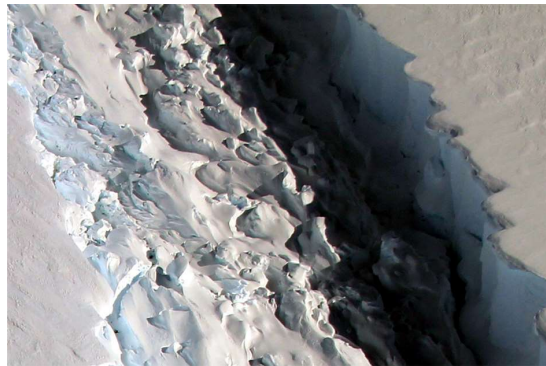
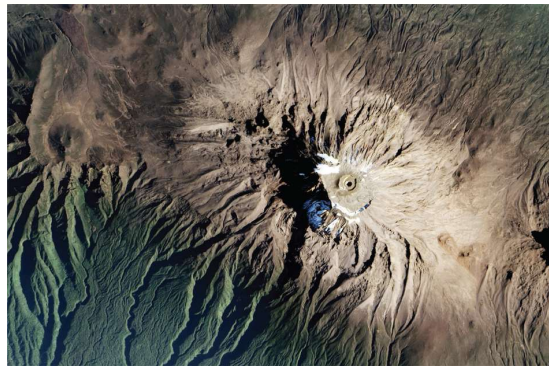


SCIENCE

National Aeronautics and
Space Administration



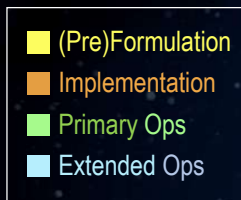
GLOBE and NASA Earth Science Connections

Allison Leidner

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GLOBE Program Manager
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November 12, 2018





