

ATMOSPHERIC COMPOSITION
CLIMATE VARIABILITY AND CHANGE
GLOBAL WATER CYCLE
LAND-USE/LAND-COVER CHANGE
GLOBAL CARBON CYCLE
ECOSYSTEMS
HUMAN CONTRIBUTIONS AND RESPONSES

Global Carbon Cycle

Carbon is important as one of the building blocks for the food and fiber that sustain human populations, as the primary energy source fueling economies, and as a major contributor to the greenhouse effect and climate change. Carbon dioxide and methane concentrations have been increasing in the atmosphere, primarily as a result of human use of fossil fuels and land.

CCSP-supported research on the global carbon cycle focuses on identifying potential future changes to atmospheric, terrestrial, and oceanic storage of carbon, and movement of carbon among those pools. The program also provides the scientific underpinning for managing carbon sources and sinks. Specific programs and projects focus on North American and oceanic carbon sources and sinks; the impact of land-use change and resource management practices on carbon sources and sinks; projecting future atmospheric carbon dioxide and methane concentrations and changes in land-based and marine carbon sinks; and the global distribution of carbon sources and sinks and how they are changing.

Benefits from this research include:

- Increased understanding of the sources and sinks for carbon, helping to evaluate carbon sequestration strategies and alternative response options
- Improved confidence in projections of atmospheric concentrations of carbon-based greenhouse gases.



Monitoring Carbon Flows. Scientists near Pt. Barrow, Alaska, check instruments that measure fluxes of carbon to and from the atmosphere. Source: Gary Braasch.