

The Status of Global Fire Modeling: Results from the Fire Model Intercomparison Project (FireMIP).

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A large number of global fire-vegetation models have been developed and widely used to simulate global fire occurrence under past and future climate and land use scenarios. Important discrepancies exist between model outcomes, resulting in a large uncertainty of past and future fire occurrence. This is in part because no systematic assessment of these fire-vegetation models has been performed so far. Therefore, in the Fire Model Intercomparison Project (FireMIP), we are examining the ability of global fire models to simulate temporal and spatial patterns of the global fire regime.

A set of transient runs for the 20th century has been completed using standardized observation based climate, atmospheric CO₂ concentration, lightning occurrence, population density and land cover data as boundary conditions. These runs are complemented by various sensitivity simulations to investigate the importance of the various drivers for the simulated trend in fire activity over the last century.

Nine global fire-vegetation models of different complexity have performed this first set of FireMIP experiments. Here we will present the first results from the FireMIP project together with a detailed comparison of model outputs against the relevant reference datasets. With a broader understanding of key processes and biases, these results will help us improve our ability to project changes in fire occurrence and to guide the development of global fire-vegetation models.