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[Volume 12, Issue 4 \(April 1982\)](#)

Journal of Physical Oceanography

Article: pp. 313–322 | [Abstract](#) | [PDF \(771K\)](#)

Velocity Structure of the Benthic Ocean

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(Manuscript received May 7, 1981, in final form January 11, 1982)

DOI: 10.1175/1520-0485(1982)012<0313:VSOTBO>2.0.CO;2

ABSTRACT

Velocity measurements in the outer part of the bottom boundary layer on the Hatteras Abyssal Plain are examined for indicators of boundary-layer turbulence. Velocity fluctuations in two frequency bands, near-inertial and high-frequency (1–4 cph), display mixed-layer signatures. The high-frequency velocities measure primarily boundary-layer turbulence. The turbulence, so measured, is modulated on inertial and tidal time scales and extends intermittently to the mixed layer top. The near-inertial velocities are less energetic within the mixed layer than above and, for the dominant clockwise component, the mixed layer leads the interior. Following D'Asaro (1982), this is attributed to turbulent stresses which, consequently, must fill the mixed layer. These observations suggest that the entire bottom mixed layer is at least inter-mittently turbulent.

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