

Abstract Submitted  
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**Examination of the Turbulent Kinetic Energy Budgets in the Mid-Water Column of the Chesapeake Bay Estuary** LUKSA LUZNIK, Mechanical Engineering Department, US Naval Academy , LOUISE WALLENDORF, Hydromechanics Laboratory, US Naval Academy — A local turbulent kinetic energy (TKE) balance is examined from measurements obtained during two-week long field experiment in the Chesapeake Bay near Kent Island, MD, under low to moderate wind conditions. Velocity data were collected with two vertically separated Acoustic Doppler Velocimeters and an upward looking pulse coherent profiler covering 0.8 to 2.5 m above bottom in approximately 5 m of water. Additionally, upward oriented AWAC mounted on a separate frame was used to obtain water column tidal current vertical profiles and overlying wave directional system. Stratification is monitored using two vertically separated CT sondes and estimated Ozmidov scale ranges from very small values up to 5m. Occurrences of large TKE dissipation rates coincide with times of maximum bottom boundary layer shear production with consistently larger values during ebb flows. In general dissipation rate exceeds shear production minus buoyancy flux in the mid-water column. Potential sources of enhanced levels of dissipation are examined including vertical turbulent transport, wind driven shear production and presence of surface gravity waves.

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