

THE CARBON SEQUESTRATION NEWSLETTER

<http://www.netl.doe.gov/sequestration>

April 2005

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Sequestration in the News

The Star Ledger (Newark, New Jersey), On March 6, 2005, there was a special section on energy with numerous stories on carbon and mitigation. Some of the articles are summarized below. To view the special energy edition visit <http://www.nj.com/business/energy/>

The Star Ledger, "To Bury a Gas: Shots in the Dark."

Article focuses mainly on Weyburn with Michael Monea of the Petroleum Research Technology Centre saying, "This is one of the most-studied 8 square kilometers in the world." According to the article, "every day, enough CO₂ to fill almost 1,500 Olympic swimming pools whooshes through a 1-foot-wide pipe to Weyburn from a synfuels production plant 200 miles away in North Dakota." March 6, 2005, <http://www.nj.com/business/energy/ledger/index.ssf?/business/ledger/stories/0306renegades.html>

The Star Ledger, "A design team says the way to control CO₂ is: Suck it up."

Article highlights Global Research Technologies' quest to build a device to suck CO₂ from the sky. Columbia University physicist Klaus Lackner, architect of the idea, says CO₂ can be captured from the air via collectors, each spanning an area of roughly 165 feet by 200 feet – about the size of a large wind turbine. Lackner figures about 250,000 towers would capture all of humanity's CO₂ emissions. March 6, 2005, <http://www.nj.com/news/ledger/index.ssf?/base/news-20/1110135026273450.xml>

The Star Ledger, The Dangers of CO₂ Explored. Article discusses historical natural leaks of CO₂ in the US, Japan, Indonesia, Italy, and Cameroon. Focuses on the effects of CO₂ releases, which have been blamed for tree kills and the death of bears and humans. Highlights the worst known CO₂ disaster at Nyos, a crater lake in west-central Africa that erupted in 1986 killing 1,800 nearby villagers. "Death of a skier points to an invisible danger," March 06, 2005, <http://www.nj.com/business/energy/ledger/index.ssf?/business/ledger/stories/0306deathskier.html>

Pittsburgh Post Gazette, "Goal: Make abundant coal clean." Article discusses the abundance and low cost of coal relative to natural gas, and the need for improved technology for coal-fired power plants. Sets forth the National Energy Technology Laboratory as leading an important coal technology research effort – one that is aligned with the interests of the coal-rich Pittsburgh region. Regarding sequestration the article states, "The challenge with carbon dioxide is to find somewhere to put it where it is unlikely to do damage." March 22, 2005, <http://www.post-gazette.com/pg/05081/475101.stm>

PR Newswire, "President George W. Bush Views Energy Innovations During Visit to Battelle."

President Bush observed demonstrations of a number of technologies with energy-related applications during a tour of Battelle in early March. The demonstrations included significant developments in pipeline safety and security, next-generation nuclear power, energy-efficient appliances, grid reliability, and clean coal. The discussion on clean coal included carbon sequestration technology, a key component of the President's FutureGen initiative. March 9, 2005, <http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=109&STORY=/www/story/03-09-2005/0003159600&EDATE>

The Boston Globe, "Cleaning up coal." "Coal could be part of the solution to climate change if builders of new plants would use technology that captures and stores CO₂ and makes mercury cleanup much simpler...advocates of global warming action could have allies among utility CEOs who know that the only thing more expensive than building gasified-coal plants with CO₂ controls is adding CO₂ controls to a conventional plant after it is running. That might be required if global warming reaches a sudden tipping point and causes such drastic effects on climate or agriculture that action cannot be delayed." March 17, 2005,

<http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13665>

EurekaAlert, "Climate change poorly understood by US public, MIT survey finds."

