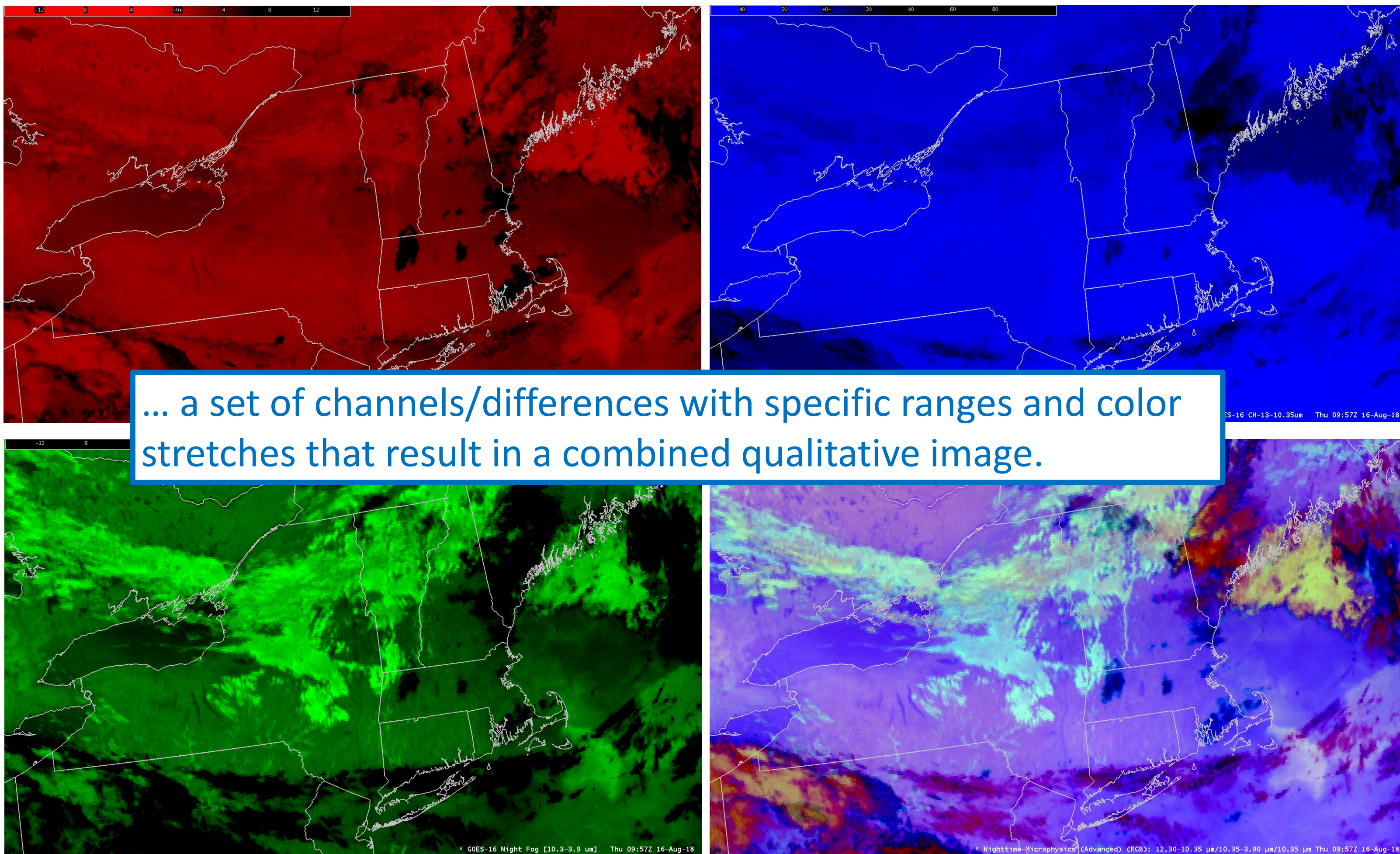


Abstract

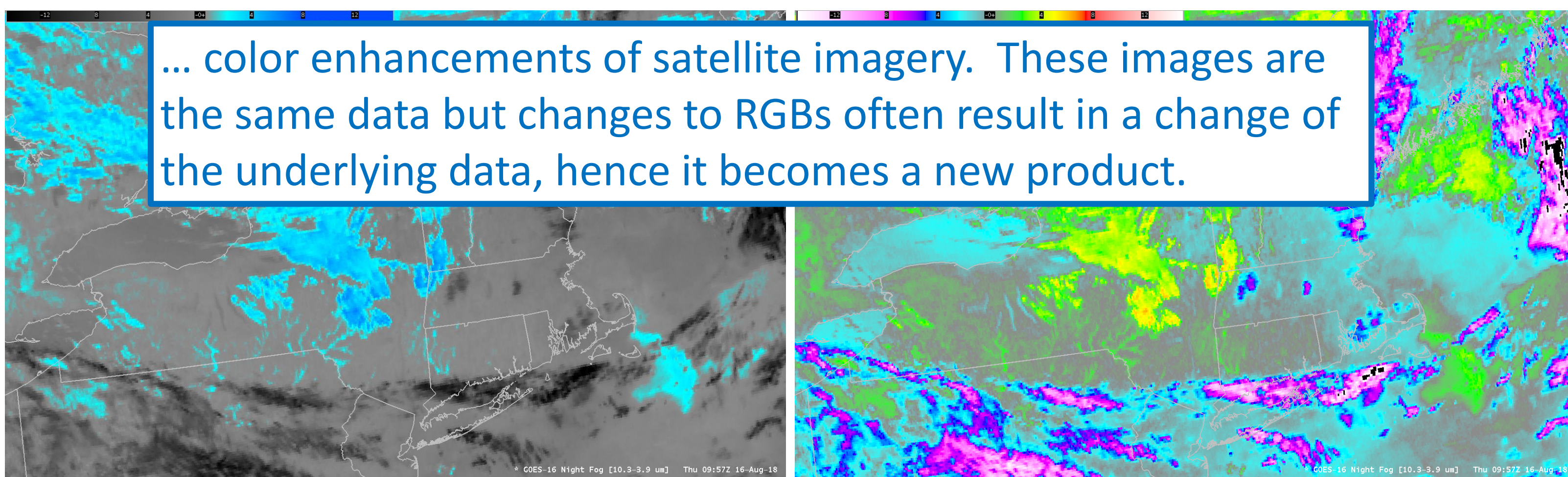
Otherwise known as “R-G-B” imagery, these new products provide a paradigm shift in short-term nowcasting and situational awareness via remote sensing. SPoRT used NASA instruments like MODIS and S-NPP VIIRS to demonstrate RGB capabilities prior to GOES-16. Now, with geostationary RGBs in operations, SPoRT has collaborated with select forecasters to assess the impact of this new GOES-16 capability.

