



Unravelling fluvioglacial and post-glacial debris flows on Gredos mountain range, Central Spain, using OSL

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Gredos mountain range is formed on granitic rocks and is located in the Iberian central range, which is an east-west belt in Central Spain. Glacial forms from the different cold periods in the Pleistocene are preserved above \sim 1400 m asl. The Last Glacial Maximum started \sim 26 ka, and glacier recession was initiated \sim 21 ka. Fluvioglacial debris flows deposits >10 m thick and >4 km from the receding ice front fill river channels. After final disappearance of glaciers \sim 15 ka, moraines became unstable and generated debris flows when the moraine materials became saturated during and after intense rainfalls. These post-glacial debris flows consist of stacks of superimposed individual events that are commonly <2 m thick and <1 km long. River incision has exposed the full thickness of the sequence of debris flow deposits. Several samples were extracted for Optically Stimulated Luminescence (OSL) analysis. A portable OSL reader was used because, in contrast to traditional OSL dating, polymineral and poly-grain size sediment samples can be readily analyzed quickly in the field using the portable reader, enabling the comparison of luminescence signals from the matrices of different debris flows. The analysis of the luminescence signals helped to provide a relative chronology of some of the fluvioglacial and post-glacial debris flows in the area, together with an interpretation about the sediment origin and their modes of transport.