THE CARBON SEQUESTRATION NEWSLETTER

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Sequestration in the News

***Reuters*, "Coal challenging gas as power-plant fuel."** Worldwide demand for coal is growing faster than expected, rising 25 percent in the last three years, to 1.1 billion tonnes. "Coal has stepped up to fill the void left by the limitations on oil and gas," said Gregory Boyce, president of Peabody Energy. "When it comes to coal, progress is being made on reducing the CCS cost and as soon as it gets down from $100 now to around $40, the coal business will be able to say they can deliver cheaper electricity and meet the CO_2 requirements," said Gerald Doucet of the World Energy Council. October 27, 2005, http://news.yahoo.com/s/nm/20051027/sc_nm/coal_power_dc

***Reuters*, "Clean coal Isn't Climate-Friendly Yet."** Only a fraction of planned coal fired power plants in the United States will use "the Holy Grail of clean coal technology" – integrated gasification combined cycle (IGCC) – because of the high initial cost. Says John Stowell, environmental strategist at utility Cinergy Corp, "This is the way we need to go to preserve the coal option." American Electric Power Co Inc. and Cinergy plan to build IGCC plants in the Midwest in the next decade. But they don't plan yet to add the capturing equipment on the IGCC plants they aim to build. "Until there is such a requirement we're not going to put that technology in place at this point," said Melissa McHenry, a spokeswoman for AEP. October 7, 2005, http://www.planetark.com/dailynewsstory.cfm/newsid/32896/newsDate/10-Oct-2005/story.htm

***Toledo Blade*, "The battle is on to capture, store carbon dioxide."** Mainstream article discusses increasing evidence of climate change and the emergence of CO_2 capture and sequestration as an option for reducing emissions. Highlights the Midwest Regional Carbon Sequestration Partnership and mentions geologic and terrestrial carbon sequestration projects throughout the world. October 17, 2005, http://toledoblade.com/apps/pbcs.dll/article?AID=/20051017/NEWS08/510170310/-1/NEWS

***Seattle Post Intelligencer*, "Washington State Proposes New Power Plant."** Article discusses how demand for electricity in the Pacific Northwest is gradually increasing and some argue that conservation and investment in renewable energy resources will meet rising demand. Energy Northwest supports and has participated in those efforts but does not believe they alone will meet demand, said Tom Krueger, the agency's project manager. In addition, he said, the region won't support hydropower expansion, a new nuclear plant in Washington simply isn't an option, and natural gas has become inordinately expensive. Instead, Energy Northwest is proposing to build an IGCC plant that would gasify coal or petcoke to generate power. The plant could also burn natural gas if the price declines, said Kruger. He added that the proposed plant would capture the carbon dioxide emissions for storage, and he said Energy Northwest is already taking part in a study to inject emissions into basalt deposits, which are common in the region. October 21, 2005, http://seattlepi.nwsource.com/business/1310AP_Deja_WPPSS.html

***Environmental Finance*, "New industry group aims to promote carbon capture and storage."** A group of large UK-based companies, including some of the world's biggest oil producers, have formed a new organization to promote technology for storing greenhouse gases underground. The Carbon Capture and Storage (CCS) Association believes this technology can help the UK meet its emission reduction goals and may also extend the life of North Sea oil fields. The founding members of the association are: BP, E.ON UK, Progressive Energy, Air Products, Alstom Power UK, AMEC, ConocoPhillips, Mitsui Babcock, Schlumberger Oilfield UK, Scottish & Southern Energy, and Shell. "CCS is absolutely essential if the world is serious about limiting greenhouse gas emissions", said Lord Oxburgh, president of the new association and former chairman of Shell Transport and Trading. October 6, 2005, http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=16733

***Bozeman Daily Chronicle*, "Coal-to-fuel proposal raises environmental concerns."** Article highlights a proposal by Montana Governor Brian Schweitzer to build 150,000 barrel-per-day coal liquid fuel plant in the state. The plan has been met with resistance from the Northern Plains Resource Council and others who cite the SASOL synfuel facility in South Africa that consumes five barrels of water per barrel of fuel produced and also emits large amounts of sulfur dioxide and nitrous oxides. Schweitzer proposes to build a plant based on IGCC technology which uses less water, emits less pollution, and produces a capture-ready exhaust of highly concentrated CO_2. October 16, 2005, http://www.bozemandailychronicle.com/articles/2005/10/16/news/01synfuels.txt

***ElectricNet*, "The China Huaneng Group Joins FutureGen Industrial Alliance."** The FutureGen Industrial Alliance announced that the China Huaneng Group – China's largest coal-fueled power generator – has joined a coalition of global electric utilities and coal companies that plan to design, construct and operate the world's first "zero-emission" coal-fueled power plant. The Huaneng Group is one of the top ten power companies in the world and is the largest coal-based power generator in China, representing about 9 percent of China's generating capacity. October 27, 2005, http://www.electricnet.com/content/news/article.asp?DocID=%7BAFA1D271-D2ED-4A59-81B1-7ED8A341B4DE%7D&Bucket=Current+Headlines&VNETCOOKIE=NO