RGB Imagery Products are



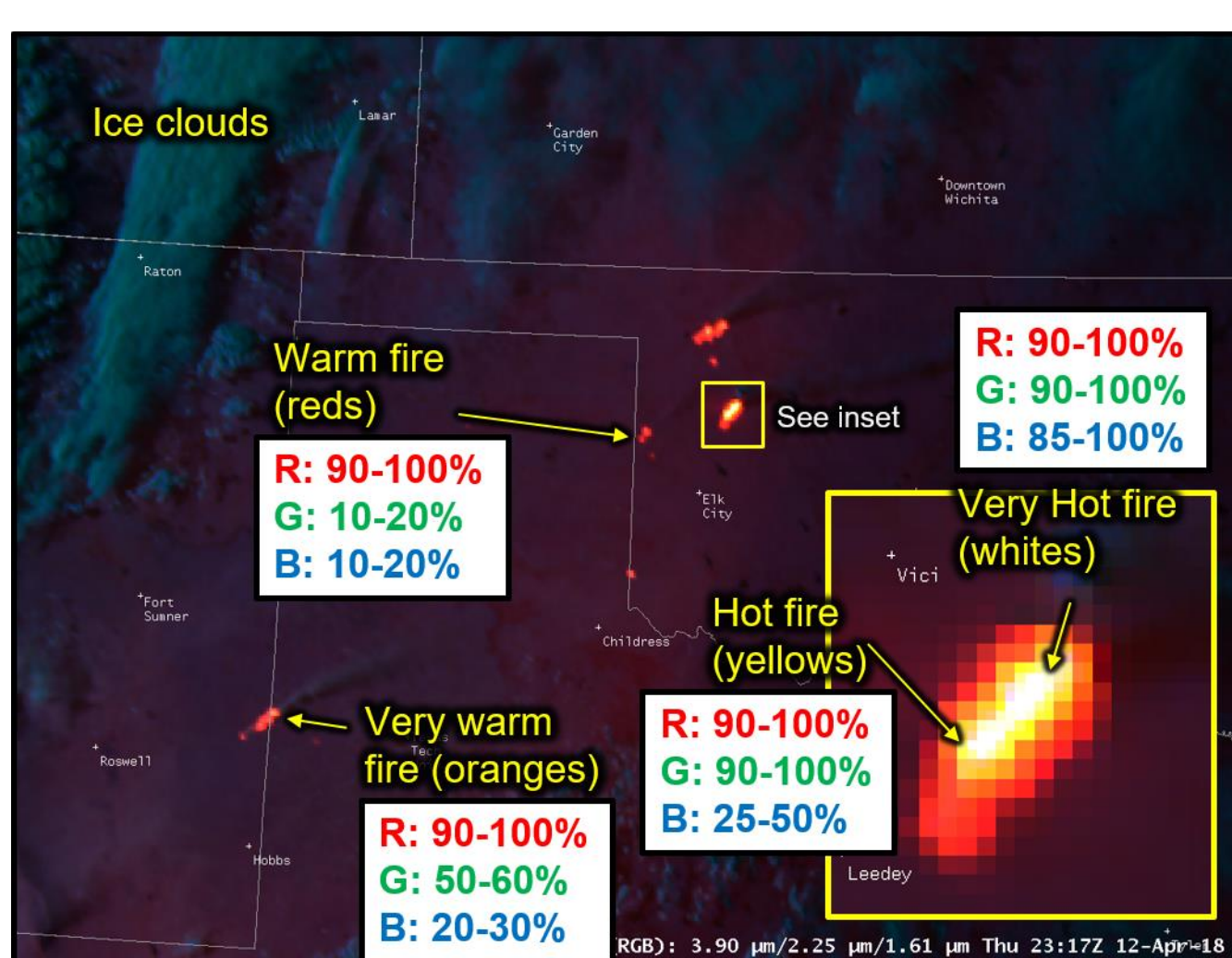
... a set of channels/differences with specific ranges and color stretches that result in a combined qualitative image.

