P3-10 Extraction and size distribution measurements of subparticles released by pollen grains

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During the blooming season of plants, pollen is a persistent component of the atmospheric aerosol. Although sexual reproduction of plants is the main function of pollen, once airborne in the atmosphere, pollen grains can also impact human health (e.g. hay fever) and cloud formation (Augustin et al. 2013, Pummer et al. 2012). It is known that under certain conditions many species of pollen rupture and release smaller particles and other material from the interior of their grains, commonly referred to as sup-pollen-particles (SPP). These SPP have been shown to act as cloud condensation nuclei (Steiner et al. 2015).

In this study we developed a method to extract material from pollen grains by rupture due to mechanical stress. We apply this method to five different pollen species (*Betula pendula, Phleum pretense, Poa pratensis, Corylus avellana, Artemisia vulgaris*) and find that pollen grains of *Betula, Phleum, Poa* and *Corylus* contain both, soluble and particulate material, whereas those of *Artemisia* only contain soluble material. We further separate the SPP from the soluble material and investigate their size distribution and shape. The size distribution of the resuspended SPP was measured using a TSI Aerodynamical particle sizer. In addition, we examined the geometric size and shape of SPP with a Scanning Electron Microscope (Zeiss Supra 55 VP). Furthermore, an estimation of SPP mass contained in the pollen grains was done.