

Momentum budget of semiannual oscillation around the tropical stratopause

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Meteorological reanalysis data have been updated and improved in the past decade, which are pretty useful for climate and meteorological studies. Their comprehensive evaluation is going underway as the SPARC Reanalysis Intercomparison Project (S-RIP). This study reports the momentum budget of semiannual oscillation around the tropical stratopause for four kinds of the latest reanalysis data (i.e., MERRA, MERRA2, ERA-Interim, and JRA55) as a part of S-RIP. They showed that, while the westerly acceleration is primarily due to unresolved wave drag (i.e. gravity wave drag), the easterly acceleration is induced by momentum transport due to meridional circulation and resolved wave drag. This feature is consistent with previous studies based on simulation and observation. However, the contribution of unresolved wave drag is maximized in MERRA/MERRA2 later than in ERA-Interim/JRA55. We discuss the difference between the latest reanalyses and its impact on the tropical dynamics.

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