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Stratospheric aerosol content in the summer polar stratosphere

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

To quantify the impact of stratospheric aerosols on ozone chemistry and on the Earth radiative budget, it is necessary to estimate accurately the total amount of particles, as well as their nature and their size distribution. Although it is currently assumed that liquid droplets constitute the main family of aerosols even in a stratosphere free of volcanic aerosols, solid particles (interplanetary dust and soot) are present below and above 25 km. Most of the polar studies of stratospheric aerosols were conducted in winter but the distribution of these different types of aerosols is not available in summer conditions.

To better document the aerosol content in the summer polar stratosphere a balloon campaign was operated by the French space agency CNES in August 2009 in the frame of the IPY. The project, funded by the French national agencies ANR, IPEV and CNES, involved three balloon-borne instruments as well as satellite observations. Aerosol counting data, photo-polarimetry observations and measurements of the wavelength dependence of aerosol extinction are used jointly to try to distinguish between the various natures of aerosols and to determine the spatial variability of their size distributions. The most striking feature is the strong spatial variability of the stratospheric aerosol content in the middle stratosphere (around an altitude of 30 km) from the 8 flights of the aerosol counter. We will give an estimation of the liquid aerosol content which is of importance in chemistry models and will highlight the vertical distribution of solid particles.

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