CURRICULUM VITAE ABREVIADO (CVA)

IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.

Part A. PERSONAL INFORMATION

First name	Angel Luis		
Family name	Udías Moinelo		
Gender	Male	Birth date (dd/mm/yyyy)	12/03/1966
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ORCID:		0000-0003-1219-0465	

A.1. Current position

Position	Professor		
Initial date	23/06/2025		
Institution	Rey Juan Carlos University		
Department/Center	Informatic and EIO	Higher Technical School of Computer Engineer.	
Country	Spain	Teleph. number	658034769
Key words	Decision Making, Optimization, Multi-criteria analysis, Machine Learning, Sensitivity Analysis, Integrated Water Resources Management, Modeling and Simulation, Digital twin, Environmental management, Remote Sensing		

A.2. Previous positions

Period	Position/Institution/Country/Interruption cause
13/12/2022 - 22/06/2025	Senior Lecturer - Rey Juan Carlos University
16/03/2022 - 12/12/2022	Lecturer - Rey Juan Carlos University
16/03/2013 - 15/03/2022	Scientific officer- Joint Research Centre (European Commission).
19/10/2004 - 15/03/2022	Lecturer- Rey Juan Carlos University

A.3. Education

PhD, Licensed, Graduate	University/Country	Year
PhD in Mining Engineering	Polytechnic University of Madrid	2004
Mining Engineering	Polytechnic University of Madrid	1995

A.4. General Indicators of Scientific Production Quality

- Tres periods of 6 years on research work (sexenios) recognized by the Ministry of Education and Science
- Tres doctoral theses supervised.
- Citations: 1432 in WoS; 1621 in Scopus; 2878 in Google Scholar
- Number of Q1 publications: 30
- H-index: 18 in WoS; 18 in Scopus; 24 in Google Scholar

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

Mining Engineer (UPM, 1995) and PhD in Engineering of Mineral Resources, Materials, Energy, and Environment (UPM, 2004). He is a *Professor* at Rey Juan Carlos University (URJC) from June 2025, after holding the position of Senior Lecturer at the same university. His career combines over two decades of academic experience with high-level research in European policy. From 2013 to 2022, he worked as a Scientific Officer at the Joint Research Centre (JRC) of the European Commission, contributing to projects on environmental management. Since June 2023, he has strengthened this collaboration as a *Seconded National Expert* at the JRC.

With an extensive background in academia, he has accrued thousands of teaching hours at both undergraduate and master's levels, in-person and online. He has supervised 3 PhD theses and 36 Master's. His research is focused on developing and applying advanced computational techniques for complex environmental challenges. Key areas of expertise include: Integrated Water Resources Management (IWRM); Multi-criteria Decision Analysis and Support Systems; Modeling and Simulation (including hydrological models and Digital Twins); Optimization and Sensitivity Analysis; Machine Learning and Remote Sensing applications.

He has a robust scientific output with over 45 articles in JCR-indexed journals and 70+ contributions in books and conferences. He has participated in more than 30 funded research projects, leading five of them as principal investigator. Previously, he was a founding partner and head of the Simulation and Optimization area at the spin-off Inventa Soluciones.

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

C.1. Publications *(45 papers in indexed journals, 9 paper in non-indexed journals, +70 conferences)*

1. Grizzetti, B.; **Udias, A**.; Vigiak, O.; Pistocchi, A.; Aloe, A.; Bisselink, B.; Bouraoui, F. et al. (2025) Effects of EU policy and climate change on future delivery of nutrients to European freshwater and seas. *Environmental Research Letters*
2. Vigiak, O.; **Udias, A.;** Bouraoui, F.; Aloe, A.; Grizzetti, B. (2025) Nutrient retention in European lakes and rivers: a continental–scale ensemble models assessment. *Environmental Research Letters*
3. Macias, D.; Bisselink, B.; Carmona-Moreno, C.; Druon, J.N.; Duteil, O; Grizzetti, B.; Pistocchi, A.; ..; **Udias, A.** (2025). The overlooked impacts of freshwater scarcity on oceans as evidenced by the Mediterranean Sea. *Nature Communications*. DOI: 10.1038/s41467-024-54979-4.
4. **Udias, A.;** Alonso-Ayuso, A.; Alfaro, C.; Algar, M.J.; Cuesta, M.; Fernández-Isabel, A.; Gómez, J.; Lancho, C.; L. Cano, E.; Martín de Diego, I. (2024). ChatGPT's performance in university admissions tests in mathematics. *International Electronic Journal of Mathematics Education*.
5. **Udias, A.;** Galimberti, F.; Dorati, C.; Pistocchi, A. (**2023**). Emissions of pesticides in the European Union: a new regional-level dataset. *Scientific Data*, 10(1), 869.
6. **Udias, A**.; Grizzetti, B.; Vigiak, O.; Aloe, A.; Alfaro, C.; Gomez, J. (**2023**). GREENeR: An R Package to Estimate and Visualize Nutrients Pressures on Surface Waters. *R Journal*, 15(3), 119-137.
7. Pistocchi, A.; Dorati, C.; Galimberti, F; **Udias, A**.; Bopp, S.; D´andrimont, R.; Catarino, R.; Schaefer,R.B. (**2023**) A screening study of the spatial distribution and cumulative toxicity of agricultural pesticides in the European Union's waters. *Front. Environ. Sci.*, 25 April 2023 Sec.Toxicology, Pollution and the Environment Volume 11 - 2023
8. Vigiak, O.; **Udías, A**.; Grizzetti, B.; Zanni, M.; Aloe, A.; Weiss F. Hristov J.; Bisselink B.; de Roo A.; Pistocchi A. (**2023**). Recent regional changes in nutrient fluxes of European surface waters. *Science of The Total Environment*, 2023, 160063
9. Marando, F., Heris, M.P., Zulian, G., **Udias, A.,** Parastatidis, D., Maes, J. (**2022**) Urban heat island mitigation by green infrastructure in European Functional Urban Areas. *Sustainable Cities and Society* , 2022, 77, 103564
10. Pastori, M., **Udias, A**., Cattaneo, L., Niang, A., Carmona-Moreno, C. (**2021**) Bioenergy potential of crop residues in the Senegal river basin: A cropland–energy–water-environment nexus approach. *Sustainability* , 2021, 13(19), 11065
11. Vigiak, O., **Udias, A**., Pistocchi, A., Aloe, A., Grizzetti, B. (**2021**) Probability maps of anthropogenic impacts affecting ecological status in European rivers. *Ecological Indicators*, 2021, 126, 107684

