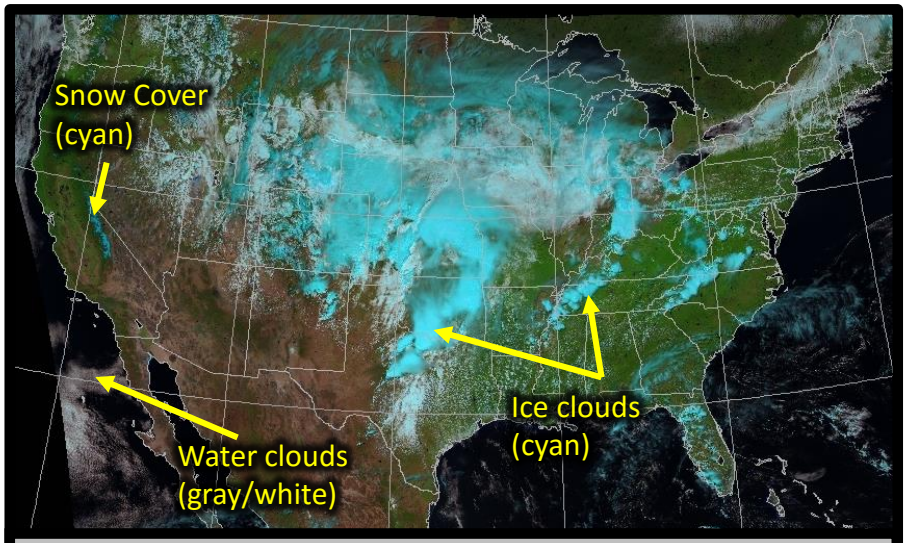
Day Land Cloud RGB Quick Guide

Why is the Day Land Cloud RGB Imagery Important?

The Day Land Cloud RGB is the same as the Natural Color RGB developed by EUMETSAT. This RGB is useful for discriminating water/ice clouds to identify low/high clouds. High ice clouds, snow, and sea ice appear cyan while low water clouds appear dull grey or white. Land/Ocean surfaces are in expected colors (but not true color). This imagery can also be used to assess vegetation and detect land surface changes where vegetation appears green and soil, inactive vegetation, and rock appear brown to dark gray.



Day Land Cloud RGB from GOES-16 ABI at 1857 UTC, 19 May 2017.

Day Land Cloud RGB Recipe

Color	Band / Band Diff. (µm)	Min – Max Gamma	Physically Relates to…	Small contribution to pixel indicates…	Large contribution to pixel indicates…
Red	1.6	0 – 97.5 % 1	Reflectance of clouds & surfaces	Ice or large particle clouds, water, snow/ice, sea ice	Water Clouds with small drops, and desert
Green	0.86	0 – 108.6 % 1		Water, inactive vegetation, bare soil	Clouds, vegetation, and snow/ice
Blue	0.64	0 – 100.0 % 1		Thin cloud, water, vegetation, bare soil	Thick clouds and snow/ice

Impact on Operations

Primary Application

Surface and atmospheric features: Discern high ice clouds from low water clouds, snow/ice cover, land surface features.

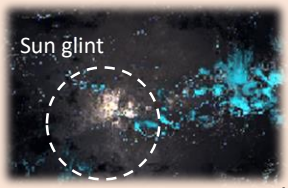
High ice clouds, snow, and sea ice are cyan: Ice strongly absorbs in the near-IR 1.6 µm band, leading to little red contribution (resulting in cyan) and notable contrast with water clouds (white/gray).

Low water clouds are gray to dull white: Water clouds with small droplets (i.e. fog) have a high reflectance in all three bands.

Land surface types are a 'Natural' color: Green vegetation, brown deserts and burn scars.

Limitations

Daytime only application: The RGB relies on solar reflectance from visible and near-IR channels.



Sun glint complicates water scenes: Water will appear grey to white as the sun moves overhead and reflects sunlight toward the satellite.

Distinguishing snow cover and high ice clouds: Snow and ice clouds are bright cyan in the RGB, but geographic features and/or cloud motion may help to differentiate between the two.

Thin cirrus/cirrostratus: These clouds are semi-transparent; hence, difficult to detect with the visible channels.

Dust appears similar color as bare land.

