



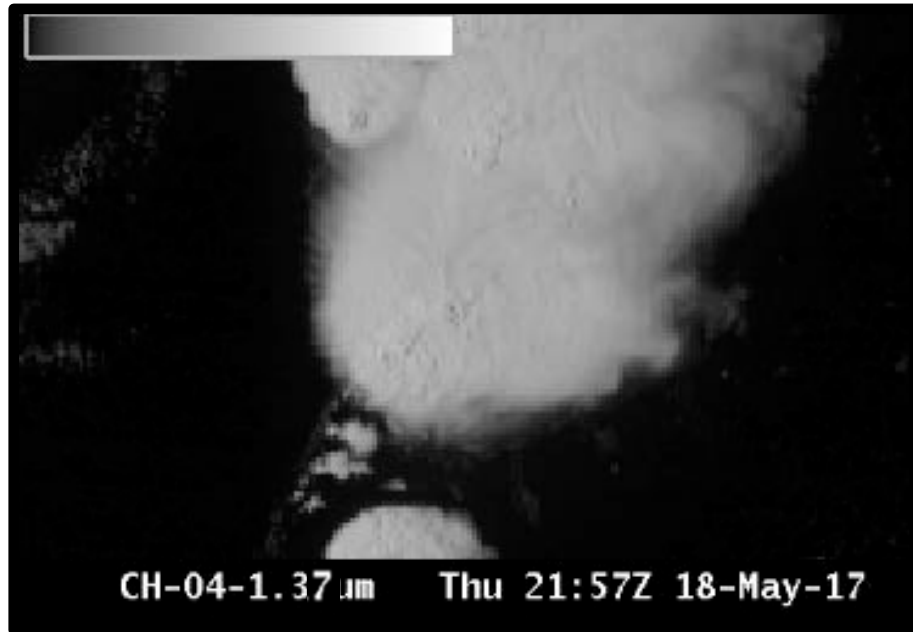
# ABI Band 4 (1.37 $\mu\text{m}$ )

## Quick Guide



### Why is the Cirrus Band Important?

The Cirrus Band (1.37  $\mu\text{m}$ ) is unique among the reflective bands on the ABI in that it occupies a region of very strong absorption by water vapor in the electromagnetic spectrum. It will detect very thin cirrus clouds during the day. In the image at right of a Supercell thunderstorm over Oklahoma, low-level cumulus clouds east of the system are only faintly visible because energy at 1.37  $\mu\text{m}$  has been absorbed as it moves through the moist atmosphere.

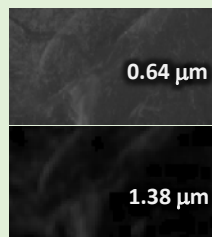


### ABI Channels in the near Infrared

ABI Band	Central Wavelength ( $\mu\text{m}$ )	Band Nickname	Type	Resolution
4	1.37 $\mu\text{m}$	Cirrus	Near-Infrared	2 km
5	1.61 $\mu\text{m}$	Snow/Ice	Near-Infrared	1km
6	2.24 $\mu\text{m}$	Cloud phase	Near-Infrared	2 km

### Impact on Operations

**Primary Application:** This channel detects high clouds during the day time. Very thin cirrus can be discerned.



**Application:** In a dry atmosphere, this band will detect highly reflective features, such as dust, or clouds, if there is limited water vapor above those features.

**Application:** The Cirrus Channel is an important part of the Daytime Cloud Mask computation because of its ability at detecting very thin cirrus.

