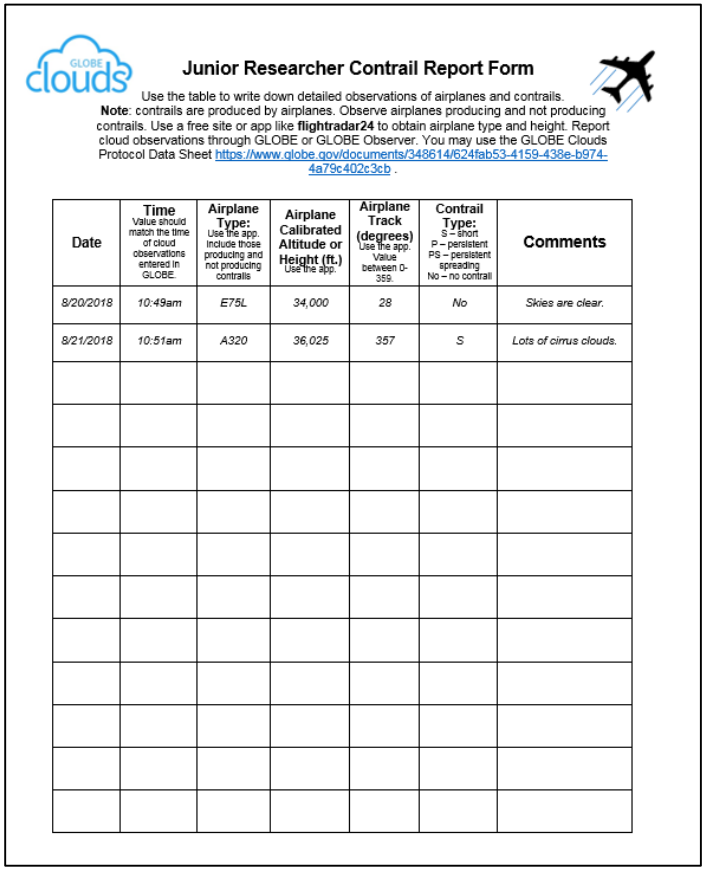
GLOBE Clouds
Junior Research Teams:
Contrail Investigation

Objective – Report to GLOBE Clouds airplanes above 25,000ft that ARE NOT creating contrails and ARE creating contrails. Report contrail type and general cloud observations.

Use the FlightRadar24 website or app to track airplanes that are NOT creating and those that ARE creating contrails. Submit cloud observations to GLOBE using the GLOBE website or the GLOBE Observer app. Report airplane data to NASA GLOBE Clouds using your team's assigned google sheet.

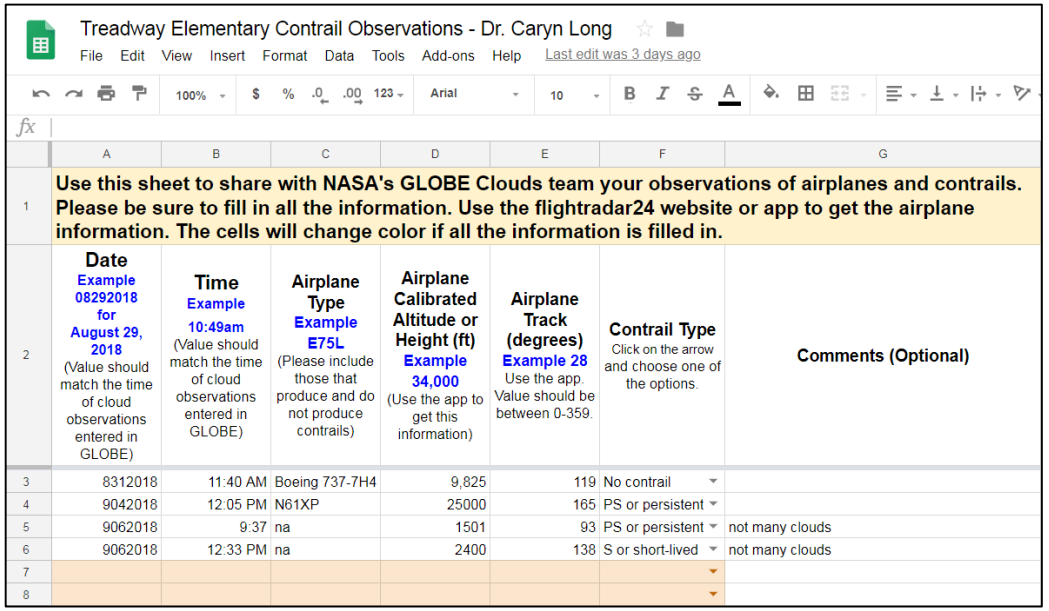
How to Report Airplane Details to NASA GLOBE Clouds



Junior Researcher Contrail Report Form

Use the table to write down detailed observations of airplanes and contrails.
Note: contrails are produced by airplanes. Observe airplanes producing and not producing contrails. Use a free site or app like **flightradar24** to obtain airplane type and height. Report cloud observations through GLOBE or GLOBE Observer. You may use the GLOBE Clouds Protocol Data Sheet https://www.globe.gov/documents/348614/624fab53-4159-438e-b974-4a79c402c3cb .

