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Decision Tree to Identify Dominant Parameters for Fog Formation - Prelude to Model Development

ABSTRACT : The fog forecasting is imperative for land surface and aircraft transportations. Fog reduces visibility causing serious damage during surface transportation as well as landing and takeoff of the aircrafts. The purpose of the present study is to identify the quantitative ranges of the meteorological parameters responsible for the formation of fog over Kolkata (22°32´, 88°20´) during the winter season (November to February). The study is a prelude to the development of models to forecast the occurrences of fog. The method adopted for the study belongs to Artificial Intelligence (AI) in the form of Decision Tree Algorithm (DTA). The decision tree algorithm uses the theory of belief functions to find out the measure of uncertainty inherent in a parameter. The minimization of uncertainty or the minimization of entropy is thus, required to perceive the persistence in a parameter. The result of the present study reveals that the most favourable meteorological condition for fog formation over Kolkata is highly humid atmosphere with moderate surface dew-point temperature accompanied with light northeasterly wind.

Key words: ***entropies, uncertainties belief functions, decision tree, persistence.***