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| CVA date | 07/11/2022 |
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Part A. PERSONAL INFORMATION

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|--|---------------------|---|--|
| First name | Alejandro | | |
| Family name | López Ruiz | | |
| | | | |
| e-mail | alopez50@us.es | https://bibliometria.us.es/prisma/investigador/2313 | |
| Open Researcher and Contributor ID (ORCID) | 0000-0002-7694-1216 | | |

A.1. Current position

| | | | |
|-------------------|---|-------|-----------|
| Position | Associate Professor (Profesor Titular de Universidad) | | |
| Initial date | 02/06/2021 | | |
| Institution | University de Seville | | |
| Department/Center | Aerospace Engineering and Fluid Mechanics, Higher Technical School of Engineering | | |
| Country | Spain | Phone | 954487224 |
| Keywords | Coastal hydrodynamics and morphodynamics, littoral processes | | |

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

| Period | Position/Institution/Country/Interruption cause |
|-----------|---|
| 2020-2021 | Associate Professor (Prof. Contratado Doctor) University of Seville, Spain |
| 2016-2020 | Assistant Professor (Prof. Ayudante Doctor) University of Seville, Spain |
| 2015-2016 | Assistant Professor (Prof. Sustituto Interino) University of Seville, Spain |
| 2014-2015 | Postdoctoral Researcher, University of Granada, Spain |
| 2010-2014 | FPU research fellow, University of Granada, Spain |

A.3. Education

| PhD, Licensed, Graduate | University/Country | Year |
|---|-------------------------|------|
| PhD (Biogeochemical fluid dynamics) | Univ. of Granada, Spain | 2014 |
| MSc. Environmental Hydraulics | Univ. of Granada, Spain | 2010 |
| BSc. Civil Engineering (Ing. Cam., Canales y Puertos) | Univ. of Granada, Spain | 2009 |

Part B. CV SUMMARY

Associate Professor (Profesor Titular de Universidad) of Fluid Mechanics at the Department of Aerospace Engineering and Fluid Mechanics of the University of Seville. I am PhD (cum laude, International Mention and Extraordinary Doctorate Award) by the University of Granada (UGR) since 2014. During my doctoral thesis and my postdoctoral stage at this university, my work focused on the analysis of the dynamics of curvilinear shorelines using both a theoretical and a numerical approach. This analysis allowed me to develop a new formulation of alongshore transport in which the curvature of the coastline is explicitly considered, as well as its application to different real problems through numerical modeling and the use of Monte Carlo techniques. The results obtained were published in the most important journals in my field of work (Coastal Engineering, Marine Geology) and presented in some of the most prestigious congresses in the world (ICCE, IAHR). I also contributed to obtain funding through a Spanish National Project (MORPHAL), as well as establishing collaborations with renowned international researchers from the universities of Padua and Plymouth, as shown in my publication record. During the last years of my stage at the UGR, I also collaborated in the creation of a new line of research, which continues today, focused on the study of the impact of anthropogenic actions and climate change in highly altered bays and estuaries. This line, which started because of an Andalusian government project, and which has allowed me to participate in two additional projects funded by the Spanish government (PIRATES,



MICROBAHIA), has increased my capabilities with numerical modeling and oceanographic measurement campaigns. The main results of this line have also been published in very prestigious journals (JGR Oceans, Geomorphology) and it has also allowed me to carry out two stays at the University of Padua (Italy) in 2014 and 2015.

At the end of 2015 I joined the University of Seville (US), where I started to constitute a new research team based on my work in two novel research lines: (1) wave energy resource analysis, and (2) hydro-morphodynamics of river mouths during extreme events. The first one has contributed to improve my capabilities in climate analysis and simulation, as well as in uncertainty analysis. The results obtained have been published in high impact journals such as Applied Energy or Energy and have allowed me to register a software (WAVER). The second has allowed me to establish a permanent collaboration with the University of Algarve, reinforced by a José Castillejo grant that I enjoyed in that center during 2019. The results have also been published in very prestigious journals such as Coastal Engineering or Earth Surface Processes and Landforms. In addition, I am currently supervising two PhD students currently working on this line whose completion date is estimated in 2023 and 2025. As a result of my background, I have participated in an international project (PROTOCOL) and I have obtained funding as PI of an Andalusian regional project (IMMINENT) and a Spanish Ministry of Science and Innovation project (RESILIENCE).

