

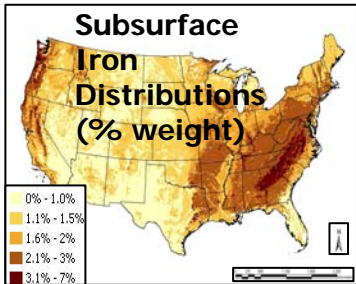


# Carbon Cycling in Soils



**This CSiTE project is composed of two integrated tasks that began October 2001**

## Task 1: Regional Scale Assessment of the Organic C Sequestration Potential in Deep Subsurface Soils



Our goal is determine the value of deep subsurface soils in the long-term sequestration of organic C and develop a geographical method for estimating the carbon storage capacity of subsurface soils (B-horizons) within the United States. This effort will allow us to identify regions and field sites which offer the greatest potential for enhanced subsurface organic C storage and thus most deserving of manipulation or improved management.

### Objectives

- Quantify the relationship(s) between subsoil organic C sequestration and soil physical, hydrological, and geochemical properties.
- Develop a geographical method for estimating the carbon storage capacity of subsurface soils (B-horizons) within the United States.
- Identify regions and field sites which offer the greatest potential for enhanced subsurface organic C storage and thus most deserving of manipulation or innovative management.

## Task 2: Manipulations to Enhance Subsurface Organic C Pools

Our goal is to test and resolve the hypothesis that deep subsurface soils can accumulate organic C as a result of near surface manipulations. The effort involves the use of two highly instrumented *in situ* soil blocks on contrasting soil types and quantifies the impact of coupled hydrological, geochemical, and microbial processes on enhanced subsoil organic C sequestration.



### Objectives

- Quantify the magnitude of enhanced organic C accumulation in deep Ultisol and Inceptisol subsoils that have been treated with amendment strategies designed to accelerate the mineralization and dissolution of surface organic matter.
- Quantify the impact of coupled hydrological and geochemical processes on the fate and transport of solubilized organic C through the soil profile.
- Quantify the chemical nature or the sequestered C and the mechanisms responsible for immobilization on the solid phase.

For more information, contact:

Dr. Philip M. Jardine: [jardinepm@ornl.gov](mailto:jardinepm@ornl.gov)

Dr. Robin Graham: [grahamrl@ornl.gov](mailto:grahamrl@ornl.gov)

Jana Tarver: [randolphjd1@ornl.gov](mailto:randolphjd1@ornl.gov)

Links:

<http://csite.esd.ornl.gov/>

<http://cdiac2.esd.ornl.gov/index.html>