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Aerosol transport of a stratospheric streamer towards high latitudes in spring 2017

The stratospheric polar vortex varies in strength and spatial characteristics during winter in the Northern Hemisphere. If the polar vortex is shifted towards the equator as a result of breaking planetary waves, air masses from the subtropics can be transported towards the pole in so-called tropical-subtropical streamers. These large-scale structures are areas of low potential vorticity and high pressure, containing dry air with a high ozone mixing ratio. The presence of these streamers can also be seen using satellite instruments such as OMPS-LP, which can detect an increase in the aerosol extinction coefficient in the middle stratosphere at the edge of the vortex. Following a displacement and deformation of the vortex, aerosol transport to high latitudes occurred in the Northern Hemisphere in spring 2017. The additional stratospheric aerosol of around 0.6 kT at an altitude of 25–35 km remained at middle and high latitudes for just under a month this year.

Topic

Atmospheric composition (Earth and planets), chemistry and transport

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