

Internal gravity waves (GWs) are an important component of the atmospheric dynamics, significantly affecting the middle atmosphere by momentum and energy transport and deposition. In order to be able to improve global circulation models, in which the majority of the GW spectrum is not resolved, it is necessary to quantify their effects as precise as possible. We study GWs in a high-resolution simulation of the WRF model around Southern Andes, Antarctic Peninsula and South Georgia Island. We analyse a Gaussian high-pass filter method for separation of GWs from the basic flow. To overcome an observed problem of dependence of the method on a cutoff parameter, we propose an improved method that determines the parameter at each time step from the horizontal kinetic energy spectrum. The differences between the methods are further examined using the horizontal kinetic energy spectrum, vertical potential energy spectrum and forcing to the divergence equation evaluated by the active wind method, which is a recent theory-based method that divides the flow into a balanced flow and a perturbation field. The results suggest that the high-pass filter method does not produce correct results for time periods with strong wave activity.