

VALIDATION OF A STATISTICAL MODEL FOR ATMOSPHERIC POLLUTION FORECAST IN A COMPLEX INDUSTRIAL AREA

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In last years we developed a statistical model (ADRI), able to compute pollution probability, using atmospheric parameters obtained from the analysis of remote sensed data hourly measured in a industrial area in the Eastern Sicily. This model, working without the knowledge of sources, is useful to study a wide industrial area, bypassing the need to estimate the amount of emission from many sources. Wind and temperature profiles have been correlated with pollution concentration hourly measured from stations distributed on the area. The model is initialised and tuned with a huge dataset, composed by years of measurements. Starting only from meteorological measurements, it is able to compute a map of pollution in the area and the amount stored up in a given period. The forecasting capabilities of the model have been successfully tested. Results seem to be realistic and able to describe air quality in the area. In order to obtain a validation of this statistical model the results are compared with those obtained from Gaussian model, that utilises as a source an extended area. ADRI performances and results are discussed and compared with the output of Gaussian model that estimates the mean concentration for long periods (year, season) on the entire area. The mean concentration is verified by the NDVI (Normalised Difference Vegetation Index) obtained from elaboration of visible and infrared satellite data of this extended industrial area. This index is related to vegetation health, and therefore able to represents vegetation stress induced by pollution.