



THE CARBON SEQUESTRATION NEWSLETTER

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March 2002

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Sequestration in the News

U.S. Climate Policy. President Bush released the [U.S. Global Climate Change Policy Book](#) on February 14th. The book seeks to reduce the greenhouse gas (GHG) intensity of the U.S. economy by 18 percent in 10 years. The Policy Book focuses on terrestrial sequestration throughout (terrestrial-targeted tax incentives will be included in the Farm Bill), but also calls for carbon capture, geologic storage, and measurement and verification as part of the National Climate Change Technology Initiative. The Policy will create "world-class standards for measuring and registering emission reductions." President Bush also announced the [Clear Skies Policy Book](#), which contains targets for multi-pollutant emissions from power plants.

NETL Carbon Sequestration R&D Program Review. The 4-day Program Review was held in Pittsburgh in February. The national laboratories principal investigators from all research areas (terrestrial, capture, geologic, ocean, and novel systems) presented their work to a panel of reviewers. The panel was composed of experts from academia, government, and industry. Reviewers were charged with evaluating the 19 projects (many involving multiple national laboratories and industrial participation) for technical merit, sequestration potential, and performance.

EPA Climate Leaders. Christie Whitman launched the Environmental Protection Agency's (EPA's) new program, [Climate Leaders](#) on February 20th. The program is part of the Bush administration's new climate policy. Ten participating companies, including PSEG, Lockheed Martin, and General Motors, will create emissions inventories and set long-term GHG reduction strategies. The companies may also report emissions reductions from investments in offset projects. February 20.

Sequestration a High Priority in DOE. Acting Assistant DOE Secretary for Fossil Energy Robert Kripowicz told Senate lawmakers January 29 that the Bush administration is committed to developing carbon sequestration to ensure climate protection and the continued use of coal for electricity. He said carbon sequestration is "one of the highest priorities of our program." The administration committed \$32 million to 50 CO₂ sequestration projects in the current fiscal year, Kripowicz told the Senate Environment & Public Works clean air subcommittee. "Bush Energy Official Backs CO₂ Sequestration To Maintain Dominant Role For Coal," *Inside EPA*, February, 2002.

This newsletter is produced by the National Energy Technology Laboratory and presents summaries of significant events related to carbon sequestration that have taken place over the past month.

Sequestration in the News, Continued

New High-Pressure Water Tunnel Facility (HWTF). NETL designed and constructed a laboratory that can duplicate deep-ocean conditions. It is used to investigate the chemical, physical, and thermodynamic behavior of CO₂ when it is injected into the ocean for sequestration at depths of over 500 m. For more information, see the [NETL webpage](#).

Plant Response to High Levels of CO₂. According to research conducted by University of California-Davis, increased levels of CO₂ in the atmosphere resulted in a less-than-expected increase in plant productivity. Researchers hypothesized that long-term CO₂ fertilization weakened the ability of plants to incorporate certain forms of nitrogen. [Proceedings of the National Academy of Sciences](#), February 5.

U.S. Terrestrial Carbon Absorption May Decrease in the Future. Researchers from the University of New Hampshire, Princeton University, and Woods Hole Research Center used two models to estimate patterns of carbon stocks and fluxes resulting from land-use changes from 1700 to 2100. The results indicate that ecosystem recovery processes are primarily responsible for the contemporary U.S. carbon sink, but will slow over the next century, significantly reducing the sink. "Projecting the Future of the U. S. Carbon Sink," [Proceedings of the National Academy of Sciences](#), February 5, 2002. This trend has also been identified in the [Environmental Protection Agency Climate Action Report](#), which can be read online.

GHG Technology Performance Verification Testing. Operating as a public/private partnership under the U.S. Environmental Protection Agency's (EPA) Environmental Technology Verification (ETV) Program, the Greenhouse Gas Technology Center offers performance verification testing on technologies that reduce GHG emissions, and makes the verification results available to stakeholders and the public. Vendors and state-level partners are being sought to participate in the program. See "[Combined Heat and Power Initiative](#)."

Ocean Research. Three recent studies have generated more than the usual amount of news about oceans this month. The studies are: documentation of a slowing ocean circulation system that brings cool water from ocean depths to the surface causing an increase in sea surface temperatures along the equator in the Pacific Ocean and a decrease of CO₂ released into the atmosphere (Slowdown of the meridional overturning circulation in the upper Pacific Ocean, National Oceanic and Atmospheric Administration (NOAA), *Nature*, February 7, 2002); a study using seven decades of temperature data shows mid-depth water in the Southern Ocean has warmed nearly twice as much as the world ocean average (Warming of the Southern Ocean Since the 1950s, Scripps Institute of Oceanography, *Science*, February 15, 2002); and a report by Mark Meier of the University of Colorado that the level of the world's oceans will rise more than twice the amount predicted by the Intergovernmental Panel on Climate Change (IPCC) because of a higher rate of glacial melting (*American Association for the Advancement of Science*, February 14, 2002).

NASA Climate Data Available. Researchers at NASA Goddard Space Flight Center released the Global Change Master Directory (GCMD) for 2002. The GCMD contains more than 10,600 descriptions of Earth and environmental science data, providing the most up-to-date data sets and services relevant to global climate change research. The directory can be accessed at <http://globalchange.nasa.gov> or <http://gcmd.nasa.gov>.

