



THE GLOBE PROGRAM

GLOBE

Visualize and Retrieve Your Data

Three steps to Visualization
Data Counts
Advanced Vis Features
Advanced Data Access Tool (ADAT)
GLOBE API

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Introduction

- You should have completed Part 1 for Teachers – Creating a Data Entry Site and Part 2 for Teachers – Entering Measurement Data
- The visualization system uses Production Data only. You will not see any data entered into the training system
- This presentation is available online as well as a video which walks you through the steps
- There is a section for you to try things for yourself after the demonstration and a section to test your knowledge at the end.
- Questions – contact help@nasaglobe.org



Three Ways to Access GLOBE Data on the website

Map It



Visualization System

Spreadsheet

ADAT

API

GLOBE API

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Visualize and Retrieve your Data

- Now that you've input your data, how can you find it?

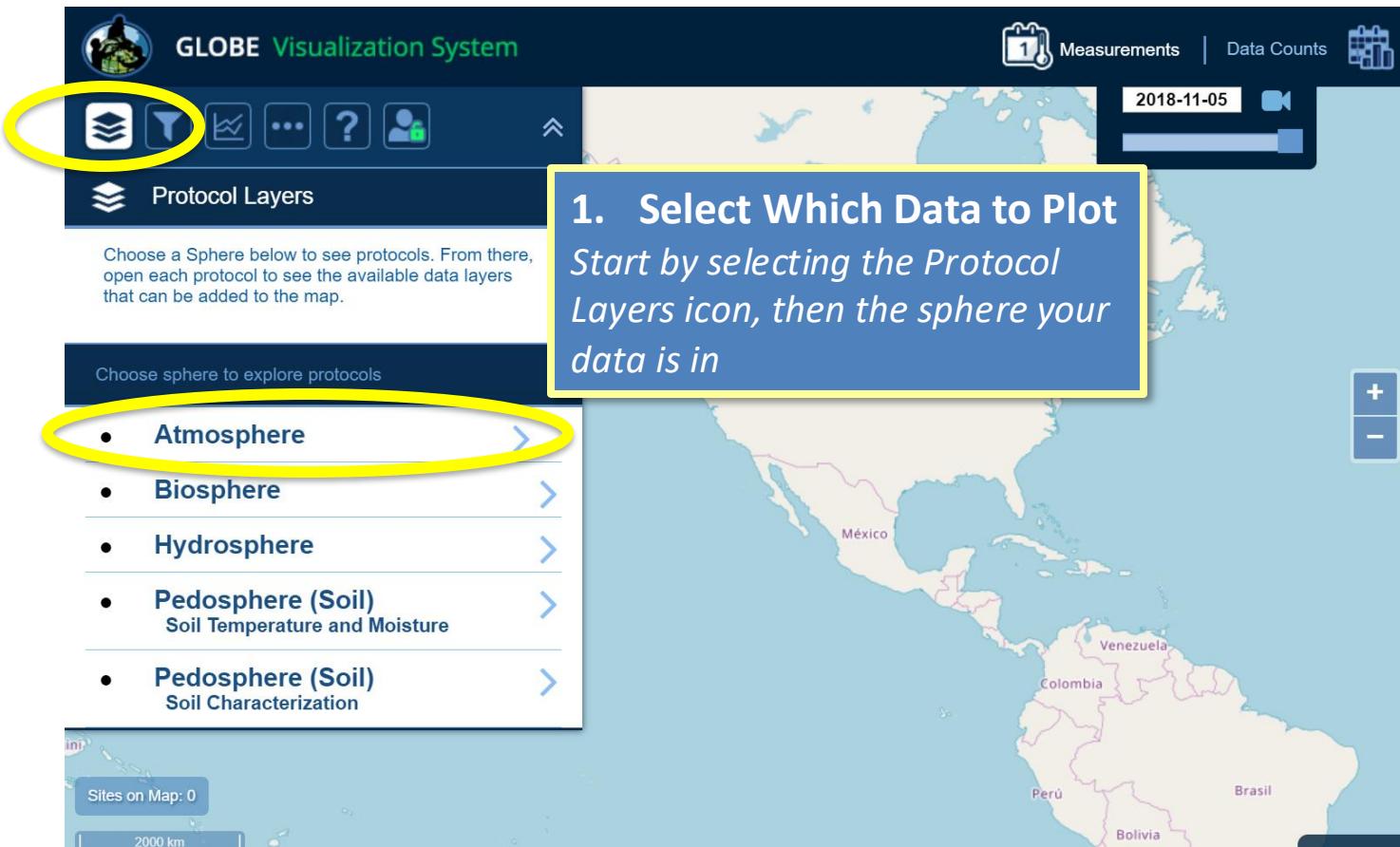
Topics - Visualization

- Navigate to the visualization system
- The pieces of the visualization system
 - Layers, Dates, Filters, Legend, Graphs
- How to view data from a specific protocol on the map
- How to graph and retrieve data for a specific protocol
- Advanced Features
- How to use data counts to find schools that are active in a given protocol

The Basics of the Visualization System

- Select Goto-> from the top and “Visualize Data”
 - Or Go to the homepage and select “Visualize Data”
 - Or <http://vis.globe.gov>
- Three Steps to Visualize your Data:
 1. Select the protocol data you want to see (Add Layers)
 2. Select the Date you want to see the data for
 3. Click on a data point on the map to receive table and graph information

Step 1 – Add Data Layers



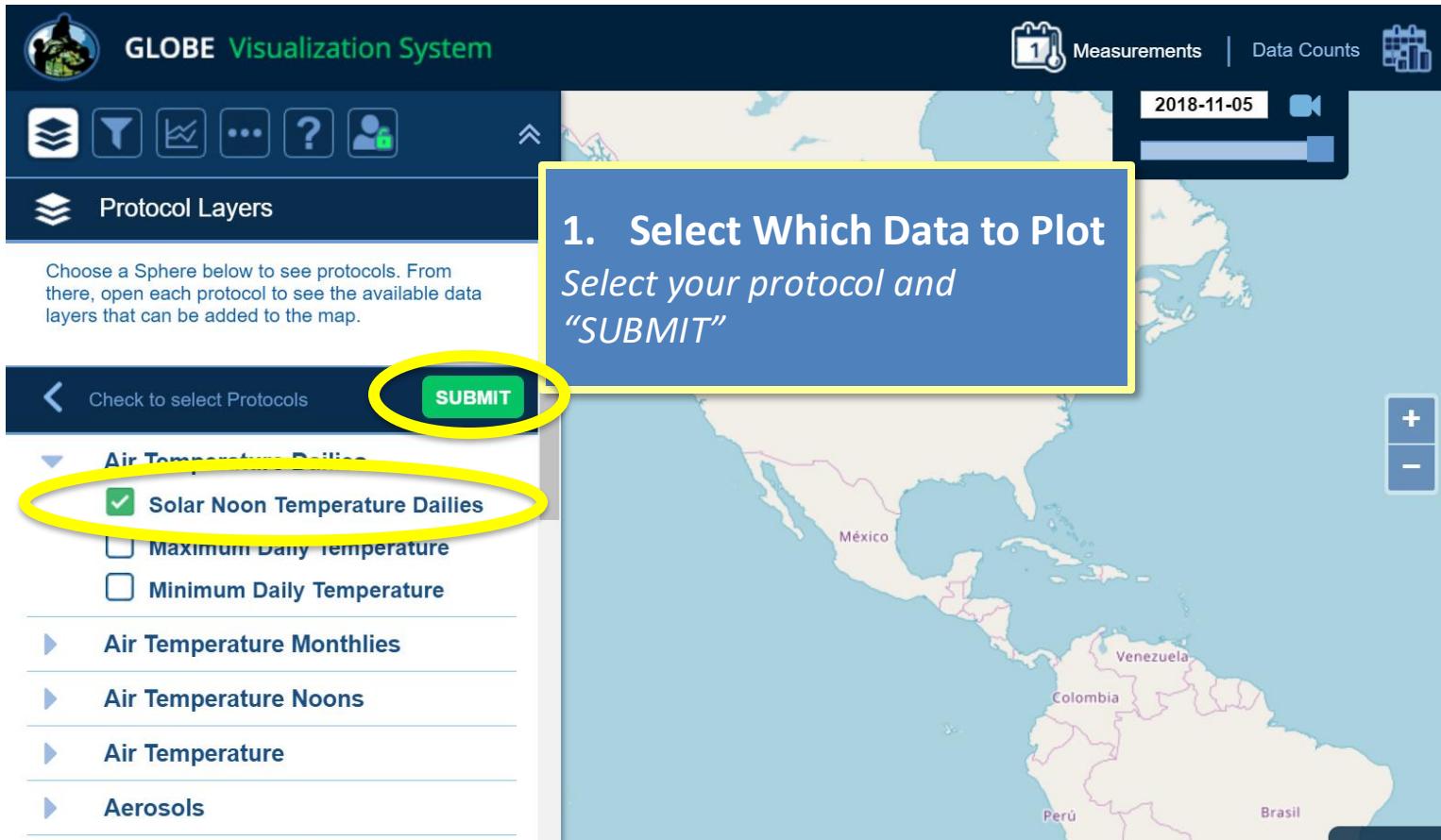
The screenshot shows the GLOBE Visualization System interface. At the top, there's a navigation bar with icons for user profile, help, and data counts, along with a date indicator (2018-11-05) and a video camera icon. Below the navigation bar, a yellow box highlights the "Protocol Layers" icon (a stack of three horizontal bars). Another yellow box highlights the "Atmosphere" option in a dropdown menu titled "Choose sphere to explore protocols". A callout box with a yellow border contains the instructions:

- 1. Select Which Data to Plot**

Start by selecting the Protocol Layers icon, then the sphere your data is in

The main area features a map of South America with country boundaries and names: México, Venezuela, Colombia, Perú, Bolivia, and Brasil. A legend in the bottom left corner shows a blue square labeled "Sites on Map: 0" and a scale bar indicating 2000 km.

Step 1 – Add Data Layers



The screenshot shows the GLOBE Visualization System interface. At the top, there's a navigation bar with icons for home, search, filters, and user profile, along with links for 'Measurements' and 'Data Counts'. A date indicator '2018-11-05' and a video camera icon are also present.

The main area features a world map with a focus on the Americas. Below the map, a callout box contains the following text:

1. Select Which Data to Plot
Select your protocol and "SUBMIT"

To the left of the map, there's a sidebar titled 'Protocol Layers' with the following content:

Choose a Sphere below to see protocols. From there, open each protocol to see the available data layers that can be added to the map.

