Geophysical Research Abstracts,
Vol. 11, EGU2009-6899, 2009
EGU General Assembly 2009

Changes in methane fluxes from the North Eurasian wetlands associated with climate changes simulated by the regional climate model

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Climate changes in pan–Arctic regions and their impact on methane emissions from wetlands are estimated based on simulations for the European and Asian parts of Russia with a regional climate model developed at the A.I. Voeikov Main Geophysical Observatory. These simulations are forced by the large–scale climate fields obtained in the SRES B1 and SRES A2 runs. Methane fluxes from wetlands are diagnosed making use the modified Christensen–Cox model.

For the late 20th century, total wetland CH_4 emissions amount 8 MtCH4/yr and 10 MtCH4/yr for the European and Asian parts of Russia respectively. To the end of the 21st century, these emissions increase up to 14 MtCH4/yr and 17 MtCH4/yr correspondingly. The dominant mechanism of growth for the CH_4 emission from wetlands is a methane production enhancement in water filled soils due to increase of soil temperature.