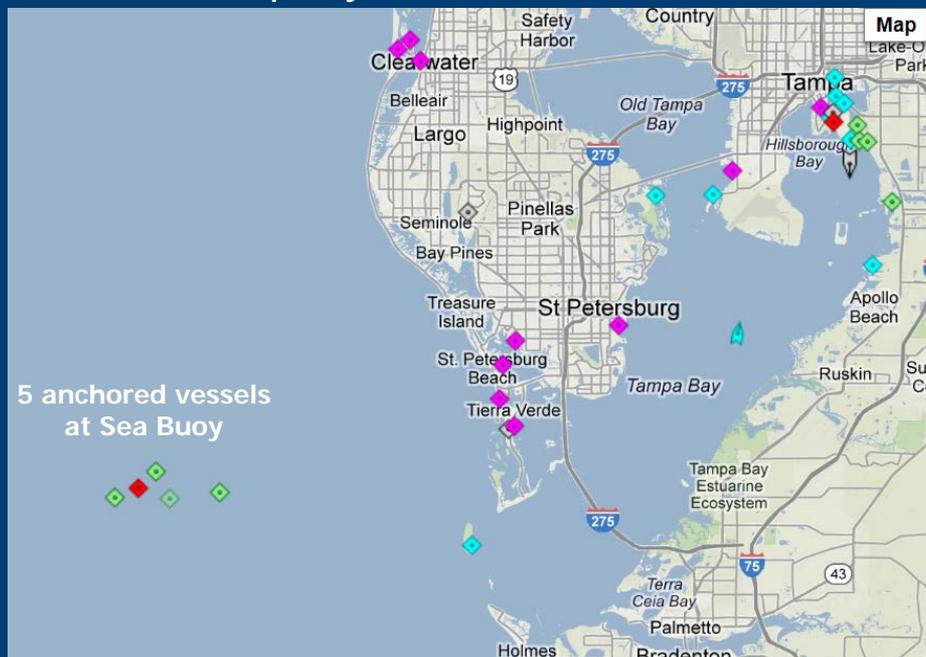
Port Manatee Visibility Sensor Observation: 1.5 mi



# Event Timeline: 0030 UTC 24 February 2013

- Conference call occurred between:
  - U.S. Coast Guard
  - Tampa Bay Harbor Pilots
  - Vessel Traffic Safety Board
  - NWS Tampa Bay
- All traffic into the Tampa Bay Channel will be held until 1300 UTC or until conditions approve.
- 10+ vessels will be anchored until the fog lifts.
- Ships with morning priority:
  - 2 Cruise ships
  - 1 NH3 ship

Tampa Bay Vessel Traffic at 0030 UTC





# Event Timeline: 0153 UTC 24 February 2013

FXUS62 KTBW 240153  
AFDTBW

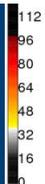
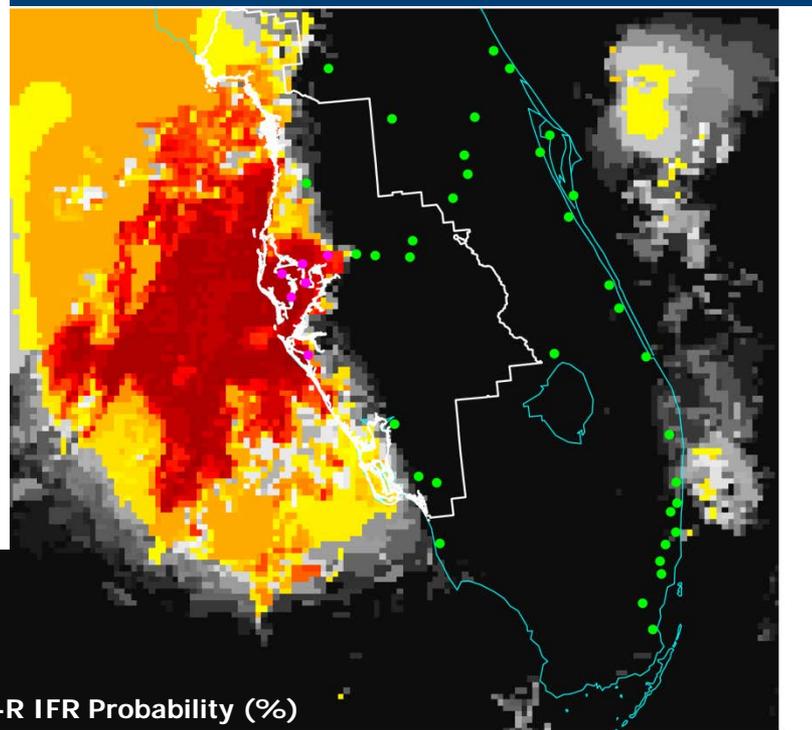
AREA FORECAST DISCUSSION  
NATIONAL WEATHER SERVICE TAMPA BAY RUSKIN FL  
853 PM EST SAT FEB 23 2013

