



## MEDCLIVAR-SISC 2024 Conference 24-27 September 2024, Lecce, Italy

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The MedCLIVAR Network and the Italian Society for Climate Sciences (SISC) are delighted to invite you to participate in the **MedCLIVAR-SISC 2024 Conference** from **24 to 27 September 2024** at the University of Salento, **Lecce, Italy**. The event is **jointly organized by the University of Salento, SISC and the Euro-Mediterranean Centre on Climate Change (CMCC)** as the 7th MedCLIVAR and the 12th SISC Conference. Information on the conference organization, sessions and important dates are available at <http://www.medclivarconf.eu/>. Registration with the MedCLIVAR network (information at HOW TO JOIN THE NETWORK (<http://www.medclivar.eu/>)) is recommended to receive updated information on the progress of the conference organization. The conference is planned to be organized with the physical presence of the participants.

### Important dates!

- 15 April 2024 Abstract submission opened
- 17 May 2024 no-charge abstract submission closing (abstracts submitted after this date will be charged 20€)
- 17 June 2024 Abstract submission closing
- 8 July 2024 Notification of acceptance to authors
- 8 July 2024 Registration opened
- 26 July 2024 Early bird registration deadline
- 1 August 2024 Conference programme published online
- 30 August 2024 Deadline for nomination of YS awards
- 2 September 2024 Deadline for registration
- 4 September 2024 Deadline for MedCLIVAR2026 organization proposals
- 24-27 September 2024 MedCLIVAR-SISC 2024 conference



### HOW TO JOIN THE NETWORK

If you wish to become part of the MedCLIVAR network, receive emails with news and announcements, access MedCLIVAR events, networking and collaboration opportunities, have the possibility to publish in the newsletter (announcements, short summaries of your recently published articles, short reports of ongoing projects and initiatives), please fill in the [online application form](#)

If you are included in the MedCLIVAR distribution list and you DO NOT wish to receive further emails from MedCLIVAR please send an email to [news+unsubscribe@medclivarconf.eu](mailto:news+unsubscribe@medclivarconf.eu) with the subject "Unsubscribe"



# List of MedCLIVAR Conference Sessions

## **Session 1 – Mediterranean cyclones**

(Conveners: Emmanouil Flaounas, Assaf Hochman)

## **Session 2 - Precipitation: dynamics, observations and evolution**

(Conveners: Yves Trambly, Sergio M. Vicente-Serrano)

## **Session 3 – Exploring Terrestrial and Marine Heatwaves in the Mediterranean: Mechanisms, Predictability, Attribution, Risk and Impacts**

(Conveners: M. Carmen Alvarez-Castro, Ricardo Garcia-Herrera, and Alfredo Reder)

## **Session 4 - Urban climate and weather**

(Conveners: Marinella Davide, Panagiotis T. Nastos)

## **Session 5 - Compound events and risks**

(Conveners: Andrea Toreti, Uwe Ulbrich)

## **Session 6 - Physical-biogeochemical-ecosystemic interactions in the Mediterranean Sea in the context of global change,**

(Conveners: Marta Álvarez, Alexandra Gogou)

## **Session 7 - Ocean dynamics and coastal risks**

(Conveners: José A- Jiménez, Katrin Schroeder)

## **Session 8 - Climate variability, predictability and change in worldwide Mediterranean-type regions**

(Conveners: Annalisa Cherchi, Jelena Lukovic, and Richard Seager)

## **Session 9 - Mediterranean climate at multiple time scales since the Pliocene to the historical past**

(Conveners: Maria Triantaphyllou, Belen Martrat)

## **Session 10 - Artificial Intelligence at the service of climate sciences in the Mediterranean region**

(Conveners: Valentina Bacciu, Silvia Torresan)

## **Session 11 - Climate adaptation strategies**

(Conveners: Roberto Barbiero, Paola Mercogliano)

## **Session 12 - Open session on Mediterranean Climate issues**

(Conveners: Maria Cristina Facchini, Silvio Gualdi, Piero Lionello)

# Detailed session descriptions

## SESSION 1 – Mediterranean cyclones

*Conveners: Emmanouil Flaounas (Hellenic Centre for Marine Research, Greece), Assaf Hochman (The Hebrew University of Jerusalem, Israel)*

