

Report of Common Activities

WECANET COST Action

Working Group 1

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A. Grm

1. Joint Publications

A list of joint publications was created considering the following rules:

- Only Journal Research Papers were considered. Conference papers and book chapters were discarded.
- The manuscripts were published over the period 2019-2022.
- At least, one researcher from two different institutions belonging to WECANET Cost Action was in the list of Authors
- At least one of those researchers from belonged to WG1.

The period 2015-2018 was considered for comparison purposes.

Only researchers included in the WECANET list at October 2, 2022 were considered.

INSTITUTION	INSTITUTION	2019 2020	2015 2018
University of Vigo, Spain	Universiteit Gent, Belgium	8	2
University of Vigo, Spain	Università degli Studi di Salerno	6	1
University of Vigo, Spain	Uni. "Dunărea de Jos" Galați, Romania	3	0
University of Vigo, Spain	Uni Politècnica de Catalunya, Spain	15	8
University of Vigo, Spain	Universidade de Lisboa, Portugal	2	0
University of Vigo, Spain	University of Manchester, UK	4	1
University of Vigo, Spain	Università degli Studi di Firenze, Italy	3	0
University of Vigo, Spain	Universidade de Aveiro, Portugal	8	1
Universiteit Gent, Belgium	Università degli Studi di Firenze, Italy	5	0
Universiteit Gent, Belgium	Uni. Politècnica de Catalunya, Spain	7	3
Universiteit Gent, Belgium	University of Manchester, UK	1	0
Universiteit Gent, Belgium	Universidade de Porto, Portugal	1	0
Universiteit Gent, Belgium	University of Manchester, UK	1	0
Universiteit Gent, Belgium	SINTEF Ocean, North Jutland, Denmark	0	1
Universiteit Gent, Belgium	Queen's University Belfast	1	0
Universiteit Gent, Belgium	Izmir Yüksek Teknoloji Enstitüsü, Turkey	2	2
Uni. Politècnica de Catalunya, Spain	Università degli Studi di Firenze, Italy	5	0
Uni Politècnica de Catalunya, Spain	Università degli Studi di Salerno	3	1
Queen's University Belfast	TU Delft, Netherlands	1	0
Queen's University Belfast	SINTEF Ocean, North Jutland, Denmark	1	0
Aalborg University, Denmark	SINTEF Ocean, North Jutland, Denmark	1	8
Aristotle Uni,of Thessaloniki, Greece	National TU of Athens, Greece	6	0
Politecnico di Torino, Italy	Maynooth University, Ireland	22	15
Politecnico di Torino, Italy	Universidade de Lisboa, Portugal	4	0
Politecnico di Torino, Italy	BME, Budapest, Hungary	8	0
Politecnico di Torino, Italy	TU Braunschweig, Germany	7	0
Maynooth University, Ireland	BME, Budapest, Hungary	14	7
Maynooth University, Ireland	TU Braunschweig, Germany	17	2
BME, Budapest, Hungary	TU Braunschweig, Germany	12	4
Uni. "Dunărea de Jos" Galați, Romania	Universidade de Lisboa, Portugal	2	5
Uni."Dunărea de Jos" Galați, Romania	Universidade de Aveiro, Portugal	3	0
TU Delft, Netherlands	Aristotle Uni. of Thessaloniki, Greece	1	0
TU Delft, Netherlands	National TU of Athens, Athens, Greece	1	0

Table 1. Number of common publications among different institutions involved in WG1 of WECANET COST Action.

Table 1 shows the strongest collaborations for those groups that had already collaborated in the past. In most cases, collaboration has been reinforced as can be observed for different research networks as Vigo-Gent-Barcelona-Florence-Salerno or Torino-

Budapest- Braunschweig- Maynooth. In general, these networks tend to connect institutions from different countries rather than institutions from the same country, with geographical proximity not being a key factor. No central hubs were identified as the collaboration follows a multi-node configuration rather than a centralized network.

The map depicted in Figure 1 shows the publication links among the different members. Only institutions with at least one common publication over the period 2019-2022 were considered. Dashed lines connect the institutions with common publications. The size of the dot corresponding to a certain institution is proportional to the number of institutions with common publications with that institution.

