

TRACE METAL CONCENTRATION IN THE KEUM RIVER AND ITS TRIBUTARIES

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In order to assess the temporal and spatial variations of trace metals in riverwater, a long-term monitoring program was carried out in the Keum River (SW of Korea). Riverwater was collected monthly or bimonthly over the period of about 6 years at a site located upstream in the main channel. In addition samples were also taken from three different upstream tributary sites over one and a half year. These samples were analysed for dissolved and particulate metals (Mn, Co, Ni, Cu, Zn, Cd, Pb, U), using ICP-MS. Temporal variation of dissolved metal concentrations in the main stream was closely related to the hydrology of river; maximum concentration in the lowest flow and minimum in the highest flow. This general trend, however, was perturbed from time to time by other complicating environmental factors such as the flushing effect after a long dry period and the biogeochemical reactions within the water column. Most particulate metals behave in similar way as SPM, except Mn whose concentration is related rather to the temperature and biological activities. The host component of trace metals in river particles, however, may differ from metal to metal. Three environmental factors were shown to be important in controlling the concentration of both dissolved and particulate metals: these are river flow variation, biogeochemical reactions and the nature of the metal sources.