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**Geographic Space**

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**Assessment of MODIS images and data validation to measure PM10 in related to ground station data. Case study: Sanandaj, Iran.**

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**Abstract**

In the last decade, remote sensing has increasingly been used to evaluate atmospheric phenomena with respect to the crisis created by the dust storms in West of Iran. It has been proven that remote sensing would facilitate environmental studies in the local and international scales. In present study, we tried to determine the relationship between the MODIS PM10 data and measured PM10 concentration in a ground station (i.e., Sanandaj city in the west of Iran) during June and July 2009, using Non-linear regression model. RGB images and MODIS/Terra Calibrated Radiances 5-Min L1B Swath 1km (MOD021KM) were utilized to assessment of move pattern of the dusts storm in the study area. Based on obtained monthly and hourly means of PM10 data, the monthly and hourly maximum means were found to be in July and at 12 p.m., respectively. Atmospheric boundary layer altitudes from land surface and wind intensity in Iraq are among the main culprits of the entrance of the dust storms to Iran from the westerner boundaries. The spatial and temporal variation in measured PM10 concentration in the ground station site located in Sanandaj city were completely correspond with the amount of suspended particulate matter shown by MODIS data. Correlation coefficients between MODIS PM10 data and PM10 data measured by the ground station site in Sanandaj city was 0.85 in June and July. Our results indicated that MODIS products could be a reliable tool to assess dust storm movement patterns and to survey the concentration of particulate matter. MODIS scanner is able to provide us with the useful information on the condition and patterns of regional storms such as; Iraq and Saudi Arabia from the outside of Iranian boundaries as well as assisting us to implicate an informed management toward dust storms reduction and implication of control program in westerner regions of Iran.

***Key word***: MODIS Images, PM10, Dust storms, Movement Patterns, Westerner regions of Iran.

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