Using NASA Resources to Promote Climate Literacy

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Program Director, **UNC Climate Leadership and Energy Awareness Program** for high school students 2009- present

Next Generation Science Standards

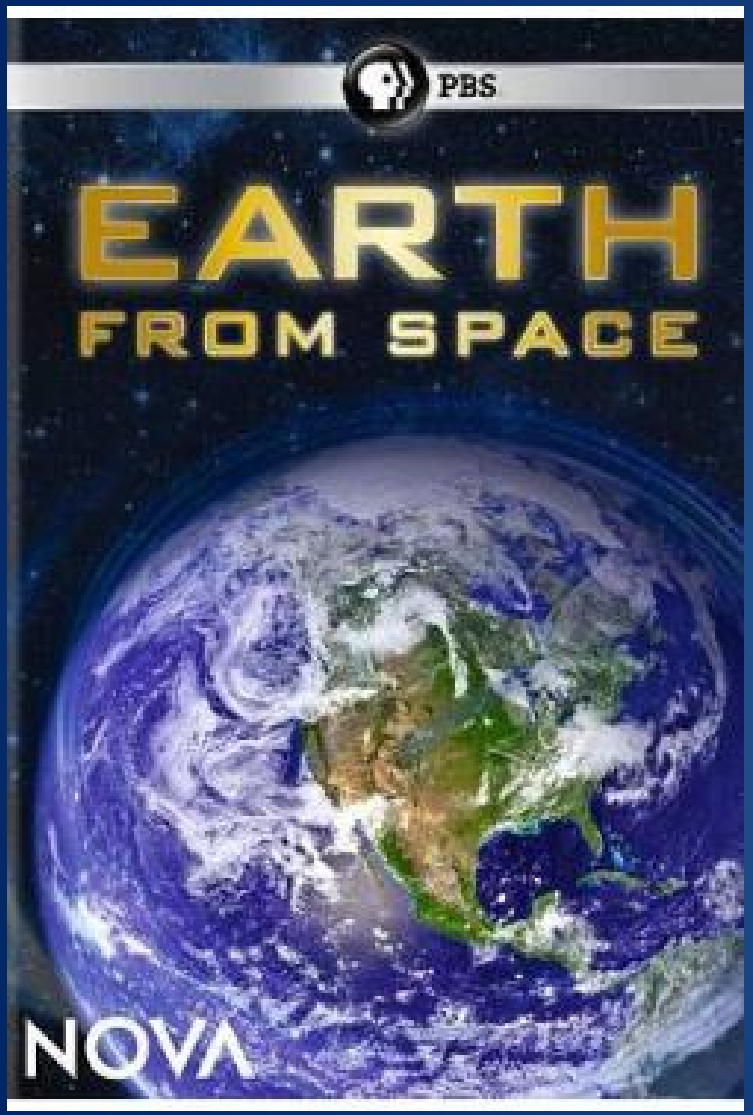
DCI: Global Climate Change

Though the magnitudes of human impacts are greater than they have ever been, so too are human abilities to model, predict, and manage current and future impacts.

Through computer simulations and other studies, **important discoveries are still being made about how the ocean, the atmosphere, and the biosphere interact and are modified in response to human activities.**


OSTM/Jason 2
(NOAA)
Aquarius
QuikSCAT
TRMM
Terra
ISS-RapidScat,
CATS
EO-1
Landsat 7
(USGS)
SMAP
Aqua
Suomi NPP
(NOAA)
Landsat 8
(USGS)
SORCE,
TCTE (NOAA)
Aura
GPM
GRACE (2)
CALIPSO
CloudSat
OCO-2

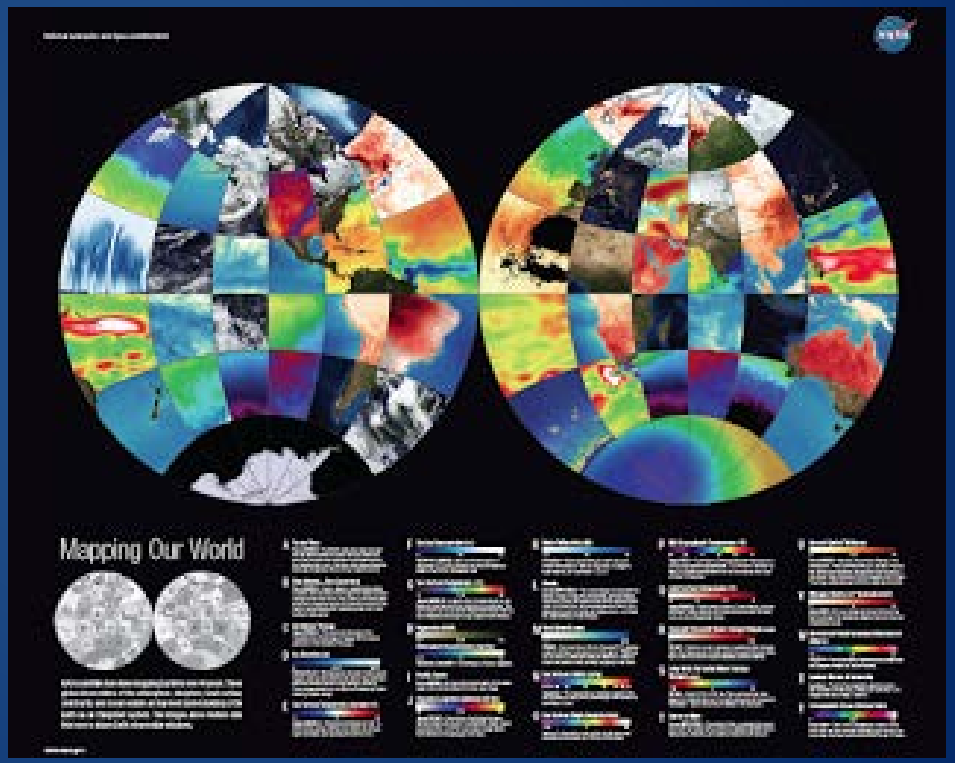
NASA's Eyes on the Earth



Produced in extensive consultation with NASA scientists, this 2 hour special reveals a spectacular new space-based vision of our planet.

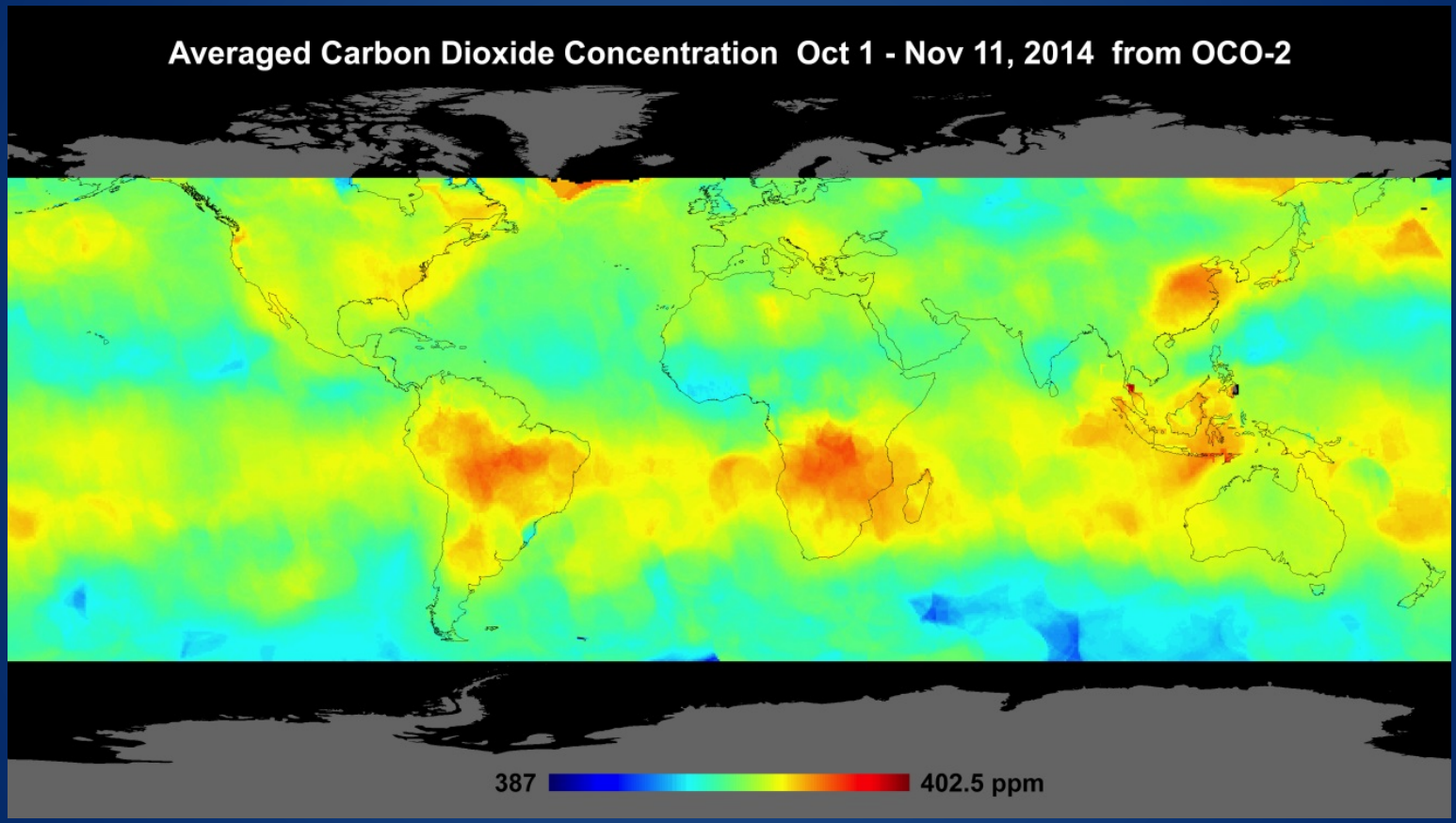
http://www.pbs.org/wgbh/nova/space/earth-from-space.html

