

CURRICULUM VITAE (CVA)

CV date	04/2024
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Part A. PERSONAL INFORMATION

First name	María José		
Family name	Polo Gómez		
Gender (*)	Female	Birth date (dd/mm/yyyy)	03/01/1969
e-mail	mipolo@uco.es	URL Web	
Open Researcher and Contributor ID (ORCID) (*)	0000-0002-6296-2198		

A.1. Current position

Position	Full Professor		
Initial date	04/05/2016		
Institution	University of Cordoba (UCO)		
Department/Center	Agronomy	ETSIAM / Andalusian Institute for Earth System Research (IISTA)	
Country	Spain	Teleph. number	957212662
Key words	Hydrology, Hydrometeorology, Remote Sensing, Snow, Integrated management in Mediterranean watersheds, surface water transport.,		

A.2. Previous positions (research activity interruptions, art. 14.2.b)

Period	Position/Institution/Country/Interruption cause
12/07/2023-Present	President Elect Int. Comm. of Remote Sensing& Hydrology of IAHS
09/07/2022-Present	Vice-Rector for Science Policy (UCO)
09/07/2015-12/07/2023	Vicepresident Vocal, Int. Comm. of Remote Sensing& Hydrology of IAHS. Dooge Medal 2022 International Hydrology Prize by IAHS-UNESCO-WMO
01/01/2012-08/07/2022	Scientific Head of Andalusian Institute for Earth System Research (IISTA) at UCO
05/06/2010-31/12/2011	Academic Coordinator of the International Campus of Excellence in Agrifood, CeIA3. UCO-UCA-UAL-UJA-UHU
13/10/2009-Present	Scientific Head of the Research Group "Fluvial Dynamics and Hydrology", Andalusian Research and Innovation Program
24/06/2006 - 04/06/2010	General Secretary of the University of Cordoba
09/03/1999 - 03/05/2016	Associate Professor/UCO/Spain/Promotion
01/10/1998 - 09/03/1999	Postdoctoral Researcher, IFAPA. Andalusian Department of Agriculture.
01/06/1993 - 31/05/1997	Predoctoral Fellowship holder at University of Córdoba.

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD Agricultural Engineer	Universidad de Córdoba-Extraordinary PhD Award in Engineering and Technology	1997
Agricultural Engineer	Universidad de Córdoba-2nd National Best CV	1992

Part B. CV SUMMARY (max. 5000 characters, including spaces)

I have been Full Professor in Hydraulic Engineering since 2016 at UCO, where I have been developing research lines on hydrological processes and water quality in Mediterranean basins since 1999, with a scientific approach to process understanding based on advanced frameworks of multi-source data (ground and remote sensing) and physically-based modelling. In 2009, I founded the Research Group Fluvial Dynamics and Hydrology (TEP248-PAIDI) up to a core group of my former PhD students, based on a first set of thesis works dealing with high mountain hydrology in Mediterranean basins, a novel research line at UCO. Ever since, our pioneering work on the dynamics of snowpacks in Sierra Nevada (Spain) and links to the hydrological signature of its head basins has evolved in a series of relevant impact research papers in highly ranked journals, and key international collaborations and projection,

being recognized at the moment as one of the reference international groups on Mediterranean mountain hydrology. My track record of publications (87 indexed works, H21, Scopus) evidences my interdisciplinary vision to address science questions and societal challenges, merging hydrology, engineering, and ecology to design advanced process-oriented monitoring networks, modelling, and experimental work, that bridge the gap between scientific standards and user-friendly tools for stakeholders and technicians. Our contribution to understanding the significance of microscale processes in the distribution of snowpack, the relevance of radiative components in the energy balance, and the role of evapsublimation from the snowpack have meant key scientific impacts on quantifying water resources in Mediterranean snow regions, future scenarios of sustainability of mountain storage, regulation, and provision services, and derived collaborations in the field of ecohydrology, including the use of terrestrial cameras to track the evolution of hydrological processes. These research goals have been successfully funded since 2009 by competitive national and international projects, that I have led, and have opened relevant international collaborations, with an intense presence in reference conferences and networking effort since 2013 as my coauthoring of high-impact works led by top international researchers in this field, my active role in different Working Groups of the International Association of Hydrological Sciences, and the inclusion of our experimental research area in Sierra Nevada as one of the reference basins in Mediterranean regions in INARCH, an international excellence network for alpine catchment research, soundly prove. As result of this research expertise, I have been awarded with the Dooge Medal at the International Hydrology Prize 2022 by the IAHS-UNESCO-WMO.

I was appointed as collaborator of the Spanish Research Agency since 2017, and have also supported other research agencies at the national and international level, including scientific EU programs.

