Research Group on Sedimentary Record of Climatic Changes– SERCC

J.C. Larrasoaña[1,*], L. Antón[2], E. Bellido[2], S. Lebreiro[2], J.M. López[3], M.P. Mata[2], R. Mediavilla[2], M.I. Reguera[2], I. Rosales[2], A. Sevillano[3] and P. Sierra[1]

[1]*IGME, CSIC. Oficina de Proyectos Zaragoza, Spain*

[2]*IGME, CSIC. Madrid, Spain*

[3]*IGME, CSIC. Oficina de Proyectos Baleares, Spain*

[*]*Corresp. Autor. C/Manuel Lasala 44, 9ºB, 50006 Zaragoza, Spain. jc.larra@igme.es*

Abstract

SERCC was created at the end of 2021 in response to the recent incorporation of the IGME as a National Centre of the Spanish Research Council (CSIC) and the need to converge to CSIC´s research organization, which is structured on Research Groups as basic units. SERCC is composed of 11 persons (6 Staff Scientists – 3 of them recently promoted to Scientific Researchers, 4 Specialized Technicians and 1 Predoctoral Student), and focuses on the imprint of past climate changes on the characteristics and properties of the sedimentary record, accumulated both in marine and continental realms. The group follows a multidisciplinary approach based on the combination of geochronological tools, such as radiocarbon dating and chemo-, bio-, magneto- and cyclo-stratigraphy, with the development and application of a variety of stratigraphic, sedimentologic, mineralogic, micropaleontological, geochemical and geophysical proxies that provide complementary views on how climate change has impacted different sedimentary environments and their associated ecosystems. Our research is centred in the Iberian Peninsula and its surrounding areas of the North Atlantic, the Mediterranean Sea and North Africa, but includes also other areas of special interest such as the Pacific, the Arabian region and East Africa. The scientific objectives are centred on disentangling the timing, pace, and origin of climate variability undergone in the Iberian Peninsula and its surrounding areas in the past, at periods from the Mesozoic to the Holocene and timescales ranging from millions of years to multidecadal. A strong emphasis is placed on periods that, because of their characteristics (e.g., high CO2 concentrations, high temperatures, extreme climate variability, enhanced marine productivity and export to the seafloor, impact on ecosystems) represent analogues of either global warming (Mesozoic marine anoxic events, Eocene, Miocene and Pliocene hyperthermals, Quaternary interglacials-interstadials) or periods of natural climate recovery (Mesozoic cold snaps, Heinrich cold events and interstadials). Special attention is also placed, for the most recent period, on disentangling the natural component of climate change in order to isolate the role of human activities on global warming. SERCC also focuses on other aspects of the sedimentary record pertinent to the Ecological Transition, such as the search for reservoir rocks, assessment of economically-important organogenic rocks, and monitoring pollution and erosion of soils, among others. We follow a perspective that combines: a) production of excellent science with an international impact that conveys the recommendations of the DORA declaration, b) publication of scientific documents and data in open access journals and institutional repositories, c) outreach and dissemination activities aiming at returning back to society the public resources invested in science, d) securement of funding in competitive calls, with an especial focus on European programs, e) recruitment and training of scientific and technical staff, and f) improvement of technical and laboratory facilities. In the long run, SERCC faces the

main challenges common to other research groups at the CISC and, overall, the Spanish Science and Technology System, namely: a) the reduced number of calls for recruiting and promoting young scientific talent; b) difficulty in acquisition of new equipment and space to develop both consolidated and emergent research lines; c) the heavy bureaucratic burden inherent to the management of research projects; and d) the unfavourable national context for the development of the scientific and technical (provided it is established) careers.