

Andrea Lira Loarca

PhD. Civil Engineering

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🆔 R R⁶ 🐦 Andrea Lira-Loarca



Personal Information

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Nationalities Guatemalan and Spanish

Date of birth December 31st, 1988

Education

March 2016 - **PhD Programme in Biogeochemical Fluid Dynamics and their Applications**, *University of Granada, Spain.*
July 2019

PhD Programme of Architecture and Engineering, *University of Parma, Italy*,
Co-tutelle programme | First class honours - Cum Laude.

Thesis: Experimental and analytical study of the hydrodynamics of swell and sea waves with partially reflective structures. <https://digibug.ugr.es/handle/10481/57414>

Supervisors: Asunción Baquerizo Azofra & Sandro G. Longo

Sept. 2014 - **MSc. in Environmental Hydraulics with specialization in Integral Management of Ports and Coastal Zones**, *University of Granada, Spain. First class honours.*
July 2015

MSc. thesis: Experimental study of a hybrid wind-wave WEC system with floating structure subjected to the action of wind and waves

Supervisors: María Clavero Gilabert & Miguel A. Losada Rodríguez

Sept. 2007 - **MSc. Civil Engineering**, (*Ingeniería de Caminos, Canales y Puertos*). *University of Granada, Spain.*
July 2013 *Second class honours (2:1).*

2012–2013 - MSc. thesis: Identification and classification of shoreline undulations patterns: a European database. <http://digibug.ugr.es/handle/10481/32329>

Supervisors: Alejandro López Ruiz, Miguel A. Losada Rodríguez & Miguel Ortega Sánchez

Professional experience

Dec. 2022 - **Research Fellow (RTD-A)**, *MeteOcean Research Group*,
2025 *University of Genova, Italy.*

○ FOCUSMed project: climate change effects in the Mediterranean wave climate and coastal impacts.

2023 - **Member of the Expert Working Group 5**, *Unlock ocean-based solutions to climate change*,
UN Ocean Decade.

<https://oceandecade.org/vision-2030/>

2023 **Consultant**, *Climate Change and Security division*,
NATO CMRE - Centre for Maritime Research & Experimentation. La Spezia, Italy.

June 2020 - **Postdoctoral researcher**, *MeteOcean Research Group*,
Dec. 2022 *University of Genova, Italy.*

○ Implementation, optimization and validation of meteocean hindcast and forecast chain in the Mediterranean Sea using WaveWatch III.

○ Climate change effects in the Mediterranean wave climate.

- Aug. 2019 - **Postdoctoral researcher**, *Environmental Fluid Dynamics Group*,
 May 2020 Andalusian Institute for Earth System Research (IISTA), University of Granada, Spain.
- Maritime climate time series simulations under climate change scenarios.
 - Wave, currents and tide analysis using numerical models (Delft3D).
- Sep. 2015 - **Researcher**, *Environmental Fluid Dynamics Group*,
 July 2019 Andalusian Institute for Earth System Research (IISTA), University of Granada, Spain.
- Analysis of climate change impacts on coastal areas. Extreme wave climate analysis.
 - Development of tools for the calculation and optimization of port operations.
 - Experimental work on wave, wind and currents flume. Water level and pressure measurements.
- Sep. 2014 - **Research internship**, *Environmental Fluid Dynamics Group*,
 Aug. 2015 Andalusian Institute for Earth System Research (IISTA), University of Granada, Spain.
- Experimental setup, scale-models design and modelling in a wave flume and wind tunnel.
 - Data analysis and related statistics of experimental data.
 - Motion analysis using digital image processing.

Teaching experience

Associate Professor accreditation,

Spanish accreditation to the position of *Profesor Contratado Doctor*

Italian accreditation to the position of *Professore Associato*.

MSc. programmes

- 2022-2023 | **Climate Change: Processes and Modeling**, MSc. Environmental Engineering,
 University of Genova, Italy.
- 2022-2023 | **Coastal Structures and Shore Protection**, *Part I: Wave theory, data and extreme value analysis*,
 2021-2022 | MSc. Environmental Engineering,
 2020-2021 | University of Genova, Italy.
- 2021-2022 | **Maritime Structures (Costruzioni Marittime)**, *Part I: Wave theory, data and extreme value anal-*
 2020-2021 | *ysis*, MSc. Civil Engineering,
 University of Genova, Italy.
- 2019-2020 | **Planning and management**, *Block I: Reliability and Block II: Introduction to stochastic optimiza-*
tion, Interuniversity Masters Program in Environmental Hydraulics,
 University of Granada, Spain.
- 2019-2020 | **Foundations and applied methods in environmental hydraulics**, *Block I: Numerical methods*
and Block II: Statistical methods, Interuniversity Masters Program in Environmental Hydraulics,
 University of Granada, Spain.

