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FIRE-CLIMATE-ECOSYSTEM INTERACTIONS RELATED TO CARBON ACCUMULATION RATES OF PEATLANDS IN JAMBI, SUMATRA (INDONESIA) DURING THE PAST 12,000 YEARS

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The largest tropical peatlands are found in Southeast Asia and their global importance as terrestrial carbon reservoirs is well documented. Despite that, little is known on the response of these peatland ecosystems to long-term climatic variability. Particularly needed is an understanding of the long-term fire regime and rainfall pattern changes linked to the *El Niño* Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD). Valuable insights into the response of peatlands to climate change can be obtained from palaeo-record reconstructions. We present palaeoecological data from two peatland cores located in the Jambi Province, Sumatra, Indonesia. The Jaw SPT core from an inland peat dome (8,000 years since peat initiation) and Sungai Buluh core (12,000 years since peat initiation) from a freshwater coastal peatland, are representative of the two main types of peatlands in the Jambi Province. We investigated the relation of reconstructed vegetation community phases (pollen and spores data), palaeohydrology (testate amoebae), fire regime history (macro-charcoal peak analysis), humification (peat characteristics) and the long-term apparent carbon accumulation rates (LORCA) with the reconstructed climatic and sea-level changes for Southeast Asia. We inferred ecosystem disturbances from $\delta^{15}N$ and pioneer pollen and spore taxa. Preliminary results indicate that vegetation dynamics were an important driver of changes in LORCA. At both sites, the fire magnitude increased from 2,000 years ago, simultaneously with an increase of *El Niño* and IOD. However, the comparison between LORCA and fire regime indicates that the overall carbon storage function was not affected at the centennial time scale. Our study highlights the potential of using palaeo-reconstructions to investigate fire ecology in the Southeast Asian peatlands and the effect of climate on these ecosystems at the centennial to millennial time scale.

Keywords:-