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Carbon-Water Cycle Interaction in Far Eastern Siberian Tundra

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A large part (37 MHa) of the territory of the Republic of Sakha (Yakutia) in East Siberia is covered by tundra. The permafrost soil contains large amounts of carbon and it is known that the tundra may switch from a sink of carbon to a source during warm years (Oechel, 1993, Goulden, 1998). However, relatively little is known about its role in the global biogeochemical cycles under conditions of climatic change. In the growing seasons of 2003 and 2004, an experimental field site was operated on East Siberian tundra near the village of Chokurdakh (70˚48'N, 147˚50'E) to observe the exchange of heat, water and carbon dioxide between the vegetation and the atmosphere. These observations are analysed with the objective to determine whether the East Siberian tundra is a sink or source for carbon dioxide and how this function will change under conditions of climate change.