

Geochemical mapping for the area covering Kikuchi and Tsuboi River basins, Kumamoto Prefecture – origin of compositional change

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River sediments were sampled at 54 points along the Kikuchi and Tsuboi River basins for the purpose of geochemical mapping. We conducted the XRF, INAA, and PGA analyses for these samples and considered the causes of producing the chemical characteristics. River sediments were sieved under 0.250mm size fraction, treated for removal of magnetic minerals, heated for removal of organic matters before analyses. Area of 1 km by 1 km was chosen for mapping.

Ti, P, Zn and Cu were found to enrich in fine-grained fractions. Difference in grain size obviously changes ratios of minerals. Fe₂O₃, MgO, MnO, TiO₂ were found to enrich in the down stream directions, whereas SiO₂, Al₂O₃, Na₂O, K₂O were found to deplete, possibly indicating the change in mineral assemblage as the result of sorting in running water.

Composition of river sediments apparently reflect the geology of source area. Anomaly in composition often shows difference in change in mineral assemblage. In order to find artificial cause in compositional anomaly, it is important to check mineral assemblage as well as source area geology.