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A stochastic Forest Fire Model for future land co scenarios assessment

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Abstract. Land cover is affected by many factors including economi development, climate and natural disturbances such as wildfires. T to evaluate how fire regimes may alter future vegetation, and how vegetation may alter fire regimes, would assist forest managers in planning management actions to be carried out in the face of antic socio-economic and climatic change. In this paper, we present a m calibrating a cellular automata wildfire regime simulation model wit data on land cover and wildfire size-frequency. The method is bas observation that many forest fire regimes, in different forest types regions, exhibit power law frequency-area distributions. The stand Drossel-Schwabl cellular automata Forest Fire Model (DS-FFM) proc simulations which reproduce this observed pattern. However, the s model is simplistic in that it considers land cover to be binary – eac either contains a tree or it is empty – and the model overestimate frequency of large fires relative to actual landscapes. Our new mod Modified Forest Fire Model (MFFM), addresses this limitation by incorporating information on actual land use and differentiating am various types of flammable vegetation. The MFFM simulation mode tested on forest types with Mediterranean and sub-tropical fire reg The results showed that the MFFM was able to reproduce structura regime parameters for these two regions. Further, the model was forecast future land cover. Future research will extend this model t the forecasts of future land cover and fire regime scenarios under c land use and socio-economic change.

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