

Atmospheric CO₂

Mar. 2011 392.40

Mar. 2010 391.01

Mar. 2009 388.76

data posted Apr. 6, 2011

Climate Change Consequences

Thomas Valone, PhD, PE

Integrity Research Institute

Washington DC

Preliminary CO₂ Data (ppm): NOAA / Mauna Loa Observatory



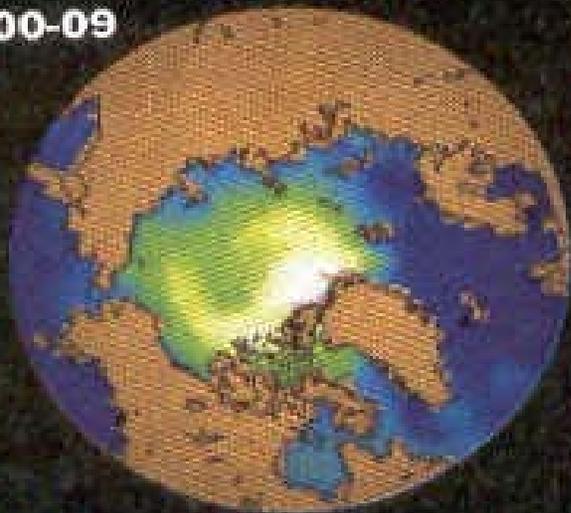
Rising temperatures . . .

Annual temperature increases, in degrees, since the 1950s



. . . and the Arctic ice cap to shrink

2000-09



Ice thickness

8 ft.

2 m

3 m

P O L A R N O T E S

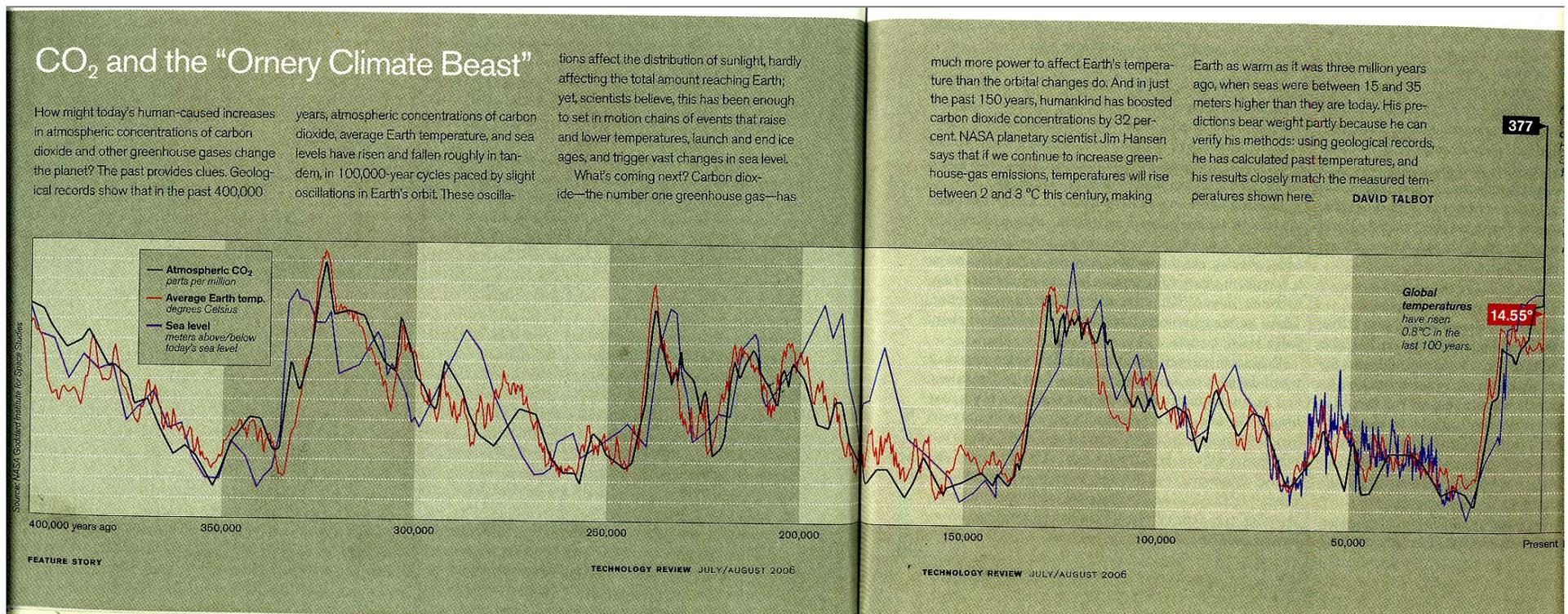
The Hole at 90° N



ARCTIC "LAKE": Not all that unusual

Earth's Most Recent 400,000 Year Climate History

credit: Jim Hansen, NASA Goddard Inst. for Space Studies



MIT's *Technology Review*, July/August, 2006

CO₂ and the "Ornery Climate Beast"

