



40th Global Monitoring Annual Conference

Boulder, Colorado

May 21-22, 2013



Housekeeping



- Poster session, 5-8 pm today!
 - Posters are being collected at the registration table. Poster tubes stored in the "hallway" on the left of the stage.
- Agendas are available at the desk and are posted outside the room and behind the food table.
 - We have memory sticks with the full pdf set of abstracts available to borrow.
 - For those without e-access, we do have some printed abstract booklets available as well. Please ask Julie.
- A few printed abstract books are kept at the desk for quick reference.
 - Wireless access throughout the building
 - DSRC connection
 - Username: gmac
 - Password: gmac
- Lunches Delivered here
 - Sign up and pay at the registration table.
- Toilets, fire alarm, etc.
- Questions – please see our wonderful staff.



The 2013 GMAC... by the numbers



Attendance – “In the room”

- 230+ Attendees
 - 37 Foreign nationals
 - 19 Nations
 - 6 Continents

 - 13 International agencies & organizations
 - 5 International universities

 - 8 U.S. agencies
 - 9 U.S. universities
 - 18 Private sector companies
 - 1 Non-profit entity

Contributing Authors

- 102 Presentations
 - 102 Lead authors
 - and-
 - 380 “unique” co-authors

- Representing:
 - 14 U.S. agencies & labs
 - 22 U.S. universities
 - 29 Countries
 - 30 International organizations
 - 18 International universities



