



Historical and future land carbon cycle, results from the 5th Coupled Model Intercomparison Project (CMIP5)

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The 5th Coupled Model Intercomparison Project (CMIP5) provided a unique source of Earth System Models simulations, generating an unprecedented range of analysis of many components of the climate system. In this presentation we will focus on the land carbon cycle, its response to the historical perturbation and its projected response in the future under the forcing of the different Representative Concentration Pathways (RCPs) scenarios. There is a broad agreement across models on the evolution of the carbon exchange between the atmosphere and the land since the beginning of the industrial revolution. Carbon sink driven by atmospheric CO₂ increase more than compensates now the carbon sources due to land use changes, consistent with independent estimates. The future of the land carbon cycle is significantly more uncertain, even for a given RCP scenario. There is no overall agreement across models on the sign of the land carbon sink by the end of the 21st century, land carbon cycle sensitivity to atmospheric CO₂ increase and climate change being strongly model dependent. Model evaluation and use of emerging constraint should help reduce uncertainties in future carbon cycle projections.