



## **Heterotrophic and autotrophic respirations of soils in forest ecosystems of the European part of Russia**

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Autotrophic and heterotrophic respirations of forest soils were continuously measured in an oak ecosystem at the south boundary of forest-steppe zone (Voronezh region) as well as in spruce (the Central Forest Biosphere Reserve, Tver region) and pine (Yaroslavl region) forest ecosystems of the South-European taiga in central parts of European Russia during 2003-07. Measurements were carried out using infra-red gas analyzer and dynamic soil chamber. Microclimatic parameters (air and soil temperatures, incoming solar radiation, precipitation and air relative humidity) at experimental sites were provided by mobile meteorological stations. Soil moisture was measured by the weighting method.

Autotrophic root respiration was estimated by two methods. In the first method the root respiration was determined as a difference between emissions of CO<sub>2</sub> from undisturbed soil surface and from control soil plot with extracted roots (heterotrophic respiration). In the second method for estimation of heterotrophic respiration the soil plot without vegetation and roots was used.

Measurement results show a large difference and variability of autotrophic and heterotrophic respirations. They are strongly depended of soil type, root amount, soil temperature and moisture.