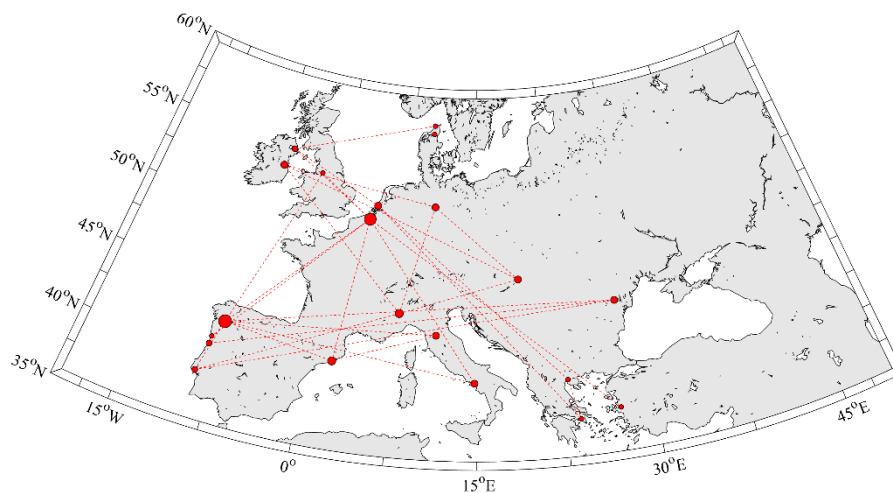


Figure 1: Map showing the collaboration among institutions in terms of common publications. A threshold of only a common publication over the period 2019-2022 was imposed.

A higher threshold was imposed (at least five common publications) in order to shed light on the intensity of the common research

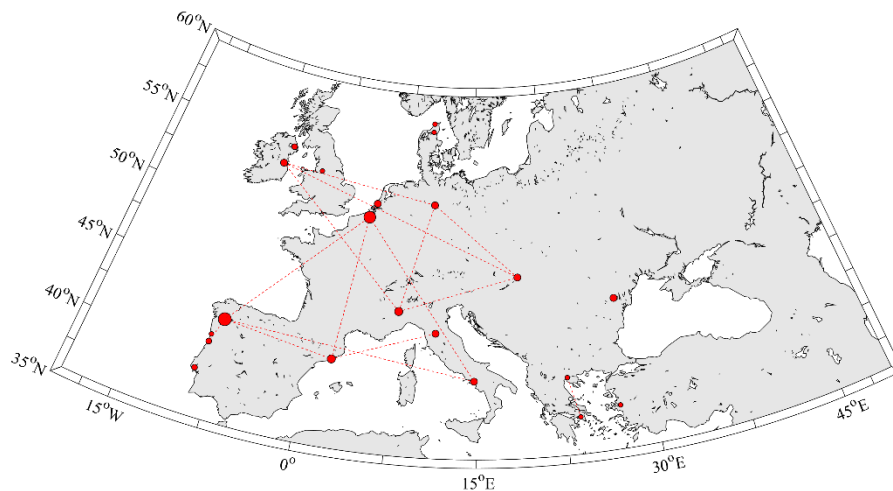


Figure 2: Map showing the collaboration among institutions in terms of common publications. A threshold of at least five common publications over the period 2019-2022 was imposed.

2. Short Term Scientific Missions (STSMs)

As stated in WECANET website, Short Term Scientific Missions (STSM) are aimed at supporting individual mobility and at strengthening the existing networks and fostering collaborations by allowing scientists to visit an institution or laboratory in another Participating COST Country, or in approved COST Near Neighbour Countries (NNC) Institutions or in approved International Partners Countries (IPC) institutions. A STSM should specifically contribute to the scientific objectives of the COST Action, while at the same time allowing applicants to learn new techniques or gain access to specific instruments and/or methods not available in their own institutions. STSM applicants must be engaged in an official research programme as a PhD Student or postdoctoral fellow or can be employed by, or affiliated to, an Institution or legal entity which has within its remit a clear association with performing research. The institutions / organisations where applicants pursue their main strand of research are considered as Home institutions, being the Host institution the institution / organisation that will host the applicant.

The first step to assess both the coverage and the extent of the STSMs was to elaborate a full list including all the STSM sorted by call. Those STSMs associated with Working Group 1 activities were selected for further analysis, being a STSM considered to be associated with WG1 if two conditions are fulfilled:

- either the applicant (home institution) or the tutor (host institution) is listed in the WG1.
- the subject of the research to be carried out during the STSM is linked to the activities of WG1.

Overall, the WG1 is involved in more around 45% of the STSMs as shown in Table 2

Call	WG1	Total	Percentage
1	4	7	57
2	2	6	33
3	3	5	60
4	2	6	33
5	5	16	31
6	1	5	20
7	4	9	44
8	9	11	82
Total	30	65	46

Table 2. Percentage of participation of WG1 in the different STSM calls.

A full list of STSMs sorted by call can be observed in Tables 3-10. The provided information includes the name of the applicant, the title of the application and the host and home institutions. Those applications marked in blue correspond to the applications that fulfilled the criteria described above.