.UPDATE...MAIN ISSUE OVERNIGHT WILL BE THE LOW CLOUDS AND FOG...ESPECIALLY THE SEA FOG WHICH IS MOVING IN ALONG THE COAST. **GOES-R IFR PROBABILITIES SHOW HIGHEST CONCENTRATION/MOST LIKELY AREAS OF FOG TO BE OVER THE GULF BETWEEN HERNANDO COUNTY AND MANATEE COUNTY.** SURFACE OBSERVATIONS AND REPORTS FROM THE COAST GUARD AND TAMPA BAY PILOTS CONFIRM THAT DENSE FOG /VISIBILITY 1 MILE OR LESS OVER THE GULF WATERS/ IS OCCURRING OVER THE BAY AND EVEN EGMONT KEY...BUT VISIBILITIES HAVE REMAINED ABOVE DENSE FOG CRITERIA / ONE QUARTER MILE / OVER LAND.

A LINE OF SHOWERS WITH A FEW THUNDERSTORMS IS ADVANCING TOWARD LEVY COUNTY SHOULD GET THERE BETWEEN 930 AND 10 PM...THEN CONTINUE SLOWLY SOUTHEAST THROUGH CITRUS AND PERHAPS HERNANDO COUNTY BY SUNRISE. MOST OF THE STORMS HAVE WEAKENED FROM EARLIER...BUT ONE OR TWO STILL SHOW SIGNIFICANT LIGHTNING ACTIVITY. WILL LEAVE THE SLIGHT CHANCE OF THUNDER IN THE FORECAST OVERNIGHT THERE.

VERY FEW CHANGES WERE MADE BEYOND THE OVERNIGHT PERIOD.

