

# Dr. Juan Alcalde

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## RESEARCH INTERESTS

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- Geological characterisation of the subsurface by means of geophysical methods, chiefly reflection seismic method (acquisition, processing and interpretation), well-log and potential field data.
- Study of depth, extension and integrity of the reservoir, seal and cap rock, faults and other structures to characterise the subsurface, with a focus on the characterisation of CO<sub>2</sub> geological storage sites.
- Research on the short-to-long term security performance of geological reservoirs.
- Research on decarbonization and negative emission technologies for a green future.
- Study of the impact of uncertainty in the interpretation of seismic data, including the uncertainty due to cognitive bias of the interpreters; this research involves studying the effect of image quality, framing and anchoring biases in seismic interpretation.
- Use of advanced seismic methods for mineral exploration, with a focus in the Iberian Pyrite Belt.

## EMPLOYMENT HISTORY

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01/20 to 12/22, **Juan de la Cierva Fellow**, at Institute of Earth Sciences Jaume Almera ICTJA-CSIC

01/19 to current, **Post-Doctoral Research Associate**, at Institute of Earth Sciences Jaume Almera ICTJA-CSIC

10/18 to 01/19, **Geophysicist**, at Lithica SCCL.

10/17 to 09/18, **Research Fellow**, at University of Aberdeen, project: “ERA-NET ACT ACORN CCS Project”.

02/17 to 09/17, **Honorary Researcher**, at University of Aberdeen.

03/15 to 02/17, **Research Fellow**, at University of Aberdeen.

11/13 to 02/15, **Post-Doctoral Research Associate**, at *University of Edinburgh*.

09/11 to 07/14, **Ph.D. student**, at *Institute of Earth Sciences Jaume Almera ICTJA-CSIC* (Barcelona, Spain).

02/09 to 11/09, **Land surveyor/permit man**, CGGVeritas Spain (Extensión Técnica).

## UNIVERSITY DEGREES

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**Ph.D. in Geophysics 2014**, University of Barcelona, Barcelona, Spain. Thesis title: [3D Seismic imaging and geological modeling of the Hontomín CO<sub>2</sub> storage site](#). *Cum Laude* with *International Mention*.

**M.Sc. in Geophysics 2011**, University of Barcelona, Barcelona, Spain. (Duration: 1 year; average mark: 7,6/10).

**B.Sc. in Geology 2009**, University of Salamanca, Salamanca, Spain, Department of Geology. (Duration: 5 years).

## LANGUAGE PROFICIENCY

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Spanish (Native); English (Working Language); French (Basic); Catalan (Intermediate).

## PUBLICATION RECORD

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1. Pérez-Díaz, L., Alcalde, J., Bond, C.E. 2020. [Handling uncertainty in the geosciences: identification, mitigation and communication](#). *Solid Earth*, 11, 889–897.
2. Sun X., Alcalde J., Gomez-Rivas E., Struth L., Johnson G., Travé A. 2020. [Appraisal of CO<sub>2</sub> storage potential in compressional hydrocarbon-bearing basins: global assessment and case study in the Sichuan Basin \(China\)](#). *Geoscience Frontiers*, In press.
3. Alcalde, J., Heinemann, N., Mabon, L., Worden, R.H., de Coninck, H., Robertson, H., Maver, M., Ghanbari, S., Swennenhuis, F., Mann, I. and Walker, T., 2019. [Acorn: Developing full-chain industrial carbon capture and storage in a resource-and infrastructure-rich hydrocarbon province](#). *Journal of Cleaner Production*, 233, pp.963-971.
4. Alcalde, J., Bond, C.E., Johnson, G., Kloppenberg, A., Ferrer, O., Bell, R. and Ayarza, P., 2019. [Fault interpretation in seismic reflection data: an experiment analysing the impact of conceptual model anchoring and vertical exaggeration](#). *Solid earth*, 10, 1651–1662.
5. Heinemann, N., Alcalde, J., Johnson, G., Roberts, J.J., McCay, A.T. and Booth, M.G., 2019. Low-carbon GeoEnergy resource options in the Midland Valley of Scotland, UK. *Scottish Journal of Geology*, pp.sjg2019-007.
6. Alcalde, J., Smith, P., Haszeldine, R.S. and Bond, C.E., 2018. [The potential for implementation of Negative Emission Technologies in Scotland](#). *International journal of greenhouse gas control*, 76, pp.85-91.
7. Alcalde, J., Flude, S., Wilkinson, M., Johnson, G., Edlmann, K., Bond, C.E., Scott, V., Gilfillan, S.M., Ogaya, X. and Haszeldine, R.S., 2018. [Estimating geological CO<sub>2</sub> storage security to deliver on climate mitigation](#). *Nature communications*, 9(1), p.2201.

