Eloi González-Esvertit

PhD Student, Earth Scientist

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MAIN RESEARCH INTERESTS

Structural Geology	Petrology	Geoenergy and Geohazards
Geological and structural mapping	Fluid-rock interactions	Earthquakes and fluid flow
Microtectonics	Fluid flow and heat transport	Carbon Capture and Storage
Folding and fracturing of rocks	Stable isotope geochemistry	GIS multi-scale analysis
Crystal-plastic deformation in shear zones	Granite metasomatism and alteration styles	Energy, carbon, and nuclear waste sub-surface storage

EMPLOYEMENT

04/21 – 04/24. PhD Researcher. University of Barcelona, Faculty of Earth Sciences

Multidisciplinary study of the giant quartz veins and their host rocks in the Pyrenees through a combination of fieldwork, laboratory analyses, and numerical modelling. Contribution to the knowledge of the Pyrenean tectono-thermal evolution as well as to the global understanding of crustal fluid flow, fluid-rock interactions, and formation of giant quartz veins.

09/22 – 11/22. Research visit at RWTH Aachen University (Germany)

Research stay at the Institute of Applied Mineralogy and Economic Geology of the RWTH Aachen University. Comprehensive study of fluid inclusions: microthermometry, raman spectroscopy and LA-ICPMS microanalysis. With Prof. Thomas Wagner and Dr. Tobias Fusswinkel.

09/20 – 03/21. Assistant Research Scientist. University of Barcelona, Faculty of Earth Sciences

Development of the Iberian Evaporite Structures Database (IESDB) (https://iesdb.eu)
Data mining, filtering, and curation. Webpage design and implementation. Image creation.
Overall assessment of evaporite structures in the Iberia Peninsula for earth science, academic research, and resource exploration and appraisal (CO2 and Energy storage, nuclear waste management).

09/18 – 06/19. Internship Student. Spanish National Research Council (GEO3BCN-CSIC)

Practical introduction to geochronology (360h). Description of igneous rocks from the Pyrenees. Sample management, sample preparation and zircon extraction for U-Pb dating.

EDUCATION

2019 – 2020. MSc (Honours) in Mineral Resources and Geological Hazards, University of Barcelona.

Awarded by the Spanish Mineralogical Society (SEM). MSc dissertation*: Insights into the structural evolution of the pre-Variscan rocks of the Eastern Pyrenees from metric- and hectometric-sized quartz veins; constraints on chlorite and fluid inclusions thermometry*.

2013 – 2019. Degree in Geology, University of Barcelona.

Awarded by the Spanish Illustrious Official College of Geologists (ICOG). Undergraduate dissertation*: La discordancia del Ordovícico Superior en La Molina (Pirineo): estudio de la deformación y condiciones de formación de las venas de cuarzo asociadas*.

ENROLMENT IN FUNDED PROJECTS

Geomodels Research Institute – *Member of the Editorial Board and representative of the PhD Students.*

Funding: Generalitat de Catalunya.
PI: Eduard Roca.

PID2020-118999GB-100 – *New evaporite records from the Eastern and Western Mediterranean: contributions to the evolution of the last saline giant and opportunities for the energy transition.*

Funding: Min. de Ciencia, Innovación y Universidades (Spanish Government) / European Regional Development Fund.
PI: Lluís Gibert / Enrique Gómez-Rivas.

RyC-2018-026335 – *Understanding the interplay between deformation, dynamic fluid flow and rock alteration in the Earth's crust.*

Hired as Assistant Researcher in the framework of the Ramón y Cajal fellowship of Dr. Enrique Gómez Rivas.
Funding: Min. de Ciencia, Innovación y Universidades (Spanish Government) / European Regional Development Fund.

PGC2018-093903-B-C22 – *Unravelling fluid flow during the evolution of inverted basins and orogenic belts: application to CO2 storage.*

Funding: Min. de Ciencia, Innovación y Universidades (Spanish Government) / European Regional Development Fund.
PI: Anna Travé Herrero / Juan Diego Martín Martín.

2017SGR-00824 – Grup de Recerca Geologia Sedimentària

Funding: Generalitat de Catalunya.
PI: Anna Travé Herrero.

COURSES AND FIELDTRIPS

Universitat de Barcelona – Statistics applied to Earth Sciences

2022 – Dr Cristina Baeza. Barcelona.

Descriptive and inferential statistics, analysis of data matrices, preparation of data for statistical analysis, SPSS package.

