

# Laura's Greatest Hits Part 2: The Latest and Most Amazing New Resources at NASA's Global Climate Change Website



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NASA's Jet Propulsion Laboratory



# NASA's Global Climate Change Website



Managed at the Jet Propulsion Laboratory in Pasadena

<http://climate.nasa.gov/>

# Meteorologist Center

The screenshot shows the NASA Global Climate Change website. The header includes the NASA logo and the text "National Aeronautics and Space Administration". The main heading is "GLOBAL CLIMATE CHANGE" with the subtitle "Vital Signs of the Planet". Below this is a banner for "NASA's Eyes on the Earth 3D". A table displays five key indicators: Arctic Sea Ice Minimum (12% per decade), Carbon Dioxide (393 parts per million), Sea Level (3.19 mm per year), Global Temperature (1.5 °F avg. temp. since 1880), and Land Ice (100 billion tons per year). A left sidebar lists various categories, with "FOR METEOROLOGISTS" circled in red. The main content area features a large image of a volcanic eruption with the text "Volcanic fertilizer" and "Phytoplankton respond to nature's emissions". Below this is a "NEWS AND FEATURES" section with articles like "A powerful cold front", "Make seed paper", and "Wind watcher". A right sidebar includes an "EXPLORE" section with links to "EYES ON THE EARTH 3D", "SEA LEVEL VIEWER", "CLIMATE TIME MACHINE", and "GLOBAL ICE VIEWER". At the bottom right, there is a "COMMUNICATIONS FROM THE FIELD" section with a blog post "my big fat planet" and a "The Latest from Twitter" section.

NASA National Aeronautics and Space Administration

GLOBAL CLIMATE CHANGE  
Vital Signs of the Planet

NASA's Eyes on the Earth 3D >>

ARCTIC SEA ICE MINIMUM >	CARBON DIOXIDE >	SEA LEVEL >	GLOBAL TEMPERATURE >	LAND ICE >
↓ 12 % per decade	↑ 393 parts per million	↑ 3.19 mm per year	↑ 1.5 ° F avg. temp. since 1880	↓ 100 (Greenland) billion tons per year

Key Indicators  
Evidence  
Causes  
Effects  
Consensus  
Uncertainties  
NASA's Role  
Missions  
Key Websites  
INTERACTIVES  
IMAGES AND VIDEO  
CLIMATE KIDS  
ENERGY INNOVATIONS  
NASA CLIMATE DAY  
SUBSCRIBE TO NEWSLETTER  
FOR EDUCATORS  
**FOR METEOROLOGISTS**  
search GO

Volcanic fertilizer  
Phytoplankton respond to nature's emissions

EXPLORE  
EYES ON THE EARTH 3D  
Fly alongside NASA satellites in 3D >  
SEA LEVEL VIEWER  
Explore sea level from space >  
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NEWS AND FEATURES  
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CLIMATE Reel

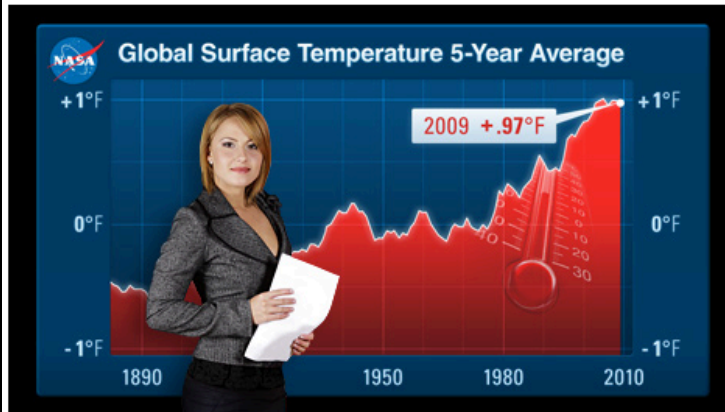
MORE NEWS FROM NASA HEADLINES ELSEWHERE

<http://climate.nasa.gov/meteorologists>



# Meteorologist Center

## Climate Indicators



### Global Temperature Average

This graph and animation illustrates the change in global surface temperature relative to 1951-1980 average temperatures. (From [NASA GISS](#))

› key points

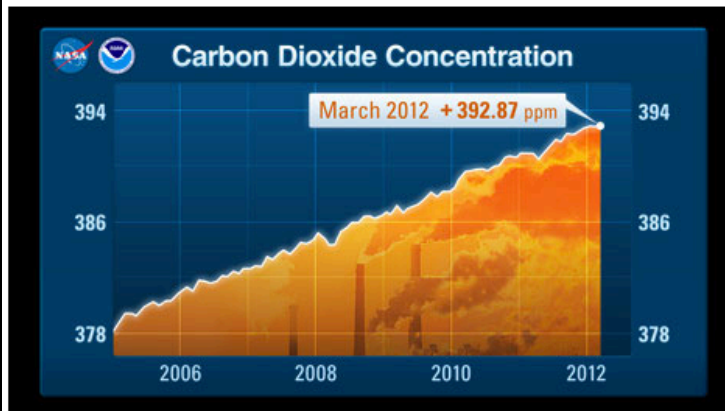
#### ACCESS OPTIONS

5-year-average

- › view full-screen graphic
- › download full-screen graphic
- › play HD movie
- › download HD movie