Other

- 2023 | 2022 | **Python for Scientists**, Scientific programming with Python for MSc. and PhD. students,
 2021 | University of Genova, Italy.

Supervision of MSc. and BSc. thesis

- 2021 - 2022 **Dipersion monitoring services in the Ligurian and Northern Tyrrhenian Seas: a multi-model**
statistica approach. Beatrice Maddalena Scotto, *110/110*,
 Supervisors: Giovanni Besio, Andrea Lira Loarca and Marco Alba,
 MSc. Environmental Engineering. University of Genoa, Italy.
- 2020 - 2021 **Langrangian dispersion of particles and mixing properties in the harbor of Genoa. Mattia**
Scovenna,
 Supervisors: Giovanni Besio, Andrea Lira Loarca and Mohammad Daliri,
 MSc. Environmental Engineering. University of Genoa, Italy.

- 2020 - 2021 **Change in joint event occurrences of wind waves and storm surge from the past to the future through climatic projections.** **Filippo Giaroli**, *110/110 - Cum Laude and dignità di stampa*, Supervisors: Giovanni Besio and Andrea Lira Loarca, MSc. Environmental Engineering. University of Genoa, Italy.
- 2020 - 2021 **Building with nature: a possible application to mitigate erosive processes in the Ligurian context.** **Marta Leveratto**, *110/110 - Cum Laude*, Supervisors: Giovanni Besio and Andrea Lira Loarca, MSc. Environmental Engineering. University of Genoa, Italy.
- 2019 - 2020 **Modello semplificato per l'evoluzione del danno in dighe a parete verticale.** **Jacopo Rucco**, *110/110 - Cum Laude*, Supervisors: Giovanni Besio and Andrea Lira Loarca, MSc. Civil Engineering. University of Genoa, Italy.
- 2015 - 2016 **Identificación y clasificación de ondulaciones en la línea de costa de Estados Unidos.** **Eugenio Lorente Moreno**, Supervisors: Miguel Ortega Sánchez, Andrea Lira Loarca and Pedro Magaña, BSc. Civil Engineering. University of Granada, Spain.

Publications

Peer-reviewed journal papers

- A. Lira-Loarca**, P. Berg, A. Baquerizo, and G. Besio, "On the role of wave climate temporal variability in bias correction of gcm-rcm wave simulations," *Climate Dynamics*, pp. 1–28, 2023.
- A. Lira-Loarca** and G. Besio, "Future changes and seasonal variability of the directional wave spectra in the Mediterranean Sea for the 21st century," *Environmental Research Letters*, vol. 17, no. 10, p. 104015, 2022.
- R. Pimentel, C. Photiadou, L. Little, A. Huber, A. Lemoine, D. Leidinger, **A. Lira-Loarca**, J. Lückenkötter, and E. Pasten-Zapata, "Improving the usability of climate services for the water sector: The AQUACLEW experience," *Climate Services*, vol. 28, 2022.
- G. Casciaro, F. Ferrari, D. L. Oneto, **A. Lira-Loarca**, and A. Mazzino, "Increasing the skill of short-term wind speed ensemble forecasts combining forecasts and observations via a new dynamic calibration," *Energy*, 2022.
- A. Lira-Loarca**, A. Cáceres-Euse, F. De Leo, and G. Besio, "Wave modeling with unstructured mesh for hindcast, forecast and wave hazard applications in the Mediterranean Sea," *Applied Ocean Research*, 2022.
- M. Cobos, P. Otiñar, P. Magaña, **A. Lira-Loarca**, and A. Baquerizo, "MarineTools.temporal: A Python package to simulate Earth and environmental time series," *Environmental Modelling & Software*, p. 105359, 2022.
- E. Sebok, H. J. Henriksen, E. Pastén-Zapata, P. Berg, G. Thirel, A. Lemoine, **A. Lira-Loarca**, C. Photiadou, R. Pimentel, P. Royer-Gaspard, *et al.*, "Use of expert elicitation to assign weights to climate and hydrological models in climate impact studies," *Hydrology and Earth System Sciences Discussions*, pp. 1–35, 2021.
- A. Lira-Loarca**, F. Ferrari, A. Mazzino, and G. Besio, "Future wind and wave energy resources and exploitability in the mediterranean sea by 2100," *Applied Energy*, vol. 302, p. 117492, 2021.
- A. Lira-Loarca**, M. Cobos, G. Besio, and A. Baquerizo, "Projected wave climate temporal variability due to climate change," *Stochastic Environmental Research and Risk Assessment*, no. 35, p. 1741–1757, 2021.
- P. Magaña, J. Del-Rosal-Salido, M. Cobos, **A. Lira-Loarca**, and M. Ortega-Sánchez, "Approaching Software Engineering for Marine Sciences: A Single Development Process for Multiple End-User Applications," *Journal of Marine Science and Engineering*, vol. 8, p. 350, May 2020.
- A. Lira-Loarca**, M. Cobos, M. Ángel Losada, and A. Baquerizo, "Storm characterization and simulation for damage evolution models of maritime structures," *Coastal Engineering*, vol. 156, p. 103620, 2020.
- A. Lira-Loarca**, A. Baquerizo, and S. Longo, "Interaction of swell and sea waves with partially reflective structures for possible engineering applications," *Journal of Marine Science and Engineering*, vol. 7, 2019.

