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Mesosphere/lower thermosphere prevailing winds at northern midlatitudes – long-term tendencies derived from radar observations and modeling

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Radar observations of mesosphere/lower thermosphere (MLT) monthly mean winds as observed by different radars at Saskatoon (Canada), Collm (Germany), and Obninsk (Russia) show corresponding long-term trends and changes of these around the middle 1990s. Zonal prevailing winds are generally increasing with time, but there is a tendency for a change in trend in the 1990s. This is also visible in the meridional wind, which increases in the 1980s but decreases in more recent years. Numerical experiments with WACCM-x and LIMA circulation models give a similar tendency. We show some experiments to analyze whether the changes of MLT winds can be attributed to the combined effect of continuous CO_2 increase and stratospheric ozone decrease, and the turnaround of ozone changes in the 1990s.