



Ca' Foscari
University
of Venice

Department of Environmental
Sciences, Informatics and Statistics

International Conference Themes 2024 – Long-term trends, abrupt shifts and extreme events in oceanic and atmospheric variability: a scientific discussion

November 13-15th 2023, Venice, Italy

Program

Wednesday November 13th

Location: Aula Baratto - Dorsoduro 3246 - 30123 (VE)

**Angelo
Rubino** **9:15-9:30** **Welcome Speech**

**Katrin
Schroeder** **9:30 – 10:00** **INVITED TALK
The evolving deep waters of the Western Mediterranean:
post-WMT observations**

Session 1 **10:00-10:45** **The Mediterranean Sea: water mass exchanges**

Ivica	Vilibić	The deep Adriatic transition(s)
Julien	Le meur	Intermittent supply of dense water to the deep South Adriatic Pit: an observational study
Annunziata	Pirro	Subsurface warming derived by Argo floats during the 2022 Mediterranean marine heatwave

10:45-11:30 **COFFEE BREAK**

Session 2 **11:30-12:15** **The Mediterranean Sea: extreme events**

Giovanni	Liguori	The need to adopt process-based or impact-based definitions for marine heatwaves
Antonio	Ricchi	On the generation of a meteotsunami, the case study of supercell storm, over Adriatic Sea.
Angela	Pomaro	45 years of recorded wave heights in the Adriatic Sea: extremes and long-term trends

12:15-14:30 **LUNCH (*)**

Matteo Meli	14:30-15:00	INVITED TALK Understanding sea-level trend variability in the Mediterranean Sea
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Session 3	15:00-16:00	The Mediterranean Sea: Modelling and Monitoring
Miroslav	Gačić	Impact of the dense water outflow on mesoscale and sub-basin scale gyres in the Adriatic and the Levantine Basin: laboratory and numerical experiments versus in situ data
Emanuele	Ingrassia	Evolution of coastal monitoring in the central Mediterranean
Michele	Gnesotto	Influence of Intrinsic Oceanic Variability Induced by a Steady Flow on the Mediterranean Sea Level Variability
Lorenzo	Pasculli	Heat and mass budget analysis in the Eastern Mediterranean Sea: insights from a climatic reanalysis and a regional ocean model

<i>16:00-16:30</i>	<i>COFFEE BREAK</i>
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Session 4	16:30-17:30	The Mediterranean sea: biogeochemical processes
Nastjenjka	Supić	Are winter conditions impacting annual organic production in the northern Adriatic? Verifications and future projections
Carlotta	Dentico	Carbonate system dynamics in the southern Adriatic
Alan Maria	Mancini	The past to unravel the future: Deoxygenation events in the geological archive and the modern oxygen crisis
Irena	Ciglenecki Jusic	The phenomenon of sea blooming, "mucillagini" in the northern Adriatic in 2024

<i>17:30-18:30</i>	<i>TOAST WITH ALL THE PARTICIPANTS</i>
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Thursday November 14th

Location: Aula Baratto - Dorsoduro 3246 - 30123 (VE)

Hans Burchard	9:30 – 10:00	INVITED TALK The relation between exchange flow and diahaline mixing in estuaries
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Session 5	10:00-11:15	Advances in climate monitoring
Luigi	Cavaleri	Underestimate of ECMWF model winds in coastal areas - a physical and (for now) unresolvable problem
Elysee	Manimpire Gasana	Reconstruction of the surface geostrophic current in the Mediterranean Sea from Absolute Dynamic Topography Generated by Generative Adversarial Network(GAN)
Gilda	Savonitto	Control and calibration procedures for oceanographic instruments
Maurizio	Fedi	A new bathymetry model for Larsen and Ronne Ice Shelves using gravity data
Daniela	Flocco	The impact of internal wave drag on Arctic sea ice

