



7-year of surface ozone in a coastal city of central Italy: Observations and models

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Hourly concentrations of ozone (O_3) and nitrogen dioxide (NO_2) have been measured for seven years, from 1998 to 2005, in a seaside town in the central Italy. Seasonal trends of O_3 and NO_2 recorded in the considered years are studied.

Furthermore, we have focused our attention on data collected during the 2005, analyzing them using two different methods: a regression model and a neural network model. Both models are used to simulate the hourly ozone concentration, using several sets of input. In order to evaluate the performance of the model four statistical criteria are used: correlation coefficient (R), fractional bias (FB), normalized mean squared error (NMSE) e factor of two (FA2). All the criteria show that the neural network has better results compared to the regression model in all the simulations. In addition we have tested some improvements of the neural network model, results of these tests are discussed.

Finally, we have used the neural network to forecast the ozone hourly concentrations a day ahead and 1, 3, 6, 12 hour ahead. Performances of the model in predicting ozone levels are discussed.