

Sectional distributions of trace elements in the East/Japan Sea

HUISU LEE, JAE EUN LEE, HYUNMI LEE AND INTAE KIM

Korea Institute of Ocean Science and Technology

Presenting Author: gmltnlee95@kiost.ac.kr

The horizontal- and vertical distributions of trace elements (Mn, Fe, Co, Ni, Cu, Zn, Cd, Pb, and REEs) were investigated in the Ulleung Basin (UB) water column of East/Japan Sea (16 stations, 0-2228m in 2018 and 2019) and Yellow Sea (4 stations, 0-80m in 2021) (Korean Seas, the marginal seas of westernmost part of North Pacific). The study area is surrounded by Korean Peninsula, Japan, and East Asian continent, and thus highly affected by atmospheric deposition, terrestrial inputs, and fresh surface water inputs. The vertical distributions of trace elements were characterized into three types: i) nutrient-type (Ni, Cu, Zn, Cd) with relatively enhanced concentrations in surface water due to external inputs such as atmospheric deposition or upwelling ii) scavenged-type (Pb, Mn, Co), and iii) boundary input (Fe, Mn, Co, and REEs) type, which were thought to be associated with the bottom input such as sediment resuspension from continental shelf and slope. The distribution patterns of these trace elements were generally similar to those of major oceans (e.g. Atlantic ocean and Mediterranean Sea), except for Ni and Cd, those were seems to be affected by distinct external inputs (atmospheric deposition and/or input from continental shelf. We also quantified the benthic fluxes of trace elements based on vertical distributions in the bottom layer of water column. Overall, the vertical- and sectional (horizontal) distributions of trace elements were appears to be affected by combination effect of physical process of water column (i.e., rapid water ventilation of <50 yrs), large terrestrial inputs from shelf, atmospheric dust, and freshwater from surrounding continent. In the presentation, more details on these results will be discussed.