NASA Earth Science

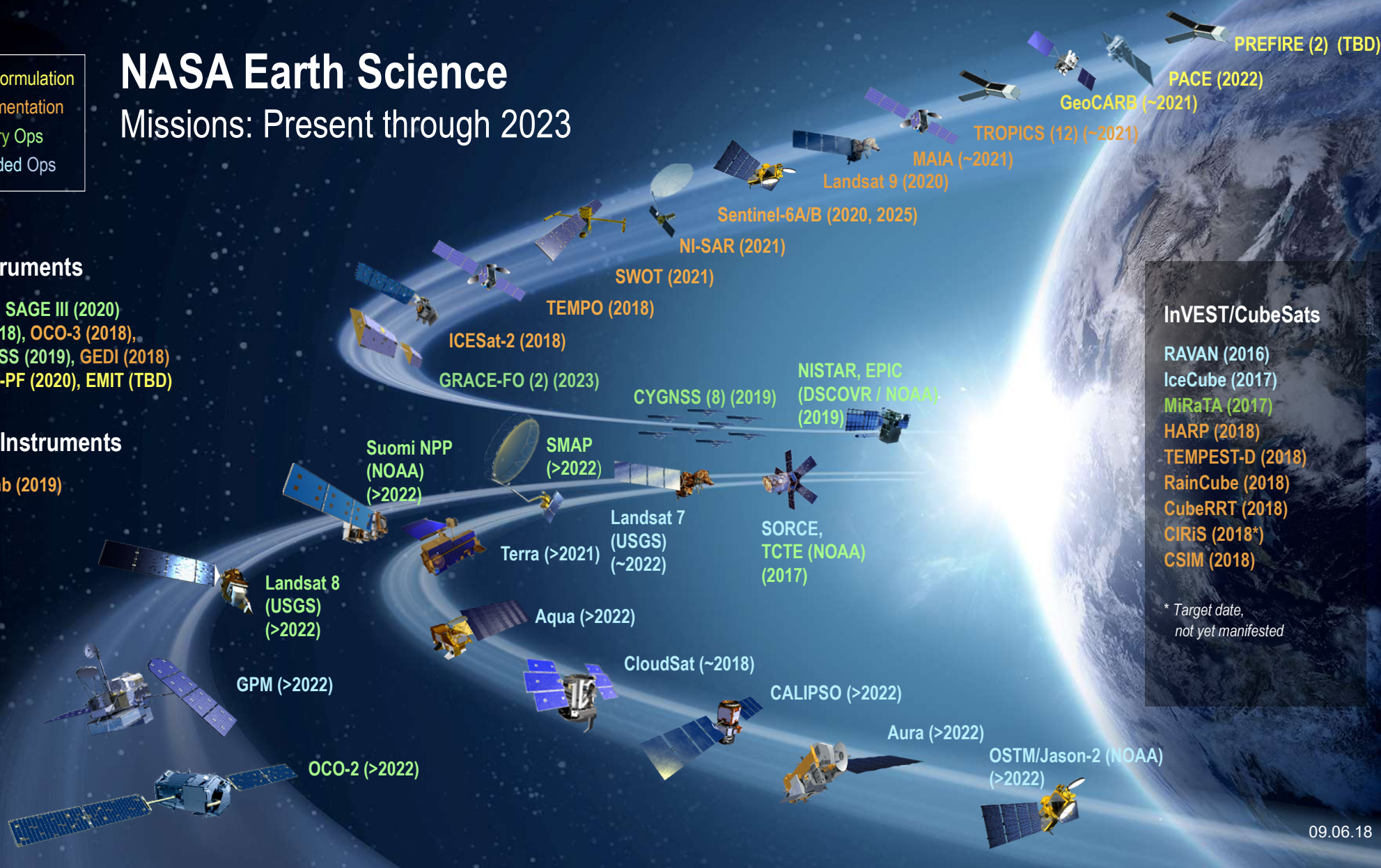
Missions: Present through 2023

ISS Instruments

LIS (2020), SAGE III (2020)
 TSIS-1 (2018), OCO-3 (2018),
 ECOSTRESS (2019), GEDI (2018)
 CLARREO-PF (2020), EMIT (TBD)

JPSS-2 Instruments

OMPS-Limb (2019)

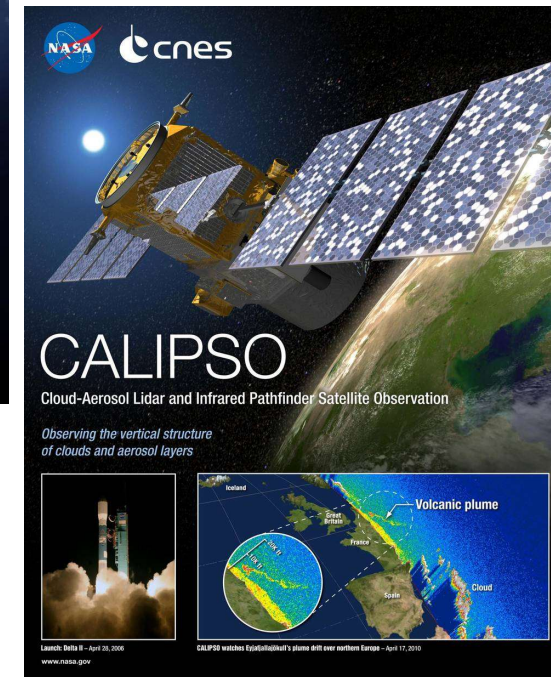
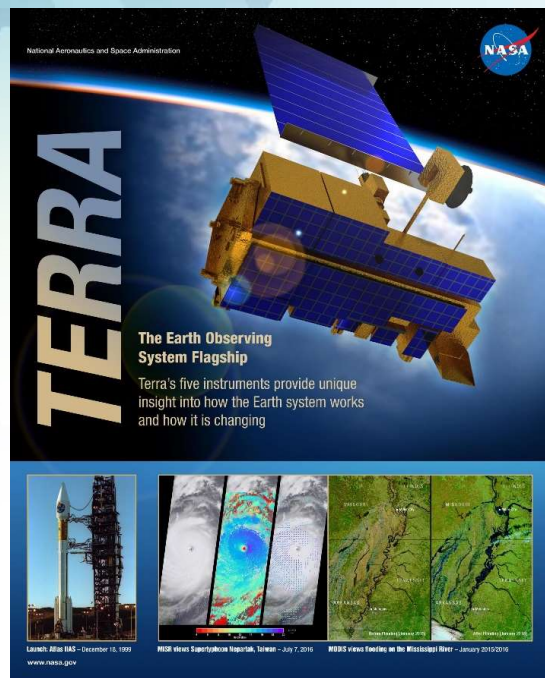


InVEST/CubeSats

RAVAN (2016)
 IceCube (2017)
 MiRaTA (2017)
 HARP (2018)
 TEMPEST-D (2018)
 RainCube (2018)
 CubeRRT (2018)
 CIRiS (2018*)
 CSIM (2018)

* Target date, not yet manifested

GLOBE and the Atmosphere



Clouds



Clouds Observations Matched to:

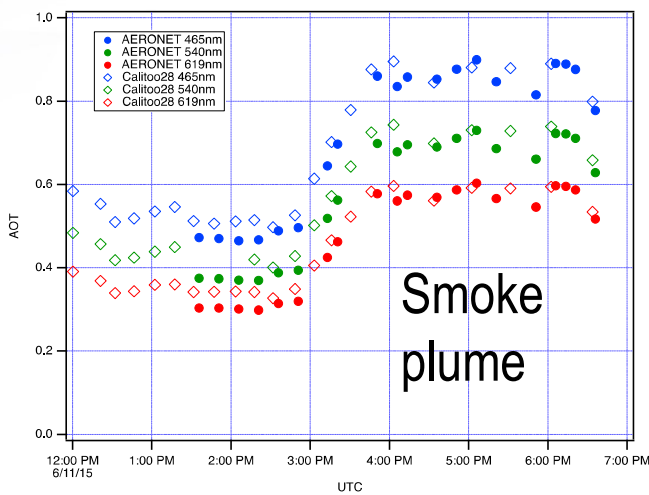
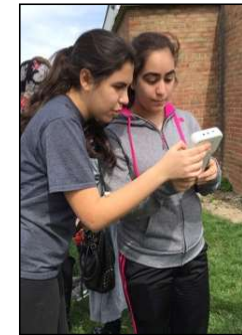
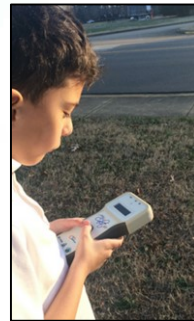
- Aqua
- Terra
- CALIPSO
- Geostationary