RGB Imagery Products are NOT

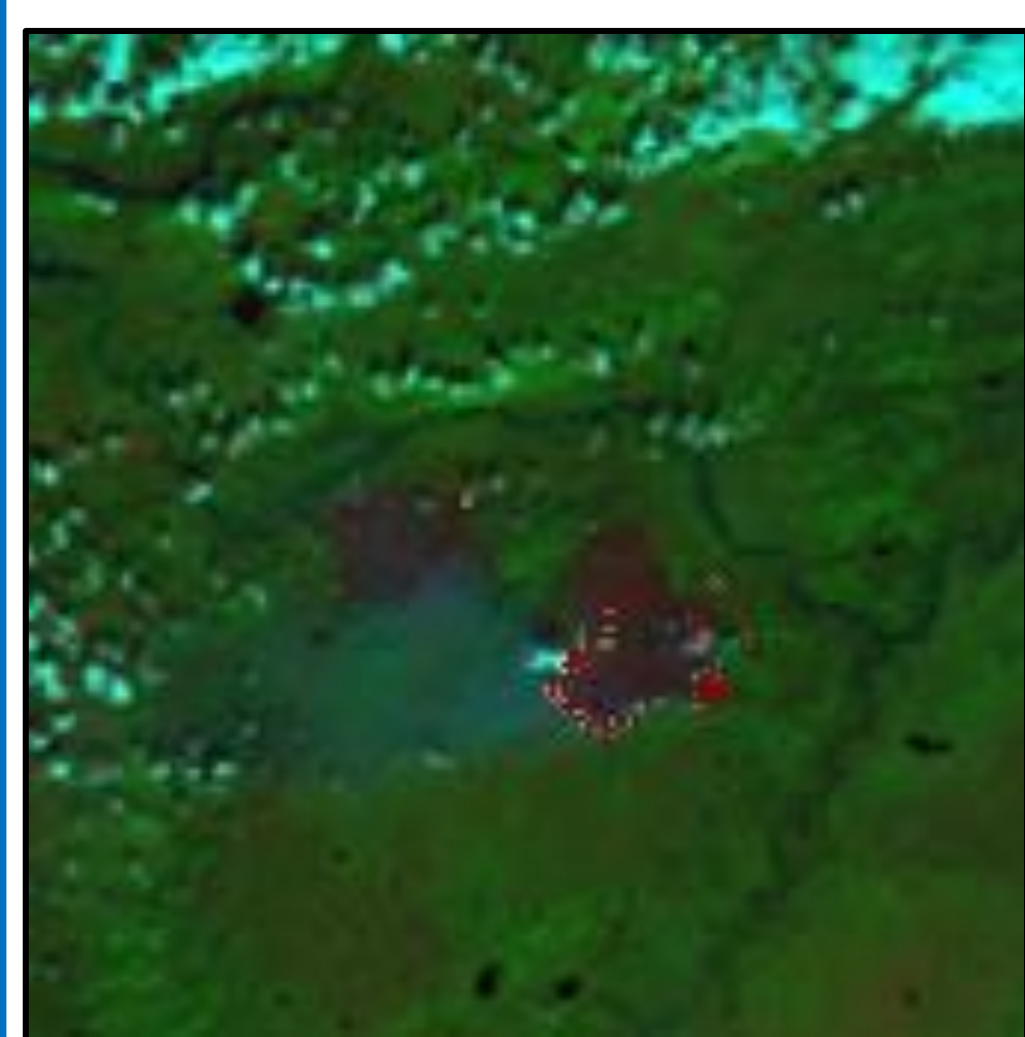


... color enhancements of satellite imagery. These images are the same data but changes to RGBs often result in a change of the underlying data, hence it becomes a new product.

New RGB Imagery Products are Possible



Fire weather RGBs are allowing forecasters to assess fire intensity and perimeter. SPoRT is also providing the Alaska BLM with VIIRS versions of these RGBs for use in their own display systems.