Name	Title of the application	Host institution	Home institution
Mr Nicolas Quartier	A DualSPPhysics model coupled to MoorDyn and Project Chrono for numerical simulations of wave energy converters with mooring lines and power take-off system.	University of Vigo, Spain	Ghent University, Belgium
Ms Tatiana Potapenko	Experimental modelling, testing and comparison of a linear generator PTO system of a wave energy converter	University of Edinburgh, Scotland, UK,	Uppsala University, Sweden
Mr Timothy Vervaet	A DualSPPhysics-OceanWave3D numerical wave basin to provide feedforward on the design of a wave energy converter array experimental set-up	University of Vigo, Spain	Ghent University, Belgium
Ms Brenda Rojas	WG3 Technology of WECs and WEC arrays	Uppsala University, Sweden	Uni. Carlos III de Madrid, Spain
Dr Hisham Elsafti	Accurate and Efficient Numerical Modelling of Point Absorber WECs with OpenFOAM	Aalborg University, Denmark	TU Braunschweig, Germany
Dr William Finnegan	Experimental investigation of WECs for the validation of high performance numerical models	Universidade do Porto, Portugal	National University of Ireland, Galway, Ireland
Prof Milen Baltov	Review of the decision making process and the economic factors behind the marine energy and wave energy projects. Marking the bridges towards the Blue growth drivers and possible donors and investors support to them	Ghent University, Belgium	Burgas Free University, Bulgaria

Table 3. List of STSMs corresponding to the first call.

Name	Title of the application	Host institution	Home institution
Mr Hugo Diaz Martinez	Wecanet (Wave farm)	TU Delft, Netherlands	University of Lisbon, Portugal
Ms. Georgia Sismani	CFD analysis of flap-type WECs	Ghent University, Belgium	Aristotle Uni Thessaloniki, Greece
Dr Jens Peter Kofoed	Development and editing of the annual assembly report, annual report and Action book; extension of the website with an exclusive user area	Ghent University, Belgium	Aalborg University, Denmark
Mr Jian Tan	Size Optimisation of Wave Energy Converters	Aalborg University Denmark	TU Delft, The Netherlands

Dr Dogan Kisacik	Laboratory-Scale Modelling of WECs and development of the: WECANet-LABIMA Open Access Data Base for Numerical Models Benchmarking	Università degli Studi di Firenze, Italy	Institute of Marine Sciences and Technology, Turkey
Dr. Florin Onea	Technical assessment of the Black Sea wave power	Dunarea de Jos Uni. Galati, Romania	Burgas Free University, Bulgaria

Table 4. List of STSMs corresponding to the second call.

Name	Title of the application	Host institution	Home institution
Mr Nicolas Quartier	Advanced wave energy converter model in DualSPHysics, with accurate boundary conditions, variable power take-off force and mooring lines.	University of Vigo, Spain	Ghent University, Belgium
Mr Joe El Rahi	Development of a fluid-structure interaction system within DualSPHysics for flexible oscillating structures with applications to wave energy converters (WEC)	University of Vigo, Spain	Ghent University, Belgium
Mr Jian Tan	The affecting factors on the PTO rating optimization of WECs: numerical modelling, the representation of wave climates and the relative computational errors	École Centrale de Nantes, France	Delft University of Technology (Delft, Netherlands)
Dr Fernando Jaramillo Lopez	Development of a PTO for an E-Motion WEC and experimental testing for dynamic modelling	University of Porto, Portugal	Maynooth University, Ireland
Ms Eirini Katsidoniotaki	Experimental wave tank tests of a point-absorber WEC in extreme wave conditions	Aalborg University, Denmark	Uppsala University, Sweden

Table 5. List of STSMs corresponding to the third call.

Name	Title of the application	Host institution	Home institution
Mr Matej Žnidarec	Integration of WECs model into energy management system of RES-rich microgrids	Uppsala University, Sweden	Faculty of Electrical Engineering, Computer Science and Information Technology Osijek, Croatia
Dr Gianmaria Giannini	Power-Take-Off Systems Scaling Recommendations and Guidelines	Uppsala University, Sweden	University of Porto, Portugal
Dr Berguzar Ozbahceci	Large Scale Experiments for LABIMA-WEC and OWC Prototype Development	Forschungszentrum Küste, Germany	Izmir Institute of Technology, Turkey
Mr Nicolas Quartier	Advanced wave energy converter model in DualSPHysics, with accurate boundary conditions, variable power take-off force and mooring lines.	University of Vigo, Spain	Ghent University, Belgium
Mr Joe El Rahi	Development of a fluid-structure interaction system within DualSPHysics for flexible oscillating structures with applications to wave energy converters (WEC)	University of Vigo, Spain	Ghent University, Belgium

Mr Daniel Clemente	Control and Forecasting Strategies for a Wave Energy Converter based on the Roll Oscillations of Multipurpose Offshore Floating Platforms	Maynooth University, Ireland	Faculty of Engineering of the University of Porto, Portugal
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Table 6. List of STSMs corresponding to the fourth call.

