



## **Nonlinear dynamics in the semi-transparent equatorial waveguide.**

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Nonlinear interactions between the baroclinic Rossby or Yanai waves trapped in the equatorial wave-guide and the barotropic Rossby waves freely propagating across the equator are studied within the two-layer model of the atmosphere, or the ocean. It is shown that a barotropic wave can resonantly excite a pair of baroclinic waves with amplitudes much greater than its proper amplitude. The envelopes of the baroclinic waves obey Ginzburg - Landau type equations and exhibit nonlinear saturation and formation of characteristic "domain wall" and "dark soliton" defects.