



Prognostic fire algorithm in CLM-CN

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Fire is an important Earth System process. It constitutes one of the most important feedbacks between global carbon and the hydrological cycle. Despite of the importance of fire in the climate system it is yet not well understood nor it is well represented within coupled carbon-climate models used to study climate change. To improve our understanding of this feedback linked to changes in the hydrological cycle we aim for a detailed consideration of fires within the fully coupled CCSM3 model.

The current version of the land model within CCSM (CLM-CN) includes a prognostic fire algorithm based on Thonicke et al. 2001 in which fire emissions occur when climatic conditions are sufficiently dry and there is sufficient litter available. We extended the model by an alternative fire algorithm based on the work by Arora and Boer (2004). In addition we included a submodel into CLM-CN accounting for deforestation in the form of burning using past trajectories of land use change. Making use of advanced satellite data on area burnt the prognostic fire module for CLM-CN will be evaluated in terms of regional and interannual variability in fire emissions.