The origin of the Bathymetrist Seamounts – a geochemical and morphological study

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Intraplate volcanism is one of the major surface manifestations of magma production and has a unique and distinct chemical composition that can significantly modify the lithosphere. Nevertheless, the origin of some of these intraplate volcanic provinces is not entirely clear, as they can be related to either mantle plumes or the presence of large fault systems. One example is the poorly investigated *Bathymetrists Seamount Chain* in the central-eastern Atlantic. This intraplate volcanic province has been associated with the Sierra Leone Rise mantle plume but is also located in an area with dense and extended transform fault systems related to the final breakup of Africa and South America.

Here we present bathymetric and geochemical data from samples collected during expeditions MSM70 and M152/2 to the *Bathymetrists Seamounts* and adjacent fracture zones. We characterize the structure and composition of the seamounts in order to understand their origin and formation mechanisms. Most of the seamounts (62%) resemble flat-topped seamounts or guyots capped by carbonated platforms, phosphorites and abundant manganese-iron crusts as observed in the Pacific. Igneous samples from the volcanoes reveal dense basaltic samples and vesicular volcanoclastic material of mafic origin containing pyroxenes, amphiboles and biotite. The morphological analyses of the seamounts indicate a structural control of volcano emplacement, potentially related to regional fault patterns and reorganisation of the African plate movement. Geochemically, the recoverd lavas have alkali ocean island basalt like compositions (with e.g. Nb/Yb>25 at TiO_2/Yb=1.2) and indicate that melts were generated by low degrees of deep melting of mantle. Based on the combination of major and trace elements, isotopes and morphological characteristics of the volcanoes, we will present a conceptual model for the origin of the Bathymetrists Seamounts.