



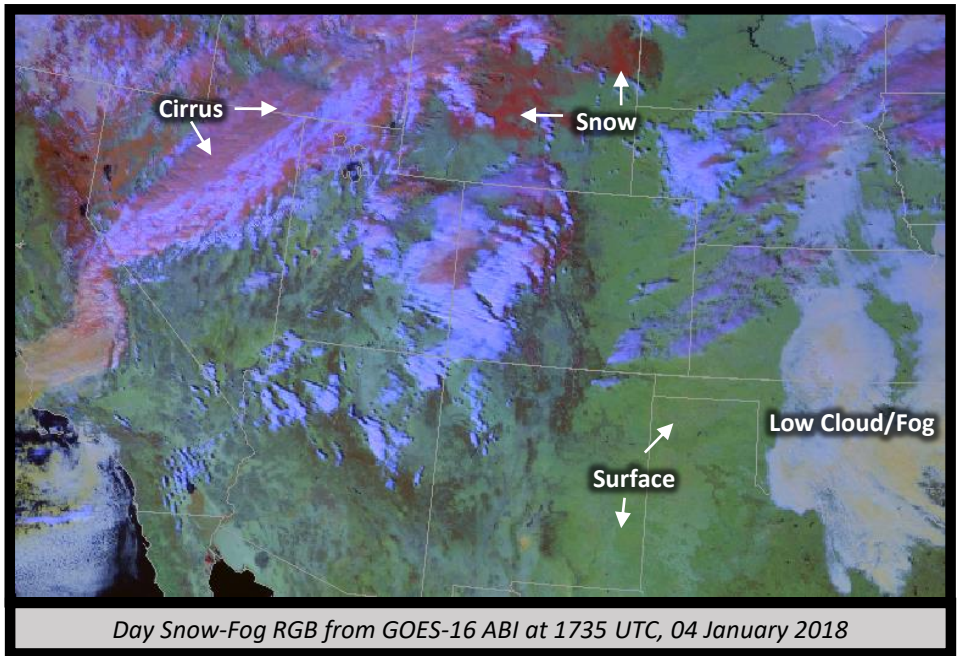
Day Snow-Fog RGB

Quick Guide



Why is the Day Snow-Fog RGB Important?

On heritage GOES, it was difficult to distinguish white “reflective” snow from white “reflective” clouds on visible imagery. On the GOES-R series, the reflectance of snow, water, and ice clouds varies across the visible, near infrared, and infrared. The channels which bring out the distinguishing differences are combined in the Day Snow-Fog RGB to show greater contrast between snow and cloud than is generally possible with a single channel.



Day Snow-Fog RGB Recipe

Color	Band / Band Diff. (µm)	Min to Max Gamma	Physically Relates to...	Small contribution to pixel indicates...	Large Contribution to pixel indicates...
Red	0.86 (Ch. 3)	0 to 100 % albedo 1.7	Reflectance of clouds and surfaces	Water, thin cirrus	Thick clouds, snow, sea ice
Green	1.6 (Ch. 5)	0 to 70 % albedo 1.7	Reflectance of clouds and surfaces	Water, snow	Vegetated land, thick water clouds
Blue	3.9 - 10.3 (Ch. 7 – Ch. 13)	0 to 30 °C 1.7	Proxy for 3.9 µm reflected solar radiance	Water, snow	Thick clouds

Impact on Operations

Primary Application

Distinguish snow and clear ground from clouds:

The Near IR 1.6 and IR 3.9 wavelengths are useful for distinguishing non-reflective (dark) snow from reflective (bright) low-level water cloud. Low level cloud layers can be distinguished when thin middle or upper level clouds are present, particularly in an animation.



Cloud phase: Provides information on water versus ice cloud phase.

Limitations

Daytime only application: The 0.86 µm, 1.6 µm, and 3.9 µm bands detect reflected visible solar radiation.

Solar angle: Low solar angles at sunrise and sunset change the color interpretation, as well as limited application for high latitudes during winter.

Cirrus clouds: Limited ability to detect thin cirrus clouds due to low contrast with background features. This can be mitigated somewhat by animation.

Coniferous forest: Areas of coniferous forest mask snow signature beneath the canopy.

Channel difference for blue component: The temperature difference does not capture the reflected solar component as intended by JMA or EUMETSAT, but is an adequate proxy.





