

Geominero Museum: past, present and... the future?

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Abstract

The Geominero Museum is a public museum that currently depends on the IGME - CSIC National Centre. A valuable geological heritage made up of more than 100,000 specimens of fossils, minerals and rocks is kept by the Museum, whose origin dates back to the second half of the 19th century. Its objectives are to conserve, disseminate and research the richness and diversity of the palaeontological, mineralogical and petrological heritage from all Spanish regions, as well as from former Spanish colonies and some representative sites of the geological record of the world. From the 1990s until 2021, the Museum has worked in three areas: research, curation-restoration and education-dissemination. A vocational and consolidated staff has achieved to position the Museo Geominero among the national and international distinguished geological museums. However, as of Royal Decree 202/2021, 30th March, the Museum missed one of its main roles: research. The reduction in Geominero Museum staff, therefore the capacities to take on museum objectives are also reduced (see the definition of a Museum by International Council of Museums, ICOM), the current weakness of the synergies previously created between researchers, curators and disseminators and a lack of expertise staff on educational and dissemination activities, have led the Museum to become a mere exhibition space for exhibiting specimens. It does not seem a very promising future for a Museum that has been a main window to the world for such an emblematic, prestigious and a long and fruitful history institution as the Spanish Geological and Mining Institute (IGME).

Past

On 20th July 1849, Gaceta de Madrid published Royal Decree of 12 July establishing a "commission to create the geological map of Madrid and to gather and coordinate the data for the general map of the kingdom", known as the Commission for the Geological Map of Spain. It was divided into four sections (Geographical-Meteorological, Botanical, Zoological and Geological-Palaeontological) led by prestigious leaders, but its trajectory was brief: cuts in funding and competences (in 1852 the section in charge of the topographic map was created) were the cause of the disappearance of the Commission in 1859 (Rábano, 2012). The geological work was taken by Junta General de Estadística until 1870, when a new Royal Decree established a second Geological Map Commission. It was made up exclusively of mining engineers, whose mission was to make general and provincial geological maps and the geological maps of the most important mining districts of the time. In 1873, the commission was reinforced with more human and financial resources, which led it to follow the path of geological-mining research that continues today at the Spanish Geological and Mining Institute (Instituto Geológico y Minero de España).

The Geominero Museum was inaugurated by King Alfonso XIII on 24th May 1926 when the XIV International Geological Congress was held with a great success in Spain. 1150 participants (350 nationals and 800 foreigners representing 52 delegations) attended to the congress and 16

geological field guides of the field trips during the congress, were published. The showcases and collections were definitively placed in the Museum in 1927. The museography was designed by Primitivo Hernández Sampelayo, the first director of Geominero Museum.

IGME was an important geological research centre from its creation until the Spanish Civil War. The war interrupted the development of work in all Spanish scientific institutions, and many prestigious researchers disappeared or went into exile. The Geominero Museum, custodian of important collections collected by scientists such as Guillermo Schulz, Casiano de Prado and Lucas Mallada, was no exception. During the post-war period, it went through a dark time of suspension of research, plundering of samples and entire collections, loss of archives, of cartouches and documentation associated with the specimens, etc. Many of the collections and their data disappeared between 1960 and the end of the 1980s due to different remodelling works carried out at the headquarters hall of the museum. These works were much likely conducted by staff with no specific curatorial expertise that systematically eliminated those samples that were decontextualized due to a lack of provenance data or systematic classification, or that simply did not seem valuable from a scientific and/or aesthetic point of view. The last of these remodellings took place during the refurbishment of the Museum, which was completed in 1989, just as the elaboration of the general inventory was about to begin.

