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Rock magnetic signature of paleoenvironmental changes in the Izu Bonin rear arc over the last 1 Ma

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During April and May 2014, IODP Expedition 350 drilled a 1806.5 m deep hole at Site U1437 in the Izu-Bonin rear arc, in order to understand, among other objectives, the compositional evolution of the arc since the Miocene and track the missing half of the subduction factory. The good recovery of mostly fine grained sediments at this site enables a high resolution paleontological and rock magnetic studies. Particularly, variations in magnetic properties and mineralogy are well documented. Natural remanent magnetization and magnetic susceptibility vary with a saw-tooth pattern. Routine rock magnetic measurements performed on about 400 samples in the first 120 meters of Hole U1437B showed that pseudo single domain to multidomain magnetite is the main carrier of the remanence. The origin of magnetite is likely detrital. The magnetic susceptibility variations depend on many factors (e.g. lithology, magnetic mineralogy, and also dilution by the carbonate matrix). The magnetic susceptibility is also used as a proxy, at first order, for magnetic minerals concentration. In order to highlight changes in magnetic minerals concentration, it's necessary to correct for the carbonate dilution effect. Onboard and onshore carbonate measurements by coulometry show that the carbonate content of the samples can be up to $\sim$60%. About 70 samples were measured onshore. After correcting the susceptibility by the carbonate content measured on the same samples, it appears that the pattern of the magnetic susceptibility before and after correction is similar. Then the magnetic susceptibility variations do not result from carbonate dilution but reflect fluctuating influx of the detrital sediment component. The delta O18 variations obtained on foraminifers (N. dutertrei) show MIS 1 to MIS 25 over the studied interval covering the last 1 Ma (see Vautravers et al., this meeting). Rock magnetic properties, concentration and grain size variations of the magnetic minerals will be compared to climatic proxies in order to investigate the rock magnetic signature of climate changes in the Izu Bonin rear arc in the Late Pleistocene.