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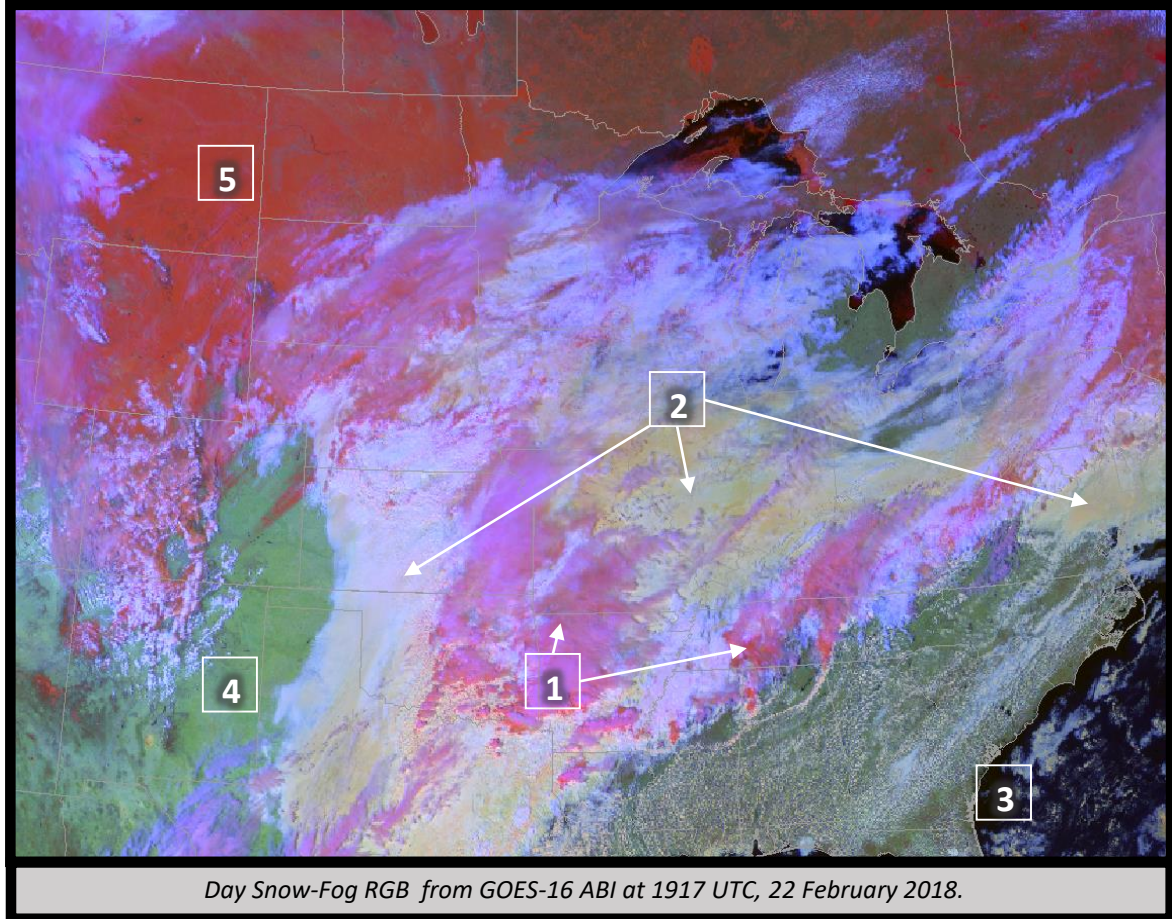
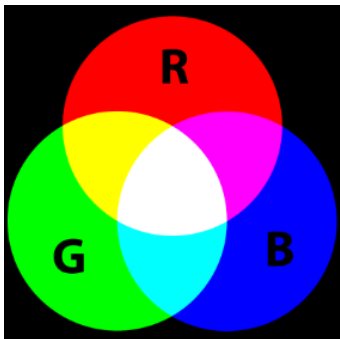


RGB Interpretation

- 1** Ice clouds, cirrus (shades of pink)
- 2** Water clouds, fog (shades of yellow)
- 3** Ocean (black)
- 4** Vegetation (green)
- 5** Snow (red-orange)

Note: colors may vary diurnally, seasonally, and latitudinally

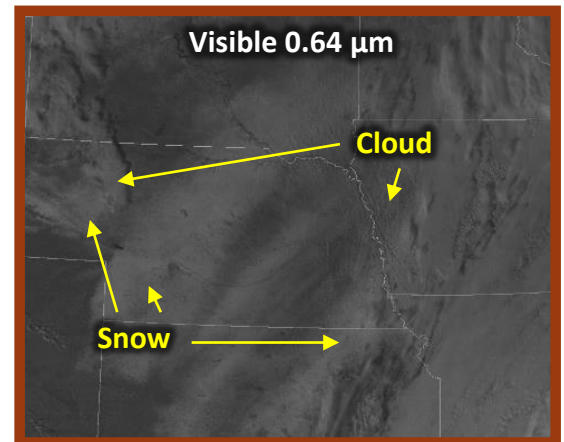
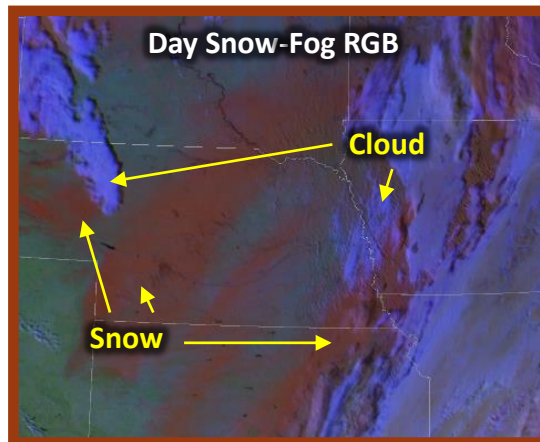
RGB Color Guide



Day Snow-Fog RGB from GOES-16 ABI at 1917 UTC, 22 February 2018.

Comparison to visible imagery:

The colors of the Day Snow-Fog RGB make it easier to distinguish between low clouds and snow/ice compared to visible imagery, as seen in the images from 11 January 2018 (below). It also provides better identification of the thickness of low-level clouds.



Resources

JMA*

[Himawari Day Snow-Fog RGB Quick Guide](#)

EUMETSAT*

[Snow RGB Quick Guide \(formerly 'Day Solar RGB'\)](#)

*Note: color interpretation is slightly different from these products as the 3.9 μm reflected solar component is used for blue

Hyperlinks not available when viewing material in AIR Tool