

# **Global Analysis of Gravity Wave Potential Energy in the upper Troposphere and lower Stratosphere derived from 5 years of GPS Radio Occultation Data**

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Global gravity wave (GW) potential energy distributions are retrieved from radio occultation (RO) data from the German CHAMP and the US-Argentinian SAC-C satellite missions 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. The investigated altitudes cover the range from the mid-troposphere up to 35 km.

The specific potential energy (SPE) as a measure of GW activity is deduced from the temperature profile for each occultation event for different altitude ranges. For extracting background temperatures and temperature perturbations a band-pass filter associated to different vertical wave lengths is used. We discuss mean SPE distributions with respect to different (1) geographical regions and seasons, (2) altitude intervals, and (3) background wind conditions.

In addition to the filter technique ECMWF temperature data along the occultation path were used to determine the background temperature. The derived SPE values are about twice as high as those derived with the traditional filtering of the temperature profiles. The use of ECMWF temperatures as background data delivers unrealistic high SPE values for the Antarctic region ( $<60^{\circ}\text{S}$ ) during winter which can be clearly attributed to the ECMWF analyses.