

Contributed by:

Kris White

Region:

CONUS East/Southeast

Office:

NWS Huntsville, AL (HUN)

Date:

3 April 2017

Product(s):

Day Convection RGB

Application Area:

Convection
Aviation
Public Event Decision Support

Feature:

Strong Convection causing strong winds, hail and tornadic conditions

Instrument(s):

GOES-16, MODIS, VIIRS

Works well with:

Visible Channels
Day Land Cloud RGB
Radar Reflectivity
GLM
LMA flash extent density

Related Links:

[SPoRT Daytime Convection RGB Interactive Quick Guide](#)

[UCAR/COMET Multispectral Satellite Applications: RGB Products Explained](#)

Event Description: A long-lived squall line tracked eastward across Georgia to the Carolinas. The storm system organized strong winds and hail that downed trees and damaged structures, causing widespread power outages and injuries. Extreme turbulence and strong surface wind gusts also caused an hour-long ground stop of all aircraft movement at Atlanta International Airport.

Product Impact: The Day Convection RGB provides the ability to identify convection due to strong updrafts and small ice particles, which indicates severe storm activity. The capacity to detect microphysical characteristics of convective clouds improves forecasting of the storm strength and stage. Forecasters can use the Day Convection RGB in conjunction with radar and other products to improve confidence in nowcasting capabilities. Areas of strong convection identified by the RGB product (Figure 1) corresponds to preliminary severe weather reports received by the NWS Storm Prediction Center (Figure 3).

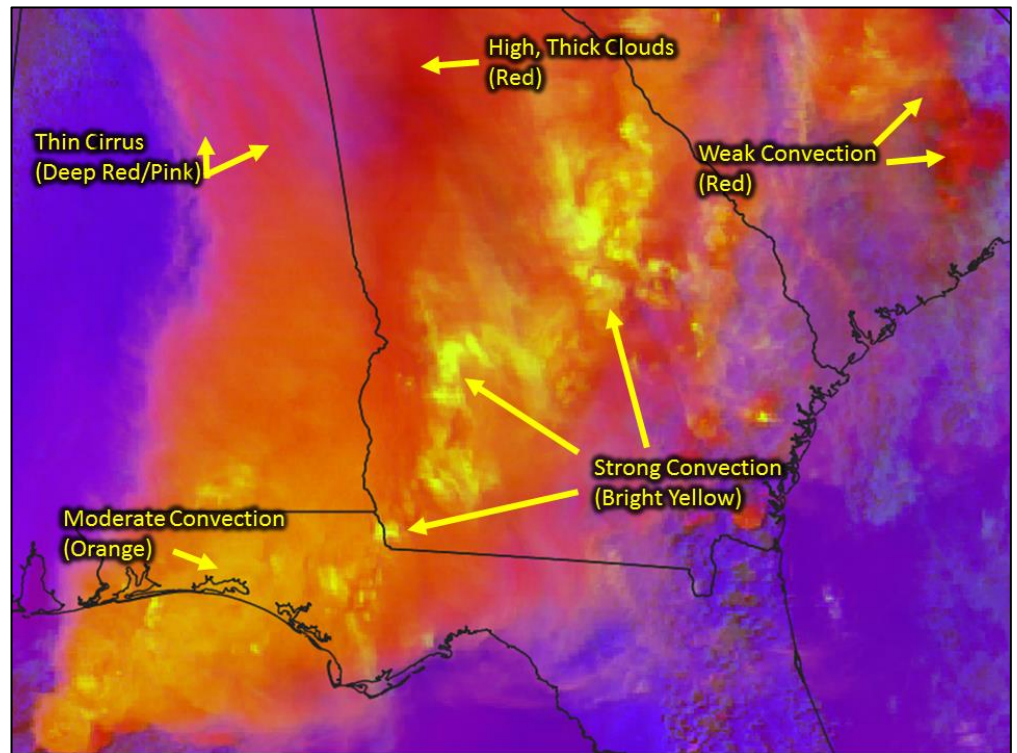


Figure 1. GOES-16 Day Convection RGB, valid 1852 April 3, 2017.

