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Geomatic techniques applied to the rock glacier of Corral del Veleta (Spain) during the period 2001-2019.

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The rock glacier of Corral del Veleta is located in the southwest of the Mediterranean basin, in the Sierra Nevada mountain range (Spain), being the highest in the Iberian Peninsula. It is located in the Quaternary circus of Guarnón at an altitude of 3,100 m, below the peak of Veleta at 3,398 m and facing northeast. The monitoring carried out during the 2001-2019 period has been carried out through different geomatic techniques: Topography, Photogrammetry, GNSS, TLS, UAV & GPR. Thermal measurements of the active layer have been added to these techniques. The analysis and results of the monitoring carried out show that it is in an accelerated process of immobilization and the relict glacial ice and permafrost on which it sits show a continuous degradation. The origin of the changes can be related to the variations in the dominant climate in the high mountains of the Sierra Nevada, particularly since the last third of the 20th century and the beginning of the 21st century.