Korea



Norway



Russia



Nigeria



Germany



Japan



Vietnam



China



Taiwan



Australia



New Zealand



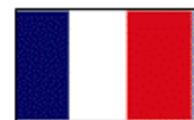
Kenya



India



Italy



France



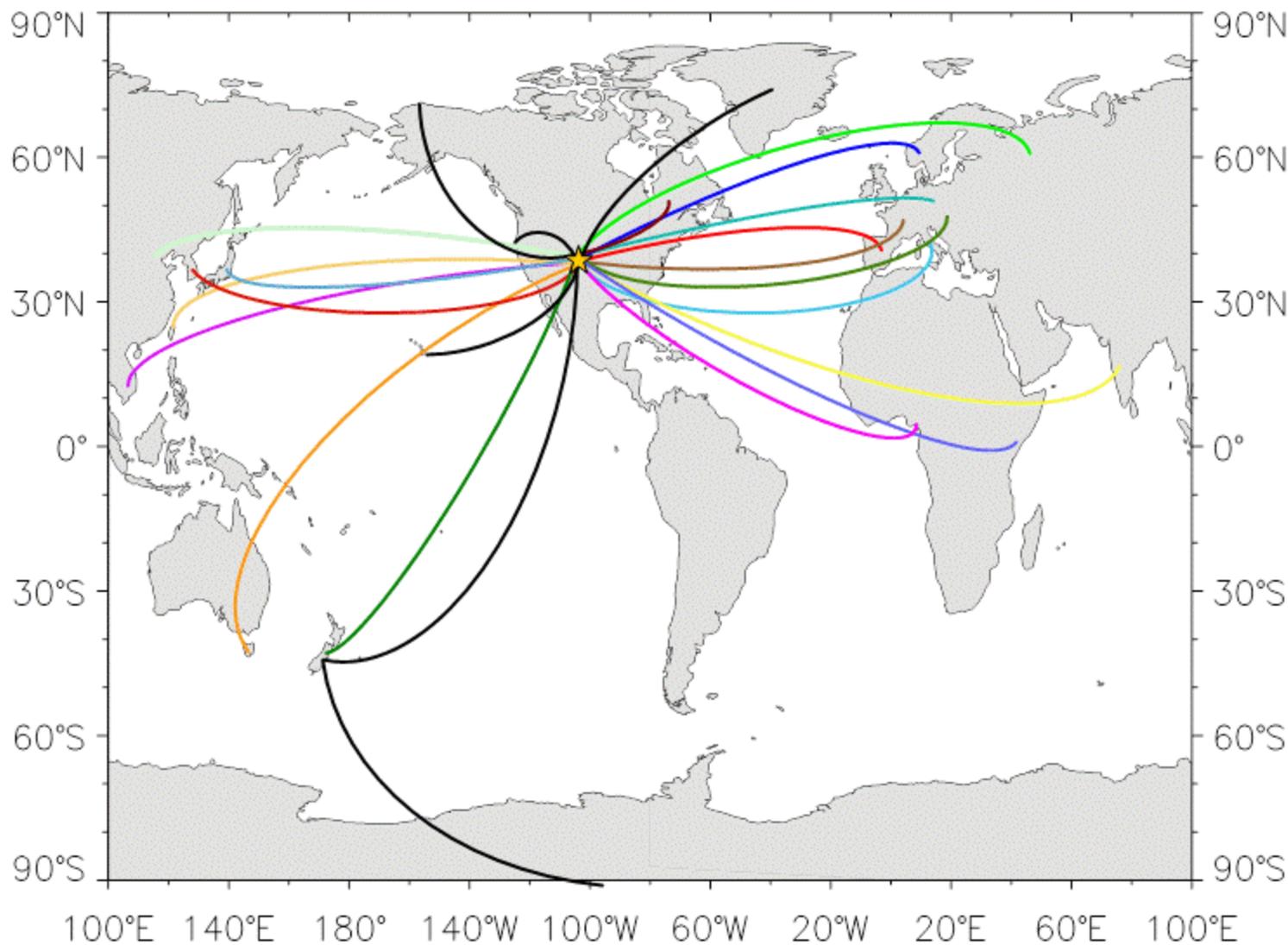
Canada



Hungary



Spain



100°E 140°E 180° 140°W 100°W 60°W 20°W 20°E 60°E 100°E

90°N
60°N
30°N
0°
30°S
60°S
90°S



GLOBAL MONITORING DIVISION

2013-2017 Research Plan



ESRL GMAC – 2013 GMD Overview
JH Butler

GMD Research Plan

- Documents GMD's purpose
- Identifies key scientific questions
- Shows how GMD activities help answer those questions
- Lays out a path forward
- Provides milestones as measures of performance

<http://www.esrl.noaa.gov/gmd/review/booklet/4.research.pdf>



400 ppm?



The CHRISTIAN SCIENCE
MONITOR
About 11:22 AM

Climate change: Arctic passes 400 parts per million milestone

Arctic monitoring stations show carbon dioxide levels are now above 400 parts per million. Carbon dioxide is the chief climate-change gas and stays in the atmosphere for 100 years. Before the Industrial Age, carbon dioxide levels were 275 ppm.

By Seth Borenstein, Associated Press / May 31, 2012



NOAA's Chris Carper adjusts a glass flask that line the walls of an air sample processing room at NOAA's Earth System Research Laboratory in Boulder, Colo. Researchers at the lab measure the levels of carbon dioxide and other greenhouse gases in air sent in weekly from sites around the world.

(AP Photo/NOAA, Will von Dauster)

Enlarge

WASHINGTON

The world's air has reached what scientists call a troubling new milestone for carbon dioxide, the main global warming pollutant.

Related stories



Earth Day: How much do you know about climate change? Take our quiz.

Monitoring stations across the Arctic this spring are measuring more than 400 parts per million of the heat-trapping gas in the atmosphere. The number isn't quite a surprise, because it's been rising at an accelerating pace. Years ago, it

TEHRAN TIMES

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Warming gas levels hit "troubling milestone"

Science Desk

On Line: 04 June 2012 18:47
In Print: Tuesday 05 June 2012

Font Size



Carbon dioxide is the major pollutant in global warming

WASHINGTON (AP) — The world's air has reached what scientists call a troubling new milestone for carbon dioxide, the main global warming pollutant.

Monitoring stations across the Arctic this spring are measuring more than 400 parts per million of the heat-trapping gas in the atmosphere.

The number isn't quite a surprise, because it's been rising at an accelerating pace. Years ago, it passed the 350 ppm mark that many scientists say is the highest safe level for carbon dioxide. It now stands globally at 395.

So far, only the Arctic has reached that 400

May 31, 2012

NOAA reported that CO₂ had reached 400 ppm for the first time at all arctic sites.



400 ppm?



The New York Times

May 10, 2013

Heat-Trapping Gas Passes Milestone, Raising Fears

By JUSTIN GILLIS

The level of the most important heat-trapping gas in the atmosphere, carbon dioxide, has passed a long-feared milestone, scientists reported Friday, reaching a concentration not seen on the earth for millions of years.

Scientific instruments showed that the gas had reached an average daily level above 400 parts per million — just an odometer moment in one sense, but also a sobering reminder that decades of efforts to bring human-produced emissions under control are faltering.

The best available evidence suggests the amount of the gas in the air has not been this high for at least three million years, before humans evolved, and scientists believe the rise portends large changes in the climate and the level of the sea.