How might today's human-caused increases in atmospheric concentrations of carbon dioxide and other greenhouse gases change the planet? The past provides clues. Geological records show that in the past 400,000

years, atmospheric concentrations of carbon dioxide, average Earth temperature, and sea levels have risen and fallen roughly in tandem, in 100,000-year cycles paced by oscillations in Earth's orbit. These osc

Global CO₂ Level in 2006

377 ppm

Temp Gap: 4°C (7°F)

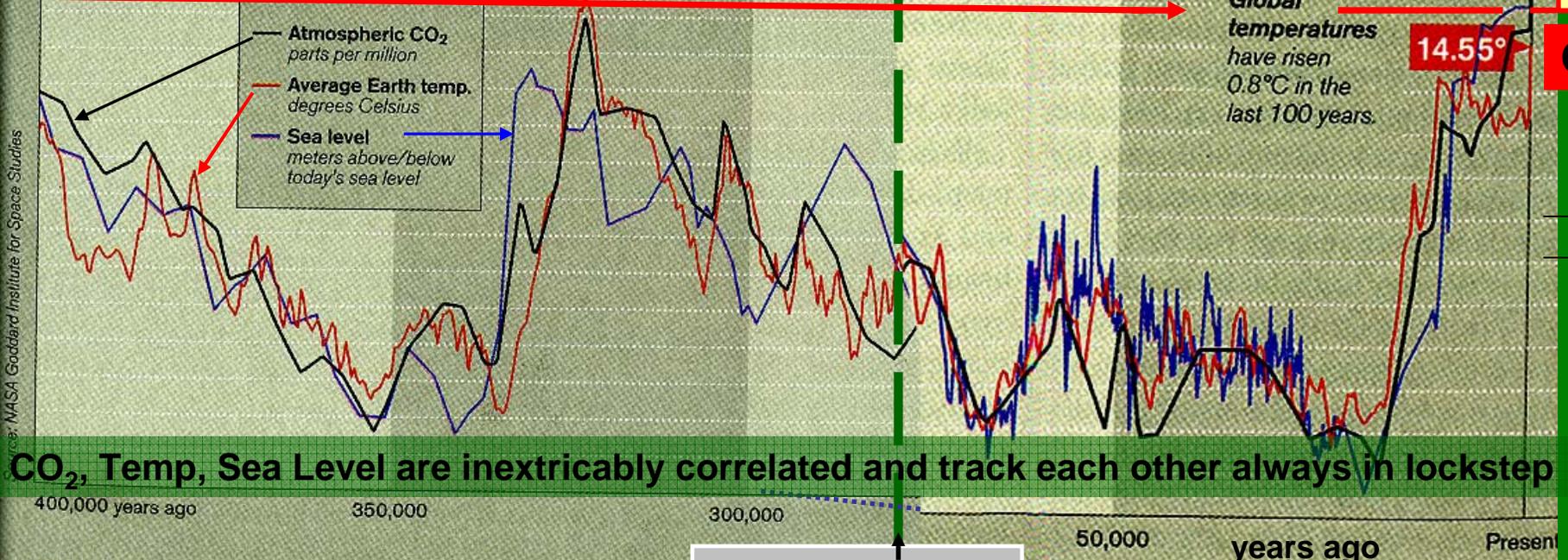
Baseline:

0 m Sea Level = 290 ppm CO₂ = 15 °C World Temp

Sea Level Gap

Global temperatures have risen 0.8°C in the last 100 years.

14.55°C



CO₂, Temp, Sea Level are inextricably correlated and track each other always in lockstep

FEATURE STORY
Technology Review, July/August 2006

Break in graph

Projected Sea Level Rise is 80 meters

KEY to graph: 10 ppm = 0.5°C = 10 meters

<http://tinyurl.com/64c2smo>

Graph enhancements by Thomas Valone, PhD, PE
November, 2006

A WORLD 4°C WARMER

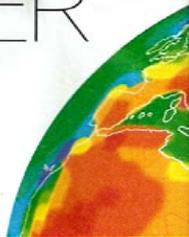
It may happen in our lifetime. **Shanta Barley** investigates what life will be like

BY 2055, climate change is likely to have warmed the world by a dangerous 4°C unless we stop pumping greenhouse gases into the atmosphere the way we do now. This is the startling conclusion of a study by the UK Met Office, unveiled at a conference in Oxford this week.

