

## **MINERAL COMPOSITION OF ATMOSPHERIC DUST IN SANTIAGO ISLAND, REPUBLIC OF CAPE VERDE: PRELIMINARY RESULTS OF CVDUST PROJECT**

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Mineral dust produced from windblown soils and deserts is one of the largest contributors to the global aerosol loading and has strong impacts on regional and global climates, long-term climate trends as well as marine and terrestrial ecosystems. Knowledge of the compositions of atmospheric dust is pertinent to understanding its impact on human health. Epidemiological studies have consistently shown an association between Air Particulate Matter pollution and the number of deaths from cancer and cardiovascular and respiratory diseases. African dust is a special case in that it is comprised almost entirely of inorganic materials and the concentration of pollutant species is relatively low. Cape Verde is located in an area of massive dust transport from land to ocean, and is thus ideal to set up sampling devices that will able the characterization and the quantification of the dust transported from Africa. The main objectives of CV-Dust project are: 1) to characterize the chemical and mineralogical composition of dust transported from Africa by setting up an orchestra of aerosol sampling devices in the strategic archipelago of Cape Verde; 2) to identify the sources of particles in Cape Verde by using receptor models; 3) to elucidate the role Saharan dust may play in the degradation of Cape Verde air quality; 4) to model processes governing dust production, transport, interaction with the radiation field and removal from the atmosphere. The project is a joint initiative of Aveiro University and Technological and Nuclear Institute (Lisbon, Portugal), together with the Cape Verde University and the support of the Cape Verde Atmospheric Observatory. Aerosol sampling is being performed at Praia airport during one year and mineralogical composition is being studied by X-ray diffraction, TEM and Scanning electron microscopy. Structural (crystallochemical) formulas will be computed from XRD and SEM – EDAX analytical data. Major phases identified in all samples, regardless of the season, include various silicates and aluminosilicates, carbonates, sulphates, phosphates, oxides and hydroxides. The identification of the main sources and origins of the particles sampled in the archipelago will be carried out by integrating complementary tools such as Principal Component Analysis, Positive Matrix Factorization, Chemical Mass Balance, Multilinear Regression Analysis, Air Mass Back trajectories analyses, meteorological data and particle size segregate analysis.

Keywords: mineral dust, X-ray diffraction, Cape Verde