***Forbes*, "Statoil CEO Lund sees UK-Norway collaboration on carbon dioxide capture."** Speaking at a conference in London, Statoil chief executive Helge Lund said that he sees a potential for collaboration between the oil and gas industries in Norway and Britain in using carbon dioxide for improved oil recovery (IOR). Statoil has pioneered CO_2 capture and injection through the Sleipner and Snohvit projects, and seeks to build on its capability. October 26, 2005, http://www.forbes.com/markets/feeds/afx/2005/10/26/afx2300586.html

Sequestration in the News, Cont'd

***BBC News*, "MP's clean coal energy solution."** According to a Member of Parliament (MP), unmined coal in Wales could be the answer to Britain's energy crisis, and "clean coal" technology could make the fuel eco-friendly. "Clean coal technology with zero emissions from these new generating plants is one of the ways forward and I'm optimistic the government will look at this quite favorably," the MP said. He also said carbon sequestration under the North Sea could also be used. Said Huw Irranca-Davies MP, "It seems like absolutely amazing science fiction...but it's already being done in Algeria and elsewhere, and highly productively." October 12, 2005, http://news.bbc.co.uk/go/pr/fr/-/2/hi/uk_news/wales/4333534.stm

***MSNBC*, "Cleaner coal? Activists now say it's possible."** Article claims that the notion of IGCC technology having a role in future electricity supply, once heresy in environmental activist circles, is now gaining some acceptance. That is, as long as the industry goes a step further by trapping carbon dioxide. "We believe it [IGCC] should be considered the requirement for a modern power plant, but until [carbon capture] happens, this is still just the shiny object that distracts us from the nearly 500 dirty coal plants that are polluting the air," said Greenpeace energy policy specialist John Coequyt. October 10, 2005, http://msnbc.msn.com/id/9619627/. Also see, "How to Clean Coal," *onearth,* Fall 2005, http://www.nrdc.org/onearth/05fal/coal1.asp

***Oil & Gas Journal,* "Australia seeks CO_2 sequestration program."** Australia wants to become a world leader in reducing greenhouse gas emissions through the capture and long-term geological storage of carbon dioxide, according to Ian Macfarlane, Australia's Minister for Industry, Tourism, and Resources. Speaking at the fourth multinational Carbon Sequestration Leadership Forum in Berlin, he said, "Australia has the geology, the scientific expertise, the industry enthusiasm, and the political will to capitalize on the carbon capture opportunity." October 4, 2005, http://ogj.pennnet.com (subscription required)

Announcements

RFA ANNOUNCEMENT: California Climate Action Registry. The California Energy Commission (CEC) released a request for applications (RFA) for firms wishing to apply as certifiers for participants of the California Climate Action Registry. To apply for State-approval as a certifier, firms should review the CEC's RFA, and submit an application to the CEC no later than **November 18, 2005**. Information is available on the CEC's website at: http://www.energy.ca.gov/contracts/index.html#climatechange

CALL FOR TENDERS: Assessing carbon sequestration in European forests. The European Commission's Joint Research Centre (JRC) has issued a call for tenders on developing harmonized methods for assessing carbon sequestration in European forests. The proposal for a monitoring scheme on carbon sequestration in forests aims at: Improving harmonization and comparability of the land-use change and forestry (LUCF) sector in the annual greenhouse gas inventory reports of Member States, as implemented under the mandate of the EU Monitoring Mechanism; and strengthening and harmonizing the existing national systems in such a way that they meet the requirements of international monitoring and reporting of GHG emissions and sinks in the forestry sector. The deadline for submitting tender documents is **November 9, 2005**. For details, visit http://ted.publications.eu.int/udl?REQUEST=Seek-Deliver&LANGUAGE=en&DOCIDs=185709-2005

Proceedings of the Fifth Annual Workshop on GHG Emissions Trading now online. This joint event between the IEA, the International Emissions Trading Association and the Electric Power Research Institute took place September 27th and 28th, 2005 at the IEA offices in Paris. It provided an opportunity for government, industry, brokers, finance, and NGO delegates to discuss some of the key issues relating to market developments. The workshop combined presentation of papers on recent research, together with extended discussion sessions on the following subjects: Market news, Emissions trading and compatibility with future international architectures, Industry experience with emissions trading, Extending the coverage of domestic systems, and Progress on project mechanisms. A website with relevant information on the Workshop has been created and can be found at http://www.iea.org/textbase/work/workshopdetail.asp?WS_ID=213