Annual

- › view full-screen graphic
- › download full-screen graphic
- › play HD movie
- › download HD movie



### Carbon Dioxide Concentration

The chart on the right shows monthly CO2 levels in recent years, corrected for average seasonal cycles, as measured at Mauna Loa Observatory, Hawaii. (From [NOAA](#))

› key points

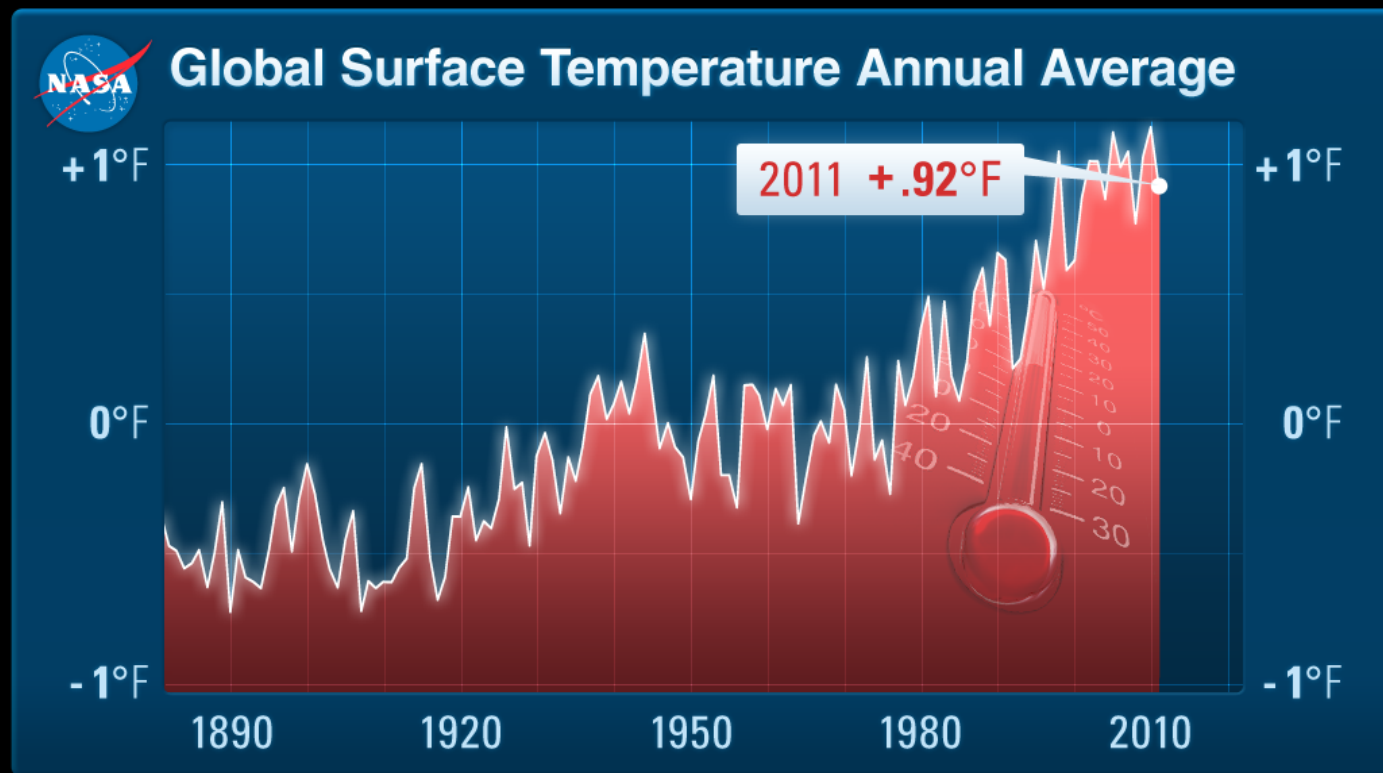
#### ACCESS OPTIONS

- › view full-screen graphic
- › download full-screen graphic
- › play HD movie
- › download HD movie

