

CLIMATE CHANGE NEWS FOR MARCH 2006

The San Francisco Chronicle reported that Republican Governor Schwarzenegger has called for reductions in greenhouse gas emissions: to year 2000 levels by 2010, to 1990 levels by 2020; and to 80% below 1990 levels by 2050. He instructed a team of administration officials, led by state EPA head Alan Lloyd, to detail how emissions could be cut. A draft of the report, published in December, listed dozens of options to lower emissions, ranging from requiring farmers to change the way they handle animal manure to increasing the state's electricity generation from wind and sun. The final version is expected to be released soon. See:

<http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2006/02/17/MNG56HAEPT1.DTL>

Parliamentarians from the Group of Eight rich nations and five major developing countries have formed a new Climate Change Dialogue initiative said their three-year goal was to force the pace of governments' actions to reduce global warming. British Prime Minister Tony Blair, who put climate change at the top of the agenda for his 2005 presidency of the G8, said it was the biggest threat facing the planet.

<http://www.enn.com/today.html?id=9957>

The Journal of Geophysical Research published an article in Sept. 2005 by David Archer, titled, **Fate of Fossil Fuel CO₂ in Geologic Time**. In it, Archer does state-of-the-art calculations on how long CO₂ from the burning of fossil fuels will remain in the atmosphere. He concludes that a good approximation is "300 years, plus 25% that lasts forever." What we put into the atmosphere now will have impacts on Earth's climate for a very long time to come—much longer than most people thought. See:

http://geosci.uchicago.edu/~archer/reprints/archer.ms.fate_co2.pdf

In an article titled, **Acid seas kill off coral reefs**, the Sunday Times reports that increasing acidity of the oceans from dissolving CO₂ produced by burning fossil fuels could kill not only coral reefs, but also a variety of marine organisms that contain calcium carbonate and provide food for many types of fish and other sea creatures. See:

<http://www.timesonline.co.uk/article/0,,2089-2058687,00.html>

Another article on ocean acidification was published last year by the Royal Society. In a press release, titled, **Cuts in carbon dioxide emissions vital to stem rising acidity of oceans**, Professor John Raven, chair of the Royal Society working group on ocean acidification, said: "Along with climate change, the rising acidity of our oceans is yet another reason for us to be concerned about the carbon dioxide we are pumping into the atmosphere." See:

<http://www.royalsoc.ac.uk/news.asp?latest=1&id=3250>

Rapid ocean acidification has happened before. In an article in Science, titled, **Rapid Acidification of the Ocean During the Paleocene-Eocene Thermal Maximum (PETM)**, James C. Zachos et al. reported new deep-sea sections (sediment cores) showing an event 55 million years ago in which the ocean became acidic enough to dissolve all the calcium carbonate. The high temperature and high acidity of the PETM

are attributed to a rapid release of ~2000 billion metric tons of carbon in the form of methane, which was oxidized in the atmosphere to CO₂, much of which then dissolved in the ocean, making it much more acidic. This 2000 billion metric tons of carbon can be compared with the 720 billion tons of CO₂ in our current atmosphere and the estimated 1000 to 22,000 billion tons of methane in the form of hydrates in our oceans now. (See my February **Climate Change News**.) Since ocean temperatures need to increase by only 2-3°C to make the methane hydrates unstable, we may inadvertently trigger a repeat of an event like the PETM, when sea surface temperatures rose by 5-9°C (9-16°F) to the highest temperature in the past 55 million years. See:

<http://www.sciencemag.org/cgi/content/abstract/308/5728/1611>

The Washington Post, in an article titled, **Rapid Warming Spreads Havoc in Canadian Forests – Tiny Beetles Destroying Pines**, reports that the lodge pole pine trees are dying in an area three times the size of Maryland as a result of a pine bark beetle, which is spreading and moving to higher altitudes as climate warms and beetle larvae are no longer killed by winter cold. See: <http://www.washingtonpost.com/wp-dyn/content/article/2006/02/28/AR2006022801772.html>

In another Washington Post article, titled, **Antarctic Ice Sheet Melting Rapidly**, we learn that Antarctica, which contains 90% of the world's ice, is now melting at a rate of as much as 36 cubic miles per year. This is significant because scientists have thought that Antarctic ice would increase this century as a result of increased snowfall. The article reports the results of another study that concludes that Africa may lose as much as 25% of its rainfall in this century. Millions of people in Kenya are already suffering from years of drought and failed crops. At: <http://www.washingtonpost.com/wp-dyn/content/article/2006/03/02/AR2006030201712.html>

