

Multiple Tropopauses in GPS Radio Occultation Data – a 5 year Climatology

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A global climatology of multiple tropopauses (MT) is discussed based on GPS radio occultation (RO) data from the German CHAMP and the US-Argentinian SAC-C satellite mission for the period May 2001 to mid-2006. The RO technique uses GPS radio signals received aboard low orbiting satellites for atmospheric limb sounding. Atmospheric temperature profiles are derived with high vertical resolution (less than 1 km in the tropopause region). In this study we present detailed investigations about the geographical and temporal distribution of MT during different seasons. The thickness of the layer between the lowest (first) and highest (last) lapse rate tropopause has a strong annual cycle. In the vicinity of the subtropical jet (STJ) stream region values vary between 4-5 km during winter and 2-3 km during summer, respectively, whereas higher differences were found on the northern hemisphere. It is shown that the occurrence distribution of MT is in good agreement with the mean climatological location of the STJ, in particular during winter time.