

GENESIS AND EVOLUTION OF TROPICAL LOW-LAND PEAT SWAMPS AND ASSOCIATED SOILS IN CENTRAL KALIMANTAN (BORNEO), INDONESIA.

G. Sieffermann*

*ORSTOM-Gadjah Mada University, Yogyakarta, Indonesia

After the presentation of the peat genesis factors in tropical low-lands, the main peat types in relation with their topographic position are described.

This paper gives a special attention to the so called "High Peat" which differs from ombrogenous basin peat through its topographic position : it is located on the highest places of the separation line of river basins, frequently overlaying buried tropical podzols. This peat, even near the surface, is older than 5.000 years B.P. and is at present not in process of formation, but in course of destruction. C_{14} data shows that the main part of this peat was formed between 9.000 and 5.500 years B.P.

After 5.500 B.P., the peat accumulation slowed down rapidly, and probably stopped completely around 2.500 B.P. Since then, this peat is in an accelerated way of destruction, its actual decomposition rate turns around 10 cm per 100 years.

This type of natural evolution, from peat accumulation to peat decomposition, can be interpreted as resulting, most probably, from a decrease in rainfall during the last 5.500 years.

The peats are situated in their environment; they are part of a well-defined landscape chain. The associated formations such as tropical podzols and saline gley-soils and their relation with the peat are reviewed.

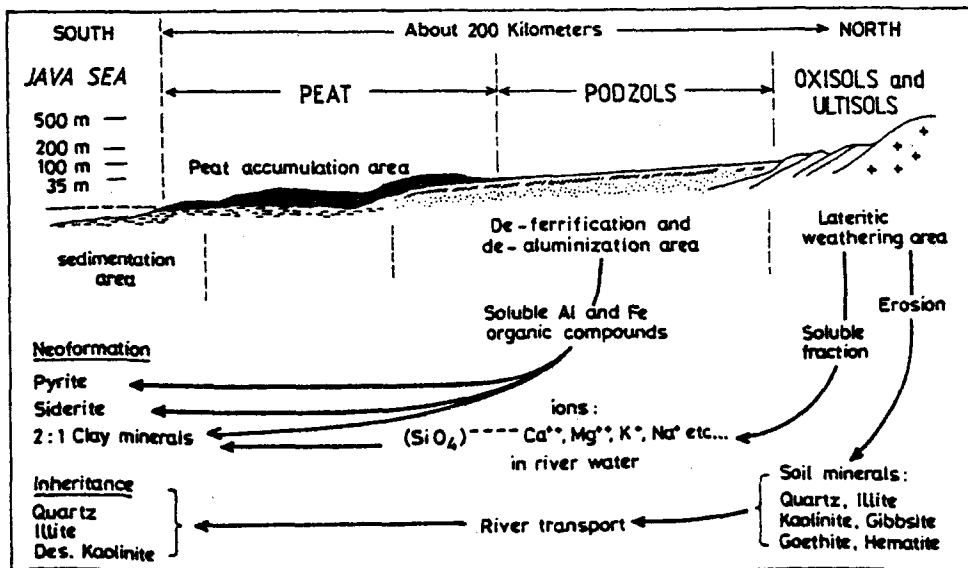


Fig. 1- Transfer of elements in the coastal landscape of Kalimantan

The geochemistry of the landscape chain from the inland to the coast is studied.

A relationship is suggested between iron-carbonate sedimentation in the coastal sediments and deferrification of podzols through a pedological process. The iron seems to be removed from the soils by "black" waters which are rich in iron-complexing organic compounds; and iron-carbonate is formed in tidal lagoons, in a brackish environment under reducing conditions.

Similar large scale changes may have occurred in the soils of the Amazonas and the Orinoco basins where actually the relations between disappeared peats, giant podzols and gley-soils with siderite layers are less obvious.

Key words : Global soil and environment changes, Equatorial peats, Pedology, Tropical podzols, Coastal Sediments, Deferrification.



第14回国際土壌科学会議

Kyoto Japan
August 12-18, 1990

Volume Commission V

Transactions

14th International Congress of Soil Science
14^e Congrès International de la Science du Sol
14. Internationaler Bodenkundlicher Kongreß