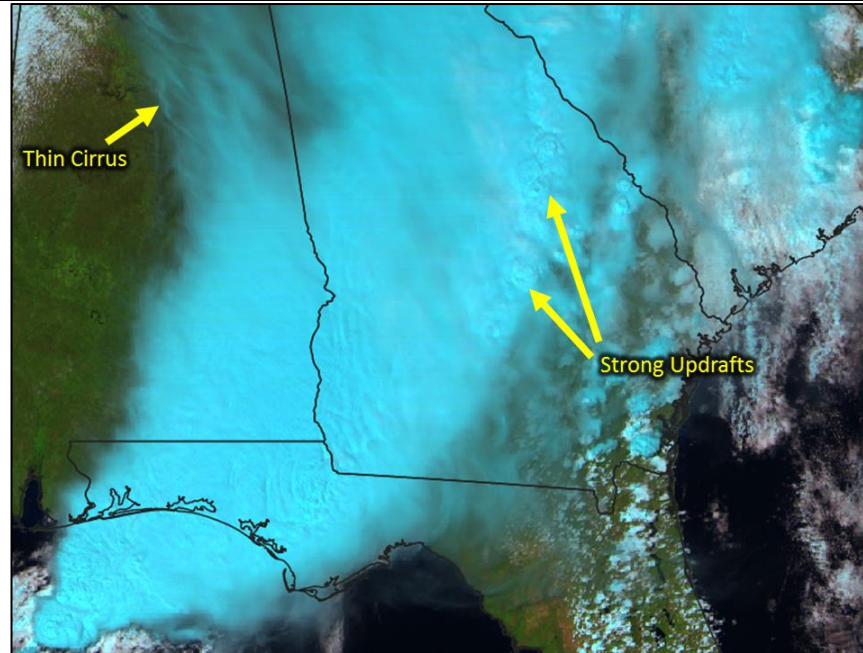


Figure 2. GOES-16 Day Land Cloud RGB, valid 1852 April 3, 2017.

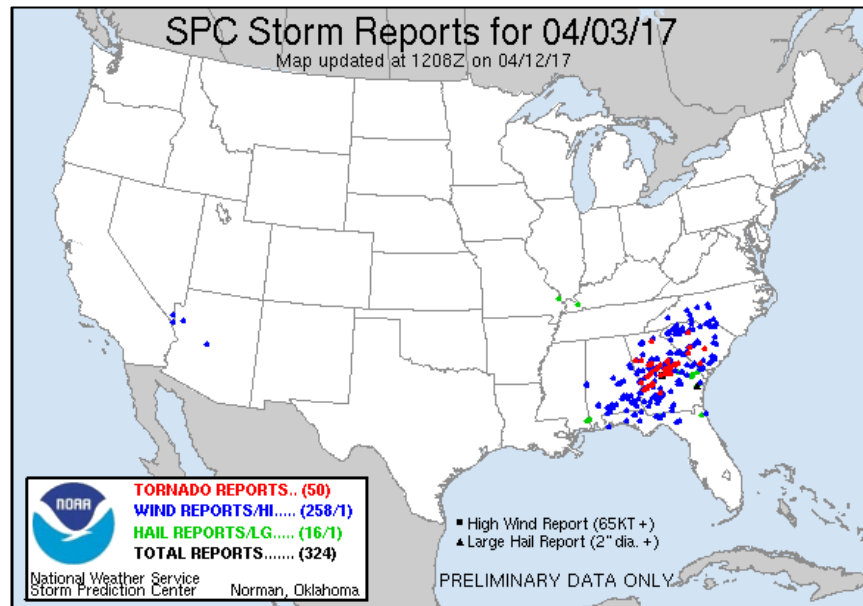


Figure 3. NWS Storm Prediction Center preliminary storm report

Interpretation: Convective clouds with strong updrafts appear bright yellow due to the presence of small ice particles at the upper level. Small ice particles are more reflective in the 3.9 μm value of the green band. To create the bright yellow, along with a large green contribution, the red component is also strong as it indicates the high cloud top in the updraft. The different stages of convection can be determined from the red and orange colors. Shades of orange to red around the updraft indicating weaker convection, results from a decrease in green contribution due to increasing ice particle size. The Day Land Cloud RGB and visible channels are efficient in identifying overshooting tops that indicate convection, but the spatial extent is not as easily defined, and the stages of convection are not discernable as with the Day Convection RGB.