“It symbolizes that so far we have failed miserably in tackling this problem,” said Pieter P. Tans, who runs the monitoring program at the National Oceanic and Atmospheric Administration that reported the new reading.

Ralph Keeling, who runs another monitoring program at the Scripps Institution of Oceanography in San Diego, said a continuing rise could be catastrophic. “It means we are quickly losing the possibility of keeping the climate below what people thought were possibly tolerable thresholds,” he said.



What's in a Number? New Carbon Dioxide Level Unseen in Human History

By CLAYTON SANDELL

May 10, 2013 —

abcnews.go.com

On Thursday, CO₂ in the atmosphere surpassed a new milestone.

Something happened on Earth Thursday that scientists believe the planet hasn't experienced in as many as three to five million years.

Atop the Mauna Loa Observatory on the Big Island of Hawaii, sensors tracking all the substances swirling around in Earth's atmospheric soup are -- for the first time -- recording carbon dioxide at levels higher than at any time in human history.

Carbon dioxide, shorthand as "CO₂," is the primary greenhouse gas emitted into the air when people burn fossil fuels. It traps heat in the atmosphere that would normally radiate back into space. Simply put, the more carbon dioxide, the hotter we get.

ESRL GMAC – 2013 GMD Overview
JH Butler

The Washington Post

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Carbon dioxide levels hit troubling milestone, scientists say

By [Brian Vastag](#) and [Jason Samenow](#),
Published: May 10

Human influence on the Earth's atmosphere touched what climate scientists called a dire milestone Friday as concentrations of heat-trapping carbon dioxide nudged up to a level unseen in about 3 million to 5 million years — long before modern humans.

A monitoring station in Hawaii recorded carbon dioxide concentrations of 400 parts per million Friday, dramatically up from the 316 parts per million recorded when the station made its first measurements in 1958. The monitor, high atop the Mauna Loa volcano, offers the longest-running record of atmospheric carbon dioxide measured directly from the air.

Carbon dioxide is a primary greenhouse gas, efficient at trapping heat from the sun. The colorless gas is released from power plants and vehicles as they burn coal, oil and gas.

May 9, 2013

NOAA and Scripps reported that the daily average CO₂ had reached 400 ppm for the first time at Mauna Loa.

May 21-22, 2013



Maybe?

Bloomberg

U.S. Revises CO2 Reading That Showed Key Threshold Passed

By Alex Morales - May 13, 2013 4:25 AM MT

2 COMMENTS

Q. QUEJE

The U.S. National Oceanic and Atmospheric Administration revised down readings that showed the amount of carbon dioxide in the atmosphere surpassed a threshold not seen for 3 million years.

Preliminary data published May 10 showed the gas reached a concentration of 400.03 parts per million, or ppm, at NOAA's Mauna Loa monitoring station in [Hawaii](#) the day before. The figure for May 9 has now been [revised down](#) to 399.89 ppm, and is still deemed preliminary.

- How about 399.89 anyone?

Los Angeles Times

Carbon dioxide in atmosphere did not break 400 ppm at Hawaii site

By Geoffrey Mohan

May 13, 2013 | 9:40 a.m.

Carbon dioxide measurements in the Earth's atmosphere did not break the symbolic milestone of 400 parts per million at a Hawaiian observatory last week, according to a revised reading from the nation's climate observers.

