

# Communicating Actionable Earth Science

at the Earth Information Center

Alex Gurvich, Ph.D.  
NASA Scientific Visualization Studio  
Data Viz DC: Earth Day, April 22, 2024



NASA has partnered with seven other Federal agencies  
to bring actionable data to the via the Earth Information Center

## Earth Information Center



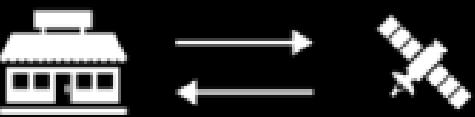
FEMA



**USAID**  
FROM THE AMERICAN PEOPLE



# The EIC at NASA HQ has four components



Immersive  
Projection  
Room



Data-driven  
LED chandelier



Interactive  
Drafting  
Table  
Kiosks



The Hyperwall

"Earth Mission Control"



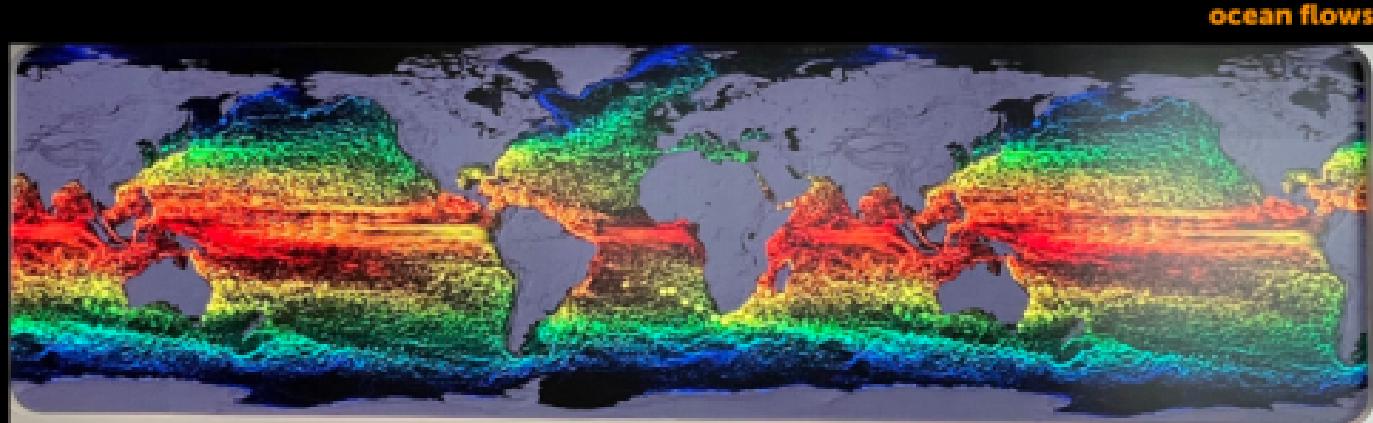


**Beauty Pieces**

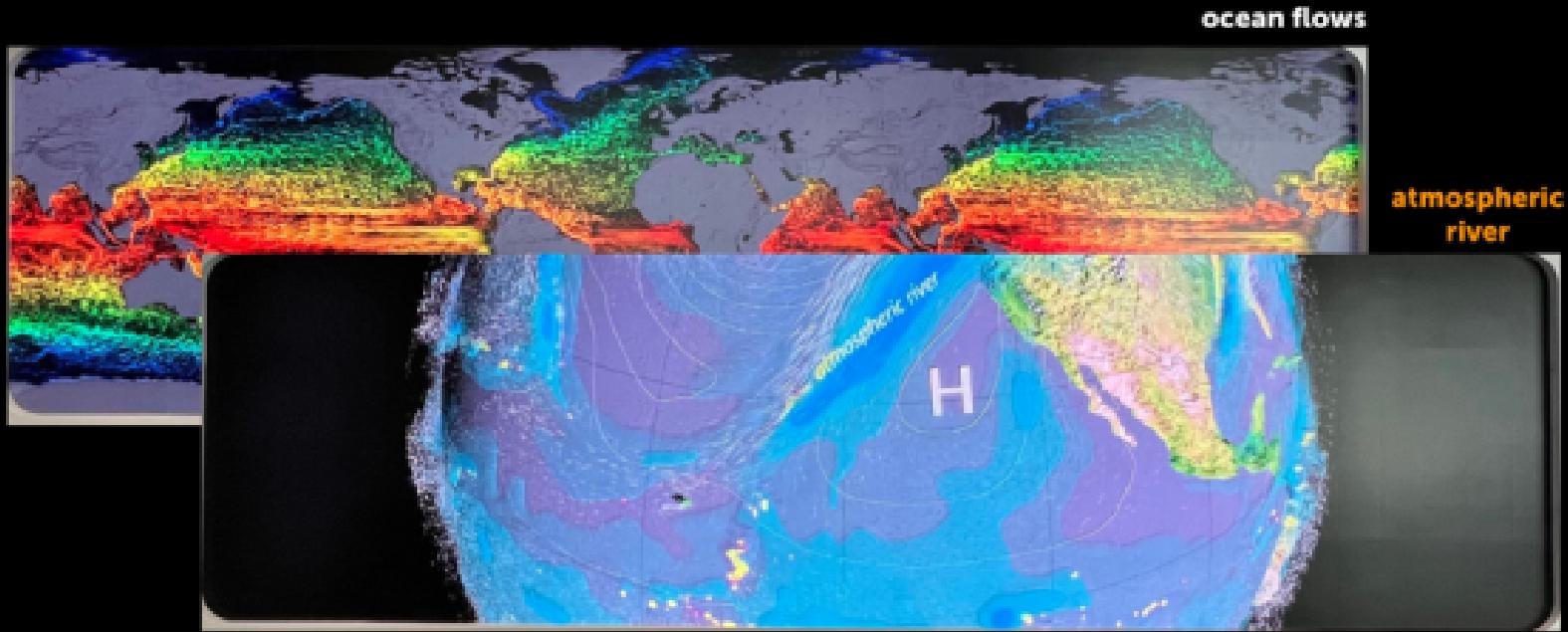
**Narrated Stories**

**Dashboards**

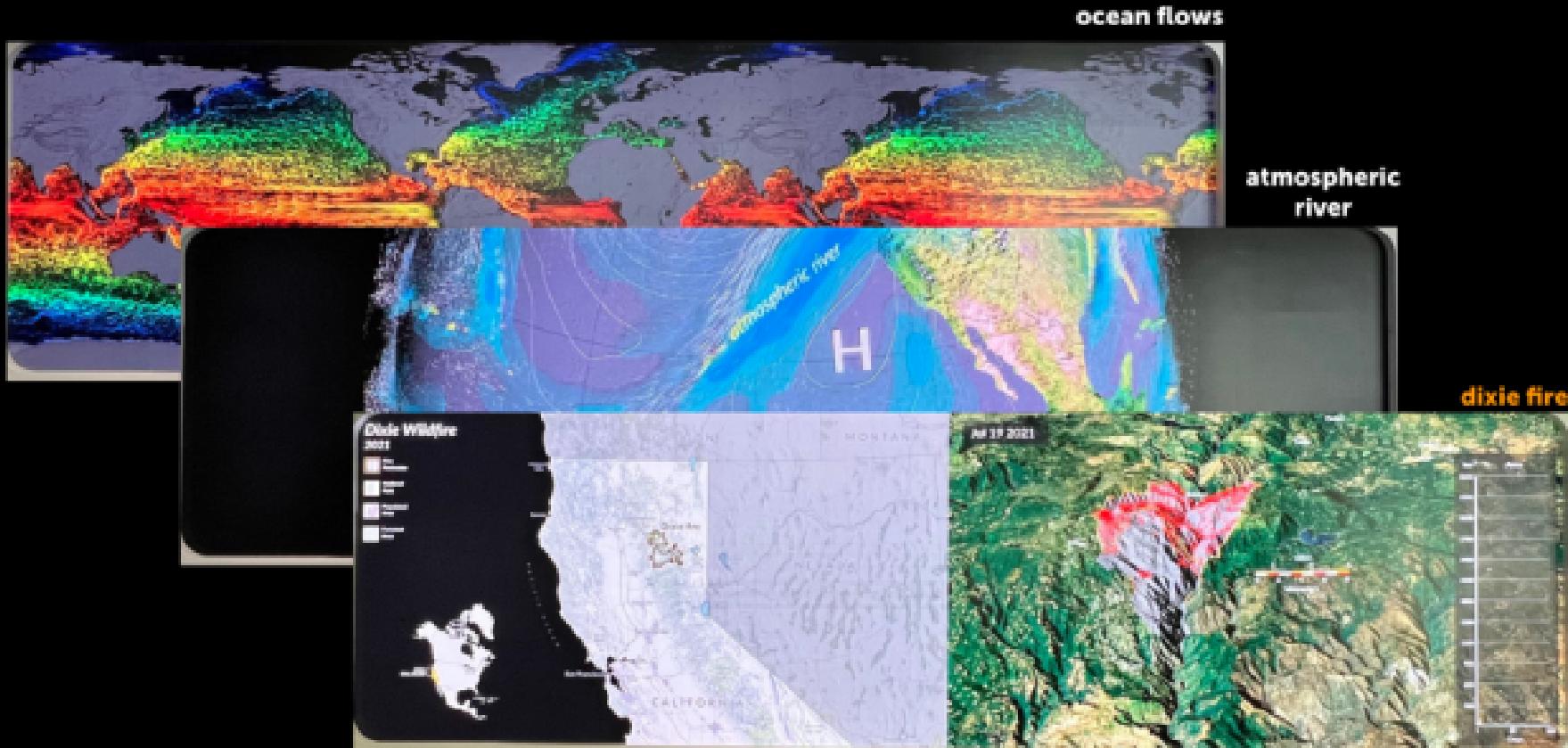
Hyperwall content is split into **three groups**:  
**beauty pieces**, narrated stories, and dashboards



