Abstract View

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MODE Bottom Experiment

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ABSTRACT

Pressure fluctuations on the deep seafloor at frequencies below inertial and tidal have been measured. Between 0.1 and 1 cycle per day the variance is about 2 mb^2, spectra diminish with increasing frequency as ω^{-n}, n=1.5 to 2, and a signal-to-instrument noise ratio of 10 dB is achieved. Fluctuations are in phase and highly coherent within the MODE area (>0.95 at 200 km) and even with inferred (atmosphere plus sea level) Bermuda subsurface pressures (0.8 at 700 km). Station *differences* (to which MODE-sized eddies would make the principal contribution) are relatively small. The large horizontal scale of the recorded bottom pressure fluctuations resembles that of atmospheric pressure, yet the coherence locally between atmospheric and bottom pressure is slight; the recorded fluctuations may be related to a barotropic ocean response to a variable wind stress on the subtropical gyre. Bottom temperature records show "sudden" (1 day) changes of order 30 millidegrees Celcius separated by long intervals (20 days) of uniform temperatures. The changes are much larger than have been observed in the Pacific. They are correlated at horizontal separations of 2 km, but uncorrelated to bottom pressure and to temperatures 1 km above the seafloor.