Name	Title of the application	Host institution	Home institution
Mr Panagiotis Vasarmidis	Extension of internal wave generation method in a non-hydrostatic model targeting the accurate modeling of wave-WEC interactions and far field effects.	TU Delft, Netherlands	Ghent University, Belgium
Mr Bono De Witte	Experimental testing of the WECfarm Wave Energy Converter	Aalborg University, Denmark	Ghent University, Belgium,
Mr Hendrik Claerbout	Experimental testing of the WECfarm Wave Energy Converter	Aalborg University, Denmark	Ghent University, Belgium
Mr Iván Martínez-Estévez	Coupling between DualSPHysics and the Finite Element Module of Project Chrono: multiphysics modelling of waves-WEC interaction	Ghent University, Belgium	University of Vigo, Spain
Mr Daniel Clemente	Hydrodynamic analysis of the E-Motions wave energy converter	University of Plymouth, UK	University of Porto, Portugal
Mr Rafail Ioannou	Round Robin Testing Programme	Ghent University, Belgium	Aristotle Uni. of Thessaloniki, Greece
Dr Gael Verao Fernandez	Advanced soil-cable interactions in Moody coupled with Chrono and DualSPHysics.	Aalborg University, Denmark,	Ghent University, Belgium
Mr Matteo Innocenti	WECANet Round Robin Test Program	Ghent University, Belgium	University of Florence, Italy
Dr Gianmaria Giannini	Analysis of offshore wave energy converters' subsystems for improving reliability and efficiency	NTNU, Norway	University of Porto, Portugal
Mr Nikolaos Mantadakis	Round Robin Testing Programme	Ghent University, Belgium	Aristotle Uni. of Thessaloniki, Greece.
Mr Louis De Beule	Experimental testing of WEC control strategies for the WECfarm project	Aalborg University, Denmark	Ghent University, Belgium
Mr Tomás Cabral	Round Robin Testing Programme - LABIMA	University of Florence, Italy	University do Porto, Portugal
Dr Stuart Walker	Breakwater Integrated Rip-current Turbine Investigation	University of Florence, Italy	University of Exeter, UK
Mr Bonaventura Tagliaferro	A Non-Linear Relationship for Simulating Power Take-off (PTO) Systems in DualSPHysics	University of Vigo, Spain	University of Salerno, Italy
Prof Liliana Rusu	Evaluation of the future wave power with numerical models	University de Lisbon, Portugal	Dunarea de Jos Uni. Galati, Romania

Dr Dogan Kisacik	Round Robin Testing Programme	Ghent University, Belgium	Institute of Marine Sciences and Technology, Turkey
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Table 7. List of STSMs corresponding to the fifth call.

Name	Title of the application	Host institution	Home institution
Dr Theodoros Maniatis	European Green ports	Ghent University, Belgium	Ship Procurement S.A, Greece
Dr Gülizar Özyurt Tarakcioğlu	Post-processing of WEC experimental and field data for decision support system flowchart of WEC-Existing Breakwater Integration	Ghent University, Belgium	Middle East Technical University, Turkey
Nikon Vidjajev	Digital-physical convergence of wave energy conversion	TU Delft, The Netherlands	Tallinna Tehnikaülikool, Estonia
Dr Vicky Stratigaki	Green Ports - Greece	Ship Procurement S.A, Athens, Greece	Ghent University, Belgium
Mr Omer Khalid	Impacts and economics of wave energy and how they affect decision- and policy-making	TU Delft, The Netherlands	University College Cork, Ireland
Ms Stavroula Gkleka	European Green ports	Ghent University, Belgium	Ship Procurement S.A, Greece

Table 8. List of STSMs corresponding to the sixth call.

Name	Title of the application	Host institution	Home institution
Mr. Bonaventura Tagliafierro	Maximum hydrodynamics loads on point-absorber wave energy converters induced by extreme conditions using focused wave models	EPHysLab, Universidade de Vigo, Spain	University of Salerno, Italy
Mr. Dogan Kisacik	Testing Scaled model of an Overtopping Device	Florence University, Italy	Izmir Institute of Technology, Turkey
Mr. Edoardo Pasta	Exploiting the power of sparse metocean datasets: gap filling techniques to model wave source changes in time and space.	Aalborg University, Denmark	Politecnico di Torino, Italy
Prof. Liliana Rusu	Evaluation of the climate change impact on wave power	University of Lisbon, Portugal	Dunarea de Jos Uni. Galati, Romania
Mr. Nicolas Faedo	Experimental data-based modelling and assessment of energy-maximising control technology for WEC array systems	Aalborg University, Denmark	Politecnico di Torino, Italy
Nikon Vidjajev	Wave energy converter pre- installation expertise	Uppsala University, Sweden	Tallinna Tehnikaülikool, Estonia
Nisa Bahadıroğlu	Testing Scaled model of an Overtopping Device	Florence University, Italy	Izmir Institute of Technology, Turkey

Vaibhav Raghavan	Extension of the open-source solver HAMS to multi-bodies with generalised degrees of freedom	Aristotle University of Thessaloniki, Greece	TU Delft, Netherlands
Prof. Vicky Stratigaki	Numerical and experimental generation of port data for green port applications	Ship Procurement S.A, Greece	Ghent University, Belgium

Table 9. List of STSMs corresponding to the seventh call.

