



## **Archaeology in soil science and climatology, Stratigraphy, Mineralogy and soil properties in loess-derived landforms, north of Iran**

F. Kiani(1), A. Jalalian(2) and A. Pashae(3)

(1) and (2) PhD student and prof, Soil Science department, College of Agriculture, Isfahan University of Technology, Isfahan, Iran. kianifarshad@yahoo.com, Jalalian@cc.iut.ac.ir

(3) Prof, Soil Science department, College of Agriculture, Gorgan University of Agriculture And Natural Resources Sciences, Gorgan, Iran. E-mail: apashae@yahoo.com

The alternation of loess and paleosols in the Loess plateau of northern Iran provides an apparently continuous record of continental climate over the past 7500 yr ago. Alternative loess sedimentation and layers discontinuity determine the warm, wet and cool, dry periods with different dust accumulation. Semiquantitative estimation indicated that different clay minerals are quantitatively different in the profile. This may be due to different weathering rates caused by cool/dry and wet/warm periods. A high degree of chlorite to smectite transformation was observed in deep soil (130 – 170) where a developed horizon was buried. Differences between soil layers development were confirmed by comparison of oxalate and dithionite extractable Fe. But there are some uncertainties in forecasting of dust influx times. Archaeology can answer these questions. In the study area (Galikesh, Golestan province, north of Iran) three ancient artworks were obtained that indicate three civilizations. 1-Zagheh ceramic related to 7000 -7200 yr ago. 2-Red ceramic relate to 4200-4700 yr ago. 3-Gray ceramics related to 2000-2500 yr ago. These civilizations were in warm and wet periods that condition was suitable for living with decreased dust accumulation and strong pedogenesis processes. Between these times, there are not evidences that any human kind settle in this area, thus we result that cool and dry climate were extended with increased dust accumulation inhibited human living with lack of the archaeological evidences. Then we can supposed that wet and warm climate periods has been cut the cool and dry climate in about 2000 ,4500 and 7000 years ago.