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BY

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ABSTRACT

Eight sections were measured and described in the 6th of October City These sections are I,II,III,IV,V,VI,VII and VIII. Lithostratigraphic sections I to III belong to the post- Miocene(Plio-Pleistocene) paleosol where as section V and VI belong to late Pleistocene (most –recent paleosol), section IV is Basalt, section VII belongs to Miocene clastic and VIII belongs to Nonclastic – Miocene.

Most cumulative curves of these sections show almost similar trend, exhibiting a dominance of sand and gravel sizes which makes the saltation and traction population is the most predominant in most of these curves.

The sorting coefficients of most of the studied samples indicate poor and very poor sorting, except those of section VI signify moderately sorting. This fact may be related to the limited extent weathering and short distance of transportation. The studied sediments were transported and deposited mainly by fluviatile processes. This is indicated by: (i) the nature of their cumulative curves which indicate that their transportation was dominated by saltation and traction; and (ii) the plotting of the relationships between their grain-size parameters into the river fields of the applied scatter diagrams. This is further confirmed by the fact that their cumulative curves are similar to those characteristic of fluviatile sediments. The sequence of the previously diagenetic processes may be accepted because the studied paleosols constitute the upper most parts of the stratigraphic sections. So, they did not subjected to burial compaction and then the cementation played the main role of lithification. Also, the abundance of iron oxides in the studied paleosol samples may be referred to the Oligocene iron rich sediments which supply the solutions with more iron oxides.

These paleosols are resulted from the karstifications processes in which the dissolution of the Eocene, Miocene and Pliocene carbonates during the pluvial period in an oxidizing wet phase depositional environments.

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INTRODUCTION

1.1 Interpretation of The Soil

Soil is a mixture of organic matter, minerals, gases, liquids, and organisms that together support life. The Earth's body of soil is the pedosphere, which has four important functions: it is a medium for plant growth; it is a means of water storage, supply and purification; it is a modifier of Earth's atmosphere; it is a habitat for organisms; all of which, in turn, modify the soil. Soil interfaces with the lithosphere, the hydrosphere, the atmosphere, and the biosphere **(Chesworth, 2008).**

The term pedolith, used commonly to refer to the soil, literally translates ground stone. Soil consists of a solid phase of minerals and organic matter (the soil matrix), as well as a porous phase that holds gases (the soil atmosphere) and water (the soil solution). **(Voroney & Heck, 2007), (Danoff, 2011) and (Taylor and Ashcroft, 1972).**

Accordingly, soils are often treated as a three-state system of solids, liquids, and gases **(McCarthy, 2006) .**

Soil is a product of the influence of climate, relief (elevation, orientation, and slope of terrain), organisms, and its parent materials (original minerals) interacting over time **(Gilluly,et al 1975).**

It continually undergoes development by way of numerous physical, chemical and biological processes, which include weathering with associated erosion. Given its complexity and strong internal connectedness, it is considered an ecosystem by soil ecologists **(Ponge, 2015) .**

Most soils have a dry bulk density (density of soil taking into account voids when dry) between 1.1 and 1.6 g/cm3, while the soil particle density is much higher, in the range of 2.6 to 2.7 g/cm3 **(Yu, et al 2015).**

Little of the soil of planet Earth is older than the Pleistocene and none is older than the Cenozoic**, (Buol, et al 2011).** although fossilized soils are preserved from as far back as the Archean **(Retallack, et al 2016).**

Pedology is focused on the formation, description (morphology), and classification of soils in their natural environment **(Amundson, 2017).** In engineering terms, soil is included in the broader concept of regolith, which also includes other loose material that lies above the bedrock **(Simonson, 1957).** Soil is commonly referred to as earth or dirt; technically, the term dirt should be restricted to displaced soil **(Raloff, 2008).**

1.2 Interpretation of The Paleosoil

In the geosciences, paleosol (palaeosol in Great Britain and Australia) can have two meanings. The first meaning, common in geology and paleontology, refers to a former soil preserved by burial underneath either sediments (alluvium or loess) or volcanic deposits (volcanic ash), which in the case of older deposits have lithified into rock. In Quaternary geology, sedimentology, paleoclimatology, and geology in general, it is the typical and accepted practice to use the term "paleosol" to designate such "fossil soils" found buried within either sedimentary or volcanic deposits exposed in all continents as illustrated by **(Retallack, 2001) and (Kraus, 1999).**

In soil science, paleosols are soils formed long periods ago that have no relationship in their chemical and physical characteristics to the present-day climate or vegetation. Paleosol is an indication of Mean Annula precipitation, Mean Annula of temperature and paleoenvironment.

Because of the changes in the Earth's climate over the last fifty million years, soils formed under tropical rainforest (or even savanna) have become exposed to increasingly arid climates which cause former oxisols, ultisols or even alfisols to dry out in such a manner that a very hard crust is formed. This process has occurred so extensively in most parts of Australia as to restrict soil development - the former soil is effectively the parent material for a new soil, but it is so unweatherable that only a very poorly developed soil can exist in present dry climates, especially when they have become much drier during glacial periods in the Quaternary.

In other parts of Australia, and in many parts of Africa, drying out of former soils has not been so severe. This has led to large areas of relict podsols in quite dry climates in the far southern inland of Australia (where temperate rainforest was formerly dominant) and to the formation of torrox soils (a suborder of oxisols) in southern Africa. Here, present climates allow, effectively, the maintenance of the old soils in climates under