The Guardian published an article in February titled, **Sweden plans to be world's first oil-free economy**, planning to complete the transformation in 15 years; its the first country to make the attempt. At: <http://www.guardian.co.uk/climatechange/story/0,,1704955,00.html>

Japan is putting a major effort into improving energy efficiency and reducing fuel use. As reported in **Japanese Putting All Their Energy Into Saving Fuel**, in the Washington Post. See: <http://www.washingtonpost.com/wp-dyn/content/article/2006/02/15/AR2006021502762.html>

The Independent reports that Arctic sea ice, which normally reforms in the winter following its minimum area the September, has largely failed to do so this winter for the first time. This suggests that the area of the ice cap may be even smaller in September 2006 than it was last year, when it reached the smallest size seen since satellite measurements began in 1979. See: <http://news.independent.co.uk/environment/article351135.ece>

Many of the world's rivers are losing flow as a result of global warming and increasing withdrawal. Klaus Toepfer, the executive director of the United Nations Environment

Programme, called the state of the world's rivers "a disaster in the making". See: <http://news.independent.co.uk/environment/article350785.ece>

A Swedish scientist has reported that atmospheric monitoring stations in the Arctic are recording annual increases in concentrations of CO₂ that are larger than the global average. This suggests a new source of CO₂ at high latitudes—probably the organic matter that has been frozen in permafrost. Methanogenic bacteria get their energy from the anaerobic (without O₂) conversion of carbohydrates (e.g., in peat) into a 1:1 molecular mixture of CO₂ and CH₄ (methane). This is another type of positive feedback in the arctic climate, in addition to the decrease in albedo as white snow and ice are replaced by darker land and deep blue sea. See: <http://www.commondreams.org/headlines06/0312-03.htm>

The Pew Center on Global Climate Change has released a comprehensive plan to reduce greenhouse gas emissions in the United States. The *Agenda for Climate Action* identifies both broad and specific policies, and calls for a combination of technology and policy in six key areas: (1) science and technology, (2) market-based programs, (3) sectoral emissions, (4) energy production and use, (5) adaptation, and (6) international engagement. Within these six areas, the Agenda outlines fifteen specific recommendations that should be started now. See: http://www.pewclimate.org/global-warming-in-depth/all_reports/agenda_for_climate_action/index.cfm

A movie titled, **The Great Warming**, will be coming soon to U.S. theaters. The web site announcing it has a movie trailer you can watch, and suggestions for books to read and things you can do. See: <http://www.thegreatwarming.com/comingsoonustheatres.html>

The following items are from the Environmental and Energy Study Institute (EESI), Carol Werner, Executive Director. Please see EESI's website for more links to climate change stories, and past editions of EESI's Climate Change News. At: <http://www.eesi.org/publications/Newsletters/CCNews/ccnews.htm>. Their newsletter is an EESI publication intended for all interested parties, particularly the policymaker community. Issues are archived on EESI's website at www.eesi.org under 'Publications.' For more information regarding either the newsletter or EESI please contact Fredric Beck at fbeck@eesi.org.

Scientists Predict Significant Decrease in African Water Supply with Climate Change

In a study published in *Science Express* on March 2, scientists predict that Africa will have 25 percent less surface water by the end of the century due to climate change. Drs. Maarten de Wit and Jacek Stankiewicz of the Africa Earth Observatory Network at the University of Cape Town used precipitation changes that are predicted with a warming climate to model geographically influenced changes in drainage. The result is an amplification of the drought conditions currently felt in East Africa due to reduced rainfall.

"The bottom line is that we had better get our act together in terms of water management," Dr. de

Wit told *Business Day*. “[South Africa] needs to start thinking much more seriously about desalination,” he said, noting that rivers supplied much of South Africa’s drinking water. Dr. Guy Midgely of the South African National Biodiversity Institute’s Global Change research group said, “It’s a worrying report, but these are long-term changes that we can do something about. The important thing is that we don’t want to imbue in people a sense of hopelessness. Some people might become fatalistic and throw up their hands in horror, or deny this is going to happen and look for solace in dissident view points, but we say forewarned is forearmed.”

According to the *Science and Development Network*, the study found that three-quarters of African countries are at least partially in an “unstable” zone, where small reductions in rainfall could cause disproportionately large declines in river water. Drs. de Wit and Stankiewicz say that the densely populated regions of southern Africa, large sections of the upper Nile and most of East Africa are “of particular concern.”

