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Metal Flux of Ferromanganese from Northwest and Equatorial Pacifc

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The hydrogenetic ferromanganese crust is a slowly-growing chemical sedimentary rock composed iron and manganese oxides, with minor heavy metal elements, for example, Co, Ni, Pt, and REEs. We selected some seamounts on the Pacific plate and equatorial seamount for two typical model areas. We carried out occurrence observation of the crusts in a slope of the seamounts at water depths of 1000m to 3000m continually with high-vision camera equipped with ROV, and took intact and unbroken samples with the manipulator at Takuyo-5th seamount. We described substrate rocks, mineralogy and chemistry, and microstructures on fine-microscopic scales with radiometric dating (I. Graham, GNS).

The chemical analysis and calculation of metal flux indicated that, the Mn, the major component has concentrated continuously and fairly constantly in all areas and the depths, while the accumulation of Co depends mainly on water depth. On the other hand, elements which are of clastic origin including Fe and Al greatly reflect the distance from the continental source. Thus the hydrogenetic ferromanganese crusts are probably regarded as useful paleoceanographic archive.

Keywords: ferromanganese crusts, metal flux, northwest pacifc, equatorial pacific