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Gravity wave coupling processes and their decadal variation (GW-CODE): first results

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The project GW-CODE is part of the DFG priority program CAWSES and focuses on long-term data sets of gravity wave activity from satellite measurements (SABER, GPS) as well as modeling (Warner and McIntyre parameterization scheme, GROGRAT) and effects on the global circulation simulated in a GCM (COMMA-LIM). By comparison of gravity wave momentum flux (GW-MF) from the Warner and McIntyre scheme with GW-MF from CRISTA measurements possible ranges of the model launch parameters are determined: The launch altitude should be lower than 6 km and the characteristic vertical wavenumber m* between 0.25 and 0.5 cycles/km. The Warner and McIntyre scheme has been integrated into the COMMA-LIM circulation model. For a full implementation into the model the eddy diffusion coefficient of the new scheme has been additionally deduced. For the first time horizontal detrending of temperatures from GPS radio occultation (RO) data was performed using ECMWF analyses. The globally derived gravity wave temperature variances are compared with results from standard vertical detrending for different seasons (May 2001- February 2006). RO temperature variances will also be discussed in comparison with results deduced from SABER. A climatology of SABER gravity wave temperature variance for the years 2002-2005 is shown.