

Climate, Fire, and Vegetation Control on Peat Carbon Accumulation in Borneo

¹F. Stute, ²J. Nichols, ³D. Peteet, ⁴A. Hoyt, ⁵R. Dommain, ⁶A. Cobb

¹*Columbia University*, ²*Lamont-Doherty Earth Observatory of Columbia University*,
³*National Aeronautics and Space Administration Goddard Institute for Space Studies*,
⁴*Massachusetts Institute of Technology*, ⁵*Smithsonian Institution*, ⁶*Singapore-MIT
Alliance for Research and Technology*

While peatlands cover only a few percent of the earth's landmass they account for roughly a quarter of all soil organic carbon (Yu et al., 2012; Turetsky et al., 2015). Our aim was to measure the impact of various factors related to peat accumulation including climate (precipitation), vegetation and fires using hydrogen isotopes, organic compound abundances, radio carbon dates and carbon content measurements. We discovered that a series of fires in Borneo burned down a peat dome by more than 3 meters releasing 3.85 megatons of carbon into the atmosphere from an area smaller than 20 km². Currently this same type of peatland is getting drained and burned by farmers to create land for agriculture, not only releasing many megatons of carbon but also impeding the peatlands natural ability to sequester atmospheric carbon.