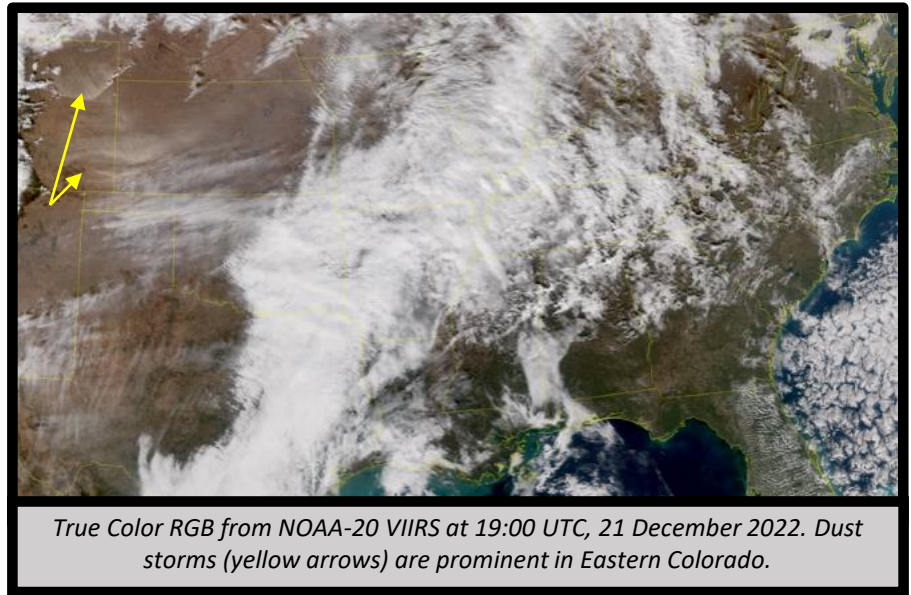


Why is the True Color RGB Important?

The VIIRS True Color RGB is a combination of the blue, green, and red portions of the visible spectrum, mimicking what the human eye would see from space. The RGB is excellent for identifying atmospheric aerosols (smoke, ash) and tracking seasonal changes in vegetation (greens, brown). Phytoplankton blooms and sediment will contrast against an otherwise deep blue ocean. A Rayleigh atmospheric 'correction' is applied to each band to improve clarity before the RGB is produced.



The True Color RGB Recipe

Color	Band [μm]	Min-Max; Gamma	Physically relates to...	Small contribution to pixel indicates...	Large contribution to pixel indicates...
Red	0.64	0-100% 1	Cloud optical thickness, vegetation, aerosols, smoke, water, sediment	Thin clouds	Thick clouds, snow
Green	0.56	0-100% 1		Thin clouds, dry vegetation	Thick clouds, green vegetation, snow
Blue	0.49	0-100% 1		Thin clouds	Thick clouds, water, snow

Impact on Operations

Aerosols: Ash, smoke, and dust are different colors (brown, blue-gray, tan). Color and structure of aerosols are distinct from white clouds and gray fog.



Is it Alive? Seasonal vegetation changes are tracked.

Water Quality: Distinguishes between deep, clean water (dark blue) and water with suspended matter, sediments, or algae blooms (cyan).

Photography: Similar to a color photograph, so it's easy for anyone to interpret and understand.

Limitations

Goes to Bed at Night:

The RGB is composed of reflectance channels that require incoming sunshine.



What's This White? Snow on land, snow on ice/sea ice, and clouds over ice/snow are not easily distinguished.

What's This Cloud? Classification often not possible.

