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| Part A. PERSONAL INFORMATION | | CV date | October 2023 |
| First and Family name | ANA MORENO CABALLUD | | |
| Social Security, Passport, ID number | 73200223D | Age | 49 |
| Researcher numbers | Researcher ID | Scopus: 55828150316 | |
| | Orcid code | 0000-0001-7357-584X | |

A.1. Current position

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|--------------------------------|--------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------|
| Name of University/Institution | CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS | | |
| Department | Instituto Pirenaico de Ecología – Departamento Procesos Geoambientales y Cambio Global | | |
| Address and country | Avda. Montañana 1005 50059 Zaragoza | | |
| Phone number | 976369393 | E-mail | amoreno@ipe.csic.es |
| Current position | Científico Titular | From | May 2014 |
| Spec. cód. UNESCO | 250205 PALEOCLIMATOLOGÍA; 250618 SEDIMENTOLOGÍA; 251090 GEOLOGÍA MARINA; 250808 LIMNOLOGÍA | | |
| Palabras clave | Speleothems, last glacial cycle, abrupt climate change, paleolimnology, stable isotopes | | |

A.2. Education

| PhD | University | Year |
|------------------------------|---------------------------------------|------|
| Degree in Sciences (Geology) | University of Zaragoza | 1997 |
| PhD in Geology | University of Barcelona, Fac. Geology | 2002 |

A.3. JCR articles, h Index, thesis supervised

Author or co-author of **more than 130 publications** in **SCI** peer-reviewed international journals (**about 90** of them in the **Q1**). My **h index** is **44** in SCOPUS, my SCI papers have been cited **more than 4000 times** excluding self-citations, with an average of **450 cites by year** in the last 4 years. I have been the supervisor of **6 PhD** (three already completed in Dec-2012, Oct-2016, January-2019 and three in progress) and **5 Master Thesis** (University of Burgos, University of Zaragoza). I have **3 “sexenios”** (last one resolved in June 2015). In the 2020 rank of Spanish researchers I am the **1st woman** in the “Geosciences-multidisciplinary” category and the **8th in the CSIC** institution.

Part B. CV SUMMARY (max. 3500 characters, including spaces)

Ana Moreno obtained her PhD in Geology at the University of Barcelona (1998-2002) using marine records to understand climate teleconnections between high and tropical latitudes. In 2003, she got a 3-years postdoctoral contract (2003-2006) funded by the Spanish Council of Scientific Research (CSIC) to work on the Limnogeology and Global Change group at the Pyrenean Institute of Ecology (IPE-CSIC), dedicated to the study of the climate signal recorded in lacustrine sediments in the Iberian Peninsula and South America. In 2006 she was recognized with a Marie Curie Outgoing International Fellowship to study abrupt climate changes at the University of Minnesota, being trained at the most prestigious laboratory worldwide on speleothem research (Prof. L. Edwards’ group). After two years in the US, Ana Moreno was awarded a highly competitive research appointment in the Ramon and Cajal program. Since the year 2009, once she returned to the IPE-CSIC, she focused on setting up a new line of research based on the paleoclimate reconstruction from speleothems. In May 2014 Ana Moreno got a permanent position at the “Quaternary Paleoenvironments” group at IPE – CSIC where she is now the leader of the research line dedicated to work with speleothems as paleoclimate archives, one of the most productive lines in the institute.

Her research career has a great international impact, with more than 120 publications, including journals such as Nature Geoscience or PNAS, being about 80 of them in the Q1 of the SCI index and accumulating more than 3700 cites (SCOPUS h-index=40). She has participated in international networks (eg. COST Action) with an important role leading working groups (“Data Quantification” WG2 in INTIMATE network), organizing international conferences (PAGES 2017, INTIMATE2014, INVITE 2009) and editing very relevant special volumes (JOPL, QSR). She has been Editor in the journal QSR (2017-2020). She has experience as Principal Investigator in 2 project funded by National Park Spanish agency, 2 regional projects (Aragon Government) and 3 national projects funded by the Spanish Science Program, all focused to cave studies and paleoclimate reconstruction. She is also intensively involved on training new researchers (3 PhD students and 3 in process and 5 TFM) and on outreach activities, including schools with students and teachers, organization of early stage researchers workshops and production of videos for the general public.

