



Timing of aeolian sediment deposition on the NE Tibetan Plateau

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Aeolian sediments on the north-eastern Tibetan Plateau have been studied since several decades and during the recent years a large number of OSL (optical stimulated luminescence) ages have been obtained from the area. For this study 223 OSL ages from loess and sand deposits have been compiled, spanning the last 21 ka. A regional analysis covered five areas on the north-eastern Tibetan Plateau; Qilian Shan, Qinghai Lake area, Gonghe Basin, Eastern Qaidam Basin, and the Donggi Cona catchment. For each region the OSL ages were clustered to identify phases of enhanced sediment deposition in relation to the dominant grain size.

No OSL ages of sand deposits were available for the Qilian Shan, the northernmost region. Enhanced sand deposition started in the Qinghai Lake area at around 17ka, while in the Gonghe Basin, the Qaidam Basin and the Donggi Cona catchment enhanced sand deposition started between 12 and 13 ka. The similar onset of accumulation in the latter three is probably related to slightly wetter climate conditions in the area due to the onset of the Asian monsoon. Wetter conditions favor the continuous fixation of the sediments. The reason for the earlier onset in the Qinghai basin by 4 ka still needs to be resolved. At around 7 ka aeolian sand deposition was strongly reduced in all areas which can be related to even wetter climate conditions in the middle Holocene and the reduction of available material. Drier conditions in the late Holocene led again to the remobilisation of aeolian sand. In contrast, OSL ages from loess deposits are much more heterogeneous. Phases of enhanced loess deposition in the five regions are not synchronous and vary between 15 ka and the present. Loess accumulation on the north-eastern Tibetan Plateau might therefore be strongly influenced by local effects, such as varying sediments sources or local topographic effects. Furthermore, erosion in loess archives might have been stronger than in sandy deposits.