

Land-Use/Land-Cover Change and Its Impacts on Weather and Climate

Dev Niyogi · Rezaul Mahmood · Jimmy O. Adegoke

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Land-use and land-cover changes (LULCC) significantly affect weather and climate as is well documented in the scientific literature. These impacts include changes in air temperature, precipitation, atmospheric moisture content, energy fluxes, and mesoscale and potentially large-scale circulations. Recently, the United States National Research Council (2005) highlighted the importance of LULCC and recommended the broadening of the climate-change issue to include land-use/land-cover processes as an important climate forcing. The report noted that, “*Regional variations in radiative forcing may have important regional and global climatic implications that are not resolved by the concept of global mean radiative forcing. Tropospheric aerosols and landscape changes have particularly heterogeneous forcings. To date, there have been only limited studies of regional radiative forcing and response. Indeed, it is not clear how best to diagnose a regional forcing and response in the observational record; regional forcings can lead to global climate responses, while global forcings can be associated with regional climate responses. Regional diabatic heating can also cause atmospheric teleconnections that influence regional climate thousands of kilometres away from the point of forcing. Improving societally relevant projections of regional climate impacts will require a better understanding of the magnitudes of regional forcings and the associated climate responses.*” Therefore, it is critical that we further investigate and understand the impacts of LULCC on weather and climate predictability.

In this context, an National Science Foundation (NSF) funded workshop was organized in Boulder, Colorado, USA in 2007 to further highlight the importance of LULCC, to present results of new research in LULCC, and to discuss the challenges of the monitoring and modelling of LULCC at various temporal and spatial scales. The articles included in this

D. Niyogi (✉)
Purdue University, West Lafayette, IN, USA
e-mail: dnyiyogi@purdue.edu

R. Mahmood
Western Kentucky University, Bowling Green, KY, USA

J. O. Adegoke
University of Missouri, Kansas City, MO, USA