

Andrea Lira Loarca

PhD. Civil Engineering

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Personal Information

Name Andrea M. Lira Loarca
Nationalities Spanish and Guatemalan

Education

2016–2019 PhD Programme in Biogeochemical Fluid Dynamics and their Applications. University of Granada. Co-tutelle with University of Parma, Italy.

Thesis: Experimental and analytical study of the hydrodynamics of swell and sea waves with partially reflective structures. Supervisors: Asunción Baquerizo Azofra & Sandro Longo

2014–2015 MSc. in Environmental Hydraulics with specialization in Integral Management of Ports and Coastal Zones. University of Granada.

Masters' 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

2007–2013 MSc. Civil Engineering (level 7 EQF). University of Granada.

Experience

2020– Postdoctoral researcher. MeteOcean Research Group

University of Genova

2019–2020 Postdoctoral researcher. Environmental Fluid Dynamics Group

Andalusian Institute for Earth System Research (IISTA). University of Granada

2015–2019 Researcher. Environmental Fluid Dynamics Group

Andalusian Institute for Earth System Research (IISTA). University of Granada

Participation in R+D Projects

- 2021 - SINAPSI Assistenza alla navigazione per l'accesso ai porti in sicurezza. Interreg Italy-France Maritime
- 2020 - Risk assessment in the Liguria region. Agenzia Regionale per la Protezione dell'ambiente Ligure (ARPAL). Regione Liguria.
- 2020 - ISYPORT Integrated system for mitigation of navigation risks. Italian Ministry of Education, University and Research
- 2020-2021 SICOMAR+ Cross-border system for safety at sea against the risks of navigation and for the protection of the marine environment. Interreg Italy-France Maritime.
- 2019-2021 ICCOAST Flooding and erosion in coastal regions of Andalusia under climate change. Andalusian Regional Government.
- 2018-2020 PIRATES. Multi-criteria analysis for physical and biotic risk assessment in estuaries. Funded by Spanish Government.
- 2017-2020 AQUACLEW Advancing quality of climate services for fluvial & coastal processes in Europe. JPI Climate and EU.
- 2016-2019 Recommendations for Maritime Works: Breakwaters (ROM 1.1). Puertos del Estado (Spanish Government)
- 2015-2016 Tools for Simulation and Optimization of Port Operations Based on Probabilistic Methods. UT FCC - Proes Consultores
- 2014-2015 UNDIGEN - Study of Ocean Wave Energy Extraction. Abengoa Research Ltd.

Teaching experience

- 2020- Coastal Structures and Shore Protection. Part I: Wave theory, data and extreme value analysis. MSc. Environmental Engineering. University of Genova, Italy
- 2020- Maritime Structures. Part I: Wave theory, data and extreme value analysis. MSc. Civil Engineering. University of Genova, Italy
- 2019-2020 Planning and management. Block I: Reliability and Block II: Introduction to stochastic optimization. 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

Grants and awards

- 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.
- Full financial support to attend the International Conference on Regional Climate-CORDEX, Oct. 2019, Beijing, China. Awarded by Swedish Meteorological and Hydrological Institute (SMHI) and WCRP.
- 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. July 2018, Qingdao, China. awarded by CLIVAR - WCRP, Intergovernmental Oceanographic Commission (IOC) UNESCO and First Institute of Oceanography, China.

Research Stays

- Sept. 2018-Feb. 2019. Research stay at University of Parma, Italy. Department of Engineering and Architecture. Fellowship awarded by ERASMUS+ EU-programme and the International Campus of Excellence in Marine Science CEIMAR.
- Sept. 2017-Feb. 2018. Research stay at University of Parma, Italy.

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.

Reviewer

- 2021. *Frontiers in Marine Science*. Frontiers.
- 2021. 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).
- 2021. *Ocean Modelling*. Elsevier.

Courses

- ERA4CS Summer School on Climate Services from the users' perspective. Pisa, Italy (September 10-14th, 2018).
- CLIVAR-FIO Summer School on Past, Present and Future Sea Level Changes. Qingdao, China (June 25-30th, 2018).
- UNESCO/IOC ODC Training Course On Ocean Forecast Systems. Qingdao, China (July 2-7th, 2018).
- DualSPHysics Users Workshop. Parma, Italy (November 13-15th, 2017).
- HYDRALAB+ Next Generation Researchers' Workshop. "New Scaling issues in hydraulic models and optical measurement techniques". Toulouse, France (January 17-20th, 2017).

Publications

Refereed journal papers - Journal Citation Reports

- A. Lira-Loarca** and G. Besio, "Future changes and seasonal variability of the directional wave spectra in the Mediterranean Sea for the 21st century," *under review at Environmental Research Letters*, 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.

Chapters in 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.

More than 35 contributions in International and National scientific conferences (ICCE, EGU, OSM, ICRC-CORDEX, CoastLab, IDRA, among others).