Date	Time (Value should match the time of cloud observations entered in GLOBE)	Airplane Type: (Use the app. Include those producing and not producing contrails)	Airplane Calibrated Altitude or Height (ft.) (Use the app.)	Airplane Track (degrees) (Use the app. Value between 0-359.)	Contrail Type: (S – short P – persistent PS – persistent spreading No – no contrail)	Comments
8/20/2018	*10:49am*	*E75L*	*34,000*	*28*	*No*	*Skies are clear.*
8/21/2018	*10:51am*	*A320*	*36,025*	*357*	*S*	*Lots of cirrus clouds.*



Treadway Elementary Contrail Observations - Dr. Caryn Long

File Edit View Insert Format Data Tools Add-ons Help Last edit was 3 days ago

Use this sheet to share with NASA's GLOBE Clouds team your observations of airplanes and contrails. Please be sure to fill in all the information. Use the flightradar24 website or app to get the airplane information. The cells will change color if all the information is filled in.

	A	B	C	D	E	F	G
2	**Date** Example 08292018 for August 29, 2018 (Value should match the time of cloud observations entered in GLOBE)	**Time** Example 10:49am (Value should match the time of cloud observations entered in GLOBE)	**Airplane Type** Example E75L (Please include those that produce and do not produce contrails)	**Airplane Calibrated Altitude or Height (ft)** Example 34,000 (Use the app to get this information)	**Airplane Track (degrees)** Example 28 Use the app. Value should be between 0-359.	**Contrail Type** Click on the arrow and choose one of the options.	**Comments (Optional)**
3	8312018	11:40 AM	Boeing 737-7H4	9,825	119	No contrail	
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5	9062018	9:37	na	1501	93	PS or persistent	not many clouds
6	9062018	12:33 PM	na	2400	138	S or short-lived	not many clouds
7							
8							

The NASA GLOBE Clouds team will receive your airplane information through the team google sheet. The sheet mimics the junior research contrail report form. NOTE: *We still need your cloud observations through GLOBE or GLOBE Observer to match your cloud observations with the airplane information.*

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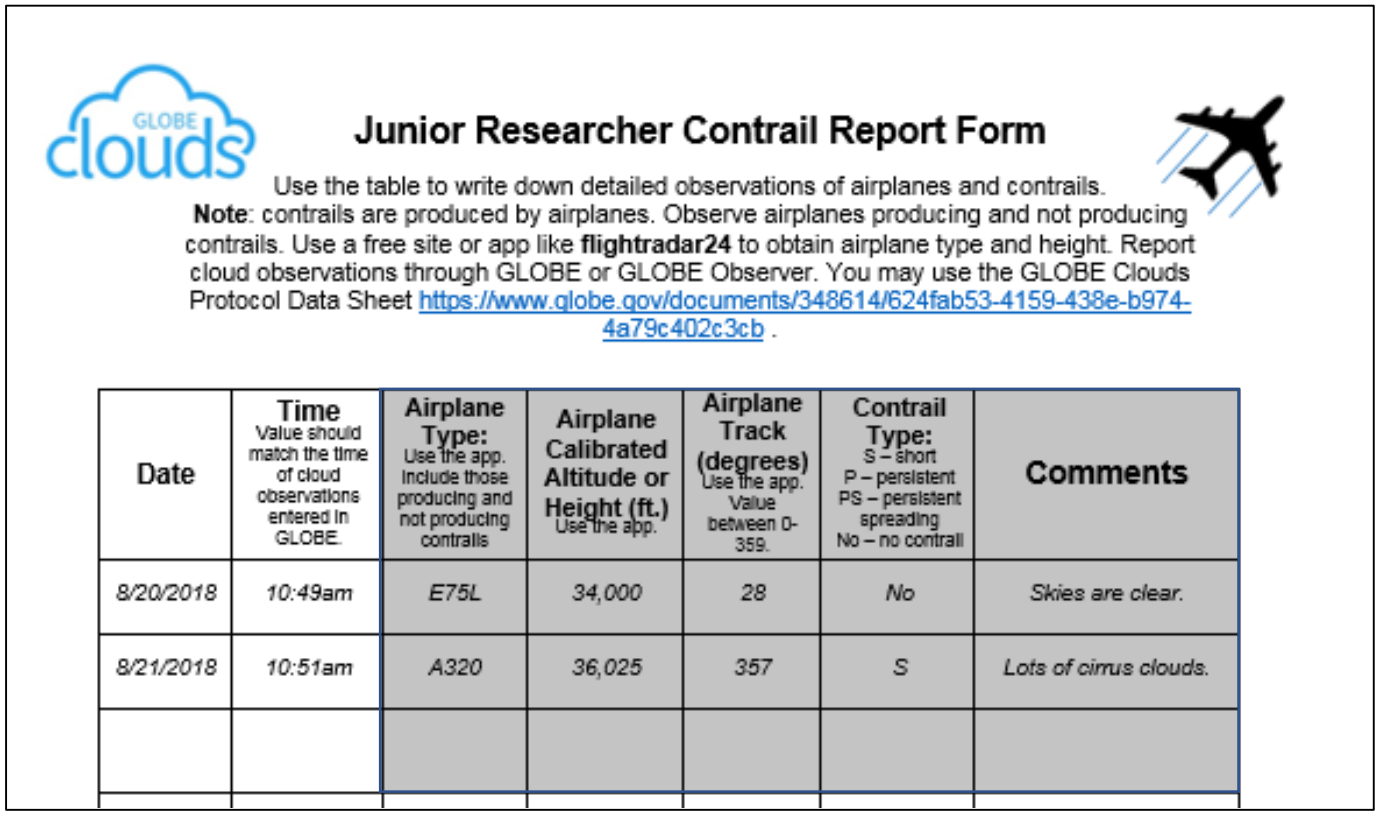
The junior research contrail report form allows you to collect airplane information while you make cloud observations. Information is available on how to use the app to get the airplane data.