M. Jalón, **A. Lira-Loarca**, A. Baquerizo, and M. Losada, “An analytical model for oblique wave interaction with a partially reflective harbor structure,” *Coastal Engineering*, vol. 143, pp. 38 – 49, 2019.

F. Addona, **A. Lira-Loarca**, L. Chiapponi, M. Losada, and S. Longo, “The Reynolds wave shear stress in partially reflected waves,” *Coastal Engineering*, vol. 138, pp. 220 – 226, 2018.

A. López-Ruiz, R. J. Bergillos, **A. Lira-Loarca**, and M. Ortega-Sánchez, “A methodology for the long-term simulation and uncertainty analysis of the operational lifetime performance of wave energy converter arrays,” *Energy*, vol. 153, pp. 126 – 135, 2018.

P. Magaña, A. López-Ruiz, **A. Lira**, M. Ortega-Sánchez, and M. A. Losada, “A public, open Western Europe database of shoreline undulations based on imagery,” *Applied Geography*, vol. 55, pp. 278–291, Dec. 2014.

Books

M. Cobos, **A. Lira-Loarca**, G. Christakos, and A. Baquerizo, *Theory and Applications of Time Series Analysis. ITISE 2018. Contributions to Statistics.*, ch. Storm Characterization Using a BME Approach. Springer Nature Switzerland.

Recommendations for Breakwater Construction Projects. Puertos del Estado. Spanish Government, 2018.

International and National Conferences: participation and proceedings

International peer-reviewed conferences

A. Lira-Loarca and G. Besio, “Future extreme wave events in the Mediterranean Sea by 2100,” in *Proceedings of the Effects of Climate Change in the World’s Ocean (ECCWO5)*, (Bergen, Norway), 2023.

A. Lira-Loarca, L. Mentaschi, and G. Besio, “Future changes in extreme waves and their seasonality in the Mediterranean Sea,” in *Proceedings of the International Conference in Coastal Engineering*, (Sydney, Australia), 2022.

M. Corrales, **A. Lira-Loarca**, and G. Besio, “Wave hindcast in the Pacific of Central America by using unstructured mesh,” in *Proceedings of the International Conference in Coastal Engineering*, (Sydney, Australia), 2022.

M. Daliri, **A. Lira-Loarca**, G. Cremonini, F. De-Leo, L. Cutroneo, A. Reboa, M. Capello, A. Stochinno, and G. Besio, “Development of an innovative system for assessing the pollutant dispersion within port waters,” in *Proceedings of the International Conference in Coastal Engineering*, (Sydney, Australia), 2022.

F. Giaroli, **A. Lira-Loarca**, and G. Besio, “Future changes in joint waves and storm surge events in the Mediterranean Sea,” in *Proceedings of the WCRP Sea Level Conference*, (Singapore), 2022.

F. Aristodemo, T. Caloiero, **A. Lira-Loarca**, and G. Besio, “Detection and quantification of wave trends in Southern Italy,” in *Proceedings of the International Conference on Time Series and Forecasting ITISE*, (Gran Canaria, Spain), 2022.

A. Baquerizo, M. Bermúdez, P. Otiñar, P. Magaña, A. Millares, **A. Lira-Loarca**, and M. Cobos, “Probabilistic flood assessment in Mediterranean coastal areas of Andalucía (Spain): the ARCA project,” in *Proceedings of the 39th IAHR World Congress*, (Granada, Spain), 2022.

A. Lira-Loarca, A. Baquerizo, and G. Besio, “Assessment of temporal-bias correction methods for wave climate projections in the Mediterranean sea,” in *Proceedings of the Ocean Sciences Meeting 2022*, 2022.

A. Lira-Loarca, F. Ferrari, and G. Besio, “Projected changes in wind and wave energy resource and combined exploitability in the Mediterranean sea,” in *Proceedings of the Ocean Sciences Meeting 2022*, 2022.

G. Casciaro, **A. Lira-Loarca**, and A. Mazzino, “Increasing the skill of short-term wind speed ensemble forecasts combining forecasts and observations via EMOS,” in *Proceedings of the International Conference on Applied Energy 2021*, 2021.