Name	Title of the application	Host institution	Home institution
Mr. Americo Ribeiro	Wave energy resource and device suitability during the winter season on the Galician coast (Spain) under climate change scenarios	University of Vigo, Spain	University of Aveiro, Portugal
Mr. Beatrice Battisti	Numerical modelling of the far-field effects of a PeWEC farm	Ghent University, Belgium	Politecnico di Torino, Italy
Mr. Chen Zeng	Numerical modelling of the far-field effects of a PeWEC farm	University of Maynooth, Ireland	University of Lisbon, Portugal
Mr. Matt Folley	Development of wave-tank models of wave energy converters suitable for array modelling	Aalborg University, Denmark	Queen's University Belfast, UK
Ajab Gul MAJIDI	Technical assessment and the impact of climate change on the wave energy resources of the Atlantic coast of the Iberian Peninsula	Bursa Uludağ University, Turkey	University of Porto, Portugal
Ms. Giulia Cervelli	Implementation of nearshore wave propagation techniques and comparison between numerical models and physically based equations.	TU Delft, the Netherlands	Politecnico di Torino, Italy
Mr. Gianmaria Giannini	Application of Smoothed Particles Hydrodynamics models for offshore wave energy converters	University of Vigo, Spain	University of Porto, Portugal
Mr. Salvatore Capasso	Simulation of moored wave buoy in waves and current by SPH	Universitat Politècnica de Catalunya, Spain	Università degli Studi di Salerno, Italy
Mr. Daniel Clemente	Advanced optimization algorithms towards the optimization of the E-Motions wave energy converter	The University of Edinburgh, UK	University of Porto, Portugal
Mr. Tomás Cabral	Development of a tool to estimate the power production of a hybrid WEC	SINTEF, Norway	University of Porto, Portugal
Mr. Maria F.L.P.R. Sarmento	Validation of a numerical model by a physical model	SINTEF, Norway	University of Porto, Portugal

Table 10. List of STSMs corresponding to the eight call.

Institution	Host(#)	Home(#)
University of Vigo, Spain	10	1
Ghent University, Belgium	3	10
Università degli Studi di Salerno, Italy	0	3
Durarea de Jos, Univ of Galati, Romania	1	2
Universitat Politècnica de Catalunya, Spain	1	0
University of Lisbon, Portugal	2	1
University of Aveiro, Portugal	0	1
Universidade do Porto, Portugal	2	3
Queen's University Belfast, UK	0	1
TU Delft, the Netherlands	2	1
Aalborg University, Denmark	3	0
Aristotle University of Thessaloniki, Greece	1	1
Ship Procurement S.A, Athens, Greece	2	0
Politecnico di Torino, Italy	0	2
Maynooth University, Ireland	1	1
TU Braunschweig, Germany	0	1
National University of Ireland, Galway, Ireland	0	1
Burgas Free University, Bulgaria	0	1
Bursa Uludağ University, Turkey	1	0
SINTEF, Norway	1	0

Table 11. Number of times that every institution has participated as home or host institution in the STSMs associated with WG1.

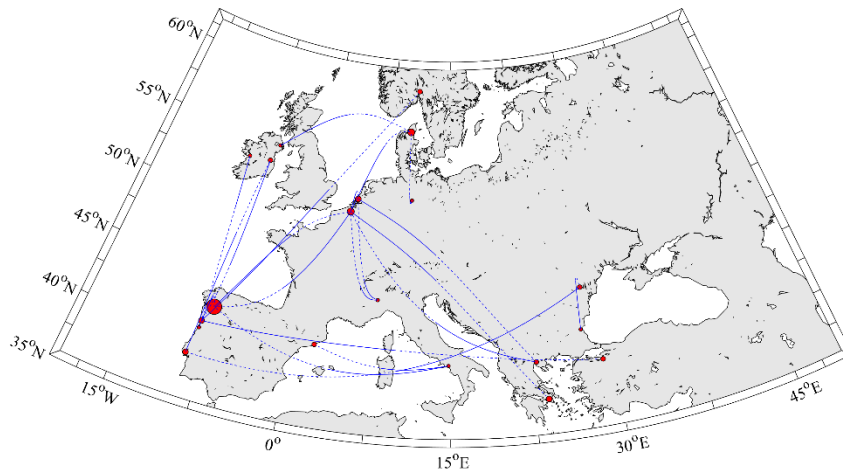


Figure 3: Map showing the collaboration among institutions in terms of the STSMs. The solid line marks the home institution and the dashed line the host institution. The size of the red dots is proportional to the activity as host institution.