Science

"World Temperatures Keep Rising With a Hot 2005." New international climate data show that 2005 is on track to be the hottest year on record, continuing a 25-year trend of rising global temperatures. Climatologists at NASA's Goddard Institute for Space Studies calculated the record-breaking global average temperature, which now surpasses 1998's record by a tenth of a degree Fahrenheit, from readings taken at 7,200 weather stations scattered around the world. "At this point, people shouldn't be surprised this is happening," said Goddard atmospheric scientist David Rind, noting that 2002, 2003 and 2004 were among the warmest years on record. *Washington Post*, October 13, 2005, http://www.washingtonpost.com/wp-dyn/content/article/2005/10/12/AR2005101202498.html

"The Truth About Global Warming." The *Seattle Times* devoted 3+ pages, no ads to its lead story, The Truth About Global Warming. The author, Sandi Doughton, was prompted to research the story after attending a forum for science writers in 2004, where "several speakers involved with climate science complained that skeptics of global warming get equal treatment in news coverage, as if scientists are hopelessly divided on the question. The speakers insisted they are not." *Seattle Times*, October 9, 2005, http://archives.seattletimes.nwsource.com/cgi-bin/texis.cgi/web/vortex/display?slug=globewarm11&date=20051009 (registration required)

"Sun's changes play role in global warming." Climate models of global warming should be corrected to better account for changes in solar activity, according to Nicola Scafetta and Bruce West of Duke University. The new study is based in part on Columbia University research from 2003 in which scientists found errors in how data on solar brightness is interpreted. The researchers found that increased output from the sun might be to blame for 10 to 30 percent of the global warming. The Duke analyses examined solar changes over 22 years versus 11 years used in previous studies – a time frame long enough to isolate the effect of volcanoes and cyclical shifts in ocean currents. *LiveScience*, September 30, 2005, http://msnbc.msn.com/id/9544093/

"Antarctic ice melts as sea warms but cause unknown." Leading scientists attending a British Royal Society conference in London said Antarctica is melting, adding to the rise in global sea levels and putting millions of lives and whole economies at risk. Said Anthony Payne of the University of Bristol, "We know a lot more about the ice sheets than we did before. We know change is happening and that it is rapid. What we don't know is why or what is causing it – what proportion is anthropomorphic." *Reuters*, October 18, 2005, http://www.enn.com/today.html?id=9047

"Global Warming Sparks Increased Plant Production in Arctic Lakes." Biological activity in some Arctic lakes has ratcheted up dramatically over the past 150 years as a result of global warming, according to a new study. In six lakes, researchers dug deep into the sediment to measure the amount "chlorophyll-a," the main pigment involved in photosynthesis. The amount of chlorophyll-a is two to five times higher in recent times compared to ancient sediment, said Neal Michelutti of the University of Alberta. "Lakes in the Arctic have extremely short growing seasons – typically they remain ice-covered for up to 10 months of the year," Michelutti explained. "A difference of only a few weeks [in the growing season] can have a huge impact biologically." *LiveScience*, October 24, 2005, http://www.livescience.com/environment/051024_arctic_lakes.html

Policy

"EPA Estimates CO_2 Control Costs as Low as $1 Per Ton." A new cost-benefit analysis by the US Environmental Protection Agency (EPA) indicates that carbon dioxide emissions control costs could be as low as $1 per ton. The findings, announced on October 27, are part of an extensive comparison of several pending legislative proposals designed to cut emissions from power plants in the United States. The EPA compared the Bush Administration's Clear Skies proposal, which advocates a cap-and-trade approach for sulfur dioxides, nitrogen oxides and mercury, with alternative proposals by Senators James Jeffords (I-VT) and Thomas Carper (D-DE). Sen. Jeffords' Clean Power Act and Sen. Carper's Clean Air Planning Act both include mandatory emissions caps for CO_2 in addition to sulfur dioxides, nitrogen oxides and mercury. The Jeffords proposal would cap CO_2 emissions at 2.05 billion tons per year by 2010 while the Carper proposal would cap emissions at 2.65 billion tons per year by 2009. In the EPA analysis, the controls for CO_2 would cost as little as $1 per ton if the Carper proposal was adopted, while the Jeffords proposal would cost $16 per ton of CO_2 emissions. *EESI Climate Change News,* October 28, 2005, http://www.eesi.org/publications/Newsletters/CCNews/10.28.05%20CCNews.htm

"Get real on climate change." The Kyoto protocol on climate change cannot work in its current form, Prime Minister Tony Blair has said. Writing in the *Observer*, Mr. Blair said cuts in greenhouse gas emissions can only be achieved by establishing an initiative that includes the US. His comments come ahead of a conference on climate change in London on November 1, chaired by Mr. Blair. Blair also argued that the problem of global warming cannot be dealt with unless any new agreement includes India and China. Blair added that there were "huge opportunities" in technology. "We need to see how the existing energy technologies we have such as wind, solar and - yes - nuclear, together with new technologies such as fuel cells and carbon capture and storage, can generate the low carbon power the world needs." *The Observer,* October 30, 2005, http://observer.guardian.co.uk/comment/story/0,6903,1604790,00.html

