The global population is expected to increase by 1.5 billion people in the next 15 years, increasing the need for affordable energy to fuel our vehicles and electrical plants, as well as our quality of life. But today’s fossil energy technologies release carbon dioxide (CO2) into the environment. Currently, about 7 billion tons of carbon (26 billion tons of CO2) is emitted into the atmosphere each year from human activities, and there is growing concern that this excess CO2 in the atmosphere might affect climate and weather on a global scale.

CO2 is a colorless, odorless gas. We come in contact with it every day: it’s produced when we breathe, it’s emitted from plants, it makes our soft drinks fizz, and a small amount of CO2 is naturally present in the atmosphere. CO2 is also present in the emissions of factories, power plants, vehicles, homes, and businesses.

CO2 from human sources may have to be controlled to reduce the risk of global warming. Governments around the world are investigating methods to manage the CO2 emissions, including a method called sequestration (the capture and long-term storage of CO2).

The soil in the prairies of the upper Midwest is historically rich in carbon. Cultivation has released some of that carbon into the atmosphere. Forested
areas also store substantial quantities of carbon in the woody plant materials and in the roots and soil below ground. There is great potential to put a substantial amount of atmospheric CO₂ back in the ground as carbon.

The PCOR Partnership is investigating various farming and land management practices that maximize the amount of plant carbon the soil can hold. Three of the PCOR Partnership research partners—North Dakota State University, the U.S. Geological Survey, and Ducks Unlimited Canada—are studying sequestration opportunities and assessing monitoring technologies that will help verify carbon sequestration in grasslands, farmland, and wetlands.

General practices that promote sequestration include conservation tillage, installing buffer strips along waterways, enrolling land in conservation programs, restoring and managing wetlands and marginal lands, eliminating summer fallow, using perennial grasses and winter cover crops, and managing forests.

There can be significant societal benefits with a well-managed landscape, including less soil erosion from wind and water. Terrestrial sequestration is intended to be a relatively short-term solution to climate change; it will give industry time to develop the technologies for reducing direct emissions to the atmosphere.

To learn more, visit the Plains CO₂ Reduction Partnership Web site at www.undeerc.org/PCOR and tune in to Prairie Public Television on May 12, 2005, to watch “Nature in the Balance: CO₂ Sequestration” (check your local listings). The show provides a 30-minute introduction to CO₂ management with a focus on the North American heartland. The video introduces audiences to NETL’s seven Regional Carbon Sequestration Partnerships and describes their role in assessing opportunities for carbon sequestration across North America.