The average American knows nearly nothing about efforts to reduce greenhouse gases, according to a Massachusetts Institute of Technology survey that researchers say has serious policy implications. The 1,200 participants in the poll were asked whether they had read about or heard of a wide range of technologies in the previous year. While most of those surveyed were familiar with more fuel efficient vehicles, solar power, and other options, very few had heard of carbon sequestration. "The recognition of carbon capture and storage and carbon sequestration is minimal," Howard Herzog of MIT said he and fellow researchers at the University of Cambridge concluded. "Less than 4 percent of respondents were familiar with the terms carbon dioxide capture and storage or carbon sequestration." March 23, 2005, http://www.eurekaalert.org/pub_releases/2005-03/miot-ccp032305.php For more information about the survey visit <http://fee.mit.edu/publications/newsletter/ee200412.pdf#page=7>

Sequestration in the News, Cont'd

Greenwire, "Clean Coal Key to U.S. Greenhouse Strategy, Utilities Say." Industry experts attending the Sustainable Energy Institute roundtable said coal gasification and other "clean coal" technologies offer the most feasible ways of reducing greenhouse gas emissions in the absence of a carbon cap-and-trade system in the United States. The roundtable also highlighted a new partnership formed by utilities last fall to spur innovations in coal technology. The "Coal Fleet for Tomorrow" aims to encourage development of integrated gasification combined cycle coal plants, or IGCC -- the Holy Grail of clean coal development, said John Novak of the Electric Power Research Institute. The article goes on to discuss IGCC and calls it a stepping-stone towards carbon sequestration. March 2, 2005, <http://www.sustainablebusiness.com/news/sbnews.cfm?id=5620>

Energy Washington, "Activists Say Sequestration Pivotal To Future Energy From Coal." Speaking at the Senate energy committee coal conference on March 10th, David Hawkins of the Natural Resources Defense Council (NRDC) stated that the future use of coal for electricity generation must depend upon use of only those clean-coal technologies that can sequester and monitor carbon, like integrated gasification combined cycle (IGCC) technology, and that the only way to ensure sequestering and monitoring of carbon is implementation of a mandatory carbon cap strict enough to drive sequestration. Hawkins said that technologies to reduce carbon emissions will not be brought to market in the absence of policies that require strict limits on CO₂ emissions. But government and industry analyses show that a mandatory carbon cap, which would drive sequestration, could also push the cost of coal-fired electricity to a level higher than that of new nuclear generation. March 16, 2005, <http://www.energywashington.com/> (subscription required)

Oil & Gas Journal, "Inert gas injection set in Athabasca oil sands." Paramount Resources Ltd., Calgary, plans to inject as much as 3 MMcfd of inert compressor exhaust gases in the Surmont area into the Cretaceous Wabiskaw-McMurray oil sands in an attempt to maintain reservoir pressure while allowing the production of a similar volume of natural gas to be produced from previously shut-in gas pools. The pilot project, to start up in April, would also enable the sequestration of as much as 400 Mcfd of carbon dioxide. "If successful, Paramount is hopeful that this experiment will offer some resolution at Surmont to the 'gas over bitumen' issue as well as provide for sequestration opportunities for carbon dioxide," the company said. March 10, 2005, http://ogj.pennnet.com/articles/article_display.cfm?Section=ONART&C=DriPr&ARTICLE_ID=222924&p=7 (subscription required)

CNW, "Penn West Petroleum Ltd. Announces the Commencement of Carbon Dioxide Injection into the Pembina Oil Field." The plan is to start with a small \$15 million pilot test and proceed to a larger-scale injection if the initial results are encouraging. March 31, 2005, <http://www.newswire.ca/en/releases/archive/March2005/31/c0833.html>

Australian Broadcasting Corporation, "Fossil fuels could slow climate change: environment roundtable." The world's biggest carbon dioxide emitters are now proposing that fossil fuels could be part of the solution, and help slow climate change. Australia's Environment Minister, Senator Ian Campbell, says that was the conclusion after two days of talks in London with other environment and energy ministers from around the world. Says Campbell, "The best thing we can do, in the medium-term at least, is to focus on making the use of coal, for example, and other fossil fuels far more energy efficient, go to cleaner coal technologies, and ultimately to zero emissions use of fossil fuels by using, for example, gasification, cleaning up of coal, and ultimately the sequestration of the carbon from it." March 17, 2005, <http://www.abc.net.au/worldtoday/content/2005/s1325870.htm>

The New Zealand Herald, Missed opportunity for sequestration in Australia. A New Zealand utility company put on hold plans to build two coal-fired power plants citing the "lack of available technology for carbon capture and separation" as a key reason for its decision. By implication the utility will meet growing demand with natural gas and renewable energy. "Northland reassured over power station plans," March 4, 2005, http://www.nzherald.co.nz/index.cfm?c_id=3&ObjectID=10113588