11:15-11:45 **COFFEE BREAK**

Session 6	11:45-12:45	Climate variability
Ana	Amaral Wasielesky	Thermohaline Properties and Long-term Trends in the Antarctic and Subantarctic Regions of the Pacific Ocean
Nicola	Scafetta	Discussion on the quasi 1000- and 2300-year oscillations in solar and climate variability
Gianluca	Alimonti	A critical assessment of extreme events trends in times of global warming (retracted article)
Adolf	Stips	Insights from calculating the information flow between global forcings and climate variables (simulated and measured)

12:45-14:30 **LUNCH (*)**

Johann Junclaus	14:30-15:00	INVITED TALK "Next Generation" storm- and eddy resolving coupled models: status and perspective for research on climate variability
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Session 7	15:00-15:45	Large-scale processes
Gian Luca	Eusebi Borzelli	The equatorial Pacific "sloping" pycnocline: a critical factor for El Niño initiation
Matteo	Mastropierro	Biophysical climatic effects of large-scale afforestation under a climate change scenario
Nicola	Scafetta	Hypotheses regarding the cause of the anomalous 2023-2024 global temperature warm peak

15:45-16:15	COFFEE BREAK
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Session 8	16:15-17:15	Extreme events and Climate adaptation
Enrico	Ferrero	Mitigation of the urban heat island effects in the city of Turin
Rob	Hetland	Climate change, tipping points, and adaptation in the US Great Lakes region
Alejandro	Caceres-Euse	Coral reefs as a protecting barriers against extreme wave conditions: the San Andres Island (Western Caribbean Sea) case
Sara	Rubinetti	Beyond our planet: what can we learn from the "Earth's evil twin"

17:15-18:30	TOAST WITH ALL THE PARTICIPANTS
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Friday November 15th

Location: Aula Baratto - Dorsoduro 3246 - 30123 (VE)

Michael Ghil	09:30– 10:00	Nonautonomous Dynamical Systems Help Study Long-term Trends and Abrupt Shifts in Climate Variability
Session 9	10:00-10:45	Atlantification and Atlantic variability
Stefano	Pierini	On the AMOC tipping point
Paolo	Montagna	Seawater temperatures, pH and water mass provenance reconstructions over the last century from cold-water coral geochemistry in the North Atlantic Ocean
Elena	Calvo	Mediterranean outflow in the North Atlantic from Argo float data
10:45-11:15		COFFEE BREAK
Session 9	11:15-12:30	(continue)
Francesco	De Rovere	Atlantification at the gateway of the Arctic Ocean in CMIP6 models
Gabriella	Boretto	Atlantification in the Barents Sea over the last millennium: multiproxy evidencesca
Manuel	Bensi	Atlantification in the Svalbard and Fram Strait regions and its impact on deep-sea properties: a view from combined in situ and satellite data
Beatriz	Mano	Atlantification in Svalbard, a changing climate: a study of the effects and interactions between heat sinks and ocean currents
Davide	Zanchettin	Where are North Atlantic sea surface temperatures heading to?
12:30 – 13:00		FINAL DISCUSSION
13:00 – 13:30		TOAST WITH ALL PARTICIPANTS

All talk slots, except key-note talks, include a 12-minute presentation and 3 minutes for discussion (*) at participants' cost

Detailed list of contributions

Alimonti G. (1), Mariani L. (2), Prodi F. (3), Ricci R.A. (4)

A critical assessment of extreme events trends in times of global warming (retracted article)

(1) INFN & UniMi, Milano, Italy

(2) UniBs – DISAA, Milano, Italy

(3) Accademia Nazionale delle Scienze, Verona, Italy

(4) Laboratori Nazionali di Legnaro, INFN, Università di Padova, Padua, Italy

Amaral Wasielesky A. (1,2), Menna M.(1), Mauri E.(1), Martellucci R. (1), Rubino A. (2)

Thermohaline Properties and Long-term Trends in the Antarctic and Subantarctic Regions of the Pacific Ocean

(1) Istituto Nazionale di Oceanografia e di Geofisica

(2) Ca' Foscari University of Venice

Bensi M. (1), Langone L. (2), Giordano P. (2), Kovacevic V. (1), Mano B. (1), Mansutti P. (1), Russo A. (3)

