



Monitoring of atmospheric trace gases in Budapest by mobile measurements

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Urban air quality is a major issue of European cities, including Budapest, the 9th largest city of the European Union with 1.7 million inhabitants. Urban air quality is monitored at 13 measurement sites in Budapest, most of which are located in domestic areas to measure the urban background concentration. However, the air pollution suffered by people on roads can be significantly higher than the reported background values of the measurement sites. As the area of Budapest covers 525 km², surrounded by a large agglomeration, citizens spend a significant amount of time in high traffic that can cause heavy air pollution loads. To date, very few measurement data is available to estimate the air pollution risk of everyday urban road transport. A measuring campaign has been conducted with two portable gas monitors carried on bicycles in Budapest. Few typical routes were selected from the domestic outskirts to the downtown area of Budapest, each ranging approximately 10 km in length. The concentration of NO₂, O₃ and CO was measured with 30 s temporal resolution along the way on several days. The spatial distribution of results clearly shows the impact of roads, parks and the Danube river. Measured concentrations have been compared to the background values to estimate the fine-scale spatial variability of air quality. A one-day long measurement campaign has also been carried out in downtown of Budapest, affecting frequently visited touristic sights and leisure areas where a large number of people spend their freetime. Results show large spatial variability of air quality, underlining the importance of car-free streets.