

## Postglacial sedimentary infill of the Bricial peatland (Cantabrian Mountains, Spain)

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Bricial is a peatland located in a glaciokarst depression of the Western Massif of the Picos de Europa (NW Spain). The depression is 425 m long and 245 m wide, and it is surrounded by moraines built during the stage of glacial expansion after the maximum advance within the Last Glaciation. In contrast to what happens in other karstic depressions existing in this massif (e.g. Comeya), the thickness and sedimentary infill of this depression is still unknown.

With the purpose of better knowing the depression's structure, two electrical resistivity tomographies (ERT)s with different lengths across the Bricial depression were conducted along perpendicular directions; the shortest ERT was done in a NNE-SSW direction with an electrode spacing of 2 m and a total length of 78 m; the longest ERT was done in a WNW-ESE direction with a 5 m electrode spacing and a total length of 195 m. Both ERTs used 40 electrodes in a Wenner configuration. The two ERTs were done in such way that they intersected near an 8 m deep borehole drilled in the area in 2006. A two-dimensional electrical inversion software was used for inverting the apparent electrical resistivity data obtained during the field work into two-dimensional models of electrical resistivity of the ground. The models are a representation of the distribution of the electrical resistivity of the ground to depths of about 14 m along the shortest ERT and 35 m along the longest. In both geoelectrical models the electrical structure is approximately horizontal at the surface (i.e. between 3 to 5 m depth) and is more complex as depth increases.

Low resistivity values prevail in most part of the profiles, which is consistent with the sedimentary sequence collected in the area. The 8 m long sedimentary sequence collected from Bricial consists of homogeneous organic-rich sediments. The base of the sequence was dated at  $11,150 \pm 900$  cal yr BP. Taking into account the sedimentation rates and the data inferred from the electrical resistivity tomographies, it is expected that the Bricial contains environment information of the last 19-23 ka, which coincides with the established chronology for the second stage of glacial advance within the Last Glacial Cycle in the Cantabrian Mountains (Jimenez et al., 2013; Serrano et al., 2013, Rodríguez-Rodríguez et al., 2014; Nieuwendan et al., 2015).

### References

- Jiménez, M., Rodríguez-Rodríguez, L., García-Ruiz, J.M., Domínguez-Cuesta, M.J., Farias, P., Valero-Garcés, B., Moreno, A., Rico, M., Valcárcel, M., 2013. A review of glacial geomorphology and chronology in northern Spain: timing and regional variability during the last glacial cycle. *Geomorphology*. 196, 50-64. DOI: 10.1016/j.geomorph.2012.06.009.
- Nieuwendam, A., Ruiz-Fernández, J., Oliva, M., Lopes, V., Cruces, A., Freitas, M.C., 2015. Postglacial landscape changes and cryogenic processes in the Picos de Europa (Northern Spain) reconstructed from geomorphological mapping and microstructures on quartz grains. *Permafrost and Periglacial Processes*. DOI: 10.1002/ppp.1853.
- Rodríguez-Rodríguez, L., Jiménez-Sánchez, M., Domínguez-Cuesta, M.J., Aranburu, A., 2014a. Research history on glacial geomorphology and geochronology of the Cantabrian Mountains, north Iberia (43-42°N/7-2°W). *Quaternary International*. DOI: 10.1016/j.quaint.2014.06.007.
- Serrano, E., González-Trueba, J.J., Pellitero, R., González-García, M., Gómez, M., 2013. Quaternary glacial evolution in the Cantabrian Mountains (Northern Spain). *Geomorphology*. 196, 65-82. DOI: 10.1016/j.geomorph.2012.05.001.