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Petrology and geochemistry of Holocene volcanoes of WNW rift of El Hierro, Canary Islands

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The Holocene basaltic monogenetic volcanic fields in El Hierro, Canary Islands, are associated to three rift systems of this island. We report preliminary petrological and geochemical data of Holocene lava flows located in the WNW rift. Sampling focused in three active volcanic zones during Holocene: Orchilla, Verodal-Sabinosa, and Tanganasoga. Petrography of the studied lavas showed that they are homogeneous. All samples were porphyritic with macrocrysts of clinopyroxene and olivine immersed in a groundmass formed by microcrysts of plagioclase, Fe-Ti oxides and clinopyroxene. Clinopyroxenes were diopsides, olivines had forsterite contents ranging from 74 to 84 % and anorthite in plagioclase varied from 66 to 76% (labradorite). Whole-rock geochemical results evidenced that all magmas are basic in composition, ranging from picrobasalts to phonotephrites. Major, trace elements and isotope support fractional crystallization as the main process of magma evolution. However, petrography and chemistry of clinopyroxene cores agree with a xenocrystic nature of some of them. These could either represent recycled crystals through diverse magma replenishment events or accumulations of crystals from the magma. This work was partially funded by the Agencia Canaria de Investigación, Innovación y Sociedad de la Información (SolSubC200801000047).