Click on the following links for the full news stories: [BBC](#), [Science](#), [Business Day](#) and [Science and Development Network](#)

12 Attorneys General Petition Supreme Court to Review EPA Global Warming Case

A coalition led by Massachusetts Attorney General Tom Reilly submitted a petition to the Supreme Court on March 3 to review last year’s federal appeals court case involving Environmental Protection Agency (EPA) regulation of greenhouse gas pollutants. That case, Commonwealth of Massachusetts vs. EPA, let stand the EPA’s refusal to regulate greenhouse gas (GHG) emissions from motor vehicles (see [Climate Change News 7.15.05](#)).

The coalition includes 12 state Attorneys General, three major cities, one island government and several prominent environmental groups. Reilly and the other parties argue that “this case goes to the heart of EPA’s statutory responsibilities to deal with the most pressing environmental problem of our time.” John Stanton, vice president for the National Environmental Trust, one of the petition’s signatories, said “The lower court’s blatant punting on global warming is a travesty. Despite the plain and simple language of the law the lower court refused to act. It’s time for the nation’s highest court to correct the lower court and take on global warming.”

Petition signatory and California Attorney General Bill Lockyer said, “Global warming is one [of] the biggest threats facing the planet and we cannot delay action. Left unchecked, it can cause devastation to our economy, public health, natural resources. It is time for the Environmental Protection Agency to step up and fulfill its responsibility to fight this problem.”

Click on the following links for the full news stories: [US Newswire](#) and [Massachusetts Attorney General](#)

New York Times, Washington Post Editorials Focus on Urgency of Climate Action

Recent editorials in the *New York Times* (March 5) and *Washington Post* (March 8) focused on the scientific consensus on climate change and the urgent need for political action to address climate change before it advances too far. The *New York Times* focused on positive feedback mechanisms that can lead to increasingly rapid ice sheet melt as well as release of greenhouse gases from melting Arctic permafrost. Dr. Jerry Mahlman of the National Center for Atmospheric Research (NCAR) was quoted as saying, “Historians of science will be brutal on us. We are right now in a state of deep denial about how severe the problem is. Political people are saying, ‘Well, it’s not on my watch.’ They’re ducking for cover, because who’s going to tell the American people?” The *Washington Post* focused on the growing general consensus on climate change, pointing out that every week brings new evidence that global climate change is advancing more rapidly than scientists had expected. The acknowledgement that global warming is real and

actions being taken by large corporations such as General Electric and Citigroup were highlighted as positive examples of where change may begin. The *Washington Post* article concludes, "History will not forgive political leaders who failed to act on this issue, and neither should voters."

Click on the following links for full news stories: [Washington Post](#) and [New York Times](#) (subscription required)

New Measurements Indicate Rapid Antarctic Ice Sheet Melt

New measurements of the Antarctic ice sheet mass from 2002–2005 show rapid melting linked to global warming. In a study published in *Science Express* on March 2, Dr. Isabella Velicogna and Dr. John Wahr of the University of Colorado used data from two NASA satellites to show that Antarctic ice is melting into the ocean at a rate of 150 ± 80 (70–230) cubic kilometers per year. The midpoint ice melt estimate of 150 cubic kilometers per year—equivalent to three months of US water consumption—would contribute 0.4 millimeters per year to global sea level rise. Dr. Velicogna said, "The ice sheet is losing mass at a significant rate. It's a good indicator of how the climate is changing. It tells us we have to pay attention." The December 2005 issue of the *Journal of Glaciology* reported that NASA scientist Dr. H. Jay Zwally and colleagues employed a different satellite measurement and came to the conclusion that Antarctica's ice sheet also lost volume over the decade prior to 2002.

Dr. Richard Alley, a Pennsylvania State University glaciologist who has studied the Antarctic ice sheet, told the *Washington Post* that he found the study significant and "a bit surprising" in light of an earlier prediction by a major international scientific panel that the Antarctic ice sheet would gain mass as higher temperatures led to increased snowfall. "It looks like the ice sheets are [melting] ahead of schedule," Dr. Alley said, "That's a wake-up call. We better figure out what's going on." Antarctic ice represents 90 percent of all the world's ice and 70 percent of all the world's fresh water. If the West Antarctic ice sheet alone were to melt, it would raise global sea levels approximately 20 feet.

Click on the following links for the full news stories: [Washington Post](#), [New York Times](#), [BBC](#), [Science](#) and [Journal of Glaciology](#)

NM and AZ Governors Launch Regional Climate Change Initiative

New Mexico Governor Bill Richardson and Arizona Governor Janet Napolitano signed an agreement launching the Southwest Climate Change Initiative on February 28, establishing a framework for the two states to collaborate on strategies addressing the impacts of climate change and reduce greenhouse gas (GHG) emissions in the region. Governor Richardson said, "In the Southwest, water is absolutely essential to our quality of life and our economy... Addressing climate change now, before it is too late, is the responsible thing to do to protect our water supplies for future generations." New Mexico was the first state to join the Chicago Climate Exchange—a voluntary though legally binding GHG emissions trading and reduction program—in September 2005. Governor Napolitano said, "In the absence of real action at the federal level, states are stepping forward to address the serious issues presented by climate change."