<http://climate.nasa.gov/meteorologists>

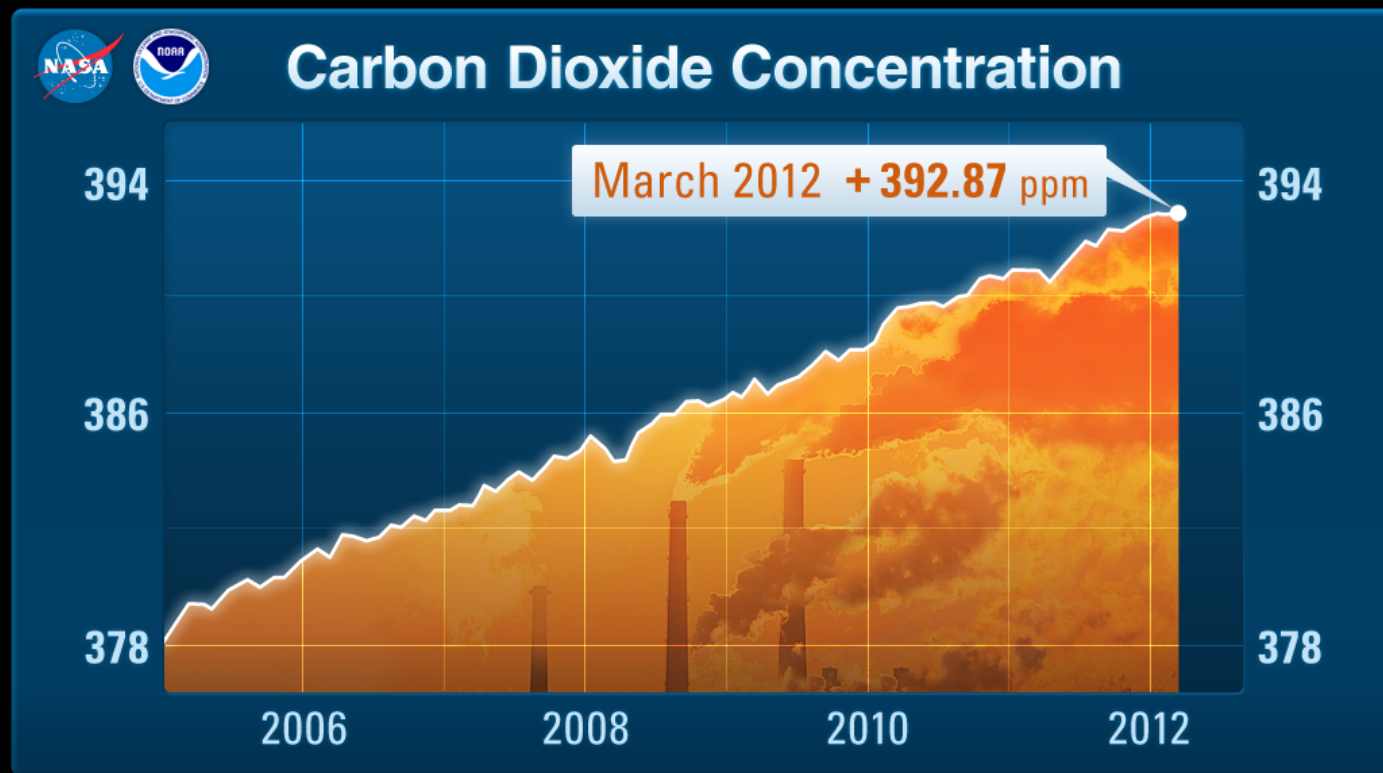


# Global Average Temperature



<http://climate.nasa.gov/meteorologists/graph-globalTemp-annual-full-090512.tif>

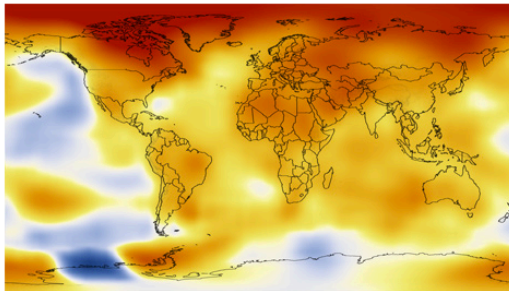
# Carbon Dioxide Concentration



<http://climate.nasa.gov/meteorologists/graph-co2-full.tif>

# Meteorologist Center

## Featured Animations updated January 15, 2013



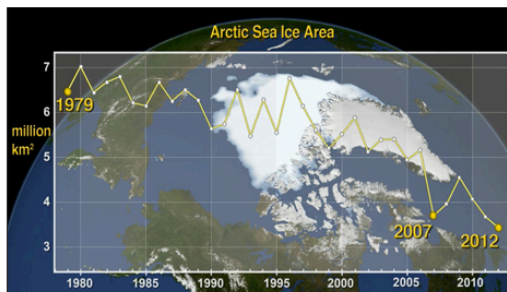
### Global Temperature Variation

NASA scientists say 2012 was the ninth warmest of any year since 1880, continuing a long-term trend of rising global temperatures. This time series shows the progression of changing global surface temperatures from 1884 through 2012. (From [NASA Goddard SVS](#))