12. Grizzetti, B., Vigiak, O., **Udias, A**., Leip, A., Bielza, M. (**2021**) How EU policies could reduce nutrient pollution in European inland and coastal waters. *Global Environmental Change*, 2021.
13. **Udias, A.**, Pistocchi, A., Vigiak, O., Bouraoui, F., Alfaro, C. (**2020**) ESPRES: A web application for interactive analysis of multiple pressures in aquatic ecosystems. *Science of the Total Environment* , 2020, 744, 140792
14. Pérez-Hoyos, A., **Udías, A.**, Rembold, F. (**2020**) Integrating multiple land cover maps through a multi-criteria analysis to improve agricultural monitoring in Africa. *International Journal of Applied Earth Observation and Geoinformation*, 2020, 88, 102064
15. Vigiak, O., Grizzetti, B., **Udias, A**., Bouraoui, F., Pistocchi, A. (**2019**) Predicting biochemical oxygen demand in European freshwater bodies. *Science of the Total Environment* , 2019.
16. Karabulut, A.A., **Udias, A.**, Vigiak, O. (**2019**) Assessing the policy scenarios for the Ecosystem Water Food Energy (EWFE) nexus in the Mediterranean region. *Ecosystem Servic*es, 2019.
17. Karabulut, A.A., Crenna, E., Sala, S., **Udias, A.** (**2018**) A proposal for integration of the ecosystem-water-food-land-energy (EWFLE) nexus concept into life cycle assessment: A synthesis matrix system for food security. *Journal of Cleaner Production* 172, pp. 3874-3889
18. **Udias, A**., Pastori, M., Malago, A., Vigiak O., Nikolaidis, N.P., Bouraoui, F. (**2018**) Identifying efficient agricultural irrigation strategies in Crete. *Science of the Total Environment* 633
19. Alberto Pistocchi, **Udias, A**, Ludwig, Ralf, Souliotis, I. (**2017**) An integrated assessment framework for the analysis of multiple pressures in aquatic ecosystems and the appraisal of management options. *Science of The Total Environment* 575, pp. 1477-1488
20. Pastori, M., **Udías, A**., Bouraoui, F., Bidoglio, G. (**2017**) Multi-Objective Approach to Evaluate the Economic and Environmental Impacts of Alternative Water and Nutrient Management Strategies in Africa . *Journal of Environmental Informatics* 29(1), pp. 16-28
21. Grizzetti, B., Pistocchi, A., Liquete, C., **Udias, A.,** Bouraoui, F., Van De Bund, W. (**2017**) . Human pressures and ecological status of European rivers. *Scientific Reports* 7 (1), 205
22. **Udias A.,** A Malagò, M Pastori, O Vigiak, A Reynaud, FJ Elorza, F Bouraoui (**2016**) Identifying Efficient Nitrate Reduction Strategies in the Upper Danube. *Water* 8 (9), 371
23. Liquete C.; **Udias**, **A. ;** Conte, G.; Grizzetti, B. ; Masi F. (**2016**) Integrated valuation of a nature-based solution for water pollution control. Highlighting hidden benefits. *Ecosystem Services* 22
24. **Udías A.**; Galbiati,L.; Elorza, F.J.; Efremov, R.; Pons, J.; Borras, G. (**2012**) Framework for Multi-Criteria Decision Management in Watershed Restoration. *Journal of Hydroinformatics* Vol 14

C.2. Congress, (Participation in 30 international and 20 national congresses)
Among which the following are worth mentioning