Since my incorporation to the US, my training capacity has been greatly enhanced by supervising not only PhD students, but also numerous research grants from both the Ministry of Education and the US. These grants, whose results have been published in high impact journals on several occasions, have contributed to the development of the professional career of students improving their working capabilities and in two cases receiving awards for MSc Thesis and best publication of the Higher Technical School of Engineering (University of Seville).

General indicators of the quality of scientific production:

- Q1 publications: 20/24 JCR Papers
- Total cites: WoS (432) Scopus (430) Google Scholar (597)
- Averaged cites: 19.94 per document, 46.5 per year (WoS)
- h index: WoS (13) Scopus (12) Google Scholar (15)

Parte C. RELEVANT MERITS

C.1. Publications

JCR publications

1. Zarzuelo, C., **López-Ruiz, A.**, Valle-Levinson, A., Díez-Minguito, M., & Ortega-Sánchez, M. (2022). Bridge-piling modifications on tidal flows in an estuary. *Coastal Engineering*, 173, 104093. <https://doi.org/10.1016/j.coastaleng.2022.104093> IF: 4.830, Q1 (1/16) Ocean Engineering.
2. Ruiz-Reina, A., & **López-Ruiz, A.** (2021). Short-term river mouth bar development during extreme river discharge events: The role of the phase difference between the peak discharge and the tidal level. *Coastal Engineering*, 170, 103982. <https://doi.org/10.1016/j.coastaleng.2021.103982> IF: 4.830, Q1 (1/16) Ocean Engineering.
3. Zarzuelo, C., **López-Ruiz, A.**, & Ortega-Sánchez, M. (2021). The Role of Waves and Heat Exchange in the Hydrodynamics of Multi-Basin Bays: The Example of Cádiz Bay (Southern Spain). *Journal of Geophysical Research: Oceans*, 126(2), 1–20. <https://doi.org/10.1029/2020jc016346> IF: 3.405, Q1 (14/65) Oceanography.
4. Garel, E., **López-Ruiz, A.**, & Ferreira, Ó. (2019). A method to estimate the longshore sediment transport at ebb-tidal deltas based on their volumetric growth: application to the Guadiana (Spain-Portugal border). *Earth Surface Proc. and Landforms*, 44, 2557–2569. IF: 3.598, Q1 (37/196) Geosciences, multidisciplinary. <https://doi.org/10.1002/esp.4679>
5. Zarzuelo, C., **López-Ruiz, A.**, & Ortega-Sánchez, M. (2019). Evaluating the impact of dredging strategies at tidal inlets: Performance assessment. *Science of The Total Environment*, 658, 1069–1084. IF: 5.589, Q1 (27/250) Environmental Sciences. <https://doi.org/10.1016/j.scitotenv.2018.12.227>
6. **López-Ruiz, A.**, Bergillos, R. J., Lira-Loarca, A., & Ortega-Sánchez, M. (2018). A methodology for the long-term simulation and uncertainty analysis of the operational



