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Obtaining insight in atmospheric trace organic compound concentrations and trends in Dronning Maud Land, East Antarctica by means of long term passive and active air sampling.

Preben Van Overmeiren[1], Stefania Gili[2], Aubry Vanderstraeten[2], Nadine Mattielli[2], Andy Delcloo[3], Karen De Causmaecker[3], Alexander Mangold[3], Kristof Demeestere[1], Herman Van Langenhove[1], Christophe Walgraeve[1]
[1]Ghent University, Ghent, Belgium, [2]Université libre de Bruxelles, Brussels, Belgium, [3]Royal Meteorological Institute, Uccle, Belgium

Antarctica's atmosphere is often regarded as pristine, however emissions from other continents in the southern hemisphere impact the air on Antarctica. Transport, chemical transformations and deposition are are poorly constrained in this region. Since the Austral summer of 2017 the air in Dronning Maud Land, near the Belgian research base Princess Elisabeth Station, is sampled by means of high volume sampling (HVS) where aerosol associated and gas phase compounds are collected separately. Additionally on 7 sites stretching 250km from the Antarctic plateau edge (2350m a.s.l.) to the King Baudouin Ice Shelf by the Southern Ocean, temporary sampling stations were installed. These consist of passive PUF-type samplers (Tisch, USA) for semi-volatile organic compounds and a protective shelter containing Tenax TA sorbent tubes (Markes, UK) collecting volatile organic compounds (VOC's). By exposing both for a year, a time integrated sample is obtained. With mass spectrometric analysis 70 volatile organic compounds and 16 EPA PAH's were detected on the different locations. The largest number of detected VOC's can be related with the atmospheric oxidation of aromatic components whereas primary pollutant levels are a factor 10^2-10^3 lower. This indicates the importance of the influx of foreign organic compounds which are transformed during atmospheric transport. The generated results will be combined with isotopic data gained from snow sampling on each of the 7 locations, time resolved aerosol count and properties, and back trajectory (FLEXPART) modeling to determine possible source regions of organic chemicals in East-Antarctica as well as defining atmospheric transport and transformation mechanisms.