
Table of Contents**Grain size distribution and pedologic properties of sand dunes in Southern Sabzevar, (northeastern Iran)**Fatemeh Jafarpour Chekab¹, Alireza Karimi¹, Adel Sepehr²¹Department of Soil Science, Ferdowsi University of Mashhad, Iran, jafarpourchekab.fatemeh@mail.um.ac.ir, karimi-a@um.ac.ir²Department of Desert Arid Zones Management, Ferdowsi University of Mashhad, Iran, adelsepehr@um.ac.ir

Introduction: Particle size distribution is the most common property which is used to identify sedimentary environments and depositional processes (Wang et al., 2003) as well as determine the nature and origin of the sediments (White et al., 2007). There are many sandy sediments in Iran; however, there is little information about their particle size distribution and pedological features. The objective of this study was to determine the grain size distribution and pedologic properties of sand dunes in Southern Sabzevar.

Material and methods: Sand dunes occurred in three geomorphic surfaces of flood plain (FP), dun field (DF) and distal part of alluvial fan (DA). Thirty surface samples (0 to 30 cm) were taken with ~1 km interval distance along the 3 transects. To identify the soil formation, three sections were described and sampled. The thin sections were prepared from undisturbed samples and were analyzed by polarizing microscope to identify pedofeatures.

Results and Discussion: In the FP, fine sand to coarse silt, in the DA, very coarse sand to coarse silt and in the DF, coarse sand to coarse silt composed the main body of the sediments. The mean grain size (Mz) in the FP, DF and DA geomorphic surfaces varied 3.25-4.63, 2.65-3.45 and 1.11- 2.16 ϕ , respectively. The studied sand dunes were finer than dunes in Tushka (Hamdan et al., 2014), Badain Jaran (Dong et al., 2013) and Ejina desert (Zhu and Yu., 2014). Sediments in FP and DA indicated a small mode at fine sand and large mode at very coarse sand, whereas in DF only one mode was observed at fine sand. The bimodal particle size distributing in FP and DA indicated contribution of both aeolian and alluvial processes in accumulation of the sediment. While, unimodal particle size distributing and directional particle size variation in DF were the indicatives of dominance of aeolian processes in this geomorphic surface. Sequences of aeolian and alluvial layers were observed in the sections of FP and DA sections. The section in DF was completely composed of aeolian sand. Only, weak evidences of soil formation (secondary carbonates and biological activities) were observed. Few small carbonate nodules were observed in the thin sections.

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Keywords: Mean grain size, Sand dune, Aeolian processes, Pedofeature

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