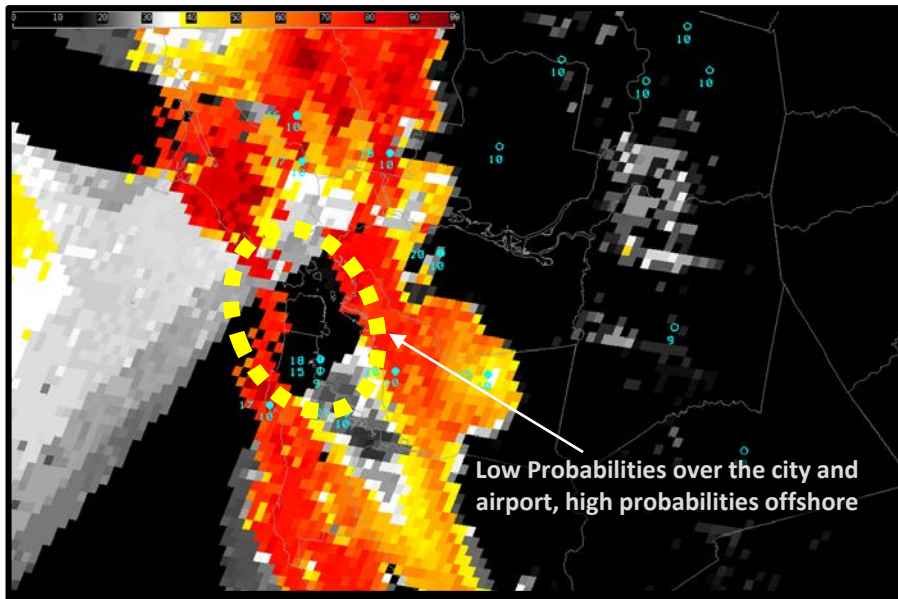# GOES-R IFR Probability

Quick Guide

Why is the GOES-R IFR Probability Important?

Knowledge of IFR conditions is a critical piece of information for transportation forecasts. GOES-R IFR Probability fields combine cloud information from GOES-16/GOES-17 and low-level saturation information from the Rapid Refresh model. How likely are IFR conditions given these two parameters?

Low Probabilities over the city and airport, high probabilities offshore

GOES-17 IFR Probability Field over San Francisco, 1106 UTC, 14 February 2020

IFR Probability fuses together satellite information and Rapid Refresh information

Data	How is it used?
Satellite	Are clouds present? Do they contain liquid water droplets?
Rapid Refresh Model	Is there saturation in the lowest 1000 feet of the model?

Benefits

Application: GOES-R IFR Probability gives a useful signal when higher clouds mask the satellite view of low clouds.

Application: GOES-R IFR Probability fields screen out regions of elevated stratus to highlight areas where the cloud ceiling likely meets IFR criteria.

Application: IFR Probability fields give a useful signal 24/7, including through sunrise. Compare this product to the Night Fog Brightness Temperature Difference, or the Night Time Microphysics RGB.

Cautions

Ice Fog: This product is challenged to detect ice fogs at very cold temperatures.

Model data are updated hourly: The model portion of this product updates hourly. Animations sometimes show obvious temporal changes on the hour that are related to updated model information.

