PERSONAL INFORMATION   Emanuela Clementi

WORK EXPERIENCE

2018/04/01-present

Scientist

CMCC (Centro Euro-Mediterraneo sui Cambiamenti Climatici) – Viale Berti Pichat 6/2, Bologna, Italy

- Research, development and implementation of a 3D wave-current coupled modelling system in the Mediterranean Sea composed by the circulation model NEMO (Nucleus for European Modelling of the Ocean) and the spectral wave model WaveWatchIII
- Quality assessment of the physical analysis and forecast numerical product for the Mediterranean Sea by comparing numerical results with both in situ and satellite measurements
- Responsible for the Mediterranean Sea NRT physical modelling system development and implementation within the CMEMS Med-MFC (Copernicus Marine Environment Monitoring Service, Mediterranean - Monitoring and Forecasting Center) consortium
- From April 2018: Deputy Leader of the CMEMS Med-MFC
- From November 2019: Task Leader (T5.2) in the H2020 Project IMMERSE: Responsible for the upgrade of the NEMO-wave coupling processes
- From January 2020: Participation to several Italy-Croatia INTERREG Projects (ADRIACLIM, CASCADE, STREAM): implementation of a high resolution wave model in the Adriatic Sea and support in setting up coupled systems.
- Jan-June 2021: Scientific Responsible for a Contract for Hydrologic river forcing for Copernicus Marine Service modelling centres: MED MFC
- System Team member of the NEMO consortium
- Member of the GODAE Intercomparison and Validation Task Team
- Co-chair of the MOi (Mercator Ocean International) Expert Team on Ocean Forecasting

2012/09/01-2018/03/31

Researcher

INGV (Istituto Nazionale di Geofisica e Vulcanologia) – Via Donato Creti 12, Bologna, Italy

- Research, development and implementation of a 3D wave-current coupled modelling system in the Mediterranean Sea composed by the circulation model NEMO (Nucleus for European Modelling of the Ocean) and the spectral wave model WaveWatchIII
- Quality assessment of the physical analysis and forecast numerical product for the Mediterranean Sea by comparing numerical results with both in situ and satellite measurements
- Study and implementation of wave-current interaction processes
- From April 2015: Responsible for the CMEMS Med-MFC product quality
- From January 2015: Responsible for the wave and current numerical modeling development for the analysis and forecast product within the operational oceanography group at INGV
- From January 2015: INGV Officer and leader of the NEMO-WAVE Working Group for the NEMO consortium
- From July 2016: Member of the GODAE Intercomparison and Validation Task Team
- From January 2017: Co-supervisor of Ph.D. Thesis in Geophysics: Damiano Delrosso, title: River runoff impact on a high-resolution numerical model of the Mediterranean Sea
- From 2017: INGV representative in EuroGOOS
- From April 2017: EGU Co-convener for the Copernicus Marine Environment Monitoring Service (CMEMS) session
- Participation in the MyOcean2, MyOcean FollowOn EU projects and CMEMS Med-MFC phase1

2008-2012

Research Fellow

University of Bologna - CIRSA (Interdepartmental Center of Research on Environmental Sciences), Ravenna, Italy

- Research and development of a 3D high resolution coupled physical-biogeochemical numerical modelling system of the marine ecosystem in the Adriatic Sea composed by the Biogeochemical Flux Model (BFM) and a numerical general circulation model Princeton Ocean Model (POM)
- Modeling the interannual variability of the Adriatic Sea ecosystem using high frequency atmospheric forcing
- Development of numerical experiments aimed at improving marine environmental predictions by testing control, hindcast and scenario
- Validation of the numerical results compared to both in situ and satellite measurements
- Participation to the VECTOR and MEECE EU projects

2007-2008   Term Contract

University of Bologna – DISTART Hydraulics, Italy

- Support in the coordination activities of the Italian coastal network (RIC) of ENCORA (European platform for sharing knowledge and experience among coastal and marine communities)
- Research on the topics: sustainable coastal engineering techniques; technical assessment of insitu observations
- Responsible for contact database RIC related to people, institutions and projects on integrated coastal zone management

