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## Fire-vegetation feedbacks in JULES-INFERNO

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Fire has an important impact on the terrestrial carbon cycle, affecting the growth and distribution of vegetation, and altering carbon stores in vegetation and soils. This is further complicated by the interaction with people, through land-use change, ignitions and fire management. This work presents the latest results from the recently coupled JULES-INFERNO fire enabled land surface model, and the interaction of fire, dynamic vegetation and varying land use. The results of historical and present-day global simulations are evaluated using observations of burned area and emissions, and through use of tools such as ilamb. The model performs well globally compared to observations, and improves the simulation of vegetation especially in the tropics. The model is also used to address how fire may change under different climate scenarios, including El Niño events, and future simulations of climate change. Results show that burned area increases in some areas with El Niño conditions such as those of 2015/16, especially in South America where a 13% increase in burned area and emitted carbon is simulated. This negatively impacts carbon uptake in this region, and reduces the terrestrial carbon sink.