North-Central Section (44th Annual) and South-Central Section (44th Annual) Joint Meeting (11–13 April 2010)
Paper No. 20-6

Presentation Time: 2:45 PM-3:00 PM

USING LARGE SEDIMENT GEOCHEMICAL DATABASES TO MAP LEAD, COPPER AND ARSENIC ANOMALIES IN A DESERT ENVIRONMENT

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Spatial analysis and exploratory data analysis (EDA) were applied to an arid area in northern Mexico in order to identify areas with lead (Pb), copper (Cu) and arsenic (As) anomalies. The location and spatial distribution of these anomalies pointed toward their possible source. The geochemical data belongs to data collected by the Servicio Geologico Mexicano (SGM) as part of the North American Soil Geochemical Landscapes Project. The resulting dataset (N= 2046) covered an area of more than 84,000 Km^2. After correlation and cluster analysis were applied to the data, anomalies were determined from EDA and were plotted using ArcMap. Anomalies' location and distribution were visually compared with prospect and mine sites, urban centers, and rocks outcropping in the area. Results included (1) determining the boundary between background and anomalous concentrations for each of Pb, Cu and As in this region, and (2) identifying the amount, concentration and distribution of two types of anomalies: mild anomalies which are related to enriched natural concentrations, and extreme anomalies which related to the presence of mine tailings and/or man-made contaminants.

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General Information for this Meeting

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Geological Evolution of the Sierra Madre Oriental, Mexico
Branson Convention Center: Compton Ferry
1:30 PM-3:15 PM, Monday, 12 April 2010