



## **Impacts of land use and land cover change on regional climate: Case study in Northern China**

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Over the past three decades, there has been rapid, large scale land use and land cover change in China. The impacts of such change on regional climate system has been studied but quantitative assessment of the spatial and temporal patterns of the regional monsoon system changes due to alterations of landscape characteristics such as deforestation and afforestation, have been limited. In this study, we used the regional climate modeling system (RAMS) and historical land use and land cover change in Northern China to demonstrate that the large scale human activities such as afforestation may have significant impact on the monsoon climate system, an result that previously deemed to be insignificant. The impact tends to have geographic patterns that reflect the pattern of land use and cover changeover the past thirty years in China.