



Accelerated deforestation in Maritime Continent contributes to weaken the Asian monsoon

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Globally, over 15 billion forest trees, approximately 0.5% of the total, are cut down each year [Crowther et al. 2015]. The rate is highest in the Maritime Continent (MC) [Hansen et al. 2013], where 263,000 km² of forest, an area larger than the United Kingdom, has disappeared from 2000 to 2014. Forest loss changes land surface properties and fluxes, which modify wind and rainfall [Charney 1975; Rodwell and Hoskins 2001]. Despite the expansive deforestation over a climatically sensitive region of the tropics, the resulting impact is unknown. Here we show using observations and a large ensemble of Atmospheric General Circulation Model experiments that deforestation into farmland and urban warms the MC, producing moisture convergence and rainfall in northwestern MC and large-scale drying north and south, weakening the South Asian summer monsoon. Our model projects that continued deforestation can contribute to significant weakening of the Asian monsoon in the coming decades.