Educators Guide to NASA Earth Science Images and Data

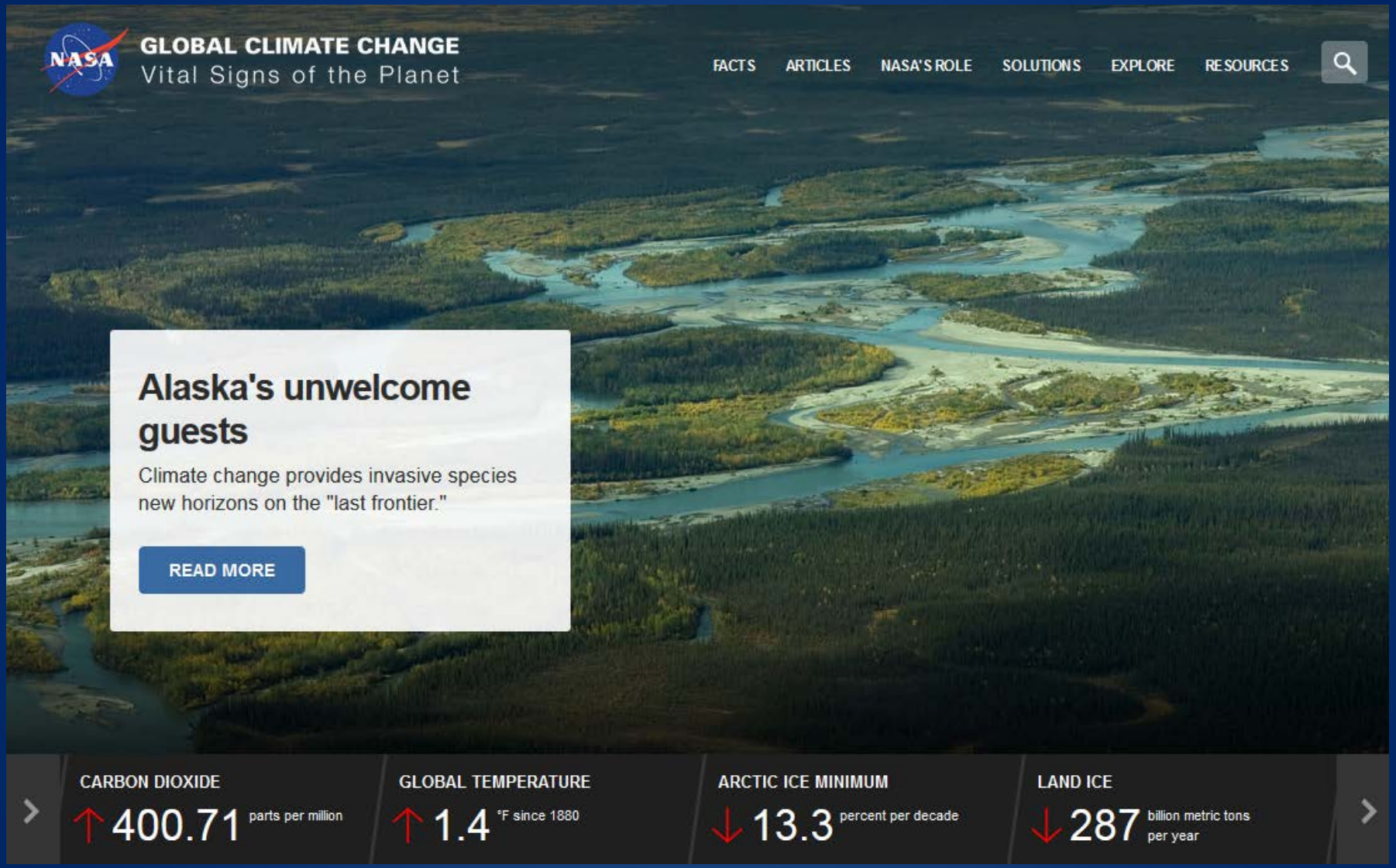


http://nasaesw.strategies.org/wp-content/uploads/2013/08/EducGuide_508Fin.pdf

NASA's Orbiting Carbon Observatory (OCO-2)



Will take more than 100,000 measurements of carbon dioxide in Earth's atmosphere every day in order to characterize CO_2 **sources and sinks** on regional scales.

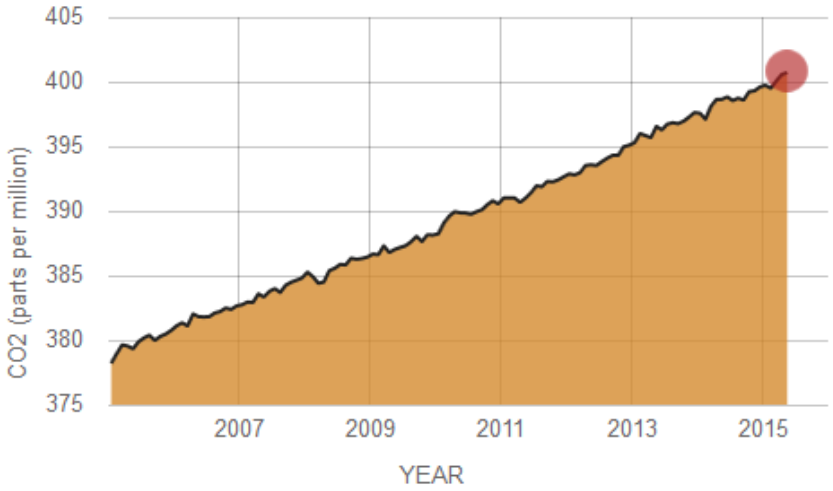


climate.nasa.gov/

Carbon Dioxide

DIRECT MEASUREMENTS: 2005-PRESENT

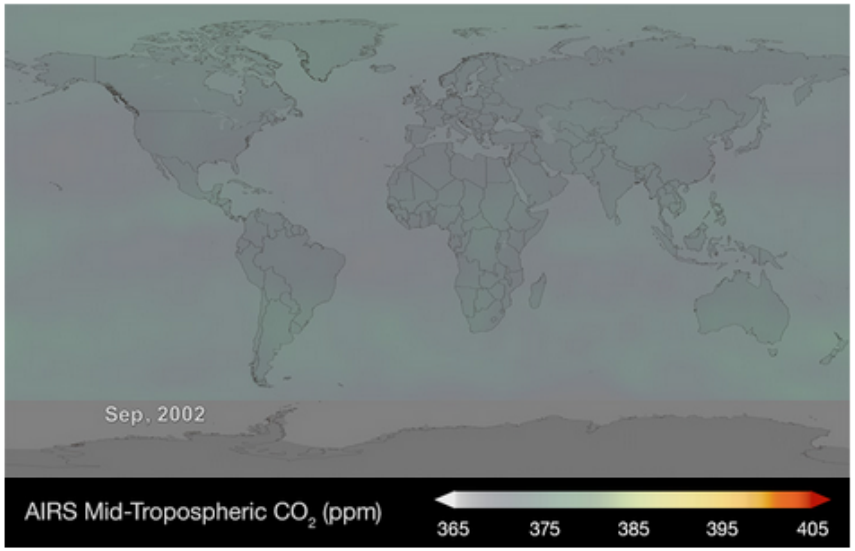
Data source: Monthly measurements (corrected for average seasonal cycle). Credit: NOAA