Report Form – Date and Time



GLOBE clouds

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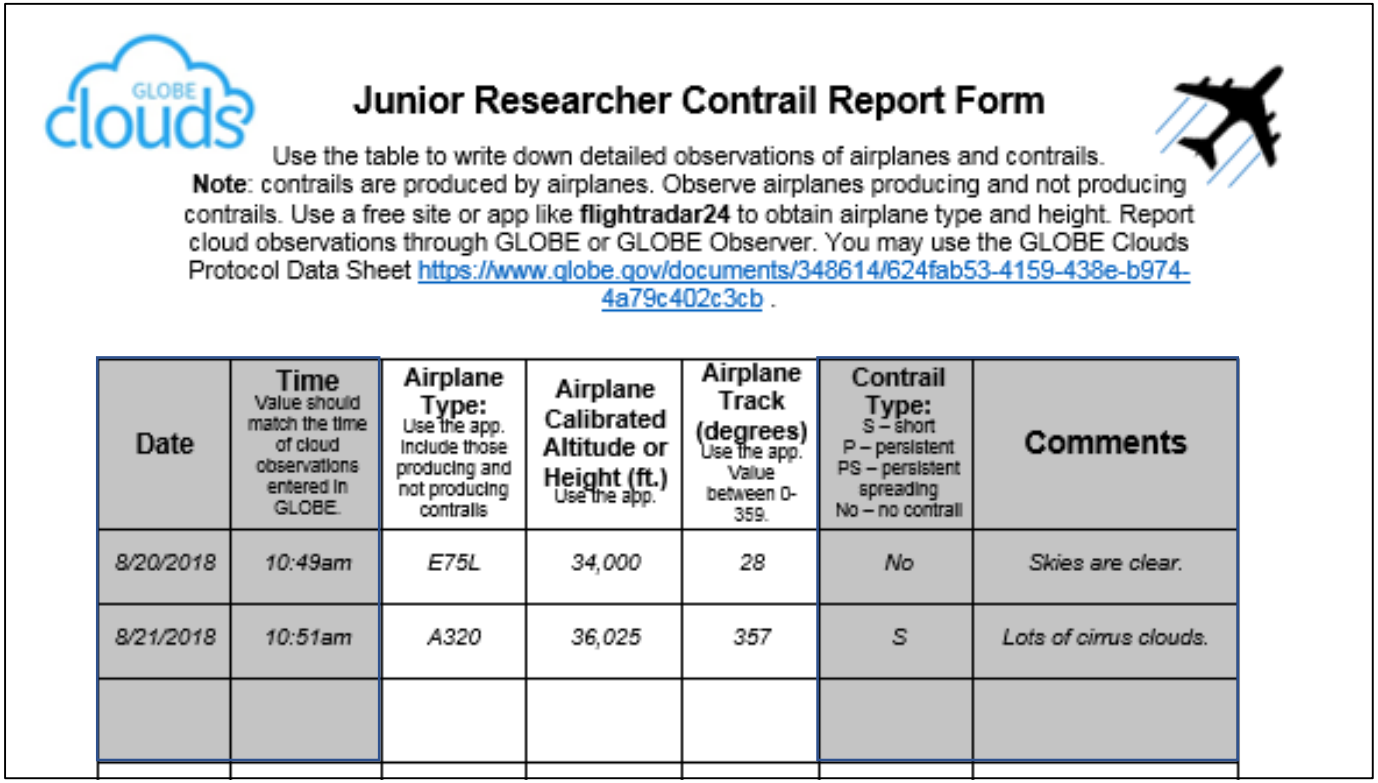
We ask that you use the same date and time (or within 5 or so minutes) as the cloud observations submitted to GLOBE.