Model resolution : Fog at very small horizontal resolution (in a narrow river valley, for example) may not be predicted by the Rapid Refresh Model nor observed by satellite
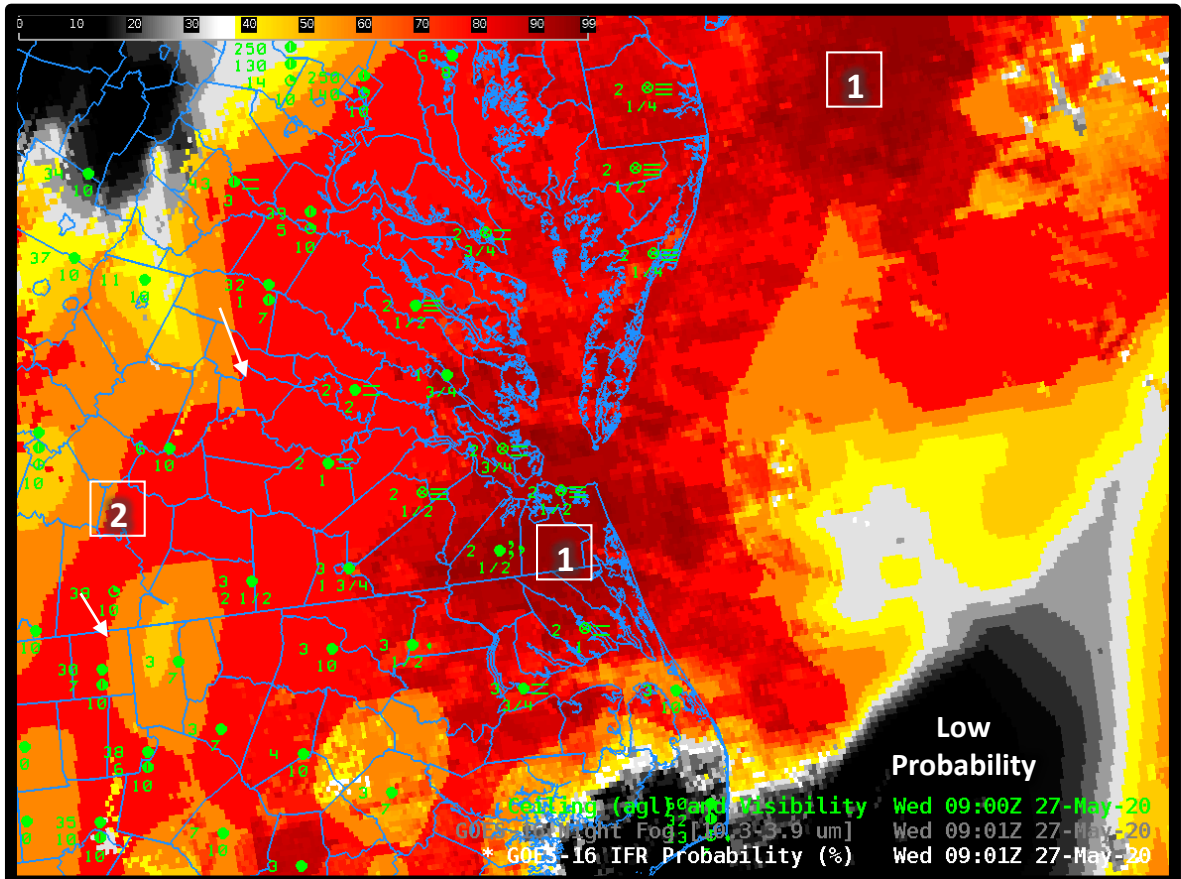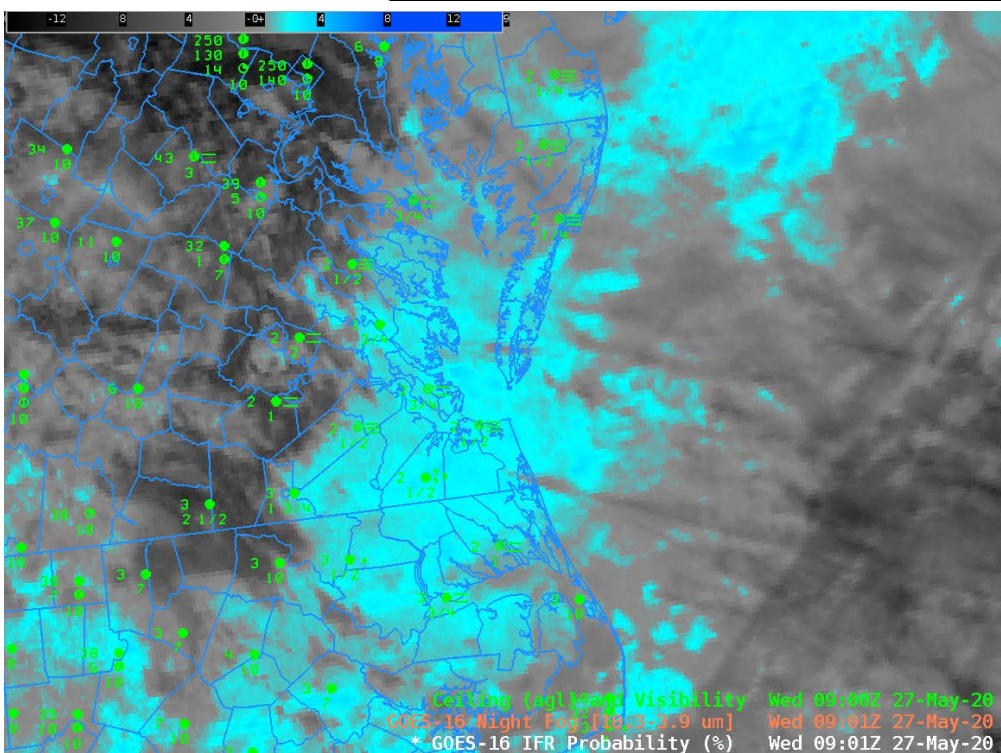
Contributor: Scott Lindstrom, CIMSS

Interpretation

1 **Highest IFR Probabilities occur where satellite and model agree. Note the pixelated look to the field where satellite data are used**

2 **In regions where multiple cloud layers prevent a satellite view of low clouds, model data can yield a fairly high IFR Probability – and the field will be relatively flat because model variability is small.**

Low Probability

Ceiling (agl) and Visibility   Wed 09:00Z 27-May-20
GOES-16 Night Fog [10.3-3.9 um]   Wed 09:01Z 27-May-20
* GOES-16 IFR Probability (%)   Wed 09:01Z 27-May-20

GOES-16 IFR Probability 0901 UTC 27 May 2020

The GOES-R "Night Fog" Brightness Temperature Difference field, at left, shows a much smaller (in area) fog signal (cyan in the color enhancement), several stations with IFR conditions or Fog are not under the cyan color

Ceiling (agl) and Visibility   Wed 09:00Z 27-May-20
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* GOES-16 IFR Probability (%)   Wed 09:01Z 27-May-20

GOES-16 Night Fog BTD 0901 UTC 27 May 2020

Resources

Fused Fog Blog with Many Examples

Algorithm Theoretical Basis Document

Hyperlinks will not work when viewing material in AIR Tool