

EMEP intensive measurements on mineral dust in PM₁₀, summer 2012 and winter 2013

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The European Monitoring and Evaluation Programme (EMEP) under the UN-ECE CLTRAP, periodically arrange intensive monitoring periods (Aas *et al.*, 2012), and in 2012-2013 one of the major focus was to measure chemical speciation in PM₁₀ with special emphasis on mineral dust, with daily sampling for two one-month periods: 8. June - 12 July 2012, and 11 Jan - 8. Febr. 2013. The campaign was arranged in cooperation with the EU projects ACTRIS, ChArMEx and PEGASOS.

Fourteen regional sites across Europe (Figure 1) participated, and this unique dataset enables an extensive evaluation of transport, sources and regional distribution of mineral dust across the continent.

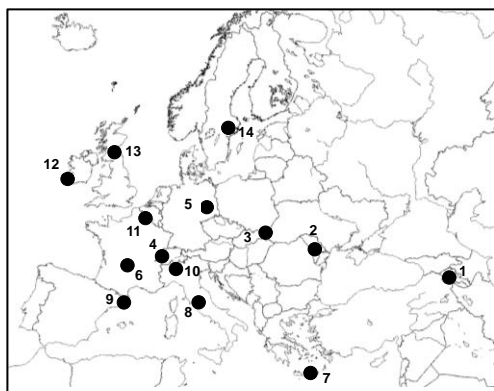


Figure 1. Sites participating in the EMEP intensive periods

PM₁₀ samples were collected using low volume samplers, and were subsequently analysed for major and trace elements using PIXE at the INFN laboratory in Florence.

The chemical composition of PM₁₀ mineral dust across Europe during the spring-summer period is

described, and correlated with possible dust origin changes.

Important variations on the Si/Al, Mg/Al, K/Al are detected and correlated with possible source origin features. Fe-Al and Ti-Al showed a very good correlation independently of the site indicating that both Fe and Ti have a major aluminium-silicate mineral affinity.

Results allowed evidencing the impact of two African dust outbreaks occurring during the study period on the levels and composition of PM₁₀ across southwestern and central Europe (Figure 2). During these episodes, mineral dust composition was very similar in the affected sites. Composition is compared with the original mineral dust sampled at different African locations in prior studies

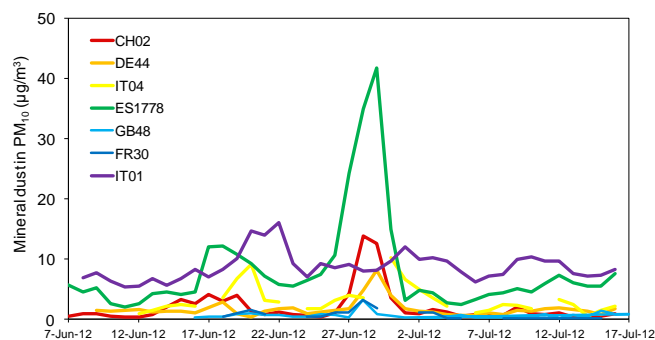


Figure 2. Time trends showing Sahara dust episode across Western Europe.

Aas W, et al. (2012) *Atmos. Chem. Phys.*, **12**, 8073-8094.