Atlantification in the Svalbard and Fram Strait regions and its impact on deep-sea properties: a view from combined in situ and satellite data

(1) OGS – National Institute of Oceanography and Applied Geophysics, Trieste, Italy

(2) CNR – National Research Council of Italy, ISP - Institute of Polar Sciences, Bologna, Italy

(3) NATO STO-CMRE, Centre for Maritime Research and Experimentation, La Spezia, Italy

Boretto G. M. (1,2), Tesi T. (1), Panieri G. (3), Capotondi L. (4)

Atlantification in the Barents Sea over the last millennium: multiproxy evidences

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(2) Joint Research Center - ENI-CNR Aldo Pontremoli, Via Monteroni s.n.c., Lecce, 73100, Italy

(3) Department of Geosciences, UiT The Arctic University of Norway, Dramsvegen 201, N-9037, Tromsø, Norway

(4) Istituto di Scienze Marine, Consiglio Nazionale delle Ricerche ISP-CNR, Via P. Gobetti 101, 40129, Bologna, Italy

Burchard H. (1), Klingbeil K. (1), Lange X. (1), Xiangyu L. (1), Lorentz (1), MacCready P. (1), Reese L. (1)

The relation between exchange flow and diahaline mixing in estuaries

(1) **Leibniz Institute for Baltic Sea Research, Rostock, Germany**

Cáceres-Euse A. (1), Orfila A. (2), De Leo F. (3), Molcard A. (1)

Coral reefs as a protecting barrier against extreme wave conditions: the San Andres Island (Western Caribbean Sea) case

(1) Université de Toulon, Aix Marseille Univ., CNRS, IRD, MIO, Toulon, France

(2) Mediterranean Institute for Advanced Studies, IMEDEA (CSIC-UIB), Esporles, Spain

(3) Department of Civil, Chemical and Environmental Engineering, University of Genoa, Genova, Italy

Calvo E. (1,2), Malanotte-Stone P. (3), Menna M. (4), Martellucci R. (4), Zambianchi E. (2)

Mediterranean outflow in the North Atlantic from Argo float data

(1) ITINERIS-funded PhD Student, PhD Course in «Environmental Phenomena and Risks», Department of Science and Technology, University of Naples «Parthenope», Naples, Italy.

(2) Department of Science and Technology, University of Naples «Parthenope», Naples, Italy.

(3) Massachusetts Institute of Technology, Cambridge, MA, USA

(4) National Institute of Oceanography and Applied Geophysics (OGS), Trieste, Italy.

Cavaleri L. (1), Bertotti L. (1), Wedi N. (2), Beljaars A. (2)

Underestimate of ECMWF model winds in coastal areas - a physical and (for now) unresolvable problem

(1) ISMAR

(2) ECMWF

Ciglencečki I. (1), Đakovac T. (2), Tojčić I. (3), Simonović N. (1), Dominović I. (1), Paliaga P. (4), Budiša A. (5), Terzić E. (1), Dautović J. (1), Vilibić I. (1,6)

The phenomenon of sea blooming, "mucillagini" in the northern Adriatic in 2024

(1) Ruđer Bošković Institute, Division for Marine and Environmental Research, Zagreb, Croatia;

(2) Ruđer Bošković Institute, Center for Marine Research Rovinj, Croatia;

(3) University of Split, Faculty of Science, Split, Croatia;

(4) Juraj Dobrila University of Pula, Faculty of natural science, Pula, Croatia;

(5) Netherlands Institute of Ecology (NIOO-KNAW), Wageningen, Netherlands;

(6) Institute for Adriatic Crops and Karst Reclamation, Split, Croatia.

