



## Impacts of Large Scale Land Use and Cover Change on Regional Climate

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**Abstract:** In my presentation, I will introduce the up to date advances of a National Key Basic Research Project in China, “Impacts of Large Scale Land Use and Cover Change on Regional Climate”. It is well known that the impact of human activities on global climate and environment is one of the frontiers in global change researches, especially the large-scale land use/cover changes (LUCC). LUCC can significantly alter the surface physical characteristics and the land surface-atmosphere exchanges of energy, water and materials and thus have significant impacts on climate and environment. However, LUCC on regional climate research has not yet been given systematic and quantitative assessments. The main reasons include: the lack of long-term observations of the exchanges between land surface and atmosphere in terms of momentum, heat and water vapor under different land cover types; the limited understanding of the impacts of LUCC on climate, especially on key processes of energy and water cycles; uncertainties in numerical modeling owing to the differences in involved models, land surface parameterization schemes and employed land cover maps.

Asia, especially China is one of the regions with most intense human activities, and is also one of the most representative regions with large scale LUCC. Based on outfield observation experiments, satellite remote sensing, reconstruction of historical data and ensemble regional simulations, this project intends to reconstruct China's temporal and spatial evolution of LUCC over the past 300 years [U+FF0C] and its impacts on the energy and water vapor cycles of Asian monsoon system. Reveal its possible linkage with the regional climate change, and evaluate LUCC's potential impacts on future climate change in this region.

**Key words:** Land use and cover change (LUCC), regional climate change