1. Grizzetti B., Vigiak O., Aguilera E., Aloe A., Biganzoli F., Billen G., Caldeira C., de Meij A., Egle L., Einarsson R., Garnier J., Gingrich S., Hristov J., Huygens D., Koeble R., Lassaletta L., Le Noë J., Liakos L., Lugato E., Panagos P., Pisoni E., Pistocchi A., Sanz Cobeña A., Udias A., Weiss F., Wilson J., Zanni M. *Knowledge for integrated nutrient management: flows, targets and possible measures in the European Union*. Conference: 2022 N workshop
2. Vigiak,O., Angel Udías, Bruna Grizzetti, Michela Zanni, Alberto Aloe, Franz Weiss, Jordan Hristov, Berny Bisselink, Ad de Roo, Alberto Pistocchi, *29 years of nitrogen fluxes in freshwaters and to the seas in Europe: a historic and regional analysis.* Conference: 2022 N workshop.
3. A.Udias, B. Grizzettia, O Vigiaka *The quest for efficient nutrient restoration strategies of aquatic ecosystems: an exploratory study*. Conference: 2022 N workshop
4. A.Udias, B. Grizzettia, F. Bouraouia, O Vigiaka, A. Pistocchia. 2020. *A web tool to support River Basin Management planning towards achieving European environmental targets*. Conference: 10 th iEMSs International Congress on Environmental Modelling and Software.
5. Ana Perez-Hoyos Angel Udias, Felix Rembold. *2020. Application of TOPSIS technique in integrating multiple land cover maps for agricultural purposes* .Conference: Living planet symposium. ESA

C.3. Research projects, (23, I have been a PI in 3 of them).

Among which the following are worth mentioning

1. Matemáticas explicables para soluciones interdisciplinares de ciencia de datos. PID2021-122640OB-I00 (01/09/2022 – 31/08/2026). Agencia estatal de Investigation.
2. Democracy4All. Democracy Empowerment System for Least Developed Countries. IPT-2011-0869-430000. Participation as P.I. (04/05/2011 - 31/12/2013). Grant amount: 245,557.68 €. Ministry of Science and Innovation.
3. Corporate Community. IPT-2011-0871-430000. Participation as P. I. (04/05/2011 - 31/12/2013). Amount of the grant: 193,535.44 €. Ministry of Science and Innovation
4. Optimal Management of Social Home Care. Participation as P. I. (31/06/2003 - 31/09/2005). Amount of the grant: 55,000 euros. Community of Madrid.
5. Energy Efficiency and Risk Management in Public Buildings (ENRIMA) ref 260041. PI: J. Martinez Moguerza (01/10/2010 - 31/03/2014). Grant amount: 354028 €. European Union.
6. Optimization for Sustainable Mobility. Participation as researcher (1/10/2006 - 30/09/2009). Amount of the grant: 3.886.108,6 €. Ministry of Education and Science.

In addition to these projects in which I have participated working for the university in Spain, as a researcher of the Joint Research Centre of the European Commission I have participated in another 10 projects, among which the following are worth mentioning:

1. Blue2.2 project (Administrative Arrangement N °110661-070201/2019/818363/AA/ ENV.C.2 between DG ENV and JRC, April 2020 – March 2023
2. BLUE2:https://mcc.jrc.ec.europa.eu/main/dev.py?N=simple&O=455&titre_chap=%C2%A0&titre_page=The%20BLUE2%20project
3. Multiple stressors in aquatic ecosystems and the Water Framework Directive: https://cordis.europa.eu/project/id/603378
4. Globaqua: https://cordis.europa.eu/project/id/603629
5. Water-energy-food-ecosystems nexus: https://international-partnerships.ec.europa.eu/policies/climate-environment-and-energy/water-energy-food-and-ecosystem-nexus_en
6. OpenNESS: https://oppla.eu/groups/openness/openness-project
7. Mekrou Project: https://www.gwp.org/globalassets/global/gwp-waf_files/running-water/running_21_english_mekrou.pdf
8. The Danube's water nexus: https://international-partnerships.ec.europa.eu/policies/climate-environment-and-energy/water-energy-food-and-ecosystem-nexus_en

C.4. Contracts, technological or transfer merits, (10 contracts, I have been a PI in 2 of them)

Among which the following are worth mentioning

1. Development of a multi-criteria methodology for the cost-effectiveness analysis of the corrective measures to be implemented in the Catalan basins to comply with the Water Framework Directive PI: F.J. Elorza. Budget 71.512€ (1/12/2007 - 31/03/2009). Catalan Water Agency.
2. Development of a multi-criteria analysis for the selection of corrective measures for the effect of diffuse pollution and climate change in the field of WFD implementation. Participation as Principal Investigation. (18/11/2008 - 17/11/2009). Budget 30000€. UTE Auditorias e Ingenierias, S.A. -United Research Services Espana S.L.- Artenginy, S.L.
3. Integration of a multicriteria analysis methodology with the water quantity/quality models currently used in the Joint Research Centre. Participation as Principal Investigator (01/01/2012 - 31/05/2012). Budget 12500 €. Polymedia S.p.A.