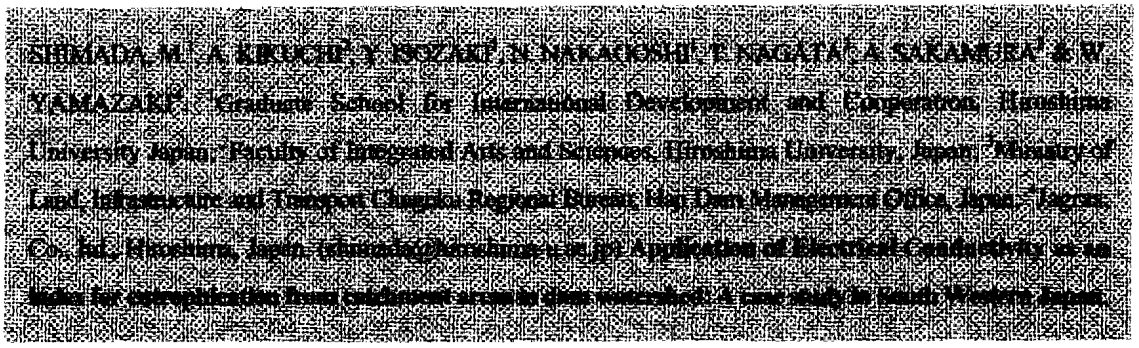
4-(2)

M. Shimada, A. Kikuchi, Y. Isozaki, N. Nakagoshi, T. Nagata, A. Sakamura & W. Yamazaki (2004) Application of Electrical Conductivity as an index for eutrophication from catchment areas in dam watershed: A case study in South Western Japan. Proceedings of the First EAFS International Congress, p195. Mokpo, Korea.



SHIMADA, M.[1], A. KIKUCHI[2], Y. ISOZAKI[3], N. NAKAGOSHI[1], T. NAGATA[4], A. SAKAMURA[5] & W. YAMAZAKI[6]. [1]Graduate School for International Development and Cooperation, Hiroshima University Japan, [2]Faculty of Integrated Arts and Sciences, Hiroshima University, Japan, [3]Ministry of Land, Infrastructure and Transport Chugoku Regional Bureau, Haji Dam Management Office, Japan, [4]Japan Co., ltd., Hiroshima, Japan. (shimada@hiroshima-u.ac.jp) Application of Electrical Conductivity as an index for eutrophication from catchment areas in dam watershed: A case study in South Western Japan.

Control of nitrogen and phosphorus loading from catchment areas is one of the urgent tasks to alleviate eutrophication from nutrients in lakes and inland seas. For this purpose, loadings from each area in catchments should be diagnosed according to geological and antecedent precipitation condition. Nevertheless, it is difficult to monitor the total amount of these eutrophicating nutrients. In this paper, to estimate loadings, EC (Electrical Conductivity) was applied as a predictor of nutrient loadings. The study site was Haji dam watershed in South Western Japan. Spatially, the drainage basin was divided into twelve regions. EC of base flow from each region was measured as well as I-N (Inorganic Nitrogen), I-P (Inorganic Phosphorus) and Q (discharged water). Survey was conducted in August and September, 2003. August was the rainy season. As for quick flow, transition of EC in one rainfall event in August, 2004, was measured as well as that of I-P and Q at a gauging station. EC flux, which was assumed as an index of total amount of electrolyte emitted from an area, was calculated as the product of EC and Q. When EC flux was applied to an estimation model, around 75% of variation in logarithm in I-N flux and around 85% of variation in logarithm in I-P flux were predicted for base flow ($p<0.001$). Comparing August and September, estimation model showed differences in their coefficients and constants. As for quick flow, around 95% of I-P flux in logarithm variation was also predicted ($p<0.001$). Consequently, measuring EC and Q, total emission of I-N and I-P from each region and in one event was estimated, though estimation models should be calibrated in time and space. These results show that nutrient loadings would be clarified constantly when EC flux gauging stations were established in this catchment area.