



From Rock to Silt: The Auernig Sturzstrom (Eastern Alps/Carinthia/Austria)

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The Auernig sturzstrom represents one of the rare pre-historic rock avalanches in the Eastern Alps which occurred in crystalline rocks, here in prasinite (amphibolite). A synform in the detachment zone with an axis in direction of the slope enabled most probably a first, short sliding phase. After around two kilometers of travel distance the rock mass shows already a strong disintegration due to dynamic fragmentation, as exhibited during excavations for a railway tunnel. The maximum thickness in the range of 100 m is found in the area where the sturzstrom was deflected by the opposing valley flank. From this location on, longitudinal ridges occur in marginal position partly high above the valley floor indicating a "swashing" flowpath. A 25 m high outcrop in around 5.5 km travel distance exhibits the internal structure of a ridge. The angularity of clasts increases towards the top from subangular to very angular. This is accompanied by a decrease in matrix content, which in lower part consists predominantly of silt and gets more sandy towards the upper part. Thus in the lower part, the appearance of the sturzstrom deposit, a massive matrix-supported diamicton, shows a striking similarity with basal traction till, especially in the lowest part, where "erratic" fluvial clasts got entrained. In contrast, the sediment in the upper part of the sequence, just beyond the huge angular boulders on top of the ridge, is clast-supported. Data on grain-size distribution and clast shape complete the picture of a "coarsening-upward" sequence indicating an increase in comminution towards the base. In total, the Auernig sturzstrom provides a nice example for studying dynamic fragmentation and the effect of fluidization.