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Glacial evolution in King George and Livingston Islands (Antarctica) since the Last Glacial Maximum based on cosmogenic nuclide dating and glacier surface reconstruction - CRONOANTAR project

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CRONOANTAR brings together researchers from Spain, Portugal, France and United Kingdom with the objective of spatially and temporally reconstruct the deglaciation process at the two largest islands in the South Shetlands Archipelago (Maritime Antarctica), since the Global Last Glacial Maximum. Glacier retreat in polar areas has major implications at a local, regional and even planetary scale. Global average sea level rise is the most obvious and socio-economically relevant, but there are others such as the arrival of new fauna to deglaciated areas, plant colonisation or permafrost formation and degradation. This project will study the ice-free areas in Byers and Hurd peninsulas (Livingston Island) and Fildes and Potter peninsulas (King George Island). Ice-cap glacier retreat chronology will be revealed by the use of cosmogenic isotopes (mainly 36Cl) on glacially originated sedimentary and erosive records. Cosmogenic dating will be complemented by other dating methods (C14 and OSL), which will permit the validation of these methods in regions with cold-based glaciers. Given the geomorphological evidences and the obtained ages, a deglaciation calendar will be proposed and we will use a GIS methodology to reconstruct the glacier extent and the ice thickness. The results emerging from this project will allow to assess whether the high glacier retreat rates observed during the last decades were registered in the past, or if they are conversely the consequence (and evidence) of the Global Change in Antarctica.

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