



Ice Concentration

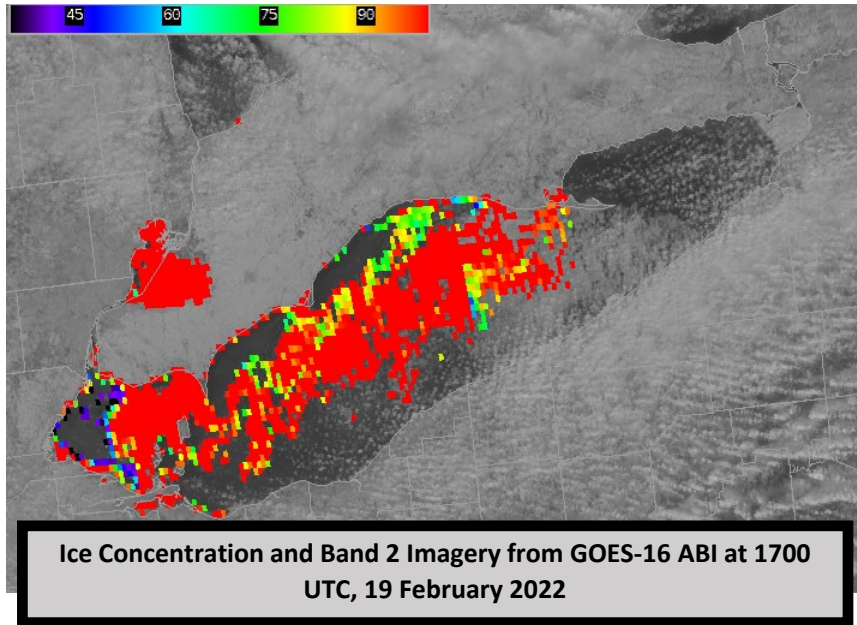
Quick Guide



Why is Ice Concentration important?

The GOES-R Ice Concentration product returns a percentage coverage for each ABI pixel. In the example at right, portions of Lake Erie and all of Lake St. Clair show abundant ice. Regions with no signal are either ice free, or cloudy. It is very important to use this product in concert with observations of clouds – as with the Band 2 imagery at right – to help discern between ice-free regions and cloudy regions that have no ice detection

Ice Detection in the day relies on relationships between reflectance channels. Ice Detection at night relies on cold surface temperatures over water.



Ice Concentration and Band 2 Imagery from GOES-16 ABI at 1700 UTC, 19 February 2022

ABI Band	Wavelength (μm)	Band Product Used
2	0.64	Reflectance (Daytime)
3	0.86	Reflectance (Daytime)
5	1.61	Reflectance (Daytime)
14	11.2	Brightness Temperature (Daytime/Nighttime)
15	12.3	Brightness Temperature (Daytime/Nighttime)

Useful Links

Advanced Theoretical Basis Document: [\(Link\)](#)

CIMSS Satellite Blog Post on Ice Products [\(Link\)](#)

Operational Information

Ice Concentration: Provides information on ice characteristics in regions that are clear or probably clear (as determined by the Cloud Mask).

How often? This full-disk product is produced every hour. Thus, it can be used over the course of a day (for example) to map out ice coverage in partly cloudy conditions if the clouds are moving.

Resolution: Full pixel-sized resolution: 2-km resolution at nadir. At a 60-degree zenith angle, resolution is around 5 km.

Clouds: Best practice is to use this product in tandem with cloud information so you can distinguish between no ice and no ice signal because of clouds.

Limitations

Clear Sky only Product: The coverage is computed only in regions where clouds are not present (in particular: where the GOES-R Cloud Mask shows 'Clear' or 'Probably Clear' conditions)

Sun Glint: If sun glint (or cloud shadow) is present, the product is not computed.

How far from satellite nadir: Quantitative values are produced at local zenith angle < 67 degrees.

Hourly Cadence: The product is hourly; this may be insufficient if you are monitoring ice movement under windy conditions.

