

INTRODUCTION

The weather station at Ecology Research Center of Miami University (Oxford, OH) is a part of two programs: the EPA's CASTNET (Clean Air Status and Trends Network), and NADP (National Atmospheric Deposition Program). In the past, the data on this site has come from a combination of CASTNET records, NADP records, and local data from the ERC. It has come to our attention that the existing data (now found in OldFiles.zip) has gaps and errors--this data is provided as is and any data used from this set should be checked before use (ex. you shouldn't use Temperature data from July if it says the temperature was -5 or Light data if SlrkW_Avg is 0 during an entire 24hr period). One large contributor to this issue is the aging of equipment at the weather station.

SOURCES

Going forward, we advise that the following data be taken from the listed sources:

Variable	Source
Temperature (air)	CASTNET
Light	ERC local
Precipitation	NADP
Relative Humidity	ERC local
Wind Speed	ERC local
Wind Direction	ERC local
Dry Depositoin	CASTNET
Ozone	CASTNET
pH	NADP
Conductivity	NADP
Wet Deposition	NADP

For example, while precipitation and temperature data are found in the ERC local file, because there are known issues, it is best to collect data from the NADP and CASTNET sources, respectively.

CASTNET

Our Weather station is CASTNET site OXF122.

Data is available here: <https://www.epa.gov/castnet/download-data>

You have two options:

- 1) Access pre-packaged data files
- 2) Open the Data Download Dashboard

Download Data

CASTNET sites provide air quality data in rural locations, often upwind or downwind of urban areas. Data provided by CASTNET include weekly concentrations of sulfur and nitrogen species, base cations, and chloride as well as hourly ozone. Some sites also provide other air pollutants (e.g., NO/NO₂, CO) or meteorological data. Many CASTNET sites have been operating for more than 30 years, providing a long-term, consistent data record that is used to evaluate climate and regulatory impacts on air quality.

Use the data dashboard to access CASTNET data or download the available pre-packaged datasets using the link below.

[Access pre-packaged data files.](#)

[Open the data download dashboard full screen.](#)

The Data Download Dashboard is a great tool for viewing data as you can easily refine the data shown from all CASTNET sites to just our site (input OXF122 into the Site ID field), and you can define a date range. There are 6 tabs of data to view:

- Filter Pack Concentrations--Weekly
- Meteorological--Hourly
- Ozone--Hourly
- Ozone QC Results--Daily
- Trace Gas--Hourly
- Trace Gas QC Results--Daily
- Total Deposition--Annual

Each tab has an option to Export Table (given that you have already refined it by site).

The screenshot shows the Data Download Dashboard interface. At the top, there are input fields for 'Site ID' and 'Inactive?', and a blue 'Export Table' button. The 'Site ID' dropdown menu is open, showing a search bar and a list of site IDs, with 'OXF122' highlighted in green. Below the dropdown, there are two data tables. The first table is titled 'Trace Gas - Hourly' and shows columns for 'HNO₃' and 'K'. The second table is titled 'Total Deposition - Annual' and shows columns for 'NH₄', 'NO₃', 'SO₂', and 'SO₄'. Both tables have a 'Q' icon in the first column, likely for sorting or filtering.

HNO ₃	K
1.226	-
1.675	0.0
1.889	-
1.966	-
2.607	-
1.409	-
1.74	-

NH ₄	NO ₃	SO ₂	SO ₄
	2.452	24.907	2.549
1.727	1.738	18.609	3.78
2.679	4.274	38.77	4.789
2.12	2.622	21.138	4.581
2.982	2.065	13.632	7.049
2.257	1.573	19.746	5.096
1.837	2.761	20.849	4.007

This is the easiest way to download the data. However, if this method does not work, you can choose to access the pre-packaged .zip files. Here is a snip of a portion of the page:

Index of /castnet/CASTNET_Outgoing/data

[ICO]	Name	Last modified	Size	Description
[PARENTDIR]	Parent Directory	-	-	-
[]	cloud_event.zip	2023-11-26 07:00	163K	
[]	cloud_month.zip	2023-11-26 07:00	9.6K	
[]	data.bad	2023-11-26 07:00	14	
[]	drychem.zip	2023-11-26 07:00	8.5M	
[]	drydep_week_web.zip	2023-11-26 07:00	12M	
[TXT]	file_output.txt	2023-11-26 07:00	10K	
[]	gas_calibration.zip	2023-11-26 07:00	4.6M	
[]	gas_calibration_web.zip	2023-11-26 07:00	1.2M	
[]	gas_calibration_web_>	2023-11-26 07:00	62K	
[]	gas_calibration_web_>	2023-11-26 07:00	119K	
[]	gas_calibration_web_>	2023-11-26 07:00	132K	
[]	gas_calibration_web_>	2023-11-26 07:00	142K	
[]	gas_calibration_web_>	2023-11-26 07:00	139K	
[]	gas_calibration_web_>	2023-11-26 07:00	123K	
[]	gas_calibration_web_>	2023-11-26 07:00	120K	
[]	gas_calibration_web_>	2023-11-26 07:00	127K	
[]	gas_calibration_web_>	2023-11-26 07:00	105K	
[]	gas_calibration_web_>	2023-11-26 07:00	109K	
[]	gas_calibration_web_>	2023-11-26 07:00	85K	
[]	historic_average.zip	2023-11-26 07:00	8.7M	
[]	historic_average_wee_>	2023-11-26 07:00	162K	
[]	hourly_gas_2008.zip	2023-11-26 07:00	237K	
[]	hourly_gas_2009.zip	2023-11-26 07:00	336K	
[]	hourly_gas_2010.zip	2023-11-26 07:00	414K	
[]	hourly_gas_2011.zip	2023-11-26 07:00	577K	
[]	hourly_gas_2012.zip	2023-11-26 07:00	1.4M	
[]	hourly_gas_2013.zip	2023-11-26 07:00	1.4M	
[]	hourly_gas_2014.zip	2023-11-26 07:00	1.5M	
[]	hourly_gas_2015.zip	2023-11-26 07:00	2.0M	

Data here tends to be broken down by year and each file includes data from all sites. Once you have downloaded the data, you can open it in Excel and use a filter to refine the set to data from only our site (OXF122). Here is an example:

The screenshot shows an Excel spreadsheet with the following data:

SITE_ID	DATE_TIME	OZONE	OZONE_F	QA_CO	UPDATE_DATE
26				3	1/1/2022 1:20
29	<			3	1/1/2022 2:22
Y				3	3/31/2022 9:16
28				3	1/1/2022 4:21
28				3	1/1/2022 5:20
28				3	1/1/2022 6:30
28				3	1/1/2022 7:21
25				3	1/1/2022 8:20
25				3	1/1/2022 9:20
27				3	1/1/2022 10:20
28				3	1/1/2022 11:20
26				3	1/1/2022 13:00
30				3	1/1/2022 13:00
31				3	1/1/2022 14:20
30				3	1/1/2022 15:20
28				3	1/1/2022 16:20
28				3	1/1/2022 17:20
28				3	1/1/2022 18:21
28				3	1/1/2022 19:21
27				3	1/1/2022 20:21
60086	OXF122	1/1/2022 20:00	14	3	1/1/2022 21:21
60087	OXF122	1/1/2022 21:00	16	3	1/1/2022 22:21
60088	OXF122	1/1/2022 22:00	17	3	1/1/2022 23:20
60089	OXF122	1/1/2022 23:00	18	3	1/2/2022 5:05
60090	OXF122	1/2/2022 0:00	19	3	1/2/2022 5:05

The filter dialog box is open, showing the search results for 'oxf122'. The filter is applied to the 'SITE_ID' column, and the results are filtered to show only rows where 'SITE_ID' is 'OXF122'.

