



Air Resources Laboratory

Real-time Environmental Applications and Display sYstem (READY)

Providing a Unique Web-based System for Running HYSPLIT & Displaying Meteorological Data

The Air Resources Laboratory (ARL) provides meteorological services and related research to NOAA and other Federal agencies in order to predict the consequences of atmospheric releases of potentially harmful materials. The Real-time Environmental Applications and Display sYstem (READY) is a web-based system, developed by ARL, for accessing and displaying meteorological data and running trajectory and dispersion model products. The system brings together dispersion models, graphical display programs and textual forecast programs generated over many years at ARL into a form that is easy to use.

READY was originally developed for the personal computer but is now available to anyone with a web browser. Users can access many of the same products available to ARL researchers for analyzing forecast and archived meteorological data. Users can also run ARL's atmospheric transport and dispersion model (HYSPLIT) and then use meteorological display programs to analyze the results— all within READY. This makes READY a unique web-based system.

READY Tools and Products

HYSPLIT Model
NOAA HYSPLIT MODEL PARTICLE CROSS-SECTIONS
PARTICLE POSITIONS AT 18 00 04 Nov 15
LAYER (m) < 2000 < 4000 < 6000 < 8000 < 10000
HEIGHT (m) 0 2000 4000 6000 8000 10000
NUMBER OF PARTICLES PLOTTED: 80000
JOB ID: 2002 0107001761 Nov 3 14:03 UTC 2015
Release: 10, 40, 20000, 100, 87, 207400, High 0 to 10000
Release Quality: Poor, Start: 15 11 02 01Z, Duration: 24 hrs, 0 min
Particle-Arriving Integration Period: 14 hrs and 0 min
City: Copenhagen, 55.0 12.133, ARL Release: New York, 4000
Release: 0000, 2 Nov 2015, 14M, 12 km
Produced by user: gary.nich

Volcanic Ash
NOAA HYSPLIT MODEL
Concentration (µg/m³) averaged between 0 m and 500 m
Integrated from 1400 12 Jul to 1500 12 Jul 15 (UTC)
Clear Release started at 0600 11 Jul 15 (UTC)

Current & Forecast Meteorology
HRRR Reflectivity
01R HRRR Issue: 061500Z20151008 102 km 05 00Z 2015
Reflectivity (dBZ)

Wildfire Smoke Forecasting
ARL/NEEDS EXPERIMENTAL SMOKE FORECAST
Air Concentration (µg/m³) Layer Average, 0 m and 5000 m
Integrated from 1400 12 Jul to 1500 12 Jul 15 (UTC)
PM2.5 Release started at 0600 11 Jul 15 (UTC)
Maximum: 100 µg/m³
Minimum: 0.00 µg/m³
Minimum: 1.0E-07 µg/m³
NIMS METEOROLOGICAL DATA

Air Quality Products
DATEM Tracer Verification
DATEM Tracer Verification

Emergency Assistance

Archived Meteorology
HRRRP METEOROLOGICAL DATA
Latitude: 42.37 Longitude: -71.03
DATEM Tracer Verification

Since its development in 1997, thousands of users (largely atmospheric scientists) have generated products from READY for their day-to-day needs and research projects. READY also provides a portal for users to become familiar with the HYSPLIT model and in the interpretation of its results. In 2017, a new record was set with more than 1.2 million HYSPLIT simulations being performed by READY users.

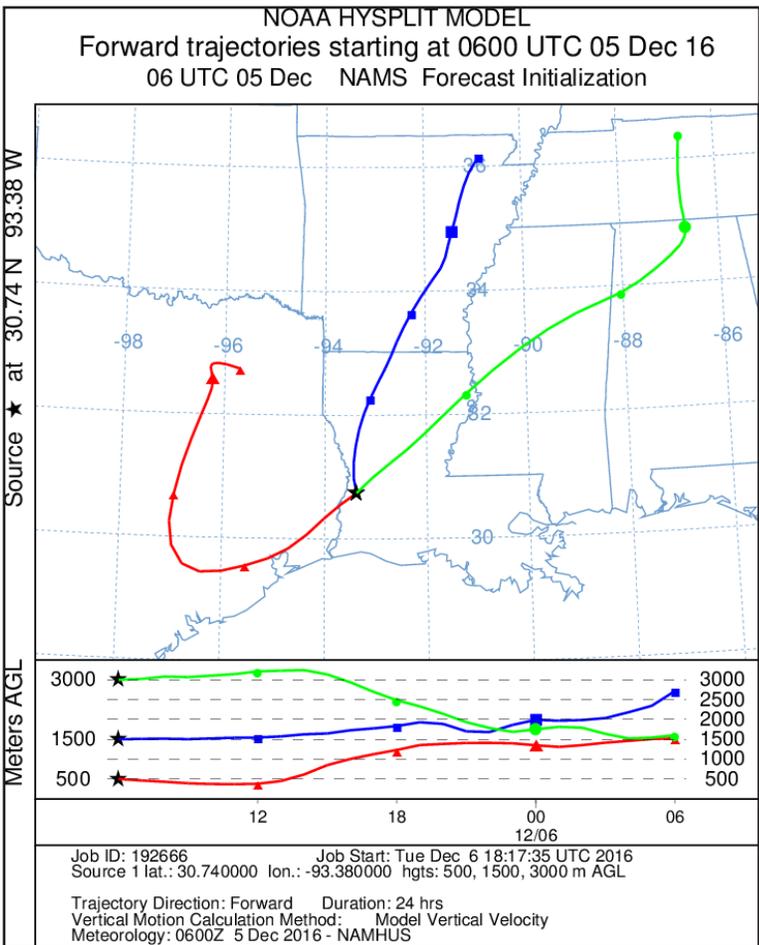
Typical user applications of READY range from atmospheric emergencies associated with the release of hazardous pollutants, to routine poor air quality events, to various climatological studies. Having access to tools such as those within READY provides the user with quick access to meteorological forecasts interpolated to the location of interest.

The primary application of READY is running HYSPLIT. Users can produce air parcel trajectories that follow the movement of the wind patterns defined by the meteorological models run operationally by NOAA's National Centers for Environmental Prediction (NCEP). Meteorological data (forecast and archived) are available to HYSPLIT on global and regional scale grids. Users can also model the dispersal of pollutants with HYSPLIT by tracking thousands of particles across the domain, as opposed to one or two particles for trajectories. In this way, pollutant plumes can be produced from such sources as wildfires, chemical or radiological releases, or volcanic eruptions.

Another application of READY is for users to be able to produce meteorological products for any location in the world based on the meteorological data produced by NCEP. These products include meteorograms (time series of meteorological variables), vertical profiles, wind roses, time-series of atmospheric stability, user-selectable two-dimensional maps, and forecast animations of meteorological data over North America and Europe. Although READY meteorological programs were initially designed just to support HYSPLIT, many users now use the meteorological display programs independent of HYSPLIT for a wide range of applications.

READY also provides links to other programs produced by ARL and other NOAA groups that offer additional support to air quality forecasters, meteorologists, emergency managers, and National Weather Service Forecast Offices.

Finally, READY can be used as a diagnostic tool to provide air quality managers with information on possible pollutant source regions that may have contributed to a bad air quality event.



Three HYSPLIT forward trajectories of air parcels starting at 500 m (red), 1500 m (blue), and 3000 m (green) above ground level from a location in Louisiana. Symbols along the trajectory are plotted every 6 hours.

READY
www.ready.noaa.gov

HYSPLIT Model
www.arl.noaa.gov/hysplit/hysplit/

ARL Transport & Dispersion Research
www.arl.noaa.gov/research/dispersion/dispersion/

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