Check to select Protocols **SUBMIT**

Air Temperature Dailies

- Solar Noon Temperature Dailies
- Maximum Daily Temperature
- Minimum Daily Temperature

Air Temperature Monthlies

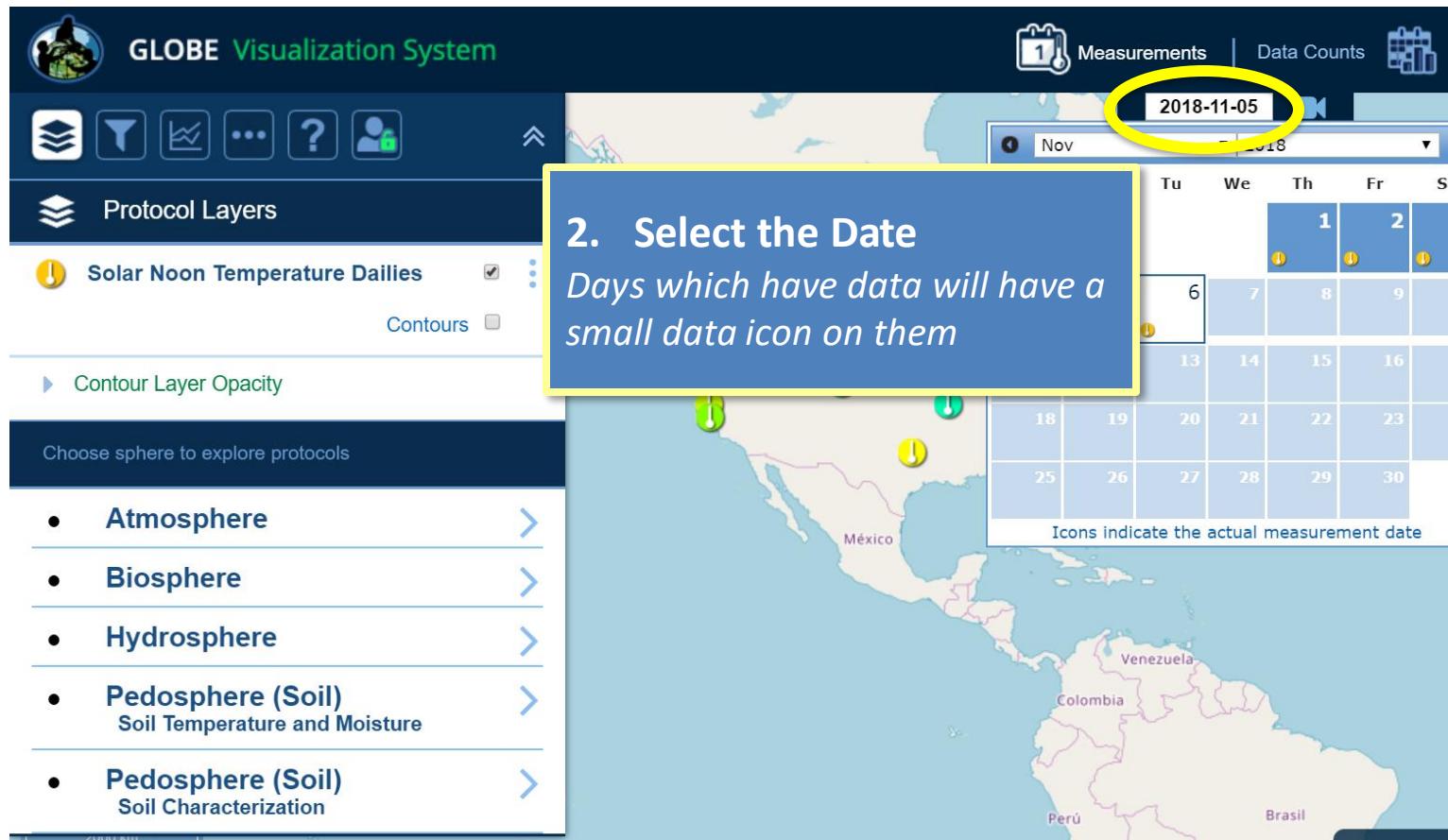
Air Temperature Noons

Air Temperature

Aerosols

Two specific items are highlighted with yellow circles: the 'SUBMIT' button and the 'Solar Noon Temperature Dailies' checkbox.

Step 2 – Select the Date



2. Select the Date

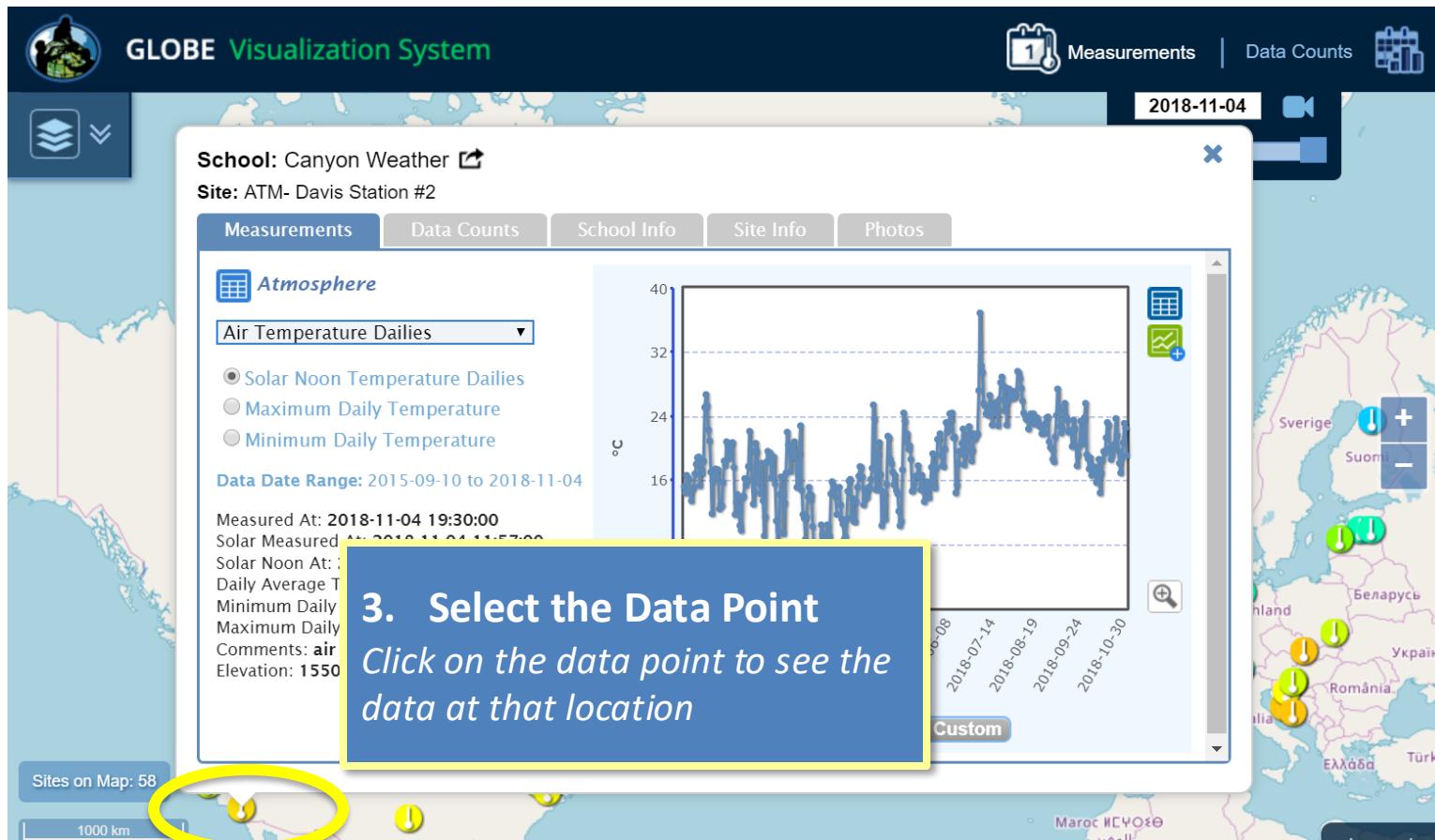
Days which have data will have a small data icon on them

Icons indicate the actual measurement date

2018-11-05

Tu	We	Th	Fr	Sa
		1	2	
6	7	8	9	
	13	14	15	16
18	19	20	21	22
25	26	27	28	29
30				

Step 3 – Select the Data Point



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Advanced Features

- Use Filters - Location/Site/Elevation to find specific locations – school, country, city etc.
- Create an animation
- Use the graph with the + icon to select multiple data sets to graph
 - Allows you to overlay data from multiple sites
- Export layers to KMZ format for using with Google Earth and other similar tools



Filter your results

The screenshot shows the GLOBE Visualizations interface with a focus on the 'Filters' section. A yellow circle highlights the 'Filters' icon in the top left corner of the main header. A callout box with a yellow border and white background contains the text 'Select Filter Icon' and 'Filter by teacher, school, country, lat/long or other options'. Below this, the 'Filters' section is expanded, showing various filtering options:

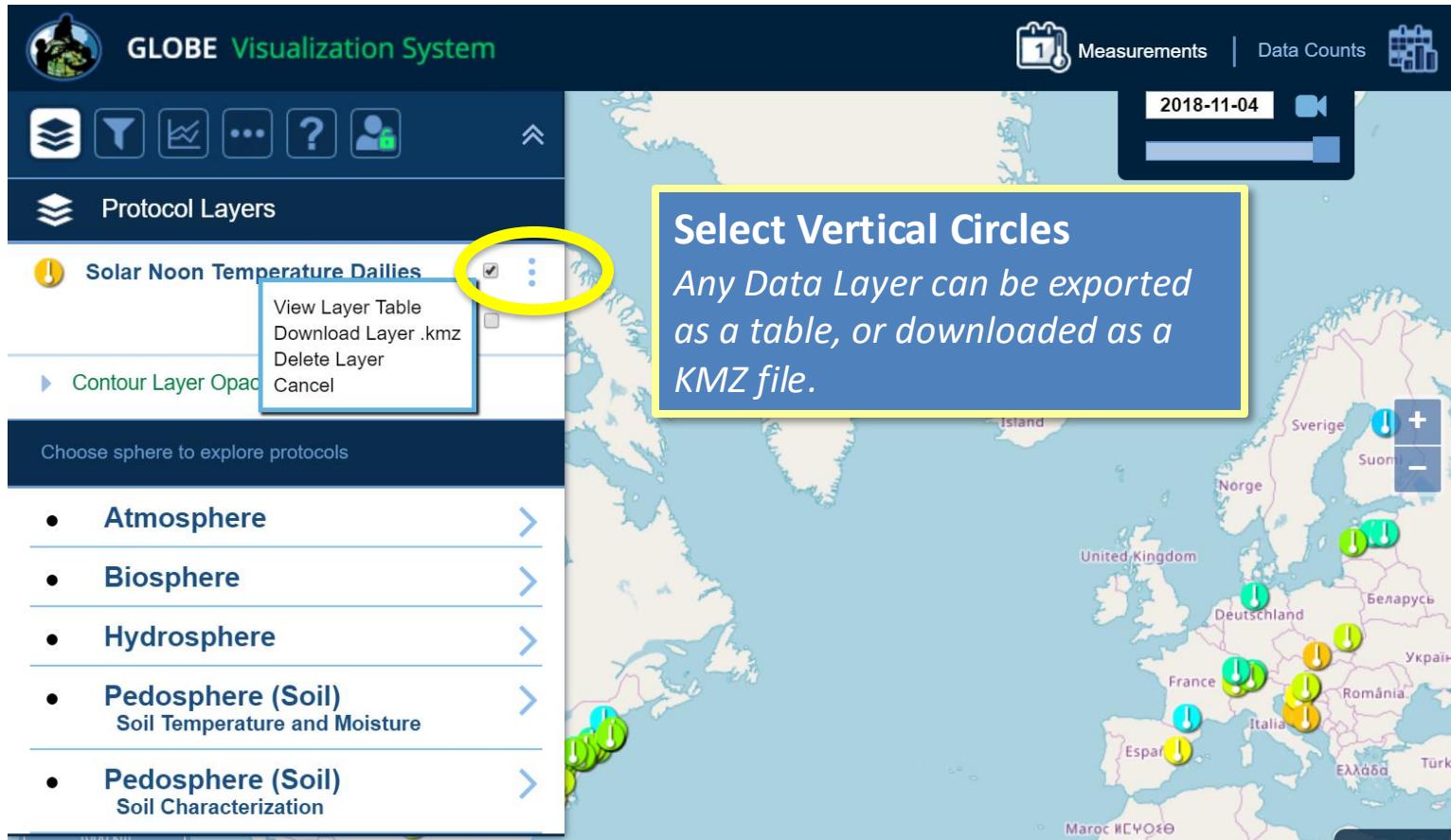
- Find a Site:** None Selected
- Find Multiple Sites:** None Selected
- Elevation:** -3492 - 7051m
- Observer:** (For Clouds data only) All Observations

A detailed 'Filters' dropdown menu is open, listing more specific options:

- Find a Site:**
 - Choose Site
 - Choose Site by School
 - Choose Site by Teacher
- Find Multiple Sites:** None Selected
- Elevation:** -3492 - 7051m
- Observer:** (For Clouds data only) All Observations

On the right side of the interface, there is a map of Europe with several data points marked by icons. The top right corner features a date selector showing '2018-11-04' and a video camera icon. The bottom right corner has a small NASA logo.

Export Layer



The screenshot shows the GLOBE Visualization System interface. On the left, there's a sidebar with icons for Protocol Layers, Solar Noon Temperature Dailies (selected), and Contour Layer Opacity. Below this is a list of protocol categories: Atmosphere, Biosphere, Hydrosphere, Pedosphere (Soil) - Soil Temperature and Moisture, and Pedosphere (Soil) - Soil Characterization. A context menu is open over the 'Solar Noon Temperature Dailies' layer, with options: View Layer Table, Download Layer .kmz, Delete Layer, and Cancel. A yellow circle highlights the three-dot menu icon. A yellow box contains the text: "Select Vertical Circles Any Data Layer can be exported as a table, or downloaded as a KMZ file." The main area is a map of Europe with vertical temperature measurement circles plotted across it.

GLOBE Visualization System

Protocol Layers

Solar Noon Temperature Dailies

- View Layer Table
- Download Layer .kmz
- Delete Layer
- Cancel

Contour Layer Opacity

Choose sphere to explore protocols

- Atmosphere
- Biosphere
- Hydrosphere
- Pedosphere (Soil)
Soil Temperature and Moisture
- Pedosphere (Soil)
Soil Characterization

Select Vertical Circles
Any Data Layer can be exported as a table, or downloaded as a KMZ file.

Measurements | Data Counts

2018-11-04

1000 KM

NASA

Supported by:

NSF

NOAA

U.S. Global Change Research Program

Setup Multi-Site Plot

GLOBE Visualization System

Multi-Site Plots

School: [Canyon Weather](#)
Site: [ATM- Davis Station #2](#)

Protocol: Air Temperature Dailies
Plot: Solar Noon Temperature Dailies
Range: 2015-09-10 to 2018-11-04
Y-Axis: -50 °C to 50 °C

School: [Utajarven Ylaaste](#)
Site: [Atmosphere:ATM-02](#)

Protocol: Air Temperature Dailies
Plot: Solar Noon Temperature Dailies
Range: 1996-02-29 to 2018-11-06
Y-Axis: -50 °C to 50 °C

Plot Date Range:
 to

For optimum performance, the maximum recommended date range is 5 years

School: Utajarve
Site: Atmosphere:ATM-02

Measurements

Air Temperature Dailies

Solar Noon Temperature Dailies
 Maximum Daily Temperature
 Minimum Daily Temperature

Data Date Range: 1996-02-29 to 2018-11-06

Measured At: 2018-11-04 10:00:00
Solar Measured At: 2018-11-04 12:04:00
Solar Noon At: 2018-11-04 09:57:00
Daily Average Temperature: 0.8 °C
Minimum Daily Temperature: -0.2 °C
Maximum Daily Temperature: 5.9 °C
Elevation: 80.00 m

Overlay multiple plots
Click on the "+" icon in the popup window to select multiple datasets to plot.

2019-11-04

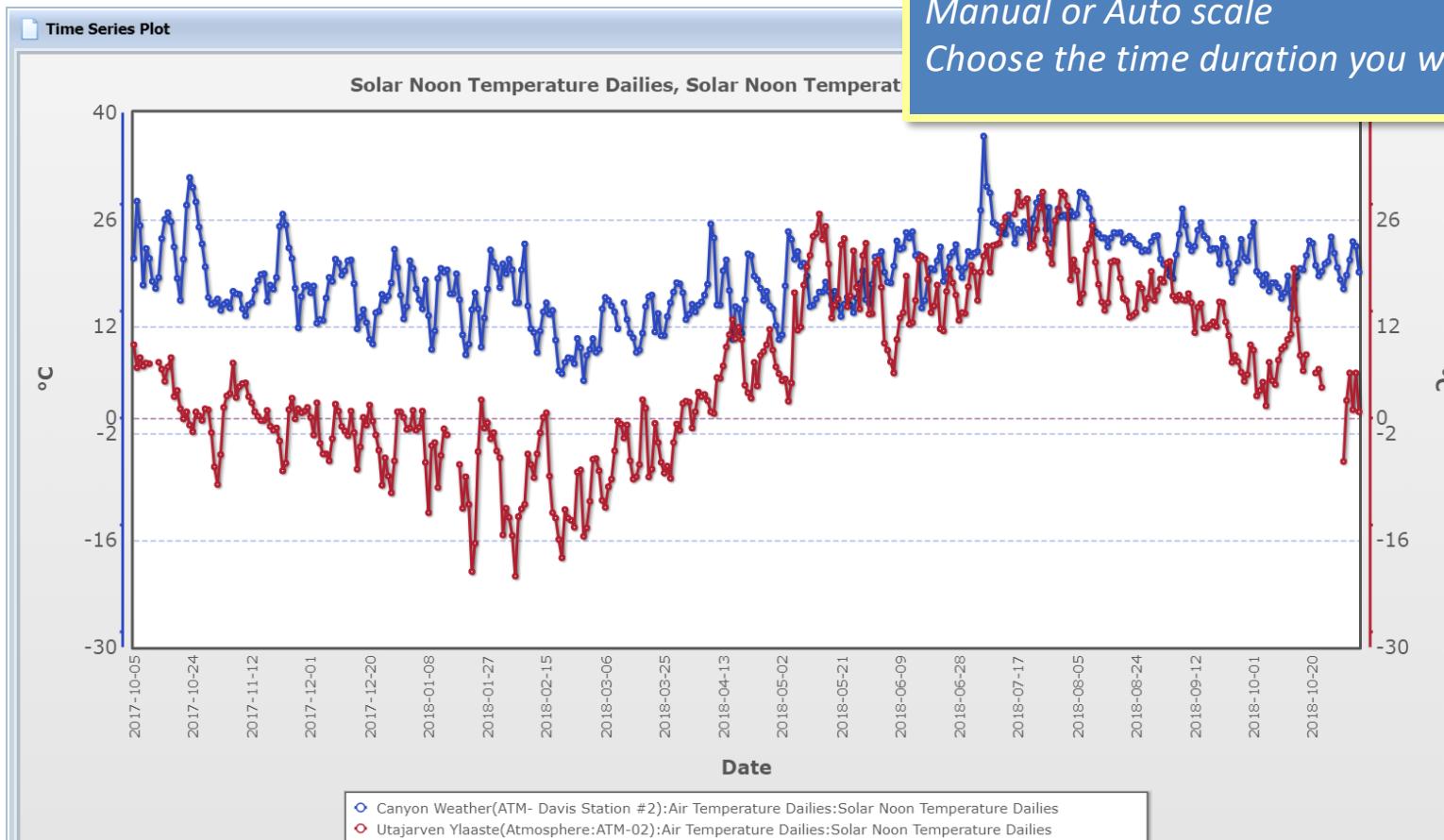
Measurements | Data Counts

30 Days | 1 Year | Custom



+ 

Setup Multi-Site Plot



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 **GLOBE Visualization System**

 **Protocol Layers**

 **Solar Noon Temperature Dailies**

Contours 

▶ Contour Layer Opacity

Choose sphere to explore protocols

- **Atmosphere** >
- **Biosphere** >
- **Hydrosphere** >
- **Pedosphere (Soil)**
Soil Temperature and Moisture >
- **Pedosphere (Soil)**
Soil Characterization >

ZUGU KHII

My Vis

Select “My Vis” to show all of my sites, filter the display by my measurements, or share/save/load a set of filters and protocols

Welcome David Garrow Sign Out

Show My 

Sites Measurements

Filter Sets: [Share](#) | [Load](#) | [Save](#)