### Limitations

**Daytime only application:** The 1.37  $\mu\text{m}$  band detects reflected visible solar radiation.



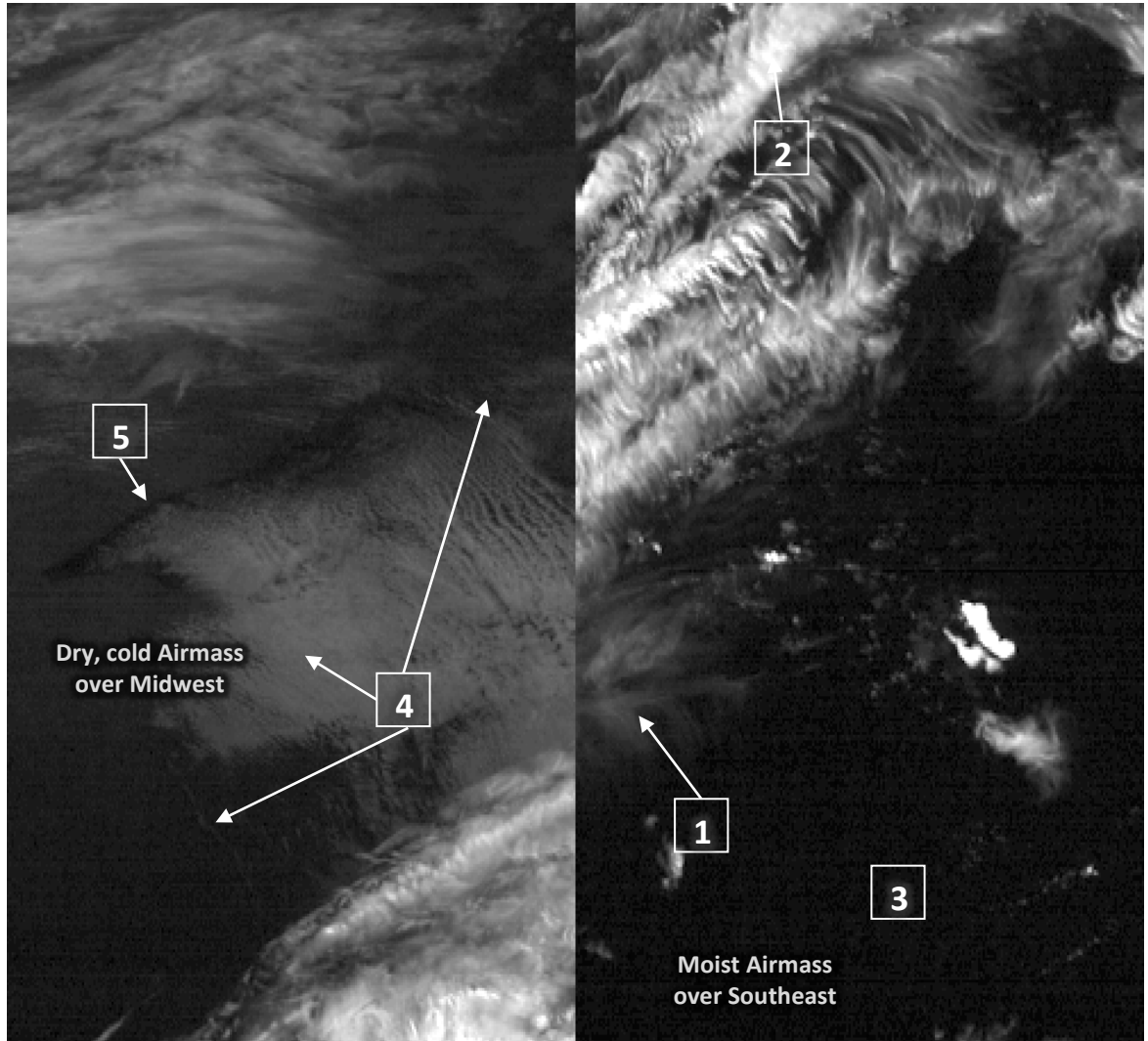
**Limitation:** Theory suggests that about 12 mm of Total Precipitable Water is sufficient to absorb most of the solar radiation at 1.37  $\mu\text{m}$ . Variable amounts of moisture in the atmosphere (and where in the vertical that moisture exists) influence how far down the satellite can see at this wavelength.

The Cirrus Channel is one of two near-infrared channels on ABI with 2-km resolution.

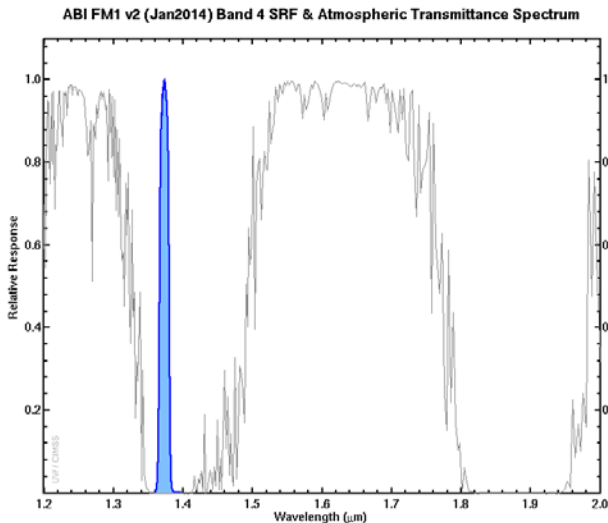


### Image Interpretation

- 1** Thin cirrus easily detectable
- 2** Thick cirrus shows up easily
- 3** Low Clouds are not detected in a moist atmosphere
- 4** Low clouds visible in dry atmosphere
- 5** Coastlines visible in dry air



GOES-16 'Cirrus Channel' (1.37  $\mu\text{m}$ ) at 21:06 UTC, 08 February 2017



The Spectral Response Function for the Cirrus Channel is shown in blue at left. The grey line shows transmittance through the atmosphere. The Cirrus Channel is in a region where strong absorption (by water vapor) occurs. (Figure courtesy Mat Gunshor, CIMSS)

### Resources

[BAMS Article](#)  
[Schmit et al. 2017](#)  
[GOES-R.GOV](#)  
[Band 4 Fact Sheet](#)

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