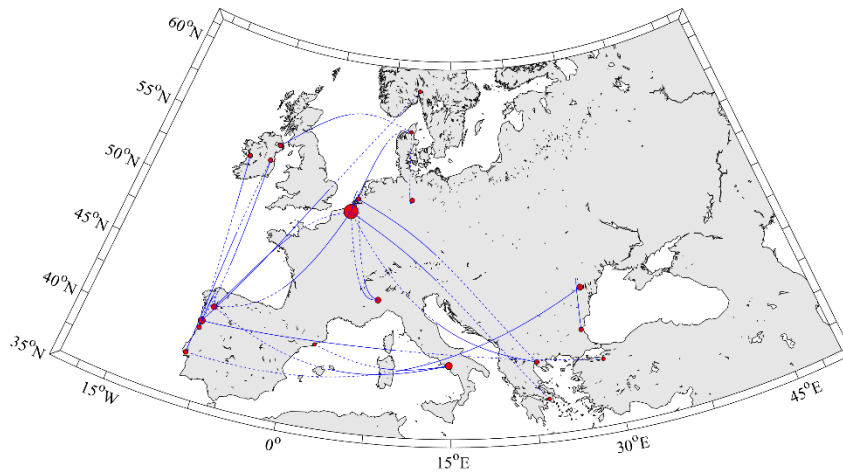


Figure 4: Map showing the collaboration among institutions in terms of the STSMs. The solid line marks the home institution and the dashed line the home institution. The size of the red dots is proportional to the activity as home institution.

3. Special Issues

The special issue "Numerical and Experimental Modelling of Wave Field Variations around Arrays of Wave Energy Converters" was published in WATER over the period 2019-2021, being the main topics:

- marine renewable energy
- wave energy converter arrays
- array wave tank experiments
- numerical modelling of WEC farm wake effects
- arrays of moored floating structures, numerical coupling methodologies
- co-located wave and wind energy farms
- WEC arrays combined with other marine facilities (e.g., breakwaters, offshore platforms, offshore wind turbines)
- WEC farm near and far field effects
- WEC array environmental impact assessment
- WEC array interactions

The special issue is a collaborative effort within the framework of WECANET, including members of the different Working Groups, with special emphasis on WG1. The special issue compiles eleven research papers (a full list can be seen in Appendix I) and was edited by P. Troch and V. Stratigaki (U. Ghent), M. Folley (Queen's University Belfast) and E Loukogeorgaki (Aristotle University of Thessaloniki).

The following table summarizes the different Institutions involved in every research paper

Paper	Institutions involved
Verao-Fernandez et al.	Ghent University, Belgium
Quartier et al.	Ghent University, Belgium University of Vigo, Spain
Šljivac et al.	University of Osijek, Croatia
Stansby and Carpintero Moreno	University of Manchester, UK Ghent University, Belgium
Kisacik et al.	Dokuz Eylül University, Turkey Ghent University, Belgium Università degli Studi di Firenze, Italy University of Vigo, Spain University of Lisbon, Portugal University of Manchester, UK
Loukogeorgaki et al.	Aristotle University of Thessaloniki, Greece National TU of Athens, Greece
Onea and Rusu	Dunarea de Jos University of Galati, Romania
Stratigaki et al.	Ghent University, Belgium
Balitsky et al.	Ghent University, Belgium
Verao-Fernandez et al.	Ghent University, Belgium
Vasarmidis et al.	Ghent University, Belgium Flanders Hydraulics Research, Belgium TU Delft, The Netherlands

Table 12. Institutions that participated in the Special Issue.

The Wecanet institutions involved in the Special Issue are represented in Figure 5

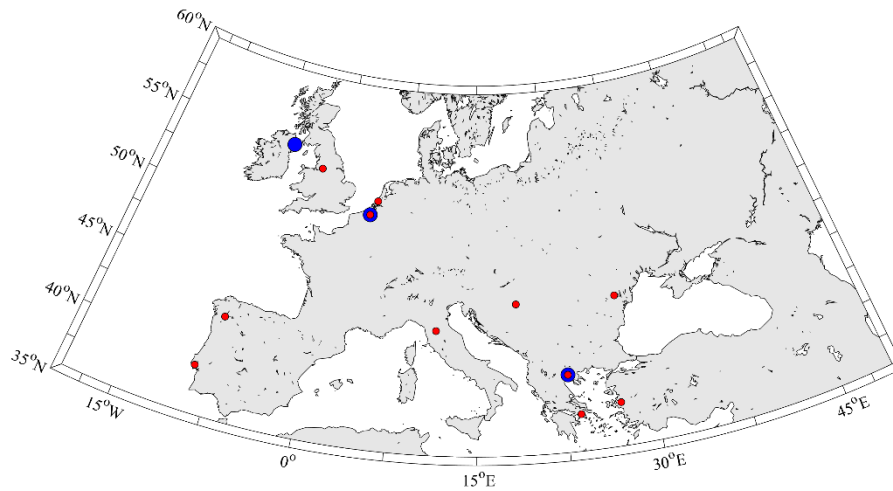


Figure 5: Map showing the institutions that participated in the Special Issue. Blue dots mark the institution of the editors and red dots the institution of the authors.

The special issue "Offshore Renewables for a Transition to a Low Carbon Society" was published in Journal of Marine Science and Engineering over the period 2022-2023, being the main topics:

- ocean energy
- climate change
- evaluation of the resources
- environmental modeling
- floating wind
- fix offshore wind turbines
- wave energy
- tide energy
- floating solar panels
- thermal and salinity gradients energy
- collocations and hybrid approaches
- economic assessments
- expected LCOE dynamics
- challenges in ocean energy extraction

The special issue is a collaborative effort within the framework of WECANET, including members of the different Working Groups, with special emphasis on WG1. The special issue compiles ten research papers (a full list can be seen in Appendix II) and was edited by L. Russu (University of Galati) and V. Stratigaki (U. Ghent). The following table only the different Institutions involved in every research paper that belong to WECANET.