 NASA Cloud Observation and Satellite Match				
Satellite		GEO	Aqua	Your Observation
Universal Date/Time 2018-07-28		10:10	10:01	10:00
Latitude Range		57.8 to 58.44	57.68 to 58.48	Latitude 58.12
Longitude Range		26.02 to 26.66	25.98 to 26.78	Longitude 26.33
Total Cloud Cover		Broken 87% 	Broken 84% 	Broken (50-90%) 
H I G H	Cloud Cover		Few (4%) 	
	Cloud Altitude		9 (km)	
	Cloud Phase		Ice 244 (K)	
	Cloud Opacity		Transparent	
M I D	Cloud Cover	Broken 79% 	Scattered 34% 	
	Cloud Altitude	3 (km)	2 (km)	
	Cloud Phase	Water 284 (K)	Water 283 (K)	
	Cloud Opacity	Translucent	Translucent	
L O W	Cloud Cover			 Cumulonimbus
	Cloud Altitude			 Cumulus
	Cloud Phase			Broken (50-90%) 
	Cloud Opacity			
		METEOSAT-11 Visible  Infrared  GEO Tutorial	MODIS Rapid Response  Worldview  MODIS Tutorial	Sky Visibility : no report Sky Color : no report

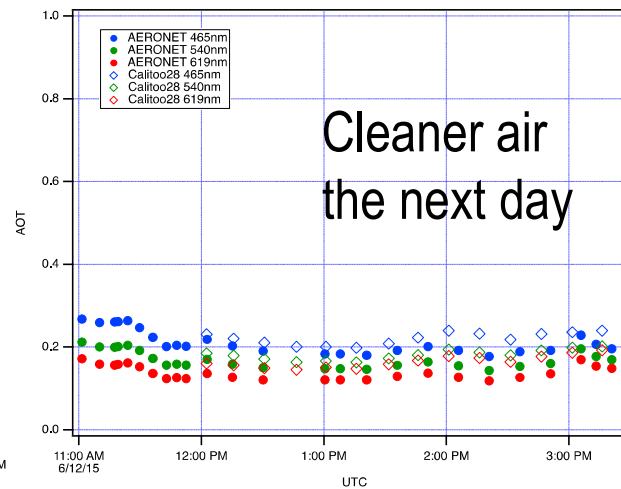
Corresponding NASA
Satellite Images.
Click to view image -->

