

**ORAL PRESENTATION:**

**Beyond the Boundary Layer – Bacterial and Fungal Diversity along a Vertical Transect at Mount Sonnblick, Austria (3106m asl.)**

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Global longrange transport of airmasses and primary biological aerosols (PBA) occurs in the free troposphere, above the inversion of the planetary boundary layer (PBL).

Most studies on PBA focus on ground based sampling or extreme events, leading to a lack of insight on vertical dispersion and composition of PBAs.

Air samples were taken above and below the PBL on four campaigns, using a liquid impinger at a remote mountain site in Austria. A vertical profile for bacteria and fungi was assessed using molecular methods.

We observed a significant difference in phylogenetic similarity and composition above and below PBL. Bacteria were dominated by Bacilli above PBL and Gammaproteobacteria, Alphaproteobacteria and Cyanobacteria below PBL.

Fungi showed a pronounced seasonality, dominated by yeast-forming classes above the PBL. The ratio of bacteria to fungi above PBL was significantly enhanced, implying more local dispersal modes for fungal spores.

Four thermophilic bacterial groups were identified as indicator species of above PBL air, supporting a paradox of omnipresent thermophiles in cold habitats overruling psychrophiles.

Below PBL, soil and plant associated fungi and bacteria were identified as indicators. These species were barely present above PBL, pointing to a height selection of ground emitted PBA.

Our results imply a need to overthink sampling approaches in aerobiology to produce solid data to understand global dispersal potential and patterns of bacteria and fungi.