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# of intermittent gravity waves in infrasound signals

Long-range infrasound propagation problems are characterized by both a large number of length scales and correlatively a large number of normal modes. In the atmosphere, these modes are confined within waveguides causing the sound to propagate through multiple paths to the receiver. Even though the accuracy of atmospheric specifications is constantly improving, the main part of gravity waves is still yet not resolved in the available data. In most infrasound modeling studies, the unresolved gravity waves are often represented as a "frozen" disturbance field that is superimposed on a given average background state. Direct observations in the lower stratosphere show, however, that the gravity wave field is very intermittent, and is often dominated by rather well defined large-amplitude and low-probability wave packets. In the present work, we use normal modes to describe both the gravity wave field and the acoustic field. The gravity wave spectrum is obtained by launching few monochromatic waves whose properties are chosen stochastically to mimic the intermittency. We will show that in several realistic situations the cumulative effect of gravity wave breakings makes the sensitivity of ground-based acoustic signals large, in that small changes in the gravity wave parameterization can create or destroy specific acoustic features.

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