"N.J. classifies carbon dioxide as air contaminant." New Jersey's acting Governor Richard J. Codey took action to classify carbon dioxide as an air contaminant, paving the way for the state to participate in the Regional Greenhouse Gas Initiative, which seeks to stabilize and reduce emissions of carbon dioxide. The adopted regulations amend several air pollution control rules, reflecting current scientific consensus that carbon dioxide is an air contaminant. *Waste News*, October 20, 2005, http://www.wastenews.com/headlines2.html?id=1129853293
Also see, "Codey Takes Crucial Step to Combat Global Warming," *Press Release,* October 18, 2005, http://www.state.nj.us/cgi-bin/governor/njnewsline/view_article.pl?id=2779

"Japan should introduce carbon tax in 2007-ministry." The Japanese Environment Ministry released a revised version of its carbon tax plan, aimed at discouraging fossil fuel use so Japan can fulfill its obligation under the Kyoto Protocol. The ministry said in a statement that the tax should be 2,400 yen ($20.85) per ton of carbon emitted. That means the tax on coal could be 1.58 yen per kilogram and that on gasoline 1.52 yen per liter (4.3 cents per gallon). The tax would generate income of 37 billion yen a year for the government and result in a payment of 2,100 yen per year for an average household. The ministry said the proposed environment tax would help Japan to cut carbon emissions by about 43 million tonnes, or 3.5 percent of the greenhouse gas emitted in 1990. ($1=115.11 yen) *AlertNet*, October 26, 2005, http://www.planetark.com/dailynewsstory.cfm/newsid/33193/story.htm

Technology

"Influence of membrane wetting on CO_2 capture in microporous hollow fiber membrane contactors." Experimental studies on CO_2 absorption using an aqueous DEA solution as the absorbent in a polypropylene hollow fiber membrane contactor show that the CO_2 absorption rate in a non-wetted mode is six times higher than those of the wetted mode of operation. *Separation and Purification Technology,* Volume 46, Issues 1-2, November 2005, Pages 33-40, http://www.sciencedirect.com/science/journal/13835866 (subscription required)

Terrestrial

"Growers Can Profit From Parking Carbon on Farm." Article highlights "carbon parking" on agricultural lands in the Western U.S. Karl Kupers, a Washington farmer, is already selling carbon credits from his conservation-tillage (CT) wheat field. Kupers and a group of partners formed the Pacific Northwest Direct Seed Association and entered a 10-year contract with Louisiana-based Entergy Corporation. Entergy gets credit for carbon-dioxide-emissions reductions achieved by the farmers to offset the carbon dioxide emissions from the company's power plants in the United States. The project reduces carbon dioxide emissions 30,000 tons over a 10-year period, according to the contract. In addition to carbon parking potential, CT presents a spectrum of benefits to farmers - including savings in expenditures for weed control, labor and irrigation, says University of California Cooperative Extension cropping systems specialist Jeff Mitchell. *AScribe,* October 3, 2005, http://newswire.ascribe.org/cgi-bin/behold.pl?ascribeid=20051003.085116&time=10%2013%20PDT&year=2005&public=0

Ocean

"Global warming could threaten ocean life." The findings of a new study reveal that coral and plankton in the waters around the southern polar region are far more at risk to carbon dioxide emissions than previously thought. The international project measured the chemical changes in the Southern Ocean caused by the absorption of CO_2. Research scientist Gian-Kasper Plattner found the resulting increased acidity in these waters dissolves calcium carbonates that corals and plankton use to make protective external skeletons. Similar experiments carried out in warmer seas projected that corals and plankton would not be seriously affected for centuries. But as colder waters contain less calcium carbonates than warmer areas, the new Ocean Carbonate Cycle Inter-Comparison Project (OCMIP) results indicate that there could be severe consequences for these organisms within 50-100 years. *swissinfo*, September 29, 2005, http://www.swissinfo.org/sen/swissinfo.html?siteSect=105&sid=6126393

"Scientists Investigate Ocean's Role in Carbon Cycle, Global Warming." Article highlights research by a team of scientists trying to improve the current understanding of the ocean's role in transferring carbon dioxide from the surface to the deep sea. Led by University of Rhode Island Professor of Oceanography S. Bradley Moran, the scientists have completed their second research cruise of 2005 to study the carbon cycle. "How much is sinking? What are the controlling mechanisms? Those are our most basic questions, and there's an ongoing debate in the scientific community about it," said Moran. Using particle-collecting sediment traps and measurements of the naturally occurring radioactive isotope thorium-234, the researchers have collected data from the Arctic Ocean, Mediterranean Sea, and North Atlantic Ocean to compare the magnitude of sinking carbon in different locations and at different times of the year. According to Moran, the data so far suggests that there are interesting differences from season to season and from place to place. The next step in the researchers' project is to determine what mechanisms control the sinking carbon. They will study how fast and how far the carbon sinks, and the extent to which it eventually returns to the surface or remains in the bottom waters and sediments. *Newswise*, October 3, 2005, http://www.newswise.com/articles/view/515047/

