



Multi-Scale Modeling of Dilute Two-Phase Flows with an Application to Turbulent Suspension of Sediment in an Open Channel Flow

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Abstract

Turbulent dispersion causes sediment particles to be transported from high concentration regions to low concentration regions and determines the concentration distribution of suspended sediment. In this study, a new turbulent dispersion model is proposed for large-scale flows with suspended sediment. Two Stokes numbers are used to describe the turbulent dispersion through the Schmidt number: a Stokes number for fluid turbulence time scale, and a Stokes number for Kolmogorov

