Boreal ecosystems linkage is discovered

February 19 2007

U.S. researchers say they have found links between both spring and autumn temperature changes and the uptake and loss of carbon dioxide.

Purdue University Associate Professor Kevin Robert Gurney, the associate director of the Purdue Climate Change Research Center, said he and colleagues examined variations in carbon flux from boreal ecosystems in relation to measurements of temperature, precipitation and climate indices.

The study shows Boreal North America removes carbon from the Earth's atmosphere during years in which the region experiences warm spring conditions and rainfall. Boreal Asia, however, exhibits an opposing response -- years with above normal autumn temperatures and rainfall result in net carbon emissions.

"A warming Canada may mean Canadian forests will act as a sink to atmospheric CO2," said Gurney, "while boreal Asia could lose ecosystem carbon to the atmosphere as the regions warms."

Some studies have shown an additional temperature increase above that derived from industrial greenhouse gases is due primarily to carbon emissions from warmed global soils. Gurney's research suggests that might occur in Asia but not in North America.

The study was presented last week in San Francisco during the annual meeting of the American Association for the Advancement of Science.