Report Form – Airplane Information



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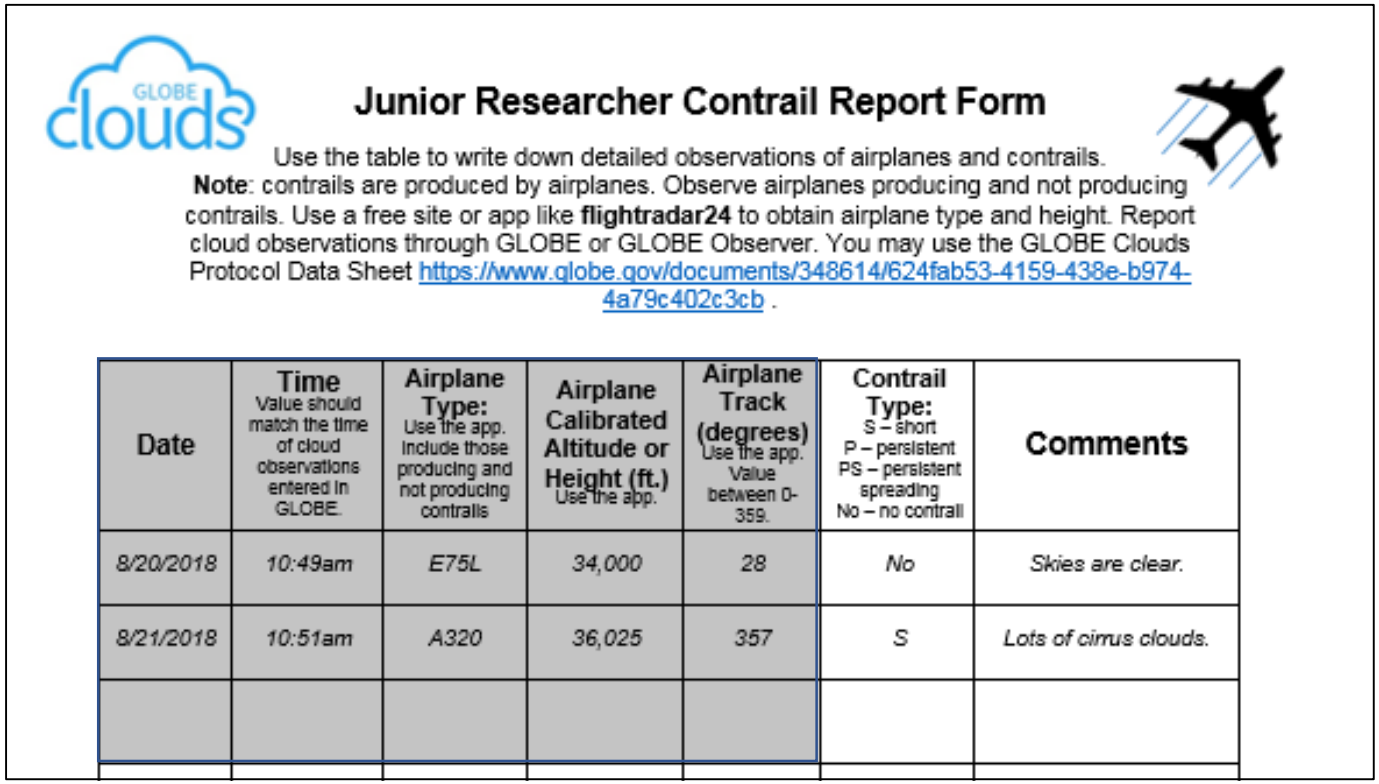
Some airplanes are better at producing contrails that others, so we ask for the type of airplane, the height, and track. ***NOTE**: Contrails are high clouds, so please keep track of airplanes above 25,000ft even if they are NOT producing contrails.*

Report Form – Contrails and Comments



GLOBE clouds

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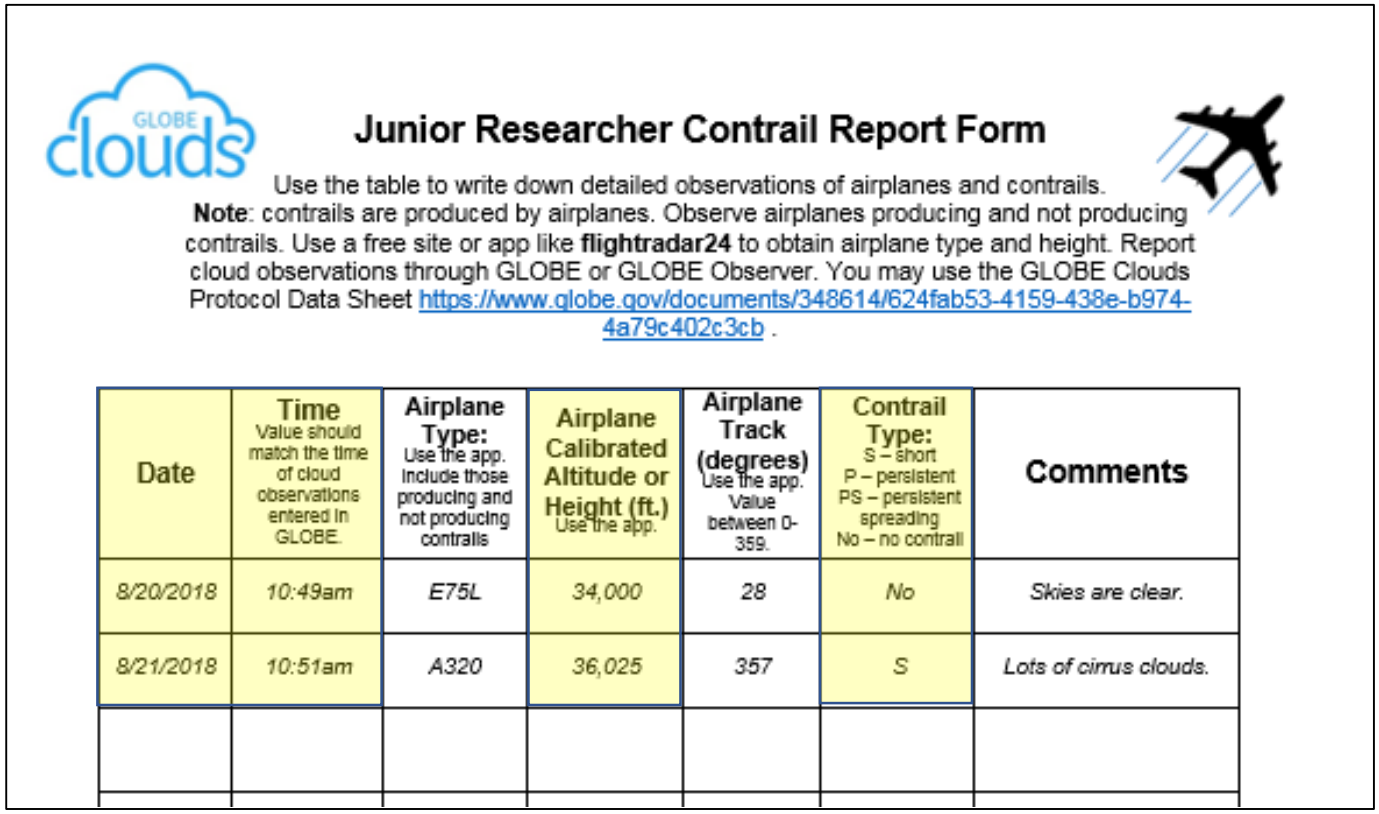
Use the comment box to write down what type of contrail the airplane is producing (short, persistent or persistent spreading). If no contrail is observed, then write no. Use the comment area for any information that is unique for that day (optional).

