

Contributions of modern pedological analysis to the history of soils and landscapes

Application to the study of soils derived from the Continental Terminal in Casamance, Senegal

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Abstract - The study of the evolution of the soils formed on Continental Terminal in Casamance (Senegal) during the Quaternary shows how modern concepts in structural soil science can be used to understand the history of the morphopedological landscapes.

Résumé - L'étude de la distribution des sols développés sur le Continental Terminal de la moyenne Casamance (Sénégal) représente une contribution intéressante de l'analyse pédologique «structurale» à la connaissance et à la mise en place des paysages caractérisant cette région. L'analyse de la transformation enregistrée à la suite de l'arrivée d'une phase aride a conduit à situer dans le passé les différents stades de l'évolution et à proposer une vision de la structure future de ce milieu morpho-pédologique.

INTRODUCTION

requirements are met, such as in the case of recent volcanic zones (Andes, Pacific...).

These transformations are accompanied by the evolution of the relief (Millot, 1977).

This means that:

1. under a given climate, several types of soils may be distributed in space along a well defined sequence. Therefore, there can be no simple relation between current climate and soil type (Fig. 1).

of view. As it is not possible to discuss all of them, we will focus on an example that concerns the soil dynamics in Middle Casamance during the Quaternary (Chauvel, 1976).

Through a study of the soils of this region and an analysis of their distribution, Chauvel showed that:

1. there are two principal types of soil: ferrallitic red



(unaffected by deforestation) transitional soils;
3. This transformation results from the more arid

FERRALLITIC RED SOILS TRANSITIONAL SOILS FERRUGINOUS BEIGE SOILS

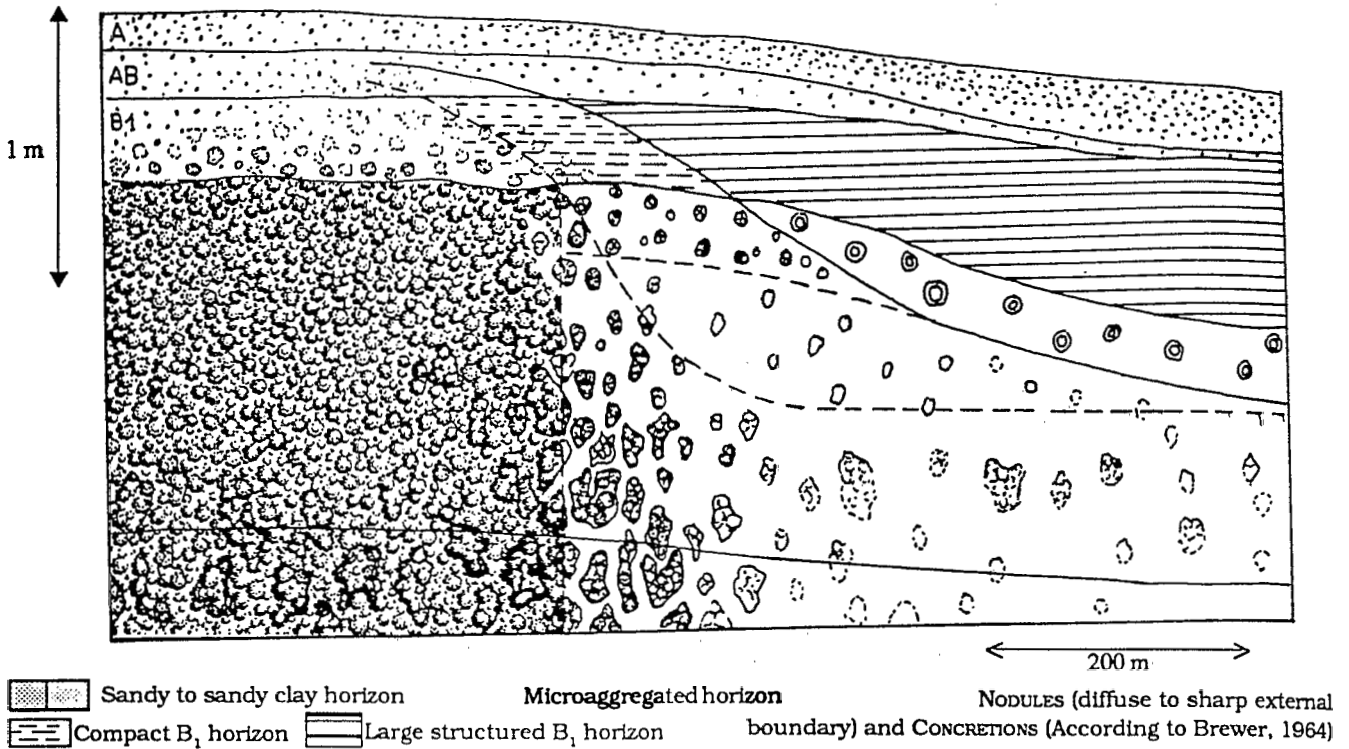


Fig. 5. Transition between red and beige soils within a toposequence, from Chauvel (1976).
 Fig. 5. Caractérisation de la zone de transition dans la toposequence: sols rouges-sols beiges.

