



Reconstruction of Landscape Processes on the North-Eastern Tibetan Plateau

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The north-eastern part of the Tibetan Plateau is especially sensitive to changes in the monsoonal system. By the reconstruction of different geomorphological processes we are going to reconstruct the influence of these changes on the landscape. In the focus of the study are the response of glacial, fluvial and especially aeolian processes to climate, tectonic, and human influence. The study area is the catchment of Lake Donggi Cona on the north-eastern Tibetan Plateau at 35°15'N and 98°30'E. In a later phase of the project the results of the geomorphological reconstructions will be compared to sediment cores from the lake.

The catchment has an area of 3174km². The lake is situated at an elevation of 4090m asl. while the highest point is located in an western branch of the Anymachqin Mountains in the southern part of the catchment at 5230m asl. High mountains with deeply incised river valleys are also present in catchment as wide basins. Today no glaciers are present. However, in the high mountain areas in the north and the southeast of the catchment a high abundance of glacial landforms has been preserved. Up to now an overall number of 360 cirques have been mapped. The average altitude of the cirque floors elevation is about 4750m. In the northern part of the catchment terminal moraines have been deposited at the lake shore. Aeolian cover sediments deposited above the morainic sediments yielded IRSL ages between 8 and 12ka. According to these first dating results we suppose a glaciation during the MIS2. This would be comparable to results from neighbouring mountain systems like the central Anymachqin Shan, the Nianboyaze Shan in the south-east or the La Ji Shan and the Qilian Shan in the north-east.

On a large alluvial fan on the eastern side of Lake Donggi Cona three generations of dunes have been identified. Along the sides of the fan recent formation of dunes can be observed. These dunes mainly consist of fine sands which are uptaken by wind from the fan and than redeposited after a short distance. In the centre of the fan a second generation of dunes is presently eroded by aeolian activity. They are mainly found on the third fluvial terrace. On the eastern side of the fan a third generation of dunes has been preserved. They are build up by sandy sediments and have a darker color than the other two. IRSL datings from the later two dune generations are actually in process.

On the slopes and the top of small hills loess-like sediments which paleosols are frequently found. Similar sediments have been analyzed in a profil a few kilometers south of the catchment at an elevation of 4000m asl. There deposition of loess-like sediments took place between 11 and 4ka. Two prominent paleosols are present in the profile. They have been formed around 5.5ka and possibly between 7 and 8ka. The paleosols at Lake Donggi Cona should have been formed in the same time span.

The project is part of the DFG founded SPP 1372 (Tibetan Plateau: Formation - Climate – Ecosystems) and is contributing to the second topic which aims for the reconstruction of the Late Cenozoic climate evolution and environmental response.