TIME SERIES: 2002-2014

Data source: Atmospheric Infrared Sounder (AIRS). Credit: NASA

SEPTEMBER
2002



2002 2014

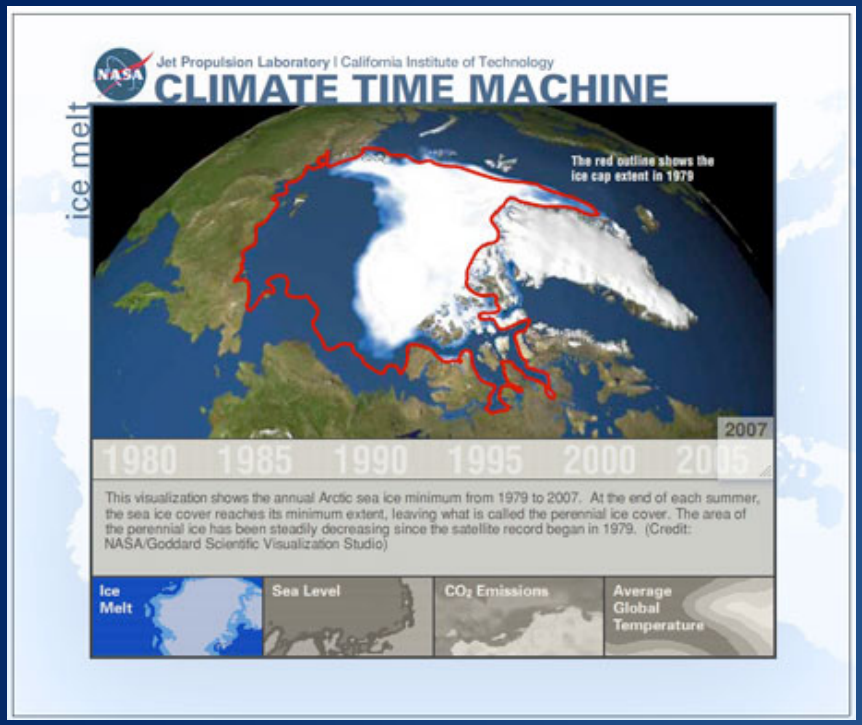
Carbon dioxide (CO_2) is an important heat-trapping (greenhouse) gas, which is released through human activities

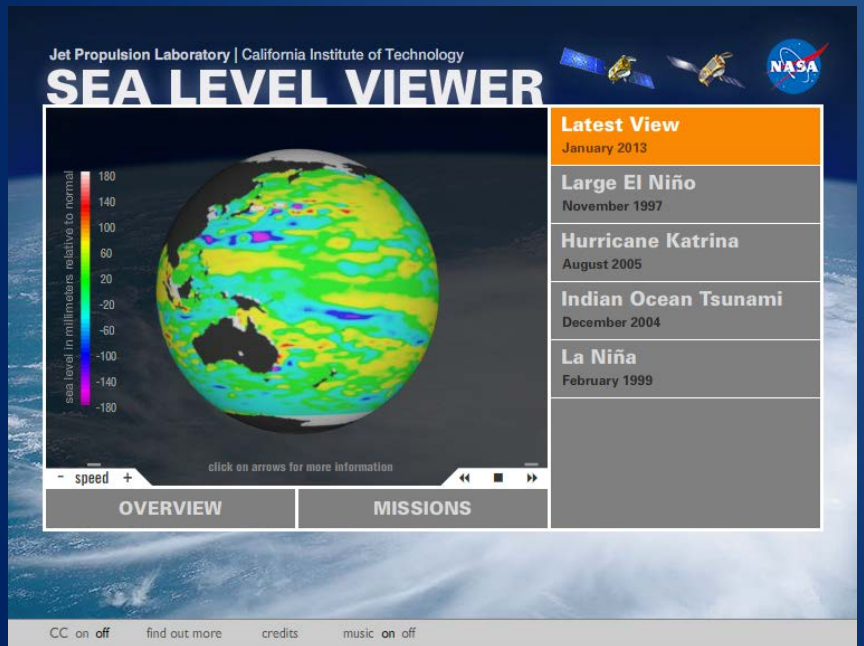
CARBON DIOXIDE
Carbon dioxide levels in the air are at their highest in 650,000 years

GLOBAL TEMPERATURE
↑ 1.4 °F since 1880

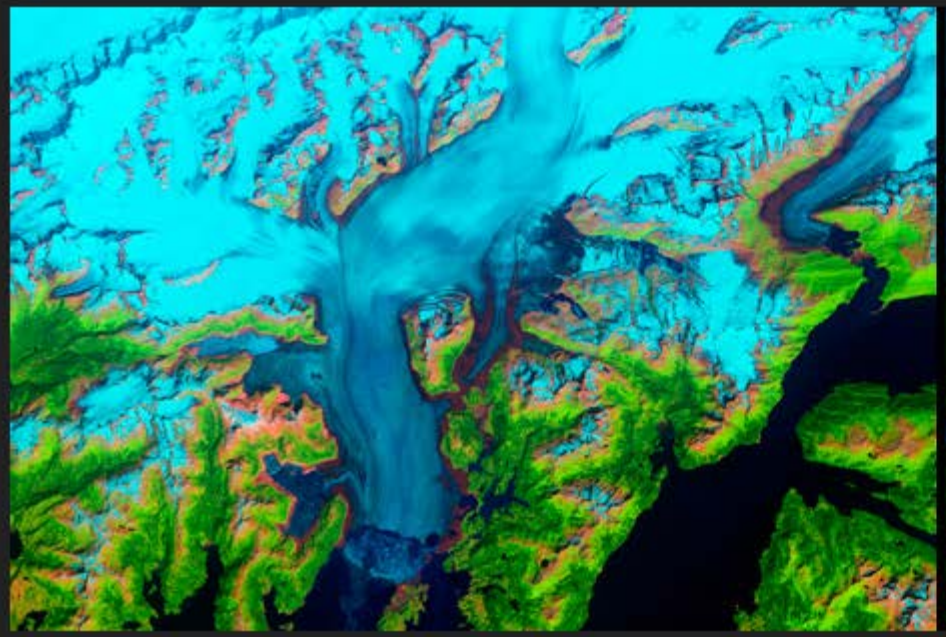
ARCTIC ICE MINIMUM
↓ 13.3 percent per decade

