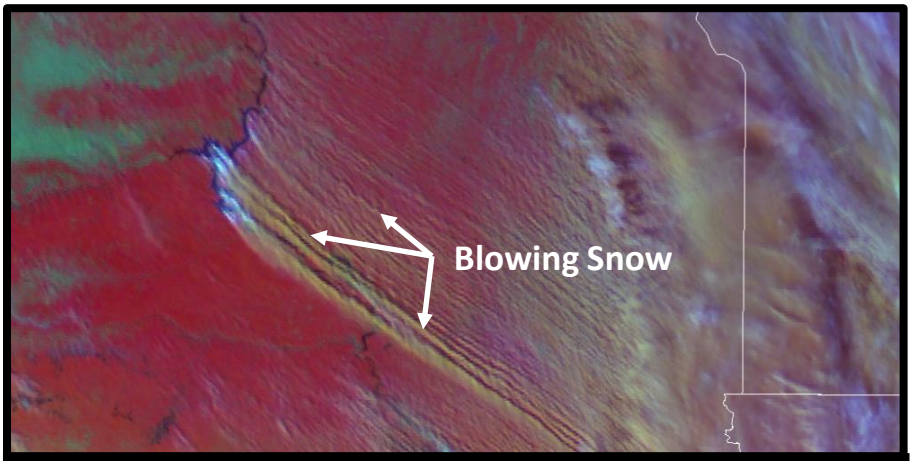
GOES Blowing Snow RGB

Quick Guide

Why is the GOES Blowing Snow RGB Important?

The GOES Blowing Snow RGB incorporates the visible, near-infrared, and fog difference imagery to indicate regions of blowing snow during clear sky / daytime conditions. The RGB highlights already accumulated snow that is picked up and blown by strong winds. Regions of blowing snow will often develop into plumes resembling Horizontal Convective Rolls (HCRs), which can significantly reduce visibility and poses a hazard to motorists and pilots.



GOES Blowing Snow RGB on 13 January 2024 over eastern South Dakota

GOES Blowing Snow RGB Recipe

Color	Band (µm)	Min to Max Gamma	Small contribution indicates…	Medium contribution indicates…	Large contribution indicates…
Red	0.64 (Ch. 2)	0 to 50 % 0.7	Water body, land surface	Liquid clouds	Glaciated clouds, snow/ice cover, blowing snow
Green	1.6 (Ch. 5)	0 to 20 % 1.0	Water body, snow/ice cover	Blowing snow, glaciated clouds	Land surface, liquid clouds
Blue	3.9 – 10.35 (Ch. 7 – Ch. 13)	0 to 30 °C 0.7	Water body, snow/ice cover, land surface	Blowing snow	Glaciated clouds, liquid clouds

Impact on Operations

Primary Applications

Blowing snow:

- **Color:** Depending on the solar illumination and plume thickness, blowing snow generally appears as shades of brown, orange and peach against a darker red background (snow cover).
- **Texture:** Deepening HCRs associated with blowing snow may cast small shadows, allowing for the appearance of a revealing texture in the imagery.
- **Trends:** The apparent linear movement of blowing snow will be seen across snow-covered surfaces in animated imagery.

Clouds and surface features: Clouds will appear as bright blue/cyan and purple, depending on the phase, thickness, and solar illumination. Bare ground will appear as bright green, snow cover as red, and water bodies as black.

Limitations

Daytime only: The RGB utilizes visible and near-infrared channels, which limits its use to monitoring blowing snowing during the day. In the winter months, the availability of the RGB is reduced due to shorter periods of daylight.

Cloud obscuration: Cloud cover can obscure areas of blowing snow.

Very localized blowing snow: GOES may have insufficient resolution for small-scale or shallow regions of blowing snow, such as in mountainous regions. The VIIRS Blowing Snow RGB offers improved spatial resolution.

Cloud appearance: Under high solar illumination, both ice and liquid clouds may appear as a similar saturated cyan. Under low solar illumination, both ice and liquid clouds may appear as a similar dark blue.