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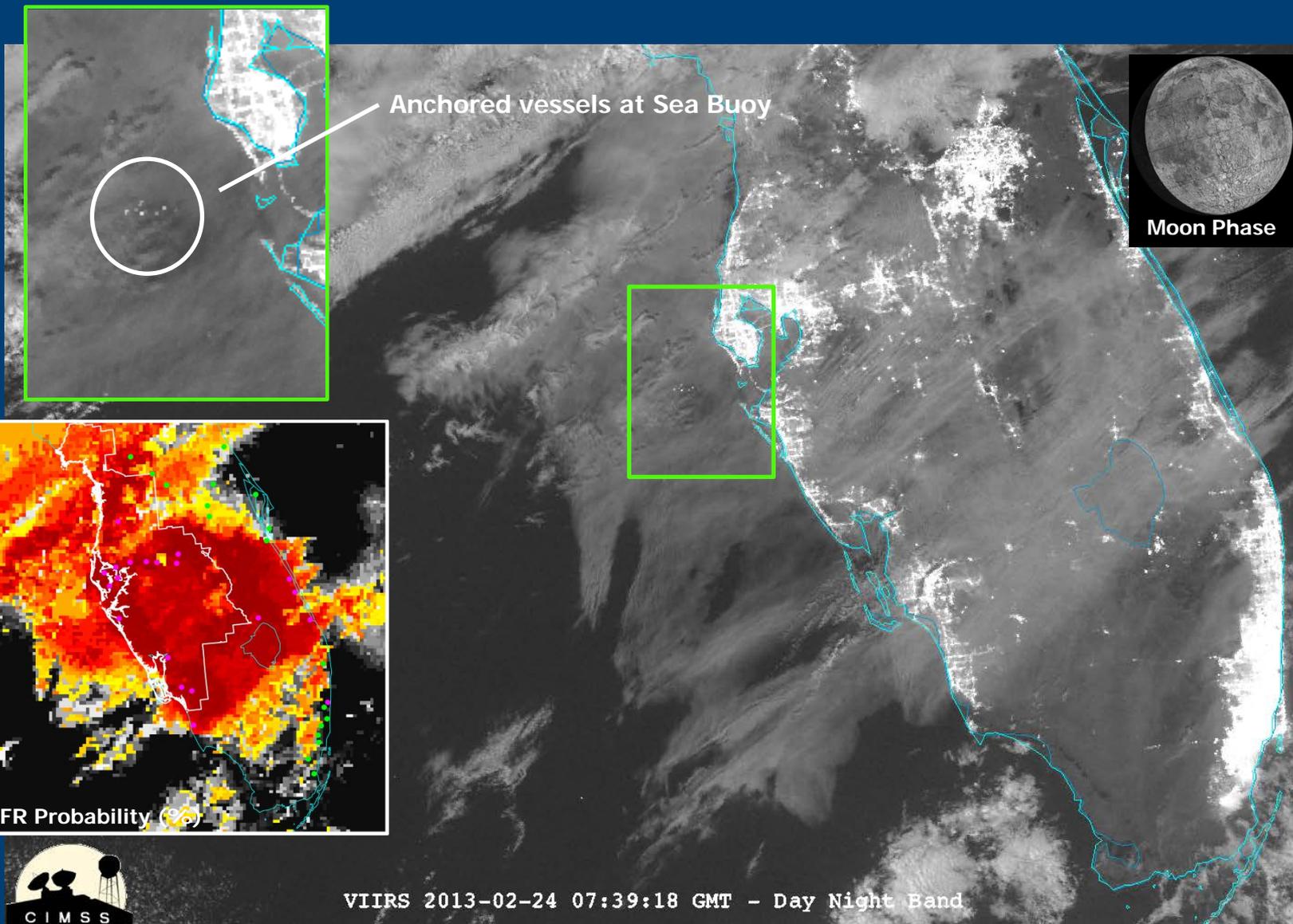
GOES-R IFR Probability (%)



