Spatial and Temporal Variation of Water Table in Degraded and Abandoned Tropical Peatlands

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To control risk of forest fires, Indonesia has imposed a new regulation for drained peatland to keep the groundwater level above 40 cm from the soil surface. The objective of this work was to analyze variations in WTs and develop a method to monitor how the drained sites comply to this level is needed. A statistical analysis was performed to assess the spatial-temporal variability of water table (WT) depth in degraded tropical peatlands in Central Kalimantan, Indonesia. Monthly WT observation over hundreds of grounds measurement were collected for three years. We investigated the spatial variability of WT depth as a function of distance to artificial drainage, as well as a function of surface elevation. The monthly time series data was used to assess the consistency of spatial variability over time for different seasons, i.e. dry and wet season. This study is aimed to establish efficient and effective methodology for mapping and monitoring of WT depth in degraded tropical peatlands. We found that the WT drawdown due to artificial drainage in the dry season reaches a minimum value three kilometers away from the ditch given that surface elevation does not fall below the elevation near the main canals. Meanwhile, ground measurements within the same sub-catchment shows similar temporal variability. This implies that ground measurement does not necessarily require very high resolution in spatial and temporal scale, as WT depth can be estimated from adjacent ground measurements.