My Vis 



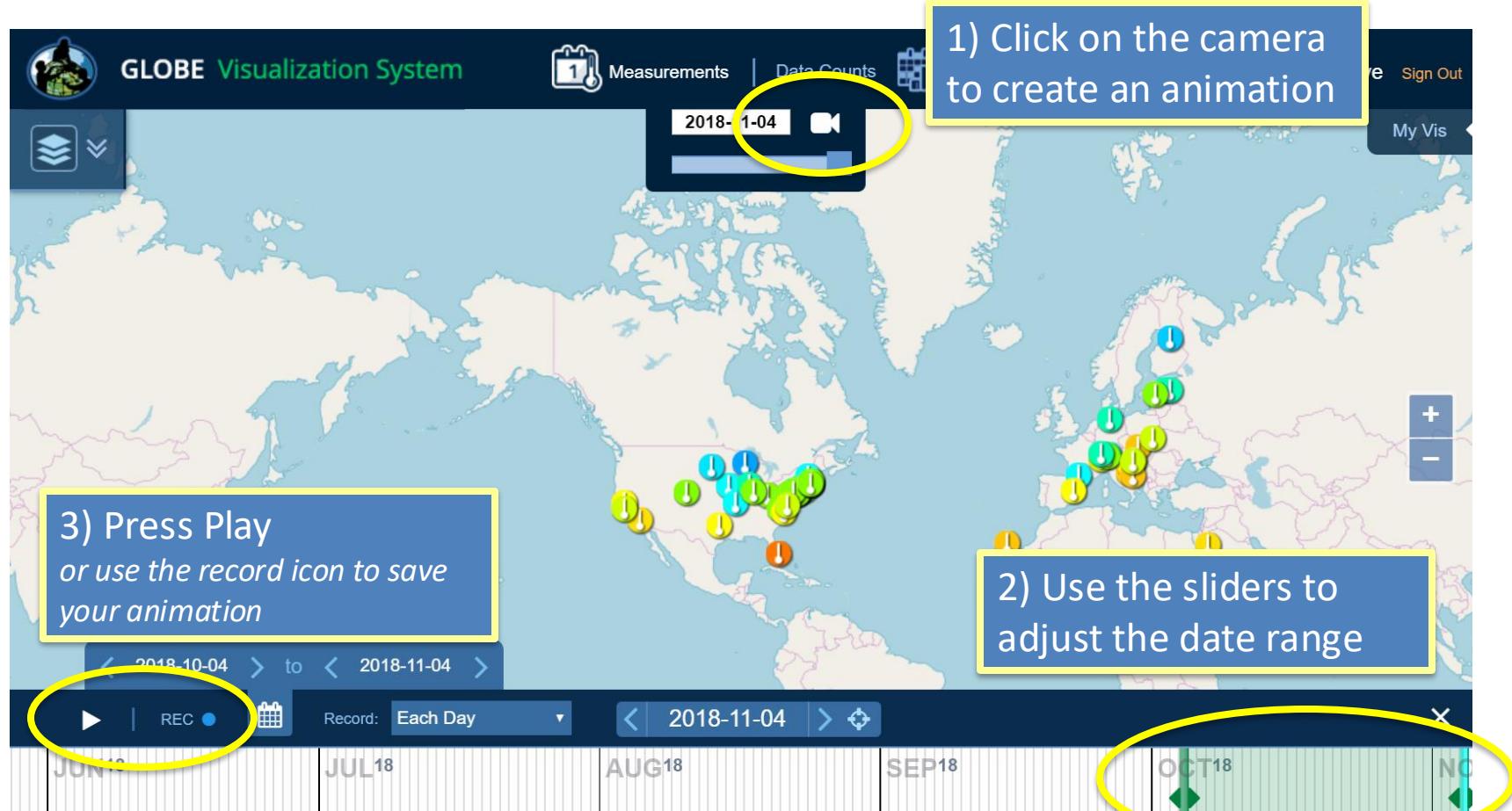
Sponsored by:



Supported by:



Animating Vis



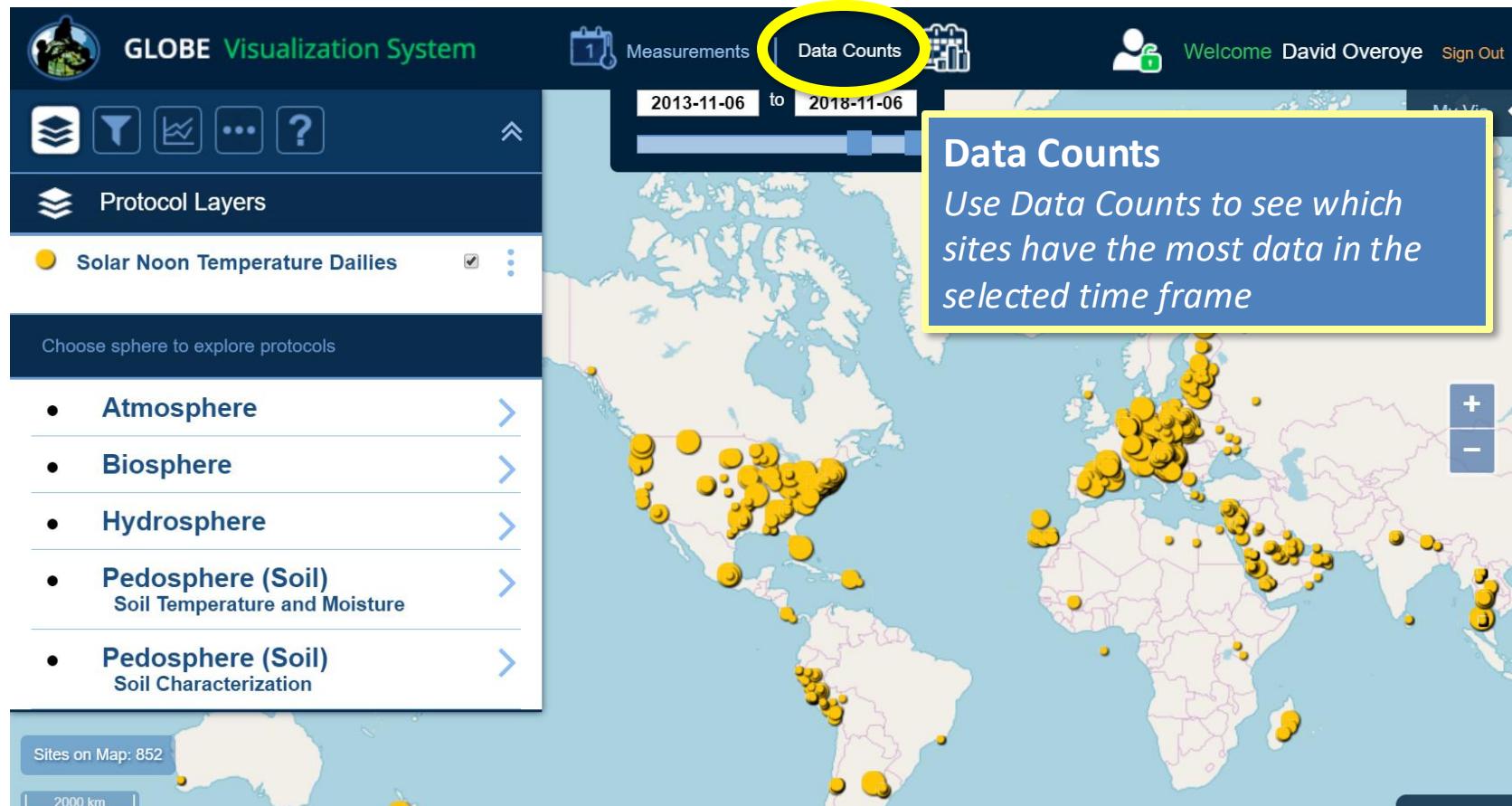
Why use Data Counts?

- The Data Counts tab tells you how much data a given location has entered in a particular period of time for a given protocol.
- Looking for someone to collaborate with? Looking for the most current data? Use Data Counts.

How to Use Data Counts

- Select Data Counts on the top menu of the vis system
- Select the protocol(s) you are interested in (ie Solar Noon Temperature Dailies)
- The map will show the total number of measurements which have occurred at any location since the beginning of the GLOBE program.
- Use the Date Range Filter to adjust the date range
- Select a site which has data
 - You can find the school and teacher if you are interested in collaborating.

Data Counts



Your Turn

- What school reported the coldest solar noon temperature in Poland on 2/16/2014? What was the temperature?
- What was the temperature for the one school which reported data in Argentina on that date?
- Make a chart showing the Solar Noon Temperature Dailies for 1 year with data from the school in Poland and the school in Argentina.
 - What do you see happening?
 - Why does it happen
 - Try checking and un-checking the “Auto Y-Axis” button to see what happens
- Find someone in another country that is doing the clouds protocol this year (or a protocol of your choice) and request to be a friend

Your Turn - Answers

- What school reported the coldest temperature in Poland on 2/16/2014? What was the temperature?
 - If you did solar noon dailies - **Gymnasium No 1, daily average -1C, minimum daily, -5C**
 - If you did minimum - **Gimnazjum por. J.Czumy in Celestynów -6C**
- What was the average temperature for the one school which reported data in Argentina on that date?
--- **21.7 C**
- Make a chart showing the Solar Noon Temperature Dailies for 1 year with data from the school in Poland and the school in Argentina.
 - What do you see happening?
 - Why does it happen
 - Try checking and un-checking the “Auto Y-Axis” button to see what happens
- **The temperature cycles are shifted relative to each other...because they are in the north/south latitudes**
- Find someone in another country that is doing the clouds protocol this year (or a protocol of your choice) and request to be a friend



Retrieving Data Using the Advanced Data Access Tool (ADAT)

- Tool allows you to download GLOBE data from multiple protocols, schools, regions or dates without using the map
 - Used for downloading large quantities of data – multiple protocols and multiple sites
- Select GLOBE Data -> Retrieve GLOBE Data or
<http://datasearch.globe.gov/>
- Three Steps –
 1. Select the Protocols you're interested in
 2. Select Filters
 - 1. Date Range, Country, School or Teacher etc.
 3. Select “Download Measurement Data” (may take a little while!)