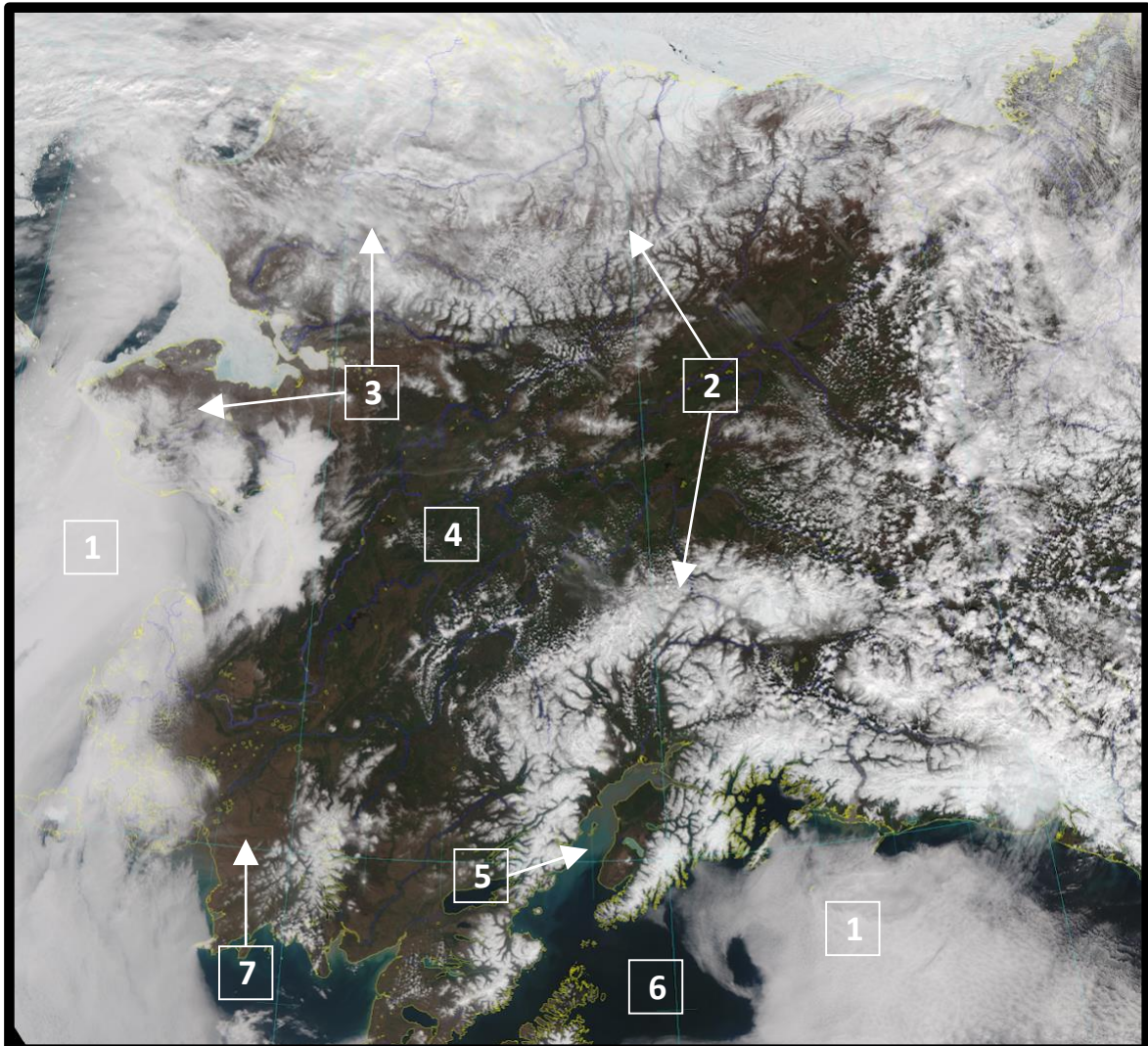
Resolution: Limited to M-Band resolution at 750-m.

Why Not Green? Not all vegetation is bright green; black spruce or muskegs appear very dark.

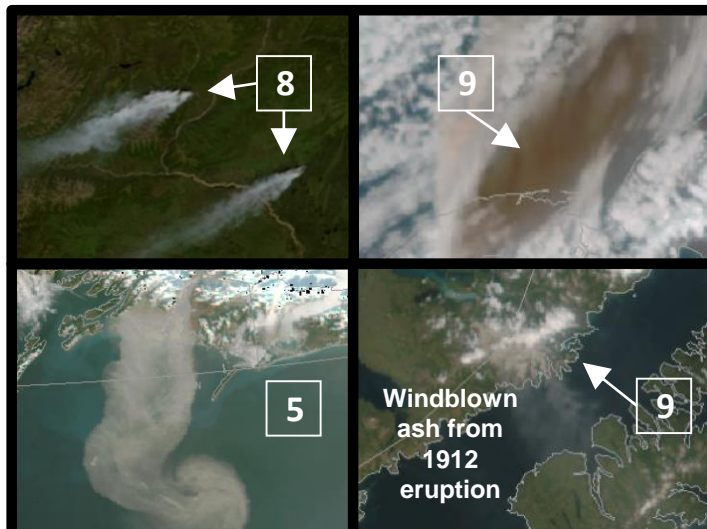
RGB Interpretation

- 1** Thick Clouds (white)
- 2** Snow (white)
- 3** Thin clouds over land or water (gray)
- 4** Thick / dense vegetation (dark green)
- 5** Water with suspended matter (greenish-gray)
- 6** Deep water without sediment (dark blue-black)
- 7** Sparse vegetation (olive-brown)
- 8** Smoke & Dust (gray with blue tone)
- 9** Volcanic Ash (brown or brownish-gray)

Note: colors may vary diurnally, seasonally, and latitudinally

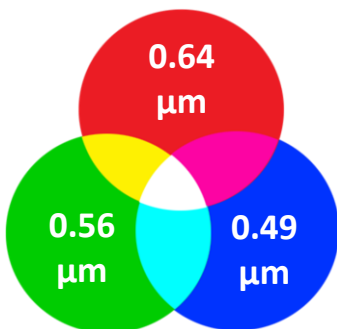


True Color RGB over southcentral Alaska from SNPP VIIRS at 21:30 UTC, 27 May 2022



(TL) 22:22 UTC, 2 Aug. 2021; (TR) 21:40 UTC, 28 Mar. 2016
(BL) 23:27 UTC, 15 Nov. 2017; (BR) 00:02 UTC, 1 Sep. 2015

RGB Color Guide



Resources

- NOAA
[JSTAR Mapper](#)
- GINA RGBs Over Alaska
[GINA Puffin Feeder](#)
- CIMSS True Color RGBs
[NOAA-20 VIIRS True Color](#)
[SNPP VIIRS True Color](#)
- CIRA Polar Slider
[CIRA GeoColor](#)
- CIRA VIIRS Blog
[True Color RGBs](#)

Hyperlinks not available when viewing material in AIR Tool