Present

The modern stage of the Museum began in 1989 with the restoration and refurbishment of the main hall and the stained glass roof. On 2nd March 1989, the Museum was reinaugurated by King Juan Carlos I, taking the name of Museo Geominero since this time. Therefore, more than three decades ago, the Museum began a new journey, recovering its role as a research centre, enhancing its geological collections and reopening its doors to the visitors. Due to the lack of a museum register book and almost any other type of documentation, it was necessary to carry out a general inventory in order to be able to estimate the volume of items in the collection. The inventory is now complete: we now know that the Museum includes more than 40,000 minerals, about 67,000 macrofossils and more than 1,500 rocks. It also comprises a micropalaeontological collection estimated at around 100,000 specimens of foraminifera, characeae, ostracods, diatoms, conodonts, pollen grains, etc. Among all the elements that can be observed to the naked eye, approximately 17% (about 18,800) are exhibited in the permanent exhibition. The collections are distributed in more than 250 carved wooden and glass showcases located in the main hall and in the access corridors. Currently, visitors can visit the Mineral Systematics Collection, made up of minerals arranged according to crystallochemical criteria; Mineral Resources Collection, with a selection of substances of mineral interest; Collection of Minerals of the Autonomous Communities and Cities, made up of an extensive selection of specimens from Spanish deposits from historical mines and current exploitations; Collection of gems, with 159 gems exhibited, including rubies, sapphires, emeralds and aquamarines, as well as 14 replicas of famous diamonds; Basic collection of rocks, samples of the most common rocks in the lithosphere; Collection of special rocks, represented by meteorites, impact rocks and natural glass; Collection of systematic palaeontology of invertebrates, includes the main groups of fossil invertebrates, highlighting their most distinctive morphological characteristics; Collection of flora and fossil invertebrates, which represent the richness of palaeontological record of Spain following a chronostratigraphic order from the NeoProterozoic to the Pliocene; Collection of fossil vertebrates, which presents an evolutionary

order from fish to human fossil remains, and Collection of foreign fossils, made up of samples of historical interest from some classical or now extinct palaeontological sites.

In 1993 Isabel Rábano took over the direction of the Museum and was responsible for the definitive modernisation of the institution. Under her leadership, the permanent exhibition was remodelled, a travelling exhibition was created with more than 500 pieces and 30 panels, research projects and educational and teaching programmes were launched, a restoration laboratory was set up and, ultimately, a working team was formed and trained to articulate the three areas that had given coherence to the Project of the Museum to date: research, curation-restoration and education-dissemination. Thus structured, the Geominero Museum was situated among recognized national and international geological museums.

During this period, the Museum's **research** is carried out on three areas:

(1) *Palaeontology, Mineralogy and Petrology*

Palaeontology: study of past ecosystems, biodiversification events, extinction events, bioinclusions, palaeobiology, palaeobiogeography, taphonomy, biostratigraphy and movable palaeontological heritage.

Mineralogy and petrology: development of methodologies for the valuation of mineral deposits, mineralogical and petrological movable heritage, petrology of igneous materials (study and classification of meteorites), petrology of sedimentary materials (palaeoclimatic and geochemical studies in speleothems and geochemistry of cave waters), geochemistry of cretaceous amber and preparation of the Spanish Inventory of Places of Geological Interest (ELIG).

(2) *Curation-Restoration*

The tasks carried out by the technicians of the Museum in the area of curation include the management, classification, expansion, loan, updating and enhancement of the collections of the Museum. In general, the following activities are realised:

- Digital management of the information of the specimens of the collections (geolocation, cleaning, homogenisation and standardisation of data and refine the information of the institutional database).
- Classification and inventory of new samples (fossils, minerals and rocks) of the collections.
- Monitoring and renovation of the museography of the permanent exhibition.
- Field collection of samples of interest.
- Management of specimens donation to the Museum.
- Data extension of inventoried samples.
- Preparation of catalogues, brochures, publications, teaching sheets, etc.
- Management of sample loans to other institutions for temporary exhibitions.
- Identification, revision and catalogue of historical specimens.
- Organization and participation in mineral exchange roundtables.
- Mineral characterisation by electron microscopy, RX fluorescence and electron microprobe.
- Attention to specialists for checking and revision of specimens.
- Attention to public, teachers, private entities and the media.
- Advice on mineral nomenclature (participation in the Mineral Nomenclature Committee of the Spanish Mineralogical Society).
- Expertise and scientific-technical reports on geological heritage seized by Spanish authorities.

