



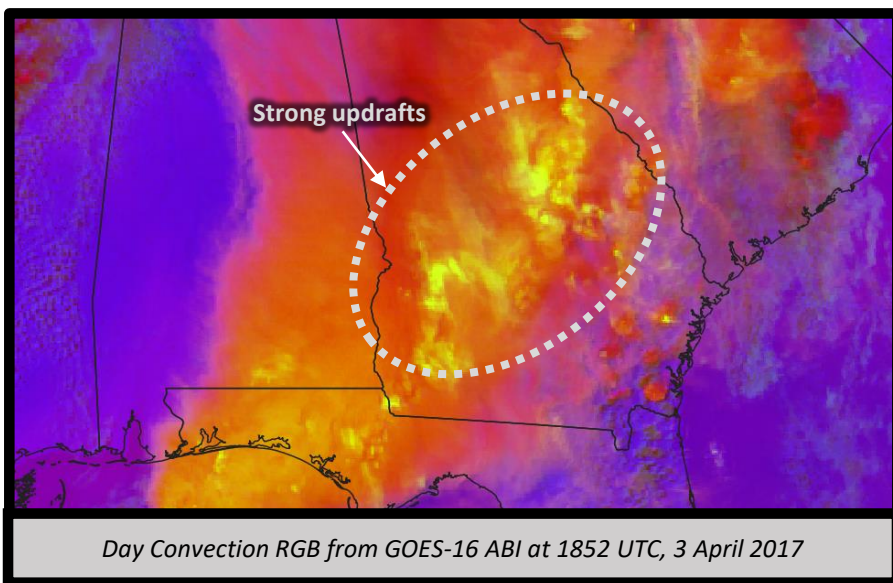
# Day Convection RGB

## Quick Guide



### Why is the Day Convection RGB Imagery Important?

The Day Convection RGB was designed to emphasize convection with strong updrafts and small ice particles indicative of severe storms. This RGB helps increase nowcasting capabilities of severe storms by identifying the early stage of strong convection. Knowing the microphysical characteristics of convective clouds helps determine storm strength and stage to improve nowcasts and short-term forecasts. Bright yellow in the RGB indicates strong updrafts prior to the mature storm stage.



### Day Convection RGB Recipe

Color	Band / Band Diff. (µm)	Min – Max Gamma	Physically Relates to...	Small contribution to pixel indicates...	Large Contribution to pixel indicates...
Red	6.2 – 7.3	-35.0 to 5.0 C 1	Cloud height	Low clouds	High clouds
Green	3.9 – 10.3	-5.0 to 60.0 C 1	Particle size	Large ice/water particles, weak updrafts	Small ice/water particles, strong updrafts
Blue	1.6 – 0.64	-0.75 to 0.25 % 1	Cloud phase	Ice clouds	Water clouds

### Impact on Operations

#### Primary Application

#### Convection and severe

**Weather:** identify intense updrafts that indicate strong convection.



**Strong convection is bright yellow:** Smaller particles are more reflective; the 3.9µm value is large for small ice particles. Within strong convective updrafts, particles do not have enough time to grow. Strong convection quickly saturates in the red and green colors, resulting in yellow.

**Differentiate new and mature convection:** mature or dissipating convection is orange or red depending on the amount of larger ice particles and warmer cloud tops.

