

# Database Architecture of Geosphere Environmental Informatics and its application

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**Abstract.** In this study, we examined the Pb concentration in river-bed sediments using GIS system of geosphere environmental informatics, which has been being developed for the integration of geosphere environmental information such as catchment area, location of mineral deposit and elevation. Geomorphologic analysis was carried out in order to extract the stream network and the catchment area of sampling points from a digital elevation model in the Sendai Plain. We integrated the Pb concentration of samples in river-bed sediments and the basins extracted by geomorphologic analysis, and created the other information which shows the Pb concentration distribution map at each basin. In addition, the influence of elevation on Pb concentration in the basins was considered. Finally, we concluded that the integrated comparison of the basin, stream network, location of mineral deposit and elevation should be important for the evaluation of the Pb concentration in river-bed sediments.

**Keywords:** GIS, Geosphere environmental information, Geomorphologic analysis, Soil pollution, Heavy metal.