Poster Presentation

Elemental Background and Anthropogenic Pollution of Heavy Metals in the Top Soil of Al-Qilt Catchment, Palestine

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Abstract

Heavy metals pollution in Palestine soils was ignored for decades; anthropogenic pollution of soil has negative effect on the environment and human life. Determination of elemental background for anthropogenic pollution in Palestine soils will help in screening the anthropogenic metal-based pollution.

The objective of this research was to study the pollution origin in soil of Al-Qilt catchment. Soil samples from pristine areas of Al-Qilt catchments was analyzed for the assessment for heavy and trace metals mainly those considered as anthropogenic sources for pollution in the area. Sources and impact of anthropogenic pollution in Al-Qilt catchment soils were also discussed.

Samples along Al-Qilt catchment were collected on monthly bases. Soil samples were digested by aqua regia, and analyzed by using BCR fractionation method for Al, Ti, Mn, Fe, Cr, and Bi.

Data analysis by computing the relation coefficient of heavy and trace metals, Heavy and trace metals were graphed with Al and Fe as reference elements to facilitate the comparison between Al-Qilt sites and we chose the best correlated metals with elemental normalizers or reference element, depending on the correlation factors (R^2) , The normalization is a way to compensate for the natural variability of trace metals in soils, so that any anthropogenic metal contributed may be detected and quantified by reducing the natural effect of grain size. This allows to identify the trace metal as a man-made pollutant, then the Enrichment Factor (EF) was computed as first step to relate between a metal and its best nomalizer, this lead to identify anomalous metal concentrations that may have an anthropogenic source; then we can specify the enriched site.

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The elemental background for anthropogenic pollution in the soil of Al-Qilt catchment was made and compared with continental crust value.

Results showed that metal/Al and metal/Fe normalization for Ti, V, Mn, Co, Rb, Ag, Li, B and Be were used as anthropogenic pollutants for most of Al-Qilt sites, As comparison the Fe was found to be the best elemental normalizer since it has the highest R^2 values compared to Al, The EF calculation showed that Pb had the highest value of trace metals in Al-Qilt catchment, and there was a moderate values for Sn and Ag in some site in Al-Qilt catchment, this results show no anthropogenic sources for pollution in Al-Qilt catchment, therefore these metal can considered as elemental background for another researcher in the future.