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Project Abstract

Landscape Vulnerability-Resilience in the Southern Yucatan Peninsular Region [SYPR]

Consistent with the expansion of international and national programs dedicated to land change science, this proposal examines the synthesis question of vulnerability-resilience of the land system in the southern Yucatán of Mexico. Building from its long-standing land-change science focus, the Southern Yucatán Peninsular Region project (1997-pr) proposes to use Landsat TM/ETM+, ASTER, MODIS, and AVHRR data, combined with modest fieldwork, to address part of the following overarching question: Is the land system of the southern Yucatán becoming less resilient, experiencing a reduction of its capacity to deliver ecosystem services, and increasing its vulnerability to combined biophysical and socioeconomic hazards? This question is salient because the southern Yucatán houses the Calakmul Biosphere Reserve and constitutes a critical ecotone for MesoAmerican Biological Corridor, but yet has incurred substantial development and deforestation over the past 35 years. The proposed project addresses three "outcomes-to-be-avoided" that diminish the capacity of the forest ecosystem to maintain crop productivity, diversity of forest types and species diversity, and resistance to catastrophic fire events through seven hypotheses ultimately linking to the land changes underway. Three hypotheses consider if the region and landscape display increasing extent and intensity in deciduousness in forests, surface temperature, and incidental burning. Two address reduced soil fertility and long-term productivity due to theses changes and those in the cultivation. And, an additional two examine the consequences of the first five on regional and landscape biotic diversity and species behavior. The finding will form one part of larger and longer term effort to create a coupled human-environment model of vulnerability-resilience for the region.