Why so soon? Because temperature rises caused by greenhouse gas emissions are expected to trigger dangerous feedback loops, which will release ever-increasing amounts of greenhouse gases. The nature and scale of these feedback loops is a subject of vigorous debate among climate scientists, but warmer oceans, for instance, may liberate more

dissolved CO₂, and plants may decay faster in a warmer climate. The Met Office ran 17 different models with these feedbacks. All concluded a 4°C world by 2055 was likely if emissions continue to rise. Even if we are lucky, we are still likely to hit 4°C by 2070.

Institute for Climate Impact Research, Germany. Even the less pessimistic estimate of a 0.65-metre rise by 2100 would put at least 190 million people a year at risk from floods, says Rahmstorf's colleague Jochen Hinkel.



TWO DIFFERENT CLIMATE GROUPS: SAME PREDICTION

The Amazon - gone

In a 4°C world, climate change, deforestation and fires spreading from degraded land into pristine forest will conspire to destroy over 83 per cent of the Amazon rainforest by 2100, according to climatologist Wolfgang Cramer at the Potsdam Institute for Climate Impact Research in Germany. His climate models show global warming alone

The Nation

Washington Post, 9/25/09, p. A4

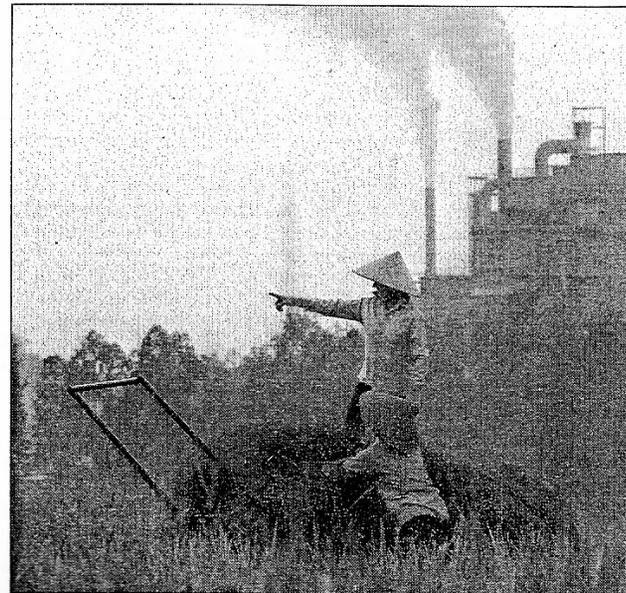
New Analysis Brings Dire Forecast Of 6.3-Degree Temperature Increase

By JULIET EILPERIN
Washington Post Staff Writer

Climate researchers now predict the planet will warm by 6.3 degrees Fahrenheit by the end of the century even if the world's leaders fulfill their most ambitious climate pledges, a much faster and broader scale of change than forecast just two years ago, according to a report released Thursday by the United Nations Environment Program.

The new overview of global warming research, aimed at marshaling political support for a new international climate pact by the end of the year, highlights the extent to which recent scientific assessments have outstripped the predictions issued by the Nobel Prize-winning U.N. Intergovernmental Panel on Climate Change in 2007.

Robert Corell, who chairs the Climate Action Initiative and reviewed the UNEP report's scientific findings, said the significant global temperature rise is likely to occur even if industrialized and de-

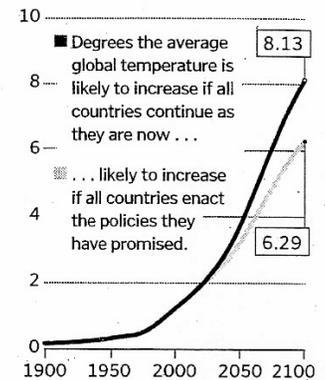


Farmers are overshadowed by a smoke-belching cement factory outside Hanoi. Even with sharp emissions curbs, temperatures may rise disastrously.

Warming Trend

Researchers say global temperatures as likely to rise more than six degrees by the end of the century even if every country enacts all climate legislation it has promised to enact to date.

Temperature increases, in degrees Fahrenheit



SOURCE: Sustainability Institute

THE WASHINGTON POST

PRIZE FIGHT
Time to revamp
the Nobels

News

WEEKLY October 3 - 9, 2009

Future Earth

New Scientist, 10/3/09