LAND ICE
↓ 287 billion metric tons per year





NASA Climate Interactives



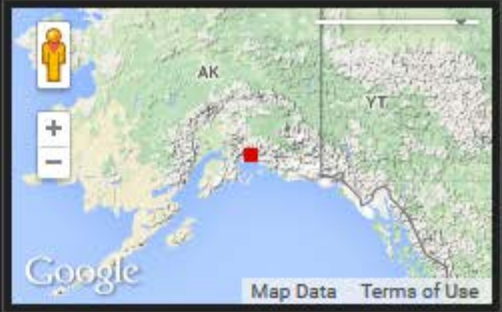
July 28, 1986

July 2, 2014

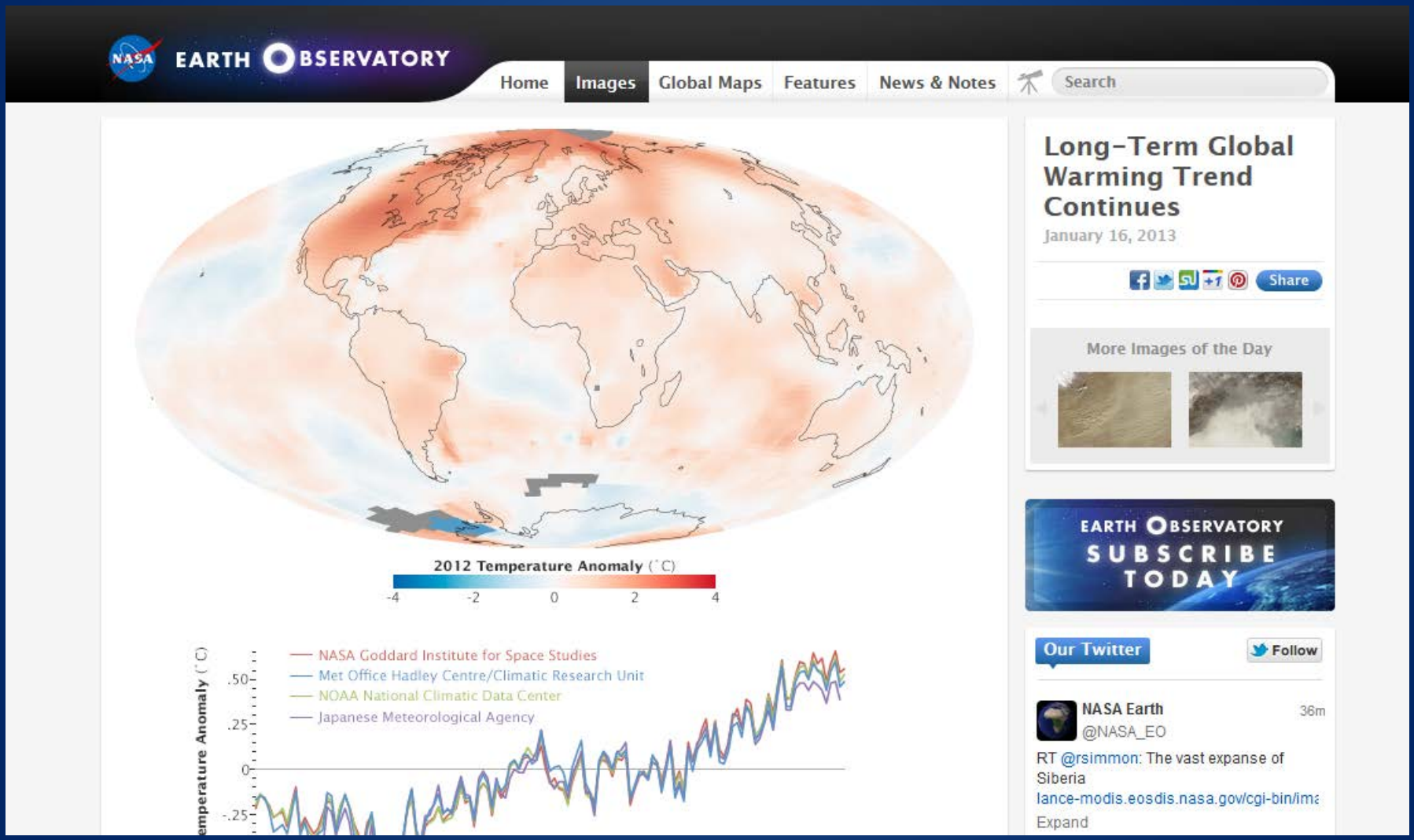
Shrinking glacier, Alaska

Alaska's Columbia Glacier descends through the Chugach Mountains into Prince William Sound. When British explorers surveyed the glacier in 1794, its nose extended to the northern edge of Heather Island, near the mouth of Columbia Bay. The glacier held that position until 1980, when it began a rapid retreat. The glacier has thinned so much that the up and down motion of the tides affects its flow as much as 12 kilometers (7.5 miles) upstream, until the glacier bed rises above sea level and the ice loses contact with the ocean.