University of Catania / INGV – Etna Volcano

2022 – Dr Rosalda Punturo, Dr Giorgio De Guidi, Dr Carmelo Monaco, and Dr Giuseppe Puglisi. Italy.

Volcano-tectonic evidence, dykes, eruptive apparatus and lava flows, active tectonics

University of Catania / INGV – Calabria Crystalline Basement

2022 – Dr Gaetano Ortolano, Dr Eugenio Fazzio, Dr Patrizia Fiannacca, Dr Carmelo Monaco, Dr Giovanni Barreca. Italy.

From ductile to brittle deformation: Palmi Shear Zone – Rovaglioso syn-tectonic granitoids – Messina Strait fault system.

University of Mainz – Microtectonics Masterclass

2022 – Prof. Cees Passchier and Prof. Virginia Toy. Germany.

Principles of microtectonic analysis, overprinting relations, deformation phases, flow and deformation, intracrystalline deformation, foliations and lineations, shear zones, veins and fringes, metamorphic reaction rims.

University of Edinburg (Online) - Climate Change: Carbon Capture and Storage

2021 – Prof. Mathieu Lucquiaud, Prof. Mark Wilkinson and Prof. MennatAllah Labib. Online.

Explore the technology that can provide a long-term solution to protect our atmosphere from an excess of carbon dioxide, in the context of global energy, our use of fossil fuels, and climate change.

University of Kyoto (Online) – Introduction to Geochemistry

2021 – Prof. Yoji Kobayashi. Online

How the Earth's elements are formed. What determines the elements' abundances and distribution on Earth. Rock classification and geochemical diversity. Environmental/technological problem solving.

Stanford University (Online) – Reservoir Geomechanics

2021 – Prof. Mark Zoback. Online.

Rock mechanics, structural geology, earthquake seismology and petroleum engineering to address a wide range of geomechanical problems that arise during the exploitation of oil and gas reservoirs.

TEACHING

Tübingen University (Mathematisch-Naturwissenschaftliche Fakultät) – MSc Geosciences

Structural Geology Field Course at Cap de Creus (Spain). Leading: Prof. Paul D. Bons.
2-10 April 2022 (including travel). Elective for the degree MSc Geosciences (Tübingen University)
Number of field days: 7 full days (70 hours).

Universitat de Barcelona (F. Ciències de la Terra) – MSc Science and Integrated Management of Water

2nd MSc year. Field practical – Hydrogeology. Leading: Dr Jofre Herrero.
2-10 April 2022 (including travel). Elective for the degree MSc Geosciences (Tübingen University)
Number of field days: 5 full days (40 hours).

PEER-REVIEWED PUBLICATIONS

9. González-Esvertit, E., Alcalde, J., Gómez-Rivas, E., (*in review*). IESDB – The Iberian Evaporite Structure Database. *Earth System Science Data*.
DOI: *not available yet*

8. González-Esvertit, E., **Casas, J. M.,** Canals, A., Bons, Paul D., Prieto-Torrell, C., Cofrade, G., Gomez-Rivas, E. (*accepted*, *in press*). Multi-scale analysis of the mylonitized giant quartz veins of the Cap de Creus and Canigó Massifs (Pyrenees). *Book Chapter – Springer. Mediterranean Geoscience Union*.
DOI: *not available yet*

7. González-Esvertit, E., Alcalde, J., Gomez-Rivas, E. (*accepted*, *in press*). The Iberian Evaporite Structure Database (IESDB) – an evaporite radar for energy, carbon, and nuclear waste storage facilities. *Book Chapter – Springer. Mediterranean Geoscience Union*.
DOI: *not available yet*

6. González-Esvertit, E., Canals, A., Gómez-Rivas, E., Bons, Paul D., Murta, H., Casas, J. M. (*accepted*, *in press*). Geology of giant quartz veins and their host rocks from the Eastern Pyrenees (Southwest Europe). *Journal of Maps*.
DOI: *not available yet*

5. Bons, Paul D., Cao, D., de Riese, T., Gómez-Rivas, E., **González-Esvertit, E.**, Koehn, D., Naaman, I., Sachau, T. & Tian, H (*accepted*, *in press*). A review of natural hydrofractures in rocks. *Geological Magazine*.
DOI: *not available yet*