BBC News, "A coal-dependent future?" Article explores the market forces behind China's preference for coal. Highlights a coal-mine methane capture project at the Sihe mine, one of China's largest and most modern coal mines, which expects to produce 10 million tones of coal before the end of the year. Before, the methane was sent straight into the atmosphere. Now, it's diverted into a small gas-fired power station. In addition to making the mine safer, the article says the scheme generates paper credits that the mine group has sold to the World Bank, for \$20 million. Article also discusses some of China's current environmental problems and some that are looming in the near future, including burning coal seams, desertification, sea-level rise, and access to fresh water. March 9, 2005, <http://news.bbc.co.uk/go/pr/fr/-/1/hi/programmes/newsnight/4330469.stm>

Announcements

New Greenhouse Gas Reporting Guidance released. On March 24, 2005 the U.S. Department of Energy released revised guidelines for voluntary reporting of greenhouse gas emissions, sequestration, and emission reductions. Draft technical guidelines include a discussion of geologic sequestration as well as agriculture and forestry sequestration. DOE will sponsor a 1 1/2 day workshop on the guidelines April 26/27 at the Crystal City Marriott at Reagan National Airport just outside Washington, D.C. The U.S. Department of Agriculture and DOE will cosponsor a workshop on the agricultural and forestry elements of the guidelines on May 5 in Riverdale, MD. The Federal Register documents and the draft Technical Guidelines are available at the following website: <http://www.pi.energy.gov/enhancingGHGRegistry/> Comments on these documents can be sent to 1605bGuidelines.Comments@hq.doe.gov

“U.S Energy Department Announces \$62.4M in “Clean Coal” R&D Awards.” Secretary of Energy Samuel Bodman announced the award of \$62.4 million for 32 clean coal research projects. Sequestration related awards are as follows:

Southern Research Institute (Birmingham, Ala.) - \$863,724
University of Michigan (Ann Arbor, Mich.) - \$501,205
University of Delaware (Newark, Del.) - \$599,373
University of North Carolina at Charlotte (Charlotte, N.C.) - \$417,645
Battelle Memorial Institute (Columbus, Ohio) - \$1,819,700
Geological Survey of Alabama (Tuscaloosa, Ala.) - \$399,889
U. of Kentucky Research Foundation (Lexington, Ky.) - \$276,232
Winrock International (Morrilton, Ark.) - \$398,720

All American Patriots, March 16, 2005,

<http://www.allamericanpatriots.com/m-news+article+storyid-8118-PHPSESSID-86966f8c4475d698581cbe552b7515c9.html>

Free Climate Graphics. UNEP/GRID-Arendal in Norway has updated their popular Vital Climate Graphics series. The first edition was launched at the COP in Den Haag in 2000. That one was based on IPCC's second assessment report. The updated edition is based on IPCC's third assessment report. You can download and use the graphics for presentations, websites, etc, but please give credit to UNEP/GRID-Arendal when using the graphics. These graphics and other graphics can be found at <http://www.vitalgraphics.net>

Science

“Global Warming Sparks Plankton Migration.” Scientists working on the Continuous Plankton Recorder survey, which has been monitoring near surface plankton in the North Atlantic and North Sea for the past 70 years, have found that the warm water plankton in the North Sea are migrating northwards while cold water plankton are moving even further north as seawater temperature rises. *The Scotsman*, March 1, 2005, <http://news.scotsman.com/latest.cfm?id=4193838>

“Climate Threshold May Alter Economic Picture of Climate Change.” Typical economic analysis applied to global warming may be biased because they neglect climate thresholds, according to Penn State researchers. “Economic analyses typically neglect that greenhouse gas emissions might trigger climate thresholds with potentially significant ecological and economic impacts,” says Klaus Keller, assistant professor of geosciences, Penn State. *GreenBiz.com*, March 4, 2005, http://www.greenbiz.com/news/news_third.cfm?NewsID=27738

Policy

“EC advocates sequestration and storage of CO₂ from coal activities.” Due to coal's high CO₂ emissions, energy commissioner Andris Piebalgs wants to invest €100 million in sequestration and storage of CO₂ from coal. “Coal in itself is not bad. The problem is the high CO₂ emissions. Therefore, that will be our focus,” said Piebalgs. He also urged Member States and utilities to invest in clean coal technology, hoping to establish a large, Europe-wide research project in the field. *Point Carbon*, March 18, 2005, <http://www.pointcarbon.com/article.php?articleID=7290&categoryID=471>