2004-2007   PhD Fellow

Polytechnic University of Milan, Italy

Thesis: Hydrodynamics in and around rubble mound breakwaters: experimental analysis and numerical modelling

- Physical and numerical modeling of sea-waves in shallow water and study the interaction of sea waves with coastal, permeable and low crested defense structures (submerged or slightly emerged)
- Design, implementation and realization of physical experiments conducted on permeable low-crested structures in a small-scale channel for waves and currents at the Laboratory of Civil Engineering of the University of Florence
- Analysis of the experimental results by identifying a new empirical formulation of overtopping for low crested structures
- Development of numerical experiments with high resolution two-dimensional code 2DV COBRAS (Cornell Breaking Waves and Structures) simulating wave-permeable structure interaction processes
- Calibration and validation of the numerical model through comparison with experimental data produced in the laboratory

2003-2004   Research Fellow

University of Bologna – DISTART Hydraulics, Italy

- Study of hydrodynamics and morphodynamics in and around low crested coastal defence structures and wave propagation in coastal zone
- Research on typical case studies of low-crested coastal defense structures;
- Study of wave propagation from offshore to onshore
- Participation to the EU project DELOS.

EDUCATION AND TRAINING

2004-2007   PhD in Hydraulics and Coastal Engineering

Polytechnic University of Milan, Italy

Thesis: Hydrodynamics in and around rubble mound breakwaters: experimental analysis and numerical modelling. Tutor Prof. A. Lamberti. 06/0/2007. Score: excellent

2005	**Environmental Technician**

ECO-Utility Company, Italy

Environmental legislation and technical issues related to: air, water, waste, polluted sites.

1995-2002	**Environmental Engineer**

University of Bologna, Italy

Thesis: Analysis of the river flooding seasonal regime toward a regionalization of the flooding risk indexes in Emilia-Romagna and Marche regions. Supervisor: Prof. A. Brath. 17/07/2002. Score: 96/100

1990-1995	**Scientific high school degree**

Scientific high school, Riccione, Italy

PERSONAL SKILLS

Mother tongue(s)   Italian

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
English B2	B2	B2	B2	B2
.				
French A2	A2	A2	A2	A2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills   Good communication skills gained through my collaboration in International projects

Computer skills
- OS: MS Windows, Unix/Linux
- Programming Languages: Fortran, Matlab, Python
- Numerical codes: COBRAS (Cornell Breaking Waves and Structure) 2DV model, BFM (Biogeochemical Flux Model), POM (Princeton Ocean Model), NEMO (Nucleus for European Modelling of the Ocean), WW3 (WaveWatchIII).

Other skills   Participation to the following specialization courses:
- 8-10 October 2012: Introduction to Parallel Programming and Message Passing Paradigm, CINECA, Bologna, Italy.
- 7-14 September 2011: MEECE Summer School: Marine Ecosystem Evolution in a Changing Environment, METU, Ankara, Turkey.
- 8-13 June 2009 – SESAME Summer School: Coupled Ecological Modelling, University of Malta.
- 27 June-08 July 2005: Summer School: Estuarine and coastal processes in relation to coastal zone management, NIOZ (Royal Netherlands Institute of Sea Research), Texel, The Netherlands.
- 7-18 June 2004: Numerical Methods for Hyperbolic Equations, University of Trento, Italy.

Driving licence   B

ADDITIONAL INFORMATION
Publications:

PEER-REVIEWED PAPERS

Escudier R., Clementi E., Cipollone A., Pistoia J., Drudi M., Grandi A., Lyubartsev V., Lecci R., Aydogdu A., Delrosso D., Omar M., Masina S., Coppini G., Pinardi N. 2021. A High Resolution Reanalysis for the Mediterranean Sea. Frontiers in Earth Science, VOLUME=9, PAGES=1060, DOI: DOI=10.3389/feart.2021.702285.