Dentico C. (1,2), Civitarese G. (2), Giani M. (2), Kralj M. (2), Cardin V. (2), and Angelo Rubino (1)

Carbonate system dynamics in the southern Adriatic

(1) Department of Environmental Sciences, Informatics and Statistics, DAIS – University Ca' Foscari of Venice, 30172 Mestre, Italy

(2) National Institute of Oceanography and Applied Geophysics – OGS, 34010 Sgonico (TS), Italy

De Rovere F. (1), Rubino A. (1), Zanchettin D. (1)

Atlantification at the gateway of the Arctic Ocean in CMIP6 models

(1) Department of Environmental Sciences, Informatics and Statistics, Ca' Foscari University of Venice

Maiolino M. (1), Florio G. (1), **Fedi M.** (1)

A new bathymetry model for Larsen and Ronne Ice Shelves using gravity data

(1) Università di Napoli Federico II

Ferrero E. (1) and Pauly L. (1)

Mitigation of the urban heat island effects in the city of Turin

(1) Dipartimento per lo Sviluppo Sostenibile e la Transizione Ecologica, Università del Piemonte Orientale, Vercelli, Italy

Flocco D. (1, 2), Feltham D.L. (2), Schroeder D. (2), Aksenov Y. (3), Siahaan A. (4), Tsamados M. (5).

The impact of internal wave drag on Arctic sea ice

(1) Dipartimento di Scienze della Terra, dell'Ambiente e delle Risorse (DiSTAR), Università degli Studi di Napoli Federico II, 80126 – Napoli, Italy

(2) Centre for Polar Observation and Modelling, Department of Meteorology, University of Reading, Reading, RG6 6ET, UK

(3) National Oceanographic Centre, Southampton, SO17 1BJ, UK

(4) British Antarctic Survey, Cambridge, CB3 0ET, UK

(5) Centre for Polar Observation and Modelling, Department of Earth Sciences, University College London, WC1E 6BT, UK

Gačić M. (1), Martellucci R. (1), Ursella L. (1), Pirro A. (1), Rubino A. (2), Menna M. (1)

Impact of the dense water outflow on mesoscale and sub-basin scale gyres in the Adriatic and the Levantine Basin: laboratory and numerical experiments versus in situ data

(1) OGS, Trieste

(2) Ca' Foscari University of Venice

Ghil M. (1)

Nonautonomous Dynamical Systems Help Study Long-term Trends and Abrupt Shifts in Climate Variability

(1) Dept. of Geosciences & Laboratory of Dynamic Meteorology (CNRS & IPSL), Ecole Normale Supérieure and PSL University, France; Dept. of Atmospheric & Oceanic Sciences, University of California at Los Angeles, USA; Dept. of Mathematics, Imperial College London, UK

Gnesotto M. (1), Pierini S. (2), Zanchettin D. (1) , Rubinetti S. (3) Rubino A. (1)

Influence of Intrinsic Oceanic Variability Induced by a Steady Flow on the Mediterranean Sea Level Variability

- (1) Department of Environmental Sciences, Informatics and Statistics, University Ca'Foscari of Venice
- (2) Department of Science and Technology, Parthenope University of Naples
- (3) ISAC-CNR, Rome

Hetland R. (1), Qian Y. (1), Yang Z. (1), Huang H. (1), Deines J. (1), Roy Chowdhury P. (1), Son K. (1), Wang J. (2), Pringle W. (2), Coon E. (3), Painter S. (3), Rathore S. (3), Hadjimichael A. (4), McManamay R. (5), Xue P. (6), Huang C. (6), Kayastha M. (6)

Climate change, tipping points, and adaptation in the US Great Lakes region

- (1) Pacific Northwest National Laboratory
- (2) Argonne National Laboratory
- (3) Oakridge National Laboratory
- (4) Pennsylvania State University
- (5) Baylor University
- (6) Michigan Technical University

Ingrassia E. (1), Lo Re C. (2), Ursella L. (3), Capodici F. (1), Ciruolo G. (1)

Evolution of coastal monitoring in the central Mediterranean

- (1) Università degli Studi di Palermo, Dipartimento di Ingegneria.
- (2) ISPRA - Istituto Superiore per la Protezione e la Ricerca Ambientale
- (3) OGS - Istituto Nazionale di Oceanografia e Geofisica Sperimentale

Jungclaus J. (1)

"Next Generation" storm- and eddy resolving coupled models: status and perspective for research on climate variability