show credits download image

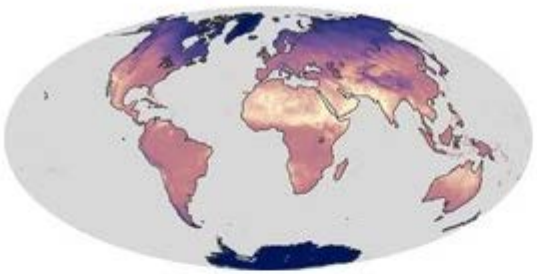


NASA's Earth Observatory

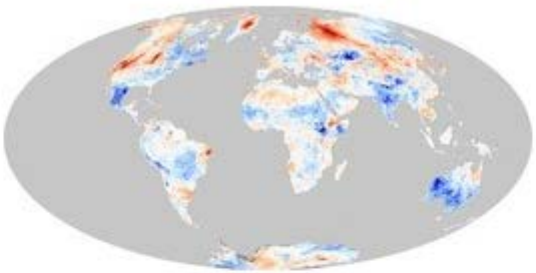


http://earthobservatory.nasa.gov/

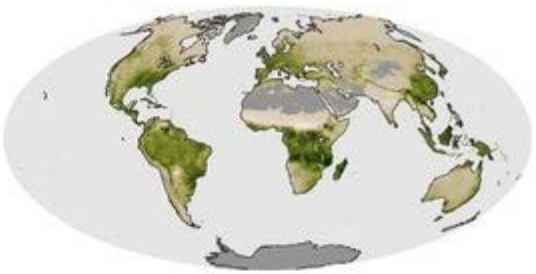
Land Surface Temperature



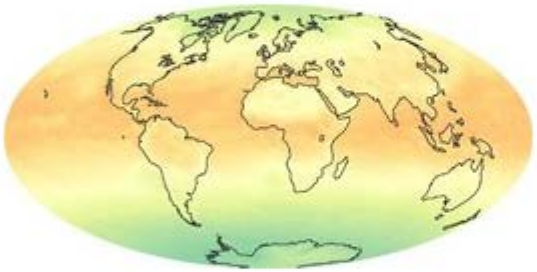
Land Surface Temperature Anomaly



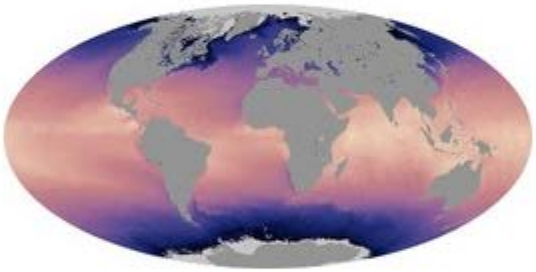
Net Primary Productivity



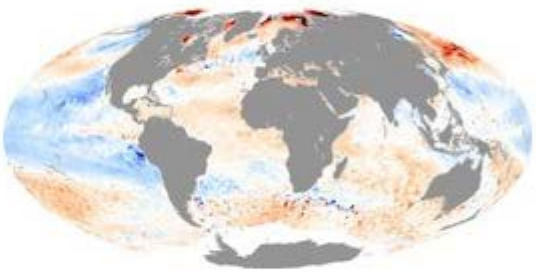
Net Radiation



Sea Surface Temperature

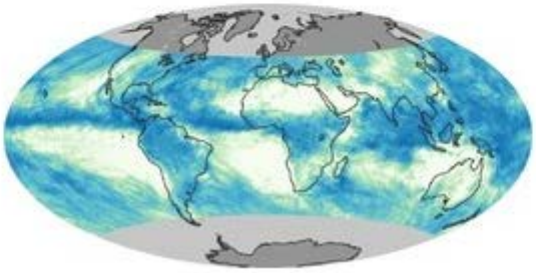


Sea Surface Temperature Anomaly

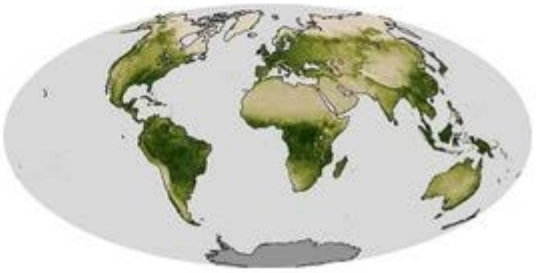


Snow Cover

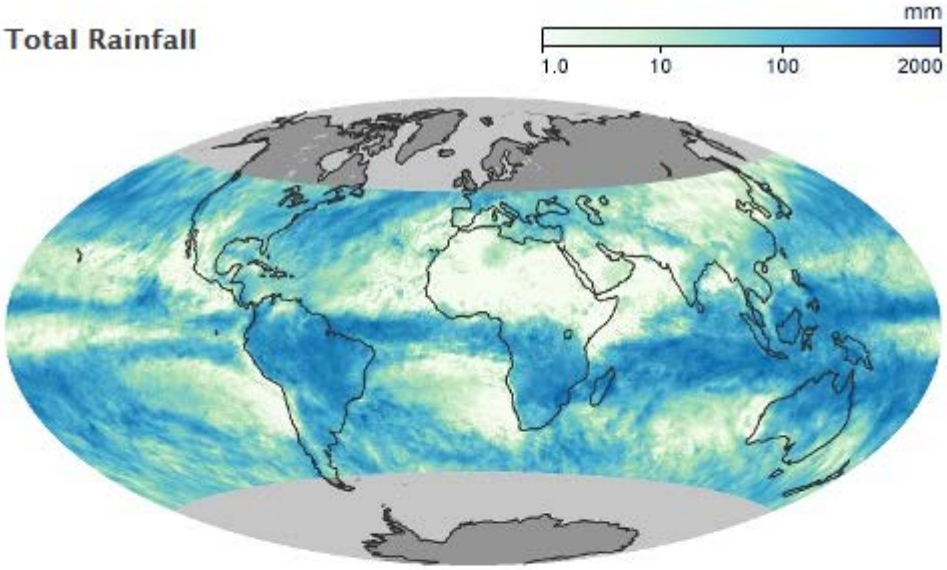
