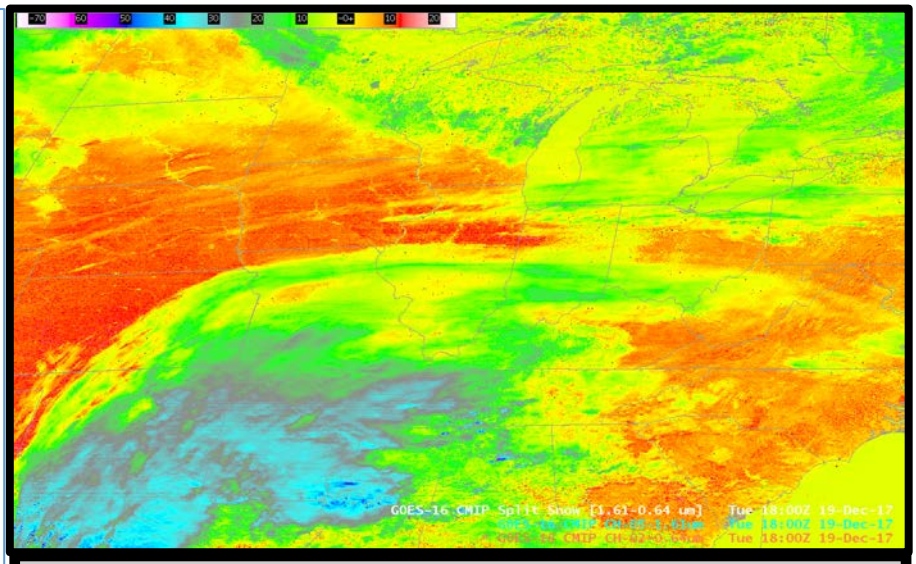
Split Snow (1.6 μm – 0.64 μm)

Quick Guide

Why is the "Split Snow" Reflectance Difference Important?

The Split Snow Reflectance Difference (1.6 μm – 0.64 μm) highlights regions where ice is present, either as a glaciated cloud or as snow/ice on the ground (or lofted blowing snow). It highlights all regions where there are significant differences between Visible (0.64 μm) and near-infrared (1.61 μm) reflectances.
That difference can arise from both cloud and surface properties; differences will decrease near sunset as the amount of reflected radiation decreases.



Split Snow Channel Difference from GOES-16 ABI, 1800 UTC 19 December 2017

Split Snow Sign	Feature	Which feature is more reflective?
Positive	• Cloud-free land	Land is more reflective at 1.61 μm
Negative	• Cloud-free Water • Glaciated Clouds • Snow Cover • Cloud Shadows	Water is more reflective at 0.64 μm Ice clouds are more reflective at 0.64 μm Snow is more reflective at 0.64 μm Shadows are darker at 1.61 μm

Impact on Operations

Primary Application: The Split Snow Brightness Temperature Difference (BTD) is used to differentiate glaciated cloud (or snow on the ground, or lofted blowing snow) from clouds made up of water droplets.

Application: Land is more reflective at 1.61 μm than in the visible bands, so the Split Snow Difference will have a strong positive signal over Land. Land/Water boundaries are apparent as well.

Application: Snow-covered lakes and open lakes will look very different because of different reflectances in 0.64 μm and 1.61 μm channels.

Limitations

Daytime only application: This Reflectance Difference field is a daytime only product.

Limitation: Very hot fires can emit significant amounts of 1.61 μm radiation, and the difference field will be affected.

Limitation: Consider that the difference field is constructed from bands of different spatial resolutions. This is especially important to remember if you compare the Split Snow Difference field to its component fields.

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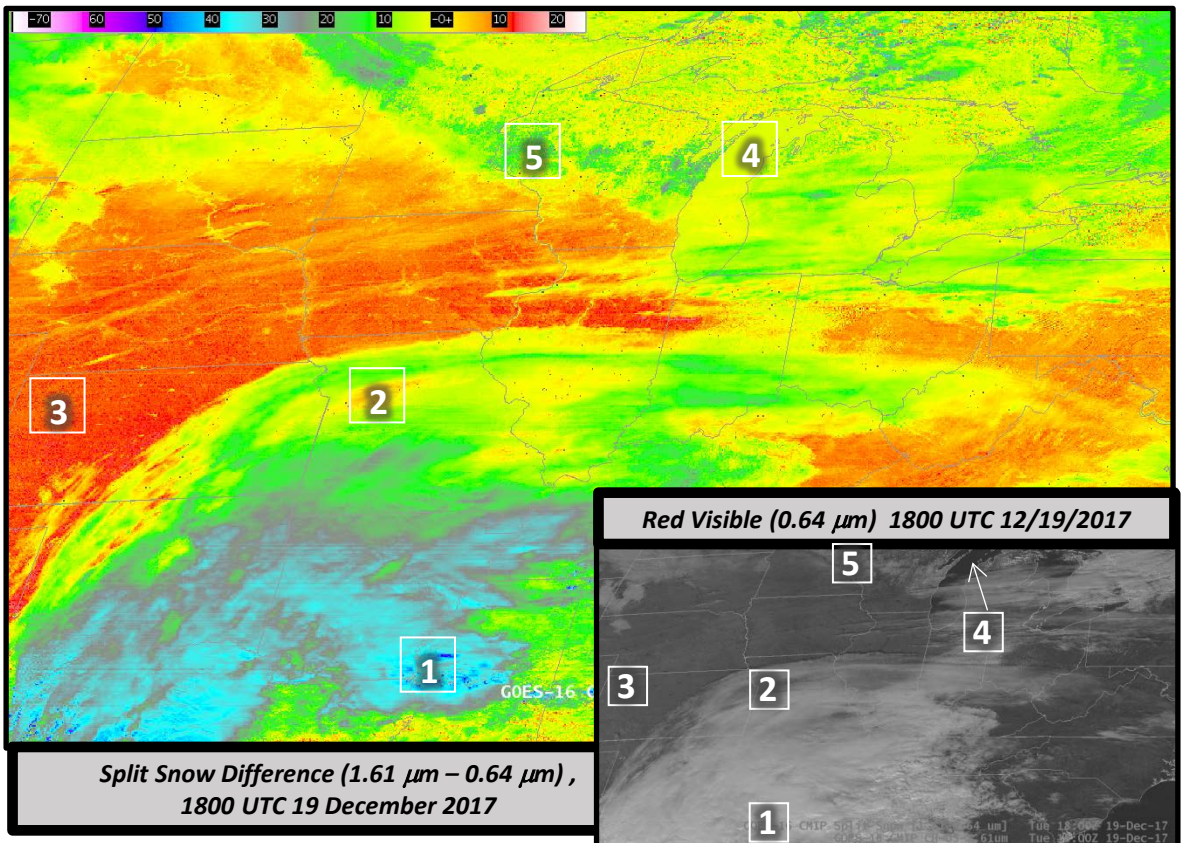
Image Interpretation

