Linear excitation of the trapped waves by an incident wave

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The excitation of the trapped waves by coastal events such as landslides has been extensively studied. The events in the open sea have in general larger magnitude. However the incident waves produced by these events in the open sea can only excite the the trapped waves through no linearity if the isobaths are straight lines that are in parallel with the coastline. We will show that the imperfections of the coastline can couple the incident and trapped waves using only linear processes. The Coriolis force is neglected in this work . Accordingly the trapped waves are consequence of uneven bathimetry. In the bathimetry we consider, the sea is divided into zones of constant depth and the boundaries between the zones are a family of hyperbolas. The boundary conditions between the zones will lead to an integral equation for the source distribution on the boundaries. The solution will contain both radiating and trapped waves. The trapped waves pose a serious threat for the coastal communities as they can travel long distances along the coastline without losing their energy through geometrical spreading.