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## Meteorological Models

Models are essential to DCOTSS for meteorological forecasting, flight planning, and post-flight data analysis. DCOTSS scientists will use operational and research models, in combination with radar and satellite observations, to provide the environmental context for all ER-2 flight missions.

Models that will be used during DCOTSS include

NASA [Goddard Earth Observing System \(GEOS\)](#) model

12 km horizontal resolution; 3-hourly forecast output to 10 days; initialized 00 and 12 UTC; deterministic; meteorology and chemistry

[model output](#)

NOAA [High Resolution Ensemble Forecast \(HREF\)](#) model

3 km horizontal resolution; 36-hour forecasts initialized every 6 hours; 8-member ensemble (WRF-NMM, WRF-ARW, NAM)

[model output](#)

NOAA [High Resolution Rapid Refresh \(HRRR\)](#) model

3-km horizontal resolution, 36-hour forecast initialized every hour; assimilates radar data; deterministic forecast (WRF-ARW)

[model output](#)

NOAA [High Resolution Rapid Refresh Ensemble \(HRRRE\)](#) model

3-km horizontal resolution (eastern CONUS only), 36-hour forecast initialized every 12 hours; assimilates radar data; deterministic forecast, 9-member ensemble (WRF-ARW)

[model output](#)

NOAA [Global Forecast System \(GFS\)](#) model

28 km horizontal resolution, 16-day forecasts initialized every 6 hours

[model output](#)

NOAA [Rapid Refresh with Chemistry \(RAP-CHEM\)](#) model

13 km horizontal resolution; 48-hour forecast; 00 UTC daily; deterministic (WRF-CHEM); focused on air quality

[model output](#)

Texas A&M Three-Dimensional Trajectory Model (TRAJ3D) model

regional or global Lagrangian particle trajectories using analyzed or forecast winds; flexible vertical coordinate; 4-D multilinear interpolation of velocity components; arbitrary time step size