Big Sky Carbon News

Summer 2013

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2012 in Review…

To better understand carbon capture and storage (CCS) opportunities within the Big Sky region, BSCSP continues to focus our research activities on identifying safe, viable, and long-term options for carbon storage. Work is being performed at two sites within the Big Sky region: the Kevin Dome Carbon Storage project located in north-central Montana and the Basalt Pilot project in eastern Washington near the town of Wallula.

Kevin Dome Project

Preparation and planning for the Kevin Dome Carbon Storage Project has been underway since the fall of 2011. Over the course of over a year, the BSCSP research team has conducted a broad range of activities to better understand the local geology and ensure the project is in compliance with local, state, and federal permitting regulations. For example, the geology team has collected vast amounts of data on the regional geologic and environmental setting, including conducting a 3-dimensional seismic survey of the project area. The data and results from the seismic survey are being used to generate a 3-dimensional model of the geologic structure below the surface.

For the project permitting, an Environmental Assessment (EA) was developed by the Department of Energy (DOE) to comply with the National Environmental Policy Act (NEPA). NEPA is an extensive review process that evaluates a project's actions, its alternatives, and any effects to the environment (see side menu). Findings from the NEPA review are incorporated into the final decision making process.

Community members listen to BSCSP Director Lee Spangler discuss the Kevin Dome Storage

For more information, visit: www.bigskyco2.org/research/geologic/kevinstorage.com

Basalt Small Demonstration Project

In order to research the storage capacity of flood basalts, scientists with BSCSP are conducting a small-scale demonstration project within the Columbia River Basalt Province in eastern Washington. Following the initial characterization activities and permitting process, the BSCSP research team performed a series of tests to analyze the geochemical and hydrologic properties of the basalt study site. For example, deep-well devices, monitoring instruments, and surface imagery equipment were used to assess changes in the underground carbon dioxide plume before, during, and after injection. Results from these tests indicated the proposed basalt site is a safe location to move forward with the next phase of the project, which involves the transportation, injection, and underground storage of 1,000 tons of CO_2. Findings from the small-scale demonstration project will help scientists better understand basalt formations around the world, especially their potential for large-scale carbon storage activities and commercial applications.

Project Highlights

- Basalt provinces are one of the largest geologic features in the world
- The Columbia River Basalt Province was formed by volcanic flows millions of years ago and extends throughout much of the Northwest.
- BSCSP proposes to inject 1,000 tons of CO_2 to a depth of ~2,700 feet underground

Read more at:
http://www.bigskyco2.org/research/geologic/basaltproject

Partner Profile... MSU Professor Kevin Repasky

Like many of our partners, Montana State University Professor Kevin Repasky has a long-standing passion for advancing the world of science. Kevin has dedicated his professional career to optics, and demonstrating their success in solving real-world challenges. As part of the BSCSP remote sensing team, Kevin uses advanced optics to "see" changes in the world around us, assure safe operations, and provide professional development opportunities for students. It is perhaps this synergy that earned him the Provost's Award for Undergraduate Research and Creative Mentoring in 2006, among other accolades.

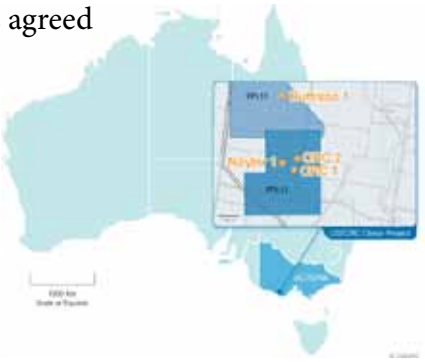
After graduating from Montana State University with a Ph.D. in Physics in 1996, Kevin went on to author more than 70 publications, successfully patent two optic components and deliver more than 70 technical talks on the role of optics in our society. His current pursuits range widely from the use of spectral imaging to map noxious weeds, to remote sensing techniques for monitoring carbon storage sites in real time. Still, Kevin has never lost focus on the key issue at hand: supporting safe and viable energy options for our growing society.

Clearly, Kevin's kind nature and sense of responsibility to our community makes us proud to have him as an active and dedicated member of the BSCSP team.

