

## **Evaluation of Bio-meteorological indices based on Observational data and Model simulations for an Urban Tropical Coastal Region in Tamilnadu, India**

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### **Abstract**

Weather research forecast model simulations were performed in summer month in order to evaluate the bio-meteorological indices in the tropical urban coastal site. Assessment and forecast of thermal indices is an important component in human bio-meteorological and health related studies. Different model PBL schemes were also compared to the simulation with observations. The simulated meteorological parameters and derived bio-meteorological indices for urban and rural sites are also discussed. Thermally driven land sea breeze circulation influences the local environment and bio-meteorological conditions. Bio-thermal indices of effective temperature, dry cooling power index and related thermal comfort were underestimated by the model due to overestimation of wind speed in model simulation. Simulation based bio-meteorological indices PET are overestimated by about 2-3 °C. The derived other bio-meteorological indices are also discussed and compared with simplified Environmental modeling system. The present study shows that the model simulation can provide alternative tool for studying bio-meteorological indices.

*Keywords - Bio-Meteorology, WRF, PBL Schemes, Thermal indices, PET, Heat index*