

## GC41C-0821: Heterotrophic soil respiration in Russia

- Dmitry Shchepashchenko<sup>1,2</sup>, Lyudmila Mukhortova<sup>3</sup>, Anatoly Shvidenko<sup>1,3</sup>, Ian McCallum<sup>1</sup>
- 1. ESM, IIASA, Laxenburg, Austria. 2. Pedology department, Moscow State Forest University, Mytischki, Russian Federation. 3. Institute of Forest, Krasnoyarsk, Russian Federation.
- Soil respiration (SR) is one of the largest fluxes of carbon dioxide to the atmosphere. It varies substantially in spatial and temporal resolution depending on climate, soil, vegetation, land use and disturbances. We have built a system which assesses SR based on all available sources of information: Soil map 2.5 Mio scale (Fridland, 1988); Landcover 1 km<sup>2</sup> resolution (Schepaschenko et al., 2010); a database of SR in situ measurements (3592 records over the globe from 1109 studies, the substantial part of non-Russian measurements was taken from Bond-Lamberty and Thomson, 2010); climatic parameter reanalysis for 1974-2009 (FOODSEC, 2011). The procedure of SR assessment comprised of 1) build regression models of total SR dependent upon climatic parameters and soil type based on the SR database and climatic variables in the year of SR measurements; 2) regional, vegetation type, current level of NPP, land use and disturbances corrections of the models; and 3) model of root contribution to the total SR dependent upon vegetation type. The system of SR assessment provides estimation for the Russian territory with spatial resolution of 1 km and temporal resolution of 1 year. It can absorb new initial data and provide advanced assessment in the future. The average heterotrophic SR flux for the Russian territory is 3.4 Pg C yr<sup>-1</sup> with interannual deviation up to 20%. The average SR flux distribution by region, natural zone and vegetation type is shown in the table. The SR map can be found at <http://russia.geo-wiki.org>. <http://russia.geo-wiki.org>