

Heavy metal concentration of river sediment in the light of the environmental quality standard value at the Kiso and Syounai Rivers in Nagoya, Japan

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The river sediment is basically composed of clastic materials derived from the surface of the Earth. The purpose of our study is to clarify the quantitative estimation of ratio of influence given to river sediment of nature and human activity by using of heavy metals [1-4].

We show the geochemical and geological characteristics of stream sediments from the Kiso and Syounai Rivers that flow in Nagoya, Japan.

We show research results of the degree of contamination in Shounai River that is the one of the most polluted river in Japan. It also searched for Kiso River in the same Noubi Plain for the comparison. Sediment samples collected from various points along the upper and lower streams were subjected to content analysis and elution analysis (using liquate (flow) out test) on the heavy metals like Cd, CN, Pb, Cr, As, Hg, Ni, Zn and Cu from the river sediment for the purpose of environment assessment.

In Kiso River, slightly high content value of As (234ppm) by the past old metal mine was detected in the middle stream. But the lower stream was diluted by self cleaning power of the river. In Syounai River, Pb, Cr, As, and Hg are relatively high content in the mouth region. Particularly, the value of elution of As slightly exceeded the environmental standard value.

This study is the first research that investigated sediment of those rivers in the light of the environmental quality standard in Nagoya area, Japan.

- [1] Watanabe *et al.* (2005) *GCA*, Abstract Vol. 194 S66.
[2] Matsumoto (2005) *International Seminar Sustainability of the precious water environment* (Matsue, Japan), Abstract Vol. 176-183. [3] Matsumoto (2007) *International Symposium Restoration and Sustainability of Estuaries and Coastal Lagoons* (Matsue, Japan), Abstract Vol. 104-107. [4] Ito & Matsumoto (2007) *Annual meeting of Japan Soc. of Earth Sci. Edu*, Abstract Vol. 58-59.

Holocene record of decadal variability from the NE Pacific

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A 40 m long marine sediment core raised from Effingham Inlet, an anoxic fjord on the west coast of Vancouver Island, Canada, yields a high-resolution record of Holocene climate variability. Forty-six ¹⁴C AMS dates comprise the age model and downcore sampling provides a record with 5 cm (20 yr) and 1.5 cm (7 yr) resolution. Spectral analysis of % opal, a proxy for diatom productivity, identifies the 20 and 50-year periods of the PDO/NPI. Both periods are present to some degree in the Early Holocene, while only the 50-year period is evident in the late Holocene. These data imply that PDO "regime shifts" would have been more frequent in the Early Holocene relative to the last few thousand years. Coherence analysis between the Effingham Inlet data and Jellybean Lake $\delta^{18}\text{O}$ records (SW Yukon)[1] indicate regional coherence at periods of 45, 70, 360 and 510 years between productivity in Effingham Inlet and changes in the Aleutian Low strength. The significant coherence between these two sites at the ~50 year period strongly implies that variability in the strength of the Aleutian Low has driven a broad climatic teleconnection from Vancouver Island to Alaska over the entire Holocene.

- [1] L. Andersen *et al.* (2005) *Quat. Res.* **64**, 21-35.