

ABSTRACT

Two dimensional sea breeze & land breeze model describes a combined observational and theoretical study of sea breeze & land breeze over Sri Lanka. The structure of the sea breeze circulation and its variations in time were obtained from observations. The observational data were gathered with surface stations, pilot balloons and radar radiosonde stations.

Over the land the depth of the layer of sea breeze flow is approximately 1500 m and velocity of 8 knots (4 ms^{-1}) is observed with 34 km inland penetration. Well defined sea breeze current is apparent early afternoon and dies away in the evening.

The wind model for simulating the wind flow in two dimensional spaces is described. The model predicts winds at different levels, in terrain following σ coordinate. Physical processes such as horizontal diffusion, diurnal heating and cooling are incorporated.

The empirical constants associated with the physical effect terms in the horizontal momentum equations and thermodynamic equation of the wind model is properly calibrated. Calibrated model is applied to Sri Lanka under the inter monsoon condition in order to check the performance of the model. The use of computer and the fraction of time required to run the program are the principal advantages of this model.

A two dimensional, time dependent, primitive equation model was constructed to simulate the observed sea breeze. The numerical simulation is reasonably realistic; however the sea breeze intensity and inland penetration were under estimated.