

LBA Abstract

The present and future effects of fire on forest carbon stocks, metabolism, hydrology and economic value in Amazonia and the Cerrado.

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Amazonian forests are burning beneath the canopy. Each year, accidental ground fires burn a forest area that is similar in size to the area that is cleared and burned, with large but poorly understood impacts on carbon stocks, forest metabolism, forest hydrology and the prospect of sustainable forest management. But these ground fires are not included in deforestation estimates. Forest fires have the potential to initiate a positive feedback with local climate, because fire-induced reductions in forest evapotranspiration may cause declines in local rainfall, provoking additional burning of forests which are, themselves, more susceptible to fire each time they burn. These fires may be the first step in a process of “savannization”, in which recurrent burning favors the replacement of fire-sensitive trees by fire-resistant grasses and thick-barked trees, a process that has already transformed much of the woodland forests of the Brazilian Cerrado, adjacent to Amazonia, into grass-dominated savannas.