› [key points](#)

#### ACCESS OPTIONS

- › [play HD movie](#)
- › [download HD movie](#)



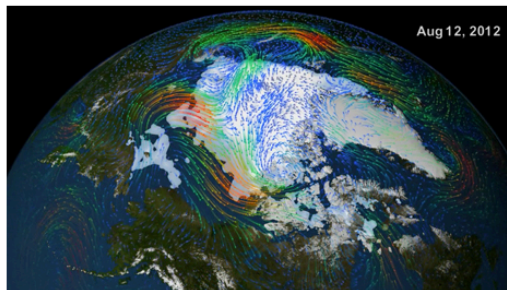
### Arctic Sea Ice

This 40-second animation shows the annual Arctic sea ice minimum area from 1979 to 2012, with a graph overlay. The 2012 Arctic minimum, reported on Sept. 19, was 1.32 million square miles (3.41 million square kilometers) – the smallest in the satellite record.

› [key points](#)

#### ACCESS OPTIONS

- › [play HD movie](#)
- › [download HD movie](#)



### Daily Sea Ice, with Winds

Early in the month of August, 2012, storms in the Arctic affected the motion of the sea ice north of Siberia and Alaska. This animation shows the motion of the winds over the Arctic in conjunction with seasonal melting of the Arctic sea ice from August 1 through September 13, 2012, when the NASA scientists determined that the sea ice reached its annual minimum extent. The surface winds, shown by moving arrows, are colored by the velocity. Slower winds are shown in blue, medium in green and the fast winds are shown in red.

#### ACCESS OPTIONS

- › [play HD movie](#)
- › [download HD movie](#)

› [see all featured animations](#)

<http://climate.nasa.gov/meteorologists>



# Tips For Educators

The screenshot shows the NASA Global Climate Change website. The top header includes the NASA logo and the text "National Aeronautics and Space Administration". Below this is a banner for "GLOBAL CLIMATE CHANGE" with the subtitle "Vital Signs of the Planet". A navigation bar contains links for "ARCTIC SEA ICE MINIMUM", "CARBON DIOXIDE", "SEA LEVEL", "GLOBAL TEMPERATURE", and "LAND ICE", each with a corresponding value and trend indicator. The left sidebar lists various categories, with "FOR EDUCATORS" highlighted by a red circle. The main content area features a large image of a volcanic eruption with the text "Volcanic fertilizer" and "Phytoplankton respond to nature's emissions". Below this is a "NEWS AND FEATURES" section with articles like "A powerful cold front", "Make seed paper", and "Wind watcher". The right sidebar includes an "EXPLORE" section with links to "EYES ON THE EARTH 3D", "SEA LEVEL VIEWER", "CLIMATE TIME MACHINE", and "GLOBAL ICE VIEWER", as well as a "COMMUNICATIONS FROM THE FIELD" section with a blog post "my big fat planet".

NASA National Aeronautics and Space Administration

GLOBAL CLIMATE CHANGE  
Vital Signs of the Planet

NASA's Eyes on the Earth 3D >>

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**FOR EDUCATORS**  
FOR METEOROLOGISTS

Volcanic fertilizer  
Phytoplankton respond to nature's emissions

NEWS AND FEATURES

**A powerful cold front**  
Satellite image shows severe weather system  
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**Make seed paper**  
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Read More

**Wind watcher**  
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EXPLORE

**EYES ON THE EARTH 3D**  
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MORE NEWS FROM NASA HEADLINES ELSEWHERE

<http://climate.nasa.gov/education/tips>

# Tips For Educators

## Tips 'n' Tricks for New Media Users

A guide to finding NASA images, animations and video clips

1

### HD EARTH VIEWS FROM SPACE

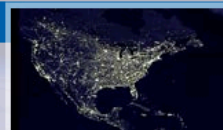
A collection of 23 video clips of Earth captured by cameras aboard the Space Shuttle and the International Space Station. The space station orbits Earth every 90 minutes from an altitude of about 220 miles, at an approximate speed of 17,500 miles per hour. The clips are approximately 10-20 seconds long and are available for download in QuickTime 1280x720.



2

### VISIBLE EARTH

A catalog of NASA images and animations of planet Earth, including thousands of stills and short video clips. You can browse by topic, collection, or by NASA satellite sensor. Check out the [Blue Marble Animation Collection](#) for animated videos of spinning Earth.



3

### EARTH FROM SPACE

A photography dataset of astronaut photos of Earth, searchable by city, landscape, human-Earth interaction, distinctive features, hurricanes, water, and geography. Choose search term, and click on "start search", scroll through items and click on desired choice. Clicking on "all available images" will open a new window with options to select the file size you would like to download and "save as" to your computer.



