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Assessment of drought susceptibility in the Caribbean island of St. Lucia

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The availability of water in sufficient quality and quantity is a key factor of success for a community. Drought is a recurring feature and is referred to the temporary lack of water, when its availability is insufficient to completely satisfy the regular agricultural, urban and environmental water needs.

The assessment of drought is based on an integrated analysis of a complex water system, which is composed of its atmospheric input, its behavior at the interface of the atmosphere with the geosphere and biosphere and its superficial und groundwater run-off. Human activity interferes in many ways with the water system, such as for drinking water production and distribution, consumption for domestic, industrial, agricultural and touristic usage.

Conceptually, drought assessment is directed versus different aspects of the phenomenon: Meteorological drought focuses on the analysis of the precipitations and evaluates the statistical significance of its variation, agricultural drought addresses the insufficient moisture for crop production, and hydrological drought studies the occurrence of minimal levels in aquifers, lakes, and reservoirs. The wide definition and impact of the problem point out to the complexity of the assessment procedure, which is often due to the critical data situation.

There are a few strategies to assess drought: a semi-quantitative approach of a point based rating system which links the co-factors of drought, the application of drought indices, and the continuous modeling of the water system.

Saint Lucia is a volcanic island, located in the Southern Caribbean and has 170’000

inhabitants. It has about 620 km2 of surface, the highest peaks reach 950 m, the coastline is about 160 km. The climate is tropical with an average temperature of 26 °C and precipitations ranging from 1500 to 3500 mm. The rain season lasts from May to August. Even though drought does not seem to be a major issue, the drinking water suppliers report a water deficit in the dry season of up to 50% of the actual need. The economy of the island depends on the export of agricultural products, mainly banana, and in an increasing way, on tourism.

The poster presents the approach for drought assessment in Saint Lucia which is based on the development of a point-based rating system of the co-factors of drought, the evaluation of drought indices, and the hydrological modeling of the water system. The current status of the work is presented.