Geophysical Research Abstracts, Vol. 9, 05045, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05045

Annual balance of CH_4 fluxes from subarctic peatland on basis of micrometeorological measurements.

M. Jackowicz-Korczyński (1), T. R. Christensen (1), P. Crill (2), T. Friborg (3), L. Ström (1)

(1) Department of Physical Geography and Ecosystems Analysis, Lund University, Lund, Sweden, (2) Department of Geology and Geochemistry, Stockholm University, Stockholm, Sweden, (3) Institute of Geography, University of Copenhagen, Copenhagen, Denmark (Marcin.Jackowicz-Korczynski@nateko.lu.se / Fax: +46 46- 2224011)

Natural wetlands in the northern hemisphere are recognized as one of the most important global sources of atmospheric methane (CH_4) and they contribute to approximately 40% of total global wetland emissions. Net emission of CH_4 from those types of ecosystems is a result of several processes including the microbial production, microbial oxidation and vascular plant associated effects such as gas transport. By taking into account that each molecule of CH_4 is 23 times more effective in absorbing heat in the atmosphere than CO_2, CH_4 is one of the most important greenhouse gases contributing to the predicted climate warming.

Among many techniques for studying land-atmosphere gaseous exchange nowadays the most direct micrometeorological method - eddy covariance (EC) technique - plays the leading role. This technique has developed fast during last decades and at the present CO_2 and H_2O fluxes are determined on a routine basic all over the word. However, there is still a limited number of well documented micrometeorological CH_4 flux measurements. In this study intensive high frequency CH_4 measurements were conducted over Stordalen mire northernmost part of sub-Arctic Sweden (68º 20' N, 19º 03' E, alt. 351 m) with special emphasis on thaw/preleaf and autumn/winter seasons. Measurements were conducted with use of cryocooled fast infra red (IR) gas analyser - Tunable Diode Laser Trace Gas Detector (TDL) Aerodyne Research, Inc. The collected data were used to calculate an annual budget of CH_4 fluxes over the area considered. This will be compared with corresponding CO_2 flux measurements to obtain a full budget for exchanges of radiative active trace gases between this mire

and the atmosphere.

This project is a part of the EU Marie Curie Research Training Network – GREEN-CYCLES, contract no. MRTN–CT–2004–512464.