

On the Motion of Air Parcels **Through** the Stratospheric Polar Vortex

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Trajectory calculations are used to describe the motion of air parcels through the stratospheric polar vortex, Horizontal winds and temperatures from the United Kingdom Meteorological Office (UKMO) assimilation system developed for the Upper Atmosphere Research Satellite (UARS) are used with a middle atmosphere radiation code to obtain the three-dimensional velocity field in isentropic coordinates. The trajectory calculation is then done for a large number of parcels filling the stratosphere of one hemisphere. Calculations have been done for both hemispheres, beginning in early winter (December in the northern hemisphere, June in the southern hemisphere) and late winter (February in the northern hemisphere, August in the southern hemisphere). An animation will be shown comparing the fates of parcels that start out inside the polar vortex in northern and southern hemispheres, and in early and late winter. The vertical distribution of parcels moving into and out of the vortex will be discussed and the relationship of this distribution to wave events and stratospheric warmings. Implications of these results for transport through the polar vortex during winter will be discussed.

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5. a) A14 Chemistry and Dynamics
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b) 3334 Middle atmosphere
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3384 Waves and tides

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