



Stratosphere over the Northern Pacific / Eastern Asia region: anomalies of the annual cycle and analysis of the gravity waves activity

Petr Pisoft and Petr Sacha

Charles University in Prague, Faculty of Mathematics and Physics, Prague, Czech Republic (petr.pisoft@mff.cuni.cz)

Previous studies using the pseudo-2D wavelet transformation pointed to a distinct area above 50 hPa where anomalous low amplitudes of the annual cycle were identified. The region is found over the Northern Pacific / Eastern Asia and it was detected in the temperature and circulation fields.

In this study, we analyze various characteristics of the area together with a study oriented on the activity of the gravity waves. Using the frequency analysis approach, the study describes in details the horizontal distribution and vertical profiles of the anomalies in the annual cycle of selected variables. For this part of the analysis, ERA-40/Interim and MERRA reanalyzed series were used.

Using GPS radio occultation data, we have investigated the hypothesis that the anomalies are observed due to enhanced gravity waves activity in this region. Special emphasis was taken on the detection of breaking levels and on the comparison of climatology of gravity waves characteristics in this area with other areas of similar lower atmospheric and orographic conditions.