

Size distribution of particulate trace elements in hydrothermal plume from the 20°S East Pacific Rise

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We will present results of particulate trace element concentration analysis from US GEOTRACES Eastern Pacific Zonal Transect (GP16), with a focus on the hydrothermal plume emitted from the 20°S Eastern Pacific Rise. Samples were collected for two size fractions (0.8-51 μm ; >51 μm) using in-situ pumps to identify trace metal composition in suspended (small) particles, which readily react with dissolved species, and in sinking (large) particles, which sink and are removed from the plume within a short time scale.

Preliminary results show that particulate iron (pFe) is mostly (>70%) composed of small particles near hydrothermal vent axis, whereas particulate manganese (pMn) is almost evenly composed of small and large particles. On the other hand, both pFe and pMn are mostly (70-90%) found in the small size fraction in the downplume. The different behaviour of pFe and pMn should affect that of other trace elements in the plume because they are known to scavenge off other elements released from the hydrothermal vent.

We will show results of Principle Component Analysis for 16 trace elements (Ag, Al, Ba, Cd, Co, Cu, Fe, Mn, Nd, Ni, P, Pb, Th, Ti, V, Y) measured in the plume particles and discuss the main variables controlling the transport and removal of trace elements in the plume.