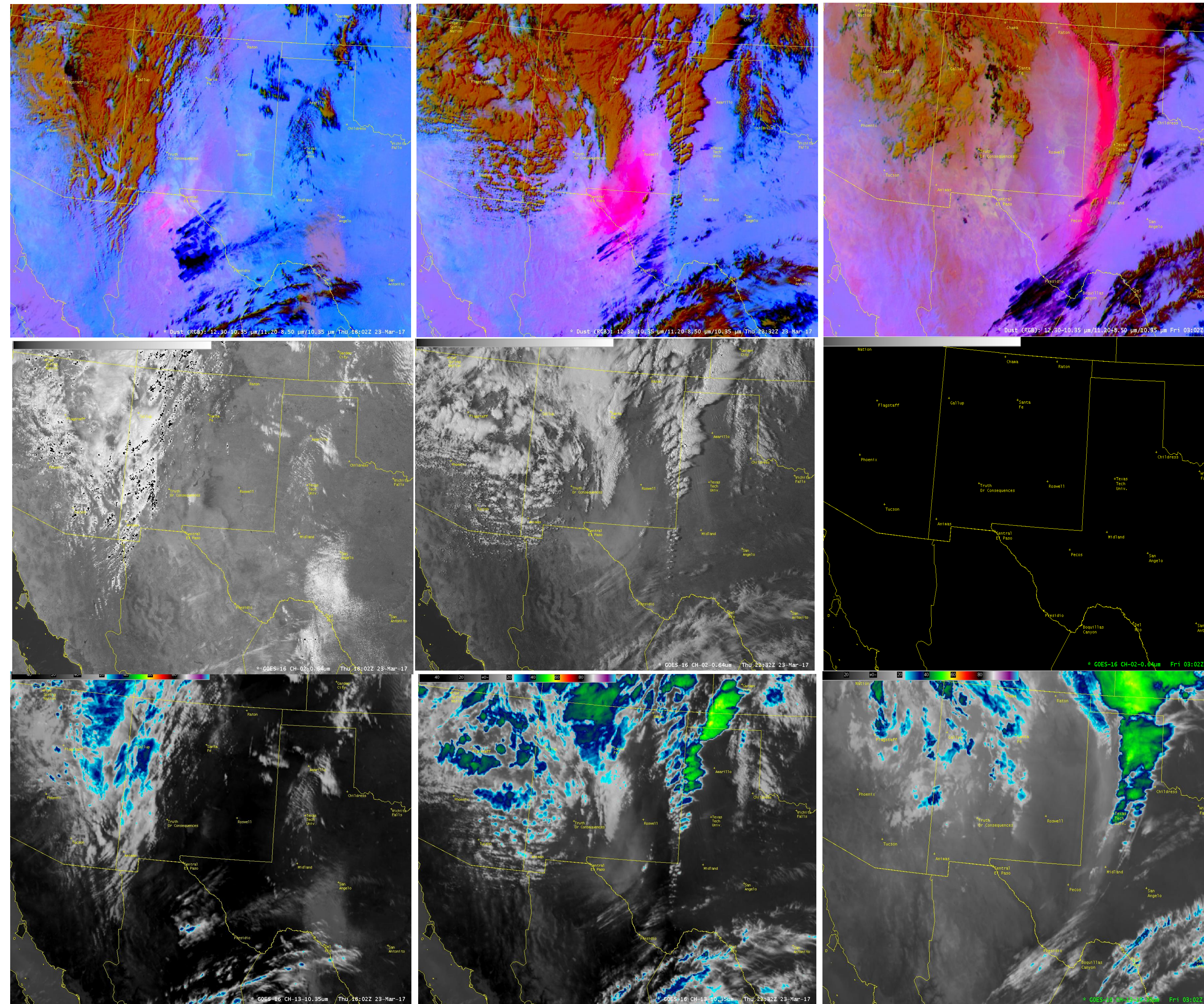
*** Visit the NASA/SPoRT exhibit booth for a demonstration of RGB imagery and further discussion ***