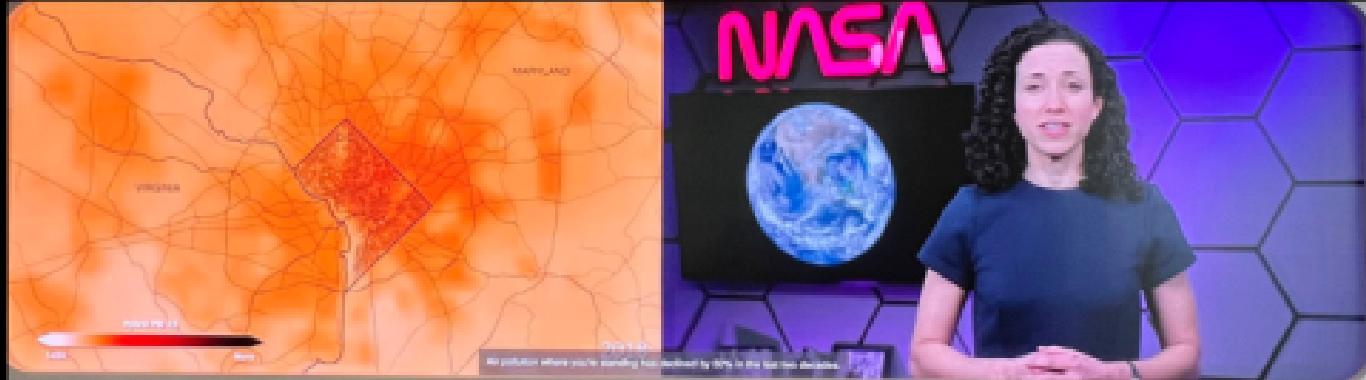
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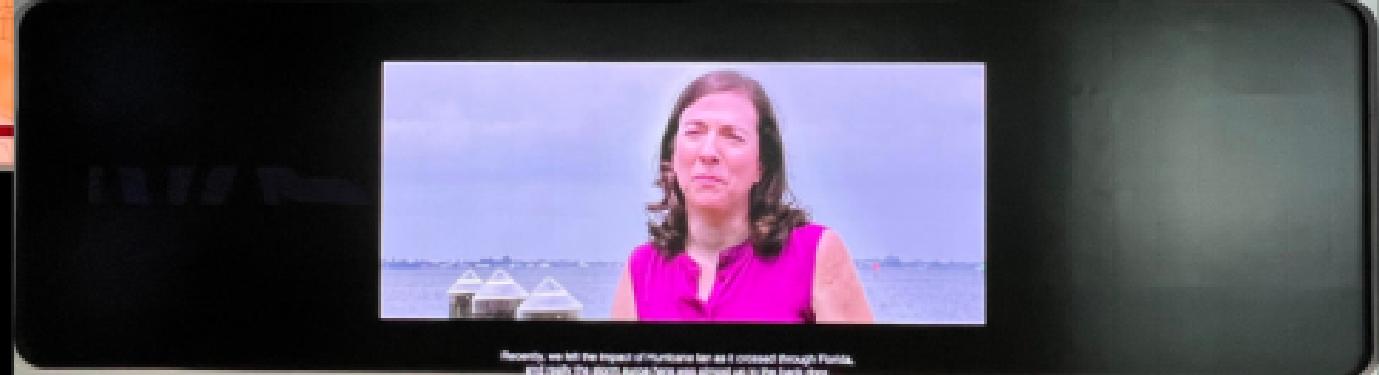
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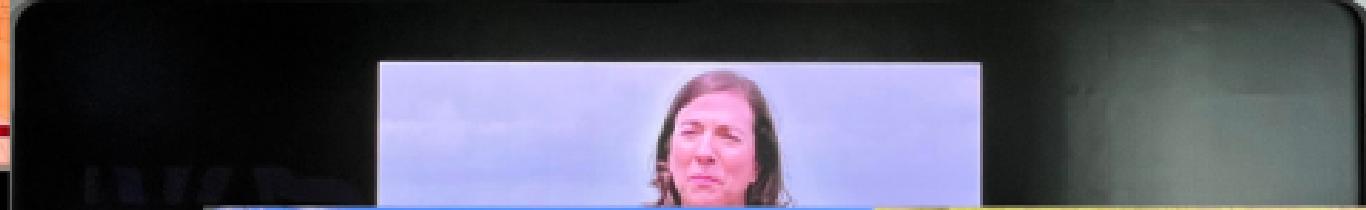
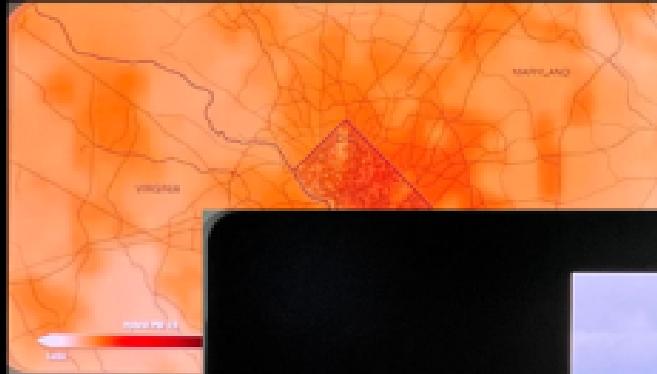


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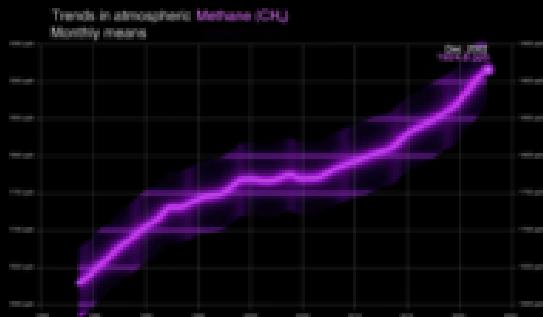
Recently, we felt the impact of Hurricane Dorian as it passed through Ponte Vedra Beach, Florida, causing flooding and damage to homes and businesses.

