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# Integration of satellite burned area products into the land biosphere model JSBACH

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Being complex and ubiquitous phenomena, fires introduce strong perturbations into the land matter leading to intense exchange of carbon between land and atmosphere. Because fires are also a very uncertain process, the estimation of the associated emissions is still a challenge. Recently, satellite observations were found helpful for the estimation of quantitative changes introduced by fires. Currently, the Global Fire Emissions Database (GFED) is the only approach for calculations of global fires emissions on based of satellite products. One of the most important primary variables of such estimations is the burned area, which can be used as a direct input (driver) to climate and carbon cycle models, and, combined with information on burn efficiency and available fuel load, it can be used for direct calculations of trace gases and aerosols emissions.
We plan to integrate the satellite burned area products, such as those used by Global Fire Emissions Database version 3 (GFEDv3), into the land biosphere model JSBACH (Jena Scheme for Biosphere-Atmosphere Coupling in Hamburg). The JSBACH model is able to simulate most of the terrestrial biosphere processes including interactive carbon cycle. Providing also a comprehensive interface to the atmospheric model ECHAM5, coupled JSBACH-ECHAM5 approach is an exceptionally useful tool for study of atmosphere-biosphere interactions. Using it, we will calculate the atmospheric carbon emissions introduced by fires and compare them to the fires carbon emissions available from GFEDv3. Differences might be expected for example due to the differences in the simulation of fuel load. Further development of measurements-model interface for JSBACH model and integration of additional satellite products will provide an independent approach, assisting our understanding of global fire emissions uncertainties.