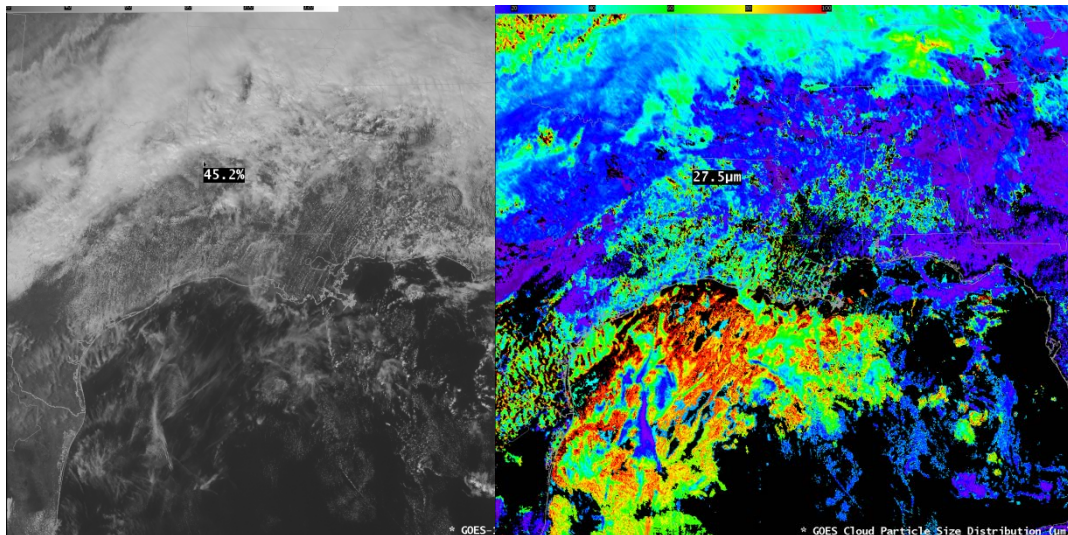# Cloud Particle Size Distribution

Quick Guide

Why is the Cloud Particle Size Distribution important?

The GOES-R Cloud Particle Size Distribution provides valuable information regarding the radiative properties of clouds. It is a fundamental product to determine liquid and ice water content of clouds, and impacts numerical weather and climate prediction by characterizing the effect of clouds on the Earth's radiation budget given the scattering and absorption properties based on the cloud particle size. In addition, inclusion of the cloud particle size is important for the derivation of precipitation estimates.

Visible Imagery (left; for comparison) and Cloud Particle Size (right) from GOES-16 ABI at 1902 UTC, 28 February 2018

Cloud Particle Size Distribution Product Characteristics

ABI Bands Used for Product Creation	AWIPS Image Interpretation	Cooperative Product Usage
2 (0.64 µm; visible) 6 (2.2 µm; near infrared)	Identifies effective particle size per pixel responsible for the given radiance measured and an increasing value with time can denote cloud growth	Cloud particle size with cloud optical depth (cloud thickness), can be combined to estimate cloud water content in the form of Liquid or Ice Water Path, depending on cloud phase

Product Limitations

- The current algorithm used to create the AWIPS product requires visible band information; therefore, the product is daytime-only in use. Nighttime products may be available in future releases.
- This product is used to deduce cloud properties, it is only available where clouds are present. A cloud mask and phase is used; therefore, missed or falsely identified clouds will impact performance. Multi-layer cloud fields can reduce product effectiveness.
- Snow-covered surfaces can affect accuracy of the product.
- This is a daytime-only product; satellite pixels with a solar zenith angle of ≤65° are considered for cloud particle size calculation.

Resources

ATBD Documentation

[Cloud Particle Size Distribution](#)

Hyperlinks will not work in AWIPS, but they will work in VLab

Contributor: Lee Cronce, CIMSS

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