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**Evaluating the anthropic impact on Indonesian Peatlands using the Airborne Electromagnetic method.**

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Peatlands are the largest stock of carbon on Earth surface, storing more carbon than the terrestrial vegetation globally and almost the same amount of carbon present in the atmosphere. Despite their importance, the anthropic impact on peatlands is devastating and releases enormous amount of carbon dioxide and other greenhouse gasses every year. The protection and conservation of peatlands is one of the major actions foreseen by IPCC to mitigate climate change. This action necessarily needs a precise assessment of the potential avoided emissions linked to conservation strategies, which is in turn strictly related to the precise quantification of peat deposits at local to global scale. Unfortunately, the available estimates of the peat volume over large territories are affected by large uncertainties due to the difficulties in measuring the peat thickness. This is particularly true for peat deposits located in the tropics (like Indonesia) due to their limited accessibility and to their fast degradation that deeply changes the peat volume over time. In Indonesia, for example, the reclamation of large forested wetlands for intensive agriculture purposes combined with severe drought events due to global warming have greatly increased the vulnerability of peatlands to subsidence and deep burn fires, posing the problem of mapping not just the amount of the stored peat but also its change over time. In this study, we use Airborne Electromagnetics (AEM) collected over two large contiguous peatlands in Indonesia, to determine both the topography (through laser altimeters) and the peat bottom surface, i.e. the separation surface between peat and the mineral substrate. Like expected for most peatland ecosystems, peat soils are more resistive than the clay substrate, making peat a suitable AEM target. The results obtained with the AEM method combined with our results on the correlation between peat thickness and surface elevation allow us to study the effects of the reclamation that has deeply affected one of the two peatlands. This work has implications for demonstrating the potential of AEM to rapidly infer peat thickness at regional scales and its applicability in characterizing the anthropic impact on Indonesian peatlands.