A. Lira-Loarca and G. Besio, “Performance evaluation of bias adjustment methods for wave climate projections in the Mediterranean sea,” in *Proceedings of the EGU General Assembly 2021*, 2021.

M. Bermúdez, A. Millares, **A. Lira-Loarca**, and A. Baquerizo, "Towards sustainable sediment management strategies in Mediterranean reservoirs: Insights from the Guadalfeo semiarid river basin," in *Proceedings of the 10th Conference on Fluvial Hydraulics*, (Delft, Netherlands (virtual conference)), 2020.

A. Lira-Loarca, M. Cobos, A. Millares, G. Besio, and A. Baquerizo, "Integrated extreme sea level events in the mediterranean coast of Spain," in *Proceedings of the EGU General Assembly 2020*, 2020.

C. Photiadou, L. Little, P. Berg, R. Pimentel, M. J. Polo, T. Sonnenborg, E. Pasten-Zapata, V. Andréassian, J. Lückenkötter, P. Kruse, D. Leidinger, A. Huber, S. Achleitner, **A. Lira-Loarca**, and B. Arheimer, "Best practises and lessons learnt from AQUACLEW," in *Proceedings of the EGU General Assembly 2020*, 2020.

H. J. Henriksen, E. Pasten-Zapata, P. Berg, R. Pimentel, G. Thirel, **A. Lira-Loarca**, and C. Photiadou, "Expert elicitation as tool for climate and hydrological model uncertainty reduction," in *Proceedings of the EGU General Assembly 2020*, 2020.

R. Pimentel, M. J. Polo, M. J. Pérez-Palazón, S. Achleitner, M. Díez-Minguito, A. Huber, P. Kruse, **A. Lira**, J. Lückenkötter, and M.-H. Ramos, "Assessing the role of a priori user knowledge in climate services perception: An experiment with university students across Europe," in *Proceedings EGU General Assembly 2020*, 2020.

A. Lira-Loarca, M. Cobos, G. Besio, and A. Baquerizo, "Coastal flooding due to extreme events in the mediterranean coast of Spain," in *Proceedings of the International Conference on Regional Climate ICRC-CORDEX19*, (Beijing, China), 2019.

M. Cobos, **A. Lira-Loarca**, G. Christakos, and A. Baquerizo, "Storm characterization using a BME approach," in *Proceedings of the International Conference on Time Series and Forecasting ITISE*, (Granada, Spain), 2018.

A. Lira-Loarca, M. Cobos, A. Baquerizo, and M. A. Losada, "Multivariate forecasting of extreme wave climate and storm evolution," in *Proceedings of the International Conference on Time Series and Forecasting - ITISE*, (Granada, Spain), 2018.

A. Lira-Loarca, M. Cobos, A. Baquerizo, and M. A. Losada, "A multivariate statistical model to simulate storm evolution," in *Proceedings of the 36th International Conference on Coastal Engineering - ICCE*, (Baltimore, USA), 2018.

A. Lira-Loarca, M. Cobos, P. Magaña, A. Millares, and A. Baquerizo, "Integrated Statistical Modeling Framework of Maritime Data in a Climate Change Context: Application to MSc. Teaching," in *Proceedings of 10th International Conference on Education and New Learning Technologies - EDULEARN18*, (Palma de Mallorca, Spain), 2018.

A. Lira-Loarca, A. Baquerizo, and S. Longo, "Wind-wave interaction with a vertical semi-immersed barrier," in *Proceedings of 7th International Conference on the Application of Physical Modelling in Coastal and Port Engineering and Science - Coastlab18*, (Santander, Spain), 2018.

A. López-Ruiz, P. Magaña, **A. Lira**, J. Gallego, and M. Ortega-Sánchez, "Databases of coastal features as an introduction to coastal engineering research," in *International Congress on Education, Innovation and Learning Technologies - ICEILT*, (Granada, Spain), 2015.

P. Magaña, A. López-Ruiz, **A. Lira**, J. Gallego, and M. Ortega-Sánchez, "Using cutting-edge technologies to motivate students to engineering research: the example of data mining," in *International Congress on Education, Innovation and Learning Technologies - ICEILT*, (Granada, Spain), 2015.

A. López-Ruiz, P. Magaña, **A. Lira**, and M. Ortega-Sánchez, "Exploring the potential of Google Earth for large-scale geographic studies: generating a database of coastal features," in *8th annual International Conference of Education, Research and Innovation - ICERI*, (Seville, Spain), 2015.

P. Magaña, A. López-Ruiz, **A. Lira**, and M. Ortega-Sánchez, "Data mining: how to make a research methodology attractive for students and engineering applications," in *8th annual International Conference of Education, Research and Innovation - ICERI*, (Seville, Spain), 2015.

