

## The River Nile \* 2 - Forming De Nile

While we tend to think of the Nile as ancient (it was flowing long before civilisations started to develop along its banks 5,000 years BCE), in geological terms it's a baby. At least 100 million years ago, in Cretaceous times, vast amounts of material uplifted in Central Africa was carried north by river systems, changing the landscapes. We know that rain has fallen on Africa for a long time and when it reaches the ground it flows to towards the lowest point. Geologists can find evidence of rivers over this period but cannot trace them accurately. And when rising sea in early Tertiary times 70 to 40 million years ago turned much of NE Africa into a shallow sea, the record gets pretty vague. We move forward to 6 million years ago when the African continent and Europe pushed so close together that the Mediterranean Sea was closed off from the Atlantic Ocean – it evaporated. This left a large hole, in places 3km deep! It is from this time that 5 different Nile systems evolved; Eonile, Paleonile, and 3 Pleistocene Niles: Protonile, Prenile, and Neonile.

The Eonile formed as streams started to cut channels deep into the rim of the Mediterranean bowl. This action extended the headwaters deeper into the African continent. Gradually the Nile cut a course down to the new level forming a huge canyon 2,400m below the current level of Cairo! Over time sea levels rose again and eventually breached the barrier at the Straits of Gibraltar so that the Mediterranean basin filled (imagine that waterfall) again. Sediment progressively filled Egypt's 'Grand Canyon'. From about 3 to 4 million years BP the Paleonile was a short river with its drainage basin probably restricted to S.E. Egypt, which was then a moist and vegetated area.

Approximately 1.8 million years BP, at the beginning to the Pleistocene Era there was a period of widespread glaciations in northern Europe. The climate changed and North Africa started to dry up. The Nile stopped flowing and desert formed. Watersheds in Central Africa flowed down from the continental divide between north and central Africa into the Congo basin and west to the Atlantic.

Approximately 1.5 million years ago the Protonile started to flow. There are a series of rifts making up the Sudanese Rift System. The Sudd forms a focus. As subsidence slowed and sediment deposition overtook sinking, drainage basins gradually linked up. The filling up of the depressions led to the connection of the Egyptian Nile with the Sudanese Nile during cyclic wet periods. About 700,000 BP sediment from the basalt highlands of Ethiopia starts to show up in the Egyptian riverbeds. The Prenile flowed until about 200,000 BP when North Africa dried to desert.

The Neonile began about 120,000 years ago at a time when North Africa was well-watered, with numerous lakes. Contributions from the White Nile have grown slowly with time. At one stage Lake Tanganyika drained northwards into the Nile making it a much longer river with its most distant headwaters in northern Zambia. Then the Virunga volcanoes exploded up from the floor of the Great Western Rift Valley. With this upraising and tilting, Lake Victoria grew in size. It became Africa's largest lake and the world's second largest fresh water lake in area. About 12,000 years ago the lake rose enough to break through at Ripon Falls forming the Victoria Nile. The headwaters of streams that feed the lake originate from the mountains of Rwanda and Burundi.

Wow, all these Niles; Eo, Paleo, Proto, Pre, Neo, Blue and White – there was even a Yellow Nile until about 3,000 years ago. Sorry, can't miss this opportunity - I'm feeling a bit an-Nile-ated.

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