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The contribution of fire to a global increase in forest loss

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Fire is one of the main drivers of forest loss worldwide and its role varies depending on natural and anthropogenic drivers, ranging from large boreal wildfires to smallholder shifting agriculture. The emergence of higher resolution satellite data creates new opportunities for studying the spatial and temporal relatedness of fires and forest loss. We have quantified this relatedness by overlapping global forest loss for 2001-2018 with fire detections from burned area and active fire satellite products at 500 m resolution. Previous studies have shown that global burned area is decreasing, mostly caused by increased human influence in savanna ecosystems. However, the opposite is true for forests: our study of trends and variability shows that forest loss has increased substantially over the last two decades in many parts of the world and that its dynamics are strongly linked to fire. Striking increases in forest loss were found for rapidly developing regions such as Africa and Southeast Asia, where commodity-driven deforestation and shifting agriculture have led to increased land clearing, often with the use of fire. Besides, stand-replacing wildfire activity has increased in boreal, temperate and tropical forests. The increase in fire activity in forests and decrease in savannas shows that the global balance is shifting because of both natural and anthropogenic factors, with important consequences for the future carbon cycle.