### Limitations

#### Daytime only

**application:** the RGB relies on solar reflectance from visible, near-IR, and shortwave IR channels.



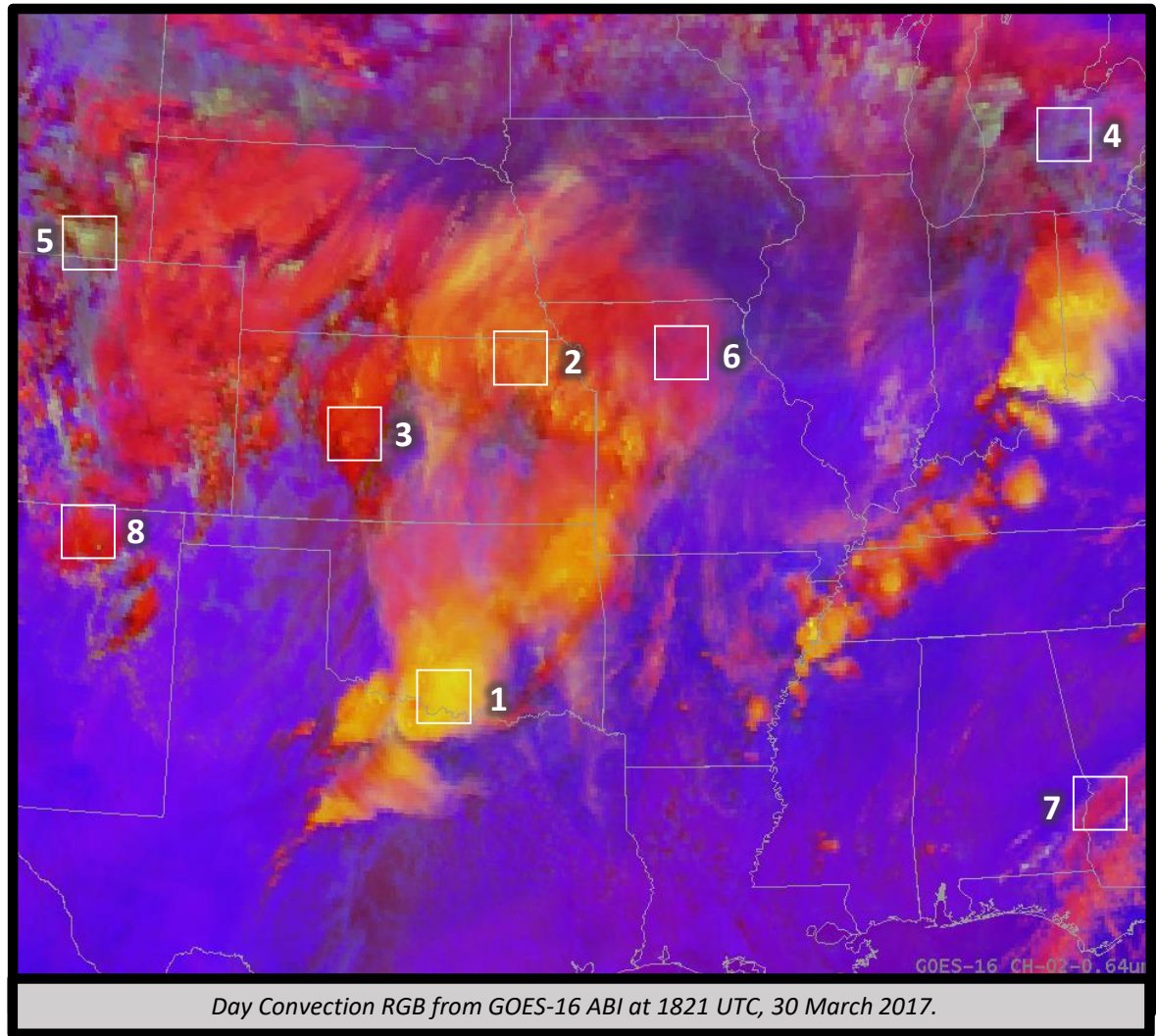
**Pixel color impacted by sun/satellite viewing angles:** yellow can be falsely increased due to sun glint in the 3.9 channel. Pixel color fades during dawn/dusk when the sun angle is low.

**Yellow colors may not always indicate strong convection:** Very cold cloud tops with only moderate 3.9µm reflectivity can result in yellow, but the updrafts are average strength. Yellow can also occur in mountain wave clouds or “polluted” air. Dust carried aloft can lead to long lived, small ice particles

### RGB Interpretation

- 1** Strong convection, small ice particles (bright yellow)
- 2** Moderate convection, large ice particles (orange)
- 3** Weak convection, large ice particles (red)
- 4** Low- to mid-water clouds (light blue)
- 5** Mid clouds, thick, small water or ice particles (light green)
- 6** Thin cirrus, large ice particles (pink)
- 7** Thin cirrus, small ice particles (purple)
- 8** High, thick clouds, large ice particles (dark red)

*Note: colors may vary diurnally, seasonally, and latitudinally*

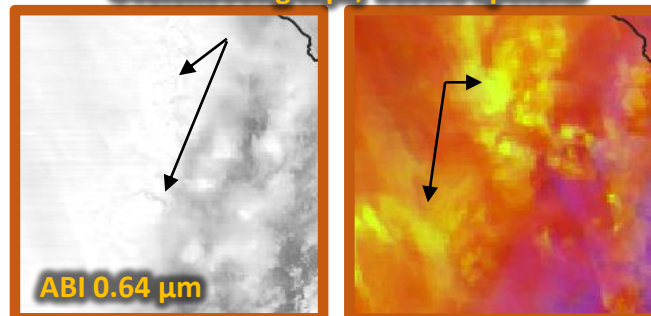


Day Convection RGB from GOES-16 ABI at 1821 UTC, 30 March 2017.

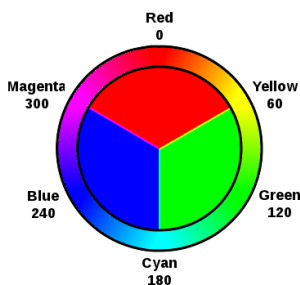
### Comparison to other products:

The traditional 0.64  $\mu\text{m}$  visible imagery can be used to identify overshooting tops and convective clouds. The convection RGB can distinguish between newer convection (bright yellow) and dissipating convection (oranges, reds).

### Overshooting tops, severe updrafts



### RGB Color Guide



### Resources

**UCAR/COMET**

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

**EUMETSAT**

[Understanding Convective Clouds Through the Eyes of \(MSG\) Cloud Particle Size](#)

**EUMETrain**

[RGB Interpretation Guide](#)

**Hyperlinks not available when viewing material in AIR Tool**