"North Sea Efficient Sink For Carbon Dioxide." Dutch-sponsored researcher Yann Bozec calculated that coastal seas such as the North Sea remove about three times as much carbon dioxide from the atmosphere than would be expected on the basis of their small surface area. This article highlights results from four expeditions, each of one-month duration, with the oceanographic research vessel 'Pelagia' from the Royal Netherlands Institute for Sea Research (NIOZ). The goal of the research was to produce a data set that could shed light on the concentrations and transport cycle of CO_2 in the North Sea. *Science Daily*, October 12, 2005, http://www.sciencedaily.com/releases/2005/10/051011065902.htm

Planktos to conduct commercial scale ocean sequestration pilot project. According to a press release, Planktos Inc. is planning to conduct a series of commercial scale pilot projects designed to sequester atmospheric CO_2 via plankton. This will be done by mimicking nature via the addition and replenishment of natural iron nutrients to stimulate phytoplankton productivity and sequestration of CO_2 from the atmosphere. Diatom Corporation will market ocean biomass carbon credits derived from the restoration of plankton productivity produced by Planktos. These carbon credits will help satisfy international agreements (such as the Kyoto Accord), domestic U.S. programs (such as Department of Energy's Voluntary Reporting Guidelines), and various state policies (such as California's climate change laws) that encourage mitigation for CO_2 emissions, says the press release. "Solar Subsidiary Planktos Commences Operations," *BusinessWire*, October 6, 2005, http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20051006005939&newsLang=en

Trading

Carbon Market Update, October 31, 2005

CCX-CFI 2005 ($/tCO$_2$)	**$2.16**
EU ETS-EUA 2005 ($/tCO$_2$)	**$26.56**

"CDM generates first carbon credits - up to a point." The first carbon credits created by the Kyoto Protocol's Clean Development Mechanism (CDM) were issued on October 20. The Executive Board - the CDM's supervisory body - authorized the issuance of 7,304 and 2,210 Certified Emission Reductions (CERs) to the developers of two hydroelectric projects at Rio Blanco and La Esperanza in Honduras, respectively. "The CDM is for real. It is delivering sustainable development to communities and at the same time real emissions reductions," said Sushma Gera, chair of the CDM Executive Board. *Environmental Finance*, October 20, 2005, http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=16964

"Japan Launches Voluntary Emissions Trading Scheme." The Japanese Ministry of the Environment has selected 34 companies and corporate groups as participants in the nation's new Voluntary Emissions Trading Scheme. Under the scheme, the ministry subsidizes the installation cost of CO_2 emissions reduction equipment to help businesses that are actively attempting to reduce greenhouse gas emissions. In exchange for the subsidy, the participants are required to commit to a certain reduction in their CO_2 emissions. The scheme also allows them to trade CO_2 emission quotas to meet their reduction targets. The total of emissions reductions promised by the individual companies for fiscal 2006 is 276,380 tons, or 21 percent of their average annual CO_2 emissions in the base years, fiscal 2002 to 2004. The reduction in CO_2 emissions over the officially-recognized service life of the subsidized equipment is calculated at about 3.7 million tons. *GreenBiz News*, September 28, 2005, http://www.greenbiz.com/news/news_third.cfm?NewsID=28866

"Natsource Closes Greenhouse Gas Credit Pool with $550 Million." Natsource announced that it has closed the Greenhouse Gas Credit Aggregation Pool (GG-CAP), with total commitments of US$550 million from 26 participants. The GG-CAP is the first private-sector initiative to provide a cost-effective means for companies to meet requirements to reduce their greenhouse gas emissions under the European Union Emissions Trading Scheme and the Kyoto Protocol. The GG-CAP is a "buyers pool" that will combine the purchasing power of the 26 participants to acquire and manage the delivery of a large volume of compliance instruments created by the project-based mechanisms included in the Kyoto Protocol. *SustainableBusiness.com*, October 19, 2005, http://www.sustainablebusiness.com/news/sbnews.cfm?id=7532