Her research interests are focused on the quantitative reconstruction of climate change at different time scales (last glacial cycle, Holocene, Common Era) using geological archives of global change. Thus, she is experienced on three different and complementary archives of climate change: marine sediments, lake cores and speleothems allowing gaining exceptional and more complete information to understand the mechanisms of rapid climate change during the last millennia. Currently, she is working on incorporating new geological archives as paleoclimate records, such as glaciers and ice caves.

Part C. RELEVANT MERITS

C.1. Publications I include here some selected SCI publications for the last 10 years.

1. Bernal-Wormull, J.L., **Moreno, A.**, Bartolomé, M., Arriolabengoa, M., Pérez-Mejías, C., Iriarte, E., Osácar, C., Spötl, C., Stoll, H., Cacho, I., Edwards, R.L., Cheng, H., 2023. New insights into the climate of northern Iberia during the Younger Dryas and Holocene: The Mendukilo multi-speleothem record. *Quaternary Science Reviews* 305, 108006. <https://doi.org/10.1016/j.quascirev.2023.108006>
2. **Moreno, A.**, Bartolomé, M., López-Moreno, J.I., Pey, J., Corella, J.P., García-Orellana, J., Sancho, C., Leunda, M., et al. 2021. The case of a southern European glacier which survived Roman and medieval warm periods but is disappearing under recent warming. *The Cryosphere* 15, 1157–1172. <https://doi.org/10.5194/tc-15-1157-2021>
3. **Moreno, A.**, Iglesias, M., Azorin-Molina, C., Pérez-Mejías, C., Bartolomé, M., Sancho, C., Stoll, H., Cacho, I., Frigola, J., Osácar, C., Muñoz, A., Delgado-Huertas, A., Bladé, I., Vimeux, F., 2021. Measurement report: Spatial variability of northern Iberian rainfall stable isotope values – investigating atmospheric controls on daily and monthly timescales. *Atmospheric Chemistry and Physics* 21, 10159–10177. <https://doi.org/10.5194/acp-21-10159-2021>
4. Oliva-Urcia, B., **Moreno, A.**, 2019. Discerning the major environmental processes that influence the magnetic properties in three northern Iberia mountain lakes. *CATENA* 182, 104130. <https://doi.org/10.1016/j.catena.2019.104130>
5. Carlos Pérez-Mejías, **Ana Moreno**, Carlos Sancho, Miguel Bartolomé, Heather Stoll, Isabel Cacho, Hai Cheng, and R. Lawrence Edwards, 2017. Abrupt climate changes during Termination III in Southern Europe, *PNAS*, 114 no. 38, 10047–10052
6. **Moreno, A.**, Carlos Pérez-Mejías, Miguel Bartolomé, Carlos Sancho, Isabel Cacho, Heather Stoll, Antonio Delgado-Huertas, John Hellstrom, R. Lawrence Edwards, Hai Cheng, 2017. New speleothem data from Molinos and Ejulve caves reveal Holocene hydrological variability in northeast Iberia, *Quaternary Research*, 88, 2, 223-233
7. Bartolomé, M., **Moreno, A.**, Sancho, C., Stoll, H.M., Cacho, I., Spötl, C., Belmonte, Á., Edwards, R.L., Cheng, H., Hellstrom, J.C., 2015. Hydrological change in Southern Europe responding to increasing North Atlantic overturning during Greenland Stadial 1. *PNAS* 112, 6568–6572.
8. **Moreno, A.**, 2014a. Palaeoclimate: Lags within the Younger Dryas. *Nature Geosciences* 7, 87–88.
9. **Moreno, A.**, Sancho, C., Bartolomé, M., Oliva-Urcia, B., Delgado-Huertas, A., Estrela, M.J., Corell, D., López-Moreno, J.I., Cacho, I., 2014b. Climate controls on rainfall

isotopes and their effects on cave drip water and speleothem growth: the case of Molinos cave (Teruel, NE Spain). *Clim Dyn* 43, 221–241.

