

**Estimated Flight Regulation Category:** This field, with values of 1-4, each value corresponding to a different color, assigns a category for the expected flight conditions over the model grid cell. The four categories are:

Category 1:VFR (Visual Flight Rules),  
Category 2: MVFR (Marginal Visual Flight Rules),  
Category 3:IFR (Instrument Flight Rules) and  
Category 4:LIFR (Low Instrument Flight Rules).

In determining the appropriate category, the model microphysical, relative humidity and temperature fields are utilized to determine an estimate of the cloud ceiling and near surface visibility.

Computations for near-surface visibility are set up to use all four microphysical fields available with the Reisner scheme. Extinction coefficients are derived from parameterizations put forth by Kunkel (1984) for cloud water, Rutledge and Hobbs (1983) for cloud ice and Stallabrass (1985) for cloud snow, and utilize the mass concentration of each hydrometeor species. The extinction coefficients are computed for each species and then summed to provide a total coefficient which is then used in a logarithmic expression relating visibility to the extinction coefficient and a contrast threshold following Kunkel (1984).

Ceiling is computed using similar expressions for extinction coefficients as for near surface visibility but for multiple levels upward from the surface. The logarithmic expression noted above is integrated upward from the surface until an upward beam of visible light is extinguished to 2% of its original intensity. This is likely to be a conservative estimate of ceiling.

Ceiling thresholds are 3000 ft and above for VFR, 1000-3000 ft for MVFR, 500-1000 ft for IFR and less than 500 ft for LIFR. Visibility thresholds are > 5 miles for VFR, 3-5 miles for MVFR, 1-3 miles for IFR and less than 1 mile for LIFR.

The algorithm is currently configured to err on the conservative side. Either a ceiling or visibility falling into a higher category results in the grid cell being assigned to that category.

This product is displayed on this website *for research evaluation purposes only and is to be considered extremely experimental.*