This session will delve into the most recent research on Mediterranean cyclones at weather and climate scales. Our dedicated session aims to bring together leading experts, researchers, and decision-makers to explore the dynamic and complex nature of cyclonic systems in the Mediterranean region. From unraveling the intricacies of their formation to understanding the profound impacts on local weather patterns and climate variability, this session promises an in-depth examination of these atmospheric phenomena. Abstracts can encompass modeling, theory, or observational studies, allowing for a comprehensive exploration of Mediterranean cyclones. Submitted abstracts will contribute valuable insights into the latest research, innovative methodologies, and breakthrough findings that enhance our understanding of Mediterranean cyclones. This session represents a unique opportunity to actively engage with cutting-edge research, foster meaningful discussions, and play a pivotal role in shaping the future of Mediterranean climate studies. This session is jointly organized by MedCLIVAR-SISC and COST Action MedCYCLONES.

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## SESSION 2 – Precipitation: dynamics, observations and evolution

*Conveners: Yves Trambly (IRD - Univ. Montpellier, France), Sergio M. Vicente-Serrano (Consejo Superior de Investigaciones Científicas, Spain)*

Precipitation stands out as the pivotal climatic factor shaping ecosystems and influencing various human activities in the Mediterranean region. Given ongoing climate change processes in the Mediterranean, there is a pressing need to thoroughly examine the characteristics of precipitation across temporal scales ranging from the minute to the decadal and centennial. Identifying the underlying processes of variability and change becomes paramount for enhancing long-term adaptation strategies. This session invites contributions encompassing a wide range of perspectives on precipitation in the Mediterranean region. This includes the generation of precipitation reconstructions spanning centuries, observational studies grounded in instrumental data, and the application of modelling approaches. This encompasses long-term projections, with an emphasis on their rigorous evaluation. Additionally, the session encourages contributions delving into the assessment of mechanisms governing precipitation variability and change, encompassing both dynamic and thermodynamic factors across different temporal scales. This session is organized by the MedCLIVAR WG on precipitation.

## **SESSION 3 – Exploring Terrestrial and Marine Heatwaves in the Mediterranean: Mechanisms, Predictability, Attribution, Risk and Impacts.**

*Conveners: M. Carmen Alvarez-Castro (Universidad Pablo de Olavide, Spain), Ricardo Garcia- Herrera (Universidad Complutense de Madrid, Spain), Alfredo Reder (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)*

Recent decades have witnessed record-shattering heat across the globe, leading to adverse outcomes for ecosystems and society. The Mediterranean region is particularly vulnerable to the escalating impacts of climate change, with an increasing frequency and intensity of heatwaves (HWs) and marine heatwaves (MHWs). Understanding the dynamics and past context of these events is crucial for predicting their occurrence and devising effective mitigation strategies. Predictability, detection, and attribution studies play pivotal roles in fortifying early warning systems and guiding adaptive strategies. Furthermore, the use of machine learning is key, introducing innovative tools that enhance our understanding and prediction capabilities in the study of extreme and compound events where HWs and MHWs are involved. Potential topics of interest include, but are not limited to, the following:

- Physical processes and drivers of HWs/MHW; - Methods for HWs/MHWs detection and characterization incl. machine learning;
- Compound events; - HWs/MHWs predictability and prediction studies;
- Early warning systems and forecasts;
- Projections in the future under different scenarios;
- Attribution of HW/MHW to climate change;
- Historical analyses and paleoclimate evidence to provide insights into the long-term;
- variability, trends, and patterns of HWs/MHWs in the Mediterranean region;
- Interdisciplinary advances for diagnosing risk and impacts of HWs/MHWs.

# Detailed session descriptions

## **SESSION 4 – Urban climate and weather**

*Conveners: Marinella Davide (University of Ca'Foscari, Italy), Panagiotis T. Nastos (National and Kapodistrian University of Athens, Greece)*

Urban areas are dynamic and complex ecosystems where a multitude of natural processes and human activities converge, intricately shaping local climate and weather patterns. The interactions between these elements within urban environments create a complex web of influences that continuously evolve over time. This session serves as a platform to delve deep into the subtle aspects of urban climate and weather dynamics, shedding light on the intricate relationships between various factors. Throughout the session, participants will be guided through an exploration of key topics such as Urban Heat Islands (UHIs), air quality, microclimates, extreme weather events, and climate resilience. By dissecting these subjects, attendees will gain a comprehensive understanding of the multifaceted nature of urban climates and the critical role they play in shaping the livability and sustainability of cities. Moreover, the session will offer valuable insights into the implications of these dynamics for urban planning, sustainability initiatives, and resilience-building efforts. Through case studies, discussions, and expert analyses, participants will be equipped with the knowledge and tools needed to navigate the challenges posed by urban climate variability and climate change and develop informed strategies and solutions that promote the long-term resilience and well-being of urban communities.

