

Water Resources Management

Human dimensions of drought, Brazil



You will contribute to the following project:

Diagnosing drought for dealing with drought in 3D

Drought affects more people than any other hazard today. Yet, means to induce, aggravate or alleviate drought are also in human hands. People's use of water, water management, and trade have (unintended) consequences for spatiotemporal patterns of drought and water scarcity. For example, technologies for managing water supply and demand may create new vulnerabilities or interrupt supplies elsewhere. To manage drought better, *human influences on drought* must be better understood. Current frameworks for drought monitoring and water accounting offer little help in distilling human influences on drought and water scarcity. Understanding both the water resources available (i.e., soil moisture, surface water, groundwater, virtual water) and the influence of human activities is important to comprehend the emergence and evolution of drought and water scarcity. Moreover, processes at the local level have to be integrated with processes acting at other socio-hydrological scales. This project combines insights from socio-hydrology, socioecological modelling, and water resources management to produce an entirely new approach, incorporating the study of water-related human **dimensions** (D_1), socio-hydrological **dynamics** (D_2), and the structuring of **dialogues** (D_3) among water-governance actors. The project will develop and test the integrated, participatory **3D Drought Diagnosis** approach. The project focuses on a severely drought-affected region reliant on mixed water resources: semi-arid north-eastern Brazil. Water resources include rivers, reservoir networks, (rechargeable) aquifers, and virtual-water transfers. Actors include networks of water users, managers, traders, and policymakers.

Research Objective Thesis

Identifying and quantifying the contributions of the three water-related human dimensions (D_1 ; water use, water management, and virtual-water transfers) on hydrological drought north-eastern Brazil.

This study includes data-analysis (GIS, statistics)

Host institutes:

UNILAB - Redenção, Ceará, Brazil (<http://www.unilab.edu.br>)

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