GLOBE Air Quality Campaigns – US and Europe

GLOBE schools measure aerosol using a Calitoo sun photometer

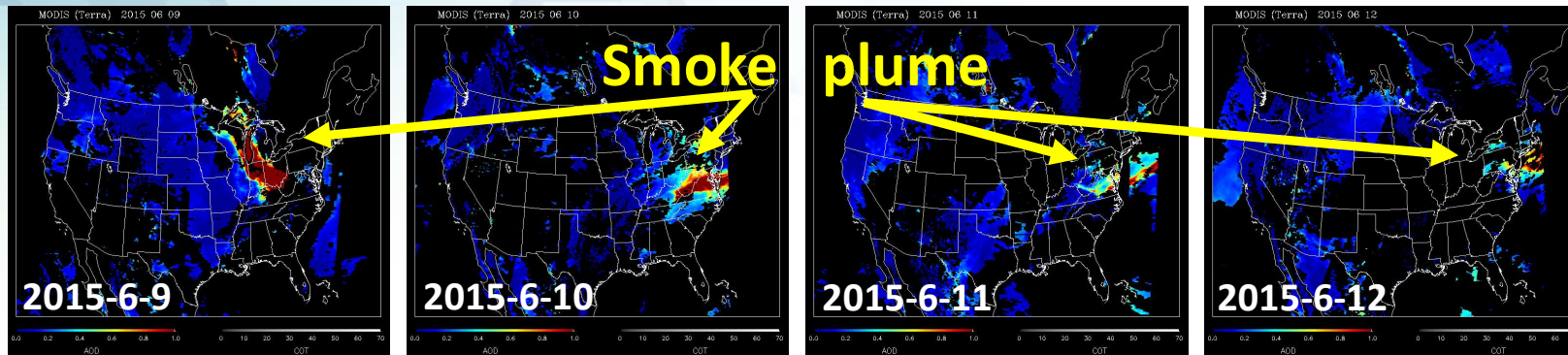


Open diamonds: Calitoo
Closed circles: AERONET

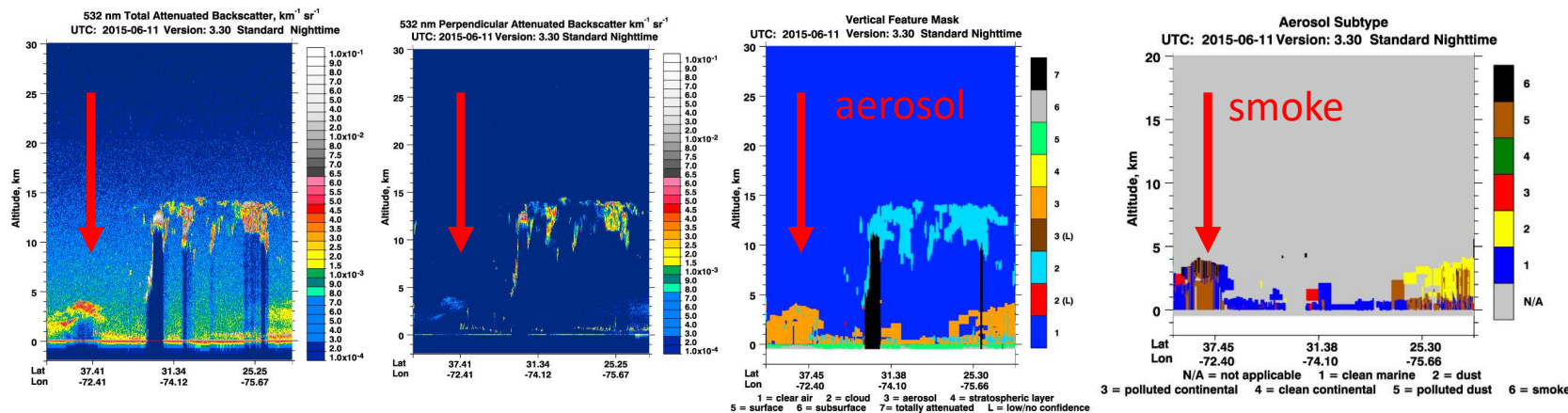


Students in Virginia
USA capture a wild fire
smoke plume

Smoke Plume Analysis

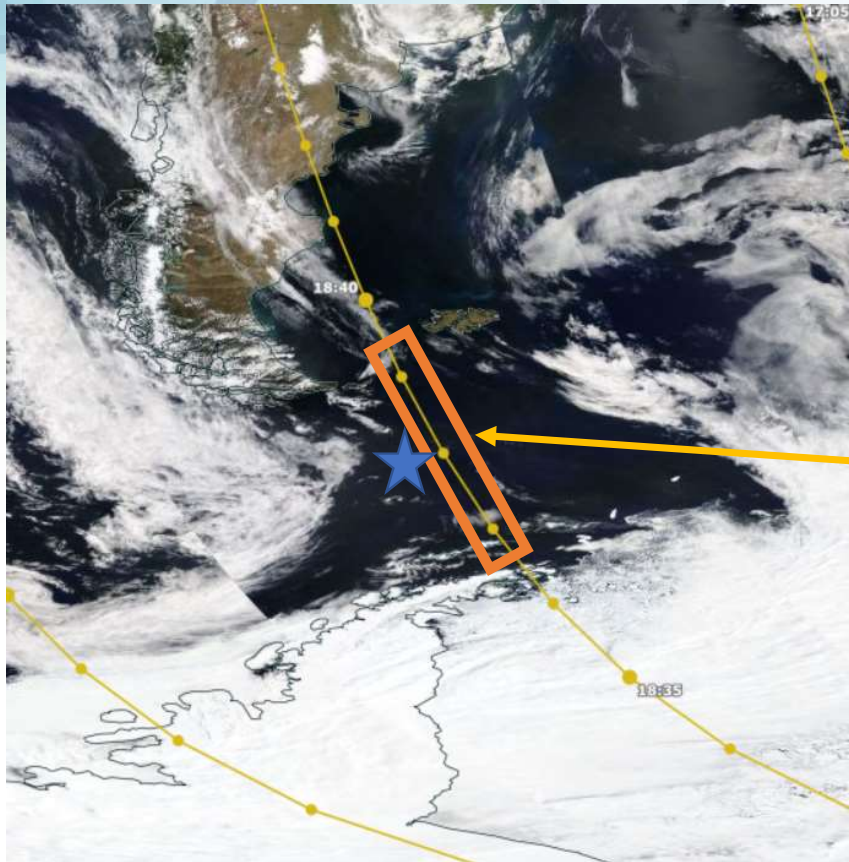


MODIS images
from the
Terra Satellite

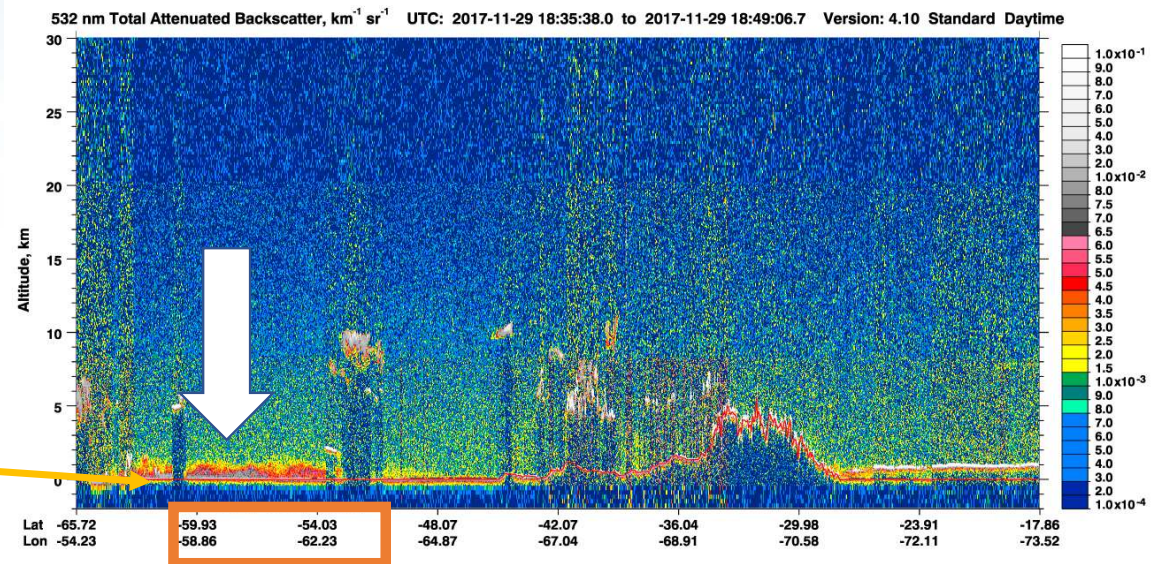


CALIOP images
from the
CALIPSO
satellite show
vertical profiles
