



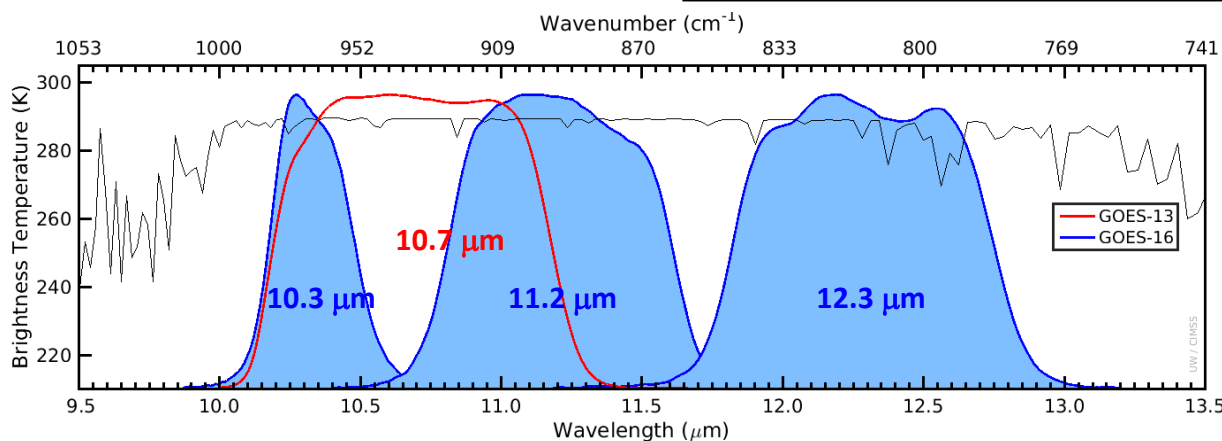
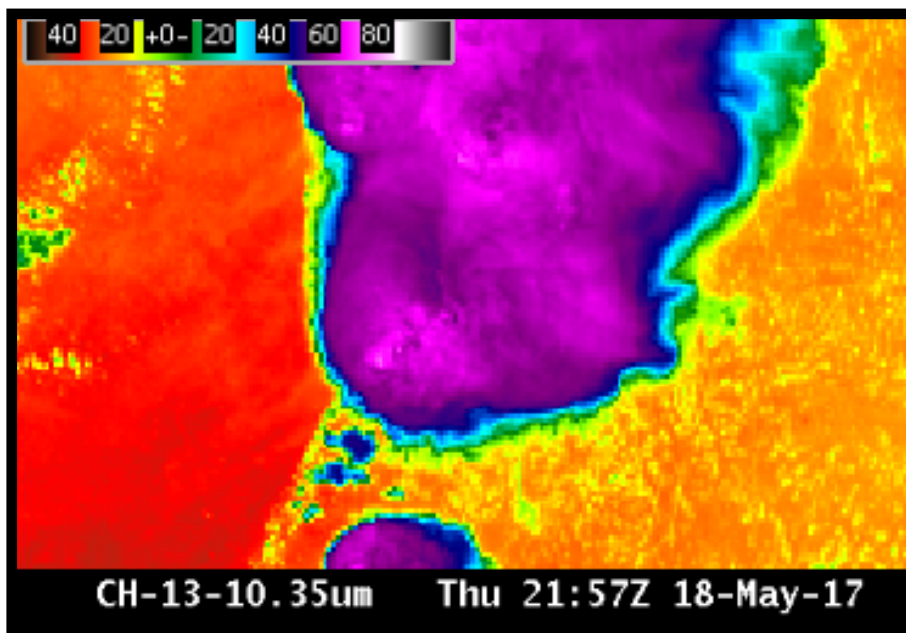
# ABI Band 13 (10.3 $\mu\text{m}$ )

## Quick Guide



### Why is “Clean longwave infrared window” band imagery important?

The 10.3  $\mu\text{m}$  “clean” infrared window band is less sensitive than other infrared window bands to water vapor absorption, and therefore improves atmospheric moisture corrections, aids in cloud and other atmospheric feature identification/classification, estimation of cloud-top brightness temperature and cloud particle size, and surface property characterization in derived products.