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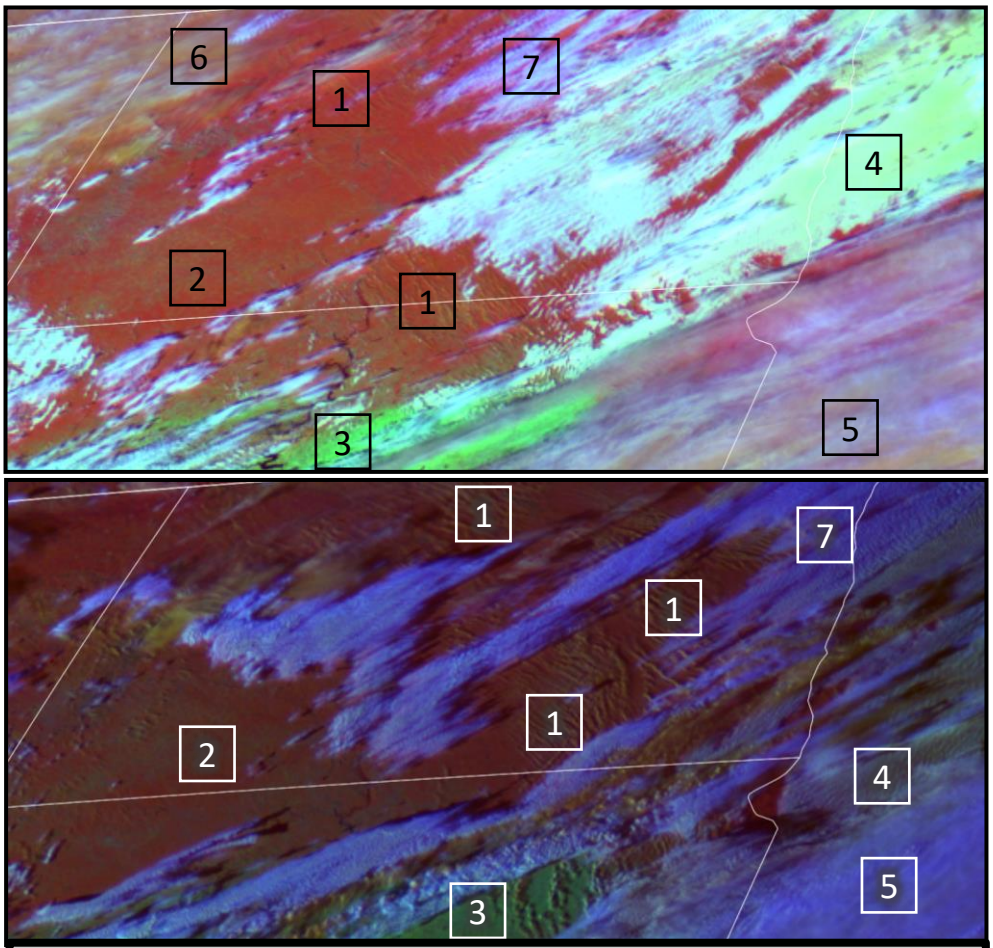


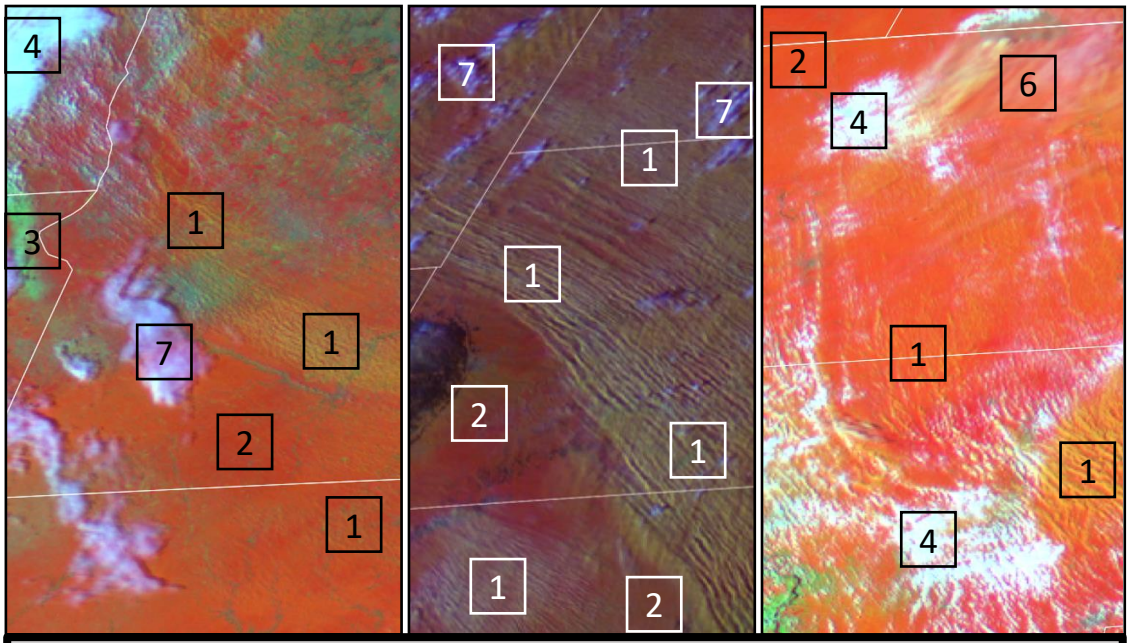
GOES Blowing Snow RGB over North Dakota at 1856 UTC (top; midday) and 2156 UTC (bottom; late day) on 8 January 2022

Interpretation

1	**Blowing Snow** *(peach /orange/brown)*
2	**Snow Cover** *(dark red)*
3	**Bare Ground** *(light green)*
4	**Liquid Cloud** *(light green/cyan)*
5	**Thick Ice Cloud** *(blue/violet/purple)*
6	**Thin Ice Cloud (over snow)** *(pink/violet)*
7	**Mixed Phase Cloud** *(light blue)*

Best Practices

- Animate to confirm linear plume movement across snow-covered surfaces.
- Look for texture in the imagery, especially near sunrise and sunset, when deepening HCRs cast shadows on snow cover.
- Use METARs, webcams, and surface reports for confirmation.



GOES Blowing Snow RGB at 1956 UTC on 5 February 2021 (left; midday), 2126 UTC on 22 December 2022 (middle; late day), and *2026 UTC on 17 March 2023 (right; midday late season)*

Resources

GOES Blowing Snow RGB available in:
SLIDER
AWIPS

Webinars:
Training Session
FDTD Webinar
SBC Webinar

Blog Posts:
January 2024
December 2022