



Analysis of internal gravity waves using the Fourier, scattering, and continuous wavelet transforms

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Analysis of tides and internal waves (IW) from model studies in the South China is done using three techniques. We summarize results from standard Fourier techniques (the FFT), continuous wavelet analysis and the scattering transform technique. Because the FFT and wavelet analysis are inherently linear analysis tools their utility in application to nonlinear dynamics is often questioned. Nevertheless, they have shown to be useful in delineating first order dynamics (for example finding fundamental modes). On the other hand the scattering transform, sometimes described as a 'nonlinear Fourier' technique, can in some cases succeed in elucidating nonlinear dynamics where linear techniques have proven less successful. We apply these techniques to model results from Lamb's 2D non-hydrostatic model (Lamb 1994) applied to the South China Sea and multi-component tides used to force the Lamb model.