Nascimento Lima L., Ciliberti S., Aydogdu A., Masina S., Escudier R., Cipollone A., Azevedo Martins D., Causio S., Peneva E., Lecci R., Clementi E., Jansen E., Ilicak M., Cretì S., Stefanizzi M. L. , Palermo F. , Coppini G. 2021. Climate Signals in the Black Sea From a Multidecadal Eddy-Resolving Reanalysis. Frontiers in Marine Science, DOI: 10.3389/fmars.2021.710973.

von Schuckmann K, Le Traon P-Y., Smith N., Pascual A., …. , **Clementi E.,** .., et al. (2021) "Copernicus Marine Service Ocean State Report, Issue 5", Journal ofOperational Oceanography, 14:sup1, 1-185, DOI: 10.1080/1755876X.2021.1946240

Causio, S., Ciliberti, S.A., **Clementi, E**., Coppini, G., Lionello, P. A. (2021) Modelling Approach for the Assessment of Wave-Currents Interaction in the Black Sea. J. Mar. Sci. Eng. 2021, 9, 893. https://doi.org/10.3390/jmse9080893

Ilicak M., Federico I., Barletta I., Mutlu S., Karan H., Ciliberti S.A., **Clementi E**., Coppini G., Pinardi N. (2021). Modelling of the Turkish Strait System using a high resolution unstructured grid ocean circulation model. J. Mar. Sci. Eng. 2021, 9(7), 769; https://doi.org/10.3390/jmse9070769

Pérez-Gómez B., García-León M., García-Valdecasas J., **Clementi E**., Mösso Aranda C., Pérez-Rubio S., Masina S., Coppini G., Molina-Sánchez R., Muñoz-Cubillo A., García Fletcher A., Sánchez González J.F., Sánchez-Arcilla A., Álvarez Fanjul E. (2021). Understanding Sea Level Processes During Western Mediterranean Storm Gloria.   Frontiers in Marine Science, ttps://www.frontiersin.org/article/10.3389/fmars.2021.647437

Verri G., Pinardi n., Bryan F., Tseng Y., Coppini G., **Clementi E**. (2020). A box model to represent estuarine dynamics in mesoscale resolution ocean models. Ocean Modeling 148, https://doi.org/10.1016/j.ocemod.2020.101587

von Schuckmann K., Le Traon P-Y., Smith N., Pascual A., …. , **Clementi E.,** .., et al. (2020), "Copernicus Marine Service Ocean State Report, Issue 4", Journal of Operational Oceanography, 13, https://doi.org/10.1080/1755876X.2020.1785097

Tintoré J, Pinardi N, Álvarez-Fanjul E, Aguiar E, Álvarez-Berastegui D, Bajo M, Balbin R, .., **Clementi E.,**… et al. (2019). Challenges for Sustained Observing and Forecasting Systems in the Mediterranean Sea. Front. Mar. Sci. 6:568. doi: 10.3389/fmars.2019.00568

Davidson F., Alvera-Azcárate A., Barth A., Brassington G.B., Chassignet E.P., **Clementi E**., et al., (2019). Synergies in Operational Oceanography: The Intrinsic Need for Sustained Ocean Observations. Frontiers in Marine Science, 6:450. DOI: 10.3389/fmars.2019.00450

Le Traon P.Y., Reppucci A., Fanjul E., Aouf L., Behrens A., Belmonte M., Bentamy A., Bertino L., .. **Clementi E.,** ..et al. (2019). From Observation to Information and Users: The Copernicus Marine Service Perspective. Frontiers in Marine Science, 6 10.3389/fmars.2019.00234

von Schuckmann K. et al. (2019). Copernicus Marine Service Ocean State Report, Issue 3. Journal of Operational Oceanography, 12(sup1), pp. S1-S123, DOI: 10.1080/1755876X.2019.1633075

Wu L., Staneva J., Breivik Ø., Rutgersson A., Nurser A.J.G., **Clementi E.**, Madec G., (2019). Wave effects on coastal upwelling and water level. Ocean Modelling.DOI:10.1016/j.ocemod.2019.101405.