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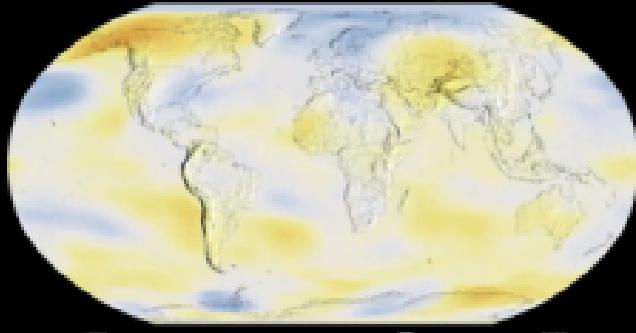
### animated charts/graphs



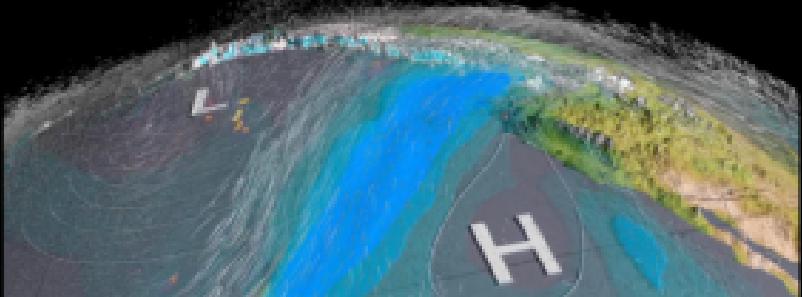
### big statistics

|                                    |                                     |                                       |
|------------------------------------|-------------------------------------|---------------------------------------|
| Global Temperature                 | Sea Level                           | Minimum Extent of Arctic Sea Ice      |
| ↑ 1.4°C<br>since pre-industrial    | ↑ 4"<br>since January 1990          | ↓ 12.2%<br>per decade since 1979      |
| Carbon Dioxide                     | Methane                             | Ice Sheets                            |
| ↑ 427<br>current parts per million | ↑ 1932<br>current parts per billion | ↓ 408<br>billion metric tons per year |

### animated maps



### 3D models



# Dashboard content is categorized thematically

 **WEDNESDAY** 

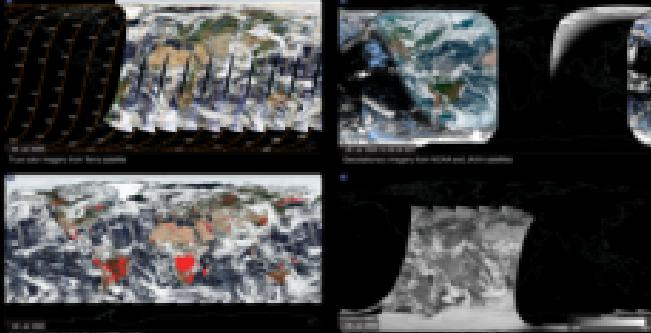
 **Earth Now**

Federal satellites provide data on Earth's land, ecosystems, water, air temperature, and climate – and have done so for more than 60 years. Earth information from space supports decision makers, partners, and people in developing the tools they need to mitigate, adapt, and respond to our changing planet.

**Earth Observing Fleet**



**Current Satellite Observations**



Left image: Clouds from Terra MODIS  
Top row: Land from Terra MODIS, Atmosphere from Terra MODIS  
Bottom row: Ice from Terra MODIS, Atmosphere from Terra MODIS

**Image of the Day**



**On This Day in 2020: Northern Australia**  
The image shows a massive forest fire in northern Australia, with smoke plumes visible against the dark sky. The fire is likely a result of the extreme heat and drought conditions experienced in the region during 2020.

