

Abstract Submitted
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Particle Settling in Low Energy Turbulence RACHEL ALLEN, LISSA MACVEAN, IAN TSE, LAURA MAZZARO, MARK STACEY, EVAN VARIANO, University of California, Berkeley — Particle settling velocities can be altered by turbulence. In turbulence, dense particles may get trapped in convergent flow regions, and falling particles may be swept towards the downward side of turbulent eddies, resulting in enhanced settling velocities. The degree of velocity enhancement may depend on the Stokes number, the Rouse number, and the turbulent Reynolds number. In a homogeneous, isotropic turbulence tank, we tested the effects of particle size and type, suspended sediment concentration, and level of turbulence on the settling velocities of particles typically found in muddy estuaries. Two Acoustic Doppler Velocimeters (ADV), separated vertically, measured turbulent velocities and suspended sediment concentrations, which yield condition dependent settling velocities, via $\frac{\partial \langle C \rangle}{\partial t} = -\frac{\partial}{\partial z} (w_s \langle C \rangle + \langle w' C' \rangle)$. These results are pertinent to fine sediment transport in estuaries, where high concentrations of suspended material are transported and impacted by low energy turbulence.

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