With the Southwest Climate Initiative, Governors Richardson and Napolitano join the governors of California, Oregon, Washington, and Montana in mounting state campaigns to deal with climate change. In the West, harmful effects of climate change are already occurring: record dry spells; millions of acres of dead forests; warmer winters; dwindling water supply and catastrophic wildfires. Governor Richardson said, "Under the Bush administration, the United States is ignoring the world's best scientists on climate change. The real action ... is at the state and local level."

Governors Napolitano and Richardson each issued Executive Orders in 2005 creating stakeholder-based Climate Change Advisory Groups (CCAG), which will make recommendations for reducing GHG emissions in their respective states later this year. The Arizona Public Interest Research Group (PIRG) gave recommendations for the state on February 28, releasing a report that said Arizona could limit its contribution to global warming over the next two decades by implementing policies to reduce carbon dioxide (CO₂) emissions from cars and light trucks.

Click on the following links for the full news stories: [Governor Napolitano](#) (pdf format), [Chicago Climate Exchange](#), [USA Today \(1\)](#), [The Arizona Republic](#), [USA Today \(2\)](#) and [Arizona PIRG](#)

IPCC to Report Stronger Climate Consensus; Greater Warming Potential

A draft of the upcoming Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report on Climate Change will state that only greenhouse gas (GHG) emissions can explain unusual weather patterns now being observed worldwide. Previously, the IPCC had said that GHGs are "probably" to blame. A source told the *BBC* that the IPCC report will forecast a temperature rise of 2–4.5°C or higher with doubling GHG concentrations, contrasted with the earlier projection suggesting that the rise could be as little as 1.5°C. According to the source, "The measurements from the natural world on all parts of the globe have been anomalous over the past decade. If a few were out of kilter we wouldn't be too worried, because the Earth changes naturally. But the fact that they are virtually all out of kilter makes us very concerned."

According to the *Guardian*, the report will state that scientists are now unable to place a reliable upper limit on how quickly the atmosphere will warm as carbon dioxide (CO₂) levels increase, and raises the possibility of the Earth's temperature rising well above the ceiling quoted in earlier accounts. Dr. Peter Cox, a leading climate expert at the UK Centre for Ecology and Hydrology, said the IPCC's move is significant because it will force governments to seriously consider extreme scenarios that are unlikely but potentially devastating. Dr. Cox said, "The most probable thing is not the most important thing to worry about. The upper end is where the big problems are, because the impact rises as the temperature does."

While uncertainties remain about the pace and scope of future climate change, scientists are worried because major disruptions are already being observed despite having increased atmospheric CO₂ concentrations by just 30 percent from pre-industrial levels. The draft report is due to be sent to world governments in April and will be made public in 2007, when it will underpin international talks on how to cut GHG emissions after the first phase of the Kyoto protocol expires in 2012. The IPCC report will address simultaneous changes in sea ice, glaciers, droughts, floods, ecosystems, ocean acidification, and wildlife migration.

Click on the following links for the full news stories: [BBC](#), [Guardian](#) and [IPCC](#)

Americans Open to Gas Tax Rise to Reduce Global Warming, Foreign Oil Dependence

According to a *New York Times/CBS News* poll published February 28, a majority of Americans would support a federal gasoline tax increase if it resulted in less global warming or reduced dependence on foreign oil. Of 1,018 adults polled, 85 percent opposed an increase in the gas tax. However, 55 percent said they would support a tax increase that reduced dependence on foreign oil, and 59 percent were in favor if the result was less gasoline consumption and less global warming. Some respondents would like the increased tax revenues earmarked to prevent the funds going to oil companies. Eighty-seven percent believed that Washington should require automakers to make more efficient cars.

According to the *New York Times*, many mainstream economists believe that a shift that raises the gasoline tax while lowering income-based taxes is the most efficient way to reduce gasoline consumption. Dr. Severin Borenstein, director of the University of California Energy Institute in Berkeley, said it might require a \$1-a-gallon increase in the tax phased in over five years.

In March 2 op-ed, author and journalist Thomas Friedman said, “Only by bringing the total price of gasoline into the \$3.50-to-\$4-per-gallon range—and keeping it there—will large numbers of Americans demand plug-in hybrid cars that run on biofuels like ethanol. When large numbers of Americans do that, U.S. automakers will move quickly down the innovation curve.” Friedman said that the poll points out the fallacy that it is political suicide to propose a gas tax increase, saying, “Green is the new red, white and blue,” and encouraged politicians to work on framing the stakes of legislation like gas tax increases for the American public.