"Most rubber estates may not get carbon credit." Article discusses how most of the existing rubber plantations in India are unlikely to qualify for trading in certified emission reduction (CER). This is because the United Nations Framework Convention of Climate Change (UNFCCC) stipulates that to qualify as a clean development mechanism (CDM) project, an afforestation or re-forestation activity should take place on those lands that did not have a forest as on December 31, 1989. This rule will automatically disqualify a large chunk of the existing rubber plantations since they would have been in existence much before the cut-off date set for CDM projects. According to this article, rubber trees have very high carbon sequestration capabilities. One hectare of rubber plantation can sequestrate about 165 tonnes of carbon over their 21-year growth period, thereby earning as much as 605 CER (605 tonnes CO_2) a hectare. *The Hindu Business Line*, October 21, 2005, http://www.thehindubusinessline.com/2005/10/22/stories/2005102201771200.htm

Events

November 1, 2005, **Climate & Oceans & Policy Conference**, Washington, DC. The Royal Norwegian Embassy is organizing the Third Trans-Atlantic Cooperative Research Conference. The principal objective of the Conference is to provide a collaborative network arena for front-line, solution-oriented research relating to the international climate regime. The event takes place from 9:00am-6:00pm at the Carnegie Institution, 1530 P Street, NW, Washington, DC. For more information, visit http://www.norway.org/restech/future/4thannual.htm

November 2-4, 2005, **2nd Annual Methane to Markets Partnership Meeting,** Buenos Aires, Argentina. The goal of this meeting is to assess the progress of the Partnership's first year, and for Partners to collaborate with the private sector, and other interested organizations to develop workplans and activities that will facilitate methane capture and use project development for the second year of the Partnership. Additional information including the preliminary agenda and on-line registration are available on the Methane to Markets Web site at http://www.methanetomarkets.org/#steering

November 9-10, 2005, **Coal-Seq IV Forum**, Denver, Colorado. The annual Coal-Seq Forums bring together experts from around the world to share information about their views and activities on the topic of carbon sequestration in coalseams, as well as enhanced coalbed methane recovery. They are excellent opportunities to stay abreast of the latest technology and global activities, as well as meet the leading experts in the field. Registration fees for non-members of the Coal-Seq II Consortium are US$195. For more information contact Susan Pershall at 713-780-0815 or spershall@adv-res-hou.com, or go to http://www.coal-seq.com

November 13-17, 2005, **Greenhouse 2005: Action on Climate Control,** Melbourne, Australia. There is a clear need for industry, scientists, and government at all levels to work closely together to tackle this significant environmental issue. Demand is strong for the latest information on the science, the likely impacts of climate change, adaptation strategies, and approaches to reducing atmospheric greenhouse gas concentrations. The Conference will cover these themes as well as international issues, policy development, communication and education. For more information: http://www.greenhouse2005.com Contact: Paul Holper - paul.holper@csiro.au

November 14-16, 2005, **U.S. Climate Change Science Program Workshop**, Crystal Gateway Marriott, Arlington, Virginia. The workshop will serve as a forum to address the Program's progress and future plans. The workshop will include discussion of decision-maker needs for scientific information on climate variability and change, as well as expected outcomes of CCSP's research and assessment activities that are necessary for sound resource management, adaptive planning, and policy formulation. For more information, visit http://www.climatescience.gov/workshop2005/default.htm

November 15, 2005, **The Legal Dimensions of Climate Change: A Conference by and for the Legal Profession,** American University Washington College of Law, Washington, DC. Designed to provide an overview of the legal dimensions of climate change, the conference will provide information about the latest developments in the field, with a special focus on the challenges and opportunities facing the business sector. Case studies will explore how leading companies assess risk, evaluate their emissions, and develop reduction strategies. For additional information visit http://www.wcl.american.edu/wcl_events/

November 15-17, 2005, **Applied Technology Workshop (ATW) on "CO_2 Sequestration,"** Hilton Galveston Island Resort, Galveston, TX. Hosted by the SPE, the workshop will include plenary sessions on perspectives of private and public organizations and consortia and technical sessions focusing on planned and operating projects. Breakout sessions will address outstanding subsurface, facilities / operations, stakeholder and economic issues. Further information: http://www.spe.org/spe/jsp/meeting/0,2460,1104_1535_4186159,00.html

November 16-18, 2005, **Coal Power Project Development: Status & Outlook**, The Ritz-Carlton, St. Louis, MO. Topics to be discussed include: Coal Power Projects – Handicapping the Field; How the Regulatory Approval Process is Impacting Today's Coal Projects; Impacts of Environmental Politics on Coal Power Project Development; Emerging IGCC Technology – Is It The Royal Road to Project Success?; and Technology Choices, Project Economics and Risk – Which Projects Will Be the Most Financeable? To register or obtain more information, please visit the event website at http://www.infocastinc.com/coal.html

November 21-22, 2005, **5th Annual Emissions Trading & The Carbon Markets Conference,** London, UK. As trading in EU allowances slowly matures, it is critical for market participants to effectively analyze the latest developments in light of the whole array of carbon management strategies available to emitters. For additional information please visit http://www.euromoneyenergy.com/default.asp?Page=13&eventid=ECK114

