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New radiocarbon chronology of a late Holocene landslide event in the Mont Blanc massif, Italy

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The Ferret valley Arp Nouva peat bog located in the Mont Blanc massif was critically evaluated since previously published radiocarbon dates have led to controversial conclusions on the formation of the swamp. Radiocarbon dating of roots from three pits of up to 1 m depth was applied to discuss the question whether the historical documented rock avalanche occurring in AD 1717 overran the peat bog or formed it at a later stage. Our results indicate that the rock avalanche formed the Arp Nouva peat bog by downstream blockage of the Bellecombe torrent. Furthermore, careful sample preparation with consequent separation of roots from the bulk peat sample provides possible explanation for the too old 14C ages of bulk peat samples dated previously (Deline and Kirkbride, 2009 and references therein). This work demonstrates that a combined geomorphological and geochronological approach is the most reliable way to reconstruct landscape evolution, especially in light of apparent chronological problems. The key to successful 14C dating is a careful sample selection and the identification of material that might be not ideal for chronological reconstructions.

References

Deline, Philip, and Martin P. Kirkbride. "Rock avalanches on a glacier and morainic complex in Haut Val Ferret (Mont Blanc Massif, Italy)".Geomorphology 103 (2009): 80-92.