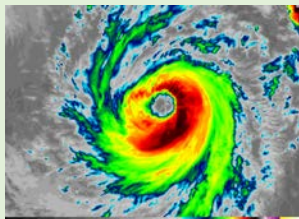


Left: U.S. Standard Atmosphere Earth-emitted temperatures and spectral responses for **ABI** and **GOES-13** Window Channels. The Legacy channel (**10.7  $\mu\text{m}$** ) covers parts of the **10.3  $\mu\text{m}$**  and **11.2  $\mu\text{m}$**  bands on **ABI** (Figure: Mat Gunshor, CIMSS)

### Impact on Operations

#### Primary Application

Continuous day/night cloud feature identification and classification, convective severe weather signatures, and hurricane intensity.



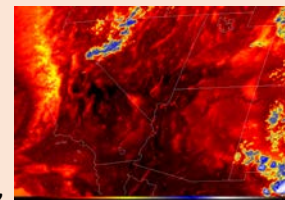
**Input into Baseline Products:** The 10.3  $\mu\text{m}$  imagery is used in the creation of legacy vertical temperature/moisture profiles, stability indices, total precipitable water, sea surface temperature, Hurricane Intensity Estimate (HIE), and snow cover products.

**Input into RGBs:** 10.3  $\mu\text{m}$  imagery is used in many RGB composites and band differences.

### Limitations

#### Infrared vs surface air temperature:

10.3  $\mu\text{m}$  brightness temperatures are not necessarily representative of 2-m shelter air temperatures, especially during the day, when the land can warm substantially compared to the near-surface air. Because there is some absorption of upwelling energy by atmospheric water vapor, the satellite-measured infrared brightness temperatures do not provide a truly accurate “skin temperature.” A Baseline Product is available that provides the Land Surface Temperature.