NADP

Our weather station is NADP site OH09.

This is our link: <https://nadp.slh.wisc.edu/sites/ntn-OH09/>

Here, under Build Report, you can download data from a time period of your choosing. After you specify that you want Weekly, Monthly, Seasonal, or Annual Data from the drop down menu, you will see a Site ID field (if you use the above link this should be already set as OH09), Start Year, End Year, and a box to indicate whether or not you would like to include invalid data (see below). Once you click Generate Report, a csv file with all the data falling within your chosen parameters will be downloaded.

BUILD A REPORT

Data Period:

Weekly

Site ID:

OH09

Start Year:

1984

End Year:

2023

Include Invalid:

Generate Report

There is another tool (operator support-->view precipitation data)

<https://nadp.slh.wisc.edu/precipitation/> that can provide precipitation data on a daily scale, in inches (the build a report tool above will produce a csv that includes weekly precipitation in mm). After specifying the site you wish to view data for, you can select a timeframe and a table, along with a few charts, will be shown below. This cannot be directly downloaded with any tool on the site, however.

Precipitation Data for OH09

Sample Date Range:
 2023-11-28 10:15 to 2023-12-05 10:15

Available Data Range:
 3/9/2011, 2:15:00 PM - 12/5/2023, 10:15:00 AM
(Standard Time)

Gage Type: Pluvio2
Collector 1 Network: NTN
Collector 2 Network: None

DAILY DATA

Show entries

Site ID	Date	Day	PPT	Actual Depth	Min. Voits	Min. Temp.	Max Temp.	Col. 1 Cycles	Expl	Ppt Data Completeness
OH09	2023-11-28	Tuesday	0	6.09	13.3	-9.4	3.5	0	0	99.1
OH09	2023-11-29	Wednesday	0	6.08	13.1	-9.9	11.6	0	0	100
OH09	2023-11-30	Thursday	0	6.05	13.1	-1.6	16.8	5	0.12	100
OH09	2023-12-01	Friday	0.32	6.22	13.3	7.4	12.1	24	7.69	100
OH09	2023-12-02	Saturday	0	6.32	13.2	7.2	13.4	0	0	100
OH09	2023-12-03	Sunday	0	6.3	13.2	5	11.2	10	0.32	100
OH09	2023-12-04	Monday	0	6.29	13.3	0.2	8.1	10	0.85	100
OH09	2023-12-05	Tuesday	0.04	6.31	13.5	2.3	4.4	11	1.99	67.2
TOTALS				0.36				60	10.97	

Showing 1 to 8 of 8 entries

Cumulative Precipitation Depth, OH09



CODEBOOK FOR CURRENT DATA

Variable	Units	Description
WS_ms_Avg	meters/second	Wind Speed
WindDir	degrees	Wind Direction
RTD_C_1_Avg	Deg C	Air Temperature recorded from sensor 1 (lower sensor)
RTD_C_2_Avg	Deg C	Air Temperature recorded from sensor 2 (upper sensor)
AirTC_Avg	Deg C	Average Air Temperature
RH	%	Relative Humidity
SlrkW_Avg	kW/m ²	Average Solar Radiation
SlrMJ_Tot	MJ/m ²	Total Solar Radiation
kohms_Avg	kilohms (kilo ohms)	Average Electrical Resistance
Rain_mm_Tot	mm	Precipitation

KNOWN ISSUES IN CURRENT DATA

ERC Local Data (ERCLocal_07/2022_to_12/2023.csv)

*****NOTE:** This only includes a description of errors for data belonging to variables listed with ERC Local as their source in the table on pg.1. It is not advisable to use *precipitation or temperature* data from this set.

- Wind Direction:

- Data is out of bounds beginning Oct 2023 (below lower bound)
- Light
 - Beginning in Aug 2023, values are close to zero around the clock