

UAH GOES-R CI Quick Guide by NASA-SPoRT

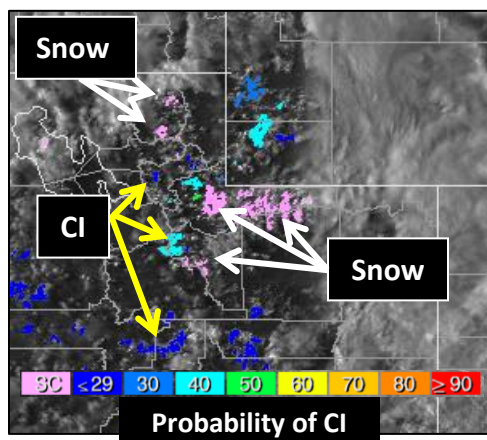
What is it? Why is it important?

GOES-R Convective Initiation (CI), developed by UAH, is a satellite-based nowcasting (0-2hr) product that fuses geostationary satellite data and numerical weather prediction model output to produce a **probability of CI**, where CI is defined as a 35+ dbz radar echo. *It can provide leadtime ahead of ground-based radar and can provide insight into the environment by indicating trends in cloud growth.* Cloud objects are first identified by type, and growing cumulus clouds are tracked over consecutive satellite scans.

The GOES data used include visible and infrared channels, which are used for cloud typing and determining cloud properties, such as growth, glaciation, height, and temporal trends in these properties. Model data used currently comes from the RAP model, and is used to determine environmental information such as CAPE, CIN, lifted index, and several other parameters.

How does the snow identification work?

The NOAA NWS Operational Hydrologic Remote Sensing Center SNOw Data Assimilation System (SNODAS) is used to help identify locations of ground snow cover. Snow covered ground can be misidentified by the cloud typing portion of the algorithm as a cumulus cloud, so it is now given its own identifying color (pink) in the display.



What is the resolution of GOES-R CI? On what domains is it available?

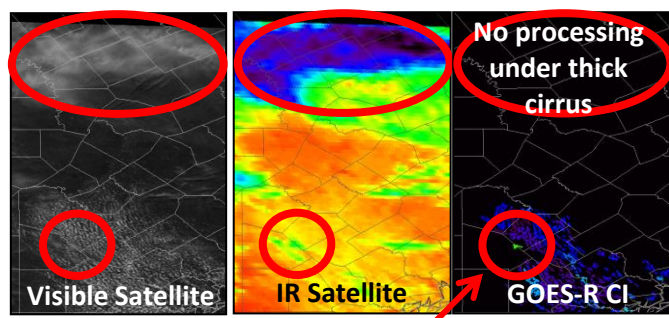
The resolution of GOES-R CI is 1 km during daytime operations and 4 km during the night on current GOES. This enhanced daytime resolution is due to the cloud typing algorithm's use of 1 km visible data, which allows for more defined cloud objects during the day. At night, the cloud typing algorithm's dependence on 4 km IR data alone for object identification results in noticeably blockier cloud objects. This product is available in both the GOES-East and GOES-West domains.

When is it available?

This product is available about every 15 minutes during normal GOES-East operations, 30 minutes for full disk scans, and every 5 minutes during rapid scan modes. On GOES-West, the product is available between 7 and 15 minutes for normal scans, 30 minutes for full disk scans, and 2.5 to 10 minutes for rapid scan operations.

