

Salt water intrusion at Tarrafal municipality

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ABSTRACT

Cape Verde archipelago is located on the Central Atlantic and not very far from the African coast. It is formed by ten islands of volcanic origin. The climate of the archipelago is a characteristic climate dominated by two distinct seasons: "time of breezes" that runs from December to June and corresponds to the dry season, and "time of waters", the rainy season, that lasts from August to October, while July and November are considered transition months. Occasionally heavy rains in a torrential regime may occur and yield in one day or few days as much as the annual rainfall of some islands.

Tarrafal County is located on the northern region of Santiago Island, where temperatures are quite high all year round with long periods without any rainfall. It possesses a highly vulnerable agro-ecosystem where water and soil management are important keys to ensure its economical development and environmental balance. The qualification of strategic water reserves requires a sustainable management model. The contents of the plan that we present constitute a contribution to the definition of measures to be taken aiming the fulfillment of environmental as well as economical goals.

The deficient water management within the County, with marked overexploitation of resources, is contributing to a clear degradation of the water quality due to an increasing contamination with sea water. The high demographic growth recorded in recent years together with low scholarly levels have been the main causes for misguided water exploitation with no respect for imposed daily pumping limits. On the other hand no big advantage is taken from surface water due to the use of traditional irrigation techniques. Besides, the education level of farmers is low, mainly on what concerns a correct use of water sources.

Excessive sand mining in Tarrafal has caused negative impacts, not only at the beach level but also within the aquifer. As a matter of fact, sand mining leads to diminishing quality of the beaches and consequent decrease in tourist and consequent economical loss for local populations. As a result people tend to divert their activity toward agriculture and even more sand mining. The degradation of alluvium causes more damage to the coastal aquifers with increasing salinity.

The above mentioned problems lead us to perform a detailed study of the situation, including aquifer characterization, water depth measurements, the distance of the water body to the shore line, physical and chemical analysis, and continuous monitoring of conductivity. The aims of this work are to take preventive measures in order to avoid a higher degradation of water resources.

Besides the scientific interest of this matter we pretend to contribute to a sustainable development of the county as well as to the scientific research on the archipelago.

Keywords: *Salt water intrusion, Tarrafal, aquifer contamination.*