Click on the following links for the full news stories: [New York Times](#) and [The Argus](#)

NOAA: Global CO2 Levels Hit Record High of 381 ppm in 2005

Recent data from the National Oceanic and Atmospheric Administration (NOAA) shows that the level of atmospheric carbon dioxide (CO₂) now stands at 381 parts per million (ppm), indicating that 2005 saw one of the largest increases on record. Dr. Pieter Tans, the chief CO₂ analyst for NOAA, told the *BBC*, “We don’t see any sign of a decrease; in fact, we’re seeing the opposite, the rate of increase is accelerating.” *EESI* confirmed with Dr. Tans that the 2005 global average annual mean growth rate in CO₂ was 2.6 ppm, the third largest annual increase in a global record that goes back to 1980. In addition, the third largest annual increase in CO₂ growth rate in the Mauna Loa record, which goes back to 1959 and is the longest continuous record of direct CO₂ measurements, occurred in 2005.

Click on the following links for the full new story and information: [BBC](#) and [NOAA](#)

U.S. Insurance Industry to Examine Climate Change Impacts

At its March 5 quarterly meeting in Orlando, Fla., the National Association of Insurance Commissioners (NAIC) voted unanimously to establish a task force to examine the impact of climate change on the U.S. insurance industry and on insurance consumers. Tim Wagner, co-chair of the task force, said “It’s becoming clearer that we are experiencing more frequent and more powerful weather events that pose huge challenges for the insurance industry. The impacts are being felt on our coasts and in the interior U.S. We’re seeing all kinds of extreme weather in the Great Plains states, including drought, tornadoes, brushfires and severe hailstorms. I am glad the NAIC is taking proactive steps to deal with this key issue.”

In December 2005, the Ceres investor coalition reported that U.S. insurers have seen a 15-fold increase in insured losses from catastrophic weather events in the past three decades. The new NAIC task force responds to the Ceres report warning of larger future financial losses if climate change trends continue and no actions are taken.

Click on the following links for the full news story and report: [Insurance Journal](#), [Ceres Report](#) (pdf format), [Lawrence Berkeley Laboratory](#) and [NAIC](#)

Quartet of Climate Change Books Reviewed

Four new books exploring climate history, science and policy all come to the conclusion that global warming is real, it’s happening now, and the existing research must be joined with real action quickly to prevent dangerous anthropogenic influence (DAI) on the climate. The authors, a prominent biologist and three well-traveled journalists, describe evidence of global warming around the world and then call for action to reduce carbon dioxide (CO₂) emissions before civilization experiences a dramatic climate shift of its own making. The recently released books are: *The Weather Makers: How Man is Changing the Climate and What It Means for Life on Earth*, by Dr. Tim Flannery; *Field Notes from a Catastrophe: Man, Nature, and Climate Change*, by Elizabeth

Kolbert; *Boiling Point: How Politicians, Big Oil and Coal, Journalists and Activists Are Fueling the Climate Crisis—And What We Can Do to Avert Disaster*, by Ross Gelbspan; and *The Winds of Change: Climate, Weather, and the Destruction of Civilizations*, by Eugene Linden. According to *Science*, Dr. Flannery “is without question an extraordinary scientist ...[he] offers an engaging—at times, spellbinding—read.”

Click on the following links for the book reviews: [Washington Post](#), [Baltimore Sun](#) and [Science](#)

Limiting CO2 Emissions “Well Within Reach” Globally

In a recent paper published by the Brookings Institution, Dr. Klaus Lackner and Dr. Jeffrey Sachs argue that preventing carbon dioxide (CO₂) from rising to levels that would cause dangerous anthropogenic influence (DAI) on the climate could cost less than one percent of gross world product through 2050. They argue that this could be achieved through carbon capture and sequestration, with simultaneous progress in energy efficiency and increasing usage of solar energy, clean coal technology, nuclear power, and hybrid vehicles. These changes could keep CO₂ levels from reaching 500 ppm by 2050 at a cost of 0.1 – 0.3 percent of gross world product. Dr. Sachs, director of The Earth Institute at Columbia University, said “Whatever we do, we know we are going to have to approach this complex problem in a multi-faceted way and from a global perspective. The key is we have to start now and we have to commit ourselves to making a change before change is forced on us. Fortunately, there are promising technologies that may well offer us solutions at large scale and reasonably low cost.”

Click on the following links for the full news stories: [Columbia University Earth Institute](#) and [Brookings Institution](#)