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Climate variability and periglacial processes during the Mid-Late Holocene in Sierra Nevada (Southern Iberian Peninsula)

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Climate variability during the Mid-Late Holocene has been determining to activate geomorphic processes in the present periglacial belt of the Sierra Nevada. We studied two sedimentary records that provide a synchronous timing for slope instability in this high semiarid massif during the last millennia: solifluction landforms and mountain lakes. Current climate conditions do not promote active solifluction processes in the Sierra Nevada, but colder and/or wetter periods during the Holocene triggered solifluction and deposited coarse-grained sediments into the lakes. By contrast, warm phases favoured soil formation, diminished the grain-size of the sediments deposited in the lakes and spread an incipient vegetation cover over the headwaters of the highest valleys. Lake sediments report an arid trend in the massif intensifying since 4.2 ky BP that has conditioned solifluction activity to shift gradually to higher altitudes.