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First results of tropospheric and stratospheric aerosols measurements during the Iceland Polar Vortex 2016 (IPV2016) campaign

Haraldur Ólafsson (1), Jean-Baptiste Renard (2), Gwenaél Berthet (2), Vincent Duverger (2), and Damien Vignelles (2)

(1) Univ. Iceland and Icelandic Meteorol. Office (haraldur68@gmail.com), (2) LPC2E-CNRS Univ. Orléans, France (jbreward@cnrs-orleans.fr)

The Iceland Polar Vortex 2016 (IPV2016) campaign was carried out during the passage of the stratospheric polar vortex over Iceland in early January 2016. During the period 9-13 January, a total of four meteorological balloon sondes were sent into the stratosphere, carrying the Light Optical Aerosol Counter (LOAC) up to altitude of 26 km. LOAC provides concentrations, size distribution and typology of the aerosols in the 0.2 – 100 micrometer size range. The measurements show background liquid and solid aerosol concentrations greater than conventional values in the mid-latitude stratosphere. LOAC has detected layers of cirrus around the tropopause and has provided their size distribution in the 5 - 40 micrometre range. Liquid polar stratospheric cloud particles, greater than a few micrometre, were detected in the 12 – 24 km altitude range. Finally, abnormal high concentrations of submicronic carbonaceous particles were observed from the middle troposphere to the middle stratosphere. The origin of all these particles will be tentatively interpreted using modelling calculation and backward trajectories