“IOGCC taskforce issues CO₂ sequestration proposals.” A new Interstate Oil & Gas Compact Commission report says U.S. states and Canadian provinces should play a critical part as a carbon dioxide sequestration regulatory regime develops. States and provinces already have 30 years of experience regulating CO₂ used in enhanced oil recovery, an IOGCC task force noted in preparing the report. The group also recommends that CO₂ remain a commodity covered by state laws and not be classified as a waste or pollutant. “State laws protect resources and maximize recovery. The IOGCC merely is saying that CO₂ should have the same designation. Classifying CO₂ as a waste would limit CCGS [carbon capture and geological storage] development,” said Arkansas Oil & Gas Commission Director Lawrence E. Bengal, who led the task force. *Oil & Gas Journal*, March 10, 2005, http://ogj.pennnet.com/articles/article_display.cfm?Section=ONART&C=GenIn&ARTICLE_ID=222927&p=7. To download the full report visit <http://www.iogcc.oklaosf.state.ok.us/PDFS/Final%20Report,%201-28-05.pdf>

“Climate group: Guidelines a 'charade'.” In response to new government guidelines for reporting greenhouse gas emissions and carbon sequestration in the forest and agriculture sectors, David Hawkins of NRDC called the reporting registry a “charade that is intended to allow the government and the participants to portray that they are doing something about global warming, when they are not.” *CNN*, March 23, 2005, <http://www.cnn.com/2005/TECH/science/03/23/greenhouse.gases.ap/>

“China committed to building lower carbon economy.” China is committed to building a lower carbon (emission) economy to combat climate change over the coming decades, a Chinese official said at a meeting in London. In his key-note speech, Liu Jiang, vice-chairman of China's National Development and Reform Commission, said that as a rapidly-developing country, China has been challenged by climate change and energy scarcity. China is among a few nations in the world that rely on coal as their major energy source. “Coal amounts to 67 percent of primary energy consumption in the country,” which made it more difficult to slow down the growth momentum of carbon emission, Liu said. Technology development and transfer is the ultimate solution to the challenge of climate change, he said. *Xinhua News Agency*, March 16, 2005, <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13656>

“EU Ministers Want Tough Post-Kyoto Emissions Target.” European Union environment ministers proposed that developed nations make sweeping cuts in greenhouse gas emissions in the years following 2012, when the first period covered by the Kyoto Protocol ends. Their recommendations go against those of the EU's executive Commission, which said in February it was too early to set post-2012 targets. A statement agreed by the ministers said developed nations ought to aim for cuts “in the order of 15-30 percent by 2020 and 60-80 percent by 2050, compared to the levels envisaged in the Kyoto Protocol.” *Reuters*, March 11, 2005, <http://www.planetark.com/dailynewsstory.cfm/newsid/29895/story.htm>

“Global Warming Threat Central to Policy-Britain.” Britain told the world's biggest polluters including the United States that only by placing the environment at the heart of economic policy could they prevent a crisis caused by global warming. “We must make climate stability, energy investment and energy security central to economic policies,” said British Chancellor of the Exchequer Gordon Brown. “International cooperation is again the only way forward.” Brown said he would study the costs and feasibility of so-called carbon sequestration -- the capture and burial deep underground of millions of tons of the carbon dioxide emitted by fossil fuel burning power stations. *Reuters*, March 15, 2005, <http://www.reuters.com/newsArticle.jhtml?type=scienceNews&storyID=7908922>

“UK's Brown freezes climate change levy, buys into sequestration.” The UK Chancellor of the Exchequer Gordon Brown said the government would freeze the climate change levy, an energy tax on business. The government also said it would lower duties on natural gas, bioethanol, biodiesel and liquefied petroleum gas for the next three years to encourage lower emissions. As expected, Brown also offered to plough money into research and development for carbon dioxide geosequestration. *Point Carbon*, March 17, 2005, <http://www.pointcarbon.com/article.php?articleID=7261&categoryID=478>