Total Rainfall



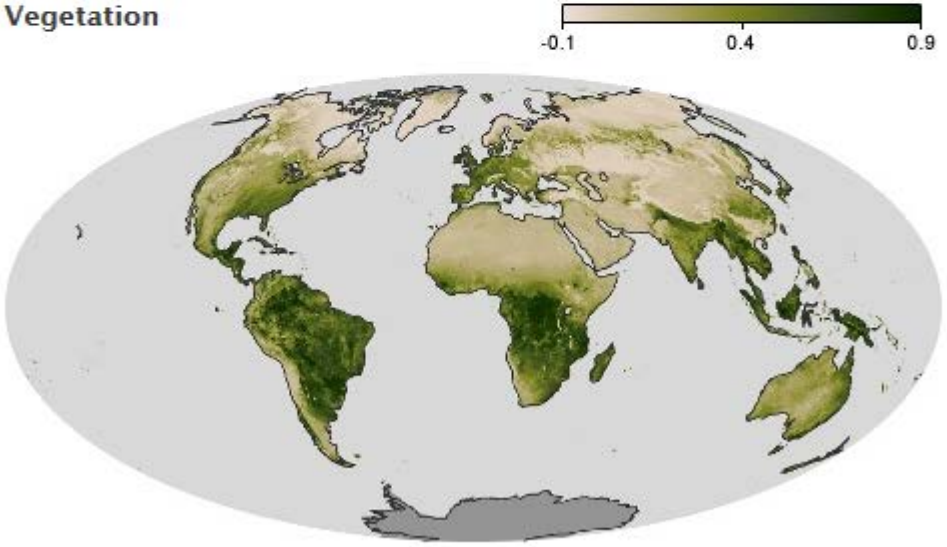
Vegetation



Total Rainfall



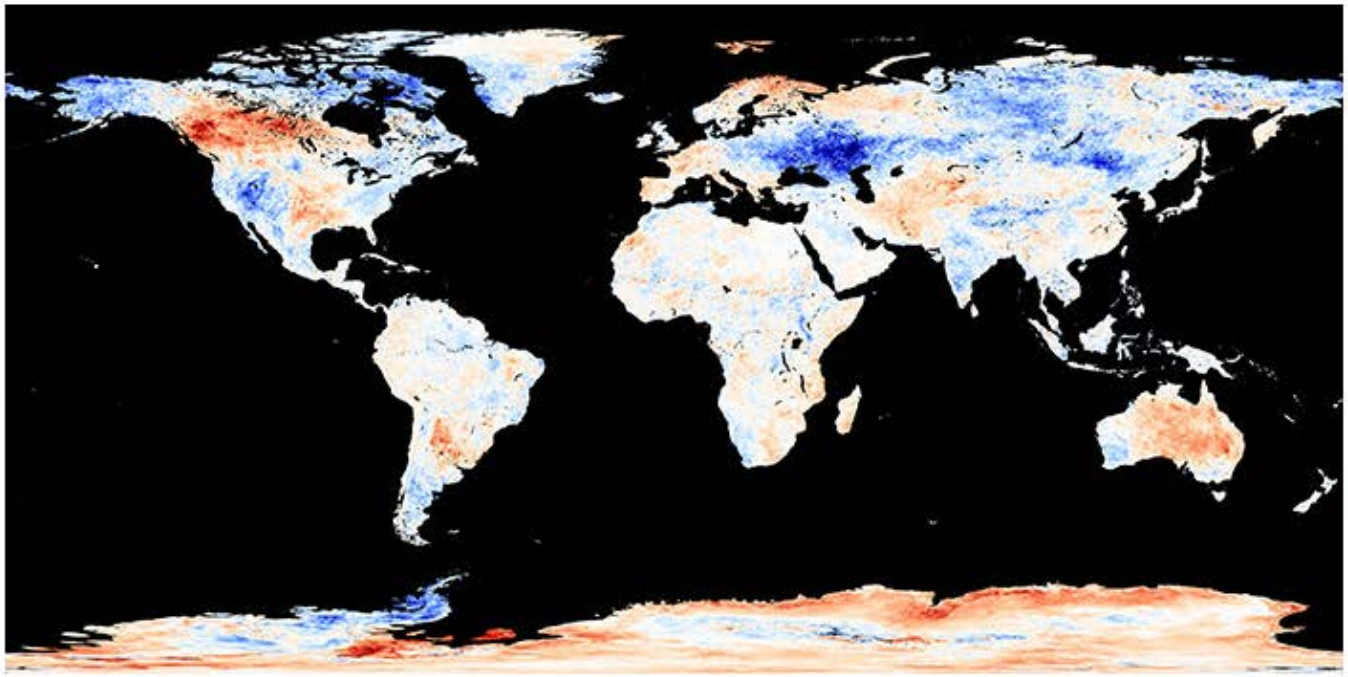
Vegetation



February 2000 October 2014

NEO NASA EARTH OBSERVATIONS

ATMOSPHERE | ENERGY | LAND | LIFE | OCEAN | NEWS | ABOUT | 0 IMAGES | ANALYZE



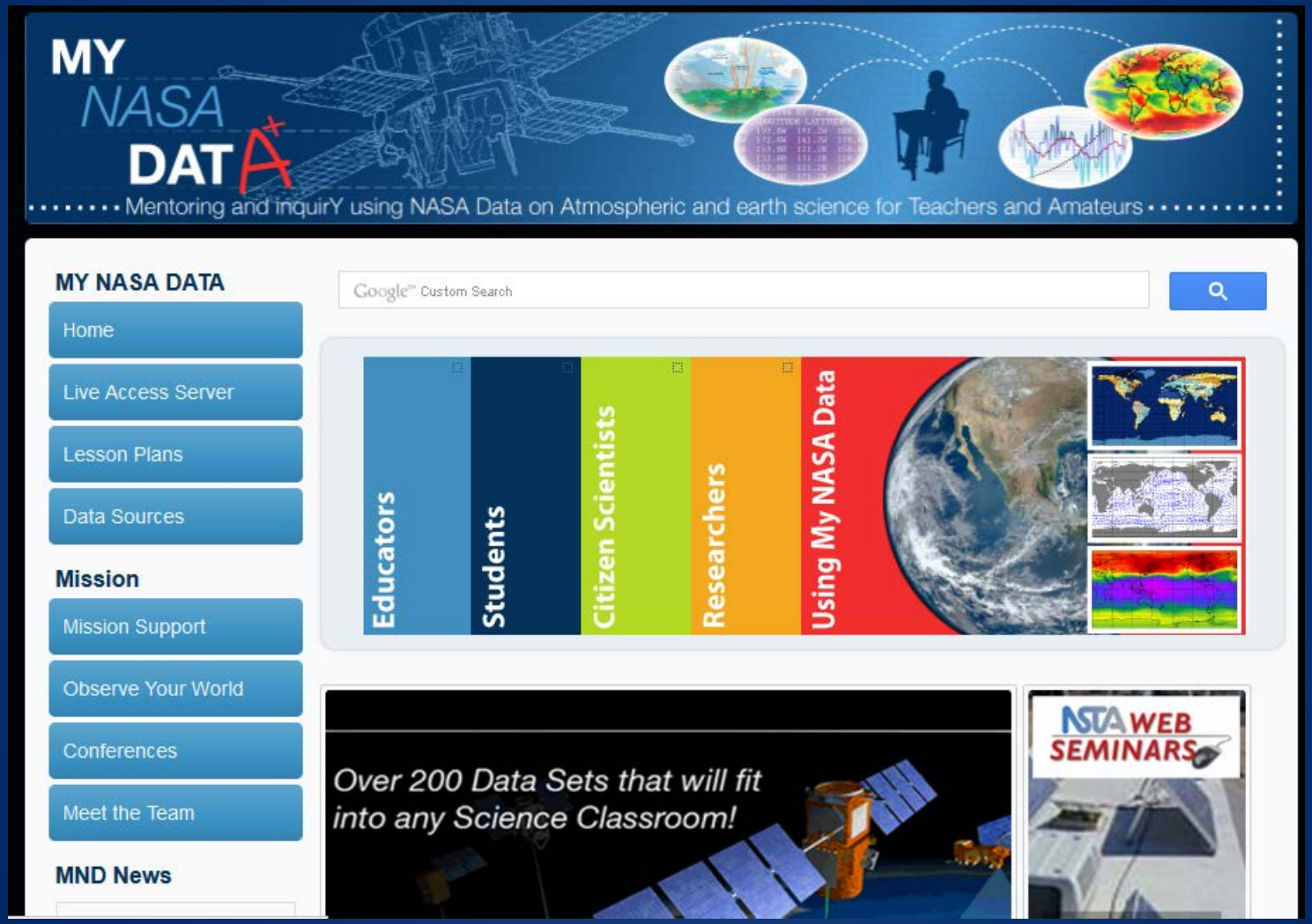
LAND

Land Surface Temperature Anomaly

Land surface temperature is how hot or cold the ground feels to the touch. An anomaly is when something is different from average. These maps show where Earth's surface was warmer or cooler in the daytime than the average temperatures for the same week or month from 2001-2010. Read more

