

Hanqin Tian
Auburn University

Land Use-Ecosystem-Climate Interactions In Monsoon Asia

The monsoon Asia has been identified by the Earth System Science Partnership (ESSP) as a priority region of integrated regional research studies. This region has experienced rapid changes in land use and land cover (LULC) due to its rapid economic development, increased population, industrialization and urbanization. The human activities in this region have significant influence on the environmental conditions both at regional and global scales. In this proposal, we will develop a coupled regional earth system model (CRESM) through integrating LULC model, ecosystem model, and regional climate model, to characterize LULC change with multiple sensor remotely sensed data and to project LULC change with models, to examine the effects of LULC change on carbon, water, and climate, and the interactions among LULC, ecosystem, and climate, and finally to analyze the uncertainty. This proposal will contribute the goals of NASA LCLUC program in (1) developing the capability to perform repeated global inventories of LULC from space; (2) evaluating the consequences of observed and predicted changes; and (3) furthering the understanding of the consequences of LULC changes on the carbon and water cycles. This proposal will answer the key questions solicited in the Monsoon Asia Integrated Regional Study (MAIRS), such as "what will the monsoon Asian region be like in 50 years?" "What will be the consequences of these projected changes for the welfare of the Asia region?" and "what will be the consequences of these changes for the Earth system?"