PROBLEMS OF LATE-GLACIAL AND HOLOCENE ADVANCES IN LANGTANG, NEPAL

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Langtang Lirung (7,234m), just above Langtang Village (3,500m), is by far the highest mountain of the central Langtang Valley. The relation between its former (local) glaciers and the former Langtang Valley Glacier is a key problem in the reconstruction of glacial fluctuations during the Late-glacial and Holocene period. Shiraiwa and Watanabe (1991) refined the moraine systems established by Heuberger et.al. (1984) and Ono's (1986) stratigraphy around Langtang Village. By convincing radiocarbon dates (Ono 1986, Shiraiwa and Watanabe 1991) they interpretated the Holocene glaciation in this area anew. Their reconstruction shows a Holocene advance of the (eastern) Lirung Glacier into the Langtang Valley (at the present-day Kyangjin Kharka and Gyaltshan Gompa, 3,900m) and extending along the main valley almost till the present-day Langthang Village.

That means, the (eastern) Lirung Glacier should have extended, during this Langtang Stage, to a length of about two thirds more than during the maxima of the Little Ice Age. This is, in comparison to the Holocene glaciation of the Himalaya and other mountains, an exceptional result.

In 1991, the authors carried out a field survey in this area, sponsored by the Fonds zur Förderung der wissenschaftlichen Forschung (Vienna), without knowledge of the new Japanese chronology. Our results only partly fit the results of Shiraiwa and Watanabe (1991) and Ibetsberger (1993).

A deciding item of Shiraiwa and Watanabe's (1991) hypothesis is their interpretation of the big sediment step across the main valley just above Langtang Village as a local terminal moraine, that is not of the Langtang Valley Glacier, but the (eastern) Lirung Glacier coming along the main valley. But the hypothetical connection between this terminal moraine and the oldest

lateral moraines of the (eastern) Lirung Glacier near Kyangjin Kharka is glaciologically not possible as the positions of the lateral moraines are too low.

The authors found the continuation of the mentioned lateral moraines at the left side of the (eastern) Lirung Glacier at Kyangjin Kharka, and even the left part of the terminal moraine following the terminal moraines of Shiraiwa and Watanabe's (1991) newly defined Lirung Stage.

Shiraiwa and Watanabe's (1991) radiocarbon dates and stratigraphy (Upper Till) giving evidence of the Langtang Stage and its Holocene age, are restricted to the area around Langtang Village and upvalley till Shingdum. But if this complex terminal moraine (just above Langtang Village, and Upper Till upvalley untill Shingdum) are neither originating from the (eastern) Lirung Glacier nor from the Langtang Valley Glacier, to which glacier do these most important deposits of the Langtang Stage belong?

These glacial deposits are most probably originating from the Middle Langtang Glacier on the steep southern slope of the Langtang Lirung top, which can be seen on the map "Langtang Himal, West" of the Alperverein, 1990. Its two tongues terminate at above 4,800m. But grown during the holocene advances this glacier must have sent ice avalanches down to the bottom of the Langtang Valley around Shingdum and Möndrong, similar to what the Western Lirung Glacier did west of Langtang Village (Shiraiwa and Watanabe 1991), forming a secondary (regenerated) glacier. Some characteristic features of the Upper Till, after Ibetsberger's analyses, support this hypothesis.

The Langtang Stage, therefore, did not exist. The late glacial and post glacial fluctuations in the Central Langtang Valley must be discussed anew.

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