



# Ice Surface Temperature

## Quick Guide

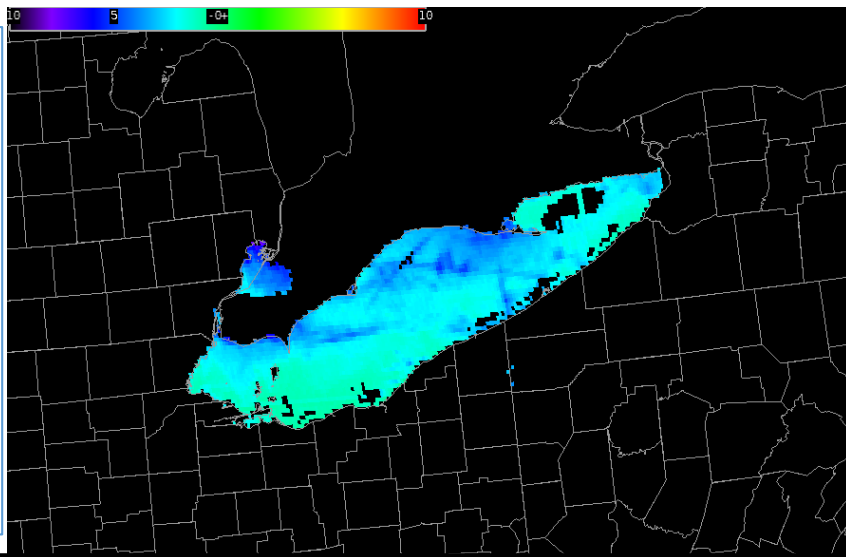


### Why is Ice Surface Temperature important?

The GOES-R Ice Surface Temperature (IST) product shows the surface temperature of detected ice. The product is computed using the equation below:

$$T_s = a + bT_{11} + c(T_{11} - T_{12}) + d [(T_{11} - T_{12})(\sec \theta - 1)]$$

$\theta$  is the local zenith angle, and the coefficients  $a$ ,  $b$ ,  $c$ , and  $d$  are functions of  $T_{11}$ . See the ATBD (linked at right) for more details.



Ice Surface Temperature from GOES-16 ABI at 0900 UTC, 21 February 2022

ABI Band	Wavelength ( $\mu\text{m}$ )	Band Product Used
14	11.2	Brightness Temperature, <i>i.e.</i> , $T_{11}$
15	12.3	Brightness Temperature, <i>i.e.</i> , $T_{12}$

### Useful Links

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

CIMSS Satellite Blog Post on all ice Products [Link](#)

### Operational Information

**Ice Surface Temperature:** Provides information on ice temperatures, which can be used to infer if melting will be imminent.

**How often?** This full-disk product is produced every hour. Thus, it can be used over the course of a day (for example) to view temperatures 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)

**Temperature accuracy and range:** Temperature values are accurate to within  $1^\circ\text{C}$ , and detected values range from  $-40^\circ\text{C}$  to  $2^\circ\text{C}$ . Positive values are produced to indicate possible melting conditions.

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