- Assessment on management, conservation and restoration of movable and immovable geological heritage for the National and Local Administration.

Regarding restoration, the following activities stand out:

- Preventive conservation of minerals, rocks, and fossils, avoiding inadequate exposures and the most sensitive samples.
- Monitoring of the state of conservation of the samples.
- Climate control of the Geominero Museum hall.
- Consolidations, adhesions and reintegrations, both material from the collections and that from field works.
- Cutting, mounting, polishing, and drawing of samples.
- Musealization of various sets of specimens, such as the showcase of the formation of amber or on the alterations of unstable minerals, both recently.
- Realization of molds and replicas from samples for educational workshops or weekend activities, molding and casting in the field of large format replicas (Cabañeros, Zumaia...) or to projects such as Soplao, etc., elaborate high quality replicas for holotypes or research, based on the invention patent owned by the IGME-Museo Geominero (2005-2025).
- New materials and new treatments research applied to conservation and restoration.
- Publication of the methodology and the results obtained in this kind of researching in specialized reviews, congresses, etc.
- Participation in postgraduate courses, master's degrees and collaborations with other museums and institutions.
- Consolidation and structural reinforcement of a "peel" of ash deposited during the eruption of the Cumbre Vieja volcano in La Palma, to allow its future exposure. In this peel, the complete stratigraphy of the ashes deposited from the beginning of the eruption until its end is collected.
- Study and evaluation of the possible musealization in situ of several points affected by the eruption of the volcano.

(3) *Education-Dissemination*

The museum is visited by at about of 45,000 visitors a year. The museum organises different activities aimed at various visitors groups: guided visits, workshops, courses, conferences, etc. Museum also take part in regular events such as Science Week, the Science Fair, International Museum Day, Book Night, Researchers' Night, etc. The museum currently lacks expertise staff dedicated to these tasks.

The activities carried out are as follows:

- Visitor service (face-to-face, by telephone and online).
- Reception of scheduled visits.
- Email management.
- Supervision of maintenance and cleaning of the facilities of the museum.
- Management of the visits agenda and volunteer guides.
- Control of educational and audiovisual material.
- Development of educational and dissemination activities (outlined above).
- Production of audiovisual teaching material.
- Production of teaching material: classroom worksheets, teachers' guides, pupils booklets, etc.
- Management of social networks and website.

- Design and production of temporary exhibitions.
- Layout of catalogues and publications.
- High quality digital photography.
- Preparation of pictures, plates and graphs for scientific publications.
- Design and production of posters and brochures for the museum.

Fardes River valley paleontological Station and Fonelas P-1 site (Lagerstätte Site, Granada).

Currently depending on the Museum, the Fardes River Valley Paleontological Station is a field infrastructure owned by the Spanish Geological Survey (IGME-CSIC), where activities are organized around the large mammal site in Fonelas P-1 at the start of the Pleistocene. Its main function is study, research, dissemination and teaching activities, in the fields of paleontology, taphonomy, paleoecology, paleoclimatology, stratigraphy and sedimentology. The main objective is the Geoconservation of national paleontological heritage of international relevance, in a musealized space insitu. Fonelas P-1 is a key international Geosite of the Granada UGGp (UNESCO Global Geopark).

The most relevant activities are related to the study of Quaternary large mammals and paleontological heritage at the Guadix-Baza basin, the inventory and the conservation of natural heritage on the paleontological station (25 hectares), and the dissemination to a broad public and teaching.

Definitively opened to public in December 2016, the Fonelas P-1 paleontological Center has become a regional reference in paleontology and Earth Sciences teaching in the field, and in geological tourism. Until February 2022, the Center had carried out 110 educational activities involving 3,325 students and teachers of primary, secondary and university education. As for geo-tourism, 7,443 visitors from 29 countries have been received.

