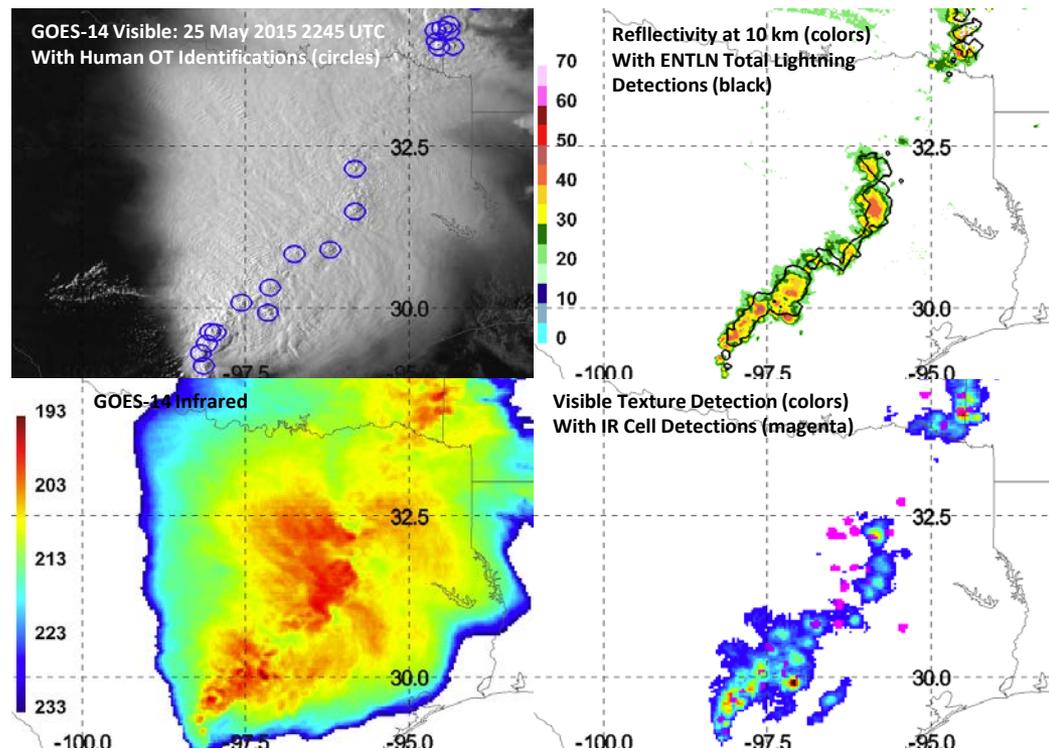# Advancement of Satellite-Detected Overshooting Top (OT) Decision Support Products
Probabilistic Multispectral OT Detection Algorithm Development

- A variety of hazardous weather conditions are concentrated near overshooting cloud tops (OTs)

- A "Version 1" satellite-based OT detection method has been evaluated by the GOES-R Proving Ground and NOAA SPC with positive outcomes, but some areas for improvement have been identified

- This GOES-R3 project supported development of a "Version 2" probabilistic multispectral pattern recognition-based OT detection algorithm to improve the product and address user feedback

- Texture in the visible channel and prominent cold regions in the IR are accurately identified within 1 minute over a CONUS domain, representing significant advancements over Version 1

- The product identified up to 57% of hail and wind events and 67% of tornadic storms in April and July 2011. Strong correlations between OT detection and convectively-induced aircraft engine icing conditions have also been found

- The new Version 2 OT algorithm is being used to generate a 20-year OT climatology over much of the Western Hemisphere (supported by NASA) to enable a wide variety of weather, climate, and private industry applications

Imagery and OT Detection Product Example

GOES-14 Visible: 25 May 2015 2245 UTC With Human OT Identifications (circles)

Reflectivity at 10 km (colors) With ENTLN Total Lightning Detections (black)

GOES-14 Infrared

Visible Texture Detection (colors) With IR Cell Detections (magenta)

View Animation Here: https://youtu.be/IFLoRy55EwY

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