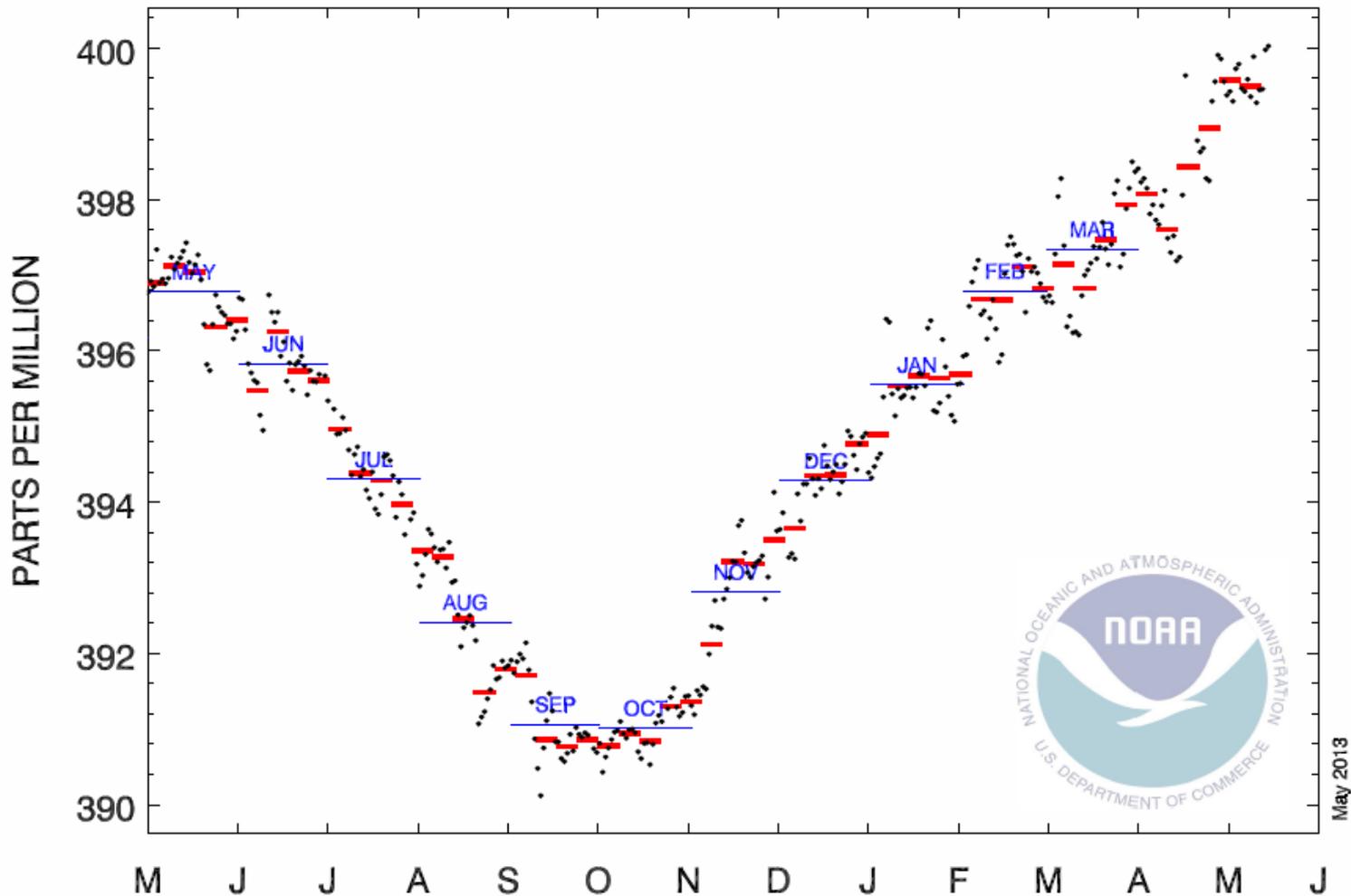
The National Oceanic and Atmospheric Administration (NOAA) revised its May 9 reading at the Mauna Loa observatory in Hawaii, saying it remained fractions of a point below the level of 400 ppm, at 399.89.

Individual readings at any of NOAA's observation stations are subject to revision on a regular basis. Sometimes a data point is moved to another set when the sets are adjusted for the international date line.

While scientists and environmentalists have used the daily milestone to highlight the buildup of greenhouse gases generated by human activities, it's the rate of rise that is most important.



One year of CO₂ daily and weekly means at Mauna Loa





Lessons?

- Transparency is important
- Integrity is important
- Data are important
- How we communicate the message is important

- “All publicity is good if it is intelligent”
 - *Atlanta Constitution 1915*



Opening Speakers

- Sandy MacDonald, Director NOAA/ESRL
- Jim White (Keynote Speaker), INSTAAR Director, University of Colorado
 - Greenhouse Gases, Climate Change, and Sustainability: Why Ignorance is not Bliss
- Pieter Tans, Senior Scientist, ESRL/GMD
 - The End of Cheap Fossil Fuels
- Rik Wanninkhof, Principal Investigator, NOAA/AOML
 - Global Ocean Carbon Uptake: Magnitude, Variability, and Trends
- Lingxi Zhou, CMA, Beijing China
 - Achievements and Prospects of the China Meteorological Administration/NOAA Bilateral Cooperation on Greenhouse Gases



Thank you all for coming!

We look forward to a productive, energetic 41st!