Geochemical prospecting studies in Sinai, Egypt

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The present geochemical work was carried out at two areas in southern Sinai, namely Wadi Nissriyn and Khashm El-Fakh.

Stream sediments, soil and bed-rock samples were collected and chemically analyzed by emission spectrograph for eighteen selected elements. The chemical results were treated with simple and multivariate statistical methods, where copper is shown to be the most abundant element at Nissriyn area, while Zn, Pb, Ag and Bi are associated elements. At Khashm El-Fakh, anomalous values of iron were found beside copper and zinc.

R-mode factor analyses show two factors one is Cu-Zn-Mo-Pb which was termed a copper mineralization factor, while the second factor which is Fe-Be-Yb was considered as a bed rock factor.

Phosphorus burial in Baltic Sea sediments with contrasting redox conditions

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Increased human input of phosphorus (P) to the Baltic Sea from agricultural practices and sewage has led to enhanced primary production and the increased occurrence of hypoxic bottom waters ($O_2 < 2$ mg/l) throughout the various submarine basins. As yet, the role of the sediments as a temporary and permanent sink for P is not well-quantified. Here we present detailed porewater and sediment data for three sites with contrasting bottom water oxygen regimes. These range from temporarily hypoxic (Arkona basin), predominantly hypoxic (Bornholm basin) to almost exclusively anoxic (Gotland deep). At Arkona, a large pool of Fe-oxide bound P was observed in the surface sediment. Porewater Fe^{2+} and PO_4 profiles indicate mobilization of the Fe-bound P pool near the sediment surface when bottom waters become hypoxic. This confirms earlier suggestions based on water column data that sediments in the Baltic can act as a major internal source of PO_4 [1]. Phosphorus speciation data for the Bornholm basin and Gotland deep suggest that these accumulation basins may be an important burial sink for reactive P. At the Gotland deep site, reactive P burial appears to be inversely correlated to terrigenous input and authigenic Ca-P, organic P and Fe-bound P act as the major sinks of P.

[1] Conley *et al*. (2002) *Environ. Sci. Technol.* **36**, 5315-5320.