Our research activities have also attracted technology and knowledge transfer demands from both the public and private sectors involved in Integrated River Basin Management, with numerous coordination of research and innovation contracts. With a clear civil service vocation, I early adopted open-access practices, with free distribution of our datasets and models, and focus on societal challenges; the development of the Global Monitoring System-SNOWMED in Sierra Nevada (<https://www.uco.es/dfh/snowmed/>) is a clear example. This transfer work was awarded by the Social Board at UCO in 2010. I also mentored the creation of the spin-off “Knowater, S.L” in 2017.

Finally, I am a motivated and vocational professor, with a clear role in teaching (being pioneer of courses in English at my department), supervising students (more than 60 degree and master thesis), and mentoring early career researchers (up to 15 PhD fellows and hosting postdocs), who have progressed further in their scientific career. I led the transition in 2006 from our PhD program to Master, and then Excellence PhD program, with novel scientific goals and professional profiles, and coordinated their development until 2016, with a large fraction of our students in the research and academic sectors today.

Part C. RELEVANT MERITS (*sorted by typology*)

C.1. Most important publications in books and journals with "peer review" and in conferences (*see instructions*).

[1] E. Contreras, M. Jurado-Ezqueta, R. Pimentel, L. Serrano. C. Hidalgo, A. Jiménez, **M.J. Polo**. 2024. Assessment of seasonal and annual patterns in phosphorus content in a monitored catchment through a partitioning approach based on hydrometeorological data. *Environmental Research*, 242: 117501. (Q1, 32/275) IF: 8.3. <https://doi.org/10.1016/j.envres.2023.117501>

[2] E. Contreras, C. Aguilar, **M.J. Polo**. 2023. Accounting for the annual variability when assessing non-point source pollution potential in Mediterranean regulated watersheds. *Science of the Total Environment*, 902: 167261. (Q1, 26/275). IF: 9.8 <https://doi.org/10.1016/j.scitotenv.2023.167261>

[3] P. Torralbo, R. Pimentel, **M.J. Polo**, C. Notarnicola. 2023. Characterizing Snow Dynamics in Semi-Arid Mountain Regions with Multitemporal Sentinel-1 Imagery: A Case Study in the Sierra Nevada, Spain. *Remote Sensing*, 15 (22): 5365. (Q1, 31/202). IF: 5.0. <https://doi.org/10.3390/rs15225365>

[4] F. J. Peñas et al. (7/20). 2023. An evaluation of freshwater monitoring programs inILTER nodes and mountain national parks: identifying key variables to monitor global change effects. *Biodiversity*

- and Conservation, 2023, 32(1), pp. 65–94 (Q1, 14/65) IF: 3.4 <https://doi.org/10.1007/s10531-022-02466-x>
- [5] E, Sebok et al. (17/22). 2022. Use of expert elicitation to assign weights to climate and hydrological models in climate impact studies. *Hydrology and Earth System Sciences*, 26(21): 5605–5625. (Q1,16/202) IF: 6.3. <https://doi.org/10.5194/hess-26-5605-2022>
- [6] **M.J. Polo**, J. Herrero, A. Millares, R. Pimentel, A. Moñino, M.J. Pérez-Palazón, C. Aguilar, M.Losada. 2022. Snow Dynamics, Hydrology, and Erosion. In: Zamora, R., Oliva, M. (eds) *The Landscape of the Sierra Nevada*. Springer, Cham. Pp. 149-164. https://doi.org/10.1007/978-3-030-94219-9_10
- [7] Z. Su, Y. Ma (AC), X. Chen, X. Wang. (13/27). 2021. Monitoring water and energy cycles at climate scale in the third pole environment. *Remote Sensing*, 13(18): 3661 (Q1, 27/200) IF: 4.848. <https://doi.org/10.3390/rs13183661>
- [8] C. Aguilar, R. Pimentel, **M.J. Polo**. 2021. Two decades of distributed global radiation time series across a mountainous semiarid area (Sierra Nevada, Spain). *Earth System Science Data*, 13 (3): 1335-1359 (Q1, 3/93) IF: 9.197. <https://doi.org/10.5194/essd-13-1335-2021>
- [9] E. Contreras, J. Herrero, L. Crochemore, C. Aguilar, **M.J. Polo**. 2020. Seasonal climate forecast skill assessment for the management of water resources in a run of river hydropower system in the Poqueira River (Southern Spain). *Water (Switzerland)*, 12(8): 2119. (Q2, 31/94) IF: 2.544. <https://doi.org/10.3390/W12082119>
- [10] **M.J. Polo**, R. Pimentel, S. Gascoin, C. Notarnicola. 2020. Mountain hydrology in the Mediterranean region. In: *Water Resources in the Mediterranean Region*. pp. 51 - 76. Elsevier, ISBN 978-0-12-818086-0. <https://doi.org/10.1016/B978-0-12-818086-0.00003-0>
- [11] G. Blösch (AC), M.F.P. Bierkens, A. Chambel, Y. Zhang (146/209). 2019. Twenty-three unsolved problems in hydrology (UPH) – a community perspective. *Hydrological Sciences Journal-Journal Des Sciences Hydrologiques*, 64 (10): 1141-1158 (Q2, 42/94) IF: 2,186. <https://doi.org/10.1080/02626667.2019.1620507>
- [12] **M.J. Polo**, J. Herrero, R. Pimentel, M.J. Pérez-Palazón. 2019. The Guadalfeo Monitoring Network (Sierra Nevada, Spain): 14 years of measurements to understand the complexity of snow dynamics in semiarid regions. *Earth System Science Data*, 11 (1): 393-407 (Q1, 3/189) IF: 10.95. <https://doi.org/10.5194/essd-11-393-2019>
- [13] M.J. Pérez-Palazón, R. Pimentel, **M.J. Polo**. 2018. Climate Trends Impact on the Snowfall Regime in Mediterranean Mountain Areas: Future Scenario Assessment in Sierra Nevada (Spain). *Water*, 10 (6): 720 (Q2, 34/90) IF: 2.524. <https://doi.org/10.3390/w10060720>
- [14] C. Aguilar, **M.J. Polo**, A. Montanari. 2017. Real time updating of the flood frequency distribution through data assimilation. *Hydrology and Earth System Sciences*, 21(7): 3687-3700 (Q1, 5/90) IF: 4.256. <https://doi.org/10.5194/hess-21-3687-2017>
- [15] R. Pimentel, J. Herrero, **M.J. Polo**. 2017. Subgrid parameterization of snow distribution at a Mediterranean site using terrestrial photography. *Hydrology and Earth System Sciences*, 21: 805 – 820 (Q1, 5/90) IF: 4.256. <https://doi.org/10.5194/hess-21-805-2017>

