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The Sahara as large-scale Mars analogue and the activities of the Ibn Battuta Centre (Morocco).

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Sahara is the largest and oldest desert in the World. It has experienced during its long geological history a large number of climatic changes from humid conditions (with savanna-type environments) to dry conditions (with hot desert environments). Therefore since the late Miocene Sahara alternated periods with rivers, lakes, deltas swamps with periods with a strong aeolian activity and the formation of deflation surface and sand seas.

The Sahara is also dominated by a cratonic landscape with a marginal mountain chain (the Atlas) and volcanic centres (Hoggar, Tibesti). The landscape is therefore broad with swells and domes resembling the Martian topography. The fluvial deposits that formed during humid period have been reworked by wind processes during the dry periods. The aeolian erosion has been extremely efficient leaving some remains of the fluvial deposits as meander belts or exhumed (inverted) channels. Deltaic deposits are strongly eroded and large inland lakes and swamp eroded and a few remains are mostly buried below dunes and sand seas. The leftover of the fluvial deposits is basically the coarse-grained component because the finer sediment has been removed by the wind. Sand to silt material accumulated (mostly by saltation) in the sand sheets and seas. The finer portion can be trapped in the large- scale atmospheric circulation.

The results of these climatic changes are fluvial systems and lacustrine deposits interrelated with deflation surfaces and sand accumulations. This situation is similar to Mar where fluvial deposits and morphologies abound but are largely eroded. When deposits are present are basically coarse-grained (e.g. the meandering channels of the Eberswakde deltaic plain) because the long lasting aeolian. This has removed the finer portion of the sediment and accumulated the sand to silt grade portion in sand seas and sheets and th fines in a sort of draping dust.

The Ibn Battuta Centre: The Centre deals with both scientific and operational analogues. In both case it take advantage of the long geological history of Morocco and the remarkable geological and geomorphological diversity. Quaternary environments are a host of morphologies and geological settings similar to Mars from reg surfaces to dry lakes, from Aeolian dunes to bio-induced carbonates. Besides these quaternary environments, several sites of the Centre consist of ancient deposits such as the Devonian Mud Mounds of th Kess Kess or the Precambrian stromatolites near Ouarzazate. The Centre is a facility of the Europlanet Research Infrastructure of the EU.