**Vital Signs**

|                |            |               |
|----------------|------------|---------------|
| Global         | Sea Level  | Glacier Area  |
| +1.1°C         | +4"        | -12.8%        |
| Carbon Dioxide | Ice Sheets | Ocean Warming |
| +421           | +1824      | +345          |

**NRT, broad**

# Dashboard content is categorized thematically

WEDNESDAY  
October 24, 2018 10:00 AM

## Earth Now

Mobile satellites provide data on Earth's land, ecosystems, water, air temperature, and climate, and have done so for more than 60 years. Earth information from space supports decision makers, partners, and people in developing the tools they need to mitigate, adapt, and respond to our changing planet.

### Current Satellite Observations



### Image of the Day



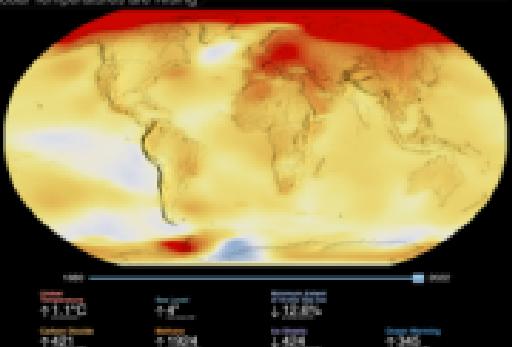
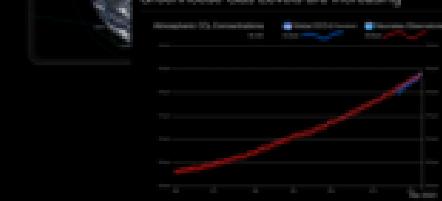
NRT, broad

Earth Observing F WEDNESDAY  
October 24, 2018 10:00 AM

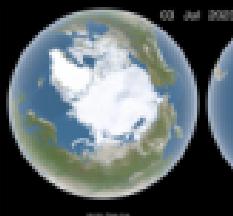
## Climate Vital Signs

Global monitors the health of our planet to benefit humans and our mission track key climate indicators and we share these with the world.

### Greenhouse Gas Levels are Increasing



03 Jul 2018



Daily, narrow

# Dashboard content is categorized thematically

WEDNESDAY  
October 4, 2006 10:29 AM

## Earth Now

Mobile satellites provide data on Earth's land, ecosystems, water, air temperature, and climate, and have done so for more than 60 years. Earth information from space supports decision makers, partners, and people in developing the tools they need to mitigate, adapt, and respond to our changing planet.

### Current Satellite Observations



### Image of the Day



NRT, broad

Earth Observing F WEDNESDAY  
October 4, 2006 10:29 AM

## Climate Vital Signs

NASA monitors the health of our planet to benefit humans and our mission track key climate indicators and we share these with the world.

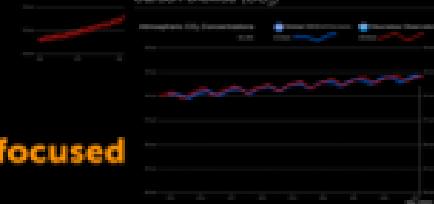


Greenhouse Gas I WEDNESDAY  
October 4, 2006 10:29 AM

## Greenhouse Gases

NASA and its partners track greenhouse gases from space, air, and ground. Our scientists model the flow of these gases across our planet.

### Carbon Dioxide (CO<sub>2</sub>)

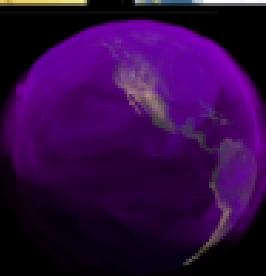
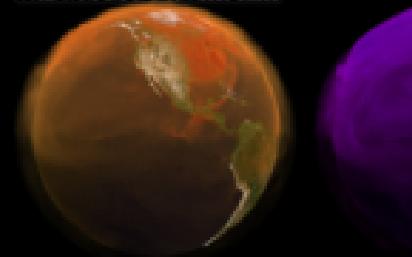