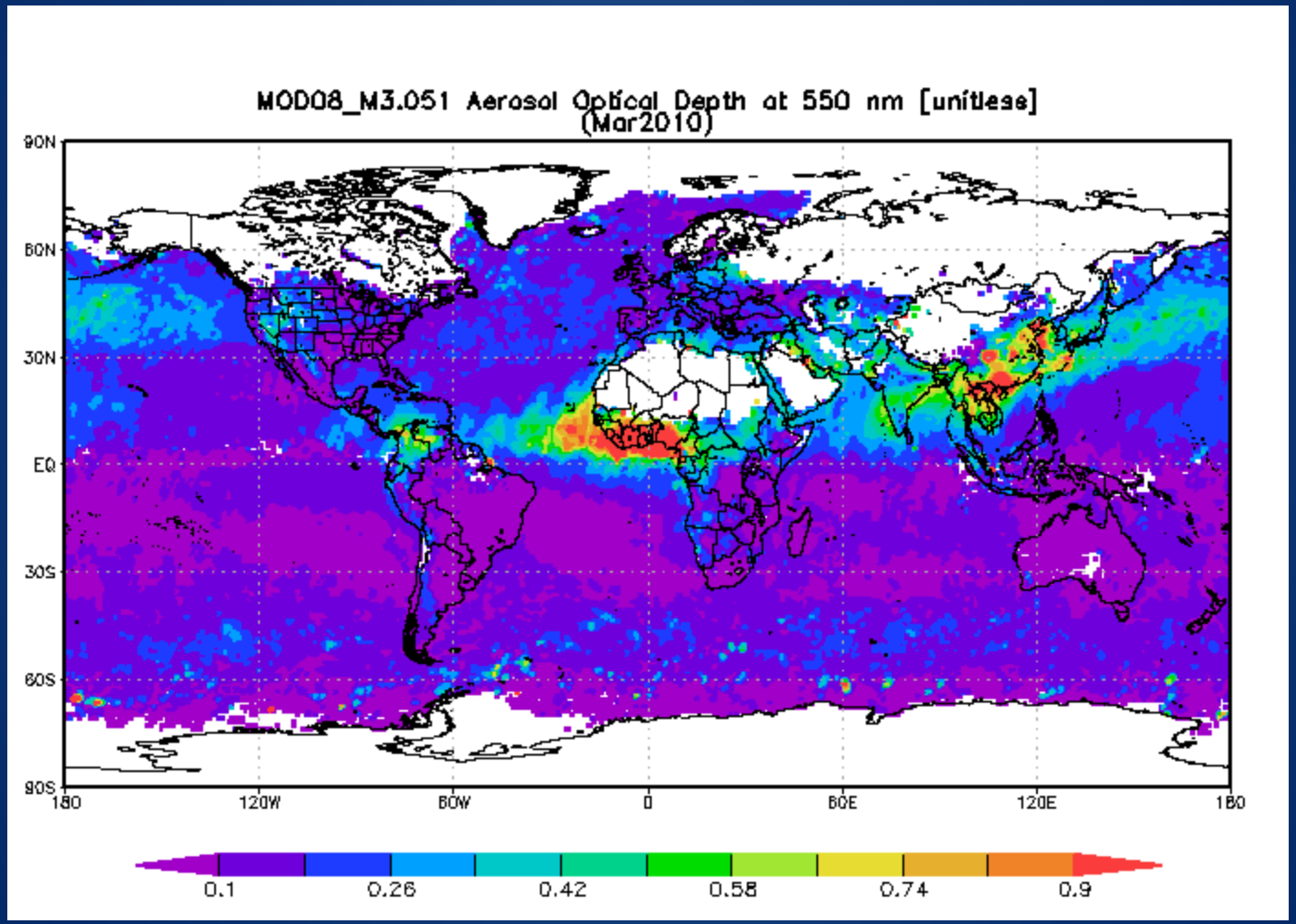
http://neo.sci.gsfc.nasa.gov/

My NASA DATA



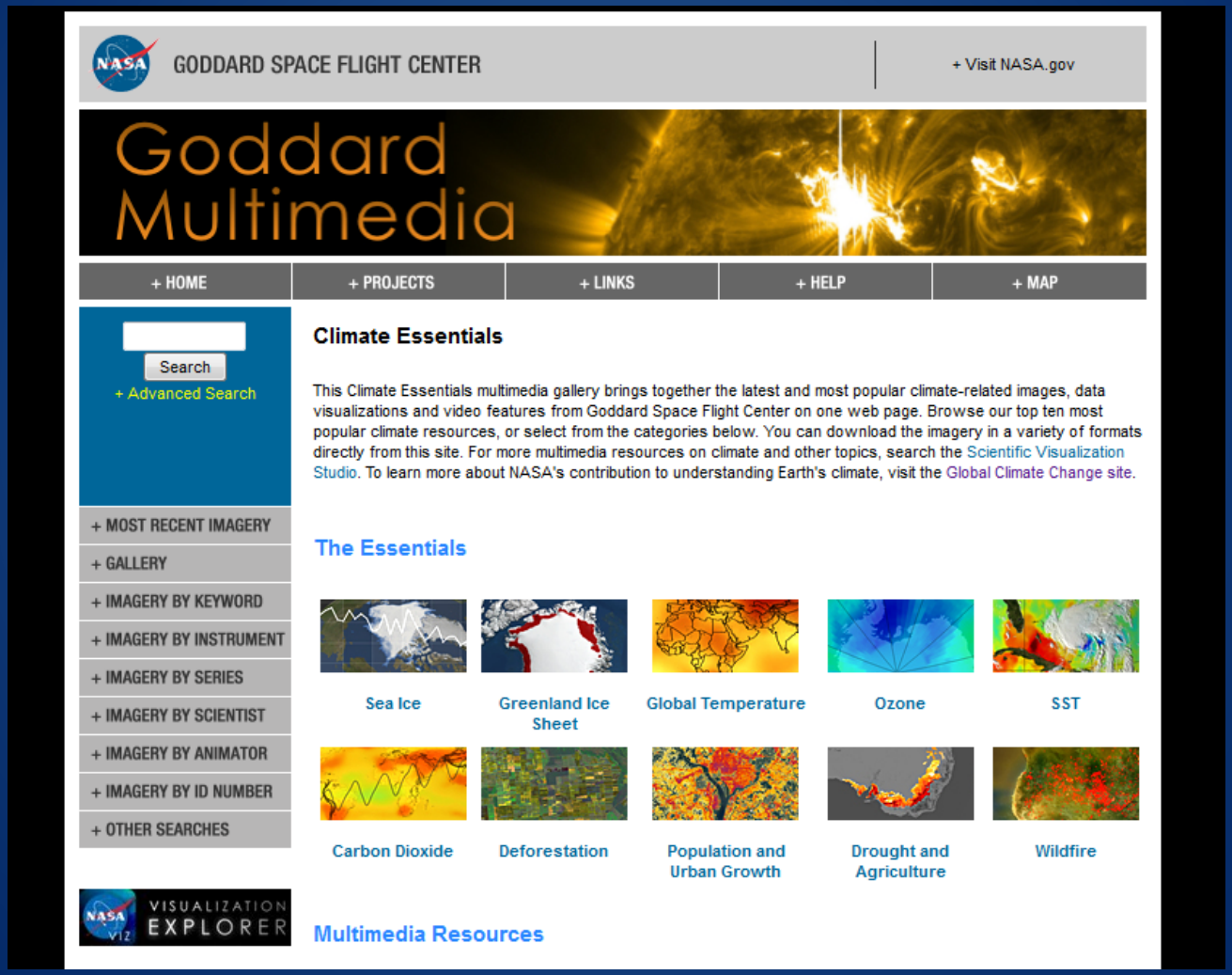
http://mynasadata.larc.nasa.gov/

Data Enhanced Investigations for Climate Change Education



http://gdata1.sci.gsfc.nasa.gov/daac-bin/G3/gui.cgi?instance_id=DICCE-G_Basic

Climate Essentials Multimedia Gallery

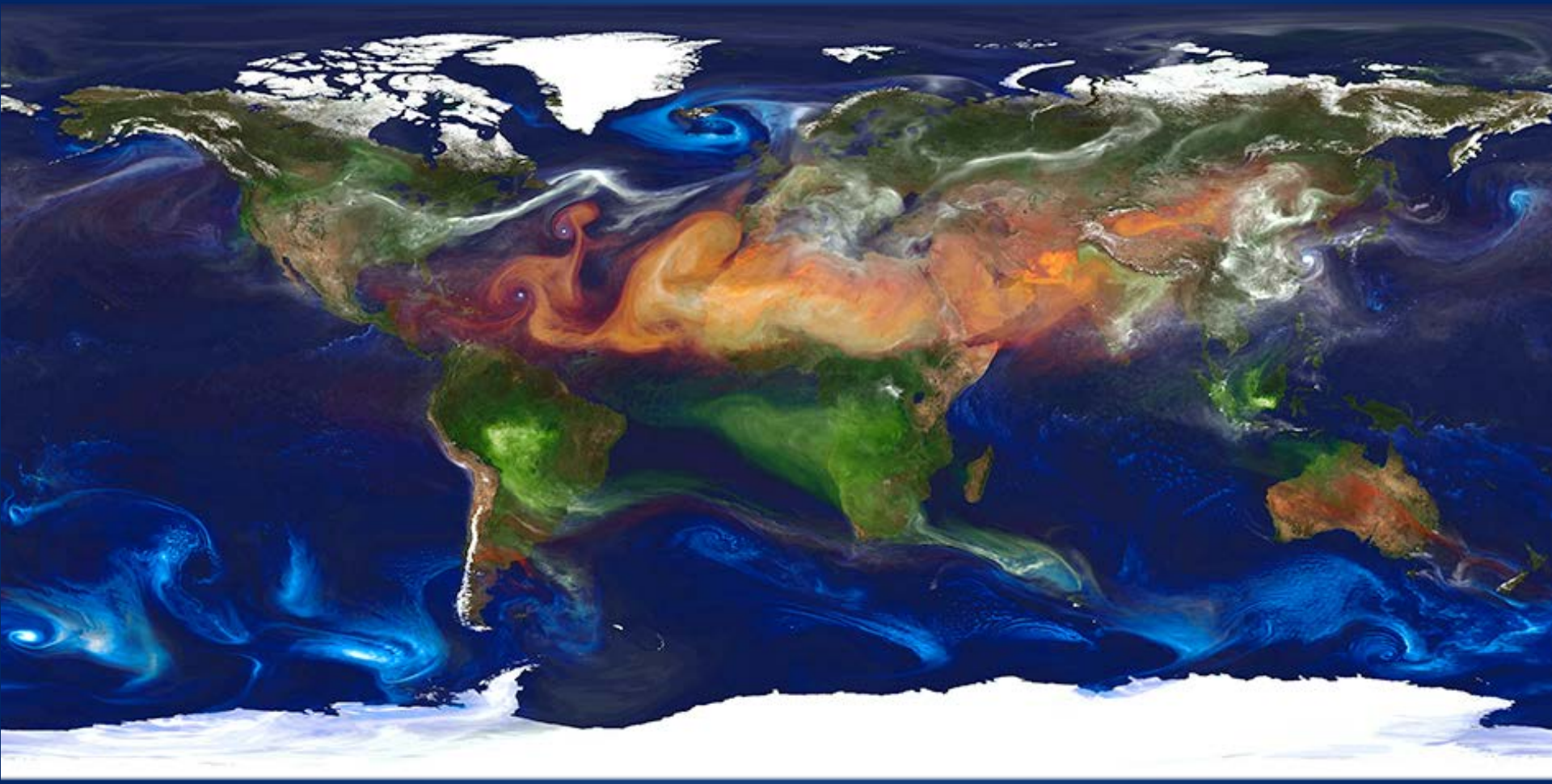


http://svs.gsfc.nasa.gov/Gallery/ClimateEssentials.html

Timelapse powered by Google Earth Engine

