

# Guide for using HYSPLIT for back trajectory calculations

For further information, see:

- HYSPLIT Tutorial and User's Guide on HYSPLIT website
- Gebhart, Schichtel, and Barna: Directional Biases in Back Trajectories Caused by Model and Input Data, *J. Air & Waste Manage. Assoc.*, 55:1649-1662, 2005.

Go to <https://ready.arl.noaa.gov/HYSPLIT.php>

Run HYSPLIT Trajectory Model → Compute *archive* trajectories

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Select Ensemble as “Type of Trajectory”

## Type of Trajectory(ies)

<b>Number of Trajectory Starting Locations</b>	<input checked="" type="radio"/> 1      Note: By choosing just one source location, more options for selecting the location will be presented on the next page, such as choosing by latitude/longitude, by WMO ID, or by plant location. Multiple source locations limit the input to just latitude/longitude positions. This option is ignored for trajectory ensemble and frequency.
	<input type="radio"/> 2
	<input type="radio"/> 3
<b>Type of Trajectory</b>	<input type="radio"/> Normal <input type="radio"/> Matrix <input checked="" type="radio"/> Ensemble <input type="radio"/> Frequency

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For meteorological data, choose ~~GDAS 0.5~~ degree, global. Enter Lat/Lon.

## Meteorology & Starting Location(s)

### Ensemble Calculation

<b>Meteorology:</b>	<a href="#">GDAS (0.5 degree, global, 09/2007-present)</a>	<a href="#">More info ▶</a>				
<b>Source Location</b> (enter using <u>one</u> of the following methods):						
<input type="checkbox"/> <b>Open Map Display</b>						
<input checked="" type="radio"/> Decimal Degrees Latitude: 46.548300		N	Deg.	Longitude: 7.980600	E	Longitude: 7.980600
<input type="radio"/> DDD/MM/SS Latitude:			Min.		Sec.	
<input type="radio"/> City (Country or State: name: lat: lon):						
<input type="radio"/> Airport or WMO ID (i.e., dca):		<a href="#">ID Lookup</a>				

[Reset Form](#) [Next>>](#)

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Choose meteorology file corresponding to the ending date of the desired backtrajectory.

## Meteorology File

**Meteorology:** Archived GDAS0p5  
**Source Location:** Lat: 46.548300 Lon: 7.980600

### Choose an archived meteorological file

Archive File: 20170325\_gdas0p5

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### Parameters:

- Trajectory direction: **Backward**
- Vertical Motion: **Model vertical velocity**
- Start time (UTC): Note that time is UTC and not local time
- Total run time (hours): No more than 120 hours (5 days)
- Maximum number of trajectories: default is 24
- Level 1 height: 500 meters AGL. Here you can try values between 100 and 2000 meters AGL (see Gebhart et al. 2005).

## Model Run Details

[Request trajectory](#)

The archived data file (GDAS0p5) has data beginning at 03/25/17 0000 UTC.

### Model Parameters

<b>Trajectory direction:</b>	<input type="radio"/> Forward	<input checked="" type="radio"/> Backward <span style="color: red;">(Change the default start time!)</span>	<a href="#">More info ▶</a>		
<b>Vertical Motion:</b>	<input checked="" type="radio"/> Model vertical velocity				
<input type="radio"/> Isobaric					
<input type="radio"/> Isentropic					
<b>Start time (UTC):</b> Current time: 13:26	year 17	month 03	day 25	hour 15	<a href="#">More info ▶</a>
<b>Total run time (hours):</b>	72				<a href="#">More info ▶</a>
<b>Start a new trajectory every:</b>	0	hrs	Maximum number of trajectories:	12	<a href="#">More info ▶</a>
<b>Start 1 latitude (degrees):</b>	46.548300				<a href="#">More info ▶</a>
<b>Start 1 longitude (degrees):</b>	7.980600				<a href="#">More info ▶</a>
<b>Start 2 latitude (degrees):</b>					<a href="#">More info ▶</a>
<b>Start 2 longitude (degrees):</b>					<a href="#">More info ▶</a>
<b>Start 3 latitude (degrees):</b>					<a href="#">More info ▶</a>
<b>Start 3 longitude (degrees):</b>					<a href="#">More info ▶</a>
<b>Level 1 height:</b>	500 <input checked="" type="radio"/> meters AGL <input type="radio"/> meters AMSL				<a href="#">More info ▶</a>
<b>Level 2 height:</b>	0				
<b>Level 3 height:</b>	0				

Select desired form of graphical output.

# HYSPPLIT Trajectory Model Results

## HYSPPLIT MODEL RESULTS FOR JOB NUMBER 176867

Model  
Status:

Last Changed Rev: 947  
HYSPPLIT4 - Initialization  
Model submitted on Thu May 17 09:12:55 EDT 2018

<b>RESULTS</b>	Click on text link to view images in a new window.	
	<a href="#">GIF Plots</a>	<a href="#">PDF Plots</a>
<a href="#">Trajectories</a>	<a href="#">.gif</a>	<a href="#">.pdf</a>

## NOAA HYSPLIT MODEL Backward trajectories ending at 1500 UTC 25 Mar 17 GFSG Meteorological Data

