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Inorganic element cycles between volcanic rocks, soils and plants in the Laurel Forest (Tenerife, Canary Islands, Spain).

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On Tenerife the distribution of the Laurel Forest is straitened to some parts in the north, north-west and northeast. Laurel Forest is an sensitive and important ecosystem with particular inorganic element cycling mechanisms. The mountains on Tenerife act as a topographical barrier to low-level, moist trade winds (Fernández-Palacios & de Nicholás, 1995). The laurel forest belt is altitudinally associated with the zone of orographic cloud formation, which is of vital importance, it creates a semi-humid environment in the otherwise semi-arid climate (Höllermann, 1981).

Soil type variations are closely related to the seen climate variations (Hernández-Moreno JM., 2005). Vertisols, Alfisols, Ultisols and Inceptisols on old basaltic lava flows correspond to aridic/ustic, udic and xeric moisture regime (Hernández-Moreno JM., 2005). Soils on recent pyroclastic materials, at the same climatic levels are Inceptisols, allophanic and vitric Andisols (Hernández-Moreno JM., 2005). Major urban and industrial development is located on Tenerife, and as a touristy hotspot the Island is exposed to heavy air traffic. Furthermore, the short distance to the African coastline and, therefore, to the Sahara, contribute a regular influence of African Dust emissions. In summary, Laurel Forest is exposed to different climatic conditions, variations in lithology, soils, and aerosols caused by local anthropogenic emissions, Saharan dust, and sea spray.

The present study aims to understand the geogenic element transports of different inorganic elements between volcanic rocks, soils and Laurus Novocanariensis leafs and roots. We want to determine the geogenic and anthropogenic impacts on forest soils and on Laurus Novocanariensis. We attempt to quantify the influence of climate change and the impact of globalisation revealed by the variation in time dependent environmental changes caused by humans on the Island.

During two field trips, 200 soil samples from 18 sample sites have been collected. At each locality, about 300 g of leafs (Laurus Novocanariensis), 50 g roots, 1 kg of soil and about 3 kg of volcanic rocks where collected. All leafs are from male species between 1 and 3 years old and are all taken from the same tree heights (1,5 – 2, 5 m). All tress are located directly at the soil profile. At 5 localities we took samples from Laurus Novocanariensis trees with different heights (1,5 – 2,5 m and 6 – 15 m) to compare the element distribution between younger and older species. The first results from four locations show us, that the Laurus Novocanariensis is growing on very different kind of volcanic rocks and soils. All analysed Leaf and Root samples have therefore different distributed elements and element concentrations.

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