Developing a stratigraphy for ferromanganese crusts from Tropic Seamount, north east Atlantic

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Hydrogenetic ferromanganese (Fe-Mn) crusts form condensed stratigraphic records of seawater evolution over millions of years. Accordingly, these deposits have been widely used to document geological events and paleoceanographic changes by measuring variations in isotopic profiles (e.g. Nd, Sr, Hf, Pb) [e.g. 1, 2]. These studies generally consider broad geographical areas, and observations are typically based on small sample suites from individual seamounts. Detailed studies of the continuity and variability of these isotope records at the local-scale (i.e. basin and seamount scale) are currently lacking. We present the preliminary results of a study of the stratigraphic coherence of a large and unique suite of Fe-Mn crust samples, acquired during the 'MarineE-Tech' project expedition to Tropic Seamount, in the north east Tropical Atlantic. Samples from the summit of the seamount (1100 m beneath sea level) were recovered by in situ drilling of Fe-Mn crust pavements, using an ROV-mounted drill. This provides excellent spatial control on sample distribution, which is lacking from studies based upon dredged sample material, and is vital to elucidate small-scale spatial changes in isotopic composition. We present new geochemical and isotopic data based on SEM (EDS and WDS) and LA-ICP MS analysis for cores ranging in thickness from 3–14 cm. This analysis highlights the extent of isotopic and geochemical variation at the metre to kilometre scale. [1] Claude *et al.* (2005) *Geochim. Cosmochim. Acta.* **69**, 4845–4854. [2] Koschinsky *et al.* (1996) *Geol Rundsch* **85**, 567–576.