8. **Alcalde, J.**, Bond, C.E., and Randle, C. 2017. [Framing bias: the effect of figure presentation on seismic interpretation](#). *Interpretation*, Vol. 5, No. 4; p-1-15.
9. **Alcalde, J.**, Bond, C.E., Johnson, G., Cooper, M.A., Butler, R.W.H. and Ellis, J.F. 2017. [The importance of structural model availability on seismic interpretation](#). *Journal of Structural Geology*, 97, p. 161-171.
10. **Alcalde, J.**, Bond, C.E., Johnson, G., Ellis, J.F., and Butler, R.W.H. 2017. [Impact of seismic image quality on fault interpretation uncertainty](#). *GSA Today*, 27, Issue 2, p. 4-10.
11. Andrés, J., **Alcalde, J.**, Ayarza, P., Saura, E., Marzán, I., Martí, D., Martínez-Catalán, J.R., Carbonell, R., Pérez-Estaún, A., García-Lobón, J.L., and Rubio, F.M. 2016. [Basement structure of the Hontomín CO2 storage site \(Spain\) determined by integration of microgravity and 3-D seismic data](#). *Solid Earth*, 7, 827-841.
12. Ogaya, X., **Alcalde, J.**, Marzán, I., Ledo, J., Queralt, P., Marcuello, A., Martí, D., Saura, E., Carbonell, R., and Benjumea, B. 2016. [Joint interpretation of magnetotelluric, seismic, and well-log data in Hontomín \(Spain\)](#). *Solid Earth*, 7, 943-958.
13. **Alcalde, J.**, Marzán, I., Saura, E., Martí, D., Ayarza, P., Juhlin, C., Pérez-Estaún, A., and Carbonell, R. 2014. [3D geological characterization of the Hontomin CO2 storage site, Spain: multidisciplinary approach from seismics, well-logging and regional data](#). *Tectonophysics* 627, pp. 6-25. DOI: 10.1016/j.tecto.2014.04.025
14. Ayarza, P., Carbonell, R., Teixell, A., Palomeras, I., Martí, D., Kchikach, A., Harnafi, M., Levander, A., Gallart, J., Arbolea, M.L., **Alcalde, J.**, Charroud, M., and Amrhar, M. 2014. [Crustal thickness and velocity structure across the Moroccan Atlas from long offset wide-angle seismic reflection data: the SIMA experiment](#). *Geochemistry, Geophysics, Geosystems* 15, pp. 1-20. DOI: 10.1002/2013GC005164
15. **Alcalde, J.**, Martí, D., Juhlin, C., MalehmirA., Sopher, D., Saura, E., Marzán, I., Calahorrano, A., Ayarza, P., Pérez-Estaún, A., and Carbonell, R. 2013. [3D Reflection Seismic Imaging of the Hontomín structure in the Basque-Cantabrian Basin \(Spain\)](#). *Solid Earth*, 4, pp. 481-496. DOI: 10.5194/se-4-481-2013
16. **Alcalde, J.**, Martí, D., Calahorrano, A., Ayarza, P., Marzán, I., Carbonell, R., Juhlin, C., Pérez-Estaún, A. 2013. [Active seismic characterization experiments of the Hontomín research facility for geological storage of CO<sub>2</sub>, Spain](#). *International Journal of Greenhouse Gas Control*. Volume 19, pp. 785-795. Elsevier, 2013. ISSN 1750-5836.

**50+ works** submitted to national or international conferences (EGU, AGU, Seismix, IGC etc.). Full list available upon request.

More info: [Google Scholar](#), [Researchgate](#), [ORCID](#), [Scopus](#).

## MERITS & AWARDS

<b>Grants:</b>	Juan de la Cierva postdoctoral fellowship (2020-2022). CIUDEN Foundation, PhD fellowship (2009-2013).
<b>Awards:</b>	AAPG Petroleum Structures and Geomechanics Division, Award for Best Recent Publication 2018. PhD with International Mention. Runners up Image of the Year and Image of the Month (November '17) of the British Geophysical Association, with the image " <a href="#">Hands-on interpretation</a> ".
<b>Research Projects:</b>	Participation in eight national and international projects, with funders including European Union, NERC, EPSERC, the Scottish Government and the Spanish Government. Total amount raised over <b>€7M</b> .
<b>Student Supervision</b>	Two PhD students and eight MSc theses supervised (University of Aberdeen, University of Barcelona, University of Vienna).

## SERVICE TO THE RESEARCH COMMUNITY

- Panel member of the Education Task Force of the UKCCSRC: tasks included administration and organisation of activities for researchers in CCS (meetings, conferences, workshops).
- Member of the Athena Swan Self-Assessment Team: writing of a proposal for the Athena Swan Award on equality and diversity in the School of Geosciences, University of Aberdeen.
- Organisation of international conferences: 17th Seismix (Aberdeen, United Kingdom); DRT 2017 (Inverness, United Kingdom).
- Convener in scientific meetings at EGU (2018, session TS11.5/GD10.5; 2019, session TS11.5/GD10.5; 2020, session ERE5.4) and Spanish Geological Society (2020, Geophysics session).
- Peer reviewer: *Solid Earth*, *Tectonophysics*, *Marine and Petroleum Geology*, *Journal of Applied Geophysics*, *International Journal of Greenhouse Gas Control*, *Near Surface Geophysics*, *Springer Books*, *Geophysical Prospecting*, *Scientific Reports*, *The Geological Society Books*, *Geosciences*.