

Abstract:

Environment is one of the important elements of life and development. However today, this component due to lack of rules and regulations and the lack of specific ownership, is used freely and widely and is resulted to destruction and pollution of environment. Air pollution is one of the aspects of environment in the big cities as a result of human activities that creates series problem for human health. Management of monitoring and supervision on air quality in big cities convert air quality data into air quality index, and therefore, the information required is available to the public. In Kerman, there is only one ground station to measure air pollution. Therefore, it increases the importance of using remote sensing data for Kerman to determine the rate of atmospheric pollutants. Using remote sensing technology, air pollution can be checked and tracked with less time and cost. One of the appropriate remote sensing data is the MODIS data that were used in this project. Also, the atmospheric data and satellite images of Tehran were used in order to compare results with a polluted city. Therefore, based on the ground data, some polluted days, clear day and partly polluted day were selected. Images of the days were received from US Geological organization and the necessary corrections were done. Then, the model was derived based on linear analysis using data of the images as input data. In this respect, the surface reflectance was extracted from an image of a clear day, polluted days and partly polluted day. Findings showed that there was an acceptable correlation between model prediction and in situ measurements. This correlation was found to be about 60% for particulate matter, 54% for nitrogen dioxide, 53% for ozone and for sulfur 48% dioxide for Kerman. Also, for Tehran, the correlation coefficient was found 71% for particulate matter, 46% for ozone and 40% for nitrogen dioxide. The high correlation coefficient for particulate matter may be due to high concentrations of particles in the atmosphere. Therefore, Reliability of results decreases for other components with lower concentration. In other words, the uncertainty of results of model increases for components with less concentration. Existence of acceptable correlation between model prediction and insitu measurements were indicative of the ability of satellite images in monitoring of the air pollution due to particulate matter particularly over urban areas.

Key Words: Air pollution, MODIS sensor, particulate matter, atmospheric pollutants, remote sensing



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