

Evaluating the Rate of Atmospheric Dust Deposition in Different Locations of Kerman City

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Abstract

Dust deposition occurs extensively in arid and semiarid regions of the world. Since dust particles are fine-sized, they have a high adsorption capacity and also high contamination potential. The objective of this study was to evaluate the temporal and spatial distribution of the rate of atmospheric dust deposition in different locations in Kerman urban area. Dust samples were collected monthly using glass traps installed on the roof of 35 one-story buildings in Kerman for 7 months from April 20 to Nov. 20, 2012 (a total of 245 samples). After each monthly sampling, traps were washed and dust samples transferred to the laboratory and weighed. The mean dust deposition rate of 7 months was mapped using the inverse distance weighting (IDW) approach. The wind rose of Kerman was drawn by WRPLOT 7.0.0. The results showed that the average rate of dust deposition decreased during the 7 months studied from 17.4 to 5 g/m². month, which could be attributed to the decrease in wind velocity. The spatial distribution of the samples also showed that the dust deposition rate varied from 4.84 in the southern parts to 14.84 g/m².month, mostly in the northern locations of the city. The wind rose based on the average wind speed of the 7 months of sampling indicated the prevailing wind blows from north, northeast and northwest and the dust spatial distribution well follows the wind direction. In general, the rate of dust deposition in Kerman city is high and; therefore, the source of dust has to be well detected and proper management practices are necessary.

Keywords: Atmospheric deposition, Spatial distribution, Kerman, Dust.

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