“U.S. Oil/Gas Companies Take Action to Reduce Climate Change Risks.” After extensive negotiations with shareholders, Anadarko Petroleum, Apache, ChevronTexaco and three other leading U.S. oil and gas companies have taken far-reaching actions in recent months to disclose their potential financial exposure from climate change and develop strategies to improve their strategic positioning as international pressure grows to reduce greenhouse gas emissions and promote renewable energy sources. The article summarizes the specifics of the company commitments and actions. *CSR Wire*, March 18, 2005, <http://www.csrwire.com/article.cgi/3648.html>

“Canada to introduce bill on greenhouse gases.” The Canadian federal government intends to introduce a bill to bring greenhouse gases under the Canadian Environmental Protection Act. The Canadian federal government's decision to impose regulations on greenhouse gas emissions on heavy industries has angered Alberta premier Ralph Klein. The greenhouse gas regulations would then come under the same act that regulates toxic chemicals such as PCBs. *Point Carbon*, March 18, 2005, <http://www.pointcarbon.com/article.php?articleID=7296&categoryID=471>

Swiss Govt Adopts CO₂ Tax on Fossil Fuels. The Swiss government has decided to impose a tax on heating oil and raise a levy on petrol and diesel imports as of next year, to help cut CO₂ emissions. The “Climate Penny” will be introduced on a trial basis, making a large amount of money available for the purchase of credits from CDM and JI projects. The environment minister, Moritz Leuenberger, warned though that if greenhouse gas levels were not curbed, motor fuel could also be taxed later. “Compromise solution to slash CO₂ emissions,” *Swissinfo*, March 24, 2005, <http://www.nzz.ch/2005/03/24/eng/article5624432.html>

Technology

“The genome king seeks to produce a tiny CO₂ eater.” Scientists at the J. Craig Venter Institute have spent three years hunting for microbes to munch carbon dioxide. While Venter's ultimate goal is to synthesize a hydrogen bug – a designer organism that would churn out the clean-burning hydrogen fuel of tomorrow – at the very least, microbes might be adapted to scrub emissions from power plants. Or be engineered to bind CO₂ into carpets, nylon or pharmaceuticals, to keep the greenhouse gas out of the atmosphere. *The Star Ledger*, March 6, 2005, <http://www.nj.com/business/energy/ledger/index.ssf?business/ledger/stories/0306genomeking.html>

Nanotechnology - Sequestration Link. According to a new science policy study by Rice University, transmission lines built from carbon nanotubes that could conduct electricity across great distances without loss would radically change the economics of moving “energy” supply from distant natural gas sources, distant wind and solar farms, and coal sequestration sites. “Nanoscience Solutions for Energy Technologies Advocated,” *AZoNano.com*, March 9, 2005, <http://www.azonano.com/news.asp?newsID=589>
The full report is available at <http://www.rice.edu/energy/publications/energynanotechnology.html>

“Benefits and drawbacks of clathrate hydrates: a review of their areas of interest.” Clathrate hydrates are well known structures that were considered for many years as harmful by the oil and gas industry because of their annoying tendency to plug pipelines. However, hydrates are now attracting renewed interest in many fields – gas hydrates naturally found in deep seas and permafrost may provide a large amount of methane. Other positive applications include carbon dioxide sequestration, separation and natural gas storage and transportation. Finally, the use of their dissociation energy can be applied in refrigeration processes and cold storage. *Energy Conversion and Management*, June 2005, <http://www.sciencedirect.com/science/journal/01968904>
(subscription required)

Terrestrial

“Soil carbon sequestration in Phytoliths.” This paper highlights a unique technology for quantification and long term sequestration of carbon in soil. The process is based on enhancing silica mineralization within crops and forests. The authors believe this technology has the potential to economically sequester hundreds of millions of tones of carbon per year. In the long term, the authors hope the technology will allow struggling land holders and grain producers to offset their incomes by selling carbon credits to the coal industry to offset their emissions. *Soil Biology and Biochemistry*, January 2005, <http://www.sciencedirect.com/science/journal/00380717>
(subscription required)