Dust RGB

Forecaster Assessment 2017/18

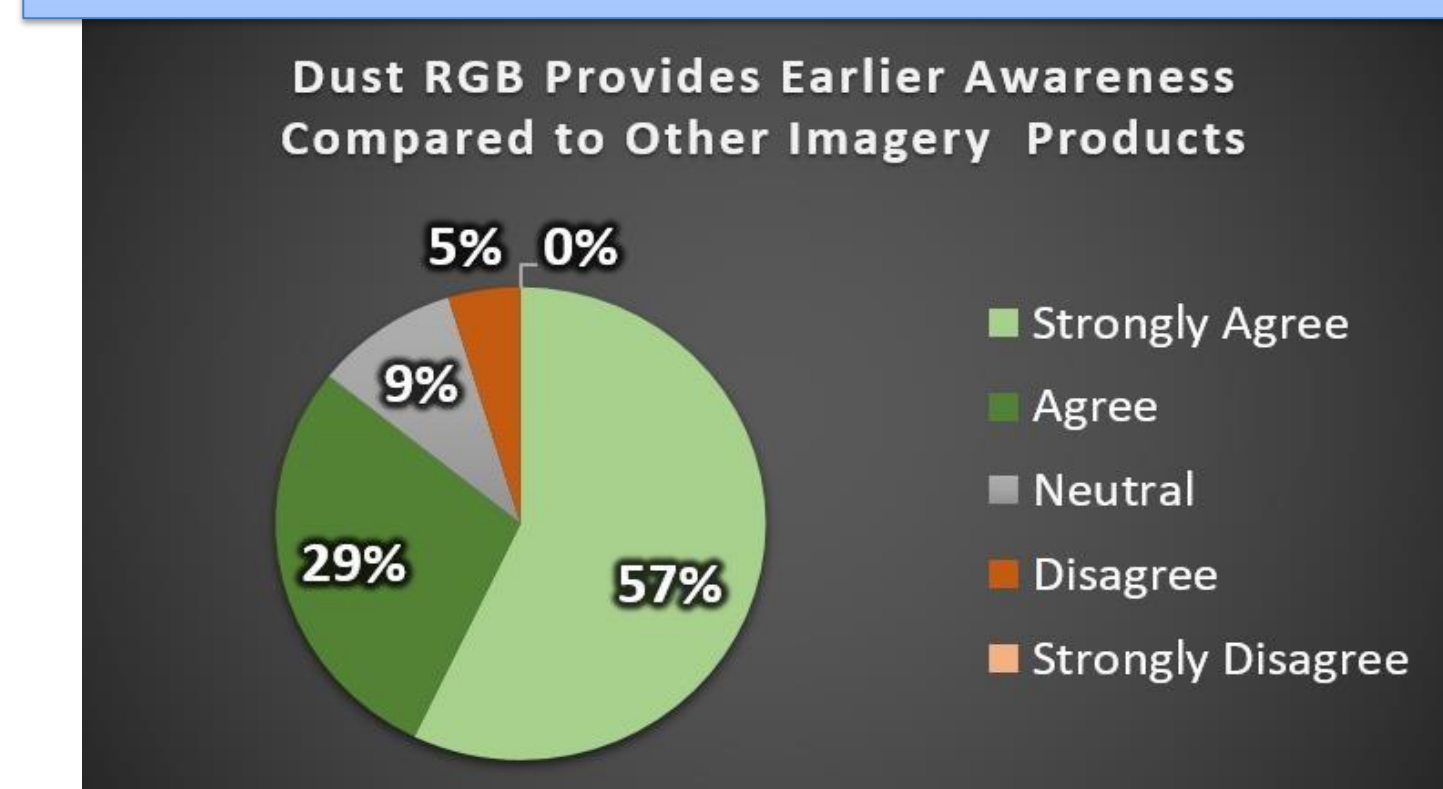
Comparison of RGB with Vis. and IR

Both blowing dust plumes (magenta coloring) and cloud types can be analyzed within this RGB, and it is available both day and night. Visible imagery is not available at night, and single-channel IR has limitations.



Here's What Forecasters Said

“RGB dust picked up on dust well before “visible imagery



“Dust RGB aided in the decision to upgrade a Wind Advisory to a High Wind Warning, and to issue a Special Weather Statement (SPS) for blowing dust impacts across northwest New Mexico.”

