Representation of turbulent length scale in numerical models

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Abstract: The basis for solving turbulence is system of governed hydrodynamic equations with turbulent fluxes, variance and covariance, with right order of closure. For unresolved scales discrete limitation is discovered by existence of cut-off eddy size. To describe subgrid effects, empirical relations, statistical methods and measurements are essential. K-theory is used for kinematic eddy fluxes, the exchange coefficient "K" has dependence on turbulent kinetic energy (TKE). Determination of mixing length and characteristic length are done with help of stationary (balanced) TKE theory. Louis integral stability profiles are modified and investigated. Diffusion coefficients dependence is extended on anisotropy of turbulence nearest the surface. Relations with TKE are presented.

Key words: characteristic mixing and dissipation length, exchange coefficients, turbulent kinetic energy, anisotropy of turbulence

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