New imaging tool can track carbon sequestration in plants. Scientists at the U.S. Department of Energy's Brookhaven National Laboratory have applied radiotracer imaging to track the distribution of nutrients in poplar trees in response to a simulated insect attack. Richard Ferrieri, who leads Brookhaven's role in the research, says scientists trying to improve plants' resistance to environmental challenges - or their ability to perform useful tasks such as carbon sequestration, phytoremediation, or the production of bio-fuels - could also use functional imaging to help track their progress. "Poplar Trees Redirect Resources in Response to Simulated Attack; Use of 'Functional Imaging' to Track Plant Nutrients Has Many Potential Applications," *AScribe*, March 28, 2005, <http://newswire.ascribe.org/cgi-bin/behold.pl?ascribeid=20050328.052546&time=07%2038%20PST&year=2005&public=0>

"Secondary forests as temporary carbon sinks?" In this study the authors applied the accounting rules for temporary and long-term Certified Emission Reductions (CER) to two reforestation projects: forest plantation and natural regrowth of secondary forest. A comparison of these alternatives showed that secondary forest is an attractive alternative because of its low establishment costs and relative early timber revenues. *Ecological Economics*, available online February 9, 2005, <http://www.sciencedirect.com/science/journal/09218009> (subscription required)

"Innovative Study Will Measure Residential Carbon Sequestration." Article highlights a new \$660,000, three-year National Science Foundation project led by Jennifer Jenkins, a research assistant professor at the Gund Institute of Ecological Economics, that seeks to quantify carbon cycles in three Baltimore-area neighborhoods and determine how different factors influence them. One facet of the project will use neighborhood-level commercial marketing-research to relate an area's per-capita fertilizer and lawn products spending to the carbon-sequestering vigor of its sweeping green lawns, perhaps yielding a model with predictive power nationwide. *Science Daily*, March 22, 2005, <http://www.sciencedaily.com/releases/2005/03/050321090451.htm>

Pennsylvania Awards Grant to Rodale Institute.

Environmental Protection Secretary Kathleen A. McGinty awarded a \$138,531 Growing Greener grant to the Rodale Institute to develop advanced soil management methods that lock up nutrients before they pollute local waterways. In addition to locking-up nutrients to improve water quality, the institute will use its grant to determine the ability of organic management methods to sequester carbon in soil, said a press release. "Rendell Administration Awards \$138,531 Grant to Rodale Institute for Soil Management Study; Advanced Methods Enhance Water Quality by Locking up Nutrients in Soils," *AScribe*, March 25, 2005, <http://newswire.ascribe.org/cgi-bin/behold.pl?ascribeid=20050325.113358&time=11%2041%20PST&year=2005&public=0>

"Oceans extend effects of climate change." According to two studies in the March 18th issue of *Science*, even if the world stopped burning fossil fuels tomorrow, the emissions already in the atmosphere would cause global temperatures to climb for the next hundred years and the sea level to keep rising for even longer. "We're already committed to a significant amount of climate change, even if we could stabilize concentrations at some point," says Gerald Meehl of the National Center for Atmospheric Research in Boulder, Colorado. "And the longer we wait, the worse it gets." *Nature*, March 17, 2005, <http://www.nature.com/news/2005/050314/full/050314-13.html>

Trading

"World class." Article discusses the European Union Emissions Trading Scheme (ETS), with emphasis on what will happen after 2012. Markets are already jittery about lack of information on the regulatory drivers for the carbon market post-2012, and their nervousness will increase exponentially as time passes without the issue being resolved. This uncertainty is not only an issue for traders and those with positions in carbon markets, it is also key to the industry, which needs some level of regulatory certainty to support planning and risk management in the future, the article states. *Utility Week*, March 18, 2005, <http://www.wbcd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13680>

"ADB Opens First CDM Facility Project to Buyers." An ADB-backed Coal Mine Methane/Coal Bed Methane Utilization Project in Fuxin, China, is the first project under its Clean Development Mechanism (CDM) Facility to be presented to carbon buyers. Between 2006 and 2012, more than 5 million carbon credits are expected to be generated from the Fuxin project, which is part of an Environmental Improvement Project in Liaoning, backed by an ADB loan of \$70 million approved in November 2004. ADB will help the project find a buyer for the credits and facilitate the transaction process during 2005. See <http://www.adb.org/cdmf> for details. *Lyrus*, March 16, 2005, <http://lists.iisd.ca:81/read/messages?id=24924>

