USING SPATIAL SYNOPTIC CLASSIFICATION TO ASSESS ATMOSPHERIC POLLUTION   CONCENTRATION IN TEHRAN

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ABSTRACT

The quality of environmental phenomenon is control by recurrent of synoptic system and air masses. In this study relation of air masses with pollution concentration in Tehran. In the current study spatial synoptic classification (SSC) was used to identify and classify air masses in to six groups on the based on origin and their moderation in its direction. These masses include Dry Polar (DP) , Moist Polar (MP),Dry Tropical(DT), Moist Tropical(MT) , Dry Moderate(DM)and Moist Moderate(MM) air masses .Seed days are needed to determine the properties of air masses and their classification. Surface level maps and 850 mb level represent the transference of special air mass to case study. Primary criteria of seed day selection for each air mass at each station were used through the exact evaluation of data and surface level climatologic maps and 850 mb level .The selected seed days can determine the properties of air mass. The data used in this paper are hourly synoptic station observation of temperature , dew point , cloud cover , sea level pressure and u- and v- component of the wind Related variable was merged using PCA method. In this study mode P was used to identify air masses. And discriminate analysis was used to classify air masses. So that the features representative of seed days were used as input for discriminate analysis function for the purpose of air masses classification. Results this study showed that certain air masses at particular locations were highly correlated with increases mortality. This study also determined which air masses are associated with high concentration of air pollutants for example DT air masses with heat island days (which is typical of all day air masses) has correlated with high concentration of air pollutions.

Keywords : Spatial Synoptic Classification – air masses - discriminate analysis –Air pollution - Tehran