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Spatial REE Geochemical Modeling at Lake Acıgöl, Denizli, Turkey: Analytical Approaches on Spatial Interpolation and Spatial Correlation

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Abstract : The spatial interpolation and spatial correlation of the rare earth elements (REE) of lake surface sediments of Lake Acıgöl and its surrounding lithological units is carried out by using GIS techniques like Inverse Distance Weighted (IDW) and Geographically Weighted Regression (GWR) techniques. IDW technique which makes the spatial interpolation shows that the lithological units like Hayrettin Formation at north of Lake Acigol have high REE contents than lake sediments as well as ∑LREE and ∑HREE contents. However, Eu/Eu* values (based on chondrite-normalized REE pattern) show high value in some lake surface sediments than in lithological units and that refers to negative Eu-anomaly. Also, the spatial interpolation of the V/Cr ratio indicated that Acıgöl lithological units and lake sediments deposited in in oxic and dysoxic conditions. But, the spatial correlation is carried out by GWR technique. This technique shows high spatial correlation coefficient between ∑LREE and ∑HREE which is higher in the lithological units (Hayrettin Formation and Cameli Formation) than in the other lithological units and lake surface sediments. Also, the matching between REEs and Sc and Al refers to REE abundances of Lake Acıgöl sediments weathered from local bedrock around the lake.

Keywords : spatial geochemical modeling, IDW, GWR techniques, REE, lake sediments, Lake Acıgöl, Turkey
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