Report Form – Minimum Requirements



GLOBE clouds

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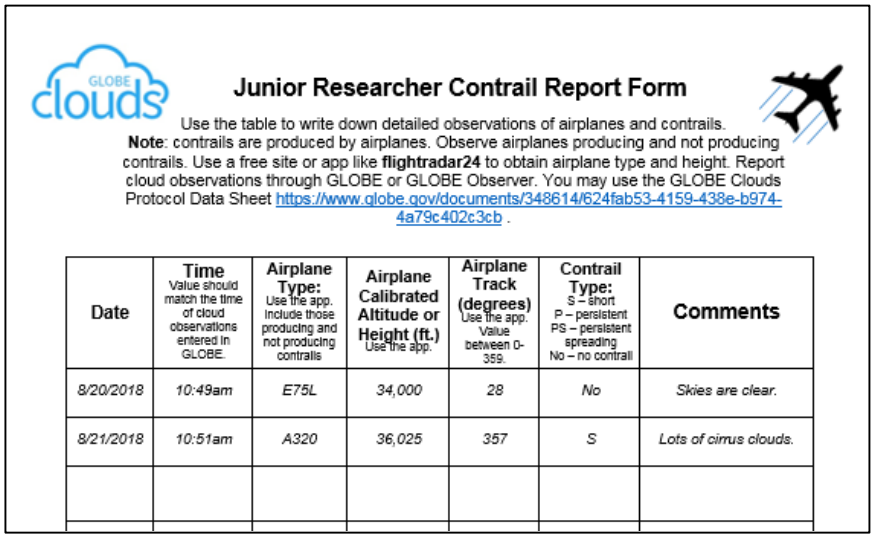
The information in yellow is the minimum required information for a successful report - **date, time, airplane calibrated altitude or height, and contrail information**.

Google Sheet Data Reporting



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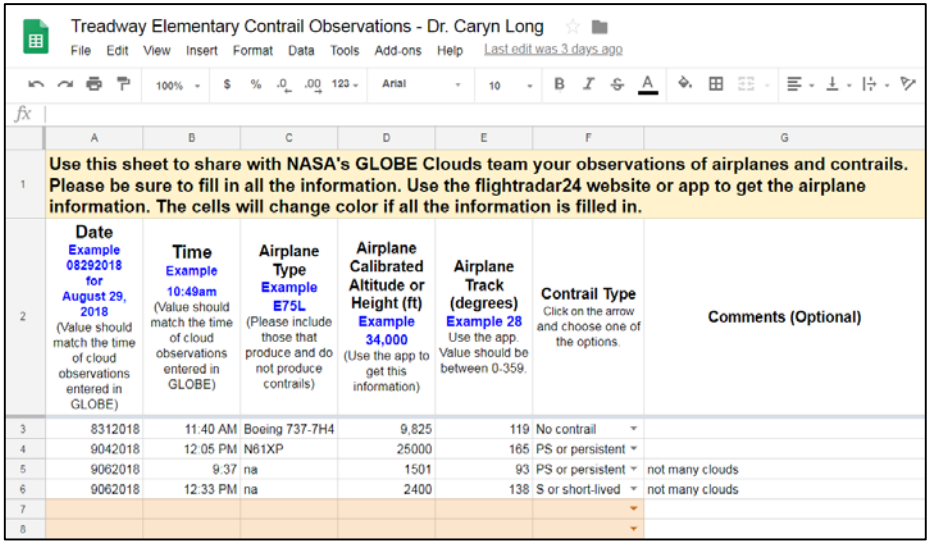