Nighttime Microphysics (NtMicro) RGB

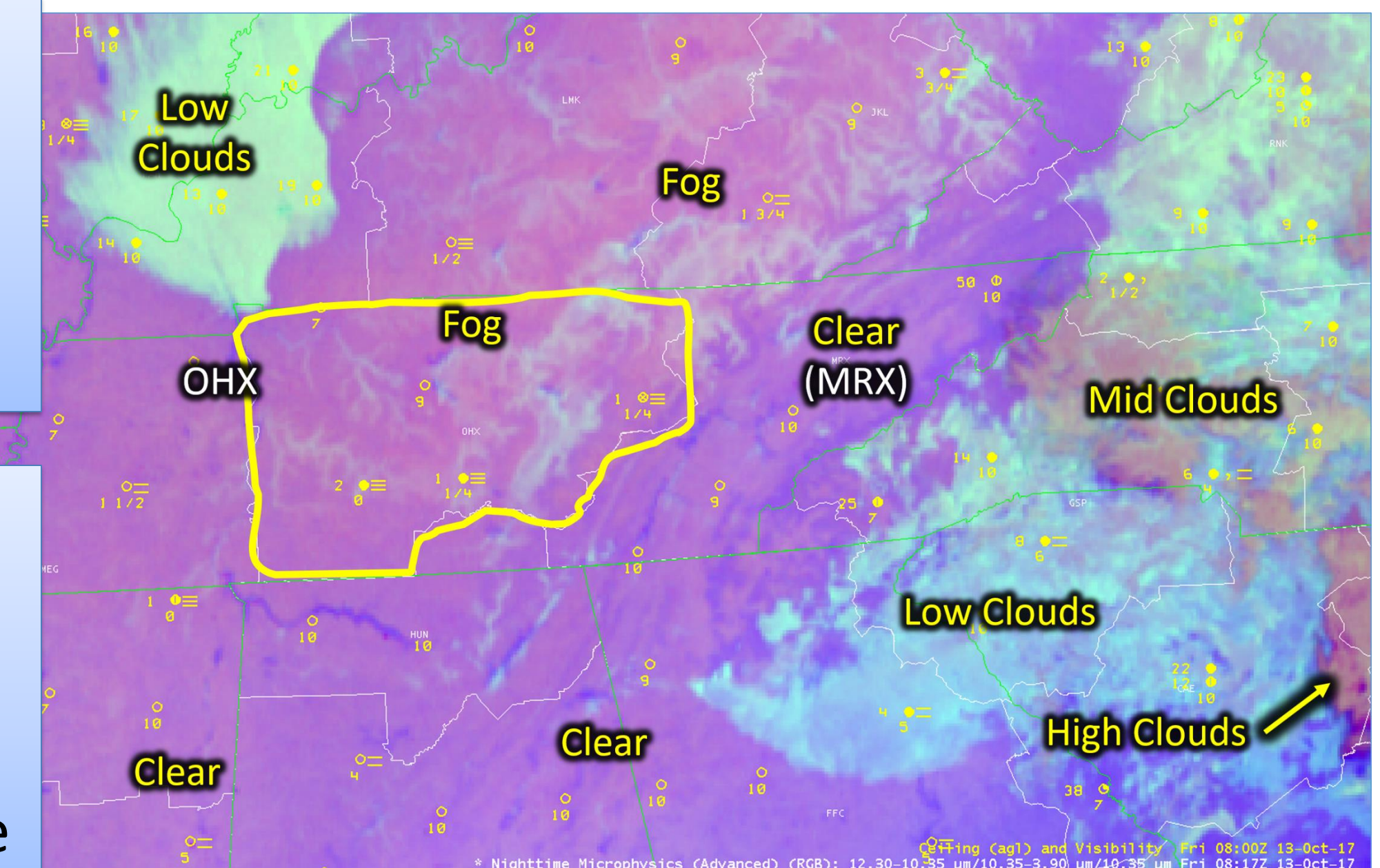
Forecaster Assessment 2018

Impact: To Warn or Advise???

The use of the NtMicro RGB product from MODIS and VIIRS resulted in improvements to the analysis of cloud features over traditional single-channel imagery as well as the legacy split window difference product and hence, improved aviation short-term forecasts and amendments related to low visibility and ceilings from fog and clouds.

MRX Forecaster: “Using the NtMicro RGB actually helped me decide not to issue a dense fog advisory, due to the fog being isolated to water and valleys.”