Paper	Institutions involved
Manolache et al.	University of Galati , Romania
Vervaet et al.	Ghent University, Belgium Aalborg University, Denmark
Vervaet et al.	Ghent University, Belgium
Stansby and Carpintero Moreno	University of Manchester, UK Ghent University, Belgium
Arguilé- Perez et al.	University of Vigo, Spain University of Aveiro, Portugal
Vagiona et al.	University of Galati , Romania Aristotle University of Thessaloniki, Greece National TU of Athens, Greece
Chirosca et al., Onea et al.	University of Galati, Romania University of Galati, Romania

Table 13. Institutions belonging to WECANET that participated in the Special Issue.

The Wecanet institutions involved in the Special Issue are represented in Figure 6

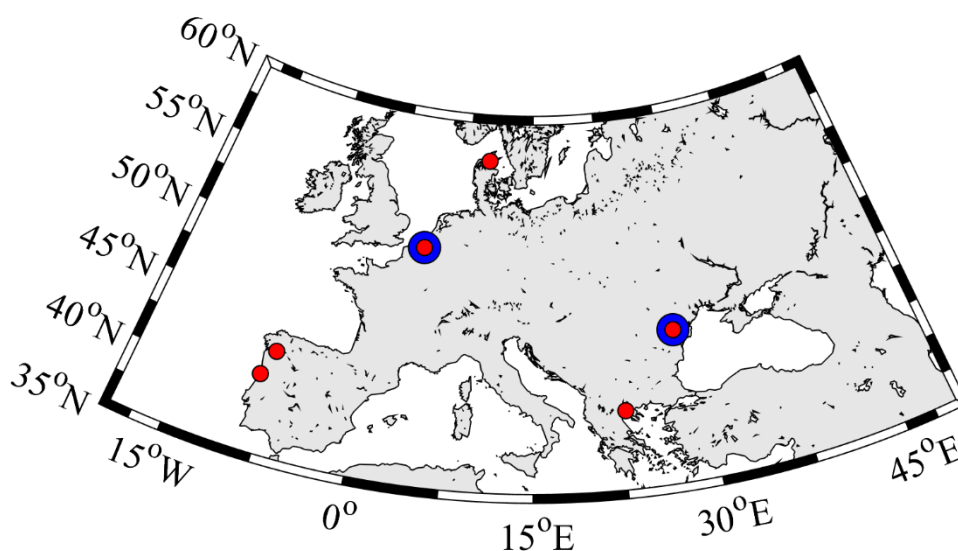


Figure 6: Map showing the institutions that participated in the Special Issue. Blue dots mark the institution of the editors and red dots the institution of the authors.

4. Training Schools and workshops

Training school Varna. Training school on wave energy in Varna (Bulgaria) on 18-22 March 2019

Training school Ourense. Training school on Numerical modelling of WECs using SPH models in Ourense (Spain) on 22-23 January 2020

Training School Belfast. Training School on spectral-domain modelling on 10-11 March 2020 in Belfast, Northern Ireland.

Training School Florence. Training School on wave-structure interaction on 12-16 July 2021 in Florence, Italy.

5. Collaboration with Working Group II

Round Robin campaign of experimental tests Researchers from WG1 belonging to University of Vigo (Spain), Ghent University (Belgium) and Universitat Politècnica de Catalunya (Spain) have collaborated with researchers from WG2 in the design of the Round Robin campaign of experimental tests. They have mainly transmitted the requirements of modellers, especially focused on validation and calibration of numerical models. A brief summary of the proposed test is shown in Appendix III.

APPENDIX I.

List of papers published in the special Issue of the journal WATER.

Gael Verao Fernandez, Vasiliki Stratigaki, Nicolas Quartier and Peter Troch
Influence of Power Take-Off Modelling on the Far-Field Effects of Wave Energy Converter Farms

Water 2021, 13(4), 429; <https://doi.org/10.3390/w13040429>

Nicolas Quartier, Pablo Ropero-Giralda, José M. Domínguez, Vasiliki Stratigaki and Peter Troch
Influence of the Drag Force on the Average Absorbed Power of Heaving Wave Energy Converters Using Smoothed Particle Hydrodynamics

Water 2021, 13(3), 384; <https://doi.org/10.3390/w13030384>

Damir Šljivac, Irina Temiz, Branka Nakomčić-Smaragdakis and Matej Žnidarec
Integration of Wave Power Farms into Power Systems of the Adriatic Islands: Technical Possibilities and Cross-Cutting Aspects

Water 2021, 13(1), 13; <https://doi.org/10.3390/w13010013>

Peter Stansby and Efrain Carpintero Moreno

Study of Snap Loads for Idealized Mooring Configurations with a Buoy, Inextensible and Elastic Cable Combinations for the Multi-Float M4 Wave Energy Converter