"Northeast States Lead Regional Global Warming Initiative." Highlights the "Regional Greenhouse Gas Initiative" to establish limits on carbon dioxide emissions and create a trading system in the Northeastern U.S. The program would allow states outside of the Northeast to participate as well, and could be extended to cover not just power plants but all stationary global warming pollution sources, and additional greenhouse gases such as methane and sulfur dioxide. The states involved in the initiative expect to jointly develop a "model rule" by June 2005, which could then be implemented by each state, says a press release. *iNRDC Press Release*, March 28, 2005, <http://www.nrdc.org/media/pressreleases/050328.asp>

Events

April 8, 2005, **IPCC-23: The 23rd Session of the Intergovernmental Panel on Climate Change**, Addis Ababa, Ethiopia. Expected to continue preparations for the Fourth Assessment Report, scheduled for release in 2007. For more information, contact: IPCC Secretariat; tel: +41-22-730-8208/84; fax: +41-22-730-8025/13; e-mail: IPCC-Sec@wmo.int; Internet: <http://www.ipcc.ch/calendar.htm>

April 13-15, 2005, **European CO₂ Capture and Storage Conference – Towards Zero Emission Power Plants**, Brussels. A high-level international conference organized by the European Commission. Attendance is free, but will be by invitation only. For more information, please contact Ms. Sabine Huygens at -32-2-2991668 or sabine.huygens@cec.eu.int

April 18-20, 2005, **GHG Registries and Competing in a Carbon-Constrained World**, Berkeley, CA. Hosted by the California Climate Action Registry and IETA, this two-day event brings together leading experts to discuss the key questions and latest developments related to climate change policy and business strategy. For more information and to register, visit <http://www.climateregistry.org/EVENTS/Conference/>

April 19-20, 2005, **Western States Coal Mine Methane Recovery and Use workshop**, Two Rivers Convention Center, Grand Junction, CO. This comprehensive workshop will feature international experts on methane gas recovery and use from both government and industry. Early registration ends on April 11. For additional information and a list of speakers and topics visit http://www.ravenridge.com/methane_workshop_2005.htm

April 19-22, 2005, **The 16th Global Warming International Conference (GW16)**, New York, NY. Over 200 papers and panels will address global and regional Extreme Weather Events, Emissions and Greenhouse Gas Reduction, Low GHG Transportation and Clean Energy Technology, Sustainable Development, and Corporate Learning. For additional information visit <http://www.globalwarming.net>

April 27-28, 2005, **Energy 2005: Future Shock**, the new Washington DC Convention Center, Washington, DC. The nation's most successful executives and government leaders will discuss issues critical to the industry, including hedge funds, utility business models, federal regulation, natural gas, IGCC/coal, energy legislation, state-based energy initiatives, and more. For the conference agenda or to register, contact Melissa Monk at (202) 662-9732 or mmonk@kingpublishing.com

May 2-3, 2005, **Fourth Annual GreenTrading Summit: Emissions, Renewables & Negawatts**, New York, NY. This year's summit will break new ground on green hedge funds, carbon sequestration trading, new advances in renewable energy trading, the new demand response regimes creating financial negawatts, software tools for forward curve generation and new green finance innovations. To obtain more information, visit <http://www.greentradingsummit.com/>

May 2-5, 2005, **The Fourth Annual Conference on Carbon Sequestration**, Alexandria, VA. For more information, visit <http://www.carbonsq.com/> or contact Exchange Monitor Publications at (202) 296-2814.

May 11-13, 2005, **CARBON EXPO 2005**, Cologne, Germany. The annual trade fair and conference dedicated to the carbon market co-organized by World Bank, International Emissions Trading Association (IETA), and Koelnmesse. For more information, please visit <http://www.carbonexpo.com>

June 19-22, 2005, **2005 American Association of Petroleum Geologists Annual Convention**, Calgary, Canada. The purpose of this combined oral and poster session is to bring together researchers active in the field of CO₂ and acid gas injection in oil and gas reservoirs, coal beds and deep saline aquifers, whether for EOR, ECBM or sequestration, to present current operations, field and laboratory experiments, and integrated studies for the evaluation of sequestration sites and the long-term fate of the injected gases. For more information about the meeting and submission of abstracts please visit <http://www.aapg.org/calgary/technical/index.cfm>

