



Historical Record of Trace Metals offshore southwestern Taiwan

Chun-Yu Lee, Chih-Chieh Su, and Po-Hsuan Tsai

National Taiwan University, Institute of Oceanography, Marine Geology & Geophysics, Taiwan, Province Of China
(laughlover1221@gmail.com)

Taiwan is located on an active continental margin, which gives it a chance to develop small mountainous rivers on the island. Since 1970s, the industrial development in Taiwan boomed with an incredibly fast pace, heavy metals pollution issue has been gradually emerged after 1980s and the contaminated area extended to the coastal environment. In this case, a considerable amount of pollutants could be carried into the marine environment. The aim of this study is to investigate the distribution and transportation of heavy metals through sedimentary records offshore southwestern Taiwan.

Gaoping River is the largest river in southern Taiwan and stands out of other major world rivers for it contains high concentrations of dissolved and particulate metals. Gaoping Submarine Canyon (GPSC) has been proven to be the major pathway for the transportation of terrestrial materials discharged from Gaoping River into the deep sea. In this study, cores were sampled in three different sedimentary environments around the GPSC: (I) Lateral sides of the upper reach of GPSC which is sited on the Gaoping continental slope and simultaneously with stable and unstable sedimentary settings, (II) The lower reach of GPSC, and (III) Location at north of GPSC which received sediments from rivers except for the Gaoping River, like the Zengwun and Erren Rivers.

^{210}Pb dating, grain size and chemical analyses were applied to determine the sedimentary features and the quantity of elements of Cu, Cr, Cd, Pb, Zn, Ni, Co, Fe, Mn, Al, Ti, Na, K, Mg, Ca, Sr, Ba. Since these elements could be derived from weathering soils, industrial or domestic waste, Enrichment Factor (EF) was used to distinguish the source of the elements.

Compared with previous results which conducted in nearshore region, anthropogenic input of most trace metals are rarely found in the slope region. Cd scarcely exists in the open waters. But enrichment of Zn was discovered in sediment cores from the deep sea site and it might be resulted from the cross-shelf transport. By comparing the distributions of trace metals within different sedimentation environments, although most of the trace metals tend to accumulate at the nearshore area, deep sea environment could also be an important sink for some trace metals. This transportation mechanism might be also applied to other submarine canyons which has characteristics analogous to GPSC.