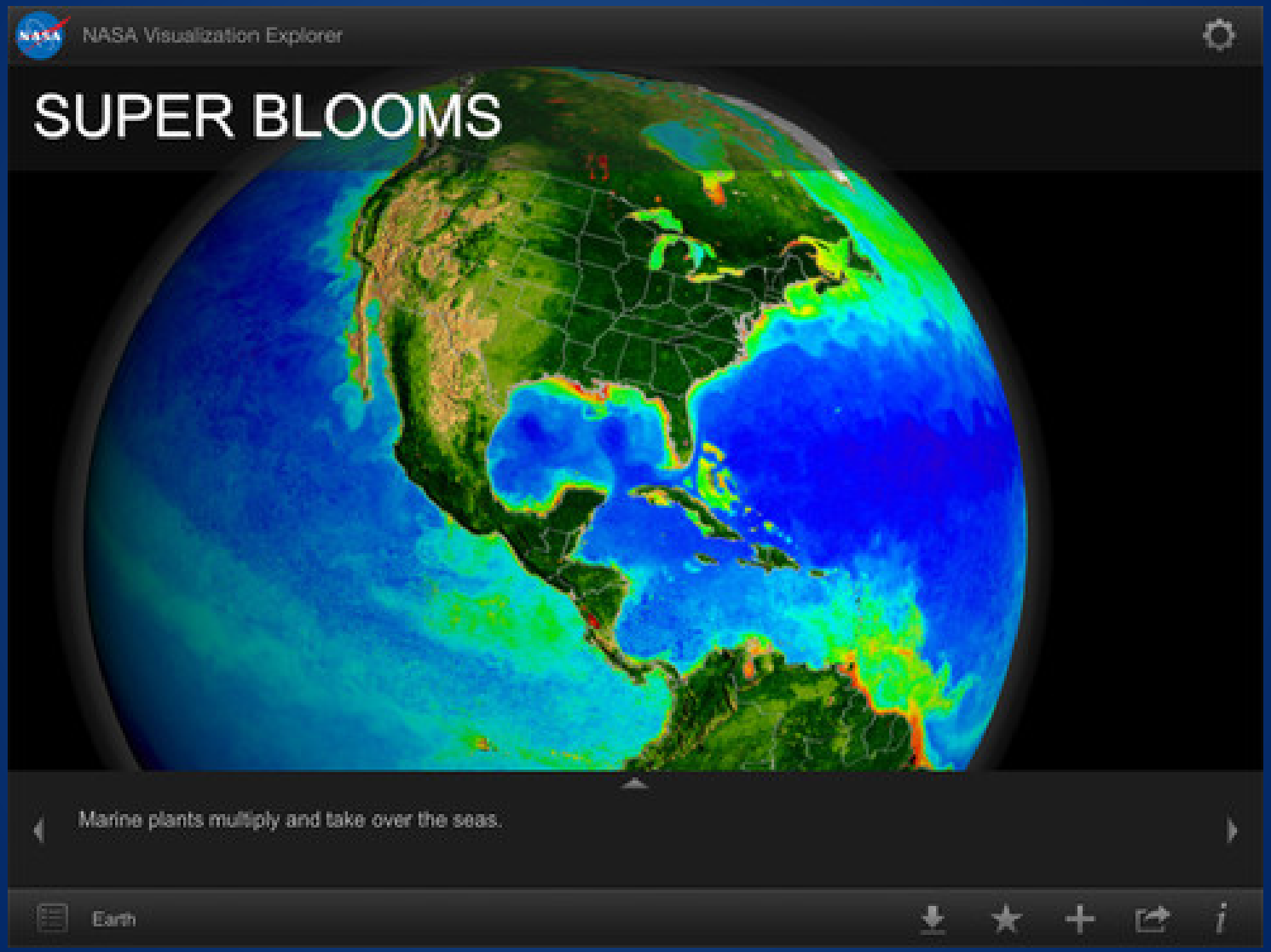
http://world.time.com/timelapse/

NASA’s Paint by Particle

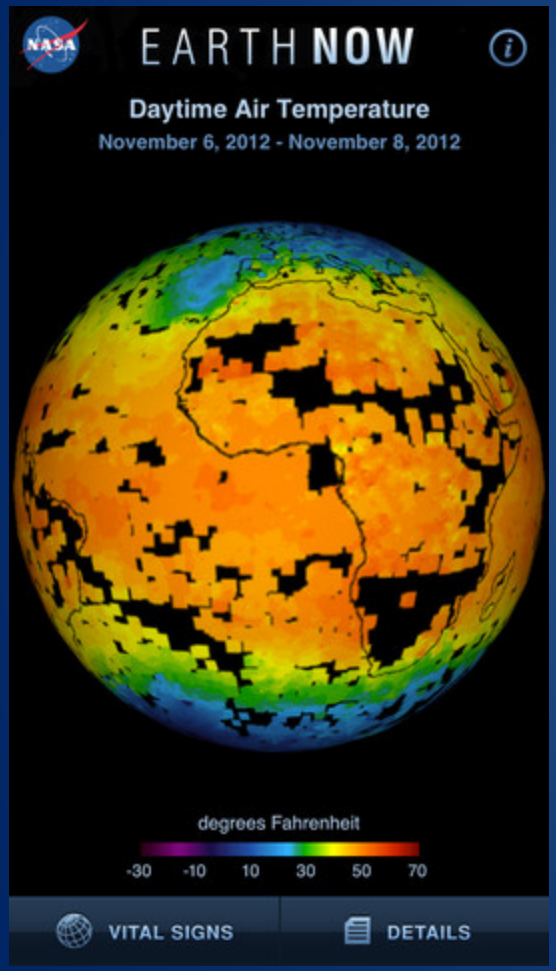


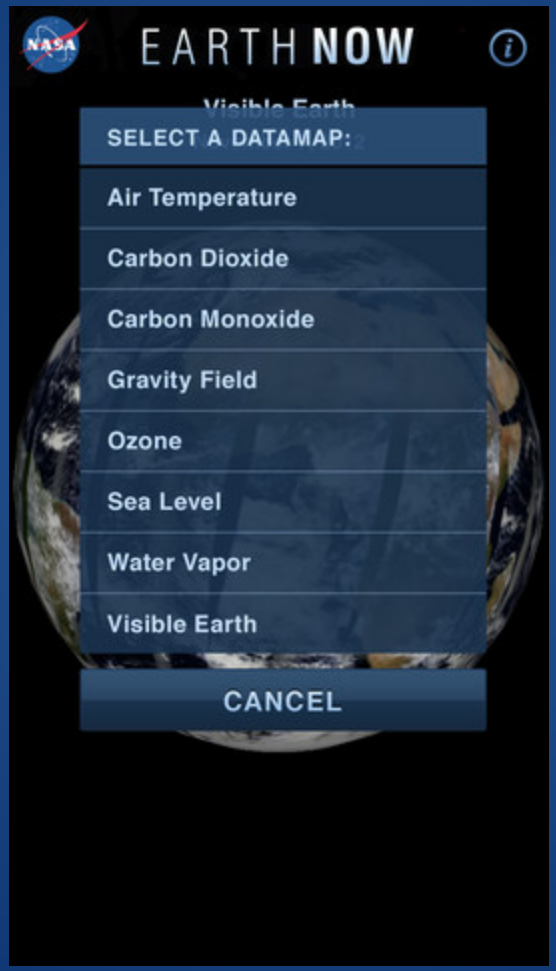
http://svs.gsfc.nasa.gov/vis/a010000/a010900/a010977/

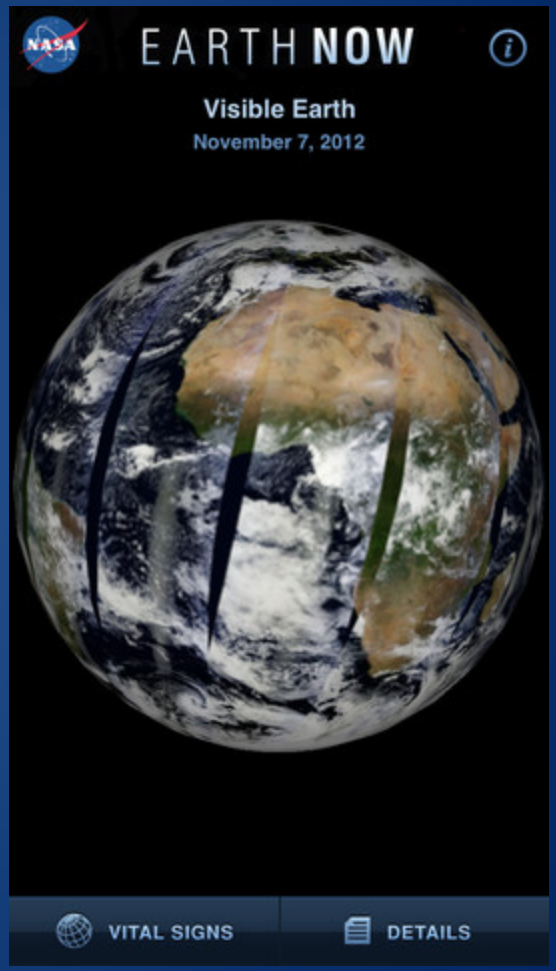
NASA’s Visualization Explorer



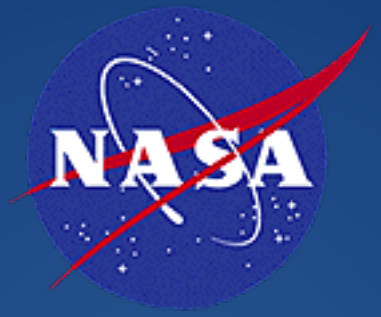
NASA's Earth Now







Thank you!



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