Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Impact of a mean current on internal tide energy dissipation at the critical latitude OCANE RICHET, JEAN-MARC CHOMAZ, CAROLINE MULLER, ladhyx, cole polytechnique — In many regions of the ocean, the abyssal flow is dominated by tidal flow. A large fraction of the tidal energy input in the ocean is dissipated via the generation of internal waves above rough topography. Idealised simulations suggest that internal tide energy is transferred and dissipated at small-erscales by the formation of a resonant triad between near-inertial waves, internal tides and subharmonics waves. Furthermore, the energy dissipation is enhanced at the critical latitude (28.8°), corresponding to the *Parametric Subharmonic Instability* (PSI). In the ocean, the presence of background flow, for instance due to the passage of a mesoscale eddy, can modify energy transfer mechanisms and the amount of energy dissipation. In this study, we investigate the generation and dissipation of internal tides in the presence of a background flow. We use a high-resolution two-dimensional nonhydrostatic numerical model (the MITgcm), with realistic multiscale topography representing the Brazil basin region. The purpose of this study is to understand the impact of the mean flow on the generation and dissipation of tidal waves. Our particular interest is how the maximum of energy dissipation at the critical latitude is impacted by the mean flow.

Jean-Marc Chomaz
ladhyx, cole polytechnique

Date submitted: 31 Jul 2015 Electronic form version 1.4