Select your protocols

THE GLOBE PROGRAM

Sign Out

Apply Filter Clear Instructions

Filter by Protocol:

(Select up to 5 protocols)

Atmosphere

- Air Temperature Dailies
- Air Temperature Monthlys
- Air Temperature Noons
- Air Temperature
- Aerosols
- Barometric Pressure Noons
- Barometric Pressures
- Clouds Noons
- Clouds
- Precipitation
- Precipitation Monthlys

Hydrosphere

- Alkalinity
- Conductivity
- Dissolved Oxygen
- Freshwater Macroinvertebrates
- Mosquito Larvae
- Mosquito Habitat Mapper
- Nitrates
- pH
- Salinity
- Water Temperature
- Water Transparency

Add Protocols

Select Protocols
Up to 5 protocols can be selected

Filter by Protocol:

(Select up to 5 protocols)

Atmosphere

- Air Temperature Dailies
- Air Temperature Monthlys
- Air Temperature Noons
- Air Temperature
- Aerosols
- Barometric Pressure Noons
- Barometric Pressures
- Clouds Noons
- Clouds
- Precipitation
- Precipitation Monthlys

Hydrosphere

- Alkalinity
- Conductivity
- Dissolved Oxygen
- Freshwater Macroinvertebrates
- Mosquito Larvae
- Mosquito Habitat Mapper
- Nitrates
- pH
- Salinity
- Water Temperature
- Water Transparency

Add Protocols

Select the date range

THE GLOBE PROGRAM Advanced Data Access Tool Sign Out

Apply Filter Clear Instructions

Select a Filter:

Data Filters

- Select Protocols
- X Across all
- Date Range Date Range

Date Count Range

Site Filters

- Site Name
- Country or State/Territory
- In proximity of a lake or river:
- School/Teacher/Partner

Filter by Date Range:

Start to End

Dates are based on UTC time

Add to Filter

View Measurements Download Summary Data

Select Date Range
Use sliders or enter a date range

Add other filters if needed then “Apply Filter”

THE GLOBE PROGRAM
Sign Out

Apply Filter
Clear
Load

Select a Filter:

Data Filters

[Select Protocols](#)

[Aerosols](#)

Date Range

[2017-01-01 to 2018-11-06](#)

Data Count Range

Site Filters

[Site Name](#)

[Country or State/Territory](#)

[In proximity of a lake or river:](#)

Apply Filters

Select any additional filtering, then click “Apply Filter” to see how much data is available for download

80 Sites Found

School Name	Name	Latitude	Longitude	Elevation
Escuela de Ensenanza Media 7 "Nicolas Copernico"	COPERNICO:ATM-01	-34.6427	-58.5405	21.8
SPS Karvina	ATM skola:ATM-01	49.8615	18.5502	255
ZS Manesova Otokovice	Garden meteorological station:ATM-01	49.2178	17.5111	183
IES Los Cristianos	LOS CRISTIANOS-ARONA:ATM-01	28.058	-16.7191	25
IES Yaiza	I.E.S.YAIZA:ATM-01	29.5671	-14.1763	104.8
Collège de Barétois	college d'Arrete:ATM-01	43.09471	-0.71333	280
Lycée Bernard PALISSY	Grande-Cour:ATM-01	44.1998	0.6243	50.6
II Gimnazija Zagreb	School Location:ATM-01	45.2035	16.0292	125
Tehnicka skola Daruvar	School Location:ATM-01	45.5972	17.2216	145.3
Skola Za Medicinske Sestre Vrapce	Vrapce 01:ATM-01	45.8163	15.8974	138
Skola Za Medicinske Sestre Vrapce	Vrapce 02:ATM-02	45.8162	15.8974	128
Rogozin A- Junior High School	SCHOOL YARD:ATM-01	32.48	35.06	47.2
Helen Parkhurst	Parkwijk Rivier:ATM-01	52.37132	5.24053	-47
Ramey School	School Location:ATM-01	18.49877	-67.13928	125.1
Texas State University	SWT weather station:ATM-01	29.8884	-97.9458	254
Texas State University	Austin:ATM-08	30.25806	-97.75162	159.9
Texas State University	Round Rock High School:ATM-09	30.5091	-97.69755	279.9
Texas State University	San Antonio:ATM-11	29.3097	-98.3779	244.7
Texas State University	South Austin:ATM-13	30.10509	-97.50045	249.8
Texas State University	South Austin - JT:ATM-15	30.24	-97.77	209.9

Sponsored by:



Supported by:







Download the Measurement Data

THE GLOBE PROGRAM

Advanced Data Access Tool

Sign In

[Apply Filter](#)

[Clear](#)

[Load](#)

[Save](#)

Data Last Updated: 2018-11-07

[Instructions](#)

80 Sites Found

[Download Measurement Data \(~4100\)](#)

[Download Summary Data](#)

Select a Filter:

[Data](#)

[Select](#)

[X All](#)

[Date](#)

[X 2018](#)

Download Data

Select Obtain Measurement data
and download the data

[Data Count Range](#)

[Site Filters](#)

[Site Name](#)

[Country or State/Territory](#)

[In proximity of a lake
or river:](#)

[School/Teacher/Partner](#)

School Name

Skola Za Medicinske Sestre Vrapce

Skola Za Medicinske Sestre Vrapce

Rogozin A- Junior High School

Helen Parkhurst

Ramey School

Texas State University

Lane Community College

Antioch High School

Crestwood High School

Stoney Creek High School

Collene Gennroe Braccane

Name

IERNICO:ATM-01

I skola:ATM-01

Den meteorological station:ATM-01

CRISTIANOS-ARONA:ATM-01

S.YAIZA:ATM-01

Lage d'Arrete:ATM-01

Vande-Cour:ATM-01

School Location:ATM-01

School Location:ATM-01

Latitude

-34.6427

49.8615

49.2178

28.058

29.5671

43.09471

44.1998

45.2035

45.5972

Longitude

-58.5405

18.5502

17.511

-16.719

17.163

0.6243

16.0292

17.2216

145.3

Elevation

138

128

50.6

125

145.3

138

128

47.2

1. org_name	site_name	latitude	longitude	elevation	measured on	aerosols=solar	aerosols=other
2. The name of the reporting school or other institution	The latitude assigned to	The longitude of t	The elevation of The date of only when the data were observed in Coordinat				
3. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/28/2017 2017-09-28T04:45:00	2017-09-28T12	
4. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/28/2017 2017-09-28T04:45:00	2017-09-28T12	
5. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/29/2017 2017-09-29T04:45:00	2017-09-29T12	
6. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/29/2017 2017-09-29T04:45:00	2017-09-29T12	
7. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/29/2017 2017-09-29T04:45:00	2017-09-29T12	
8. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/29/2017 2017-09-29T04:45:00	2017-09-29T12	
9. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/30/2017 2017-09-30T04:45:00	2017-09-30T12	
10. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	9/30/2017 2017-09-30T04:45:00	2017-09-30T12	
11. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/1/2017 2017-10-01T04:45:00	2017-10-01T12	
12. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/1/2017 2017-10-01T04:45:00	2017-10-01T12	
13. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/1/2017 2017-10-01T04:45:00	2017-10-01T12	
14. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/2/2017 2017-10-02T04:45:00	2017-10-02T12	
15. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/2/2017 2017-10-02T04:45:00	2017-10-02T12	
16. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/2/2017 2017-10-02T04:45:00	2017-10-02T12	
17. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/2/2017 2017-10-02T04:45:00	2017-10-02T12	
18. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/3/2017 2017-10-03T04:45:00	2017-10-03T12	
19. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/3/2017 2017-10-03T04:45:00	2017-10-03T12	
20. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/8/2017 2017-10-08T04:45:00	2017-10-08T12	
21. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/4/2017 2017-10-04T04:45:00	2017-10-04T12	
22. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/4/2017 2017-10-04T04:45:00	2017-10-04T12	
23. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/4/2017 2017-10-04T04:45:00	2017-10-04T12	
24. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/5/2017 2017-10-05T04:45:00	2017-10-05T12	
25. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/5/2017 2017-10-05T04:45:00	2017-10-05T12	
26. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/5/2017 2017-10-05T04:45:00	2017-10-05T12	
27. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/6/2017 2017-10-06T04:45:00	2017-10-06T12	
28. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/6/2017 2017-10-06T04:45:00	2017-10-06T12	
29. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/7/2017 2017-10-07T04:45:00	2017-10-07T12	
30. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/7/2017 2017-10-07T04:45:00	2017-10-07T12	
31. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/8/2017 2017-10-08T04:45:00	2017-10-08T12	
32. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/8/2017 2017-10-08T04:45:00	2017-10-08T12	
33. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/8/2017 2017-10-08T04:45:00	2017-10-08T12	
34. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/8/2017 2017-10-08T04:45:00	2017-10-08T12	
35. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/9/2017 2017-10-09T04:45:00	2017-10-09T12	
36. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/9/2017 2017-10-09T04:45:00	2017-10-09T12	
37. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/9/2017 2017-10-09T04:45:00	2017-10-09T12	
38. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/10/2017 2017-10-10T04:45:00	2017-10-10T12	
39. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/10/2017 2017-10-10T04:45:00	2017-10-10T12	
40. Al-Hussein Bin Ali Secondary School at Makkah Al-Mukarramah	AL:RAFY STREET	21.23	39.47	267.7	10/10/2017 2017-10-10T04:45:00	2017-10-10T12	

Sponsored by:

Supported by:

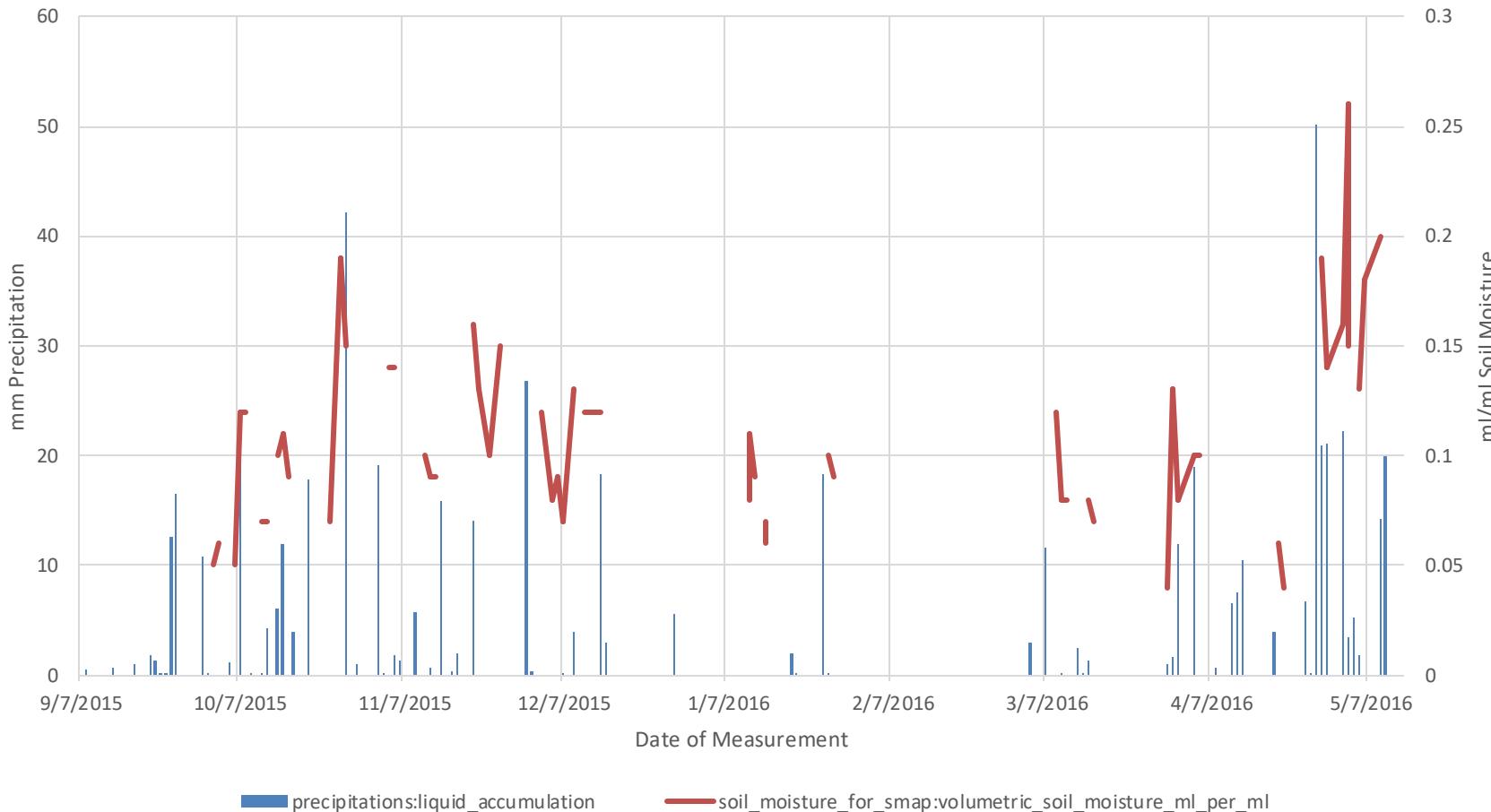
ADAT – Your Turn

- How many sites measured Soil Moisture (SMAP) during the Northern Hemisphere Fall and Winter periods (9/1/2015 – 2/29/2016) – 87 Sites
 - How many data points were taken
 - Which school and site had the highest gravimetric soil moisture (g/g), when was it measured, and what was the value?
- Export all Precipitation and SMAP data from the Ramey School for the period 9/1/2015 thought 5/17/2016
 - Plot the data – Is there a correlation between precipitation and Soil Moisture?

Answers - ADAT

- How many sites measured Soil Moisture (SMAP) during the Northern Hemisphere Fall and Winter periods (9/1/2015 – 2/29/2016) – 87 Sites
 - How many data points were taken (1168)
- Which school and site had the highest gravimetric soil moisture (g/g), when was it measured, and what was the value?
 - Srednja skola Vela Luka, 1/15/2016, 0.85 g/g
- Export all Precipitation and SMAP data from the Ramey School for the period 9/1/2015 thought 5/17/2016
 - Plot the data – Is there a correlation between precipitation and Soil Moisture? [see next page – what do you think?]

Ramey School Precipitation and Soil Moisture – Do you see a correlation?



precipitations:liquid_accumulation

soil_moisture_for_smap:volumetric_soil_moisture_ml_per_ml

Sponsored by:



Supported by:



Retrieving Data – the GLOBE API

- API - allows users to pull data from GLOBE programmatically
 - Programmatically = something I can call via a program/script/URL
 - Simple but useful interface
 - Fast
 - Provides support for getting data that is similar to ADAT

Info: <https://www.globe.gov/globe-data/globe-api>

Tool: <https://api.globe.gov/search/swagger-ui.html>

Main Interface

swagger Select a spec: public-api

GLOBE Elasticsearch API v1.0

[Base URL: <https://staging.globe.gov/glb-api-out/>]
<https://staging.globe.gov/glb-api-out/v2/api-docs/group-public-api>

API for accessing GLOBE data

[Terms of service](#)
[GLOBE - Website](#)
[Send email to GLOBE](#)

api-controller Controller for accessing GLOBE data from Elasticsearch

- GET** /api/v1/measurement/ Find measurements by protocol, date field(range) and numeric field(range).
- GET** /api/v1/measurement/pid/ Find measurements by postgres id.
- GET** /api/v1/measurement/protocol/ Find measurements by protocol.
- GET** /api/v1/measurement/protocol/lat/lon/ Find measurements by protocol and latitude range.
- GET** /api/v1/measurement/protocol/measureddate/ Find measurements by protocol and measured date range.
- GET** /api/v1/measurement/protocol/measureddate/country/ Find measurements by protocol and country code (ISO3). In order to check GLOBE countries, check /api/v1/country/all and /api/v1/country/wildcardname
- GET** /api/v1/measurement/protocol/measureddate/country/distance/ Find measurements by protocol within a country border or border plus a distance (km).
- GET** /api/v1/measurement/protocol/measureddate/place/ Find measurements by protocol and place id (ex: 42 for Lake Michigan). In order to check GLOBE places, check /api/v1/place/all and /api/v1/place/wildcardname
- GET** /api/v1/measurement/protocol/measureddate/polygon/geojson/ Find measurements by protocol and polygon coordinates.
- GET** /api/v1/measurement/protocol/measureddate/polygon/wkt/ Find measurements by protocol and polygon coordinates.
- GET** /api/v1/measurement/protocol/organizationid/ Find measurements by protocol and organization id.
- GET** /api/v1/measurement/protocol/organizationname/ Find measurements by protocol and organization name.
- GET** /api/v1/measurement/protocol/point/distance/ Find measurements by protocol, location point (lat, lon) and distance in kilometers.
- GET** /api/v1/measurement/protocol/siteid/ Find measurements by protocol and site id.
- GET** /api/v1/measurement/protocol/updatedate/ Find measurements by protocol and update date range

Models

APIResponse >

- Divided into different paths depending on what type of query you want to make

Use the interface to build your query

GET /v1/measurement/protocol/measureddate/ Find measurements by protocol and measured date range.

Parameters	
Name	Description
protocols * required array(string) (query)	Protocols for search <input type="text" value="dissolved_oxygens"/>
startdate * required string (query)	Start date <input type="text" value="2018-01-01"/>
enddate * required string (query)	End date <input type="text" value="2019-01-01"/>
geojson * required string (query)	Return GeoJSON format results if true. Otherwise, return results in custom JSON format. <input type="text" value="FALSE"/>
sample * required string (query)	Return sample number of results (10) if true. Otherwise, return all results. <input type="text" value="TRUE"/>

https://api.globe.gov/search/v1/measurement/protocol/measureddate/?protocols=dissolved_oxygens&startdate=2018-01-01&enddate=2019-01-01&geojson=FALSE&sample=TRUE





API – Tips on inputs

- Use Sample=“TRUE” to return 10 records to make sure your query is correct BEFORE trying it “for real” (Sample=“FALSE”)
- Use GeoJSON=TRUE to return data in GeoJSON format. Use GeoJSON=FALSE to return data in custom JSON format (this response includes the total records which will be returned)
- Currently limited to 1,000,000 records

API – Download your data

- We recommend putting the URL directly into the browser for larger datasets, otherwise use the “Download button” in the response window

Request URL
`https://api.globe.gov/search/v1/measurement/protocol/measureddate/?protocols=dissolved_oxygens&startdate=2018-01-01&enddate=2019-01-01&geojson=FALSE&sample=TRUE`

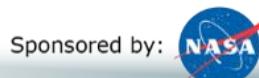
Server response

Code	Details
200	Response body

```
{  
  "count": 6969,  
  "message": "success",  
  "results": [  
    {  
      "protocol": "dissolved_oxygens",  
      "measuredDate": "2018-01-12",  
      "createDate": "2019-03-19T00:00:00",  
      "updateDate": "2019-03-19T00:00:00",  
      "publishDate": "2019-06-25T05:20:58",  
      "organizationId": 102968,  
      "organizationName": "CAG Ceske Budejovice",  
      "siteId": 1981,  
      "siteName": "School Location:SWS-01",  
      "countryName": "czech-republic",  
      "countryCode": "CZE",  
      "latitude": 48.9737,  
      "longitude": 14.5027,  
      "elevation": 395,  
      "pid": 84213954,  
      "data": {  
        "dissolvedoxygensMeasuredAt": "2018-01-12T13:00:00",  
        "dissolvedoxygensWaterBodyState": "normal",  
        "dissolvedoxygensDissolvedOxygenViaKitMgl": "6.6",  
        "dissolvedoxygensUserid": "3806974"  
      }  
    }  
  ]  
}
```

Download

Response headers



Your Turn

- Which query would you use to find all dissolved oxygen measurements between 1/01/2010 and 1/01/2011
- Which format option would you use to determine how many measurements there are in that time frame?
- Download the dissolved oxygen data using the GeoJSON format, save the file and plot it at geojson.io

Answers

- Which query would you use to find all dissolved oxygen measurements between 1/01/2010 and 1/01/2011
 - Use /measurement/protocol/measureddate
- Which format option would you use to determine how many measurements there are in that time frame?
 - Use GeoJSON="FALSE" and Return sample results="TRUE" to get a count of how many measurements there are in that timeframe:

https://api.globe.gov/search/v1/measurement/protocol/measureddate/?protocols=dissolved_oxygen&startdate=2010-01-01&enddate=2011-01-01&geojson=FALSE&sample=TRUE

[Answer: count: 3096]