Treadway Elementary Contrail Observations - Dr. Caryn Long

File Edit View Insert Format Data Tools Add-ons Help Last edit was 3 days ago

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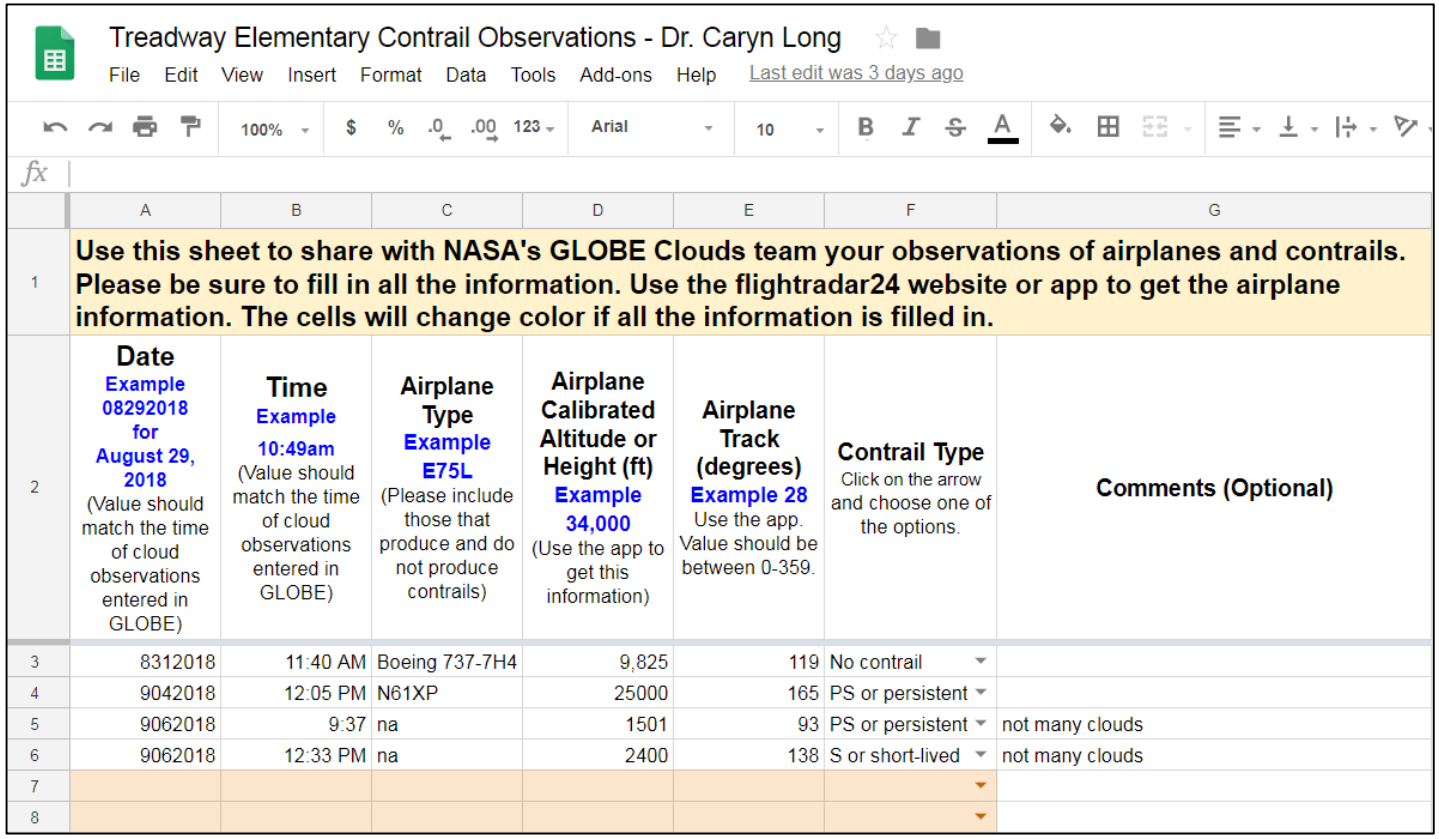
Google Sheet Data Reporting