of aerosol

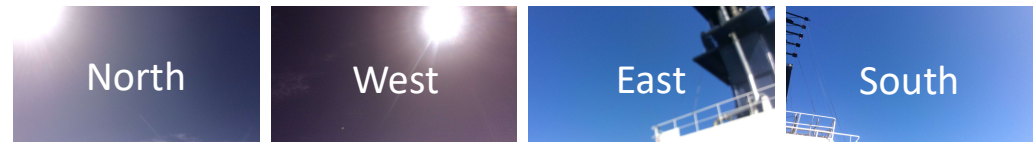
CALIPSO and GLOBE in Southern Oceans



- ★ Location of citizen science observer
- CALIPSO path near Drake Passage, Antarctica

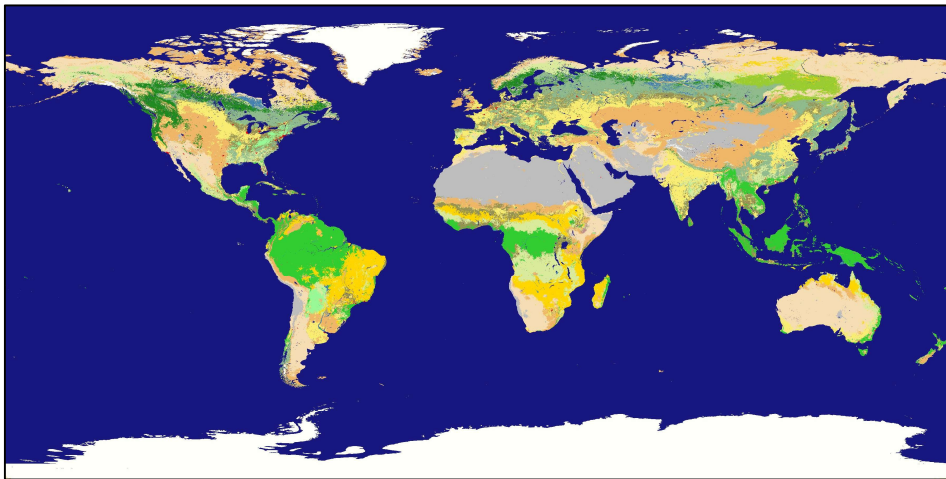


Images and cloud/visibility data submitted by a GLOBE observer

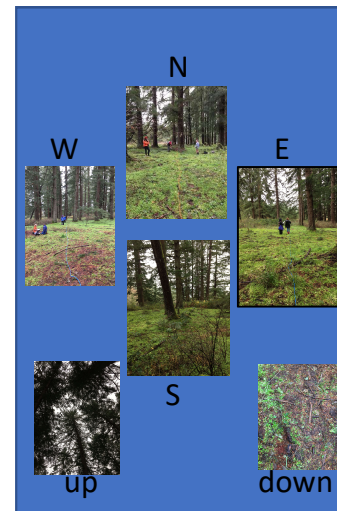


AGU 2018 – IN22B-07: Citizen science cloud observations compared to near ground cloud observations from CALIPSO and MODIS satellite data over the Drake Passage, *Colón Robles, M., et al.*

