

**IAI-CRN2-21 TROPI-DRY:
Human and Biophysical Dimensions of
Tropical Dry Forests**

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In 2004, the science Citation Index mentioned up to 2300 articles on science research in tropical areas of which barely 10% related to tropical dry forests (*tdf*) while humid and rain forests were well documented. Hence, multidisciplinary and comparative studies are very scarce and none exists for the *tdf* of the Americas. However, *tdf* is dangerously prone to biodiversity anthropogenic changes as its very location and climate make it suitable for replacement by agricultural land.

To complement the lack of knowledge in this area, the Inter-American Institute for Global Change Research, as part of a Collaborative Research Network Program CRN-2, set up TROPIDRY: A collaborative research network to understand the human and biophysical dimensions of tropical dry forests in the Americas. The network includes Mexico, Venezuela, Costa Rica and Brazil; the project is planned to last 5 years.

TROPI-DRY is coordinated/administrated by Dr. Sanchez-Azofeifa - as Principal Investigator - , University of Alberta, Canada.

The Science Advisory Board is composed of Dr. Sanchez-Azofeifa, Dr. Garvin (UofA Canada), Dr. Quesada (UNAM Mexico), Dr. Nassar, Dr. Rodríguez (IVIC Venezuela), and Dr. Gamon (UCal USA).

The country coordinators are: Dr. Quesada (Mexico), Dr. Rodríguez (Venezuela), Dr. Calvo (Costa Rica), and Dr. Wilson-Fernandez (Brazil).

TROPI-DRY's goal is to bring together researchers in conservation biology, ecology and evolution, remote sensing and geographic information systems, sociology, anthropology, policy analysis, and forestry to develop a comprehensive, "state of the art" understanding of the status of tropical dry forests (primary and secondary) in the Americas. TROPI-DRY focuses on developing a common multidisciplinary strategy in collaboration with local and national policy making organizations in order to produce comprehensive and comparative land use/policy studies in tropical dry regions in the natural and social sciences.

Three basic levels are under scrutiny: 1) the context of conservation biology, 2) the context of the land use and land cover change taking place on this rich agricultural frontier and 3) the context of local and national development policies that contribute to the degradation of *tdfs*.

Ecology and Remote Sensing approach: to develop two standardized ecological protocols: (1) Floristic and structural data; and (2) Biotic interactions (seed dispersal, and herbivory); and two remote sensing protocols: (1) Spectral vegetation Index approach for site selection and (2) Inverse modelling approaches for ecosystem complexity estimation.

Linkages to the DIVERSITAS bioDISCOVERY core project are obvious especially because the work on assessing current levels of biodiversity can help to the development of new scientific basis for monitoring and observing; understanding and predicting changes in tropical dry forests in the Americas.

Social Sciences component approach: to incorporate multiple knowledge into ecosystem management of *Tdfs*; the human component – as well as the environmental one – is conceived as dynamic, complexly-related agents in ecosystem processes and both influence and are influenced by each other. The social science component of the proposed project entails a three-part data collection process incorporating social statistics, policy reconstruction, and embedded ecological knowledge.

Ecology and Human Dimensions approach: by the continental nature of the work being conducted by TROPI-DRY, the linkage to the ecoSERVICES's goals of “expanding biodiversity and ecosystem functioning science to larger scales and over a greater breadth of the biological hierarchy; linking changes in ecosystem structure and functioning to changes in ecosystem services; assessing human response to change in ecosystem services” represents a natural fit.

Human Dimensions and Integration: TROPI-DRY aims to link its results to the policy arena and to contribute to the progress of sustainable development policies that promote the conservation and restoration of tropical dry forests in the Americas, a natural link is also expected with the DIVERSITAS bioSUSTAINABILITY core project.

The expected results of TROPI-DRY range from basic contributions in the social science, ecology and remote sensing fields, to grounded implementation of community-based programs with an impact on how local, regional and national agencies perceive their own dry forest environments.

Among other goals, TROPY-DRY aims at producing standard protocols as base lines to help quantifying land cover change in *Tdfs* in the Americas, and measurement of such changes in the recent past, as well as assessing the status, complexity and quantification of the relative value of *Tdfs* to human societies.

An edited book (to be submitted to Cambridge University Press) will summarize the project's results with a unique use of comparative data from several *Tdfs* throughout their entire distribution in the Americas and link the three main areas of interest of TROPI-DRY: human, ecological and remote sensing spheres. Such

a comprehensive book on *Tdfs* currently does not exist, although some books have presented information from a particular *Tdf* area (i.e. Frankie *et al.* 2004).