



## **Horizontal refraction of gravity waves in a global ray tracing experiment**

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Current orographic gravity wave parametrisations ignore horizontal refraction of gravity waves. In a comprehensive global study we use the GROGRAT ray-tracer to propagate idealised gravity wave spectra through the UK Met Office assimilated stratosphere. The spectra are composed of waves typically found in the atmosphere, covering a range of absolute (or ground-based) frequencies, phase speeds, and propagation directions. Parallel computing is utilised to achieve a fine grained resolution, with millions of ray trajectories computed to address the research questions posed in the present study. For instance, we ask how are various parts of the gravity spectra (and corresponding pseudo-momentum fluxes) affected by horizontal refraction, and what does this imply for gravity wave parametrisations, as well as for the issue of “missing forces”, which have been of considerable theoretical interest.