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Corg migration fluxes in the Albeluvisols of the forest and agricultural ecosystems at the Yuryev-Polish Opole

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Introduction. There are results of 3-year (2015-2017) stationary field research focused on the Albeluvisol Corg pools and processes of its air and water migration in the forest and agricultural ecosystems at the Yuryev-Polish plain in the Yaroslavl region of Central Russia (in case of the RTSAU educational-experimental farm "Druzhba").

Objects and Methods. The principal set of the investigated objects include representative loamy Albeluvisol on the surface loam and two-term parent materials with clay loam moraine and shallow temporary groundwater (up to 87-92 cm). They have been investigated in frame of mesorelief catenas with placore – slope – bottom positions. The sorption lysimeter columns have been installed in 2-4-fold repetition separately for 3 seasons: spring, summer and fall.

Results and Discussion. Dominated in the Yuryev-Polish Opole natural meadow and forest landscapes are characterized by comparatively poor pools of Corg (around 30-40 t/ha) in the Albeluvisols with different texture and level of gley processes development. At the same time they have relatively high level of CO_2 and water-soluble organic substances (WSOS) fluxes, which usually become even essentially higher in case of more or less intensive land-use practices without compensated doses of organic fertilizers. Soil preservation with grass-saturated crop rotation was able essentially improve the soil Corg balances and increase the atmospheric CO_2 sequestration potential that is especially important in the challenges of the global climate changes with developing more favourable conditions for profitable agricultural land-use in this part of Russia.