

PROFILING SO₂ AIR POLLUTION PATTERNS IN 9 EU APHEKOM CITIES - THE APHEKOM PROJECT

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Background and Aims: A detailed analysis of hourly pollutant concentrations mainly focusing on SO₂ data obtained from 9 centres involved in the Aphekom project was conducted. This involved the generation of individual diurnal SO₂ profiles in order to:

- (i) identify city specific patterns including source apportionment and quantification,
- (ii) track changes over time,
- (iii) analyse the changes in SO₂ concentrations from different emission sources, i.e. traffic, heating, shipping and industrial sources, overtime.

Methods: Individual cities diurnal (24hr) SO₂ profiles were generated using hourly SO₂ measurements from different monitoring sites by season and by weekday for each year. European cities with suitable data included Athens, Bordeaux, Brussels, Dublin, Le Havre, London, Rouen, Strasbourg and Vienna.

Results: For the majority of the examined cities similar diurnal patterns were found with a general decreasing trend for SO₂ levels overtime. Morning and evening traffic rush hours were strongly reflected widely in the diurnal profiles as well as lower weekend SO₂ levels due to missing traffic volume and industry related emissions. Seasonal heating related peaks were observed during evening and night-time hours during the winter months.

City specific SO₂ patterns were identified. For example for Dublin these reflected late-night shopping hours on Thursdays. For London these patterns showed elevated SO₂ levels during midday, suggesting the metropolitan life-style of the city involving constant traffic use.

Conclusion: For the majority of the cities examined road traffic and heating appeared to be the most important sources of SO₂ emissions and hence the driving components widely reflected in the diurnal profiles. Furthermore a decrease in emissions related to those two sources overtime has been observed.

Detailed hourly pollution profiles can prove very useful to policy makers/planners in identifying sources and hence policies to reduce pollution levels.