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## Some experimental constraints for spectral parameters used in the Warner and McIntyre gravity wave parameterization scheme

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**Abstract.** In order to incorporate the effect of gravity waves (GWs) on the atmospheric circulation most global circulation models (GCMs) employ gravity wave parameterization schemes. To date, GW parameterization schemes in GCMs are used without experimental validation of the set of global parameters assumed for the GW launch spectrum. This paper focuses on the Warner and McIntyre GW parameterization scheme. Ranges of parameters compatible with absolute values of gravity wave momentum flux (GW-MF) derived from CRISTA-1 and CRISTA-2 satellite measurements are deduced for several of the parameters and the limitations of both model and measurements are discussed. The findings presented in this paper show that the initial guess of spectral parameters provided by Warner and McIntyre (2001) are some kind of compromise with respect to agreement of absolute values and agreement of the horizontal structures found in both measurements and model results. Better agreement can be achieved by using a vertical wavenumber launch spectrum with a wider saturated spectral range and reduced spectral power in the unsaturated part. However, even with this optimized set of global launch parameters not all features of the measurements are matched. This indicates that for further improvement spatial and seasonal variations of the launch parameters should be included in GW parameterization schemes.

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