Occurrence and emissions of biogenic aerosol particles in Europe

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Recent advances in the analysis of bio-aerosol constituents allow the assessment of the occurrence of biogenic aerosol constituents in atmospheric samples. In two larger studies, CARBOSOL and AQUELLA, tracer techniques were applied to derive source contributions from plant debris and fungal spores to particulate matter on the European level. Detailed investigations involving numerical enumeration techniques and tracers were used to assess contributions from bacteria, fungal spores and plant debris to PM for sites in Eastern Austria.

The data have been used to obtain estimates of the release of primary biological aerosol particles (PBAPs) in into the atmosphere. Emission flux data of surrogate compounds, for which concurrent concentration measurements were available, were used to quantify the release of PBAPs as PM10 mass. Results indicate fungal spores to be the most important contributors with highest contributions in the warm season. The area-based emission rates for PBAP's were in the range of 6–90, with an average of 24 $kgkm^{-2}$ and year.

Cenozoic ultramafic intrusive rocks in upper mantle beneath SW Poland

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Intense late Oligocene-early Miocene volcanic activity in the NE part of Bohemian Massif (SW Poland) formed the eastern part of Central European Volcanic Province. As elsewhere, some of the eruptions have brought mantle xenoliths to the surface. One of the most xenolith-rich occurrences is the Księginki volcano, located on the NE prolongation of the Eger Graben.

Pyroxenites (olivine clinopyroxenites and websterites) form significant part of the Księginki xenolith population. Some of them have well defined cumulate texture with intercumulus volcanic material among the clinopyroxene and olivine subhedral grains, suggesting crystal settling interrupted and frozen by eruption. The cumulate textures are not obvious or not recognizable in other pyroxenite xenoliths. However, the phase compositions as well as whole rock and clinopyroxene REE/TE patterns show that most of the members of the pyroxenite suite originated from the same parental magma. The latter is chemically related to the nephelinite forming the major part of the Księginki volcano. Thus, the Księginki pyroxenites originated during Cenozoic volcanic activity.

Seismic S01 profile [1] located close to the Księginki volcano shows an uppermost mantle and a lowermost crust characterised by V_P close to 7.9 and < 7.0 km/s, respectively. The mantle velocity may be interpreted as resulting from the significant pyroxenites in an essentially peridotitic lithology. Scarce gabbroic/pyroxenitic xenoliths from Księginki are of crustal origin, but seismic data suggest that ultramafic lithologies are subordinate in the lower crust. The S01 profile suggests that upper mantle/lower crust relationships similar to those inferred for Księginki occur to the SW along the Eger Graben. Another type of Moho occurs at the eastern margin of the Bohemian Massif and is defined by intensely layered, high-velocity lower crust (up to 7.75 km/s) leading the gradational lower crust – upper mantle transitions [2].

[1] Grad *et al.* (2008) *J. Geophys. Res.* **113**, B10304. [2] Hrubcová *et al.* (2008) *Tectonophysics* **460**, 55-75.