4. González-Esvertit, E., Canals, A., Bons, Paul D., Casas, J. M. & Gómez-Rivas, E. (2022). Compiling regional structures in geological databases: the Giant Quartz Veins of the Pyrenees as a case study. *Journal of Structural Geology,* 163(1–4):104705.
DOI: https://doi.org/10.1016/j.jsg.2022.104705

3. González-Esvertit, E., Molins-Vigatà, J., Canals, A., & Casas, J. M. (*accepted*, *in press*). The geology of the Gréixer area (La Cerdanya, Eastern Pyrenees): Sardic, Variscan, and Alpine imprints. *Trabajos de Geología*.
DOI: *not available yet*

2. González-Esvertit, E., Canals, A., Casas, J. M., & Nieto, F. (2021). Chlorite chemical adjustment in the Gréixer vein: effects on thermometry. *Macla*, 24, 32-33.
URL: https://dialnet.unirioja.es/servlet/articulo?codigo=8231752

1. González-Esvertit, E., Canals, A., Casas, J. M., & Nieto, F. (2020). Insights into the structural evolution of the pre-Variscan rocks of the Eastern Pyrenees from La Molina quartz veins; constraints on chlorite and fluid inclusion thermometry. *Geologica Acta*, 18(1), 1-20, I-XVIII.
DOI: https://doi.org/10.1344/GeologicaActa2020.18.18

CONFERENCE COMMUNICATIONS

[Underlined author = presenting author]

11. González-Esvertit, E., Casas, J. M., Canals, A., Bons, Paul D., Prieto-Torrell, C., Cofrade, G., Gomez-Rivas, E. (2022). Multi-scale analysis of the mylonitized giant quartz veins of the Cap de Creus and Canigó Massifs (Pyrenees). *Mediterranean Geoscience Union Annual Meeting*. [Poster Presentation]. Marrakech, Morocco.

10. González-Esvertit, E., Alcalde, J., Gomez-Rivas, E. (2022). The Iberian Evaporite Structure Database (IESDB) – an evaporite radar for energy, carbon, and nuclear waste storage facilities. *Mediterranean Geoscience Union Annual Meeting*. [Oral Presentation]. Marrakech, Morocco.

9. González-Esvertit, E., Alcalde, J. & Gómez-Rivas, E. (2022). Introducing the Iberian Evaporite Structure Database (IESDB). Deformation mechanisms, Rheology and Tectonics (DRT) Meeting. [Poster Presentation]. Catania, Italy.

8. González-Esvertit, E., Casas, J. M., Gómez-Rivas, E. & Canals, A. (2022). Structural analysis of giant quartz veins from the Eastern Pyrenees (SW Europe). Deformation mechanisms, Rehology and Tectonics (DRT) Meeting. [Poster Presentation]. Catania, Italy.

7. González-Esvertit, E., Gómez-Rivas, E., Canals, A., Llorens, M-G., Margalef, A. & Casas, J. M. (2021). Indexation, evaluation and interpretation of regional geological structures using Geographic Information Systems: The giant quartz veins of the Pyrenees (SW Europe) as a case study. *XXI Congreso Geológico Argentino* / Online live event [Oral presentation].

6. González-Esvertit, E. (2021). Giant quartz veins: kilometres of geological information. Invited keynote at Expominer – MinerMat 2021: Minerales, materiales, medio ambiente y desarrollo sostenible. [Oral presentation].

5. González-Esvertit, E., Gómez-Rivas, E., Canals, A. & Casas, J. M. (2021). Building an orogen-scale databse of giant quartz veins: the GIVEPY (**Giant** Quartz Veins of the Pyrenees) database. *Waiting for Yorgset, Società Geologica Italiana (SGI)* / Online live event [Poster presentation].

4. González-Esvertit, E., Canals, A., Gómez-Rivas, E. & Casas, J. M. (2021). Giant quartz veins in the Eastern Pyrenees: a GIS-based macrostructural approach. *X Congreso Geológico de España de la Sociedad Geológica de España* / Vitoria (Spain) [Oral presentation].

3. González-Esvertit, E., Canals, A., Casas, J. M., & Nieto, F. (2020). Chlorite chemical adjustment in the Gréixer vein: effects on thermometry. *II Meeting, Spanish Mineralogical Society (SEM-CAT)* / Online live event [Oral presentation].

