

# HYSPLIT for Exceptional Events Tool User Guide

## Overview

The HYSPLIT for Exceptional Events Tool provides 5-day backward air parcel trajectories from all active monitors for ozone, fine particulate matter (PM<sub>2.5</sub>), particles with diameters less than 10 microns (PM<sub>10</sub>), and sulfur dioxide (SO<sub>2</sub>), covering 2023 through the most current design value year. This guide instructs users on how to query and interact with trajectory data. For a more in-depth overview and configuration of HYSPLIT runs, please refer to the HYSPLIT for Exceptional Events Tool Overview document.

## Master Data Table

The master data table includes the fields described below. This table is accessible via download after the user queries a trajectory. Each row represents a single point along the trajectories path.

**Table 1. HYSPLIT master data table fields.**

Field	Description
aqsid	AQS Site ID
start_date_lst	Starting date of the back trajectory. This date represents the arrival date of the air parcel to the site location.
start_hour_lst	Starting hour of the back trajectory. This hour represents the arrival time of the air parcel to the site location at the starting date above.
point_date_utc	Specific date (UTC) of the trajectory point.
point_hour_utc	Specific hour (UTC) of the trajectory point.
hours_back	Hours back from the initial start time.
latitude	Latitude of the trajectory point.
longitude	Longitude of the trajectory point.
ht_agl	Terrain height meters above sea level.
mix_ht	Mixing layer height meters above sea level.
terr_ht	Terrain height meters above sea level.
smoke_intensity_heavy	Indicates if the trajectory point intersected a smoke polygon classified as heavy.
smoke_intensity_medium	Indicates if the trajectory point intersected a smoke polygon classified as medium.
state_name	State of the AQS Site.
county_name	County of the AQS Site.
epa_region	EPA region of the AQS Site.

## Query a Trajectory

Begin by selecting the state, county, and AQS Site ID.

State:

Illinois

County:

Champaign

Site ID:

170190007

Select the date of occurrence and initiate the query by clicking the **Query Trajectory** button. Any time the the location or date is changed, the **Query Trajectory** button must be clicked to reflect new changes.

Date:

2023-06-15

 Query  
Trajectory

## Download Data

Once the query is complete the map will render the trajectory data, which can be downloaded by clicking the **Download Trajectory** button (see data dictionary below).