GLOBE Observer: Land Cover



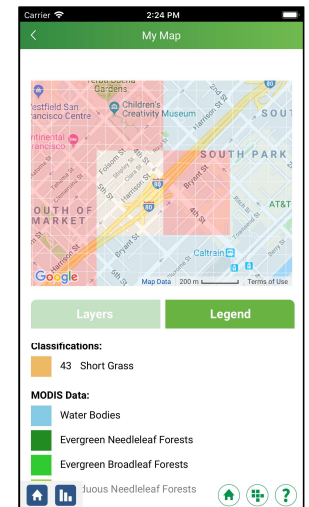
capture



classify

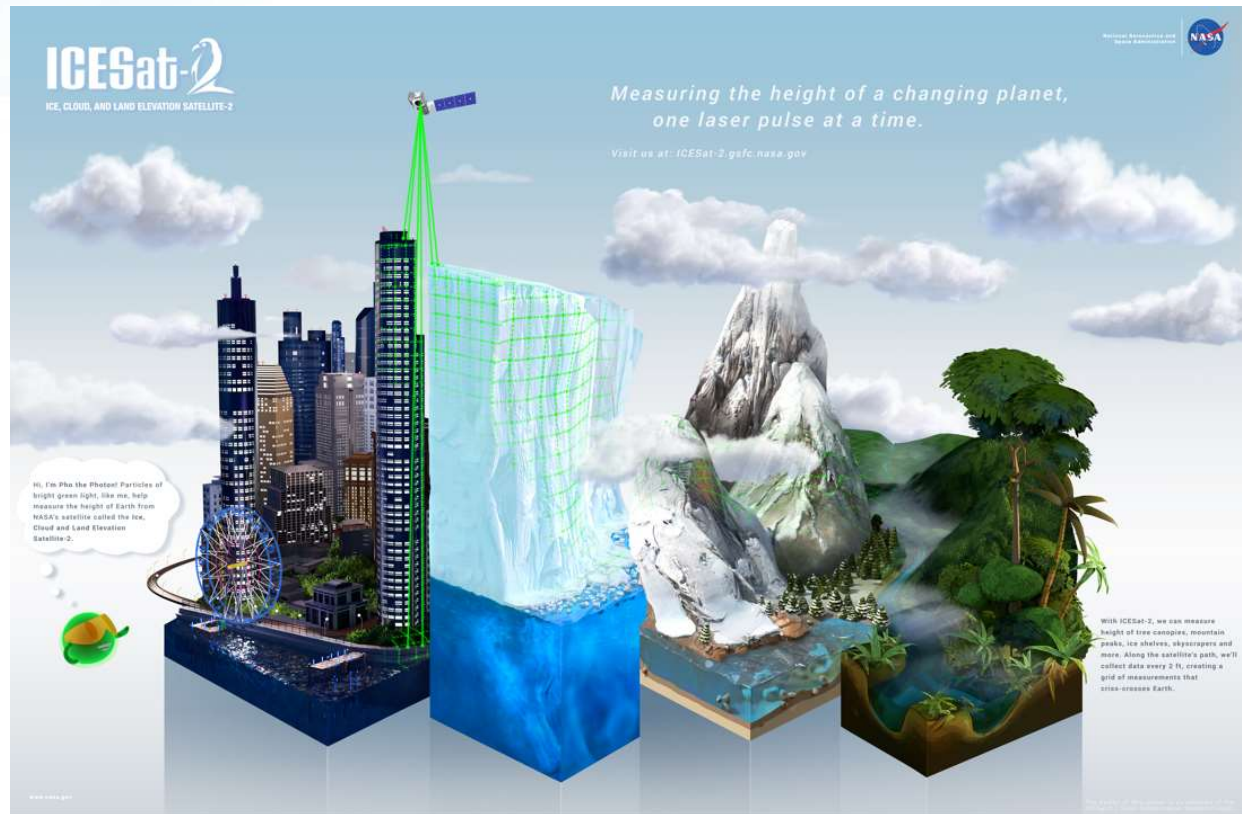
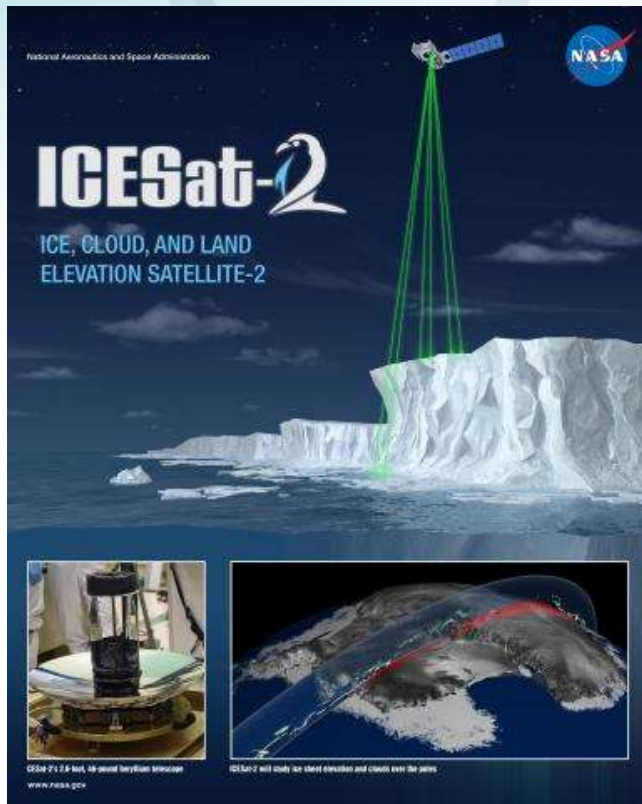