Liubartseva S., Coppini, G., Lecci R., **Clementi E.** (2018). Tracking plastics in the Mediterranean: 2D Lagrangian model. Marine Pollution Bulletin, 129,1,ISSN 0025-326X, https://doi.org/10.1016/j.marpolbul.2018.02.019.,

von Schuckmann K. et al. (2018). Copernicus Marine Service Ocean State Report. Journal of Operational Oceanography, 11(sup1), pp. S1-S142, DOI: 10.1080/1755876X.2018.1489208

Clementi E., Oddo P., Drudi M., Pinardi N., Korres G., Grandi A. (2017). Coupling hydrodynamic and wave models: first step and sensitivity experiments in the Mediterranean Sea. Ocean Dynamics Volume 67 (10), pp.1293–1312. doi: https://doi.org/10.1007/s10236-017-1087-7.

Von Schuckmann, K., Traon P-Y., Alvarez Fanjul E., Axell L., ….. **Clementi E**., et al. (2017). The Copernicus Marine Environment Monitoring Service Ocean state report. Proceedings of the Institute of Marine Engineering, Science, and Technology. Journal of operational oceanography 9(Sup2):235-320. DOI: 10.1080/1755876X.2016.1273446.

Zodiatis G., De Dominicis M., Perivoliotis L., Radhakrishnan H., Georgoudis E., Sotillo M., Lardner R.W., Krokos G., Bruciaferri D., **Clementi E**., Guarnieri A., et al. (2016). The Mediterranean Decision Support System for Marine Safety dedicated to oil slicks predictions. Deep Sea Research Part II: Topical Studies in Oceanography. 133. https://*doi.*org/*10.1016/j.dsr2.2016.07.014*.

Chust G., I.J. Allen, L. Bopp, C. Schrum, J. Holt, K. Tsiaras, M. Zavatarelli, M. Chifflet, H. Cannaby, I. Dadou, U. Daewel, S.L. Wakelin, E. Machu, D. Pushpadas, M. Butenschon, Y. Artioli, G. Petihakis, C. Smith, V. Garçon, K. Goubanova, B. Le Vu, B.A. Fach, B. Salihoglu, **E. Clementi**, X. Irigoien, 2014. Biomass changes and trophic amplification of plankton in a warmer ocean. Global Change Biology, 20 (7). pp: 2124-2139, DOI: http://dx.doi.org/10.1111/gcb.12562

PROCEEDINGS AND NOT PEER-REVIEWED PAPERS

Coppini G., Clementi E., Cossarini G., Korres G., Drudi m.,et al. (2021) The Copernicus Marine Service ocean forecastinf system for the Mediterranean Sea. 9th EuroGOOS International conference, Shom; Ifremer; EuroGOOS. AISBL, May 2021, Brest, France. pp.272-279. HAL Id: hal-03334358. https://hal.archives-ouvertes.fr/hal-03334358v2

Le Traon P.Y. and 108 co-authors, (2017). The Copernicus Marine Environmental Monitoring Service: Main Scientific Achievements and Future Prospects. Special Issue Mercator Océan Journal #56. https://doi.org/10.25575/56

Clementi E., J. Pistoia, D. Delrosso, G. Mattia, C. Fratianni, A. Storto, S. Ciliberti, B. Lemieux, E. Fenu, S. Simoncelli, M. Drudi, A. Grandi, D. Padeletti, P. Di Pietro, N. Pinardi (2017). A 1/24 degree resolution Mediterranean physical analysis and forecast modeling system for the Copernicus Marine Environment Monitoring Service. Extended abstract to the 8th EuroGOOS Conference, Bergen, 5pp.

Pistoia J., **Clementi E**., Delrosso D., Mattia G., Fratianni C., Drudi M., Grandi A., Padeletti D., Di Pietro P., Storto A., Pinardi N. (2017). Last improvements in the data assimilation scheme for the Mediterranean Analysis and Forecast system of the Copernicus Marine Service. Extended abstract to the 8th EuroGOOS Conference, Bergen, 5pp.

Delrosso D., **Clementi E**., Grandi A., Tonani M., Oddo P., Girardi F.G., Pinardi N. (2016). Towards the Mediterranean Forecasting System MyOcean V5: numerical experiments results and validation. Rapporto Tecnico INGV. ftp://ftp.ingv.it/pro/cen/Delrosso/technical_report_delrosso_formatted.pdf

Clementi E., Gaeta M.G., Lamberti A., 2009. Filtration through low crested structures in 2D: experimental and numerical investigations. Proceeding in: 5th Int. Conf. on Coastal Structures 2007, (Venezia, 2007), World Scientific, pp 927-938. DOI 10.1142/9789814282024_0082.

