



Enabling Worldwide Citizen Science Reporting of Dust Storms with NASA's GLOBE ObserverApp



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AMS 100th

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Thank you to our collaborators



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Forecast Capability Program



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NASA GLOBE Clouds

Global Learning & Observations to Benefit the Environment (GLOBE) Program

Since 1995

121 countries

34,000 schools

160,000 citizen scientists

globe.gov



Sponsored by:



Supported by:



Implemented by:



Mobile app launched in 2017



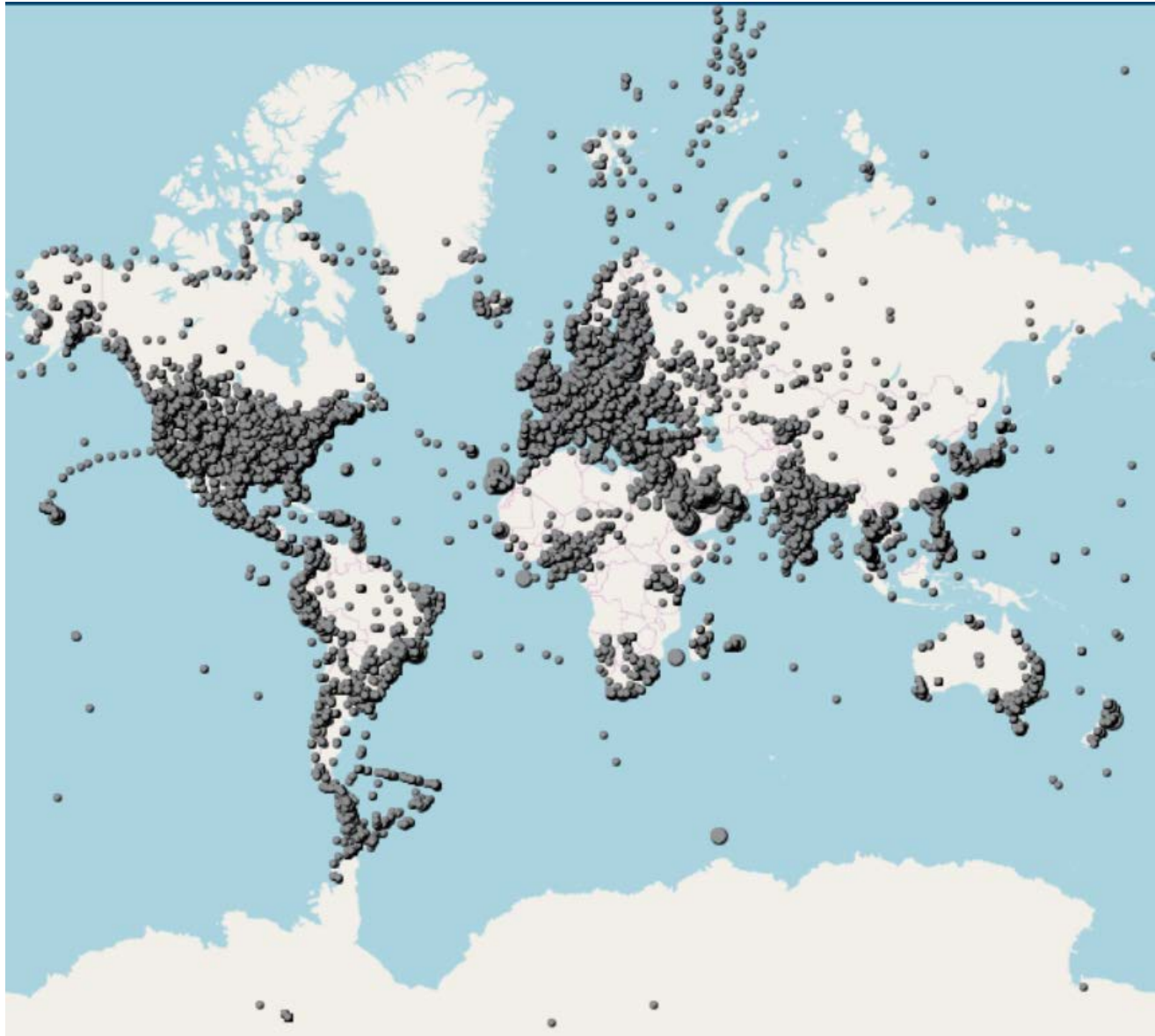
**DO SCIENCE
IN THE PALM OF YOUR HAND**

Download the GLOBE Observer app
observer.globe.gov

NASA Your planet is changing. We're on it.