Water 2020, 12(10), 2818; <https://doi.org/10.3390/w12102818>

Dogan Kisacik, Vasiliki Stratigaki, Minghao Wu, Lorenzo Cappietti, Irene Simonetti, Peter Troch, Alejandro Crespo, Corrado Altomare, José Domínguez, Matthew Hall, Moncho Gómez-Gesteira, Ricardo Birjukovs Canelas and Peter Stansby
Efficiency and Survivability of a Floating Oscillating Water Column Wave Energy Converter Moored to the Seabed: An Overview of the EsfLOWC MaRINET2 Database

Water 2020, 12(4), 992; <https://doi.org/10.3390/w12040992>

Eva Loukogeorgaki, Ifigenia Boufidi and Ioannis K. Chatjigeorgiou

Performance of an Array of Oblate Spheroidal Heaving Wave Energy Converters in Front of a Wall

Water 2020, 12(1), 188; <https://doi.org/10.3390/w12010188>

Florin Onea and Eugen Rusu

The Expected Shoreline Effect of a Marine Energy Farm Operating Close to Sardinia Island

Water 2019, 11(11), 2303; <https://doi.org/10.3390/w11112303>

Vasiliki Stratigaki

WECANet: The First Open Pan-European Network for Marine Renewable Energy with a Focus on Wave Energy-COST Action CA17105

Water 2019, 11(6), 1249; <https://doi.org/10.3390/w11061249>

Philip Balitsky, Nicolas Quartier, Vasiliki Stratigaki, Gael Verao Fernandez, Panagiotis Vasarmidis and Peter Troch

Analysing the Near-Field Effects and the Power Production of Near-Shore WEC Array Using a New Wave-to-Wire Model

Water 2019, 11(6), 1137; <https://doi.org/10.3390/w11061137>

Gael Verao Fernandez, Vasiliki Stratigaki, Panagiotis Vasarmidis, Philip Balitsky and Peter Troch

Wake Effect Assessment in Long- and Short-Crested Seas of Heaving-Point Absorber and Oscillating Wave Surge WEC Arrays

Water 2019, 11(6), 1126; <https://doi.org/10.3390/w11061126>

Panagiotis Vasarmidis, Vasiliki Stratigaki, Tomohiro Suzuki, Marcel Zijlema and Peter Troch

Internal Wave Generation in a Non-Hydrostatic Wave Model

Water 2019, 11(5), 986; <https://doi.org/10.3390/w11050986>

APPENDIX II.

List of papers published in the special Issue of the journal Journal of Marine Science and Engineering.

Tianyu Song, Ze Li, Honghao Zheng, Chujin Liang and Zhanhong Wan
Optimization on Hydrodynamic Performance for First Level Energy-Capturing Enhancement of a Floating Wave Energy Converter System with Flapping-Panel-Slope
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APPENDIX III.

1/3 Preliminary tests:

INITIAL DECAY TESTS (only floating):

Decay tests: heave decay and pitch decay

INITIAL WAVE PROPAGATION TESTS (fixed and floating):

Wave propagation WITHOUT WEC aiming:

To measure the surface elevation at WEC position (this is important in CFD not only for regular waves but also for focused waves so that we should check first with the code that the target waves are reaching the device).

To apply a correction to the generation transfer function of the wavemaker at each facilities in order to get the target wave conditions (calibration phase)

TESTS TO DETERMINE INERTIA MATRIX OF FLOATING OWC (Mechanical Laboratory)

2/3 Inputs for numerical modelling:

BUOY (fixed and floating):

Geometry model: .STL is preferred

Total mass Moment of inertia in X, Y, Z direction

Density of the device as homogenous (otherwise this can be obtained using geo and mass)

Initial draft: helps to validate the initial situation at equilibrium

MOORINGS (only floating WEC):

Positions of the fairleads and anchor points

Stiffness of the mooring lines

Length of each line diameter or equivalent volume of lines

Friction coefficient (in case of seabed friction)

Initial tension will also validate the mooring solver

WAVE CONDITIONS (fixed and floating):

Wave parameters (H,T,d) and focused waves (xf, tf)

Time series of wavemaker displacement (not the DEMAND, the real one).

PTO Orifice diameter of the OWC

Relationship between airflow and air pressure inside the OWC chamber (this can however also be deduced from the output measurements of the airflow and the air pressure.

3/3 Measurements for numerical validation:

Sampling frequency of each measurement device must be clearly specified.

Raw and filtered data must be provided.

If treated (i.e. post-processed), information on how data have been treated (e.g. filtering techniques applied, etc) must be provided.

MEASUREMENTS (fixed and floating):

Surface elevation at different locations (if possible groups of 5 WG to determine reflection coefficient)

Water level inside the OWC

Pressure inside the air chamber

Air velocity through the orifices

MEASUREMENTS (only floating):

Tensions in the moorings

Motions of the buoy (heave, surge, sway, roll, pitch, yaw)