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A model for convective planetary boundary layer growth

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Abstract:
The planetary boundry layer (PBL) is characterized by different thermodynamics conditions: neutral, stable, and convective boundarylayers. Few studies in the literature are dedicates to the transitions layers.

The transition phase from neutral boundary layer to convective boundary layer(CBL) will be presented.The characteristics of the turbulent kinetic energy (TKE) during the growth phase of the CBL are analyzed with the help of 3D analytical spectral model. The precision and characteristics of the TKE spectra generated by analytical model are compared with data obtained by the Large-Eddy Simulation (LES) model for three different levels in the vertical.

The analytical model agrees fairly well with LES results.