[Italian peer-reviewed conferences](#)

A. Lira-Loarca, J. Rucco, and G. Besio, "Long-term simulation and evaluation of damage evolution of vertical wall breakwaters: sliding," in *Studi di Aggiornamento. Associazione di Ingegneria Offshore e Marina 2022*, (Parma, Italia), 2022.

F. Giaroli, **A. Lira-Loarca**, and G. Besio, "Prestazioni di GCM-RCMs nell'analisi di eventi congiunti di wind waves e storm surge nel Mediterraneo," in *Studi di Aggiornamento. Associazione di Ingegneria Offshore e Marina 2022*, (Parma, Italia), 2022.

A. Lira-Loarca and G. Besio, "Future temporal and multimodal changes in waves in the Mediterranean Sea," in *XXXVIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche (IDRA2022)*, (Reggio Calabria, Italia), 2022.

F. Aristodemo, T. Caloiero, N. Livadoti, **A. Lira-Loarca**, and G. Besio, "Analysis of wave trends in the Mediterranean Sea," in *XXXVIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche (IDRA2022)*, (Reggio Calabria, Italia), 2022.

F. Giaroli, **A. Lira-Loarca**, and G. Besio, "Change in joint event occurrences of wind waves and storm surge from the past to the future through climatic projections," in *XXXVIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche (IDRA2022)*, (Reggio Calabria, Italia), 2022.

M. Corrales, **A. Lira-Loarca**, and G. Besio, "Coastal risk assessment in Central America: from deep waters to nearshore regions," in *XXXVIII Convegno Nazionale di Idraulica e Costruzioni Idrauliche (IDRA2022)*, (Reggio Calabria, Italia), 2022.

A. Lira-Loarca and G. Besio, "Impatti del cambiamento climatico nella caratterizzazione del clima marino e del suo comportamento interannuale e multimodale nel Mediterraneo," in *Studi di Aggiornamento. Associazione di Ingegneria Offshore e Marina 2021*, 2021.

F. Addona, **A. Lira-Loarca**, L. Chiapponi, M. Clavero, M. A. Losada, and S. Longo, "Spatial variation of wave shear stresses, under partial reflection conditions. An experimental study," in *XXXVI Convegno Nazionale di Idraulica e Costruzioni Idrauliche*, (Ancona, Italia), 2018.

Spanish peer-reviewed conferences

A. Lira-Loarca, A. Baquerizo, and M. A. Losada, "Un estudio sobre el control de la agitación en la dársena de Guadiaro en el Puerto de Málaga," in *XV Jornadas Españolas de Ingeniería de Costas y Puertos*, (Torremolinos, Málaga, España), 2019.

P. Magaña, J. Del-Rosal-Salido, M. Cobos, **A. Lira-Loarca**, and M. Ortega-Sánchez, "Desarrollo de software científico en el ámbito de la ingeniería de costas," in *XV Jornadas Españolas de Ingeniería de Costas y Puertos*, (Torremolinos, Málaga, España), 2019.

A. Lira-Loarca, F. Addona, M. Clavero, S. Longo, A. Baquerizo, and M. A. Losada, "Estudio experimental del transporte de cantidad de movimiento bajo la influencia de viento," in *XIV Jornadas Españolas de Ingeniería de Costas y Puertos*, (Alicante, España), 2017.

C. Zarzuelo, A. López-Ruiz, M. Díez-Minguito, **A. Lira-Loarca**, and M. Ortega-Sánchez, "Alteraciones en el flujo de energía mareal en las bahías por el impacto de nuevas construcciones: Bahía de Cádiz," in *XIV Jornadas Españolas de Ingeniería de Costas y Puertos*, (Alicante, España), 2017.

A. Lira-Loarca, M. Clavero, and M. A. Losada, "Canal de Interacción Atmósfera-Océano (CIAO)," in *I Jornadas de Investigadores en Formación*, (Granada, España), 2016.

M. Cobos, **A. Lira-Loarca**, P. Magaña, and A. Baquerizo, "Caracterización espacial del viento en el entorno portuario basada en técnicas estadísticas a partir de registros SIMAR," in *I Jornadas de Investigadores en Formación*, (Granada, España), 2016.

A. M. Jiménez-Robles, **A. Lira-Loarca**, C. Zarzuelo, and M. Ortega-Sánchez, "Modelado numérico en desembocaduras fluviales," in *I Jornadas de Investigadores en Formación*, (Granada, España), 2016.

A. Lira-Loarca, P. Magaña, A. López-Ruiz, M. Ortega-Sánchez, and M. A. Losada, "Ondulaciones en la línea de costa: un ejemplo de la potencialidad de Google Earth para estudios costeros a gran escala," in *XIII Jornadas Españolas de Ingeniería de Costas y Puertos*, (Avilés, España), 2015.