Annual, focused



Daily, narrow

### A Year in the Life of Greenhouse Gases

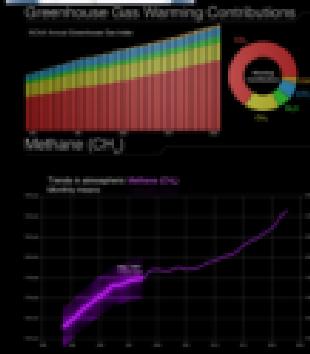


### Carbon Dioxide (CO<sub>2</sub>)

3D CO<sub>2</sub> concentrations produced by merging CO<sub>2</sub> observations with NASA's GISS model to produce a best estimate of the processes controlling climate change.

### Methane (CH<sub>4</sub>)

3D CH<sub>4</sub> concentrations from the GISS model incorporate emissions estimates from human activities, wildfires, fires, and winds informed by billions of satellite observations.



# Dashboard content is categorized thematically

WEDNESDAY  
October 4, 2006 10:29 AM

## Earth Now

Today's satellites provide data on Earth's land, ecosystems, water, air temperature, and climate, and have done so for more than 50 years. Earth information from space supports decision makers, partners, and people in developing the tools they need to mitigate, adapt, and respond to our changing planet.

### Current Satellite Observations



Global Temperatures are Rising

### Image of the Day



NRT, broad

Earth Observing F WEDNESDAY  
October 4, 2006 10:29 AM

## Climate Vital Signs

NASA monitors the health of our planet to benefit humans and our mission track key climate indicators and we share these with the world.



Greenhouse Gas I

WEDNESDAY  
October 4, 2006 10:29 AM

## Greenhouse Gases

NASA and its partners monitor greenhouse gases from space, air, and ground. Our models model the flow of these gases across our planet.

Carbon Dioxide (CO<sub>2</sub>)

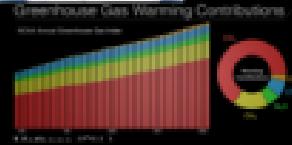
WEDNESDAY  
Oct 4, 2006 10:29 AM

## Carbon Dioxide Sources & Sinks

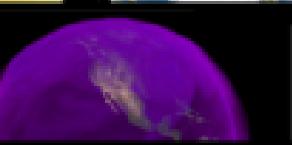
Source: NASA Goddard Institute for Space Studies  
NASA's Carbon Cycle program monitors the flow of carbon dioxide, its emission and transport around the globe, and its absorption by the ocean and biosphere.



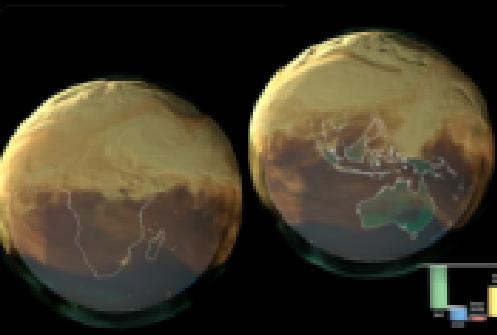
Annual, focused



Daily, narrow



One time, very focused



The EIC is the culmination of an amazing team's effort



NASA's Scientific Visualization Studio (PC: Wade Sisler)

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NASA's Scientific Visualization Studio (PC: Wade Sisler)

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The Hyperwall - Earth Information Center

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EARTH NOW CLIMATE VITAL SIGNS Open in a new browser tab

MONDAY April 20, 2020

Earth Now

NASA satellites provide data on Earth's land, ecosystems, water, air, temperatures, and climate—and have done so for more than 50 years. Earth information from space supports decision makers, partners, and people in developing the tools they need to mitigate, adapt, and respond to our changing planet.

Earth Observing Fleet

Current Satellite Observations

Image of the Day

Vital Signs

| Global       | Sea Level  | Green Land    |
|--------------|------------|---------------|
| +1.4°C       | +4"        | +12.2%        |
| Ocean Health | Ice Sheets | Ocean Warming |
| +425         | +1932      | +360          |