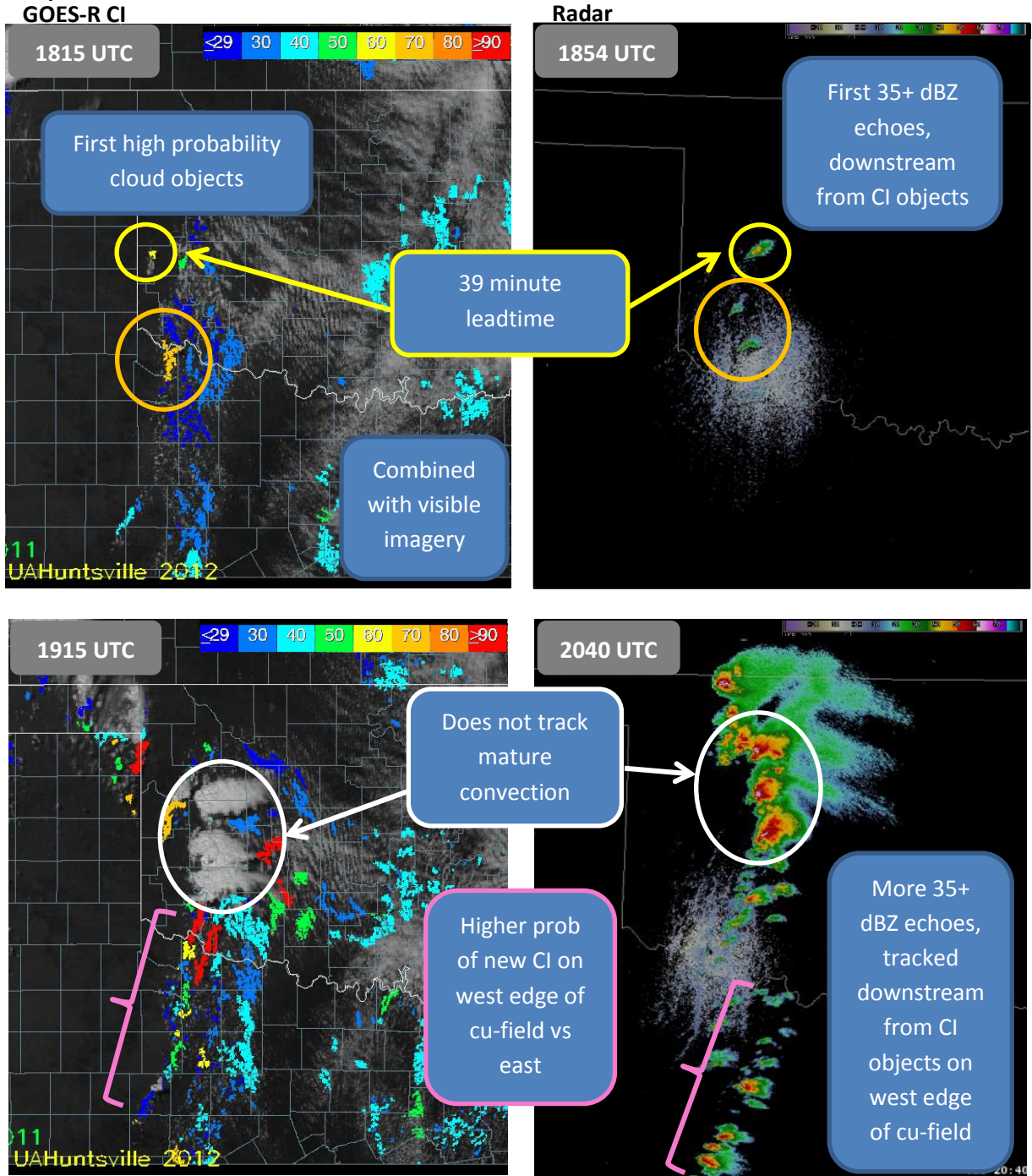
What should I look out for when using this product?

- No CI is identified under thick cirrus or objects optically touching thick cirrus
- CI is identified under thin cirrus
- Rarely, a thick cirrus cloud will be given an erroneously high CI value because it was missed by the cloud masking algorithm
- Rapid changes in object's color can indicate environment (e.g., capping, locations of instability, etc.)



Anomalously high probability of CI assigned to missed cirrus

Example



Resources

More information about GOES-R CI, developed by the University of Alabama in Huntsville, can be found at www.nsstc.uah.edu/uahci. More information about NASA-SPoRT products and training can be found at <http://weather.msfc.nasa.gov/sport>.