S. Nieto, **A. Lira-Loarca**, M. Clavero, and M. A. Losada, "Canal de Interacción Atmósfera-Océano," in *XIII Jornadas Españolas de Ingeniería de Costas y Puertos*, (Avilés, España), 2015.

Invited talks: outreach and dissemination

High-resolution modeling of wind and waves in the Mediterranean Sea: a reliable forecast tool for the Ocean Race Grand Finale, *Unige at the Ocean Live Park in Alicante*, Ocean Race Alicante.

11th January, 2023. Alicante, Spain

Operational forecast of atmosphere and wave climate using Amazon Web Services, *AWS Initiate 2022*. Genova, Organized by Amazon Web Services.

17th November, 2022. Genova, Italy

Climate change effects on maritime climate in the Mediterranean Sea: future temporal and multimodal variability, *Science Diplomacy: workshop "Climate Change in the Broader Mediterranean area"*, Organized by the Italian Embassy in Cairo, Bibliotheca Alexandrina, NIOF and AASTMT.

09-10th October, 2022. Alexandria, Egypt

Impatti del cambiamento caratterizzazione del clima marino nel Mediterraneo, *Seminario Tempeste Estreme: Aspetti tecnici, gestionali ed assicurativi*, Naples Shipping Week, Organized by Consorzio Inter-Universitario per la Previsione e Prevenzione dei Grandi Rischi.

28th September, 2022. Salerno, Italy

High-resolution Mediterranean past, present and future atmospheric and maritime climate, *TNC22 Conference*, Invited by Amazon Web Services, Organized by GEANT and co-funded by the European Union.

13-17th June, 2022. Trieste, Italy

Reviewer and Editor

Editor

2022 **Frontiers in Marine Science**, *Frontiers*, Advances and Modelling of Climate Change Effects on Coastal and Estuarine Hydro-Morphodynamics.

Topic Editor

2022 **Journal of Marine Science and Engineering**, *MDPI*, Remote Sensing Techniques in Marine Environment.

Guest Editor

Reviewer

2023 – **Nature Communications**, Nature.

2023 – **Nature Reviews Earth & Environment**, Nature.

2022 – **Renewable Energy**, Elsevier.

2021 – **Frontiers in Marine Science**, Frontiers.

2021 – **Ocean Modelling**, Elsevier.

2021 – 2022 **Early Career Scientists associations group review of the Second Order Draft of the Working Group II contribution to the IPCC Sixth Assessment Report Climate Change 2021: Impacts, Adaptation and Vulnerability**, The Association of Polar Early Career Scientists (APECS), Mountain Research Initiative (MRI), Past Global Changes Early-Career Network (PAGES-ECN), Permafrost Young Researchers Network (PYRN), Young Earth System Scientists (YESS) community and the Intergovernmental Panel on Climate Change (IPCC).

2020 **Climate**, MDPI.

2019 - 2020 **Journal of Marine Science and Engineering**, MDPI.

2019 - 2020 **Remote sensing**, MDPI.

Other research activities

Intellectual Property Rights (IPR) registry

- June 2020 **SIMSTORM. Storm analysis and simulation**, (*Análisis y simulación de tormentas*), M. Cobos, **A. Lira-Loarca**, P. Magaña, A. Baquerizo, M. Losada..
- May 2016 **CORPORA. Tool for the analysis and simulation of port operations**, (*Herramienta para el cálculo de operatividad portuaria*), **A. Lira-Loarca**, P. Magaña, M. Cobos, A. Baquerizo, M. Losada..
- June 2015 **TESLA. Western Europe Shoreline Ondulations Database**, (*Base de datos de ondulaciones de la línea de costa en Europa occidental*), **A. Lira-Loarca**, A. López-Ruiz, P. Magaña, M. Ortetga-Sánchez, M. Losada..

Research stays

- Sep. 2018 - **Department of Engineering and Architecture**,
Feb. 2019 *University of Parma, Italy.*
- Sep. 2017 - **Department of Engineering and Architecture**,
Feb. 2018 *University of Parma, Italy.*