C.3. Projects or research lines in which you have participated.

- [1] PID2021-123235NB-I00. Incorporando la incertidumbre hidrológica y el análisis de riesgos asociado a la operación de infraestructuras hidroeléctricas en cuencas de montaña mediterránea. 2022. Ministerio de Ciencia e Innovación. Convocatoria de Proyectos de Generación de Conocimiento 2021. Investigadoras Principales (IPs): **M.J. Polo**, **C. Aguilar**. 2022-2025. 123.299,00 €. Investigadora Principal.
- [2] CEI20_00074. Gestión Integrada para el control de aportes de agua y sedimentos en Sistemas de Embalses en la cuenca del Guadalquivir. 2021. Consejería de Economía, Conocimiento, Empresas y Universidad. Junta de Andalucía. Convocatoria proyectos I+D+i. Modalidad Retos. CEI Cambio. Investigador Principal (IP): **M.J. Polo**. 01/01/2022-31/12/2022. 101.414,44 €. Investigadora Principal.
- [3] EQC2021-007093-P. Seguimiento ecohidrológico integral de zonas urbanas y periurbanas para diagnóstico, diseño y mejora de espacios sostenibles. 2021. Ministerio de Ciencia e Innovación. Conv. Adquisición Equipamiento Científico-Técnico. IP: **M.J. Polo** (UCO). 2021/2022. 875.000,00 €.

- [4] PY20_00178. Tendencias hidrometeorológicas en zonas protegidas de montaña en Andalucía: ejemplos de co-desarrollo de servicios climáticos para estrategias de adaptación a cambio climático. 2021. Consej. Transformación Económica, Industria, Conocimiento y Universidades. Junta de Andalucía. Ayudas a proyectos I+D+i. IP: [M.J. Polo](#) (UCO). 05/10/2021-31/12/2022. 95.968,33 €.
- [5] RTI2018-099043-B-I00. (OPERA) Operatividad en la gestión hidrológica bajo condiciones de torrencialidad/sequía de nieve en alta montaña de cuencas semiáridas. Ministerio de Ciencia, Innovación y Universidades. Convocatoria I+D+i 2018 “Retos en la Sociedad”. IP: [M.J. Polo](#) (UCO). 01/01/2018-30/06/2022. 108.900,00 €.
- [6] ERA-NET ERA4CS/PCIN-2017-072. AQUACLEW - Advancing QUALity of CLimate services for European Water. MITECO /UE. Call APCIN linked to EU- ERANET. IP: [M.J. Polo](#) (UCO). 18/09/2017- 31/12/2020. 95.000,00 €.
- [7] H2020-SC5-2016-2017-730482-1. CLARA-Climate forecast enabled knowledge services. EU. H2020. IP: [J.Mysiak](#) (CMCC); [M.J. Polo](#) (IP UCO). 01/06/2017- 30/09/2020. 558.609,78 €.
- [8] LIFE13 ENV/ES/001182. EBRO-ADMICLIM-Adaptation and mitigation measures to climate change in the Ebro Delta. EU. LIFE+ Environment Policy and Governance project application 2013. IP: [C. Ibáñez](#) (IRTA); [M.J. Polo](#) (IP UCO). 02/06/2014-01/06/2018. 167.605,00 €.
- [9] CGL2014-58508-R. SNOWMED- Sistema de seguimiento global de la cubierta de nieve en regiones mediterráneas: análisis de tendencias e implicaciones. MINECO. Retos. IP: [M.J. Polo](#) (UCO). 01/01/2015-31/12/2017. 84.700,00 €.
- [10] CGL2011-25632. (NIMED) Dinámica de la nieve en regiones mediterráneas y su modelado a diversas escalas. Implicaciones para la gestión de recursos hídricos. MICINN. Plan Nacional. IP: [M.J. Polo](#) (UCO). 01/01/2012-31/12/2014. 53.240,00 €.

