

Carbon dioxide fluxes dynamics comparison in Moscow urban forest and adjacent urban areas

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In the beginning of the 2014 in northern district of Moscow was installed eddy covariance tower on the edge of Timiryazevskiy urban forest and Timiryazevskiy district of Moscow. Tower 34m high was constructed inside the territory of LOD (Lesnaya Opytnaya Dacha) experimental station in the south-eastern part of the forest. Main tree species of urban forest and neighboring urban areas are *Acer Plantanoides*, *Tilia cordata*, *Betula pendula*, *Quercus robur*, *Pinus sylvestris*. Forest itself is mixed with some small plots dominated only by deciduous or coniferous species, whether trees in urban areas was mainly deciduous. Mean canopy height is about 30m. in both forest and urban areas. The soil cover of the studied sections is represented by sod-podzolic soils with different degree of development of the humus horizon. All soils have well-developed profile of sod-podzolic soil with low power litter (only in forest area) and developed humus-accumulative horizon with high humus content (3,24%)

Carbon dioxide daily fluxes from investigated area was calculated for six months of 2014 (from April till October) utilizing eddy covariance method. Most (90%) of fluxes footprints was no longer than 500m for all wind directions during the time of monitoring. Forest in 500m radius around tower is a zone of active recreation with several roads and wide path network. On the other hand closest to tower urban area characterized by a low-rise buildings (in most cases no more than 5 floors) which are mainly administration ones and have wide green areas around them very few roads and low traffic.

As a result difference in calculated fluxes was not so dramatic, as it was expected. Diurnal carbon dioxide fluxes dynamics was pretty the same for all months except August, due to long period without precipitation and higher soil moisture under the forest canopy. Estimated daily fluxes values was higher in forest areas for the whole period of investigation, except August, and ranged from -2 to 8 g C CO₂ d⁻¹ m⁻² with mean about 2,5 g C CO₂ d⁻¹ m⁻².