# ABI Band 13 (10.3 $\mu\text{m}$ )

## “Clean” Infrared Window

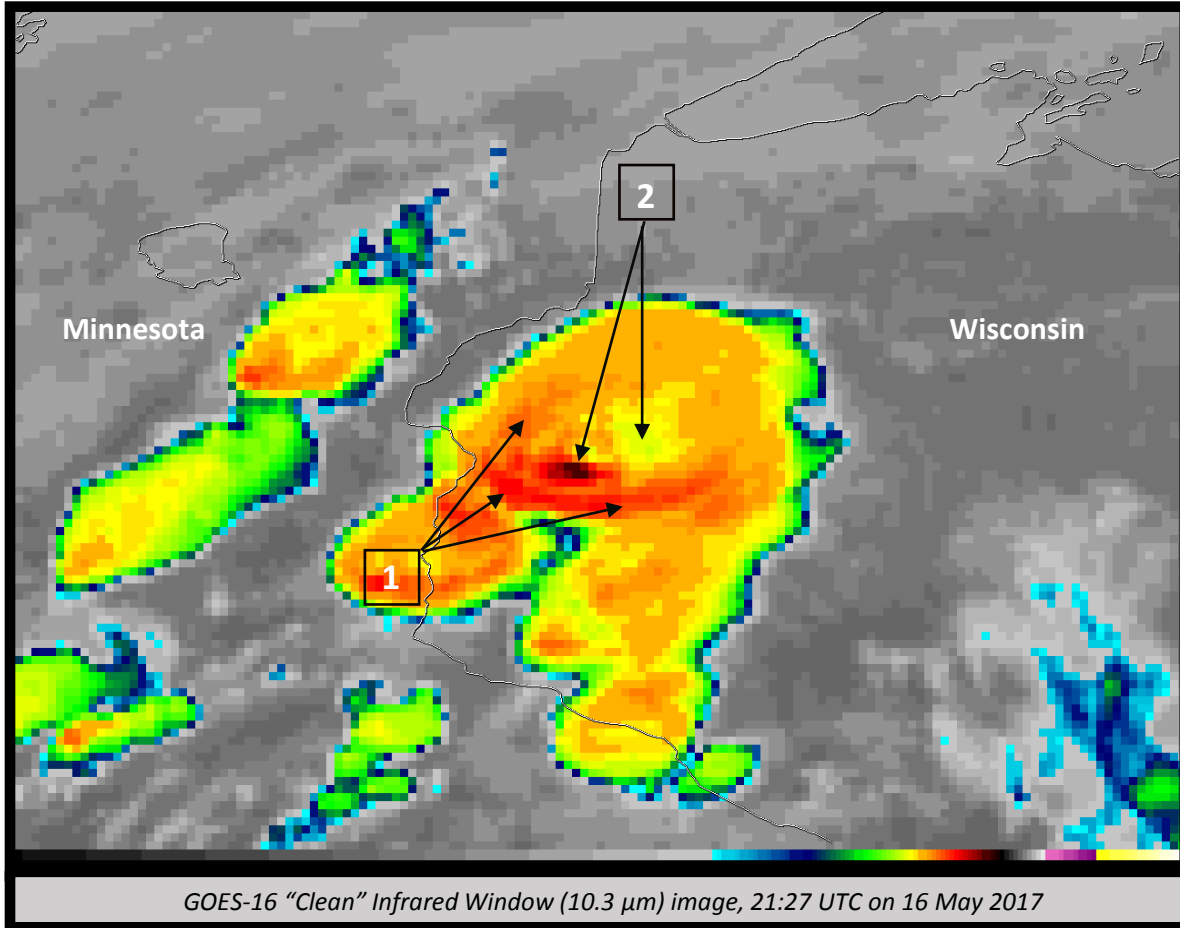


### Image Interpretation

**1** Enhanced-V signature (Reds) with Overshoot in Black

**2** Cold (Black) / Warm (Yellow to Green) Thermal Couplet

The “Enhanced-V” and/or “Thermal Couplet” infrared storm-top signatures are associated with thunderstorms that are or will presently (usually within 20-30 minutes) be producing either damaging winds, large hail, or tornadoes

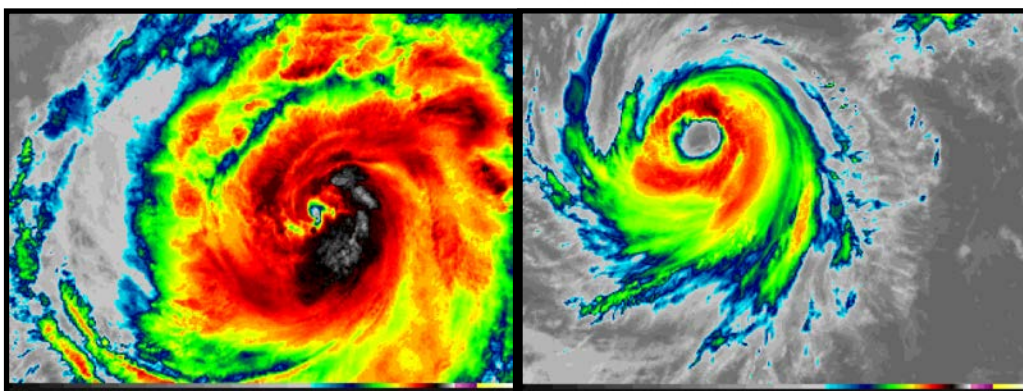


### Resources

BAMS Article  
[Schmit et al., 2017](#)

GOES-R.gov  
[ABI Band 13 Fact Sheet](#)

[Hyperlinks do not work in AWIPS but they do in VLab](#)



GOES-16 10.3  $\mu\text{m}$  “Clean” Infrared Window images of Hurricane Dora in the East Pacific Ocean, showing the development of a well-defined eye during the 12-hour period between 14 UTC on 26 June (left) and 02 UTC on 27 June 2017 (right). Images are the same scale, showing storm contraction during intensification. (Credit: CIMSS)