10. **Moreno, A.**, Svensson, A., Brooks, S.J., Connor, S., Engels, S., Fletcher, W., Genty, D., Heiri, O., Labuhn, I., Perşoiu, A., Peyron, O., Sadori, L., Valero-Garcés, B., Wulf, S., Zanchetta, G., 2014c. A compilation of Western European terrestrial records 60–8 ka BP: towards an understanding of latitudinal climatic gradients. *Quaternary Science Reviews*, 106, 167–185.

C.2. Research projects and grants. I include here only the projects where I have been the main researcher in the last 10 years

1. **TEMPURA: TEMPeratUre Reconstruction At past rapid climate transitions** (Ref: PID2020- 139101OB-I00)
Funded by: Ministerio de Economía y Competitividad Project years: 2023-2026
Principal investigator: Ana Moreno Caballud
Budget: 132.500 €
2. **PYCACU: Origen y cuantificación de los cambios paleoambientales en el Pirineo: variabilidad climática e impacto humano** (Ref: PID2019-106050RB-I00)
Funded by: Ministerio de Economía y Competitividad Project years: 2020-2022
Principal investigator: Penélope González Sampérez & Ana Moreno Caballud
Budget: 181.000 €
3. **Las cuevas de hielo del Parque Nacional de Ordesa y Monte Perdido: dinámica actual ante el cambio global y reconstrucción paleoambiental** (Ref: 2552/2020)
Funded by: Organismo Autónomo de Parques Nacionales Project years: 2020-2022
Principal investigator: Ana Moreno Caballud
Budget: 83.615,35 €
4. **SPYRIT: Speleothems and Ice deposits from PYrenean caves to Reconstruct rapid climate Transitions** (Ref: CGL2016-77479-R)
Funded by: Ministerio de Economía y Competitividad Project years: 2017-2019
Principal investigator: Ana Moreno Caballud
Budget: 169.000 €
5. **PALEO-ICE: ¿Es el periodo actual el más cálido de los últimos milenios? Evidencias desde el hielo glaciar de los Pirineos** (Ref: CGL2015-72167-EXP)
Funded by: Ministerio de Economía y Competitividad Project years: 2017-2018
Principal investigator: Ana Moreno Caballud
Budget: 40.000 €
6. **Reconstrucción de cambios climáticos abruptos a partir de registros de cuevas en el Parque Nacional de Ordesa y Monte Perdido: formaciones de espeleotemas y depósitos de hielo** (ref. 258/2011)
Funded by: Organismo Autónomo de Parques Nacionales Years: 2012-2014
Principal investigator: Ana Moreno Caballud
Budget: 88.000€

C.3. Awards

1. 3rd National Price Degree in Geology (1998)
2. PhD Thesis awarded by the University of Barcelona (best thesis defended during 2002).
3. “María Jesús Ibáñez” Award (2005) best PhD thesis in Geomorphology and Quaternary
4. Felix de Azara price for our work in ice caves (2018)

C.4. Member of Committees and Funding Panels

1. Member of the Spanish Geological Society, Spanish Network CLIVAR, Spanish Quaternary Society (vocal member in the Management Committee), American Geophysical Union and INTIMATE group (I was member of the Management Committee in the EU Cost Action nº ES0907).
2. Evaluator of Research Projects for the Spanish Agency for Evaluation (since 2009), regional funding agencies (since 2008), the Binational Science Foundation (in 2008) and in the funding panel of the CGL/BOS (Biodiversity, Ecology and Global Change) program for Research Projects (calls from years 2011 and 2012) and in the panel of MAR (Marine Science and Technology, 2016) and personal grants (Juan de la Cierva, 2018)