Project Spotlight: The CO2CR Otway Project

Carbon capture and storage (CCS) projects are actively being pursued by more than 11 countries around the world. In Australia for example, the CO2CRC Otway Project is currently the world's largest geologic carbon storage demonstration project, with more than 65,000 tonnes of CO_2 injected into a depleted underground gas reservoir in southwestern Victoria.

The CO2CRC Otway Project was initiated in October of 2003 when a global team of interdisciplinary scientists, university affiliates, public participants, and industry leaders agreed to collectively cooperate on the ambitious goal of performing a large-scale CCS pilot project alongside a comprehensive long-term monitoring program. Objectives of the Otway Project are centered on providing local educational and training opportunities while also expanding understanding of site selection, operations, storage capacity, modeling, and regulations of CCS projects.



As an international research endeavor, the CO2CRC Otway Project demonstrates the collaborative potential and unique scientific opportunities presented by large-scale geologic carbon storage projects. Lessons learned from the Otway Project can inform future global CCS efforts such as the BSCSP's Kevin Dome Carbon Storage Project.

Learn more about the CO2CRC project and its Otway Project team by visiting: http://www.co2crc.com.au/otway/

Did you Know... Terrestrial Sequestration?

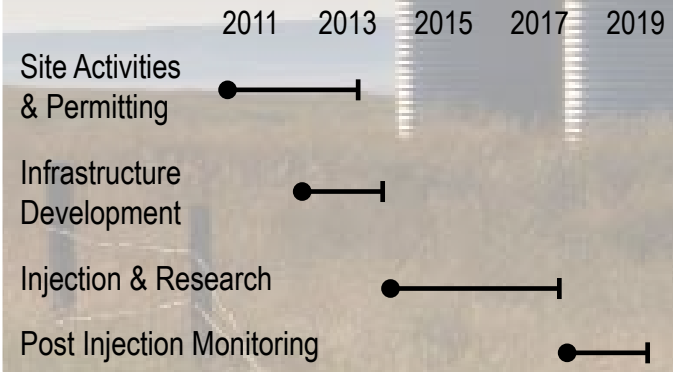
In addition to storing carbon in underground geologic formations, carbon capture and storage can take place in forests, plants, and grasslands. Known as terrestrial sequestration, this method of CCS involves storing CO_2 within naturally occurring carbon "sinks" such as vegetation, wood materials, and soils. Through the process of photosynthesis, trees, grasses, and other plants remove carbon dioxide from the atmosphere and release oxygen in its place, thus forming an integral component of earth's carbon cycle. By altering land management activities and land use practices, terrestrial sequestration can be enhanced to increase the storage capacity of soils, rangelands, croplands, and forests. Opportunities for terrestrial CCS include cropland management, grazing land management, afforestation, restoration of degraded soils or wetlands, and biofuels substitution. All of these practices can provide the following benefits: enhanced soil and water quality, reduced erosion, reduced evaporative water loss, reduced pest problems and overall ecosystem improvement.

Read more about BSCSP's research and terrestrial sequestration activities at: http://www.bigskyco2.org/research/terrestrial

Upcoming Events

DOE Carbon Storage R&D
Project Review Meeting
August 20 - 22, 2013
Pittsburgh, Pennsylvania
For more information,
visit: www.netl.doe.gov/events

Kevin Dome Project Timeline



We've Moved to the Neighborhood!

BSCSP has established a field office in Shelby, MT. You can find us at:

Phone: 406-424-8024
Fax: 406-424-8025

Mailing Address:
PO Box 689
Shelby, MT
59474-0689

Physical Address:
301 1st St. South
Suite #7

STAFF PROFILE:

Meet Richard Czech: Kevin Dome Field Manager

Rick recently joined BSCSP as the Field Site Manager for the Kevin Dome Carbon Sequestration Project located in north central Montana. He has experience in oil and gas production and also a background in regulatory permitting.

Rick will provide a local point of contact for the BSCSP as well as direct communications and coordination efforts for the project. Rick will be on-site and will oversee all field activities and community relations. As a former resident of Toole County and the research project area, Rick is well acquainted with the local geography, landscape, and environment. When away from work, he likes to take advantage of the local golf courses and working around his yard.

To contact Rick or any other BSCSP staff, email us at **bigskycarbon@montana.edu** or call **406-994-3755**. To contact the Shelby Field Office, see contact information to the left.