Geophysical Research Abstracts, Vol. 7, 04402, 2005 SRef-ID: 1607-7962/gra/EGU05-A-04402 © European Geosciences Union 2005



## Resonant excitation of equatorial baroclinic Rossby waves

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We consider nonlinear interaction of barotropic Rossby wave (which is not decaying away from equator) with equatorial baroclinic Rossby waves confined to the equator vicinity. The model in use is two-layer rotating shallow water on the equatorial beta-plane. The interaction between the barotropic and two baroclinic waves can result in exponential time growth of the baroclinic waves amplitudes. The interaction of barotropic wave with one baroclinic mode in the presence of an arbitrary zonal baroclinic flow can produce the linear growth of the baroclinic wave amplitude. In both cases the baroclinic wave amplitudes can reach values far exceeding the amplitude of incident barotropic Rossby wave. Analysis of various two-modes models shows that the effects described above remain valid in all cases.