Contributor: Dr. Emily Berndt NASA SPoRT https://weather.msfc.nasa.gov/sport/

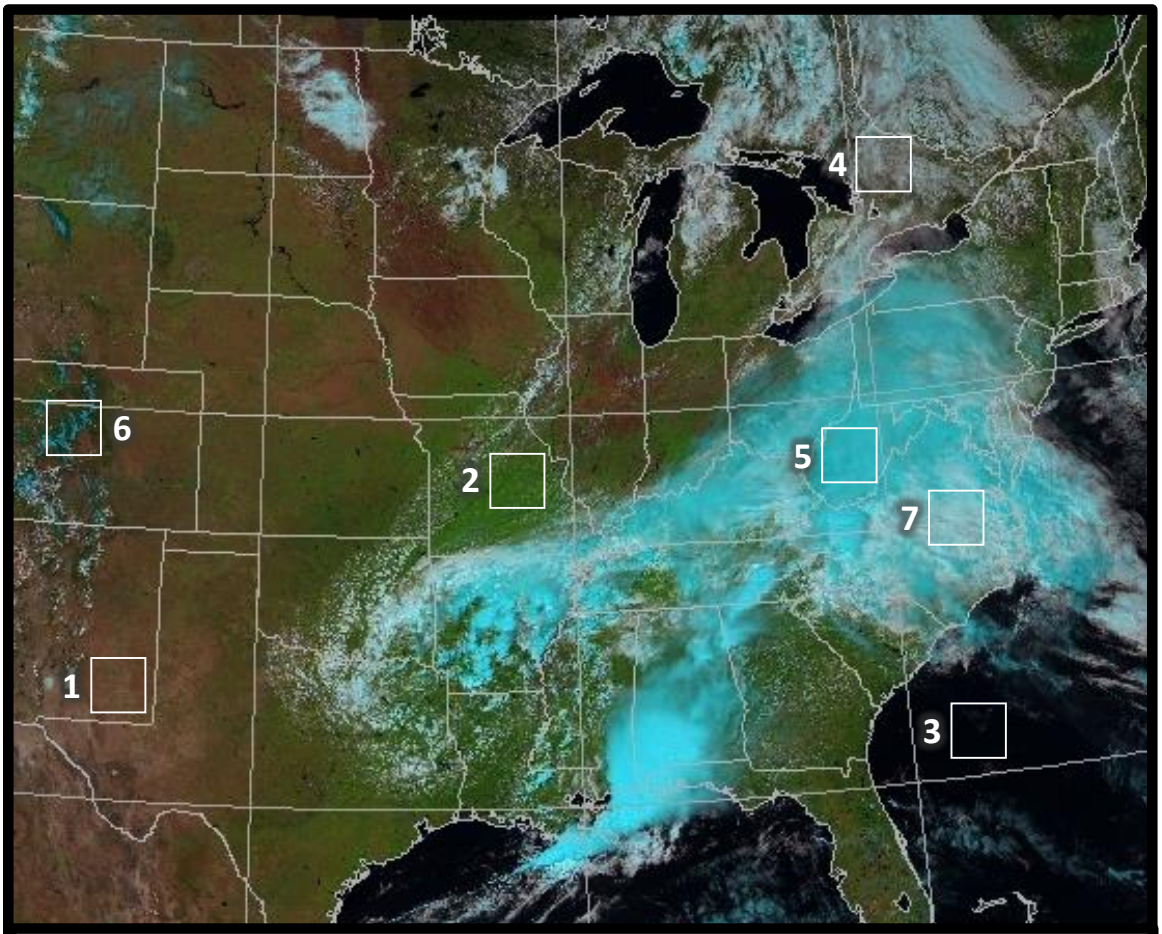
Day Land Cloud RGB

Quick Guide

RGB Interpretation

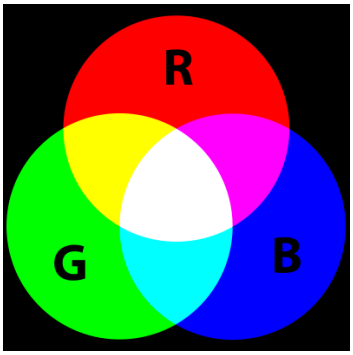
1	**Bare land or inactive vegetation** *(shades of brown)*
2	**Vegetation** *(shades of green)*
3	**Water bodies or flooded areas** *(dark blue to black)*
4	**Low water clouds** *(shades of gray and white)*
5	**High ice clouds** *(bright cyan)*
6	**Snow** *(dark to bright cyan)*
7	**Mid mixed phase clouds** *(gray shades of cyan)*

Note: colors may vary diurnally, seasonally, and latitudinally

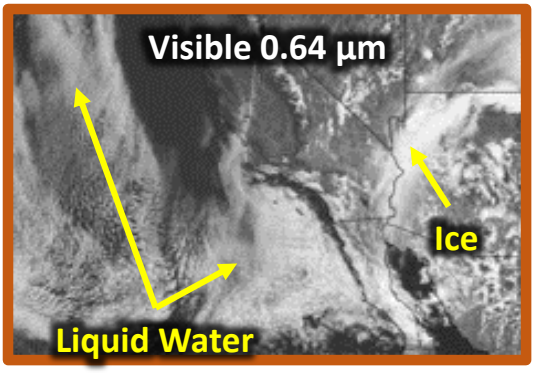


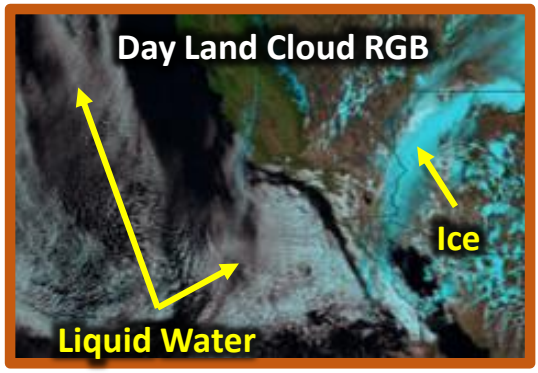
Day Land Cloud RGB from GOES-16 ABI at 1902 UTC, 12 May 2017.

RGB Color Guide



Comparison to other products: Cloud particle phase is not easy to discern in a single channel 0.64 µm visible satellite image. The Day Land Cloud RGB can distinguish between clouds which are primarily composed of ice crystals (bright cyan) and those primarily composed of liquid water (gray and dull white).





Resources

UCAR/COMET

Multispectral Satellite Applications: RGB Products Explained.

NASA/SPoRT

Applications Library

EUMETrain

RGB Interpretation Guide

Hyperlinks not available when viewing material in AIR Tool