Port Manatee Visibility Sensor Observation: 3.1 mi



# Event Timeline: 0739 UTC 24 February 2013



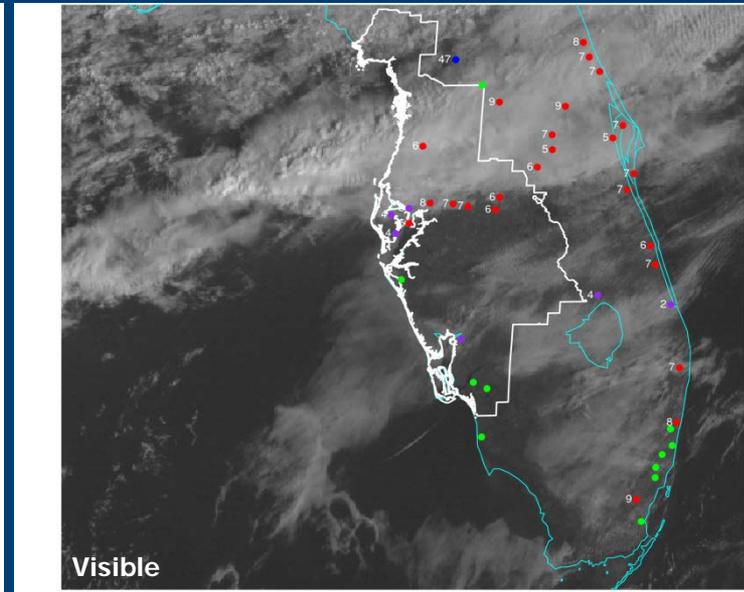
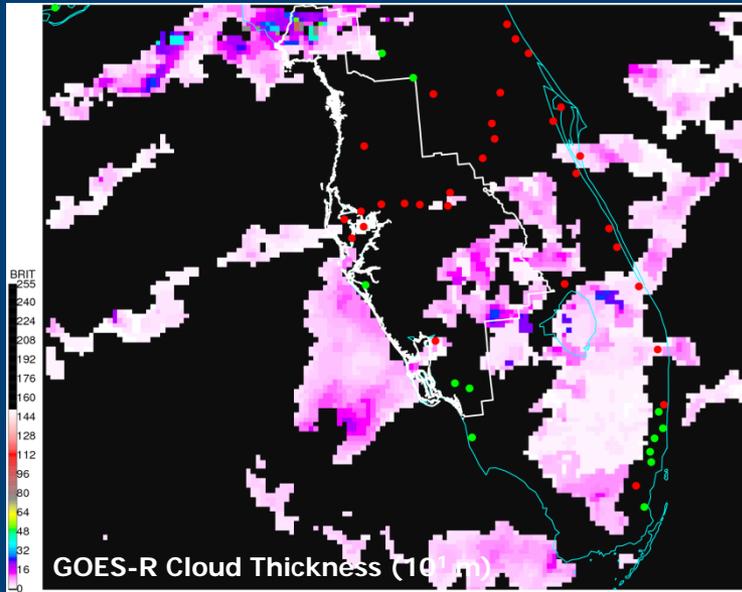
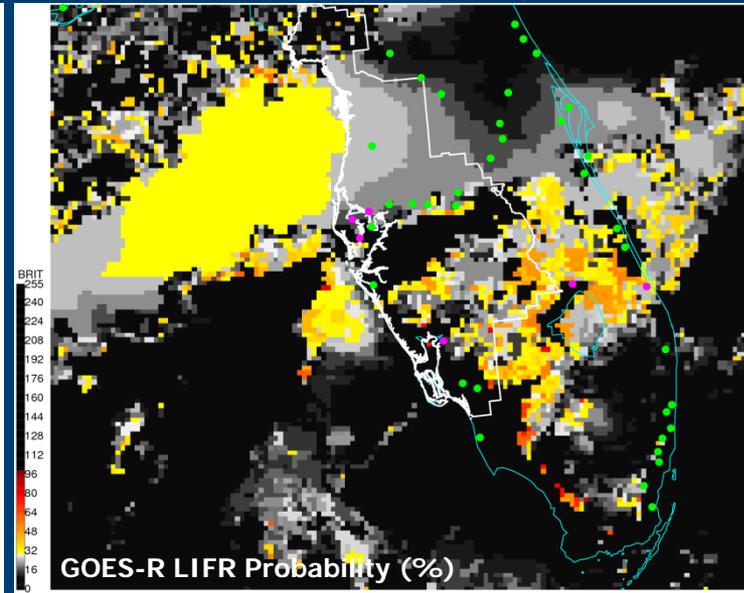
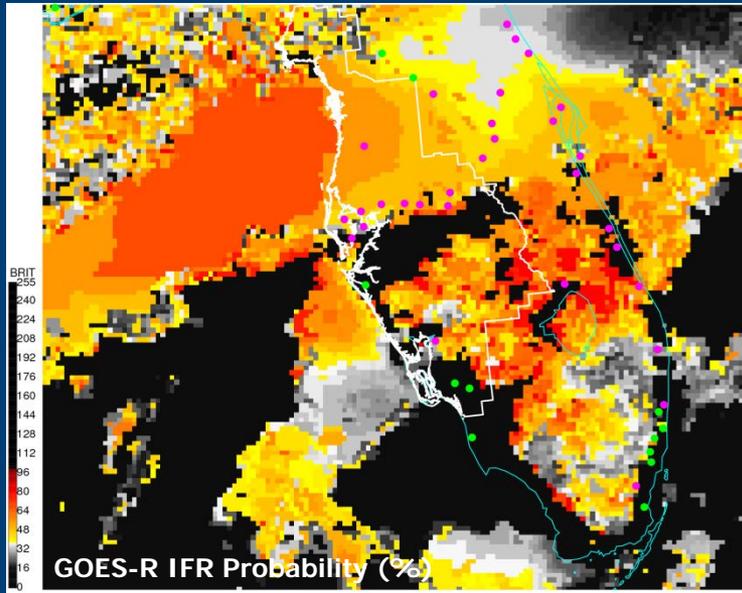
VIIRS 2013-02-24 07:39:18 GMT - Day Night Band