4

### EARTH AS ART

The United States Geological Survey (USGS) Image Gallery, a collection of extraordinary images taken by NASA's Landsat satellite.



<http://climate.nasa.gov/education/tips>

# New PD from PBS and NASA

NASA National Aeronautics and Space Administration

## GLOBAL CLIMATE CHANGE

Vital Signs of the Planet

Home  
Key Indicators  
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Uncertainties  
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Key Websites  
IMAGES OF CHANGE  
EARTH WALLPAPER  
CLIMATE REEL  
CLIMATE KIDS  
FOR EDUCATORS  
SUBSCRIBE TO NEWSLETTER

Engage Explore Explain Elaborate Evaluate

### Introduction to Earth's Dynamically Changing Climate

Science works by demanding evidence and logical arguments to support claims; and by continually searching for more accurate theories. Evidence helps in interpreting and evaluating accounts of climate change in the media and elsewhere and helps to distinguish scientific fact from opinion. What kind of evidence exists that helps us determine how climate has changed over time and how it might change in the future?

In this section, you will examine the evidence for global climate change.

#### Data Activity: Examining the Vital Signs

Travel through Earth's recent climate history with the "Climate Time Machine" interactive. Carefully examine the changes over time in sea ice, sea level, carbon emissions, and average global temperature. Reflect on the key changes in the four variables shown in the interactive by thinking about the following questions:

- When did the key changes occur for each variable?
- Can you hypothesize as to why these key changes occurred when they did?
- How does this information compare with what you have heard in the media?
- Is any of this data surprising or new to you?

Integrate science and mathematics learning with technology and the engineering design process to investigate solutions to real-world problems with our STEM courses.

PBS TeacherLine, the premier provider of online professional development services for PreK-12 educators, has the goal of making professional development accessible, affordable and engaging for teachers. Our hope is that our courses can help inspire and guide STEM learning at every age and in every discipline.

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## Introduction to Earth's Dynamically Changing Climate

Engage Explore Explain Elaborate Evaluate

### EXPLORE

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Next, view the interactive data for "Vital Signs of the Planet" on NASA's Global Climate Change: NASA's Eyes on the Earth website to give you a sense of the scale of change we have seen in our climate system.

Now, look at graphical and pictorial representations of data that show trends up to the present for Sea Level, Carbon Dioxide Concentration, Global Surface Temperature, Arctic Sea Ice, and Land Ice. Go to NASA's Key Indicators and for each of these indicators, consider the data source for the information, the length of time the data covers, what is being measured, and what causes the changes. What is more useful to you to understand the data—looking at the graph or the visualization?

Why should we be concerned about these specific indicators?

What impact do these trends have on our Earth?

What is your new understanding of the data sources you explored from NASA's Key Indicators?

Solidify what you have learned in this section by exploring the "Piecing together the temperature puzzle" webpage and watching the "Warming World" video. After watching the video, return to your summary of your understanding of the data sources you explored from NASA's Key Indicators. Are there any changes or updates you would like to make to your notes after watching this video?

Glossary Citations & References Standards PBS TeacherLine © 2010

Global Climate Change Lessons

- Introduction to Earth's Dynamically Changing Climate
- Earth's Warming Climate: Are We Responsible?
- Going Local with Global Warming
- The Climate Change Skeptic's Argument: Natural Solar Cycles or Human Activity?

Online Professional Development

PBS TeacherLine.

PBS TeacherLine, the premier provider of online professional development services for PreK-12 educators, has the goal of making professional development accessible, affordable and engaging for teachers. Our hope is that our courses can help inspire and guide STEM learning at every age and in every discipline.

Integrate science and mathematics learning with technology and the engineering design process to investigate solutions to real-world problems with our STEM courses.

GO >>

[http://climate.nasa.gov/education/pbs\\_modules](http://climate.nasa.gov/education/pbs_modules)



# Eyes on the Earth 3D

The screenshot shows the NASA Eyes on the Earth 3D website. At the top, the NASA logo and "National Aeronautics and Space Administration" are displayed. Below this is the "GLOBAL CLIMATE CHANGE" section with the subtitle "Vital Signs of the Planet". A red circle highlights the link "NASA's Eyes on the Earth 3D >>". Below this are five climate indicators: Arctic Sea Ice Minimum (down 12% per decade), Carbon Dioxide (up 393 parts per million), Sea Level (up 3.19 mm per year), Global Temperature (up 1.5 °F avg. temp. since 1880), and Land Ice (down 100 billion tons per year). The main content area features a large image of a volcanic eruption with the text "Volcanic fertilizer" and "Phytoplankton respond to nature's emissions". To the left is a sidebar with navigation links like "Key Indicators", "Evidence", "Causes", etc. To the right is an "EXPLORE" section with links to "EYES ON THE EARTH 3D", "SEA LEVEL VIEWER", "CLIMATE TIME MACHINE", and "GLOBAL ICE VIEWER". Below this is a "NEWS AND FEATURES" section with articles like "A powerful cold front", "Make seed paper", and "Wind watcher". At the bottom right is a "COMMUNICATIONS FROM THE FIELD" section with a blog post "my big fat planet" and a Twitter feed.

