CIMSS Natural True Color
Quick Guide
GOES-R
NOAA ~ NASA
NASA
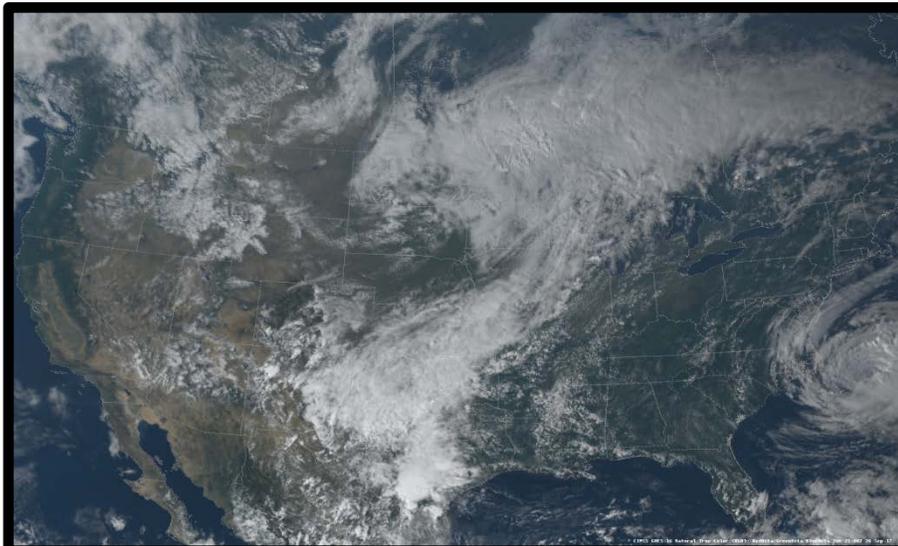NOAA

Why is CIMSS Natural True Color Important?

True Color Imagery gives an image that is approximately as you would see it from Outer Space. With ABI, the challenge of creating True Color arises from the the lack of a Green band. The CIMSS Natural True Color product, approximates the green by combining Blue (0.47 μm), Red (0.64 μm) and 'Veggie' (0.86 μm) bands. The use of the Veggie band is important because it mimics the enhanced reflectivity present in the Green band.
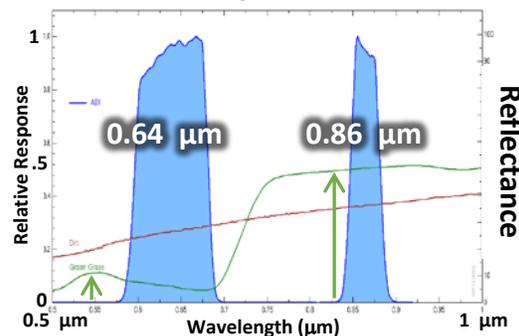

CIMSS Natural True Color from GOES-16 ABI at 2100 UTC, 26 September 2017

CIMSS Natural True Color RGB Recipe

Color	Band
Red	0.64
Green	0.45 * Red + 0.1*Veggie + 0.45*Blue
Blue	0.47

The Spectral Response Function at right shows reflectance varying above vegetated and bare Earth. The 0.86 can be used as green substitute as it has large reflectance over vegetation, similar to the small bump at 0.55

Impact on Operations

Primary Application: 'True Color' imagery has characteristics similar to what one might view from space. Thus what you see approximates what you'd see from outer space. If a phenomenon has a particular or distinctive color, it will have a notable presence in a True Color Image. Examples of this include snow cover, blowing dust, smoke and vegetation.

This product is generated from individual ABI bands only. Upstream pre-processing is not needed, nor are extra files. There is no direct correction for the effects of scattering.

Application: There are a variety of True Color products. For example, CIRA's GEOCOLOR can be found on-line.

Limitations

Daytime only : This product uses reflected solar light. At night-time, no image is created. In AWIPS, you can substitute in whichever image or product you care to.