Clementi E., 2008. Analisi sperimentale e studio numerico dell'idrodinamica in prossimità di frangi-flutti in massi. Article in Bollettino AIOM n.37, pp. 27-31.

Clementi E., Gaeta M.G., Lamberti A., 2008. Analisi numerica 2DV dei processi idrodinamici indotti dalla presenza di barriere permeabili a cresta bassa. Extended abstract al 31° Convegno Nazionale di Idraulica e Costruzioni Idrauliche, Perugia, 9-12 settembre 2008, 8pp.

Clementi, E., 2007. Hydrodynamics in and around rubble mound breakwaters: experimental analysis and numerical modelling. PhD thesis, 231 pp. Politecnico di Milano.

Martinelli L., Zanuttigh B., **Clementi E**., 2007. Transformation of waves from deep water to shallow water. Part III: Tools, Section 13.2, pp. 206-217, in "Environmental Design Guidelines for Low Crested Coastal Defence Structures", Burcharth H. F., Hawkins S., Zanuttigh B. & A. Lamberti, ed.s, Elsevier.

Clementi E., Cappietti L., Martinelli L., 2006. Analisi sperimentale di tracimazione, piling up e filtrazione per scogliere a cresta bassa. Proceeding in: 30th Convegno Idraulica e Costruzioni Idrauliche, (Roma, 2006). Versione elettronica, 16 pp.

Clementi E., Cappietti L., Martinelli L., 2006. Wave flume experiments and results on piling up and overtopping for low crested structures. Proceeding in: 1st Int. Conf. on the Application of Physical Modelling to Port and Coastal Protection (Porto, 2006), pp. 413-424.

Cappietti L., **Clementi E.,** Aminti P.L., Lamberti A., 2006. Piling-up and filtration at low crested breakwaters of different permeability. Proceeding in: 30th Int. Conf. on Coastal Engineering (San Diego, 2006), Vol. 5, pp. 4957-4969.

DATASETS

Clementi E., Pistoia J., Delrosso D., Mattia G., Fratianni C., Storto A., Drudi M., Grandi A., Ciliberti S., Lemieux-Dudon B., Fenu E., Simoncelli S., Padeletti D., Di Pietro P., Lecci R., Coppini G., Pinardi N. (2017). "Mediterranean Sea Analysis and Forecast (CMEMS MED-Currents V3.2 2015-2017)". [Data set]. Copernicus Monitoring Environment Marine Service (CMEMS). Doi:10.25423/CMCC/MEDSEA_ANALYSIS_FORECAST_PHY_006_013

Clementi E., Pistoia J., Fratianni C., Delrosso D., Grandi A., Drudi M., Coppini G., Lecci R., Pinardi N. (2017). Mediterranean Sea Analysis and Forecast (CMEMS MED-Currents 2013-2017). [Data set]. doi: https://doi.org/10.25423/MEDSEA_ANALYSIS_FORECAST_PHYS_006_001.

Projects   **Participation and collaboration in the following research projects and services:**

- **CMEMS Med-MFC**: Copernicus Marine Environment Monitoring Service, Mediterranean - Monitoring and Forecasting Center: https://marine.copernicus.eu/about/producers/med-mfc
- **IMMERSE H2020** Project: https://immerse-ocean.eu/
- **INTERREG Projects**: ADRIACLIM, CASCADE, STREAM
- **EU project MyOcean2** (development of upgrade capabilities for existing GMES fast-track services and related operational services):
- **EU project MyOcean Follow On**
- **DGMARE – EMODNET** Mediterranean Sea Basin Checkpoint
- **ENCORA** (European Platform for Coastal Research Coordination Action, EU FP6 Coordination

Action)
- **EU-FP7 project MEECE**: Marine Ecosystem Evolution in a Changing Environment
- **EU-FP6 project DELOS**: Low Crested Coastal Defence Structures

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV

Bologna, 11-03-2022

Emanuela Clementi