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Sources of material for 'loess' deposits at 15°N in North Africa

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Africa is not a loess-rich continent. Lacking are the large expanses of glacial terrain and the high cold mountain regions, which would have provided the material and processes for loess deposits. African geomorphology and climatic history did not favour the formation of major loess deposits. However, within the African setting there are situations which could lead to particle formation and loess deposition. Loess deposits are made from 'large' dust (i.e. particles around 30μm).

Small dust (around 3μm) is generated in large amounts in Africa, and distributed over large distances. Large dust is not generated in significant amounts in Africa, and this accounts for the relative lack of loess deposits. It is a relative lack; examination of the map of loess distribution in the World by Scheidig 1934 (still the best world loess map) shows some possible loess in Africa. In particular there is a band across the continent at around 15°N. We propose some possible sources for this material, and fit these sources into a recently revised deterministic model of loess deposit formation. And look at some exotic but possible indicators of the loessic nature of the 15°N band.

Three possible material sources are:
(1). The Fonta-Djalon highlands to the west of the loess band,
(2). The Bodélé Depression, towards the centre of the loess band, and
(3). The Ethiopian highlands to the east. There is a convenient river associated with the loess band; the Niger rises in the Fonta-Djalon region and carries material through the loess zone. The catchment of the Niger is well placed to receive large dust material from the Bodélé depression. Most Bodélé material is small dust carried away in high suspension but small amounts of large dust could be transported to the Niger catchment. Material from the Ethiopian highlands makes up the Nile silt but again some could be transported to the west to contribute to the loess band- which is a modest loess deposit.
The deposit can be examined with respect to the deterministic model of loess deposit formation which sets out four event aspects which must be accommodated. PTDC: provenance (of material), transportation, deposition and change- all need to be considered when loess deposit genesis is examined. In the case of the 15°N loess the P actions are speculative, and probably not very effective. In fact the deposits they deliver, as mapped by Scheidig, still have to be established as genuine loess.

There are indicators of loessic nature; one is that they are favoured by tunnel nesting birds, in particular bee-eaters. Merops apiaster (the European bee-eater) travels large distances to nest in the European loess. The bee-eater nesting zones map nicely on to European loess distribution. In the 15°N zone there is a concentration of nesting activity by the Northern Carmine bee-eater (Merops nubicus) and we take this as an indicator of ground nature.