

Investigating mineralogy, geochemistry and provenance of loess deposits, Golestan Province, northeast of Iran

S. Asadi^{*1}, F. Moore¹, B. Keshavarzi¹, F. Rahmani²

1- Department of Geology, Faculty of Sciences, Shiraz University, Shiraz, Iran

2- Department of Medical Geology, Geological Survey of Iran

(Received: 28/8/2010, in revised form: 6/11/2010)

Abstract: Little information is available on the provenance, evolutionary trend and characteristics of the loess deposits in northeast Iran. These deposits are thought to be related to Quaternary paleoclimate. Studies of mineralogical, surface textures and geochemical composition and trace elements in these loesses in Golestan Province suggest that they are mostly derived from felsic igneous rocks (granitic or granodioritic). The studied loess samples display uniform chemical composition, suggesting a similar alteration history. Chemical index of alteration suggest a weak to moderate degree of weathering in a felsic source area. Whole-rock analyses indicate that the abundance and composition of heavy minerals such as zircon, tourmaline, apatite, titanite, and phyllosilicate minerals (e.g. chlorite, biotite and muscovite), derived from felsic magmatic sources, exert a significant control on the chemical composition. Scanning electron micrographs of quartz grains indicate an abundance of silt-sized quartz probably resulting from glacial processes active in Pleistocene followed by aeolian transport from the arid to semiarid Central Asian southern desert (Turkmenistan, Tajikistan and Uzbekistan great deserts). Seemingly, local topography of northeast Iran, acted as a major barrier, entrapping the airborne dusts.

Keywords: *Loess deposits; felsic source rock; chemical index of alteration; Golestan Province.*

متن فارسی اصل مقاله از صفحه ۴۶۳ تا ۴۷۶ در این شماره به چاپ رسیده است.

^{*}Corresponding author, Tel-fax: (0711) 2284572, Email: geosinaa@gmail.com