**EARTH
RIGHT NOW**

500,000 cloud observations since 2017



13 January 2020

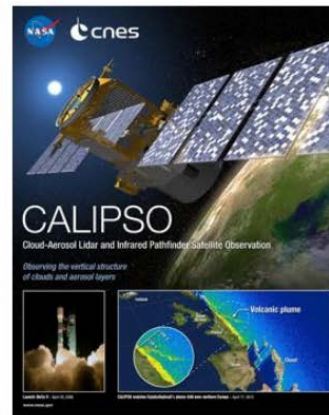
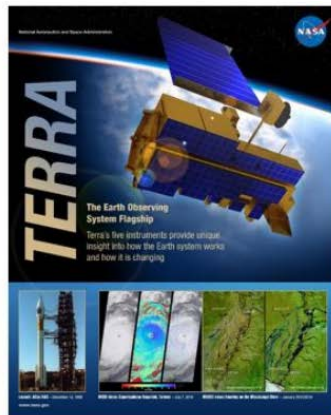
GLOBE



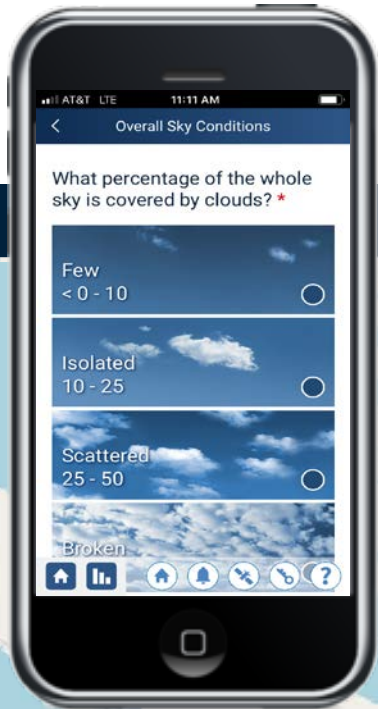
230,000 satellite matches

NASA emails your satellite match to you

Satellite-matched cloud dataset available
observer.globe.gov/get-data/cloud-data



Original objective: clouds



GLOBE Visualization System

Select Language

2019-10-08

Spain Citizen Science
Site: 31TCF445528

Measurements | Data Counts | Site Info | Photos

Select Photos: Sky Conditions | Select Date: 2019-10-08 06:19:00.0

North

Map showing global locations with small photo thumbnails. Labels include: Mexico, Venezuela, Colombia, Peru, Brasil, Marac, المغرب, الجزائر, ليبيا, مصر, السودان, Tchad, Niger, Mali, Egipte, Türkiye, Turkménistan, Irán, Afganistán, Pakistan, India, Bangladesh, Viet Nam, Malaysia, Indonesia, and others.

GLOBE Observers Caught in Saharan Dust Storm



Canary
Islands

March 28, 2018

Important Unique Opportunity

Saudi Arabia

2019-07-24 09:36

17.31N 43.15E



Cyprus

2019-10-14 11:24

35.16N 33.40E

Satellite match

[here](#)



- Source of data *to augment extremely sparse in situ dust monitoring data.*
- Geotagged photographs of dust events can be *compared to satellite data and models.*

Data call issued to GLOBE community

 **NASA GLOBE Observer** 
@NASAGO Follow 

Dust storms are dangerous and difficult to forecast. You can help by reporting [#duststorms](#) with the [#Clouds](#) tool within the [#NASAGO #app](#). Find out how: bit.ly/32aBem9 [#citizenscience](#) [#citsci](#) [#dust](#) [#dustdevil](#) [#haboob](#) [#duststorm](#)



