

Age of strata-bound ore deposits in the Japanese accretionary complexes and a secular change of marine redox condition

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We report the age distribution of strata-bound ore deposits in the Japanese accretionary complexes. These deposits are divided into umber (Fe-Mn), Mn-rich, and volcanogenic massive sulfide (VMS; Besshi-type). The Mn-rich deposits are further divided into two subtypes that are associated with greenstone and NOT associated. Ages of these deposits provide us important constraints for a secular change of marine redox condition over the past ~360 Myr. Depositional ages of umber and Mn deposits were previously determined by microfossils including radiolarians and conodonts. On the other hand, ages of the VMS deposits are determined by Re-Os method. Oxide ore deposits such as umbers and Mn deposits related to hot-spot volcanism very likely precipitated in the modern-style oxygenated deep-sea during the period from Late Devonian to Middle Permian and during the period since Cretaceous. In contrast, Mn carbonate and VMS deposits likely precipitated in the stagnant, O₂-deficient deep-sea during the Triassic and Jurassic periods.