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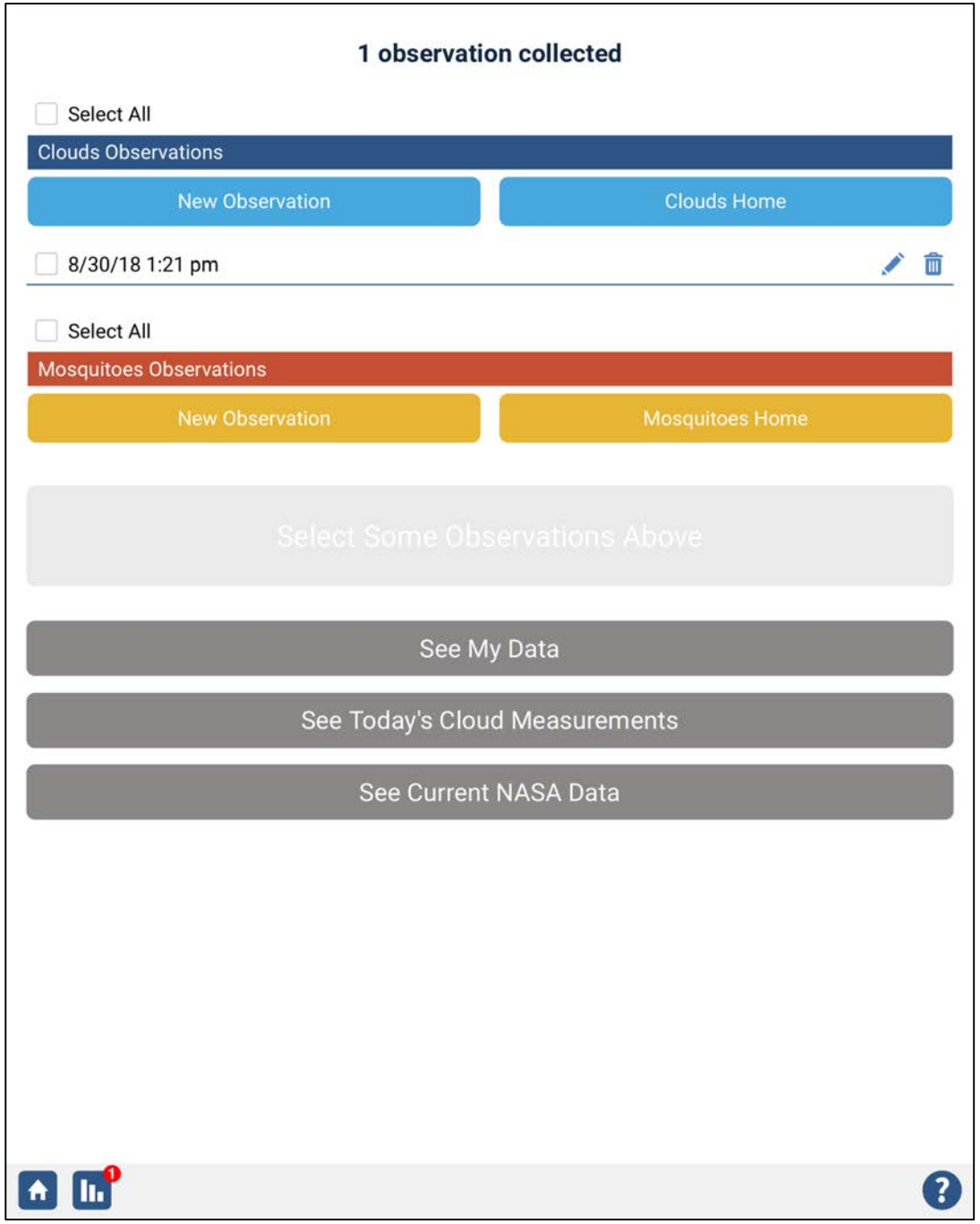
The sheet changes color to white as information is entered. Enter as much information as possible. **NOTE**: date & time is used to look for your clouds observations submitted to GLOBE.

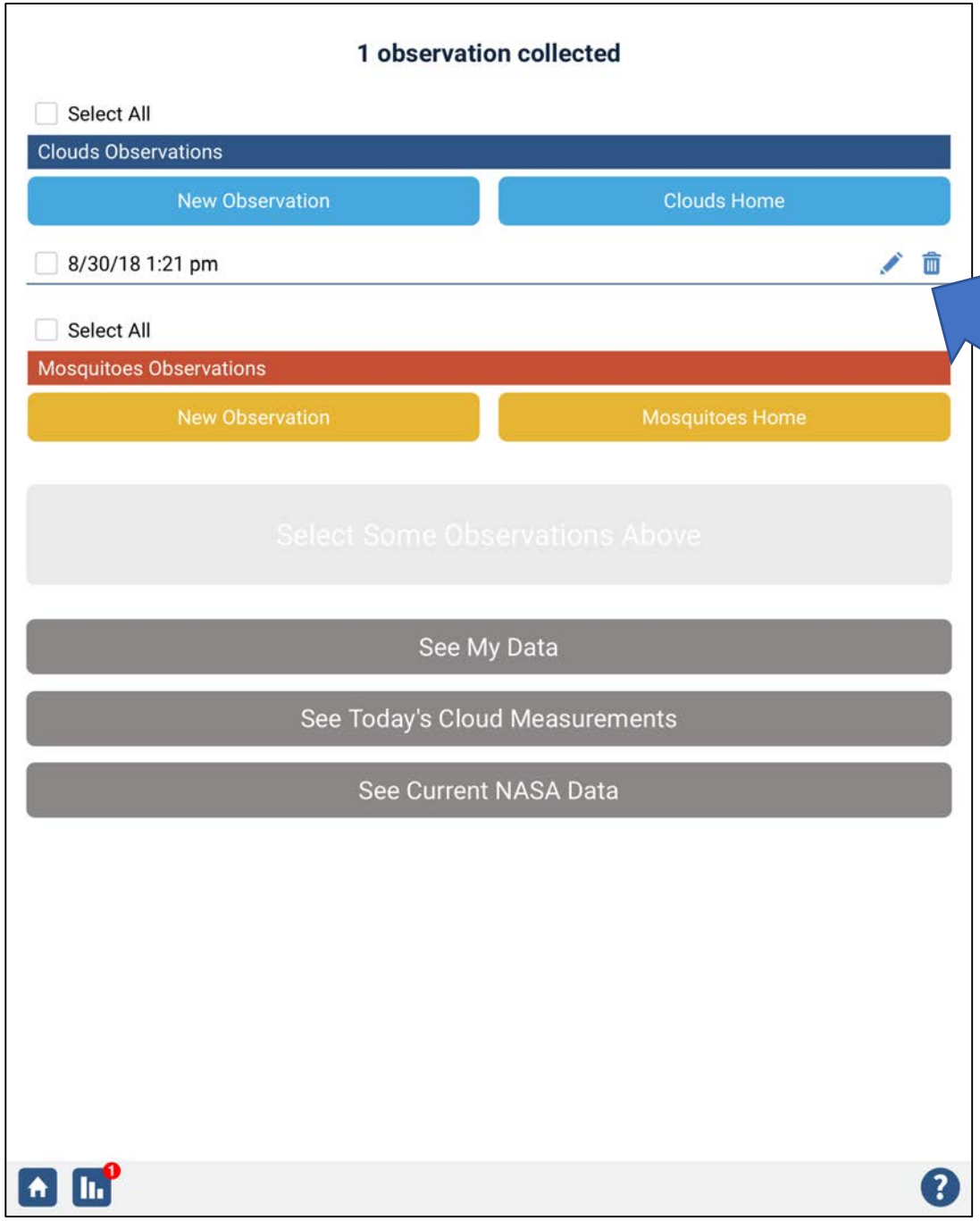
How to make sure I'm sending in my observations if using GLOBE Observer