8:30 AM - 7 Jul 2019

 **NASA en español** 
@NASA_es Follow 

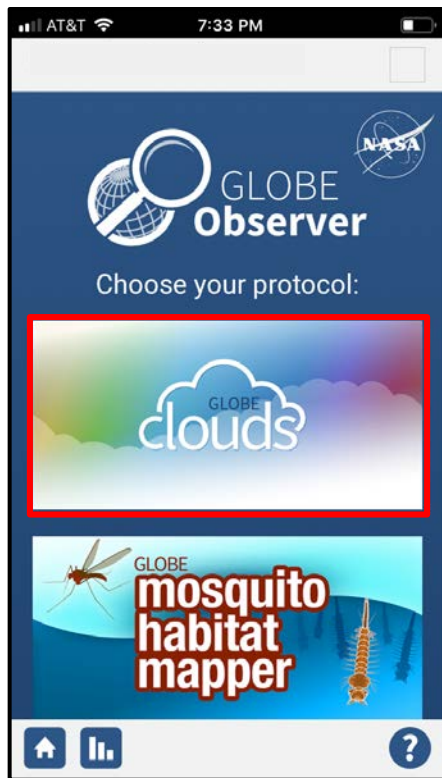
¿Vives en un área que experimenta tormentas de polvo atmosférico? Te animamos a que fotografíes el suceso y nos envíes tus fotos usando la aplicación [@NASAGO](#). bit.ly/33SSi0X



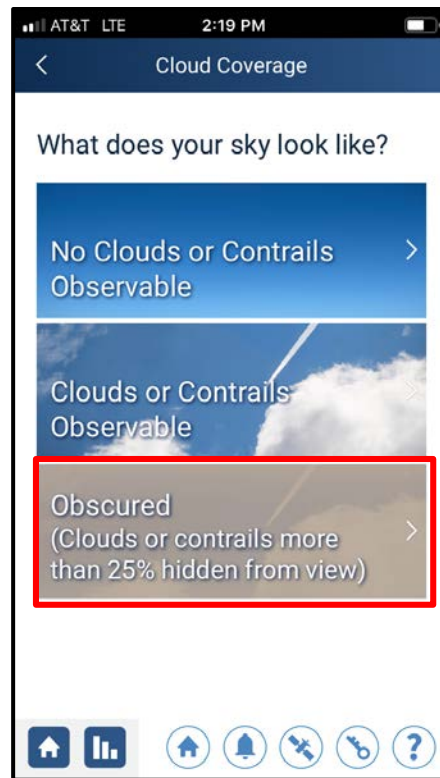
6:58 AM - 22 Aug 2019



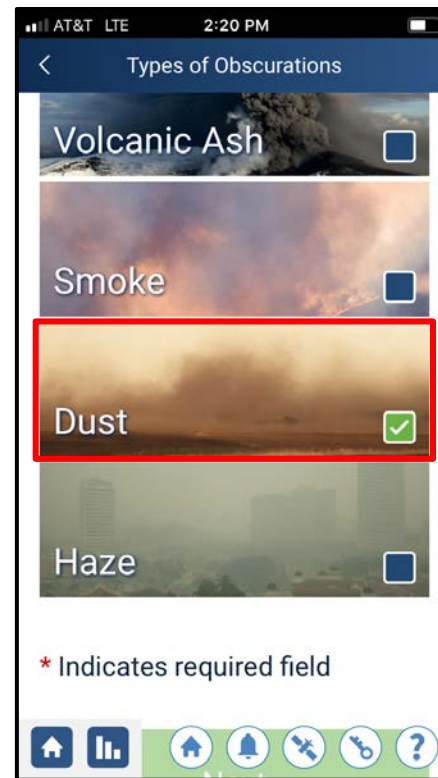
Blog with step-by-step instructions (English & español)



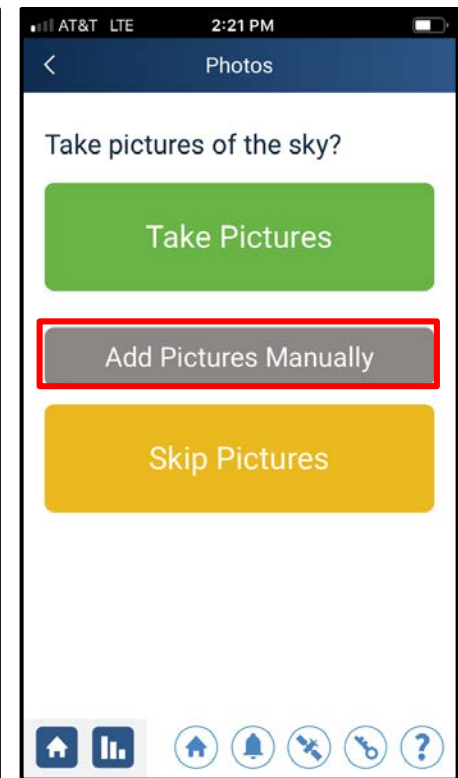
1



2



3



4



Dust focus in Fall Cloud Challenge

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Oct. 1, 2019

NASA Wants Your Help Identifying Clouds: Fall Cloud Challenge

 GLOBE Clouds Fall Announcement

Watch later | Share

Who knew being a scientist could be as easy as pointing your phone at the sky?

