

Geophysical investigation and geochemical study of sediment along the coastal area in Kota Belud Sabah, Malaysia

ABSTRACT

This article discusses the geophysical investigation of sediment and the status of heavy metals pollution in the coastal sediment from Usukan Beach, Kota Belud Sabah Malaysia. Study area is located at the northwest coast of Sabah which is bounded by the South China Sea and made up of Crocker Formation which age from Late Eocene to Early Miocene, Wariu Formation with Middle Miocene age and Quaternary Alluvium. This study using geoelectrical method namely electrical resistivity (IR) and induced polarization (IP) to measure the thickness of sediment and the parent rock lithology respectively. Whereas the heavy metal contents were measured using the Inductively Coupled Plasma-Optical Emission Spectrometry (ICP- OES). Three sets of subsurface cross-sections were conducted for the geophysical survey and covered the depth around 37 meters for all the survey line. The result of geophysical survey shows that the alluvium quaternary deposits in the low-lying flat area have a thickness up to 13 metres and overlie the mudstone dominated rock of the Crocker Formation. The geochemical analysis shows a decreasing ranking order of elemental concentrations Fe>Mn>Zn>Cu>Pb>Cr>As. The analyses show all elements are within the background values and acceptable standard limits of the Sediment Quality Guidelines (SQG) by USEPA for coastal sediments. The assessment of heavy metals revealed only minimal degree of pollution in the coastal sediments.