

Application of Multivariate statistics to study stream sediment data from the vicinity of lead-zinc occurrences at Gabal El-Rusas area, Eastern Desert, Egypt.

MORSY, M.A. Geology Department, Faculty of Science, Alexandria University, Alexandria, Egypt.

Sixty seven stream sediment samples were collected in the vicinity of the Miocene lead-zinc occurrences near Gabal El-Rusas area, and analyzed for their Pb, Zn, Cu, Ni, Co, Mn and Fe contents.

In the present study, statistical cluster and factor analyses revealed useful simplification of the given data. Cluster analysis classifies samples into two main groups: the first contains mostly the background samples, while the second shows probably mineralized samples. R-mode factor analysis revealed three dominant factors (R_1 : Co-Mn-Ni-Fe ; R_2 : Zn-Pb ; R_3 : Cu-Fe-Ni) which explained 86% of the total information contained in the original geochemical data. Factor R_2 is closely related to the lead-zinc occurrences in the area and can be termed the mineralized factor. Factors R_1 and R_3 are probably the result of adsorption and coprecipitation of cobalt and nickel in Mn-Fe hydroxides in the first factor and of Cu & Ni in Fe-hydroxides in the third factor. These two factors may account for the main background population which is affected by secondary adsorption effects.