- lifetime performance of wave energy converter arrays. *Energy*, 153, 126–135. IF: 4.520, Q1 (17/92) Energy & Fuels. <https://doi.org/10.1016/j.energy.2018.04.018>
7. Zarzuelo, C., **López-Ruiz, A.**, D'Alpaos, A., Carniello, L., & Ortega-Sánchez, M. (2018). Assessing the morphodynamic response of human-altered tidal embayments. *Geomorphology*, 320, 127–141. IF: 3.681, Q1 (35/196) Geosciences, Multidisciplinary. <https://doi.org/10.1016/j.geomorph.2018.08.014>
 8. **López-Ruiz, A.**, Bergillos, R. J., Raffo-Caballero, J. M., & Ortega-Sánchez, M. (2018). Towards an optimum design of wave energy converter arrays through an integrated approach of life cycle performance and operational capacity. *Applied Energy*, 209, 20–32. IF: 7.182, Q1 (6/92) Energy & Fuels. <https://doi.org/10.1016/j.apenergy.2017.10.062>
 9. Bergillos, R. J., **López-Ruiz, A.**, Ortega-Sánchez, M., Masselink, G., & Losada, M. A. (2016). Implications of delta retreat on wave propagation and longshore sediment transport - Guadalfeo case study (southern Spain). *Marine Geology*, 382, 1–16. IF: 3.572, Q1 (3/63) Oceanography. <https://doi.org/10.1016/j.margeo.2016.09.011>
 10. **López-Ruiz, A.**, Bergillos, R. J., & Ortega-Sánchez, M. (2016). The importance of wave climate forecasting on the decision-making process for nearshore wave energy exploitation. *Applied Energy*, 182, 191–203. IF: 7.182, Q1 (6/92) Energy & Fuels. <https://doi.org/10.1016/j.apenergy.2016.08.088>
 11. **López-Ruiz, A.**, Ortega-Sánchez, M., Baquerizo, A., & Losada, M. Á. (2014). A note on alongshore sediment transport on weakly curvilinear coasts and its implications. *Coastal Engineering*, 88, 143–153. IF: 2.428, Q1 (1/14) Ocean Engineering. <https://doi.org/10.1016/j.coastaleng.2014.03.001>
 12. Ortega-Sánchez, M., Lobo, F. J., **López-Ruiz, A.**, Losada, M. A., & Fernández-Salas, L. M. (2014). The influence of shelf-indenting canyons and infralittoral prograding wedges on coastal morphology: The Carchuna system in Southern Spain. *Marine Geology*, 347, 107–122. IF: 2.710, Q1 (10/61) Oceanography. <https://doi.org/10.1016/j.margeo.2013.11.006>
 13. **López-Ruiz, A.**, Ortega-Sánchez, M., Baquerizo, A., & Losada, M. A. (2012). Short and medium-term evolution of shoreline undulations on curvilinear coasts. *Geomorphology*, 159–160. <https://doi.org/10.1016/j.geomorph.2012.03.026>

Books and book chapters

1. **López-Ruiz, A.**, Ortega-Sánchez, M., & Losada, M.A. (2020). Morphodynamics of mixed sand and gravel beaches. In: *Sandy Beach Morphodynamics*. Elsevier, ISBN: 9780081029275. <https://doi.org/10.1016/B978-0-08-102927-5.00014-X>
2. Ortega-Sánchez, M., Bergillos, R.J., **López-Ruiz, A.**, & Losada, M.A. (2017). Morphodynamics of Mediterranean Mixed Sand and Gravel Coasts. SpringerBriefs in Earth Sciences. Springer. ISBN 978-3-319-52439-9. <https://doi.org/10.1007/978-3-319-52440-5>
3. Ortega-Sánchez, M., **López-Ruiz, A.**, Baquerizo, A. & Losada, M.A. (2015). Shoreline undulations. In: *Encyclopedia of Estuaries* (Ed. Michael J. Kennish). Springer. ISBN: 978-94-017-8800-7. https://doi.org/10.1007/978-94-017-8801-4_365

C.2. Conferences

1. Zarzuelo, C., **López-Ruiz, A.**, Valle-Levinson, A., Déiz-Minguito, M. & Ortega-Sánchez, M. (2022). Tidal flow modifications induce by bridge piles: the example of Cádiz Bay. 39th IAHR World Congress 2022. Oral presentation. Granada (Spain), 22/6/22.
2. **López-Ruiz, A.**, Garel, E., & Ferreira, O. (2021). Short-term morphodynamics of the Guadiana ebb- tidal delta, International Coastal Symposium (ICS) 2021. Oral presentation. Seville, (Spain), 3/5/21.
3. Zarzuelo, C., **López-Ruiz, A.**, & Ortega-Sánchez, M. (2021). Mid-term evolution of a nature-based dredging strategy at an altered ebb-tidal shoal, International Coastal Symposium (ICS) 2021. Oral presentation. Seville, (Spain), 3/5/21.
4. Ruiz-Reina, A., Zarzuelo, C., López-Herrera, J.M., & **López-Ruiz, A.** (2021). The marine-fluvial front at river mouths during extreme events: a hydrodynamic approach, International Coastal Symposium (ICS) 2021. Oral presentation. Seville, (Spain), 3/5/21.
5. Zarzuelo, C., D'Alpaos, A., Carniello, L., **López-Ruiz, A.**, & Ortega-Sánchez, M. (2017). Characteristics and evolution of ebb-dominated creeks, 10th Symposium on River, Coastal and Estuarine Morphodynamics (RCEM). Oral presentation. Padova (Italy), 15/09/2017



