



SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants Physical	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

⊖ Carbon Storage

What Is This Indicator, and Why Is It Important? This indicator will report the total amount of carbon stored in soil and plants in grasslands and shrublands.

Carbon storage has become an important issue in international negotiations on the management of greenhouse gas emissions, because increased carbon storage can be useful in offsetting emissions of carbon from fossil fuel burning and other sources. The amount of carbon stored in grasslands and shrublands generally changes very slowly. It may be affected by changes in fire frequency, changes in grazing intensity, by the introduction of non-native species, or by conversion of these lands to other uses (like agriculture). In grasslands (including alpine and arctic tundra), more than two-thirds of all carbon is stored in the soil. This contrasts with forests, where significant amounts of carbon are stored in trees (see Forest Carbon Storage, p. 123). Some grassland and shrubland soils normally have low levels of stored carbon; however, at least globally, they are thought to store about half as much carbon as is stored by forests and as much as is stored in croplands.

Carbon in soil—in the form of organic matter, or partially decayed plant and animal matter—helps the soil hold water and supply nutrients to plants; it also protects against erosion and helps support a healthy and diverse set of microscopic plants and animals. Soil carbon is indicative of soil fertility, and some grassland soils are among the most fertile on earth. Further, soil organic matter also stores nitrogen for hundreds and even thousands of years. This helps limit the effect of increasing atmospheric nitrogen deposition, by ensuring that nitrogen does not leach into groundwater (see Nitrate in Groundwater, p. 164).

See also Farmlands Soil Organic Matter (p. 99).

Why Can't This Indicator Be Reported at This Time? There are baseline estimates of soil carbon, but there is no mechanism for regular monitoring of and reporting on carbon storage.

The technical note for this indicator is on page 259.