- (1) Max Planck Institute for Meteorology, Hamburg, Germany

Le Meur J. (1,5), Wirth A. (2), Paladini de Mendoza F. (3), Miserocchi S. (4), Cardin V. (5)

Intermittent supply of dense water to the deep South Adriatic Pit: an observational study

- (1) Dipartimento di Matematica e Geoscienze, University of Trieste, Trieste, Italy
- (2) Univ. Grenoble Alpes, CNRS, LEGI, France
- (3) Consiglio Nazionale delle Ricerche-Istituto di Scienze Polari (CNR-ISP), Messina, Italy
- (4) Consiglio Nazionale delle Ricerche-Istituto di Scienze Polari (CNR-ISP), Bologna, Italy
- (5) National Institute of Oceanography and Applied Geophysics - OGS, Sgonico, Italy

Liguori G. (1)

The need to adopt process-based or impact-based definitions for marine heatwaves

- (1) Department of Biological, Geological, and Environmental Sciences at University of Bologna, Bologna, Italy.

Mancini A.M (1), Marino G. (2), and Negri A. (1)

The past to unravel the future: Deoxygenation events in the geological archive and the modern oxygen crisis

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- (2) Centro de Investigación Mariña, GEOMA, Palaeoclimatology Lab, Universidade de Vigo, Vigo, 3610, Spain

Manimpire Gasana E. (1), Menna M. (1), Pirro A. (1), Mauri E. (1)

Reconstruction of the surface geostrophic current in the Mediterranean Sea from Absolute Dynamic Topography Generated by Generative Adversarial Network (GAN)

- (1) OGS, Trieste

Mano B. (1), Bensi M. (1), Kovacevic V. (1), Langone L. (2), Giordano P. (2)

Atlantification in Svalbard, a changing climate: a study of the effects and interactions between heat sinks and ocean currents

(1) OGS - National Institute of Oceanography and Applied Geophysics, Trieste, Italy

(2) CNR - National Research Council of Italy, ISP - Institute of Polar Sciences, Bologna, Italy

Mastropiero M. (1), Peano D. (2), Zanchettin D. (1), Brovkin V. (3)

Biophysical climatic effects of large-scale afforestation under a climate change scenario

(1) Department of Environmental Sciences, Statistics and informatics, Ca' Foscari University of Venice, Venice, Italy

(2) CMCC Foundation, Bologna, Italy

(3) Max Planck Institute for Meteorology, Hamburg, Germany

Meli M. (1)

Understanding sea-level trend variability in the Mediterranean Sea

(1) University of Bologna, Italy

Montagna P. (1), Broecker K. (2), Rigo M. (2), Chiggiato J. (3), Schroeder K. (3), Ragnarsson S. (4), Trotter J. (5), McCulloch M. (5), Colin C. (6), Frank N. (7)

Seawater temperatures, pH and water mass provenance reconstructions over the last century from cold-water coral geochemistry in the North Atlantic Ocean

(1) ISP-CNR, Bologna

(2) Department of Geosciences, University of Padova

(3) ISMAR-CNR, Venice

(4) Marine and Freshwater Research Institute, Reykjavik, Iceland

(5) University of Western Australia, Perth

(6) GEOPS, University of Paris-Saclay

(7) Institute of Environmental Physics, Heidelberg University

Pasculli L. (1,2), Schroeder K. (2), Falcieri F.M. (2), Chiggiato J. (2), Rubino A. (1)

Heat and mass budget analysis in the Eastern Mediterranean Sea: insights from a climatic reanalysis and a regional ocean model

(1) Università Ca' Foscari, Dipartimento di Scienze Ambientali, Informatica e Statistica, Venezia, Italy

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Pierini S. (1)

On the AMOC tipping point

(1) Dipartimento di Scienze e Tecnologie, Università di Napoli Parthenope

Pirro A. (1), Martellucci R. (1), Gallo A. (1), Kubin E. (1), Mauri E. (1), Juza M. (1), Notarstefano G. (1), Pacciaroni M. (1), Bussani A. (1), Menna M. (1)