NASA National Aeronautics and Space Administration

GLOBAL CLIMATE CHANGE  
Vital Signs of the Planet

NASA's Eyes on the Earth 3D >>

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97% of climate scientists agree that climate change is very likely man-made. Read their statements here: http://t.co/UFqvM36h 11

<http://eyes.nasa.gov/earth/>

# Headlines: Planet Earth

The screenshot shows the 'Eyes on the Earth' website in a browser window. The URL bar shows <http://eyes.nasa.gov/earth>. The page features the NASA logo and the title 'EYES ON THE EARTH: Vital Signs of the Planet'. Below the title is a navigation bar with links: Climate Staging, EOE tickets, FogBugz, EOX tickets, EOX Devel, Blackhawk, JPL Chorus, Climate External, Climate Internal, Eyes Classic, DaddyMail, and Facebook. The main content area has three columns: 'Explore Earth's Vital Signs' (with a globe visualization), 'Fly along with NASA Satellites' (with a satellite visualization), and 'View the latest Image of the Day' (with a satellite image). At the bottom, there is a large 'START' button circled in red, with an arrow pointing to it from the text '2. Click "START"'. Below the 'START' button, the text 'Eyes on the Earth is a Java-launched Unity3D application' is visible. At the very bottom, a large red and blue instruction reads: '1. Go to <http://eyes.nasa.gov/earth>'.

http://eyes.nasa.gov/earth

Climate Staging EOE tickets FogBugz EOX tickets EOX Devel Blackhawk JPL Chorus Climate External Climate Internal Eyes Classic DaddyMail Facebook

**EYES ON THE EARTH**  
Vital Signs of the Planet

Travel in time and explore NASA satellite visualizations in 3D [contact us](#) | [credits](#)

**Explore Earth's Vital Signs**

View recent data for air temperature, carbon dioxide, carbon monoxide, sea level, ozone, ice and water.

**Fly along with NASA Satellites**

Follow NASA satellites and learn how they collect critical data about Earth's atmosphere, land and oceans.

**View the latest Image of the Day**

Spectacular views of our home planet from space, updated daily.

Eyes on the Earth is a Java-launched Unity3D application


**START**










2. Click "START"


1. Go to <http://eyes.nasa.gov/earth>






**EYES ON THE EARTH**



SHARE

VITAL SIGNS OF THE PLANET

Image of the Day



January 30, 2013

Close-up of Flooding in Mozambique

[View here](#)


Current News


November 14, 2012

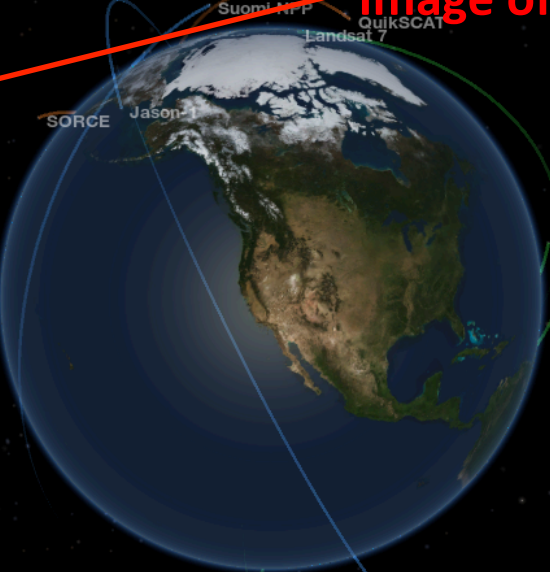
Slash and Burn Agriculture

[Show archive](#)

Stories about Planet Earth






September 07, 2009  
Station Fire

February 12, 2012  
Antarctic Ice Loss



Satellites shown: Suomi NPP, QuikSCAT, Landsat 7, Jason, SORCE, Terra, EO-1, OSTM

News Archive





EXIT

Image of the Day





VITAL SIGNS OF THE PLANET

### Image of the Day



January 30, 2013

Close-up of Flooding in Mozambique

[» Go there now](#)

### Current News

November 14, 2012

Slash and Burn Agriculture

[» Show archive](#)

