Particulate trace element fluxes in the northern Ulleung basin of East/Japan Sea

Y. I. KIM[1], K. Y. CHOI[1*] AND S. H. KIM[2]

[1]Korea Institute of Ocean Science & Technology, East Sea Research Institute, 48, Haeyangscience-gil, Jukbyeon-myeon, Uljin, 767-813, Korea (yikim@kost.ac) (*correspondence: sberri@kost.ac)

[2]Korea Institute of Ocean Science & Technology, 787, Haeanro, Ansan, 426-744, Korea (shkim@kiost.ac.kr)

The concentrations of trace elements (Al, Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Ti, V and Zn) in settling particles were determined. Time-series sediment traps were deployed in the northern Ulleung basin of the East/Japan Sea during November 2010 and June 2013. The traps with sampling periods ranged between 8 and 10 days were moored at 1000m depth.

Observed total mass fluxes varied from 0.05 to 0.83 g/m^2/day with the average of 0.32 g/m^2/day. The fluxes of most elements (except Cd) were closely related with the vertical transport of alummium. Elemental composition and fluxes in settling particles suggested that these elements were remarkably supplied by aerosol loadlngs through the westerlies from land.

Crustal enrichment factors of trace elements showed that most elements were originated from lithogenic materials. The crustal enrichment factors (EF) of Cd (289), Cu (4.1), Pb (10.7) and Zn (6.1) in settling particles were relatively high during March 2011 and June 2013. This indicates that these elements were scavenged well by biogenic materials even though the input of lithogenic Al was low in this period.