There is no Green band on ABI: True Color Imagery cannot be made easily from ABI because ABI lacks a Green band. Unlike AHI on Himawari-8/-9 , which has a band at 0.51 μm in addition to Blue (0.47 μm) and Red (0.64 μm) bands, ABI has only the Blue and Red. Thus, a Green component has to be created. This is achieved using the Veggie (0.86 μm) band that has enhanced reflectance over vegetation compared to visible imagery. After the Green band is generated locally, all bands are stretched to increase contrast.
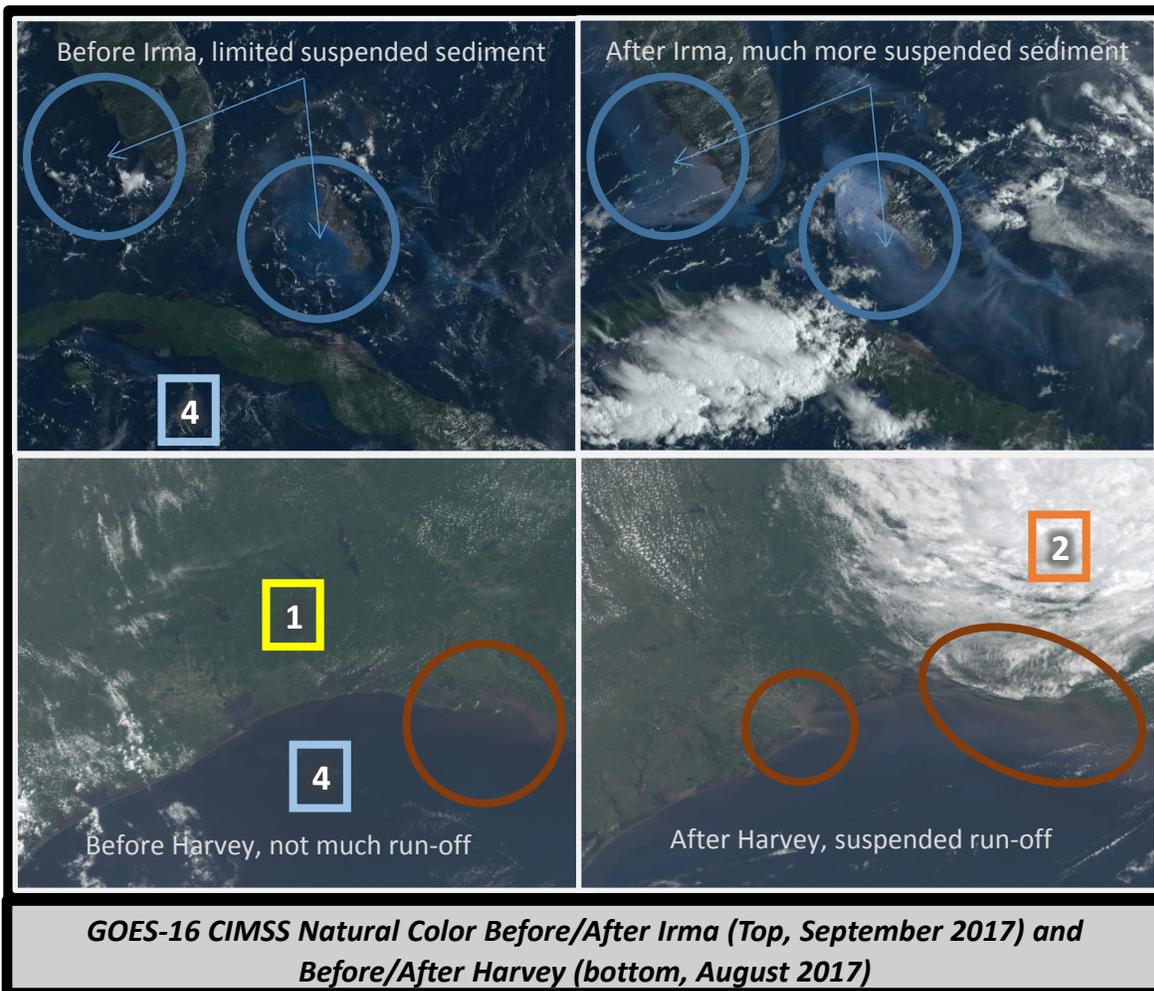
Contributor: Scott Lindstrom, Kaba Bah, Tim Schmit, Rick Kohrs CIMSS

CIMSS

RGB Interpretation

1 **Vegetated surfaces during the growing season will be green**

2 **Clouds are white** *(color)*

3 **Smoke can be a distinct brown color** (not shown)

4 **Ocean and water can show up as blue, or as aquamarine.**

Before Irma, limited suspended sediment

After Irma, much more suspended sediment

1

2

4

Before Harvey, not much run-off

After Harvey, suspended run-off

GOES-16 CIMSS Natural Color Before/After Irma (Top, September 2017) and Before/After Harvey (bottom, August 2017)

The CIMSS Natural True Color shows how surface features are readily apparent; snow and clouds are easily differentiated. Animation is helpful in distinguishing between snow and clouds too.

* CIMSS Natural Color (RGB): Red/Green/Blue Tue 16:07Z 07-Nov-17

Resources

CIMSS Natural True Color
Also Available Online

CIRA GeoColor
Available Online

VIIRS True Color Imagery
Available Online

MODIS True Color Imagery
Available Online

Hyperlinks do not work in AWIPS but they do in VLab