### Stories about Planet Earth



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Station Fire



February 12, 2012  
Antarctic Ice Loss



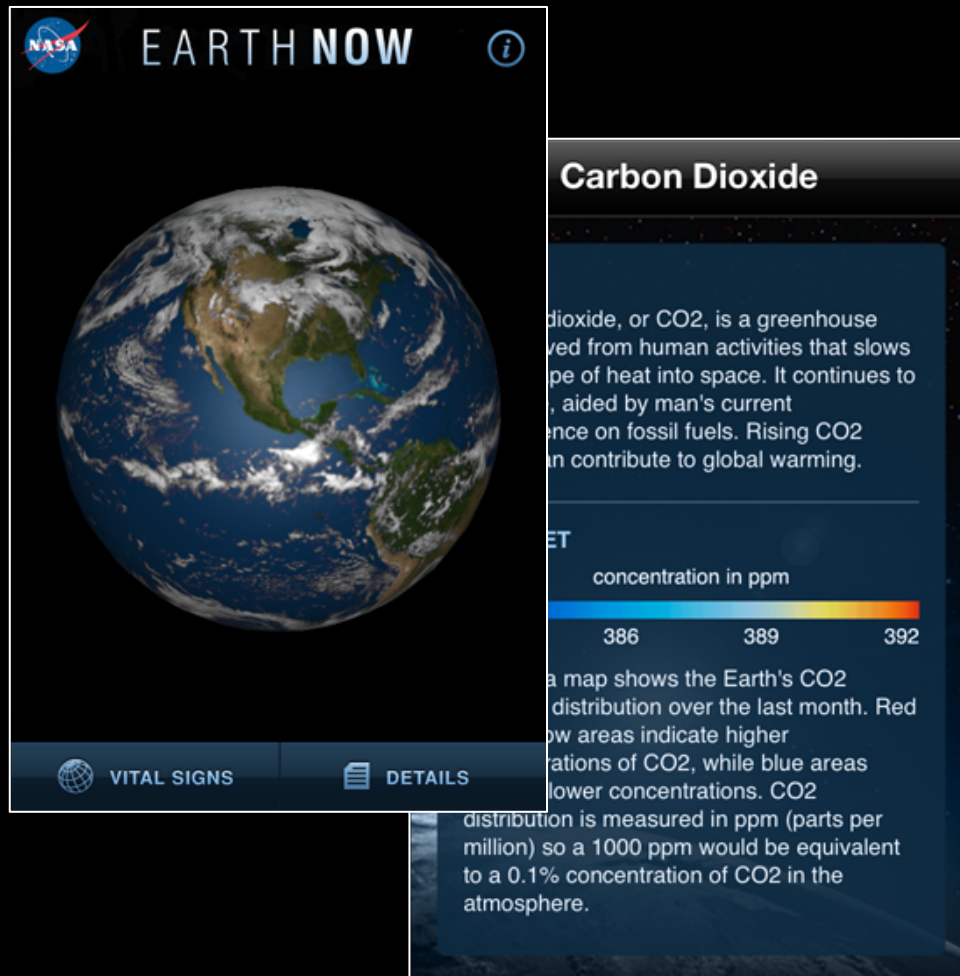
News Archive



EXIT



# Expanded to mobile

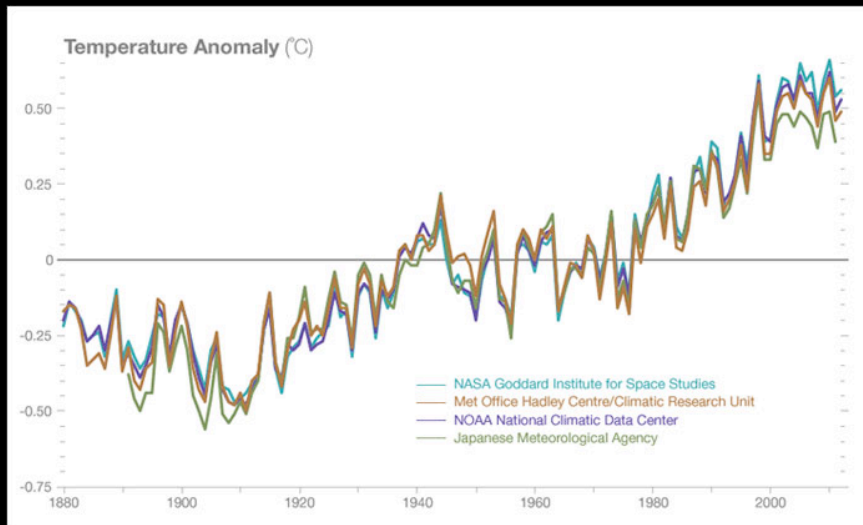




# What else is new?

- Facebook Share buttons
- Eyes on Earth Data
- The Sun: A Virtual Tool
- Consensus Page

