

1 **Non-Stationary Internal Tides Observed with Satellite**
2 **Altimetry**

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6 Temporal variability of the internal tide is inferred from a 17-year combined
7 record of Topex/Poseidon and Jason satellite altimeters. A global sampling of
8 along-track sea-surface height wavenumber spectra finds that non-stationary vari-
9 ance is generally 25% or less of the average variance at wavenumbers charac-
10 teristic of mode-1 tidal internal waves. With some exceptions the non-stationary
11 variance does not exceed 0.25 cm^2 . The mode-2 signal, where detectable, con-
12 tains a larger fraction of non-stationary variance, typically 50% or more. Tem-
13 poral subsetting of the data reveals interannual variability barely significant com-
14 pared with tidal estimation error from 3-year records. Comparison of summer
15 vs. winter conditions shows only one region of noteworthy seasonal changes,
16 the northern South China Sea. Implications for the anticipated SWOT altime-
17 ter mission are briefly discussed.