Abstract

Erosion by wind is one of the most important factors in desert environments. Prevailing winds can shift sand dunes and affect their accumulation. Also, wind regime determines the direction of sand dune mobility. The aim of this research was to investigate sand drift potential in 7 study cases areas, using sand movement models. First of all, 21 sand samples were collected from 7 sand dunes based on their different morphologies and locations in the 7 Sistans areas and samples were collected to calculate the threshold velocity of wind erosion under review by Bagnold physical (grain size, density measurement, etc.) and then statistical parameters (size, mean, median, sorting and skewness) of particles were extracted based on cumulative and normal diagrams using graphical for each zone and to test whether the data distributed normally, the Kolmogroff - Smirnov test was used and for determining the mathematical relationship between certain characteristics and to determine the best sand and speed physical ablation threshold using Spss software. For this research, wind data between 1992 and 2003 from the meteorological station of zabol and zahak were acquired to examine sand drift potential (DP), and erosive storm winds through different methods . For data analysis software such as the popular sand Rose and wind Rose were used. Then attempts to determine the rate of sand transport equation based on the software sand rose front Lettau – Lettau and all indicators - the Frayberger and dean were about carrying sand and gravel and at the end compared to the time and place sand drift potential on areas of study . Results showed a significant correlation between density, mean size and threshold velocity in study area. Also, the analysis of granulometry details indicated that the Shila Sand sea presents the most coarse particles due to dune morphology (sand sheet) and less transportation of grain and the Niatak Sand sea presents the smallest particle due to dune morphology (Nebka) and high transportation of grain transition, accordingly the Niatak sands need least threshold velocity in comparison to the Shila sands. Moreover, the Shila sands represents the highest density while the Niatak sands has the smallest density, and the other region have an average size of density, median and mean and finally statistical analysis showed that there are a significant correlation between statistical parameters and threshold velocities. Also the results of this study showed that Among these sand Rose areas, Niatak had the highest power handling and lowest threshold velocity of sand and then the regions Bibidust, Shila, Mohamad shah karam, Sharif Abad, Ghlae Kang, and the lowest Kaftargy carry a higher threshold velocity sand and more sand migration in the region in the summer. The results obtained from the analysis of wind rose data indicated that the direction of prevailing winds in the zabol and zahak basin is generally from north to north-west, and the storm winds have been generally directed northwest, and the frequency of winds of a velocity less than 6 m s^{-1} (threshold velocity) is% 25/21and 33/64% as observed from zabols and zahaks meteorological station.

Keywords: Drift potential, Sand rose, Threshold velocity, Wind Erosion, Sistan

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