



Fig. 15.1 Terminology associated with the bottom boundary layer (here, but not universally defined on the basis of velocity deficit). Oceanic bottom boundary layers rarely grow to equilibrium thickness, but are constrained by either the frequency,  $\omega$ , of forcing (e.g., of wave oscillations or tides) or water depth, whichever imposes the smaller limit. Viscous (momentum) and diffusive (mass) sublayers exist only when conditions are not fully rough turbulent. The layers are not drawn to scale. Where turbulent fluctuations are important, the fluctuating component of velocity is denoted by  $u'$ . As per the text,  $u_*$  is shear velocity, whereas  $\kappa$  is Von Karman's constant (0.41) and  $\rho$  and  $\mu$  are fluid density and dynamic viscosity, respectively.

Jumars, P.A. 1993. *Concepts in Biological Oceanography: An Interdisciplinary Primer*. Oxford Univ. Press, NY. p. 266.

If you want more detail and recent reviews, see:

Boudreau, B.P., and B.B. Jørgensen, eds. 2001. *The Benthic Boundary Layer: Transport Processes and Biogeochemistry*. Oxford Univ. Press, Oxford.