



Gravity wave emission from balanced flow by shear instability

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We diagnose gravity wave emission in numerical simulations of shear instabilities of geostrophically balanced flow. Our diagnostic method allows for a separation of balanced flow and residual wave signal up to fourth order in the Rossby number Ro . While we found evidence for spontaneous gravity wave emission from balanced flow in a single layer model with large lateral shear and large Ro , a vertically resolved model with moderate velocity amplitudes appropriate to the interior ocean shows hardly any wave emission. Only when static instabilities generated by the shear instability of the balanced flow are allowed, gravity waves can be detected in the vertically resolved case. This result leaves not much room for the importance of spontaneous wave emission of balanced flow in the classical sense, but calls for the investigation of wave generation during frontogenesis creating strongly sloping isopycnal.