

Petrography and Geochemistry of the sandstones of the Jeirud Formation in the Central Alborz: Application for Provenance and Tectonic setting

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Received: 2017/7/10 Accepted: 2018/4/7

Abstract

Petrography and geochemistry (major and trace elements) of siliciclastic rocks from the Jeirud Formation (Upper Devonian) in the Central Alborz, have been investigated to understand their provenance. Petrographical and geochemical analyses of the white to gray sandstones of the this Formation display three categories which consist of quartz arenite, sublitharenite and sub-arkose. These sandstones, characterized by medium to very well roundness, high sorting and high compositional and textural maturity of monocrystalline quartz, chert and k-feldspar, were derived from a distal Arabia-Africa plates recycled orogen and stable cratonic source. Most major and trace element contents of studied samples are generally depleted (except Si) to upper continental crust (UCC) values that is mainly due to the high percentage of stable minerals such as quartz and chert and low content of un-stable Al-bearing minerals like feldspar and clay minerals. Modal composition (e.g. quartz, feldspar, lithic fragments) and geochemical indices of sandstones, indicate that they were derived from felsic source rocks in a humid climate and were deposited in a passive continental margin.

Keywords: Central Alborz, Jeirud, Devonian, Provenance, Tectonic setting