2. González-Esvertit, E., Canals, A., Casas, J. M., & Nieto, F. (2020). Chlorite and fluid inclusion thermometry as a tool to inquire into the tectono-thermal evolution of orogens: an example from the La Molina V1 (Late Ordovician) and V2 (Alpine) quartz veins. *Geological Society of America Annual Meeting (GSA2020)* / Online live event [Oral presentation]. doi: 10.1130/abs/2020AM-359638

1. González-Esvertit, E., Canals, A., & Casas, J. M. (2019). The Upper Ordovician Unconformity in La Molina area (Axial Pyrenees); deformation study and formation condititions of the associated quartz veins. *Basins and Resources (40th anniversary of CREGU).* / Nancy (France) [Poster presentation].

AWARDS

Deformation Mechanisms, Rheology and Tectonics Society (DRTsociety)

Awarded by the European Society for Deformation Mechanisms, Rheology and Tectonics as an early career researcher to attend the DRT2022 international conference in Catania, Italy (July 2022).

Committee: Paul Bons (University of Tübingen); Maria-Gema Llorens (GEO3BCN-CSIC); Gaetano Ortolano (University of Catania); Till Sachau (University of Tübingen); Eugenio Fazio (University of Catania).

Geological Society of London Research Grants

Awarded by the Research Grants Committee of the Geological Society of London, chaired by Science secretary Dr Alex Whittaker, for the project *Unravelling the formation mechanisms of giant quartz veins at the Canigó Massif (Eastern Pyrenees): a structural and geochemical approach*. Amount awarded: £1900

Supporters: Joyce Neilson (University of Aberdeen) | Josep Anton Muñoz (University of Barcelona).

Best MSc Dissertation (2020) – SEM

2021 Call for proposals: Academic Honours Award from the Spanish Mineralogical Society (SEM): "Best MSc Thesis Award". Amount Awarded: 300€.

Supporters: Josep Maria Casas (University of Barcelona) | Àngels Canals (University of Barcelona).

Best Undergraduate Dissertation (2019) - ICOG

2020 Call for proposals: Academic Honours Award from the Illustrious Official College of Geologists (ICOG): "Best BSc Thesis Award". Amount Awarded: 200€.

Supporters: Josep Maria Casas (University of Barcelona) | Àngels Canals (University of Barcelona).

DATASETS [Open Access]

González-Esvertit, E., Alcalde, J., & Gomez-Rivas, E. (2022). IESDB-The Iberian Evaporite Structures DataBase. An interactive atlas of evaporite structures in Iberia [Data set]. DIGITAL.CSIC. https://doi.org/10.20350/digitalCSIC/14586

González-Esvertit, E., Gomez-Rivas, E., Canals, A., Bons, P.D., & Casas, J.M. (2021). Giant Quartz Veins of the Pyrenees Database – Full Dataset (ESRI Shapefile) (12_2021) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5720513

González-Esvertit, E., Gomez-Rivas, E., Canals, A., Bons, P.D., & Casas, J.M. (2021). Giant Quartz Veins of the Pyrenees Database – Full Dataset (MS File) (12_2021) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5720604

González-Esvertit, E., Gomez-Rivas, E., Canals, A., Bons, P.D., & Casas, J.M. (2021). Giant Quartz Veins of the Pyrenees Database – Vein width Dataset (MS File) (12_2021) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5720630

SERVICE TO THE RESEARCH COMMUNITY

Conference organization: PhD Representative in the organizing committee of the Deformation Mechanisms, Rheology and Tectonics Meeting (DRT – Barcelona 2024).

Webpage administration

IESDB DATABASE: The IESDB (Iberian Evaporite Structures DataBase) is an interactive atlas of evaporite structures in the Iberian Peninsula. [https://iesdb.eu].

GIVEPY DATABASE: The GIVEPY Database (GIant quartz VEins of the PYrenees) is an interactive tool that incorporates information of giant quartz veins in the Pyrenees. [https://givepy.info].

Sedimentary Geology Research Group: The Sedimentary Geology consolidated group is based at the University of Barcelona and makes contributions to understanding the spatial and temporal evolution of sedimentary basins worldwide. [https://ub.edu/sedimentary-geology]

Social networks management

Sedimentary Geology Research Group: Management of Twitter, LinkedIn and Instagram official accounts.

Iberian Evaporite Structure Database: Management of Twitter accounts.

[Earth Science communication and outreach in my private twitter account, @Eloigoes]

Student Supervision

I have contributed to the supervision of two BSc (Júlia Molins and Victor Martí) and one MSc (Andreu Castanyo) theses in the University of Barcelona in 2019 and 2022, respectively.