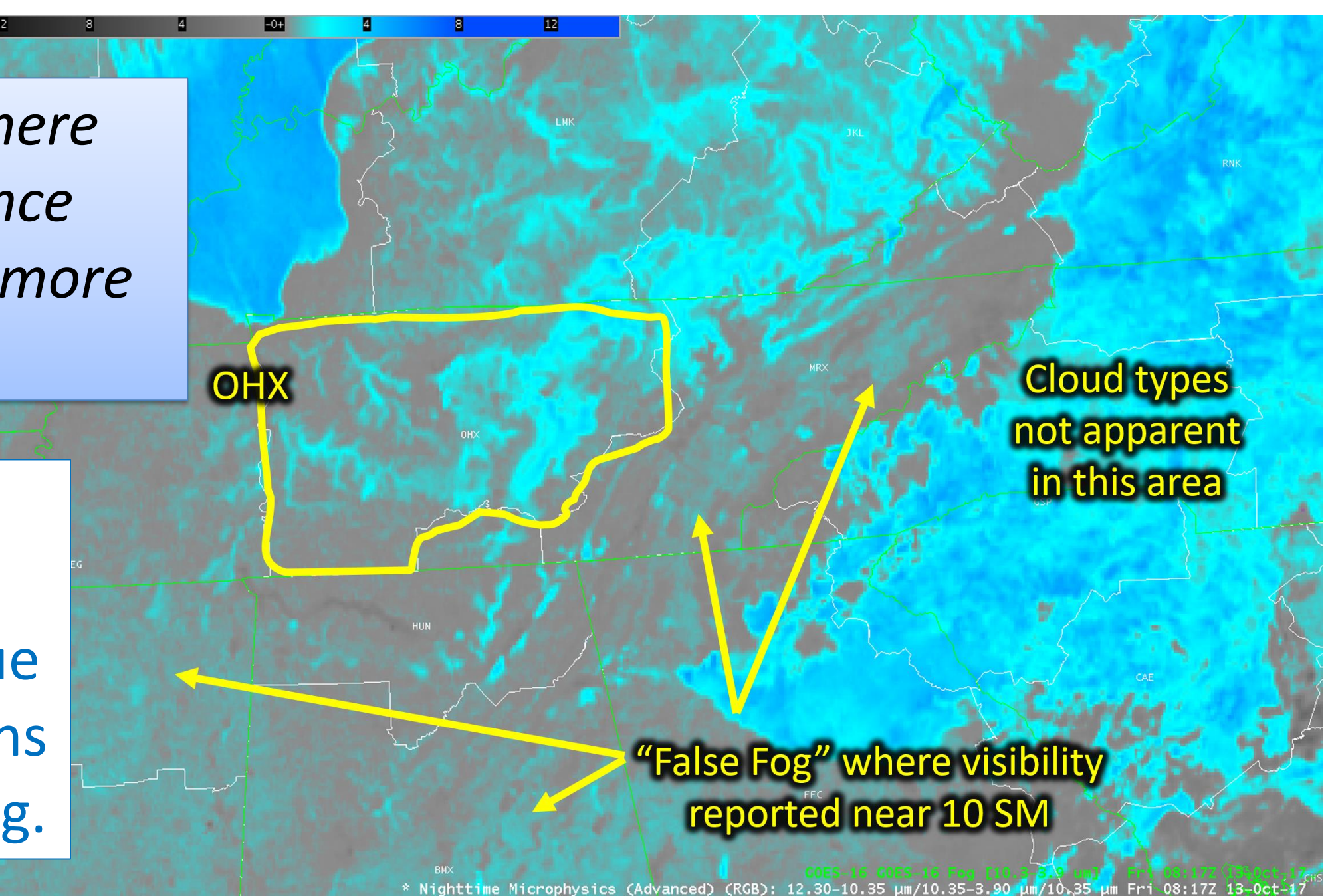
OHX Forecaster: “The ‘NtMicro RGB’ imagery was immensely helpful in the decision making process on issuing the advisory.” ...RGB Provided 2 hours lead time



Improvement Over Legacy Products

From MRX: “It was hard to tell where the fog was located ...The difference product made the fog look much more extensive than it really was.”

“False” indication of wide fog based on color enhancement in “Fog” Product. Aqua appears due to differences in ground emissions of 10.4 and 3.9 um during cooling.



“Applications” from Forecasters

- Differentiate fog and clouds
- Quickly identify cloud types
- Improved fog detection over traditional imagery
- Rapid looping of imagery to see subtle changes in fog
- Identification of low clouds like to have IFR ceilings