



## **Three-dimensional structure of topographically induced gravity waves and inertia-gravity waves**

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The three-dimensional structure of gravity waves and inertia-gravity waves is examined for topographically-generated forcings. There is a rich variety of gravity wave structures that arise in various environments and forcing configurations. For narrow forcings, the St. Andrews Cross pattern is evident, and plays a role in the three-dimensional structure of gravity waves produced by broader forcings as well. Ship wave type patterns are common, but the exact structure depends on the environment and forcing. Inertia-gravity waves produce ship wave patterns very similar to trapped gravity (lee) waves. The spectrum of gravity waves possible leads to reductions in the  $Ri$  locally which can have highly complex, and in some situations, nonintuitive patterns. Some of these patterns derived from linear analysis and simulations will be presented, along with supporting evidence from satellite imagery.