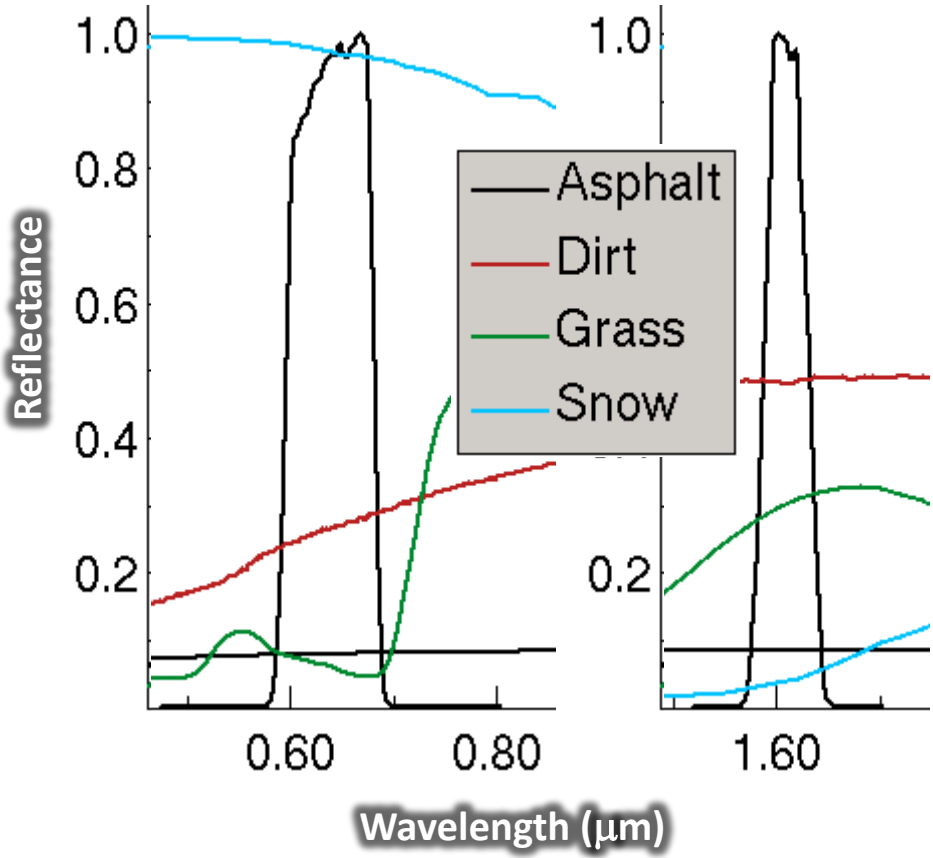
1. **Cirrus Clouds:** Large Negative values
2. **Water Clouds:** Small Negative Values
3. **Clear Land:** Large Positive Value
4. **Clear Water:** Near Zero
5. **Snow on Ground:** Negative Value

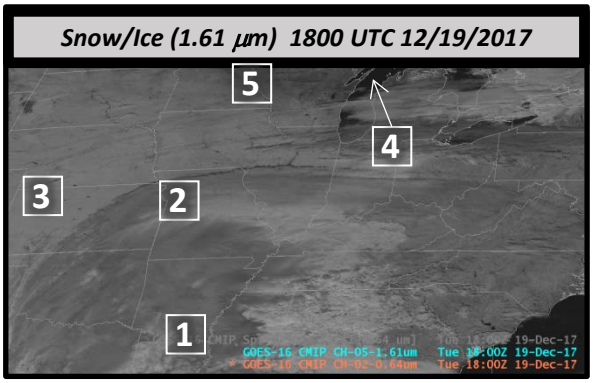


Split Snow Difference (1.61 μm – 0.64 μm) , 1800 UTC 19 December 2017

Red Visible (0.64 μm) 1800 UTC 12/19/2017

The figure below shows 0.64 μm and 1.61 μm reflectance over different surfaces





Snow/Ice (1.61 μm) 1800 UTC 12/19/2017

Resources

BAMS Article

Schmit et al.(2017).

Hyperlinks do not work in AWIPS but they do work in the VLab