Research network

- UGR, Spain **Prof. Asunción Baquerizo, Prof. Manuel Diez Minguito and Prof. Miguel Ortega Sánchez**, *University of Granada, Spain*,
Collaborating on stochastic analysis and laboratory experiments and outcomes published in high-ranked journals.
- US, Spain **Prof. Alejandro López Ruiz and PhD. Carmen Zarzuelo Romero**, *University of Seville, Spain*,
Collaborating on coastal hydro-morphodynamics with publication in Energy and national conferences. Part of the research team on a project proposal for Spanish Funding Scheme 2021.
- EEA, Denmark **PhD. Christiana Photiadou**, *European Environment Agency, Denmark*,
Collaboration on hydrological impacts within a European project and publications derived..
- SMHI, Denmark **PhD. Peter Berg**, *Swedish Meteorological and Hydrological Institute, Sweden*,
Collaboration on bias correction of wave climate projections.
- UNAM, Mexico **Prof. Rodolfo Silva**, *National Autonomous University of Mexico, Mexico*,
Collaborating on regional wave modelling and for possible joint PhD students.
- UMG, Guatemala **Ing. Rolando Torres**, *Mariano Gálvez University, Guatemala*,
Collaborating on regional wave modelling. I was invited for a one-week seminar on wave modeling in January 2020.
- USAC, Guatemala **Ing. Elfego Orozco**, *Mariano Gálvez University, Guatemala*,
Collaborating on regional wave modelling. I was invited for a one-week seminar on wave modeling in January 2020.
- CSIRO, Australia **PhD. Mark Hemer**, *Commonwealth Scientific and Industrial Research Organization, Australia*,
Collaborating on sea-level and wave extremes through the preparation of H2020-MSCA-GF-2020, HORIZON-MSCA-2021-GF and HORIZON-ERC-2022-STG proposals.

Grants and awards

2018-2019 Extraordinary Doctoral Award, *Best PhD thesis in the Engineering and Architecture area*, awarded by the University of Granada.

2022 Ocean Sciences Meeting grant, *Registration grant to attend the 2022 Ocean Sciences Meeting*, awarded by the American Geophysical Union (AGU), the Association for the Sciences of Limnology and Oceanography (ASLO) and The Oceanography Society (TOS).

Seal of Excellence H2020-MSCA-GF-2020, *Awarded by the European Commission for a High Quality Project submitted to the Marie Skłodowska-Curie Actions H2020-MSCA-GF-2020..*

Travel and expenses grant, *Full financial support to attend the International Conference on Regional Climate-CORDEX (ICRC-CORDEX 2019)*, 14-18 Oct. 2019, Beijing, China, awarded by Swedish Meteorological and Hydrological Institute (SMHI) and World Climate Research Programme (WCRP).

Research stay fellowship, *Department of Engineering and Architecture, University of Parma, Italy*, Dec. 2018 - Feb. 2019, awarded by ERASMUS+ EU-programme.

Research stay fellowship, *Department of Engineering and Architecture, University of Parma, Italy*, Sep. - Nov. 2018, awarded by the International Campus of Excellence in Marine Science CEIMAR.

Travel and expenses grant, *Full financial support to attend the CLIVAR-FIO Summer School on Past, present and Future Sea level changes and UNESCO/IOC ODC Training Course on Ocean Forecast Systems*, 25 June - 07 July 2018, Qingdao, China, awarded by CLIVAR (Climate and Ocean: Variability, Predictability and Change) - World Climate Research Programme (WCRP), Intergovernmental Oceanographic Commission (IOC) of UNESCO and The First Institute of Oceanography (FIO), China.

Research stay fellowship, *Department of Engineering and Architecture, University of Parma, Italy*, Dec. 2017 - Feb. 2018, awarded by ERASMUS+ EU-programme.

Research stay fellowship, *Department of Engineering and Architecture, University of Parma, Italy*, Sep. - Nov. 2017, awarded by the Programme of International Mobility of PhD students of the University of Granada, Spain.

Travel and expenses grant, *Full financial support to attend HYDRALAB+ Next Generation Researchers's Workshop, New Scaling issues in hydraulic models and optical measurement techniques.*, 17 - 20 Jan. 2017, Toulouse, France, awarded by the Hydralab+ Project and University of Hull, UK.

Participation in R+D Projects

Public Funding

FOCUSMed,

Enhanced Assessment of Future Coastal Multi-Hazards and Compound Risks in the Mediterranean Sea, Young researchers - Seal of Excellence grant.

Funding organism: Italian Ministry of Education, University and Research

Duration: 20/12/2022 – 19/12/2024

Project director: **Andrea Lira Loarca**

Funding received: 150.000,00 euros

Seal of Excellence - attrazione di talenti @UniGe,

Quantifying extreme coastal water levels in the Mediterranean Sea (ForeMedSea).

Funding organism: University of Genoa (UniGE) and Compagnia San Paolo Foundation

Duration: 01/12/2021 – 30/11/2022

Project director: **Andrea Lira Loarca**

Funding received: 33.557,00 euros

SINAPSI,

Assistenza alla navigazione per l'accesso ai porti in sicurezza.