<http://climate.nasa.gov/scientific-consensus>



# A reason to stay connected

**NASA** National Aeronautics and Space Administration

**GLOBAL CLIMATE CHANGE**  
Vital Signs of the Planet

[NASA's Eyes on the Earth 3D >>](#)

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**Deep freeze**  
To the underbelly of Antarctica

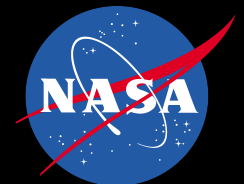
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Travel through Earth's recent climate history >  
[GLOBAL ICE VIEWER](#)  
Sentinels of climate change >

**NEWS AND FEATURES**  
[The end of the IceBridge](#)  
Flights over Antarctica come to an end for 2011  
> Read more  
[Deep freeze](#)  
To the underbelly of Antarctica  
> Read more  
[Images of change](#)  
Oil production expands  
> Read more

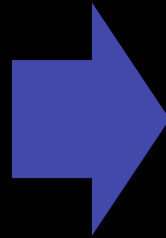
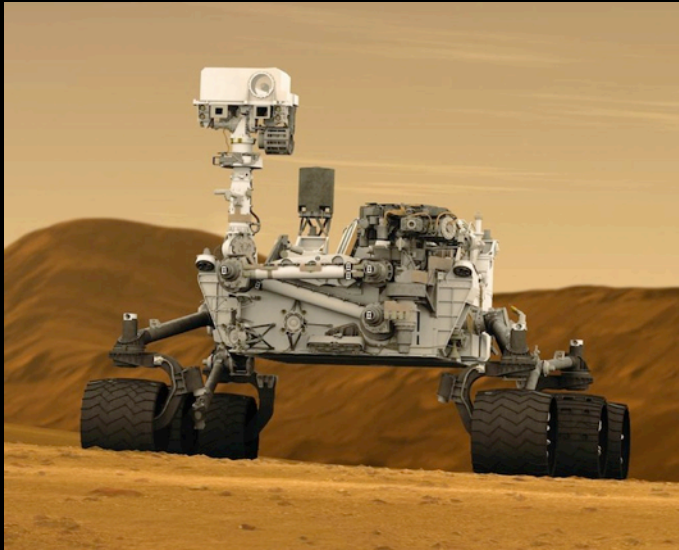
**COMMUNICATIONS FROM THE FIELD**  
[my big fat planet](#)  
a blog hosted by Dr. Jenkins  
**Pick of the pics**  
Check out our latest pick of the pics - this time the River Nile, as seen from space.  
[CLIMATE KIDS](#)  
A kids' guide to climate change >

**WINNER**  
THE 15TH ANNUAL  
**WEBBY AWARDS**  
BEST SCIENCE SITE - 2011

Latest news and information



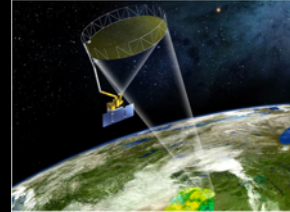
# Going back to Earth



Six NASA missions, 18 months beginning April 2014

# Six NASA Missions, Eighteen Months

	<b>Mission</b>	<b>Launch</b>	<b>What it will do for the planet</b>
1	Rapid SCAT	April 2014	Measure winds over the ocean: hurricanes, storms, climate change
2	GPM	June 2014	Measure rain and snow every 3 hours: understand water and energy cycles and forecast extreme events
3	OCO-2	July 2014	Measure atmospheric CO2: understand where the carbon is going (sources and sinks)
4	SMAP	October 2014	Measure global soil moisture & freeze/thaw every 3 days: support agri productivity and flood & drought prediction
5	Jason-3	March 2015	Global view of sea-level changes: reveal where the heat is stored and how currents affect weather & climate
6	GOES-R	October 2015	Provide atmospheric and surface measurements of Western Hemisphere: weather forecasting, severe storm tracking, and meteorological research





# Develop key messages and thematic story



# Feedback and dissemination from CLN



What else can we do to help you?

**GLOBAL CLIMATE CHANGE** | NASA's Eyes on the Earth

**GLOBAL TEMPERATURE** HOW MUCH DO YOU KNOW?

**1 SCORCHER** The six hottest years on record occurred during the last

**CHOOSE YOUR ANSWER:**

- ☐ A. 100 years
- ☐ B. 50 years
- ☐ C. 10 years

**CHECK OUT ALL OF EARTH'S VITAL SIGNS** 1 2 3 4 5 6 7 8 9 10

\* At "Climate Change Education: Science, Solutions, Inspiration and Empowerment" at the North American Association of Environmental Education in Raleigh, NC.




# What works

- Make scientific concepts engaging, useful, and relevant
- Build immersive and interactive experiences
- Use images and video to tell a story
- Partner with trusted sources
- Give users a reason to stay connected and come back







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