GLOBE Clouds: 1 Million Matches and Counting
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Overview

- Satellite Comparisons by the Numbers
- Update to Satellite Comparison Table
- Past Events
  - NASA Langley Open House
  - Solar eclipses 2023 and 2024
  - GLOBE Eclipse Challenge: Clouds and Our Solar-Powered Earth

Thank you to CERES, SatCORPS, and ASDC teams for their ongoing support.
The Science Activation program is a competitively-selected network of collaborative projects that seek to connect NASA Science with diverse learners of all ages in ways that activate minds and promote a deeper understanding of our world and beyond, with the ultimate vision:

to increase learners' active participation in the advancement of human knowledge.

https://science.nasa.gov/learn/about-science-activation/
# Satellite Matches by the Numbers and Addition of NOAA-20

1 January 2017 to 1 May 2024

<table>
<thead>
<tr>
<th>Satellite</th>
<th>Total Satellite Matches</th>
<th>NASA LaRC Team Support</th>
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</thead>
<tbody>
<tr>
<td>GEO Satellite Matches</td>
<td></td>
<td></td>
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<tr>
<td>GOES, Himawari, METEOSAT</td>
<td>992,422</td>
<td>SatCORPS</td>
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<tr>
<td>SSF Satellite Matches</td>
<td></td>
<td></td>
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<tr>
<td>Terra – 162,176</td>
<td>348,942</td>
<td>CERES Flash Flux</td>
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<tr>
<td>Aqua – 147,888</td>
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<tr>
<td>NOAA-20 – 38,878</td>
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<tr>
<td><strong>Total (2017 – Current)</strong></td>
<td><strong>1,341,364</strong></td>
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GLOBE Cloud Observations: 1,476,692  
Observations with images: 529,512  
Total Clouds and Sky Photos: 2,599,745 (each cardinal direction, upward, and downward)
Satellite Comparison Table New Look

User feedback from:
- Interns who use screen readers
- Community members from the 2023 GLOBE Annual Meeting
NASA Langley Open House 2023

GLOBE and My NASA Data area with Clouds Corn Hole Activity
Parent Quote:
One of the most interesting things is to see that the children can dream that it’s not a limiting factor, that they are Hispanic; they can also be there (NASA) one day. To see so many Hispanics at NASA, it not only makes us feel proud but it is a source of inspiration that they too can one day achieve their own dreams.

Collaboration with NASA funded program Engaging Hispanic Communities to do a special tour showcasing Acting Deputy Center Director Lisa Ziehmann and members of the HEAC ERG.
GLOBE Eclipse Challenge: Clouds and Our Solar-Powered Earth

15 March – 15 April 2024

Collected:
- 23,000 cloud observations
- 25,444 satellite comparisons
With observations from over 90 countries
GLOBE Eclipse Challenge Special Thanks

Dr. Brant Dodson & NASA Skywatchers

Dr. Patrick Taylor

Dr. Sergio Sejas

Dr. Brad Hegyi
Solar Eclipses 2023 and 2024 Data Collection
14 October 2023 (annular) and 8 April 2024 (total)

In the Eclipse Tool: Participants collect air temperature and clouds before and after maximum.

*Dodson et al., 2019, Eclipse Across America: Citizen Science Observations of the 21 August 2017 Total Solar Eclipse
https://doi.org/10.1175/JAMC-D-18-0297.1
Annular Solar Eclipse – 14 October 2023

The team was part of the NASA footprint at the 2023 Albuquerque Balloon Fiesta event (900,000 people) during the Annular Solar.

Air temperature measurements: 17,000
Cloud measurements: 2,100
Total Solar Eclipse – 8 April 2024

Events and Engagements

- Products and Videos in English and Spanish
- Scientific Presentations (poster and NASA Hyperwall talks) at the American Meteorological Society’s Annual Meeting
- 5-week GLOBE Eclipse Workshop for U.S. Educators

Participants

- Air Temp Measurements:
  - 34K+ (2.3 times the previous 3-day average)
- Clouds Measurements:
  - 10K+ (13 times the previous 3-day average)
- Accounts for over half of all the data contributed to NASA citizen science projects!
Preliminary Results

- First focus: 4 major cities (pop. >10k) with notable cloud changes (type or percentage)
  - Kerrville, TX (primarily hot-humid)
  - Waco, TX (primarily hot-humid)
  - Texarkana, TX/AR (primarily hot-humid)
  - Georgetown, KY (primarily mixed-humid)
**Preliminary Results**

- Generally, citizen scientists reported lower cloud coverage than the nearby ASOS site, but agreed with the satellite match report.
- Kerrville, Waco, and Texarkana (all in path of totality) citizen scientists reported cloud coverage decreases as totality approached, and increases post-eclipse.
- Contrail reports increased as the partial eclipse started & continued.
- Noticeable temperature decreases at local eclipse max.

![Waco, TX; during partial, before local max](image1)

![Waco, TX; same location, 30 min later, 25 min before max](image2)
Opportunities for You

- Requesting Data Collection (Geofencing) - only available in the US
- Suggest ideas for Data Challenges
- Use the Data

https://observer.globe.gov/get-data/clouds-data