compare

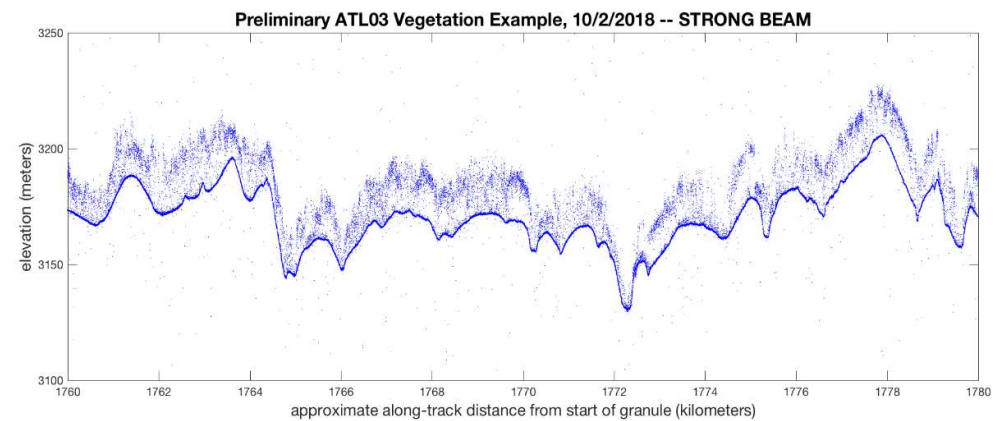
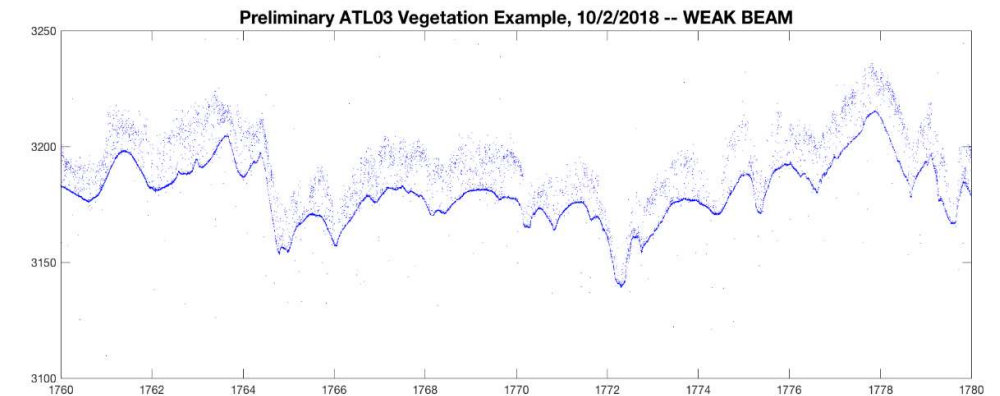
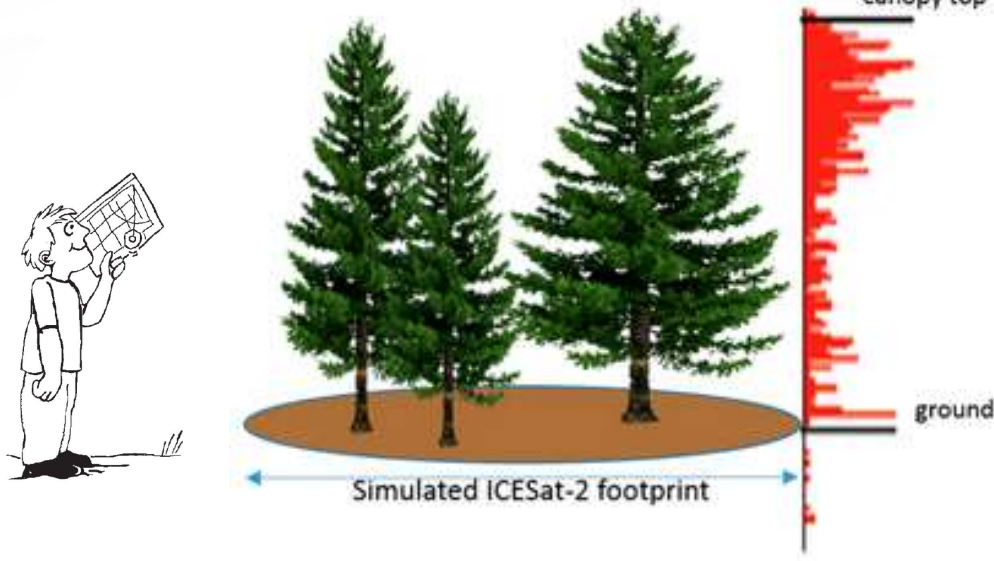


