

Aerosol Fe cycling in the surface water of the NWPO: Sources & Transformation

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Receiving extremely high aerosol deposition during winter and spring seasons, the Northwestern Pacific Ocean provides an ideal platform to investigate the sources and the transformation processes of lithogenic and anthropogenic aerosol Fe in the surface ocean. Wang and Ho (2020)[1] found that the seasonal variations of aerosol Fe fluxes in the surface ocean are reflected in the particulate pool but not dissolved phase in the Western Philippine Sea. Based on Fe composition in size-fractionated suspended particles, they proposed that highly soluble aerosol Fe is transformed to biologically labile amorphous particulate Fe, which are largely adsorbed or aggregated on cyanobacteria. In this study, we applied the elemental and isotopic composition of size-fractionated aerosols collected in Penjia Islet and suspended particulate matter collected in the subarctic North Pacific Ocean to investigate and validate the sources and transformation processes of aerosol Fe in the surface water. These new results from the size-fractionated aerosols and marine suspended particles shall provide insights to understand the cycling mechanisms of aerosol Fe in the surface ocean.

[1] Wang, B.-S. and T.-Y. Ho (2020), *Progress in Oceanography* doi: 10.1016/j.pocean.2020.102291.