Tbd, July 2005, **Model-Data Fusion for Carbon Cycle Modelling: Intercomparison of Optimization Techniques for Parameter Estimation (Opt-IC)**, Canberra Australia. The aim is to evaluate methods for parameterizing terrestrial carbon cycle and biogeochemical models from multiple data sources, particularly remotely sensed data. For more information visit <http://www.globalcarbonproject.org/ACTIVITIES/OptIC.htm>
Contact: Mike Raupach - Michael.raupach@csiro.au

August 2-11, 2005, **IAMAS 2005 Conference: Carbon Cycle and Climate Symposium**, Beijing, China. The aim of this session is to encourage multiple-disciplinary approach in studying carbon cycles and its interactions with climate. For more information visit the conference website at <http://www.iamas2005.com>
Contact: Ying Ping Wang – Yingping.wang@csiro.au

September 15-16, 2005, **Reduction of Emissions and Geological Storage of CO₂: Innovation and Industrial Stakes**, Paris, France. The symposium intends to bring together researchers, industrialists, economists, and financiers to examine the role the geological storage of CO₂ can play in reducing emissions of greenhouse gases, and the means to be used to finance such operations. For additional information visit <http://www.CO2symposium.com>

September 26-30, 2005, **7th International CO₂ Conference**, Broomfield, CO. The purpose of this conference is to bring together scientists from different disciplines to communicate the most recent results pertinent to the global carbon cycle, with an emphasis on the contemporary increase of atmospheric carbon dioxide. Topics will include long-term potentials and vulnerabilities of carbon sequestration, and more generally, the human impact on the carbon cycle, and more. For additional information: <http://www.cmdl.noaa.gov/info/icdc7/>

Recent Publications

“Modelling the Potential of Geosequestration.” Highlights a recent CO2CRC-supported study where a mathematical model was developed to assess the potential of geosequestration for mitigating global and local CO₂ emission levels and atmospheric CO₂ concentrations. A secondary objective was to assess the extent to which leakage needs to be taken into account when globally modeling carbon capture and storage. *AETF Review*, February/March 2005, <http://aetf.emcc.net.au/ContentStore/pdf/ReviewFebMar2005.pdf>

“Carbon Capture and Storage (CCS).” In this four page POSTnote, the UK government’s global strategy to address climate change is discussed. The POSTnote discusses the potential of carbon capture and storage (CCS) to reduce UK and global emissions, and also the costs, environmental impacts and public perceptions of CCS. *POSTnote*, March 2005, <http://www.parliament.uk/documents/upload/POSTpn238.pdf>

“Agriculture could help solve global warming, says report.” A new report shows that by 2030, the Illinois summer climate will generally resemble that of current east Texas. University of Illinois professor Michelle Wander and co-author Steve Clemmer of UCS say that agriculture can be an important part of the solution to global warming and they recommend incentives to sequester carbon on marginal lands. *University of Illinois Press Release*, February 28, 2005. Read the full report, “Confronting Climate Change in the Great Lakes Region: Impacts on Our Communities and Ecosystems,” at <http://www.ucsusa.org/greatlakes>

“Companies and Regulators in Emissions Trading Programs.” Much has been written about the economic and environmental performance of U.S. emissions trading programs for sulfur dioxide and nitrogen oxides. Less explored have been the unique roles and interactions of environmental regulators and the companies they regulate in these programs. The paper uses examples from U.S. trading programs to illustrate the design and administrative features that allow program administrators and companies to best fulfill their respective roles. The paper also examines whether these features are present in the EU Emissions Trading System and analyzes the implications for its effectiveness. *Resources for the Future*, February 2005, available at <http://www.rff.org/rff/Documents/RFF-DP-05-03.pdf>

Legislative Activity

“Coal: Clean King?” In this interview with Peabody Energy CEO Irl Engelhardt and Duke Power CEO Ruth Shaw the following topics are discussed: The Clear Skies bill and the incorporation of limits on CO₂, Senator Hagel’s proposed incentives for clean coal and IGCC, with in-depth discussion of how to encourage the construction of more IGCC plants, and FutureGen status. *E&ETV*, March 10, 2005, transcript available at <http://www.eande.tv/showAssets/related/031005/031005transcript.html>