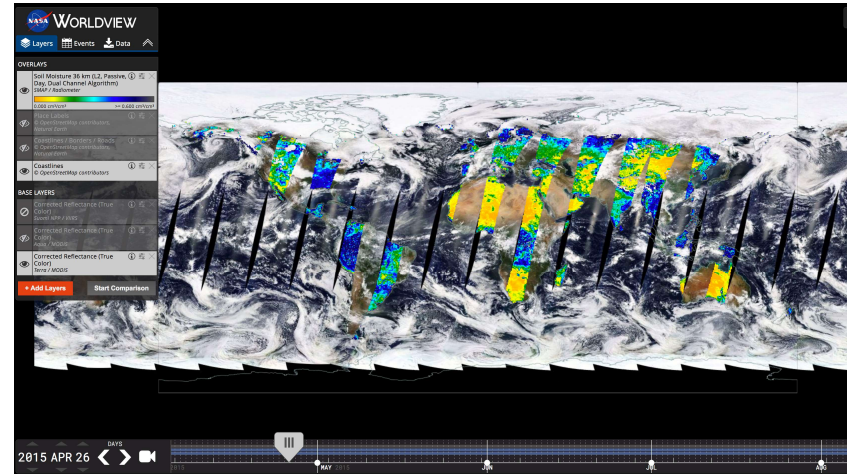
so NASA can *map, measure, monitor, model*

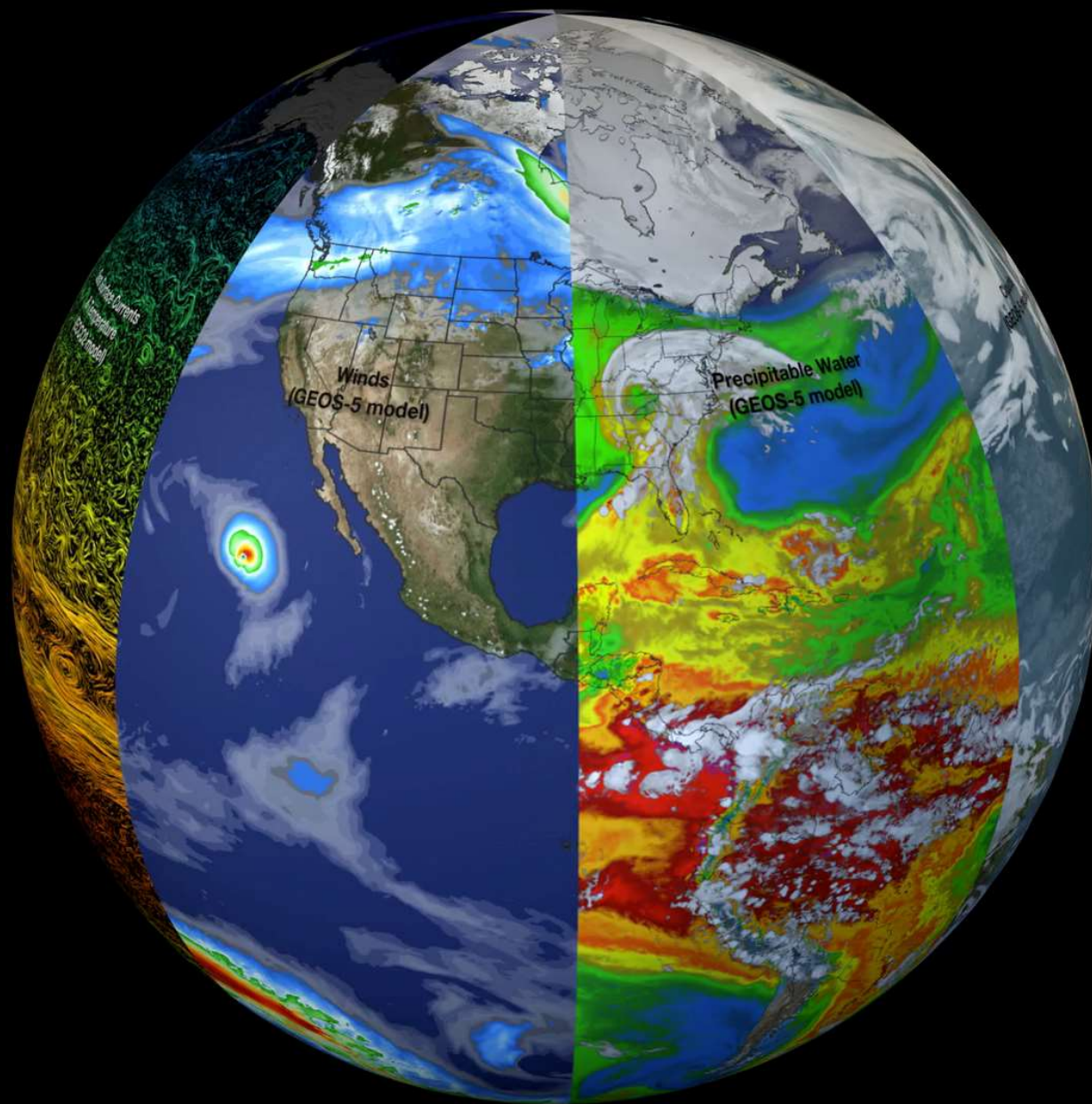
ICESat-2



ICESat-2 and Trees Around the GLOBE







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