For the **second year in a row**, NASA and The **GLOBE Program** are asking citizen scientists to take out their phones and report what kinds of clouds they see.



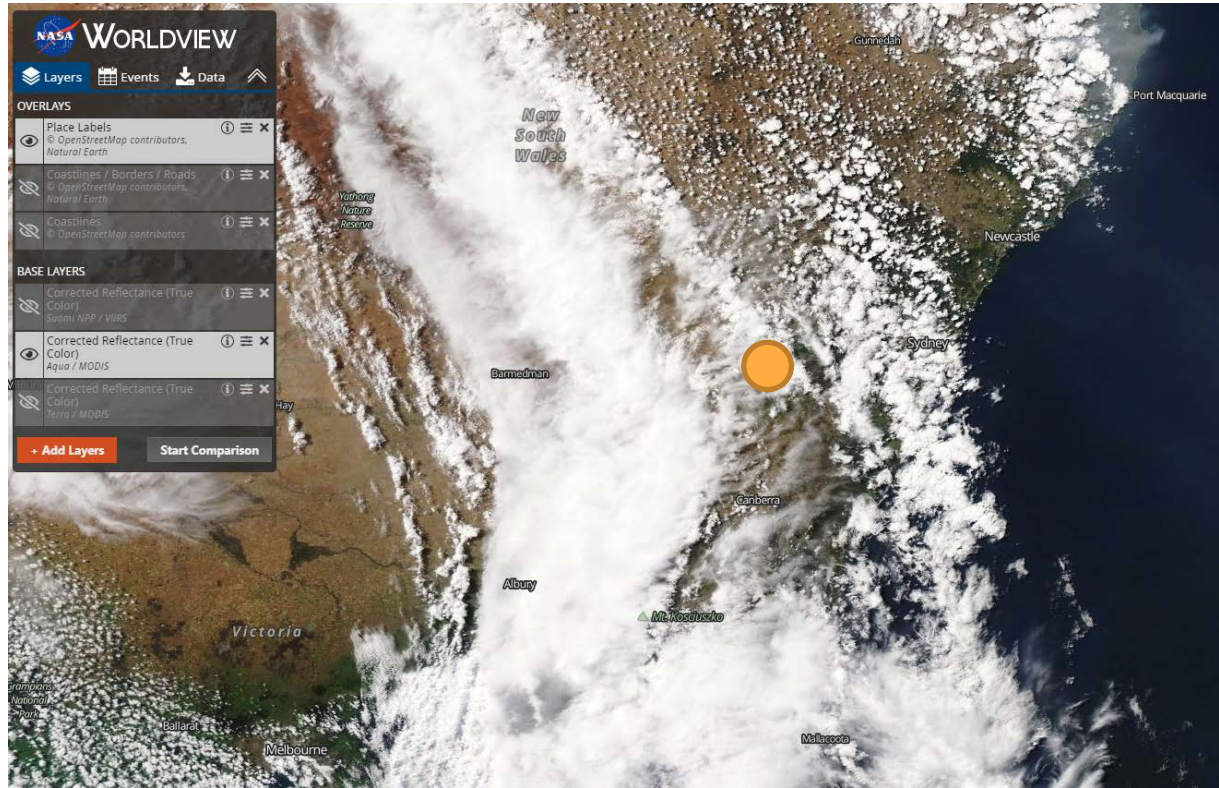
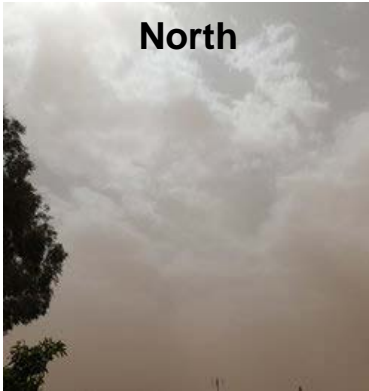
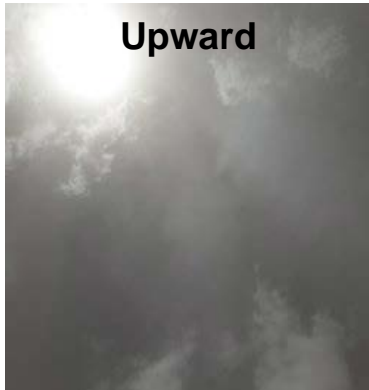
Fall Cloud Challenge