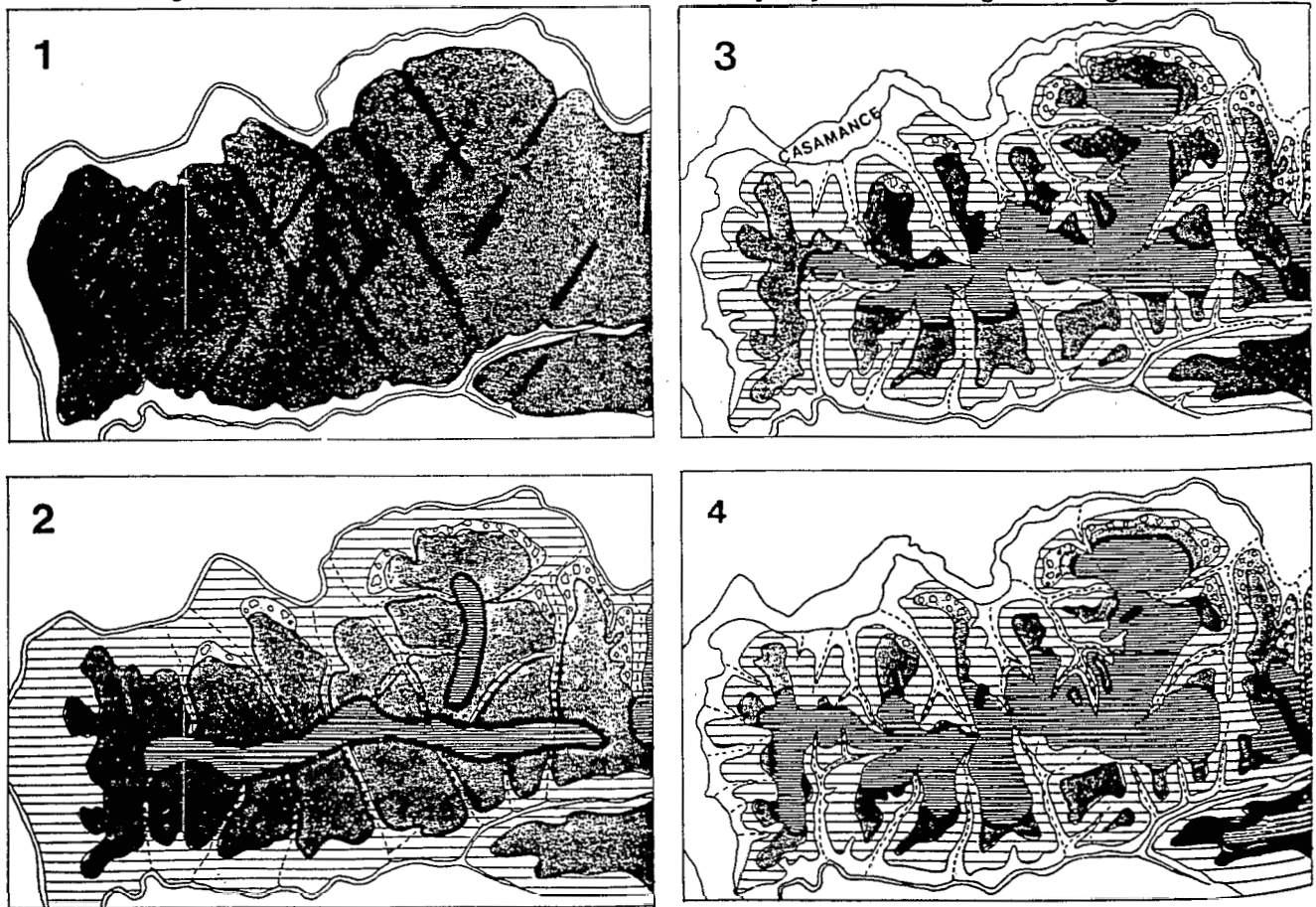


Fig. 6. Transformation phases of a typical plateau in Casamance since the Quaternary (n° 1 through n° 3) and projected into the future (n° 4), from Chauvel (1976).

Fig. 6. Evolution de la couverture pédologique en Casamance durant le Quaternaire: Passé-Présent-Futur.

5 km

red soils will survive only as "relicts" on the plateau periphery, while along the valleys the beige plateau soils would be progressively eroded and give rise to the beige slope soils.

CONCLUSIONS

Brabant, P. et Gavaud, M. 1985. Les Sols et les Ressources en terres du Nord Cameroun. 1985. ORSTOM. Collection Notice Explicative n° 103. 2 livrets et 2 cartes au 1/500 000.

Chauvel, A. 1976. Recherches sur la transformation des sols ferrallitiques dans la zone tropicale à saisons