3. Evaluator for European Research Council: COST Actions (2012) & ERC projects (2019).
4. Reviewer of manuscripts (Nature Communications, Nature Geosciences, Quaternary Science Reviews, Earth and Planetary Science Letters, Geophysical Research Letters, Quaternary International, Journal of Paleolimnology, Geochemistry, Geophysics, Geosystems (G3), Deep Sea Research journal, Marine Geology and many other)
5. Editor in Quaternary Science Reviews from 2017 to 2020

C.5. Organization of research activities

1. Organizer of the international PAGES conference in Zaragoza, 7-16th May 2017
2. Organizer of the IV INTIMATE Conference and field trip in Zaragoza, 15th-21st June 2014, funded by EU Cost Action nº ES0907
3. Organizer of the Workshop: Terrestrial records from Western Europe – INTIMATE in Zaragoza (Nov 2012)
4. Organizer of the Workshop: Recording past environmental variations based on speleothem records in Zaragoza (Nov 2009) funded by the Project INVITE.
5. Organizing Committee International Limnogeology Congress (ILIC) 2007 in Barcelona
6. Co-editor of a Special Volume in Journal of Paleolimnology (2011) and in Quaternary Science Reviews (2014).

C.6. PhD thesis supervised

1. Title: Variabilitat climàtica ràpida a la conca occidental del Mediterrani: registre sedimentològic
PhD student: Jaume Frigola Ferrer (codirigida con el Dr. Miquel Canals, UB)
University: Universitat de Barcelona; Facultat de Geologia / Depto. Estratigrafia, Paleontologia i Geociències Marines
Date: 5 Diciembre 2012 <http://hdl.handle.net/2445/35486>
2. Title: La Cueva del Caserío de Seso (Pirineo Central): espeleogénesis, dinámica actual y reconstrucción paleoambiental de los últimos 13.000 años
PhD student: Miguel Bartolomé (codirigida con el Dr. Carlos Sancho, UNIZAR)
University: Universidad de Zaragoza; Facultat de Ciències/ Depto. Ciències de la Terra
Date: 14 Octubre 2016
3. Title: The Ejulve cave speleothemic record: from monitoring control to abrupt climate changes during the Pleistocene in the Eastern Iberian Range (Teruel)
PhD student: Carlos Pérez (codirigida con el Dr. Carlos Sancho, UNIZAR)
University: Universidad de Zaragoza; Facultat de Ciències/ Depto. Ciències de la Terra
Date: 18 Enero 2019 <https://zaguan.unizar.es/record/12262?ln=es>
4. Title: Registro de los cambios climáticos abruptos a partir de espeleotemas en el Pirineo Occidental
PhD student: Juan Luis Bernal
University: Universidad de Zaragoza / Facultat de Ciències/ Depto. Ciències de la Terra
Date: en progreso (prevista fecha lectura 5 Dic 2023)
5. Title: Las Cuevas de Villanúa (Pirineo Central): espeleogénesis, monitorización ambiental e hidrológica y reconstrucción paleoclimática basada en espeleotemas
PhD student: Reyes Giménez
University: U. de Zaragoza (codirigida con el Dr. Miguel Bartolomé)
Date: in progress (expected defense in January 2025)

C.7. Experience on outreach activities

I participate actively in a collaborative program between scientists and high-school centres to approach science to young students. A group of high-school students got a national award from the Esdelibro editorial for their research work under my direction. I have given numerous conferences addressed to society about Climate Change and Paleoclimatology (University of Lleida, Summer school in Jaca, Intermón Oxfam, Picos de Europa National Park, University of Zaragoza, etc) and participated in other outreach activities in my research center (open-doors days, the Science Day, etc) and city (IV Jornadas Divulgación Innovadora). I am an active member of Scientist Rebellion.

More information on: <https://sites.google.com/site/anamorenocaballud/>