



## On the stable turbulent regimes in PBL

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In this work it is made comparable analyze of three different in their nature stable turbulent regimes in SL – ABL:

- traditional nocturnal stable regime (“z-less concept”) described according to MO similarity theory.
- very stable and weak intermittent regime (“no Richardson concept”).
- long-lived free-flow stability in the high latitudes.

In the first case  $R_i \rightarrow R_{ic} \approx 0.25$ , in the second case  $R_{ic}$  depend on the free flow stability and it can reach values up to 0.6–0.8. In the third case  $\alpha_\theta = K_\theta/K_m = \varphi_m(\xi)/\varphi_\theta(\xi) \rightarrow 0$ ,  $\varphi_m(\xi)$  is linear and  $\varphi_\theta(\xi)$  is stronger than linear function of  $\xi = z/L_{MO}$  and  $R_i$  is not limited (see Zilitinchevich and Essau (2006)–BLM).

On this basis it is realized the bulk Richardson number parameterization scheme and it is calculated surface turbulent fluxes and other basic characteristics for the three regimes. It is analyzed the differences in their behavior and it is derived criteria for their differential use at parameterization of environmental and weather / climate models.