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Zur pedologischen Relativdatierung glazialgeomorphologischer Befunde aus dem Dhaulagiri- und Annapurna-Himalaja im Einzugsgebiet des Kali Gandaki (Zentral-Nepal)

Pedological relative dating of glaciogeomorphologcial features from the Dhaulagiri and Annapurna Himalaya along the catchment of the Kali Gandaki (central Nepal)

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Zusammenfassung

Markus Wagner:
Zur pedologischen Relativdatierung glazialgeomorphologischer Befunde aus dem Dhaulagiri- und Annapurna-Himalaja im Einzugsgebiet des Kali Gandaki (Zentral-Nepal)
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In order to conduct a pedological relative dating of glacigenic accumulations in selected catchment areas of the Kali Gandaki, located between Annapurna and Dhaulagiri-Himalaya in Central Nepal, it is of fundamental importance to first establish their glacigenic origin. An appropriate verification took place through an elaborate discussion of the partially controversial glaciogeomorpholocial investigations, which exist for the investigated area (KUHLE 1982a, Iwata 1984, Fort 1985 et al.). The investigations where supplemented through the personal field observations by the author. From these glaciogeomorpholocial findings and detailed equilibrium line altitude (ELA) calculations a relative chronology of the accumulations can be derived, which serves as a temporal framework of reference, so that the potentials and limitations of the pedological relative dating can be examined. The Kali Gandaki as an antecedent Himalayan transverse valley, thereby offers the opportunity, to pursue the effects of differing climatic and geological-lithological conditions within a small area with respect to the feasibility of pedological relative dating.
The extreme relief dimensions as well as the strong change of the relief conditions, have a great influence on the position of the ELA within the vertical extensions of the glacier. Since of the here applied methods of HÖFER (1879), LOUIS (1954/55) und KUHLE (1986b), only the Kuhle method allows for the consideration of the relief conditions over the relief specific correction factor FSD, this method yields the most reliable results for the ELA calculation. Also, the possible consideration of the from glacier thickness stemming expansion of the accumulation area in the FSD, is thereby given a significant meaning. Hence, the relative chronology of the stadia - beeing relevant for a comparison with the pedochronological dating within the framework of this study - can adequately be derived within the respective subareas.
A relative dating of glacial sites without almost any restrictions is possible only for profiles in the Thini Khola and in the Dhampus Basin, since here adequate humid and comparatively climate conditions as well as minor variations in the parent material are existent. Thereby not only a differentiation between the High-, Late-, and Neoglacial is possible, but also within the Late glacial. In the vicinity of the Nilgiri-West-Slope, in particular the different parent material does not allow for a correct temporal assignment to the individual profiles. However, for the southern slope of the Himalaya typical characteristics, e.g., a high degree of relief energy, precipitation, and anthropogenic use, preclude here a reliable deduction of the relative age of the glacigenic accumulations from the soil age, since a required undisturbed soil development and primary form conservation of the accumulations, is nearly impossible.