CLIMATOLOGY OF THE STATIONARY PLANETARY WAVES SEEN IN THE SABER/TIMED TEMPERATURES (2002-2007)

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The presentation is focused on the global spatial (altitude and latitude) structure, seasonal and interannual variability of the SPW1 and SPW2 derived from the SABER/TIMED temperature measurements for full 6 years (January 2002-December 2007). The climatological features for altitudes between 20 and 120 km and latitudes between 50^{o}N and 50^{o}S are obtained by a new analysis method where the tides (migrating and nonmigrating) and the planetary waves (zonally travelling and stationary) are simultaneously extracted from the satellite data. In this way the aliasing problems between the SPWs and the nonmigrating tides are minimized. The seasonal behavior of the SPWs is dominated by winter amplification in the stratosphere and mesosphere and a semiannual variation with equinoctial amplifications in the lower thermosphere; only the SPW2 in the lower thermosphere of the NH showed June solstice maximum. The altitude structure of the SPW1 indicated amplification at near 40, 70 and 115 km at both hemispheres, however while in the stratosphere and mesosphere the wave amplitudes are similar in the lower thermosphere the SPW1 in the SH is significantly stronger than that in the NH. The altitude structure of the SPW2 revealed more than two amplifications in the stratosphere and mesosphere (20-95 km) and the waves are similar at both hemispheres. The SPW1 phases are similar in the stratosphere and mesosphere at both hemispheres, but the waves are almost out of phase in the lower thermosphere. The climatological altitude and latitude structures of the SPWs indicated that the stratosphere and mesosphere are coupled by direct vertical propagation of the waves, while in the lower thermosphere (above 95 km altitude) the waves are most probably in-situ generated by the dissipation and breaking of gravity waves filtered by lower atmospheric planetary waves.

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