A small, red number at the bottom of the screen means that you have data saved but it has not been sent in to the program.



How to make sure I'm sending in my observations

You get to this view when you click on the little, red number on the bottom. It shows all your observations.

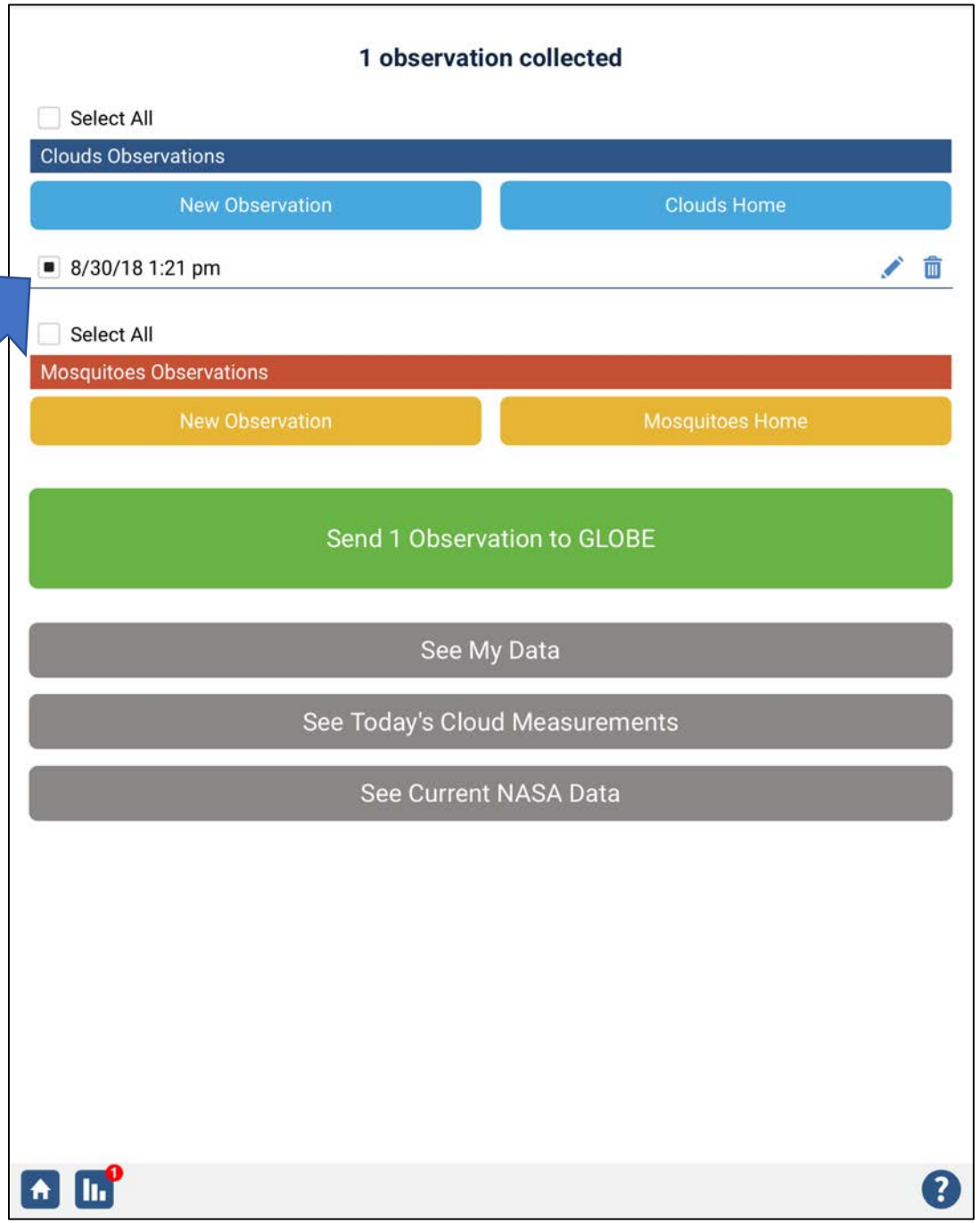


How to make sure I'm sending in my observations

You can hit the pencil and make changes to the observation if needed. If you hit the garbage can, it will delete the observation.

How to make sure I’m sending in my observations

Touch the square for the observation you want to send to GLOBE.



How to make sure I’m sending in my observations

You will then see the option to send the observation to GLOBE.