Observations From Space. After examining 22 years of satellite measurements, National Aeronautics and Space Administration (NASA) researchers find that more sunlight entered the tropics and more heat escaped to space in the 1990s than in the 1980s. Their findings indicate less cloud cover blocked incoming radiation and trapped outgoing heat. Though not completely sequestration-related, the website contains impressive animations and photos from space. See "[Fewer Clouds Found in Tropics](#)," NASA, January 31, 2002.

Feature Topic: State and Local Action

Pew Center State and Local Database. Case studies of state and local programs that quantify greenhouse gas reductions are accessible and searchable through a new database from the Pew Center. The [database](#) is searchable by state, project type, or keyword.

Cities' Initiative: San Francisco and Salt Lake City. The mayors of San Francisco and Salt Lake City recently announced plans to reduce their cities' GHG emissions. On January 28, San Francisco Mayor Brown introduced a resolution to reduce municipal greenhouse gas emissions to 20 percent below 1990 levels by 2012. The resolution, which must be adopted by the city's Board of Supervisors, calls on the San Francisco Department of the Environment to develop a climate protection action plan by June 2002. Likewise, on February 5, Salt Lake City Mayor Anderson announced that his city will reduce its greenhouse gas emissions to 7 percent below 1990 levels over the next four years. For more information, see [Cities for Climate Protection](#).

New York City. A New York City Council member reintroduced a bill that would affect nearly 7,000 MW of generating capacity in the city, requiring power plants to reduce their CO₂ emissions by as much as 20 percent within 5 years of enactment. "[New York City Moves to reduce CO₂ Emissions](#)" January 31, 2002.

Carbon Trading News

Prototype Carbon Fund Swings into Gear. The [World Bank Prototype Carbon Fund](#) was established as a temporary entity to contribute learning experience in the market for project-based emissions reductions. At a meeting in mid-February 2002, project preparations in the Czech Republic, Mauritius, Colombia, Romania, Poland, and Bulgaria on a variety of energy efficiency or carbon sequestration (terrestrial) technologies were moved forward.

Emissions Trading Conference. BP, the IETA, Powergen, and Shell, among others, attended the Amsterdam emissions trading conference held February 20th. EU emissions proposals were discussed by industry, the European Commission, and the NGO community. [Eyeforenergy](#), February 22, 2002.

Economic Analysis of GHG Reduction. Researchers Adam Rose and Gbadebo Oladosu used a model to analyze the economic impacts of marketable permits for GHG reduction across industries and income groups in the United States. Their results indicate that a permit price of as much as \$128 per ton carbon would be needed to comply with the full U.S. Kyoto commitment, and that this would lead to a slightly more than 1 percent reduction in GDP in the year 2010. According to the study, expansion of trading to include carbon sequestration and methane mitigation could significantly lower these impacts. "Greenhouse gas reduction policy in the United States: identifying winners and losers in an expanded permit trading system," *Energy Journal* (1), February 2002.

Events and Announcements

Michael Smith is the new Assistant Secretary for Fossil Energy. On February 5, 2002, Carl Michael Smith, the former Secretary of Energy for the State of Oklahoma, was sworn in as DOE's 9th Assistant Secretary for Fossil Energy. Smith previously served as president of the Oklahoma Independent Petroleum Association. He was a member of the Oklahoma Energy Resources Board and is a member of the Oklahoma Bar Association. For more information, see the [Fossil Energy website](#).

Coal Bed and Coal Mine Methane Conference. The Strategic Research Institute (SRI) will host a 2-day [conference](#) on coalbed and coal mine methane March 25 and 26, 2002 in Denver, CO. Raven Ridge Resources senior project engineer Ronald Collings will discuss modeling CO₂ sequestration in abandoned coal mines. March 2002.

U.S. EPA Coalbed Methane Outreach Program Conference List. The U.S. EPA compiles a [list of upcoming conferences](#) on methane and non-CO₂ GHGs.

Recent Publications

- **EPA Draft for Public Comment.** US Emissions Inventory 2002, [Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2000](#). The inventory includes estimates of carbon sequestration in U.S. forests and an updated assessment of emissions from the electric power industry. The EPA releases this annual publication to comply with the United Nations Framework Convention on Climate Change (UNFCCC). Comments must be submitted by March 25th.
- **Global Warming Potentials.** A recent report from the Center for International Climate and Environmental Research (CICERO) evaluates the Global Warming Potential (GWP) index, which is used to compare the relative strength of the different greenhouse gases in the Kyoto Protocol. The choice of method for comparing gases has considerable policy implications, and the [report](#) both looks into the rationale behind the GWP index and considers alternative approaches.
- **COP7 Analysis.** A recent CICERO report analyzes the October/November COP 7, and provides an evaluation of what the finalized Kyoto Protocol means for business. "[An Evaluation of business implications of the Kyoto Protocol](#)," CICERO.

Legislative Activity

- **Tax Incentives.** Senator Baucus (D, Montana) has proposed a bill with a series of tax incentives for the U.S. energy policy. For [tax incentive proposals](#) on Clean Coal Technology, see page 25 of "Energy Tax Incentives Act of 2002." The bill does not have a number yet, so is not accessible on Thomas.
- **The Energy Policy Debate.** The next few weeks in the Senate will be dominated by an [Energy Policy](#) debate. Democrats have introduced S517, which incorporates S1766 introduced by Daschle last December, as well as John Kerry's proposed CAFÉ standards. February 26, 2002.