In 2007, Fonelas P-1 was listed as a Geosite (VP014; Global Geosites Project Spain; Natural Heritage and Biodiversity Law (Law 42/2007)), and in 2010, as a cultural geo-resource by the Regional Government of Andalusia (AND 303; Andalusian strategy for comprehensive management of geo-diversity). On 28 December 2010, IGME purchased the 25 ha where the site is located, thus affording it the highest level of protection. In September 2011 IGME approved funding for a new stage of research and publicity for the Fonelas P-1 site and the Fardes River Valley Palaeontological Station (Spanish acronym EPVRF) was established, with appropriate financial and technical support for diverse activities over the following years (IGME EPVRF Task Force), to develop the first stage of the scientific field work project: Fonelas P-1 Paleontological Center (CPFP-1).

The infrastructure created with a grant funding (applied for from the Granada Province Cooperation Group -Directorate General for Sustainable Rural Development-, in the category Protection and Conservation of Cultural Heritage and was co-funded by the European Regional Development Fund and the Regional Government of Andalusia), built during 2013, is the Fonelas P-1 Paleontological Center (a 1020 m² protected area, monitored and displayed). This enabled protection of the site from atmospheric and biological damage, and its paleontological heritage to be safeguarded. Systematic works then proceeded so that the fossils obtained could be analyzed in situ. Stratigraphic sections were conserved to enable appropriate 3D interpretation of the processes that formed the site, as well as to collect materials for research and display in a musealized space.

In 2014, IGME (EPVRF) selected, collected and funded items for display in the Paleontological Center, and the center was opened to the public by appointment. In 2016, Fonelas P-1 was listed

as a Granada Geopark LIG (GG-08), and in 2017, fieldwork staff was appointed (senior technical expert) and the Center opened to the public all year round. In 2020, Granada Geopark joined the UNESCO Global Geoparks Network.

And... the future?

By Royal Decree 202/2021 of 30 March, IGME loses its competences as a Public Research Body and becomes part of CSIC. The organization changes to a dichotomical structure: scientific and technical, with research staff in a scientific Vice-Presidency and technical staff in technical Vice-Presidency. This imposition by the Ministry of Science and Innovation disarticulates and splits the Museum team: the researchers, despite their complaints and frontal opposition to this change, are forced to join a scientific department, and the rest of the museum staff, together with the Valle del Río Fardes Palaeontological Station (Fonelas, Granada) is integrated into a technical department. As a result of this situation, the Museum staff has been reduced by almost 50% (from 19 to 10) and the functions of the Geominero Museum have been limited considering that the currently most accepted definition of a museum contemplates the research as one of the required attributes. According to the ICOM Statutes, adopted by the 22nd General Assembly in Vienna, Austria, on 24 August 2007, the current museum definition is as follows: A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment.

On the other side, the Museum Public Programs have suffered significant cutbacks. These programs covered a variety of activities (workshops, trips, talks, temporary exhibitions, courses, educational kits, audio-visual resources, etc.) aiming to promote community literacy in Earth Sciences. And therefore a community who is able to know, preserve, value and enjoy its geological heritage. Some of these activities have been recognized with several awards in 2003, 2007, 2015 and, more recently, 2021. However, the Museum currently lacks the budget to develop these activities as well as the staff devoted exclusively to educational fields, so that its functions are even more limited, being reduced to preservation and restoration.

Until January 2022, the Museum had a perfectly articulated and consolidated work team. Its activities and awards in all areas (research, preservation and dissemination) gave visibility and prestige to the IGME. But since then we live times of uncertainty in which the future of the Museum seems to be at stake. We do not know if we are going to have the economic resources to carry out educational activities, nor the expert staff to design them. We have lost the support of researchers in most of our daily work. We do not know if some kind of general admission fee or activity fee will be charged in the future. But we do know that we are a public service that fulfils a social function and therefore should be regulated according to broader criteria than those merely economic.

We will continue working on the objectives that define the functioning of our Museum because these objectives were, are and will be the attributes that represent its uniqueness.