November 28 – December 9, 2005, **United Nations Climate Change Conference (COP 11 and COP/MOP 1)**, Montreal, Canada. Canada will host the first meeting of the Parties to the Kyoto Protocol in Montréal in conjunction with the eleventh session of the Conference of the Parties to the Climate Change Convention. For more details, please see http://unfccc.int/meetings/cop_11/items/3394.php

November 30, 2005, **European and American Business Perspectives on Emissions Trading and Climate Policy,** The Roosevelt Hotel, New York, NY. The event will inform EU and U.S. companies, financial firms, and climate negotiators on recent developments in emissions trading and climate policy on both sides of the Atlantic. For more information, please see http://lists.iisd.ca:81/read/attachment/26909/1/MistralInvite.pdf

December 5-9, 2005, **American Geophysical Union's (AGU) 2005 Fall Meeting**, San Francisco, CA. Session B07: Approaches to Stabilizing Atmospheric CO_2 and Climate, will provide a forum for discussion of promising CO_2 and climate change mitigation strategies. For meeting details see http://www.agu.org/meetings/fm05

December 6-9, 2005, **Carbon Management Workshop and 11th Annual CO_2 Flooding Conference**, Midland, Texas. Planned for December 6 and 7, the EOR Carbon Management Workshop will offer an in-depth look at CO_2 geologic storage, its trends, developments and opportunities. Also featured is a field tour on December 7 of Kinder Morgan Production Company's Yates Field where the company conducts a gravity-dominated CO_2 flood. The CO_2 flooding conference, set for December 8 and 9, will focus on the use of carbon dioxide for enhanced oil recovery. The conference features theme sessions that examine current industry best practices in operations and reservoir management. For additional information visit http://www.spe-pb.org/co2_conference/index.asp

January 22-25, 2006, **9th Annual EUEC 2006 Conference on Air Quality, Climate Change & Renewable Energy**, Westin La Paloma Resort, Tucson, AZ. Visit the conference website for more information http://www.euec.com/default.html

CALL FOR PAPERS: March 7-9, 2006, **Planning for the Future: Climate Change, Greenhouse Gas Inventories & Clean Energy Linkages,** Sheraton Fisherman's Wharf hotel, San Francisco, California. This International Specialty Conference sponsored by the Air & Waste Management Association and will examine the convergence of policies and technical issues that are central to understanding and mitigating GHG emissions and Climate Change impacts. For information regarding relevant topics for paper submissions, visit AWMA's website. Abstracts of 250 words or less should be submitted via the online abstract management system by **November 14, 2005**. For further information on the conference see http://www.awma.org/events/confs/GLOBAL/default.asp or contact Amy Klaus at (412) 232-3444, ext. 3119, or aklaus@awma.org

This newsletter is produced by the National Energy Technology Laboratory and presents summaries of significant recent events related to carbon sequestration. If you'd like to join the e-mail distribution list, email majordomo@list-manager.netl.doe.gov with "subscribe sequestration" in the body of the message. We encourage you to pass this along to interested persons. Contacts: Sean Plasynski, sean.plasynski@netl.doe.gov or David Hyman, david.hyman@netl.doe.gov.

Events, Cont'd

March 8-9, 2006, **Environmental Credits Generated through Land-Use Changes: Challenges and Approaches**, Baltimore, MD. The workshop will be used to study and discuss the challenges that arise when market-based mechanisms are used to encourage changes in practices on the land in order to achieve environmental goals. The primary focus will be on carbon sequestration and nutrient run-off reductions, though lessons will be applicable to a wide range of environmental issues. Space is limited. For more information, to reserve a spot, or to ensure that you receive updates on the program, contact Richard Woodward at r-woodward@tamu.edu, 979-845-5864. Additional information is available at http://www.envtn.org/LBcreditsworkshop/

June 19-22, 2006, **GHGT-8**, Trondheim, Norway. The aim of this conference is to provide a forum for the discussion of the latest advances in the field of greenhouse gas control technologies. Details at http://www.ghgt-8.no

Recent Publications

"CO_2 Price Dynamics: The Implications of EU Emissions Trading for the Price of Electricity." This study concludes that free allocation of emission allowances is a highly questionable policy option for a variety of reasons and suggests that auctioning is better. *Energy research Centre of the Netherlands (ECN)*, September 2005, http://www.ecn.nl/docs/library/report/2005/c05081.pdf

Verification of Tracking System Design for the Regional Greenhouse Gas Initiative. The Environmental Resources Trust released a report on "Verification System Design for RGGR and RGGI." The Northeast States and several Mid-Atlantic States are currently developing a Regional Greenhouse Gas Registry (RGGR), a policy and accounting framework capable of quantifying and registering greenhouse gas emissions and project-related emission reductions or "offsets." The goal of the verification system recommended and outlined in this white paper is to provide a high level of data quality assurance to all mandatory, voluntary, and RGGI programs-that will be useful to current and future regulatory efforts-while minimizing both public and private costs. For the full report, visit http://www.ert.net/pubs.html