Funding organism: Interreg Italy-France Maritime

Duration: 2018 – 2022

Project director: Giovanni Besio

ISYPORT,

Integrated system for mitigation of navigation risks.

Funding organism: Italian Ministry of Education, University and Research

Duration: 2018 – 2022

Project director: Giovanni Besio

Risk assessment in the Liguria region.

Funding organism: Agenzia Regionale per la Protezione dell'ambiente Ligure (ARPAL). Regione Liguria.

Duration: 2020 – 2022

Project director: Giovanni Besio

SICOMAR+,

Sistema transfrontaliero per la sicurezza in mare COntro i rischi della navigazione e per la salvaguardia dell'ambiente MARino (Cross-border system for safety at sea against the risks of navigation and for the protection of the marine environment).

Funding organism: Interreg Italy-France Maritime

Duration: 2018 – 2021

Project director: Giovanni Besio

ICCOAST,

Estudio de inundación y erosión en zonas costeras de Andalucía en un escenario de cambio climático (Flooding and erosion in coastal regions of Andalusia in a climate change scenario).

Funding organism: Andalusian Regional Government (Junta de Andalucía)

Duration: 2020 – 2021

Project director: Asunción Baquerizo Azofra

Funding received: 284.614,82 euros

PIRATES,

Multi-criteria analysis for physical and biotic risk assessment in estuaries.

Funding organism: Ministry of Economy, Industry and Competitiveness. Spanish Government

Duration: 2018 – 2020

Project director: Manuel Diez Minguito

Funding received: 96.679,00 euros

AQUACLEW-UGR,

Advancing quality of climate services for fluvial & coastal processes in Europe.

Funding organism: Ministry of Economy, Industry and Competitiveness. Spanish Government

Duration: 15/09/2017 – 15/09/2020

Project director: Asunción Baquerizo Azofra

Funding received: 96.000,00 euros

Recomendations for Maritime Works,

Redaction of the Recommendations for Maritime Works: Breakwaters (ROM 1.1).

Funding organism: Puertos del Estado. Spanish Government

Duration: 01/01/2012 – 01/01/2019

Project director: Miguel A. Losada

Funding received: 360.000,00 euros

Private Funding

Tools for the Simulation and Optimization of Port Operations Based on Probabilistic Methodologies.

Funding organism: UT FCC - Proes Consultores, S.A.

Duration: 01/09/2015 - 15/05/2016

Project director: Asunción Baquerizo Azofra

Funding received: 122.000,00 euros

UNDIGEN - Study of Ocean Wave Energy Extraction,

Activity III: Development of an experimental platform for the analysis, simulation and validation of offshore devices..

Funding organism: Abengoa Research S.L.

Duration: 11/03/2013 - 11/03/2016

Project director: Miguel A. Losada

Funding received: 120.000,00 euros

Courses and workshops

14-15 May 2019 **Copernicus Marine Service Training Workshop for to Iberia-Biscay-Ireland region,**
Lisbon, Portugal Organized by Copernicus Marine Service.

10-14 Sept. 2018 **ERA4CS Summer School on Climate Services from the users' perspective,**
Pisa, Italy Organized by ERA4CS (European Research Area for Climate Services) initiative of the Joint Programming Initiative (JPI Climate).

- 25-30 June 2018 **CLIVAR-FIO Summer School on Past, Present and Future Sea Level Changes**,
Qingdao, China Organized by CLIVAR (Climate and Ocean: Variability, Predictability and Change) part of the World Climate Research Programme (WCRP) & The First Institute of Oceanography (FIO), State Oceanic Administration (SOA), China .
- 2-7 July 2018 **UNESCO/IOC ODC Training Course On Ocean Forecast Systems**,
Qingdao, China Organized by the Intergovernmental Oceanographic Commission (IOC) of UNESCO & The First Institute of Oceanography (FIO), State Oceanic Administration (SOA), China .
- 13-15 Nov. 2017 **DualSPHysics Users Workshop**,
Parma, Italy Organized by the University of Parma. Italy; The University of Manchester, U.K.; Universidade de Vigo, Spain; Universiteit Gent - Flanders Hydraulics Research, Belgium. .
- 17-20 Jan. 2017 **HYDRALAB+ Next Generation Researchers' Workshop. "New Scaling issues in hydraulic models and optical measurement techniques"**,
Toulouse, France Organized by the HYDRALAB project (financed by EU Horizon 2020 Research and Innovation Programme).
- 15 March 2015 **Technical seminary "Fluid Mechanics Technologies"**,
Madrid, Spain Organized by Alava Ingenieros.

Languages

Spanish Mother tongue
English Proficient user - C2
Italian Advanced user - C1
French Basic user - A1

Certificate of Proficiency in English (CPE)

Certificat de connaissance en langue Française - niveau B1 (2012)