6. **López-Ruiz, A.**, Bergillos, R.J., Ortega-Sánchez, M., Lobo, F.J., & Losada, M. A. (2015). Influence of submerged undulations on the development of a horn-embayment system: a case of study in southern Spain. 36th IAHR World Congress. Oral presentation. Delft-The Hage (Netherlands), 28/06/2015.
7. Bergillos, R.J., Rodríguez-Delgado, C., **López-Ruiz, A.**, Millares, A., Ortega-Sánchez, M., & Losada, M. A. (2015). Recent human-induced coastal changes in the Guadalfeo river deltaic system (Southern Spain). 36th IAHR World Congress. Oral presentation. Delft-The Hage (Netherlands), 28/06/2015.
8. **López-Ruiz, A.**, Ortega-Sánchez, M., & Losada, M. A. (2015). A simple method for estimating wave refraction along weakly curvilinear coasts. OCEANS15 MTS/IEEE GENOVA. Oral presentation. Genoa (Italy), 18/5/15.
9. **López-Ruiz, A.**, Ortega-Sánchez, M., Baquerizo, A., Navidad, D., & Losada, M. A. (2012). Nonuniform alongshore sediment transport induced by coastline curvature. 33rd International Conference On Coastal Engineering (ICCE). Oral presentation. Santander (Spain), 5/7/12.

C.3. Research projects and research lines

Research projects

1. Resiliencia de bahías y estuarios al cambio climático: respuesta morfodinámica ante eventos extremos (RESILIENCE). PID2021-125895OA-I00. Proyectos de generación de conocimiento 2021. Modalidad: investigación orientada. Ministerio de Ciencia e Innovación. 2022-2025. Total amount: 97.163 €. PI: **Alejandro López-Ruiz**. PI.
2. Impacto del cambio climático en la inundabilidad de desembocaduras: estudio combinado mediante experimentación en laboratorio y modelado numérico avanzado (IMMINENT). B-TEP-110-UGR20. Junta de Andalucía, Proyectos de I+D+i programa FEDER Andalucía 2014-2020. 2021-2023. Total amount: 30.000€. PI: Miguel Ortega-Sánchez and **Alejandro López-Ruiz**. Co-PI.
3. Desarrollo de herramientas para prevenir y gestionar los riesgos geológicos en la costa ligados al cambio climático (RISKCOAST). SOE3/P4/E0868. Comisión Europea INTERREG SUDOE. 2019-2021. Total amount: 175.000€. PI: Jorge Pedro Galve Arnedo (University of Granada). Work team.
4. Análisis multicriterio para la evaluación de riesgos físicos y bióticos en estuarios (PIRATES). CTM2017-89531-R. Ministerio de Economía, Industria y Competitividad. Proyectos de I+D+i 2017. Programa RETOS. 2018-2020. Total amount: 96.679 € PI: M. Díez-Minguito (University of Granada). Research team.
5. Ecología microbiana y biogeoquímica de los sedimentos intermareales: Efectos del forzamiento físico de las mareas, el fotoperíodo y los eventos climáticos extremos (MICROBAHÍA2). CTM2017-82274-R. Ministerio de Economía, Industria y Competitividad. Proyectos de I+D+i 2017. Programa RETOS. 2018-2020. Total amount: 165.000 € PI: Alfonso Corzo Rodríguez, Luis Antonio Mariscal Rico (University of Cádiz). Work team.
6. Protección de frentes urbanos costeros frente al calentamiento global (PROTOCOL). 917PTE0538. CYTED – Programa Iberoamericano de Ciencia y Tecnología para el desarrollo. 2017-2020. Total amount: 202.109€. PI: Miguel Ortega Sánchez (University of Granada). Research team.
7. Morfodinámica de playas heterogéneas en el litoral andaluz del Mar de Alborán (MORPHAL). CTM2012-32439. Ministerio de Economía y Competitividad. 2013-2015. Total amount: 76.050€. PI: Miguel Ortega-Sánchez (University of Granada). Work team.
8. Dragados en el sistema portuario Andaluz: método para la gestión y toma de decisiones (DRAGAPORT). Consejería de Fomento y Vivienda (convocatoria de proyectos de I+D+i). 2013-2015. Total amount: 146.061,09€. PI: Miguel Ortega Sánchez (University of Granada). Work team.
9. Dinámica y flujos biogeoquímicos de la Bahía de Cádiz. Campañas de medidas y modelos (P10-RNM-6352). Junta de Andalucía (convocatoria de proyectos de excelencia - motrices). 2011-2016. Total amount: 208.247 €. PI: Miguel A. Losada Rodríguez (University of Granada). Work team.