

**Seminar on Physics and Chemistry  
of the Atmosphere  
21.12.2018, WiSe 2018 - 2019, IUP Bremen**

## **Climatological Study of Black Carbon Transport from European Major Population Centers**

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### **Abstract**

The offline Lagrangian transport and dispersion model FLEXPART will be utilized to simulate the climatological dispersion characteristics of air pollution plumes produced by major population centers (MPCs) in Europe. The simulations will use black carbon emissions from the MACCity emission inventory and will be based on ECMWF ERA-Interim reanalysis data. The main scientific question to be addressed is the quantification of the impact of the emissions from the selected European MPCs on air pollution levels at local, regional and hemispheric scales. Black carbon has been chosen as a tracer since it has a significant role as a positive radiative forcer, impacts notably human health, and is well suited for transport studies due to its linear chemistry. The black carbon aerosol-like tracers are modeled subject to removal processes by dry and wet deposition. The BC emissions from the chosen MPCs are treated separately to allow to investigate their individual but also their cumulative impact, compared to other BC sources, on local atmospheric composition, and regional sites of pollution accumulation. As an outlook, the MPCs emission outflow to the Arctic regions will be discussed as well as consequences for human health of the exposure to elevated black carbon concentrations.