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Air Pollution Deterministic Index Modeling (APDIM) for Pakistan: Application in Quetta City

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Mathematical model are applied to predict the sensitivity of climate to changes produced by natural phenomena and human activities. In this paper Air Pollution Deterministic Index Modeling (APDIM) for Pakistan is developed with the practical implication in Quetta City. The modeling is based on deterministic model and Pollution Indices to monitor the Ambient Air condition in Quetta City. The novelty of the model is adding a constant in the basic deterministic formula. The values of the constant balance the theoretical and experimental validations for Ambient Air. The APDIM gives the alerts about the weather conditions in simple indices or colour coding displays. These indices indicate the air pollution situation in the city by a single number or colour code. The application of the APDIM is done in Quetta city, six criteria pollutants (CO, SOx, NOx, O3, TSP and PM10) are chosen for modeling according to the WHO criteria which have lethal health effect on the communities. The results of the APDIM indicate that the gases (CO, SOx, NOx, and O3) are touching the boundary of satisfactory to un-satisfactory zone. The cause of concern is TSP and PM10, which lies in the hazardous zone. Air Pollution Deterministic Index Modeling (APDIM) is an important tool of decision making, which determine the risk assessment for communities. The aim of the APDIM is to inform the general public of the local area about the severity of ambient air pollution, and the potential health risk it would impose, particularly on vulnerable groups such as children, the elderly, and those with existing cardiovascular and respiratory diseases. Further the tool helps the environmentalists and policy makers to modify the policy and strategies according to the provided air data.

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