

# Resolving Baroclinic Inertia-Gravity Wave "Noise"

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## Abstract

As reported earlier [1,2,3], the characteristic amplitude of SSH variations due to baroclinic inertia-gravity (BIG) waves may well exceed 5 cm. Although this HF signal represents a major component of altimeter "measuring noise", it has not yet received due attention in the altimeter community. One reason for its common dismissal is the lack of direct in situ SSH measurements in open ocean which could provide a credible confirmation of our altimeter-based estimates.

Therefore, I present here two alternative confirmations.

1) Based on a mathematical model relating inertia-gravity currents, for a given density stratification, to the SSH field, the SSH amplitude is shown [4] to be in the range claimed by our altimeter-based estimates; 2) I then examine SeaWiFS-based 2D spectra of Chl-a concentration in selected ocean regions and analyze them, jointly with altimeter-based spectra, in the light of recent theory of tracer fluctuations caused by BIG waves [5,6]. A brief review of our recent efforts on filtering this BIG wave signal out of altimeter data is also presented.

References: [1] JPO, 26(7), 1256-1265, (1996); [2] Int. J. Rem. Sens., 17, 2647-2666, (1996); [3] Proc. Roy. Soc, A, 455, 91-123, (1999); [4] J.Fluid Mech., 420, 147-200 (2000); [5] Phys. Rev. Lett, 83(24), 5011-5015, (1999); [6] Submitted to JFM (available upon request.)