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Effect of Weathering on the Mineralogy and Geochemistry of Sediments of the Hyper Saline Urmia Salt Lake, Iran

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Abstract : Urmia Salt Lake (USL) is a hypersaline lake in the northwest of Iran. It contains halite as main dissolved and precipitated mineral and the major mineral mixed with lake bed sediments. Other detrital minerals such as calcite, aragonite, dolomite, quartz, feldspars, augite are forming lake sediments. This study examined the impact of weathering of this sediments collected from 1.5 meters depth and augite placers. The study indicated that weathering of tephritic and adakite rocks of the Islamic Island at the immediate boundary of the lake play a main control of lake bed sediments and has produced a large volume of augite placer along the lake bank. Weathering increases from south to toward north with increasing distance from Islamic Island. Geochemistry of lake sediments demonstrated the enrichment of MgO, CaO, Sr with an elevated anomaly of Eu, possibly due to surface absorbance of Mn and Fe associated Sr elevation originating from adakite volcanic rocks in the vicinity of the lake basin. The study shows the local geology is the major factor in origin of lake sediments than chemical and biochemical produced mineral during diagenetic processes.

Keywords : Urmia Lake, weathering, mineralogy, augite, Iran
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