C.4. Participation in technology/knowledge transfer activities and exploitation of results.

- [1]
Mountain areas in Mediterranean and semiarid regions as early detectors of the potential future climate of snow domains across different latitudes. EURAC-Research. IP: [M.J. Polo](#). 23/11/2021-24/11/2024. 109.217,08 €
- [2] Desarrollo de sistemas *low-cost* para la monitorización de la densidad y equivalente de agua del manto de nieve para la estimación de recurso hídrico acumulado en forma de nieve en cuencas de montaña. Tecnologías y Servicios Agrarios, S.A. IP: [M.J. Polo](#). 27/07/2021-26/01/2024. 9.680,00 €
- [3] Análisis de la viabilidad hidrológica de las actuaciones de drenaje en la Laguna de Palos. Tratamientos Proyectos Medioambientales, S.L. IP: [M.J. Polo](#). 19/05/2021-30/09/2021. 10.108,35 €
- [4] Revisión y análisis de masas de agua en los nuevos Planes Hidrológicos. Endesa Generación, S.A. IP: [M.J. Polo](#). 16/07/2019-30/11/2020. 17.757,53 €
- [5] Aportes de polvo sahariano y *black-carbon* en Pirineos y Sierra Nevada ¿Favorecen pérdida nival prematura? IGME. IP: [M.J. Polo](#). 11/09/2017-11/06/2018. 7.521,18 €
- [6] Diseño, implementación y calibración de un sistema de aforo en el río Poqueira. Endesa Generación, S.A. IP: [M.J. Polo](#). 01/05/2016-31/03/2017. 10.300,00 €
- [7] Service for water indicators in climate change adaptation (SWICCA). Swedish Meteorological and Hydrological Institute. IP: [M.J. Polo](#). 2015-2018. 50.806,00 €

C.5. Others.

- [1] Member International Advisory Committee of Instituto de Hidráulica de Cantabria (2020-hoy)
- [2] Member of Task Force on Biodiversity de la European Geophysical Union (2022-hoy)
- [3] Member of EMASESA's Drought Scientific Expert Committee. (2022-hoy)
- [4] Cordobesa del Año 2022 Award of Diario Córdoba for the social value of research (2023)
- [5] Member of the CREAM Climate and Environment Spokespersons Network (since 2024)
- [6] PI (UCO) of International Mobility Projects of the European Space Agency's Dragon4 and Dragon5 Programme (EU and China)
- [7] Manager of the Civil Engineering and Architecture sub-area of the PIN area of the Spanish Research Agency (2017-2021).
- [8] Vice-President (Vocal) ICRS (International Commission of Remote Sensing) IAHS (2015-2023)

- [9] Member of the Panel of Experts of the ACADEMIA-ANECA Programme (2007-2017), evaluator of ANEP and AEI since 2006.
- [10] PI of the International Working Group “Water&energy fluxes in a changing environment” y miembro del Working Group “Mountain Hydrology”, ambos de la iniciativa Panta Rhei IAHS
- [11] Member of the Juan de la Cierva and Ramón y Cajal commissions of the Civil Engineering and Architecture subarea (2016), and Juan de la Cierva of the Earth Sciences subarea (2017).
- [12] Award for the transfer of knowledge to society for the project "Transfer of advanced tools in hydrology to society: a multidisciplinary perspective from research to application" of the GDFH, UCO Social Council, 2011.
- [13] Fertiberia Award for the Best Doctoral Thesis on Agricultural Issues, 1999.
- [14] Caja-Madrid Award for Doctoral Thesis 1998, Environment section
- [15] Extraordinary Doctorate Award of the University of Cordoba, Engineering and Technology macro-area, academic year 97/98.
- [16] Second National Prize for the best Agricultural Engineer's record, 1993.