● Port Manatee Visibility Sensor Observation: 0.21 mi

Suomi NPP DNB Image courtesy of William Straka, CIMSS



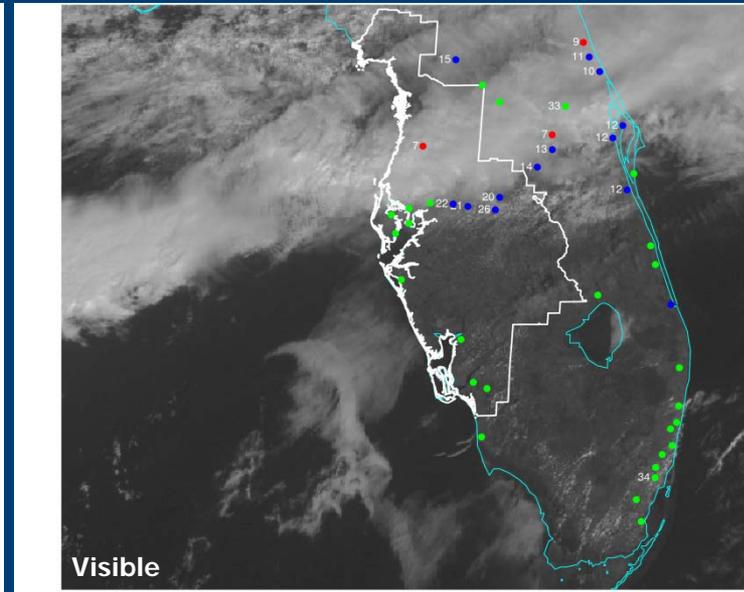
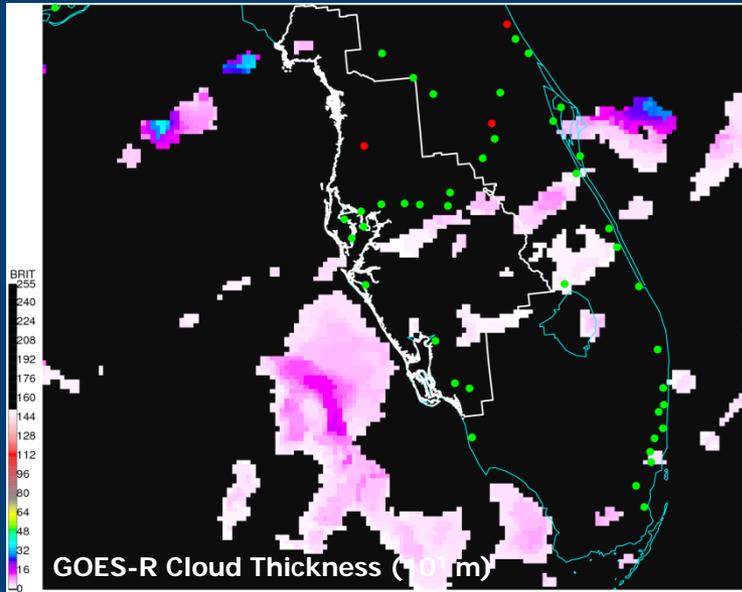
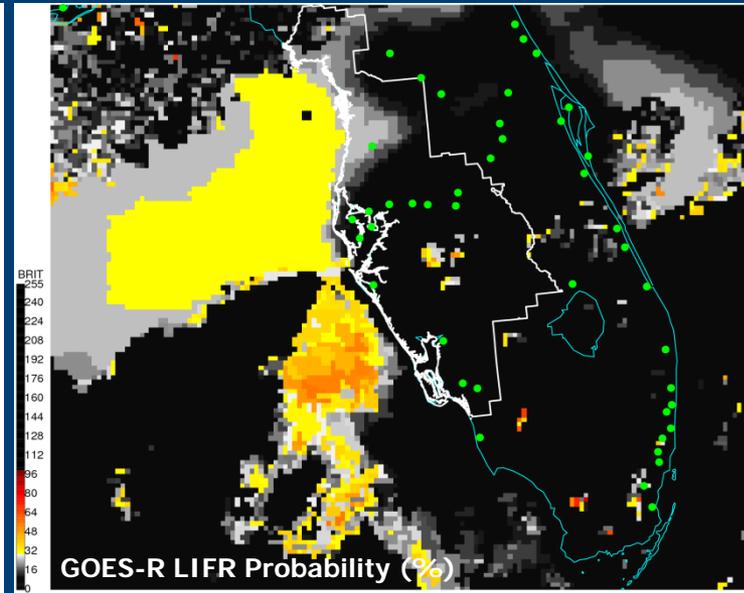
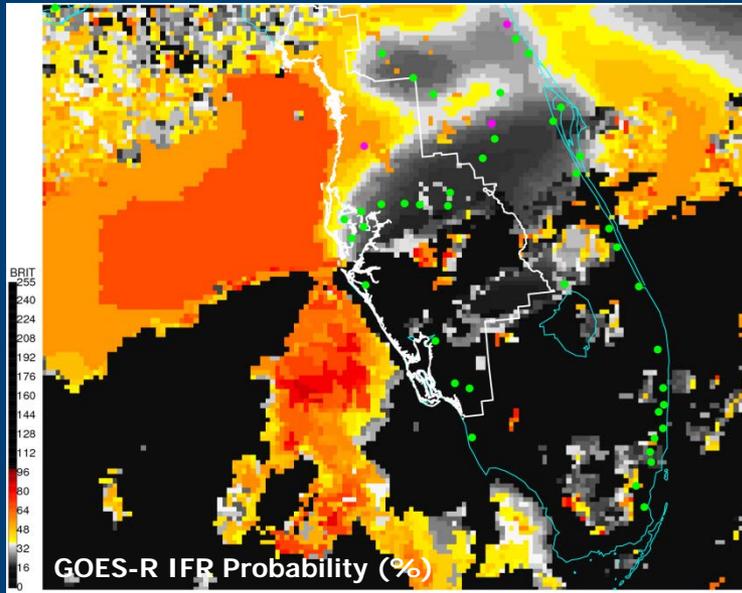
# Event Timeline: 1402 UTC 24 February 2013



● Port Manatee Visibility Sensor Observation: 3.6 mi



# Event Timeline: 1602 UTC 24 February 2013



Port Manatee Visibility Sensor Observation: 12.4 mi



## Conclusions/Takeaways

- High-impact event illustrates the importance of satellite products (legacy and future) in data sparse regions.
- NWS forecasters use this information to provide decision support to affected partners.

Questions or Comments?

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