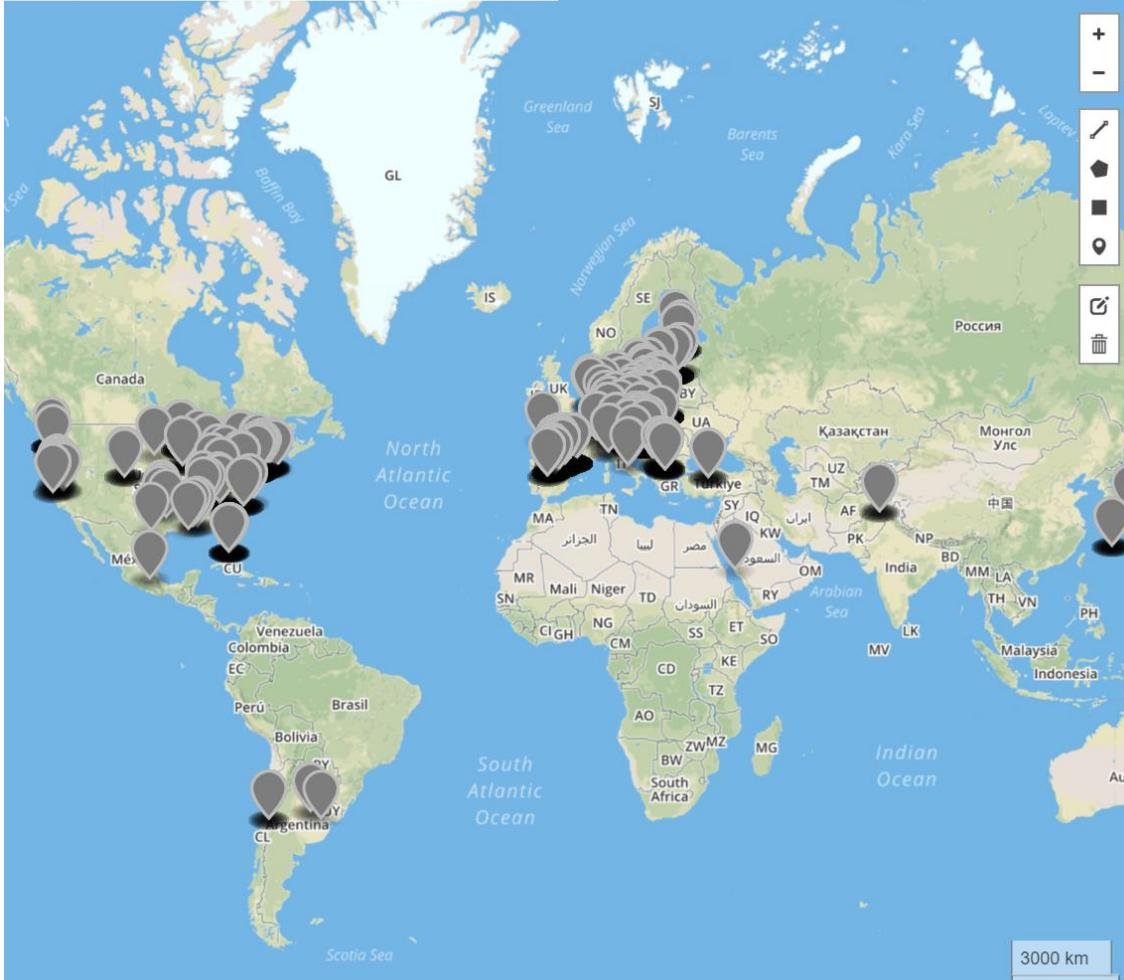
- Download the dissolved oxygen data using the GeoJSON format, save the file and plot it at geojson.io (Note geojson="True" and sample="false")

https://api.globe.gov/search/v1/measurement/protocol/measureddate/?protocols=dissolved_oxygen&startdate=2010-01-01&enddate=2011-01-01&geojson=TRUE&sample=FALSE



Geojson.io plot

Open Save New Share Meta unsaved



</> JSON

Table

Help

anon | log

```
1 {
2   "type": "FeatureCollection",
3   "features": [
4     {
5       "type": "Feature",
6       "properties": {
7         "countryCode": "ARG",
8         "countryName": "Argentina",
9         "dissolvedoxygenComments": "La turbidez se i",
10        "dissolvedoxygenDissolvedOxygenViaKitMgl": "2010-09-08T17",
11        "dissolvedoxygenMeasuredAt": "2010-09-08T17",
12        "dissolvedoxygenOxygenKitMfg": "lamotte",
13        "dissolvedoxygenOxygenKitModel": 7414,
14        "dissolvedoxygenUserid": -1,
15        "dissolvedoxygenWaterBodyState": "normal",
16        "elevation": 64.3,
17        "organizationId": "organizationId",
18        "organizationName": "Escuela de Educación Se",
19        "protocol": "dissolved_oxygens",
20        "siteId": "siteId",
21        "siteName": "Subafluente del Ludueña 1:SWS-0
22      },
23      "geometry": {
24        "type": "Point",
25        "coordinates": [
26          -61.00819,
27          -33.01783
28        ]
29      }
30    },
31    {
32      "type": "Feature".
```

Next Steps

- Congratulations – you should:
 - Know how to find your school data
 - Know how to find data from other schools around the world
 - Know how to find schools and teachers who are entering data so you can collaborate with them
- You can now
 - Start creating sites and entering data into the GLOBE system
 - Next Training – 4. Teachers - How to use Setup your GLOBE account

Questions – contact the GLOBE Helpdesk – help@globe.gov



ADAT Case Study

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Supported by:



ADAT Case Study - What would be a good filter to setup to see if GLOBE data “saw” El Nino?

- Background
 - El Nino is a phenomenon that happens approximately every 7 years that results in increased rain along the western side of the US, Latin and South America. The last El Nino occurred in 2015/2016.
- Which protocol to measure?
 - Precipitation
- Date Range?
 - Compare 2013/2014 to 2015/2016 (El Nino Year)



Clear Filters

Data Last Updated: 2016-05-16

Instructions

Select a Filter:

Data Filters

Select Protocols

X Precipitation

Date Range

X 2015-12-01 to 2016-02-29

Data Count Range

Site Filters

Site Name

Country or State/Territory

In proximity of a lake or river:

School or Teacher

Elevation Range

Lat/Long Range

Proximity to Lat/Long

345 Sites Found

Download Measurement Data (13300)

Download Summary Data

Protocol

Date Range

School Name	Site Name	Location	Latitude	Longitude	Elevation
2nd Arsakei-Tositseio lyceum Ekalis	School Arsakei Drosia-CC		38.1198	23.8661	380.6
Abdulah Bin Salam Secandary School at Al-Ahsa	مدرسة عبدالله بن سلام دراسة العلاقى الجوى		25.4524	49.5944	150
Agial Junior High School	METEOROLOGICAL SHELTER SCHOOL YARD		32	34.44	27
Ahmad Sameh	GREENHOUSE PATH:ATM-01		31.45	35.13	698.2
Al Afak School -Sur Baher	GARDEN YARD:ATM-01		31.44	35.13	599.6
Alexander von Humboldt Gymnasium	Humboldt Gymnasium Vordereingang:ATM-01	Konstanz, BW, Germany	47.667	9.183	367.4
Alexander von Humboldt Gymnasium	Radolfzell Mogginger Steig:ATM-02	Konstanz, BW, Germany	47.449	8.593	386.8
Al-Fahd Secondary School at Rejal Alma'a	Al-Fahd at Rejal Alma'a		17.79349	41.94154	743
Al-Farouq Intermediate School at Jeddah	ikea:ATM-01		21.5546	39.1844	12.9
Al-Fath Secondary School at Abha	ALFath:ATM-01		18.1208	42.31	2247
Al-Hayathem Intermediate and Secondary Girls School : AL-Hayathem Intermediate:ATM-01			24.1	47.1427	700
Al-Hussein Bin Ali Secondary School at Makkah Al-Muk: AL-RAFEEY STREET:ATM-01			21.23	39.47	267.7
AlJazeera Intermediate School at Taif	Aljazeera School:ATM-01		21.21266	40.26944	365.2
Al-Khaleej Secondary School at Dammam	ALKalig:ATM-02		26.2589	50.0669	10
Al Majd Junior High School	School almjad		32.6047	35.44457	101
Al-Masaudi Intermediate School at Jeddah	Al-Masaudi Intermediate School at Jeddah		21.56452	39.20419	32
Al Mustakbal Elementary School	METEOROLOGICAL SHELTER ON THE ROOF		32.09	34.57	59
AL MUTANABI JUNIOR HIGH SCHOOL (GLIDUZ3N)	SCHOOL RIGHT MAIN ENTRANCE:ATM-01		32.8507	35.2142	212
Al Mutran	SCHOOL YARD:ATM-01		32.41	35.16	412
AL Salam Elementary School	School Entrance Garden Yard:ATM-01		31.25	34.46	255
Anyksciai distr. Troskunai K. Inciura Gymnasium	TROSKUNAI:ATM-01		55.5869	24.8866	50
Apeitio Gymnasio Agrou	atm-1:ATM-01		34.91643	33.0144	993.8
As-Siddiq Secondary School at Rejal Alma'a	Alsedeq Secondary School Atmosphere:ATM-01		19.26422	46.53181	1245.
Athens Intermediate School	AIS 2:ATM-02	Athens, AL, United States	34.47649	-86.59782	249.2
AT-Tahawy High School at Al-Hofuf	موقع دراسة العلاقى الجوى		25.21	49.36	173.8
Attour Junior High School For Girls	School Entrance Garden Yard:ATM-01		31.46	35.14	820
aum hany	sumail atm		23	57	394
aum hany	I'm Hani atm2		23	58	366
Bagy Bin Mekhled School at Riyadh	bagy atmosphere		24.81287	46.88946	595
Barta'a Junior High School	School Roof:ATM-01		32.475	35.08	4
Berufskolleg Institut Dr. Flad	School Location:ATM-01	Stuttgart, BW, Germany	48.774	9.1543	271
Brazil Secondary School	BHS Instrument Shelter:ATM-01		10.561	-61.27	25
Brazil Secondary School	BHS Car Park:ATM-02		10.561	-61.27	25
Bundeshandelsakademie und Bundeshandelsschule Brei	School Location:ATM-01		47.49139	9.72331	403
Bunyawat Wittayalai School	Fongsiri		20	99	477
Cabrina High School	Cabrina High Back Yard:ATM-01	New Orleans, LA, United States	29.9815	-90.088	1
Canyon Weather	ATM- Davis Station #2	la verne, CA, United States	34.1248	-117.7493	475
Cedar Grove Elementary	Atmosphere	Germantown, MD, United States	39.24907	-77.23223	130
CEIP Pérez Zamora	huerto de los abuelos:ATM-01		28.3773	-16.5833	334.9
CEIP Pérez Zamora	huerto de los abuelos:ATM-01		28	17	100

Sponsored by:



Supported by:



[Clear Filters](#)

Data Last Updated: 2016-05-16

[Instructions](#)

Select a Filter:

Data Filters

Select Protocols

X Precipitation

Date Range

X 2015-12-01 to 2016-02-29

Data Count Range

Site Filters

Site Name

Country or State/Territory

X Oregon
X Washington
X California
X Uruguay

In proximity of a lake or river:

School or Teacher

Elevation Range

Lat/Long Range

Proximity to Lat/Long

13 Sites Found[Download Measurement Data \(321\)](#)[Download Summary Data](#)

School Name	Site Name	Location	Latitude	Longitude
<input checked="" type="checkbox"/> Canyon Weather	ATM- Davis Station #2	Ia verne, CA, United States	34.1248	-117.7493
<input checked="" type="checkbox"/> Escuela No. 10	RINCON METEOROLOGICO:ATM-01		-33.24423	-56.30924
<input checked="" type="checkbox"/> Escuela No. 81 Enrique Amorin	Agapito		-31	-57
<input checked="" type="checkbox"/> Escuela No. 88 Alfredo B. Nobel	Las Violetas:ATM-01		-34.56708	-56.29809
<input checked="" type="checkbox"/> Escuela No. 8 Alemania	Estación escolar Nuevo Berlín		-32.97972	-58.057
<input checked="" type="checkbox"/> Kingsburg High School	Kingsburg High School Weather Station Site:ATM-02	Kingsburg, CA, United States	36.5197	-119.5463
<input checked="" type="checkbox"/> Lane Community College	Science Building (NW):ATM-01	Eugene, OR, United States	44.0083	-123.0310
<input checked="" type="checkbox"/> Liceo No. 1 Brause	Liceo Brause Pando		-34.7	-55.9
<input checked="" type="checkbox"/> Lourdes Public Charter School	Lyons Fire Hall:ATM-01	Scio, OR, United States	44.7166	-122.6927
<input checked="" type="checkbox"/> Lourdes Public Charter School	School Site:ATM-02	Scio, OR, United States	44.7225	-122.6898
<input checked="" type="checkbox"/> McKnight Middle School	AWS and Cloud site:ATM-01	Renton, WA, United States	47.4851	-122.1112
<input checked="" type="checkbox"/> Monroe Elementary School	Monroe Elementary - The Out ATM-01	Everett, WA, United States	47.9792	-122.2008
<input type="checkbox"/> test_mobile school 1	Ready for Download	Pasadena, CA, United States	37.63675	-122.1260

Ready for [Download](#)[X](#)**Locations**

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THE GLOBE PROGRAM

McKnight Middle School – Data from 2013 and 2015 - Download to Excel

A	B	C	D	E	F	G	H	I	J	K
1	org_name	site_name	latitude	longitude	elevation	measured_on	precipitations	precipitations:occurred	no occurrence	rain
106	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/1/2015	0	no occurrence		
107	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/2/2015	1.52	rain		
108	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/3/2015	1.52	rain		
109	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/4/2015	3.05	rain		
110	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/5/2015	0	no occurrence		
111	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/6/2015	0.51	rain		
112	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/8/2015	16.25	rain		
113	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/9/2015	15.49	rain		
114	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/10/2015	2.54	rain		
115	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/11/2015	1.27	rain		
116	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/12/2015	0.51	rain		
117	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/13/2015	3.55	rain		
118	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/14/2015	0.51	rain		
119	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/15/2015	0	no occurrence		
120	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/16/2015	1.02	rain		
121	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/17/2015	0	no occurrence		
122	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/18/2015	6.35	rain		
123	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/19/2015	0.51	rain		
124	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/20/2015	0.51	rain		
125	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/22/2015	3.56	rain		
126	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/23/2015	0.76	rain		
127	McKnight Middle S	AWS and Cloud site:ATM	47.4851	-122.111	161	12/24/2015	0	no occurrence		



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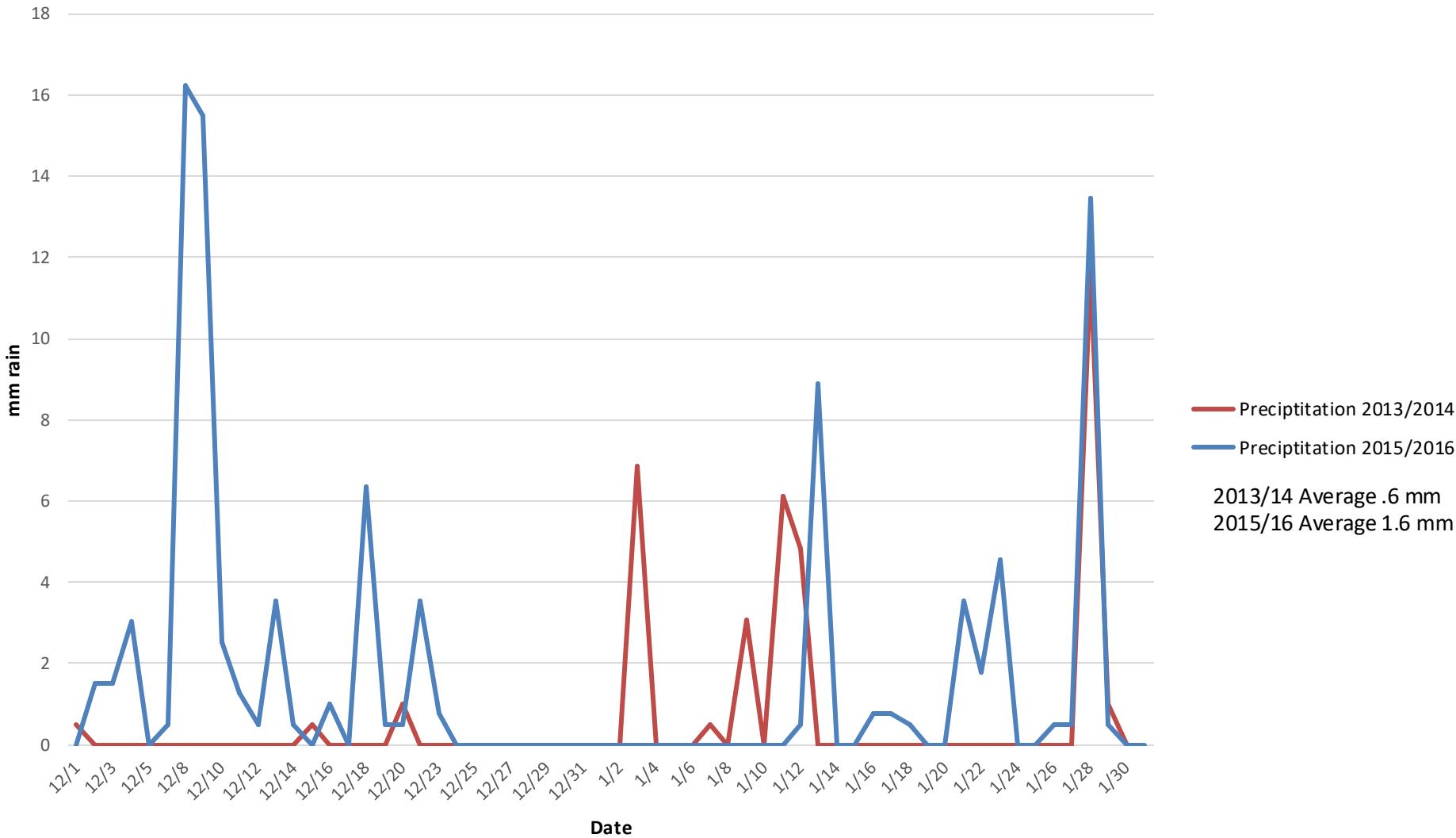
Supported by:





THE GLOBE PROGRAM

McKnight Middle School – Compare Precipitation 2013/14 to 2015/16



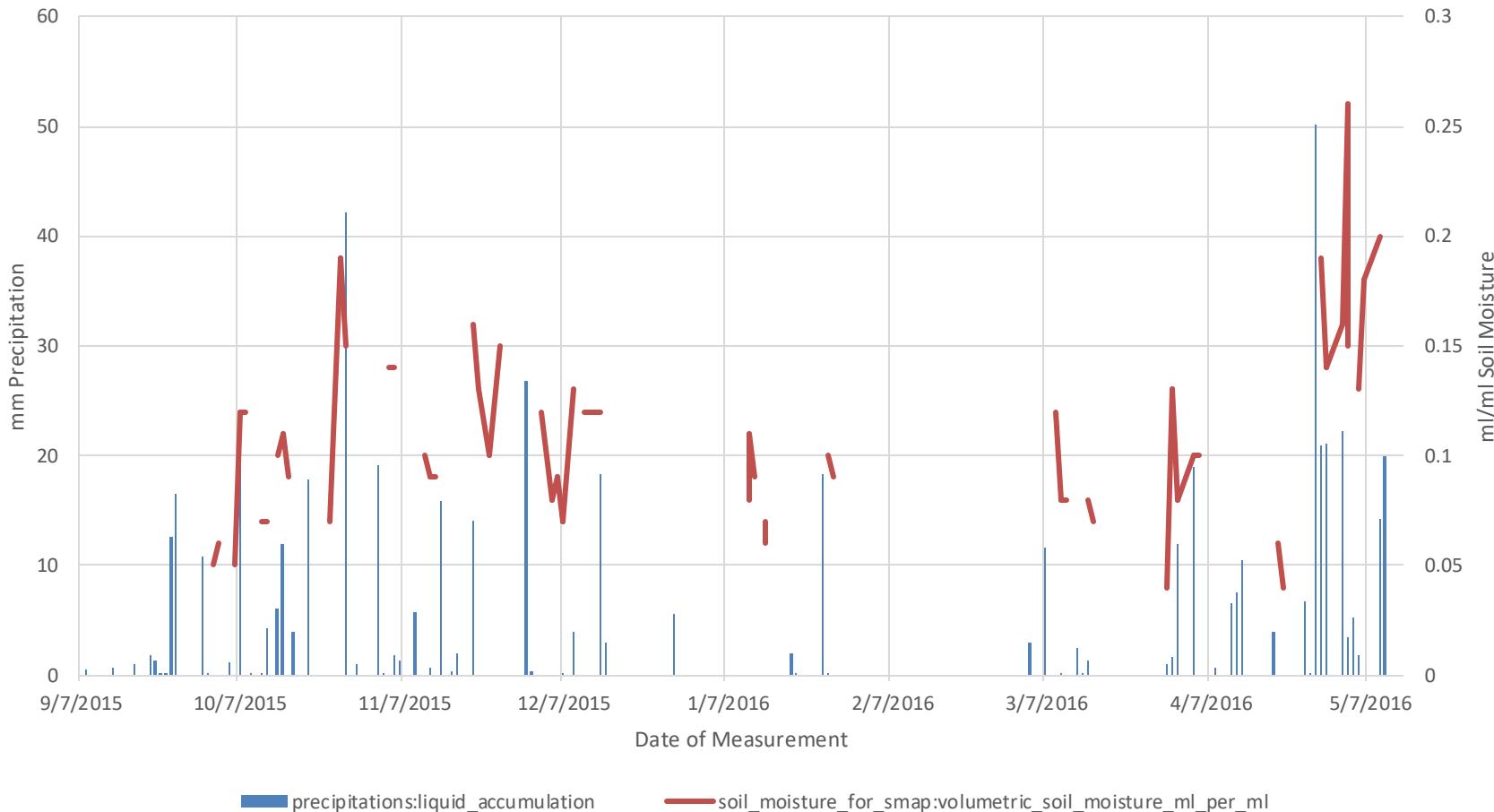
Sponsored by:



Supported by:



Ramey School Precipitation and Soil Moisture – Do you see a correlation?



precipitations:liquid_accumulation

soil_moisture_for_smap:volumetric_soil_moisture_ml_per_ml

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