Subsurface warming derived by Argo floats during the 2022 Mediterranean marine heatwave

(1) National Institute of Oceanography and Applied Geophysics (OGS), Trieste, 34010, Italy

(2) Laboratory Balearic Islands Coastal Observing and Forecasting System (SOCIB), Palma, 07122, Spain

Pomaro A. (1), Cavaleri L. (1), Bertotti L. (1)

45 years of recorded wave heights in the Adriatic Sea: extremes and long-term trends

(1) CNR-ISMAR, Venice, Italy

Ricchi A. (1,2), Falco P. (3), Vilibić I. (4), Memmola F. (3), Coluccelli A. (5), Brocchini M. (3), Corvaro S. (3), Penna P. (6), Ferretti R. (1,2)

On the generation of a meteotsunami, the case study of supercell storm, over Adriatic Sea.

- (1) University of L'Aquila
- (2) CETEMPS
- (3) Polytechnic university of Marche
- (4) Ruđer Bošković Institute
- (5) CNR-ISAC
- (6) IRBIM-CNR

Rubinetti S. (1), Arnone E. (2), Pérez-Invernón J. (3), Dietrich S. (1)

Beyond our planet: what can we learn from the "Earth's evil twin"

- (1) ISAC-CNR, Rome
- (2) Dipartimento di Fisica, Università di Torino
- (3) Instituto de Astrofísica de Andalucía (IAA), CSIC, Granada, Spain

Savonitto G. (1,2), Comici C. (1,2), Kuchler S. (1,2), Nair R. (1,2), Gerin R. (1,2)

Control and calibration procedures for oceanographic instruments

- (1) Oceanographic Calibration and Metrology Center (CTMO)
- (2) National Institute of Oceanography and Applied Geophysics – OGS Sgonico (Trieste), Italy

Scafetta N. (1)

Discussion on the quasi 1000- and 2300-year oscillations in solar and climate variability

- (1) Università degli Studi di Napoli Federico II

Scafetta N. (1)

Hypotheses regarding the cause of the anomalous 2023-2024 global temperature warm peak

- (1) Università degli Studi di Napoli Federico II

Schroeder K. (1)

The evolving deep waters of the Western Mediterranean: post-WMT observations

- (1) CNR-ISMAR, Venice

Stips A.K. (1), Liang S.X. (2) and Macias-Moy D. (1)

Insights from calculating the information flow between global forcings and climate variables (simulated and measured)

- (1) Joint Research Centre, Ispra, Italy
- (2) Fudan University, Shanghai, China

Sullivan A. (1,2)

The equatorial Pacific "sloping" pycnocline: a critical factor for El Niño initiation

- (1) School of Earth, Atmosphere, and Environment, Monash University, Melbourne, 3800, Australia
- (2) CSIRO, Environment, Aspendale, 3195, Australia.

Supića N. (1), Budiša A. (1), Ciglencečki I. (2), Čanković M. (2), Dautović J. (2), Djakovac T. (1), Dunić N. (3), Dutour-Sikić M. (2), Ivančić I. (1), Kalac M. (1), Kraus R. (1), Kužat N. (1), Lučić D. (4), Marić Pfannkuchen D. (1), Mifka B. (5), Mihanović H. (3), Njire J. (4), Paliaga P. (6), Pasarić M. (7), Pasarić Z. (7), Simonović N. (2), Telišman Prtenjak M. (7), Vilibić I. (2,8)

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- (7) Faculty of Science, University of Zagreb, Zagreb, Croatia
- (8) Institute for Adriatic Crops and Karst Reclamation, Split, Croatia

Vilibić I. (1,2), Terzić E. (1), Cardin V. (3), Le Meur J. (3), Dunić N. (4), Vodopivec M. (5)

The deep Adriatic transition(s)

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(4) Institute of Oceanography and Fisheries, Split, Croatia

(5) National Institute of Biology, Marine Biology Station, Piran, Slovenia

Zanchettin D. (1)

Where are North Atlantic sea surface temperatures heading to?

(1) Ca' Foscari University of Venice