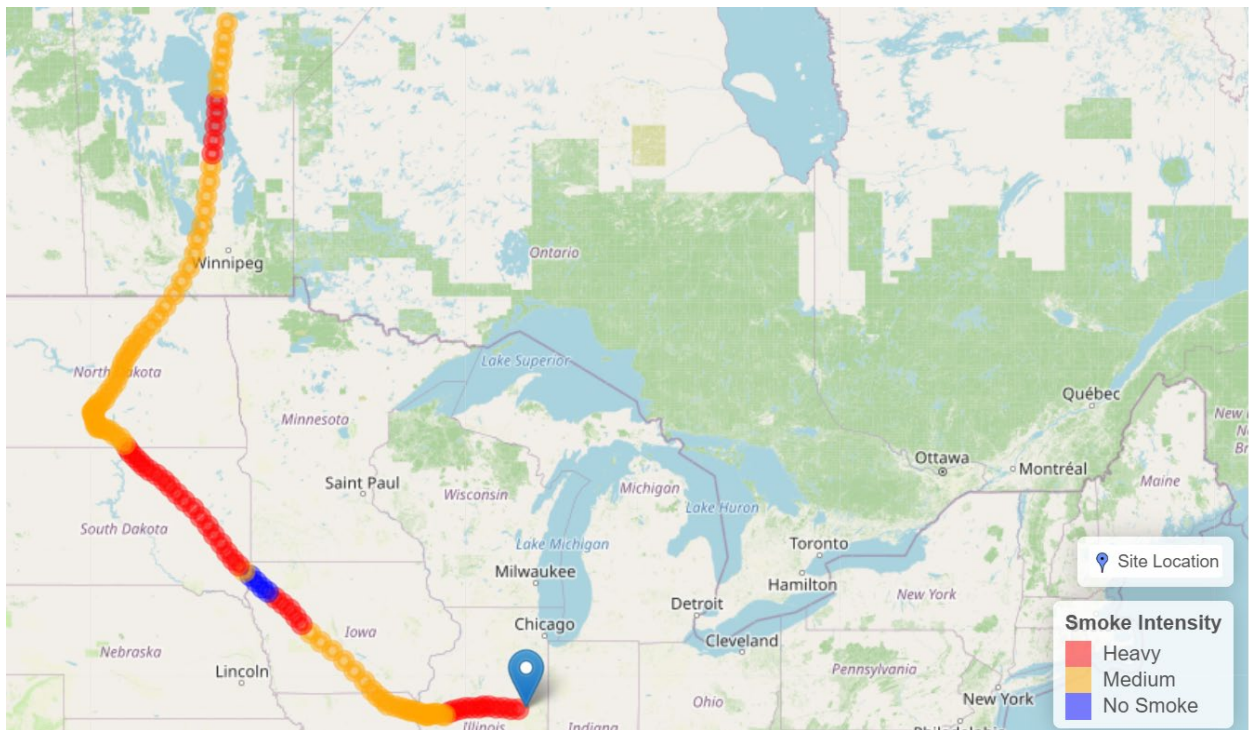
 Download  
Trajectory

## Trajectory Visualization

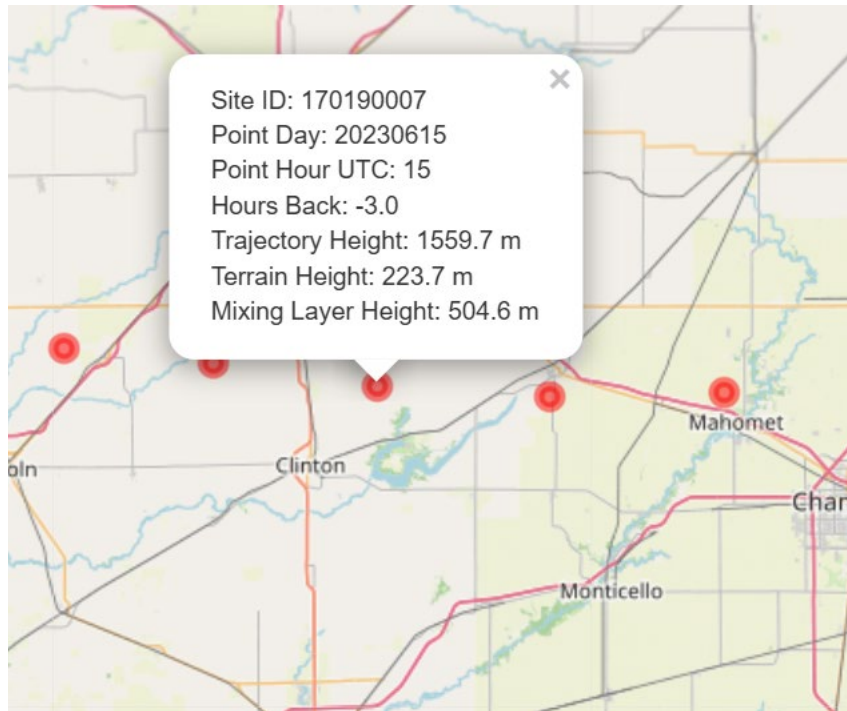
The **Trajectory Local Time of Arrival** drop down menu allows the user to select the local hour at which the air parcel arrived at the site location. These hours are reported in Zulu time for 0000, 0600, 1200, 1800.

Trajectory Local Time of Arrival:

Below is an image of an entire trajectory. As shown in the legend, the colors of the points along the trajectory path indicate if the point location has intercepted with a Hazardous Mapping System (HMS) smoke polygon.



By zooming in and selecting a single point, a pop-up of the trajectory point's meta data appears. This information was derived during the HYSPLIT backward trajectory run and is included in the downloaded table.



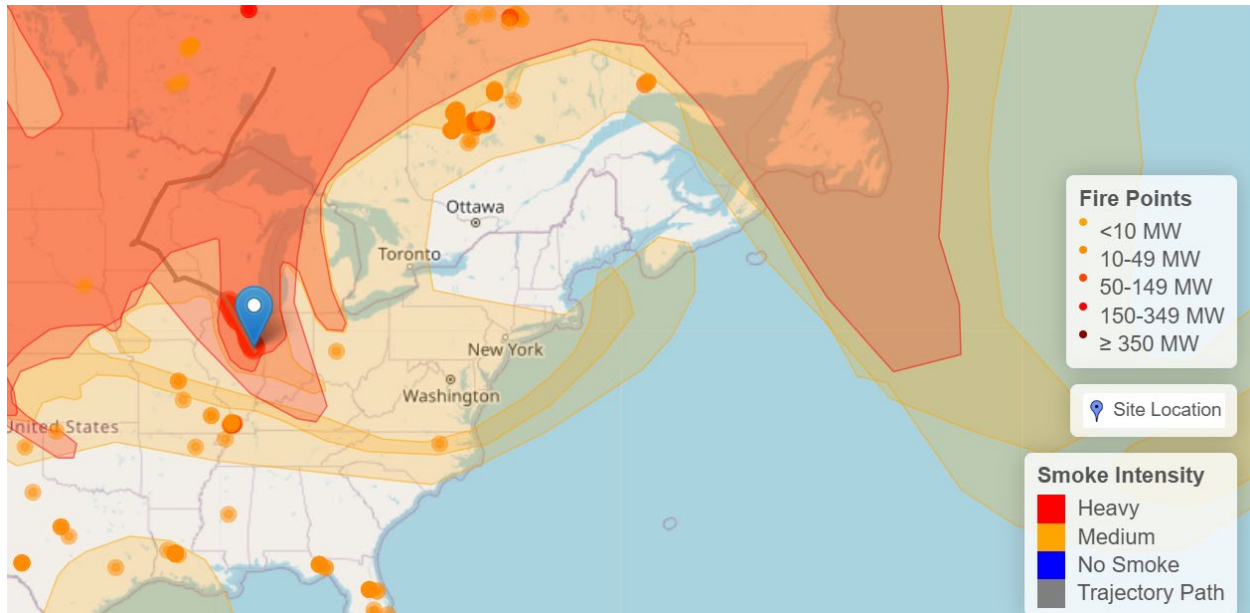
Clicking the **Show Smoke** toggle renders the smoke polygons on the map for the selected day within the 5-day trajectory. Different days within the trajectory can be viewed by changing the **Single Day in the Trajectory** drop down menu.

Show Smoke

Single Day in the Trajectory:

2023-06-15 ▼

Only the selected day within the trajectory is shown as points on the map when smoke is shown. The rest of the trajectory is shown as a gray line. HMS fire locations can also be shown by toggling on **Show Fires**.



## Download HMS Smoke and Fire Location Data

HMS smoke polygons in KML format and fire points in CSV format can be downloaded by clicking the appropriate download buttons.

Download  
Smoke KML

Download Fire  
Points CSV