"Multi-gas emission pathways to meet climate targets." A new study on multi-gas emissions pathways has been accepted by the Journal *Climatic Change* for publication. A free software tool to generate emissions pathways that meet specific climate targets (like 2°C, 400ppm CO_2 equivalence etc.) accompanies this study. To download the paper, visit http://www.up.umnw.ethz.ch/~mmalte/simcap/publications/Meinshausen_etal_Multigas_pathways_rf.pdf. The manual and software tool are available at http://www.simcap.org (click on "Models")

"Transaction and abatement costs of carbon-sink projects in developing countries." Concerns have been expressed that participation in carbon-sink projects may be constrained by high costs; particularly for projects involving smallholders in developing countries. This paper addresses these issues by reviewing the implications of transaction and abatement costs in carbon-sequestration projects. An approach to estimating abatement costs is demonstrated through four case studies of agroforestry systems located in Sumatra, Indonesia. The paper concludes with recommendations to reduce the disadvantages that smallholders may face in capturing the opportunities offered by carbon markets. *Environment and Development Economics* 10: 597–614, October 2005, http://journals.cambridge.org/action/displayIssue?jid=EDE&volumeId=10&issueId=05 (subscription required)

"Degassing Lakes Nyos and Monoun: Defusing certain disaster." Based on 12 years of limnological measurements the authors developed a model of future removal rates and CO_2 inventory, which predicts that in Monoun the current pipe will remove approximately 30 percent of the CO_2 remaining before the natural gas recharge balances the removal rate. In Nyos the single pipe will remove approximately 25 percent of the gas remaining by 2015; this slow removal extends the present risk to local populations. More pipes and continued vigilance are required to reduce the risk of repeat disasters. The model indicates that 75-99 percent of the gas remaining would be removed by 2010 with two pipes in Monoun and five pipes in Nyos, substantially reducing the risks. *PNAS*, October 4, 2005, vol. 102, no. 40, 14185-14190, http://www.pnas.org/cgi/content/abstract/102/40/14185 (subscription required)

"Secondary forests as temporary carbon sinks? The economic impact of accounting methods on reforestation projects in the tropics." The authors found that secondary forest becomes economically attractive, if the price of permanent credits is above \$4.5/tCO_2, whereas forest plantations require permanent CER prices of \$7.0/tCO_2. *Ecological Economics,* Volume 55, Issue 3, November 15, 2005, Pages 380-394, http://www.sciencedirect.com/science/journal/09218009 (subscription required)

"Tillage impacts on soil aggregation and carbon and nitrogen sequestration under wheat cropping sequences." An experiment conducted in south-central Texas showed that the use of no till farming significantly improved soil aggregation and the sequestration of soil organic carbon and soil organic nitrogen in surface soil, but not subsurface soils. *Soil and Tillage Research,* Volume 84, Issue 1, November 2005, Pages 67-75, http://www.sciencedirect.com/science/journal/01671987 (subscription required)

Legislative Activity

"House Climate Stewardship Act of 2005 Cosponsorship Now at 106." As of October 20, the number of cosponsors of the House Climate Stewardship Act of 2005 (HR 759), introduced by Rep. Wayne Gilchrest (R-MD) on February 10, 2005, has risen from the original 25 to 106. The eight cosponsors signing on after the August Congressional recess are Representatives Brady (D-PA), Payne (D-NJ), Capuano (D-MA), Velazquez (D-NY), Meehan (D-MA), Cleaver (D-MO), Sherman (D-CA), and Schwartz (D-PA), with Rep. Schwartz being the most recent cosponsor. The purpose of the bill is to provide for a program of scientific research on abrupt climate change, to accelerate the reduction of greenhouse gas emissions in the United States by establishing a market-driven system of GHG tradable, reduce dependence upon foreign oil, and ensure benefits to consumers from the trading in such allowances. *EESI – Climate Change News*, October 21, 2005, http://www.eesi.org/publications/Newsletters/CCNews/10.21.05%20CCNews.htm

Kucinich Demands White House Documents On Climate Change. In the wake of a devastating hurricane season, Congressman Dennis J. Kucinich (D-OH) introduced a Resolution of Inquiry (H. Res. 515) demanding that the White House submit to Congress all documents in their possession relating to the anticipated effects of climate change on the coastal regions of the United States. The Kucinich Resolution is co-sponsored by 150 Members of Congress. A Resolution of Inquiry is a rare House procedure used to obtain documents from the Executive Branch. Under House rules, Kucinich's resolution is referred to committee, and action must be taken in committee within 14 legislative days. October 27, 2005, Rep. Kucinich, http://kucinich.house.gov/News/DocumentSingle.aspx?DocumentID=36282