

Peat moisture and water level relationship in a tropical peat swamp forest

ABSTRACT

Forest fire occurring in the tropical peat swamp forest has been a major concern and has been on the increase at an alarming rate during the past decades. This problem is further compounded by the fact that some of the affected areas have burned twice or more. If left unabated, peat areas that will be at risk to frequent fires will be on the increase. Peat soils when dry, posed a high risk of combustibility. It is therefore essential to understand the moisture characteristic of the peat soil in order to develop forest fire management programme. The objective of this study was to monitor peat moisture and water level relationship. A study has been conducted to investigate the temporal characteristics of the peat water level and to understand the relationship between water table and peat moisture. The study was conducted at Compartment 101, Raja Musa Forest Reserve, Selangor, Malaysia. This area was on fire in 1998, early June 1999 and 9 March 2000. A 180 m long transect starting from the edge of the canal into the forest was established. Twenty peizometers of 2 m length each, were installed along the established transect. Water table and peat samples were taken weekly beginning at 24 October to 20 December 2000. Peat soils were analyzed for soil moisture on oven-dry basis. The result showed that there was a systematic rise and fall of the water table. The maximum and minimum water table recorded were at 22.6 cm above ground and 31.5 cm below ground, respectively. In the forested area, results showed that the changes in water level had a smaller range (16.9 cm) compared to the open area (25.1 cm). Mean peat moisture sample at depths 0 cm (surface), 50 and 100 cm were 577,891 and 1070%, respectively. ANOVA analysis showed that lower depth has significantly higher moisture (at 95% confidence level) compared to higher layers. The study shows the temporal variations of water level in peat swamp forest. This variations can be used as a basis for early warning indicator of peat forest fire. © 2006 Asian Network for Scientific Information.

Keyword: Forest fire; Peat moisture; Tropical peat forest