Oct. 15 - Nov. 15

Announcement in English [[link](#)] and en español [[link](#)]



Australian Haboob – October 25, 2019



Follow live updates to dust data

Global Observations of Dust Storms

Select networks to visualize and download data/images

Data Sources: IMPROVE  AirNow  GLOBE 

4/10/2019



10/10/2019



Submit

(use "Shift" key and your mouse to select area data to download)



Email qtong@gmu.edu to add your data to the map!



Analysis-Ready GLOBE Datasets



THE GLOBE PROGRAM



GLOBE
Observer



Download Data

GLOBE Visualization System - explore data on a world map

- View latest cloud, mosquito, land cover, and tree height data

Advanced Data Access Tool - download to csv

GLOBE API - query data from command line

Download pre-packaged data for:

- Clouds - by year and for special data challenges and events
- • Dust - sky conditions with quality assurance annotations ←
- Eclipses - air temperature and clouds during eclipse events

<https://observer.globe.gov/get-data/dust-data>



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GLOBE dust webpage

globe.gov/web/s-cool/home/new-dust-observations

→ includes tutorial and python code to retrieve dust data



Listserv for scientists

lists.nasa.gov/mailman/listinfo/go-sci



Download the app

observer.globe.gov/get-the-app



[@NASAGO](https://twitter.com/NASAGO)



[@nasa.globeobserver](https://www.facebook.com/nasa.globeobserver)



SEE A DUST STORM? SUBMIT YOUR PHOTOS WITH GLOBE OBSERVER.



Find lessons, activities, and more:
www.globe.gov/web/s-cool/home/new-dust-observations



¿VES UNA TORMENTA DE POLVO? ENVÍA TUS FOTOS CON GLOBE OBSERVER.



Para lecciones, actividades y más:
bit.ly/GO_Dust_Spanish



SEE A DUST STORM? SUBMIT YOUR PHOTOS WITH GLOBE OBSERVER.



Download on the
App Store

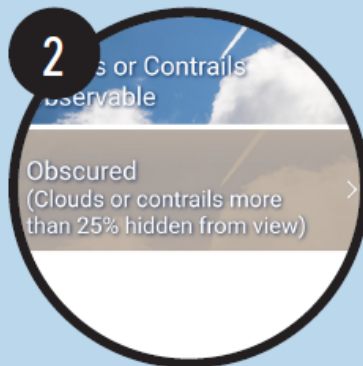


GET IT ON
Google Play





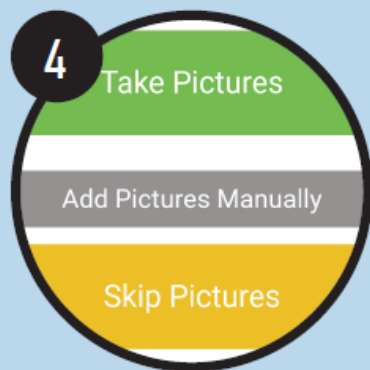
1 Download the **GLOBE Observer app**. Select Clouds and start a new observation.



2 Select **OBSCURED**.



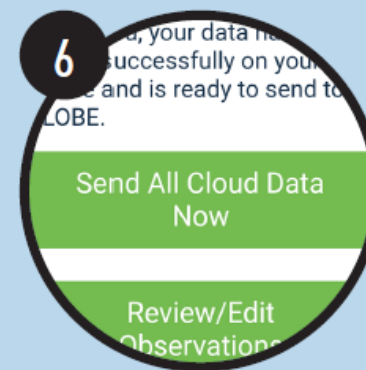
3 Select **DUST**. Tap continue and report ground conditions.



4 Select **ADD PICTURES MANUALLY**.



5 Tap on the camera icon to take photos. Point your camera straight at the horizon.



6 Send your observations when a cellular or WiFi signal is available.



Safety First! Protect yourself from dust. Observe from inside a building or car. Pull over, if needed.

Learn more at observer.globe.gov/dust