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**POSTER**

**SIMULATION MODELLING CARBON DIOXIDE EMISSION FROM ARABLE SOILS IN  
EUROPEAN RUSSIA**

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Mathematical models are used to creation the program for decreasing greenhouse gases emission from soils to the atmosphere. “Estimation of emissions from agriculture” from United Nations framework convention on climate change (2004) admits models may be used as alternative to the IPCC methods for estimation of emission from agriculture if the models can be adapted for different countries conditions. In this document DNDC (DeNitrification-DeComposition) is declared as the most suitable model that was recommended and successfully used at national level in United Kingdom and China.

The aim of our research was approbation of the DNDC model for its using in Russia.

The main require for modelling is large amount of input data including information about agricultural technologies, good quality meteorological and soil data. We offer to decide these demands by gathering official statistical and literature data. Russian Institute of Hydrometeorological Information provides open data about air temperatures and precipitations. Soil characteristics are collected in Union state register of soil recourses of Russia (2014). Cropping technologies are published by agricultural research institutes and departments, and crops yields are provided by Federal state statistic service.

The database on meteorological parameters, soil and plant characteristics in agrolandscapes were collected to parameterize DNDC for Russia. To verify the model we had

used: (i) experimental data on carbon dioxide (CO<sub>2</sub>) emission from Haplic Chernozem (Kursk region) and Luvic Phaeozems (Moscow region), (ii) literature data on soil CO<sub>2</sub> emissions in Moscow, Vladimir, and Orel regions. Accurate results were accepted, modelled values were equivalent to the measured ones.

It was revealed that the DNDC model may be used to evaluate and forecast the CO<sub>2</sub> emission from arable soils in Russia based on the official statistical information.

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