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## **SESSION 5 – Compound events and risks**

*Conveners: Andrea Toreti (European Commission, Joint Research Centre, Italy), Uwe Ulbrich (Freie Universität Berlin, Germany)*

Compound events and concurrent extremes are emerging as an effect of climate change. The same holds for recurrent events that may not be extreme individually but as a sequence trigger higher risks and increase vulnerability. All these complex events cause heavy impacts on socio-economic and financial sectors as well as on ecosystems. Understanding, modelling, predicting, and projecting such events, as well as the associated risks, are of primary importance in reducing their impacts and enhancing resilience. This session welcomes contributions focused on all aspects of this challenging topic. Studies focused on the dynamics and the statistics of such events, analyses on sectoral and multi-sectoral risks, novel methodologies also integrating AI are all of relevance.



## Detailed session descriptions

### **SESSION 6 – Physical-biogeochemical-ecosystemic interactions in the Mediterranean Sea in the context of global change**

*Conveners Marta Álvarez (Instituto Español de Oceanografía, Spain), Alexandra Gogou (Hellenic Centre for Marine Research, Greece)*

This session seeks studies with an aim to contribute to a better understanding of Mediterranean's C, N, P biogeochemical cycles along with the ecosystemic states and trends from seasonal to multi-annual scales, in respect to regional and large scale circulation patterns, the prevailing oceanographic processes and climate variability, as revealed through in-situ observations, laboratory experiments and modeling studies. Focus is given on the impact of atmospheric deposition (i.e. desertic dust events and anthropogenic aerosols) and riverine inputs, the air-sea fluxes of greenhouse gasses (CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O), the natural and anthropogenic carbon sinks to the deep (carbon sequestration), changes in productivity modes due to temperature and salinity increases and the concomitant extension of the stratification period, the effects of acidification on Mediterranean marine species and the invasion of alien species. This knowledge rises important in assessing modes of physical-biogeochemical-ecosystemic interactions in the Mediterranean Sea, and their responses in the context of global change.

### **SESSION 7 – Ocean dynamics and coastal risks**

*Conveners: José A- Jiménez (Universitat Politècnica de Catalunya, Spain), Katrin Schroeder (Italian National Research Council, Italy)*

The Mediterranean region faces substantial coastal risks arising from the convergence of a highly vulnerable coastline and escalating exposure to multiple climate-induced hazards. While the anthropogenic component significantly amplifies these risks, it is crucial to comprehend and characterize the nature of oceanic and marine processes that drive coastal hazards and their unique features across the basin. This session invites contributions focusing on the diverse aspects of oceanic and marine processes that contribute to coastal risks throughout the Mediterranean basin. We welcome submissions covering a wide range of approaches, including but not limited to observational studies, cutting-edge modeling, and dynamic analyses, and encompassing various temporal and spatial scales, from transient events to long-term trends, and from to basin-wide perspectives. The goal of the session is to explore how diverse meteo-oceanographic processes such as ocean and coastal circulation, storm surges, waves, medicanes and meteo-tsunamis contribute to typical coastal hazards and prevalent natural risks along the Mediterranean coastline, including shoreline erosion, flooding, and pollution. We welcome contributions that address the specificities of these topics within the Mediterranean context.

# Detailed session descriptions

## SESSION 8 – Climate variability, predictability and change in worldwide Mediterranean-type regions

*Conveners: Annalisa Cherchi (Italian National Research Council, Italy), Jelena Lukovic (University of Belgrade, Serbia), Richard Seager (Lamont Doherty Earth Observatory, USA)*

This session will compare and contrast across the five Mediterranean-type climates the character and mechanisms of variability and change on interannual to centennial timescales for the past, present and future. The Mediterranean climate type is defined by mild wet winters under the influence of westerly winds and extratropical storms and dry hot summers under prevailing high pressure. The Mediterranean climate type covers the Mediterranean region itself, California, central Chile, southern Africa and southwest Australia. Despite their similarities in terms of mean climate, climate variability and change have interesting similarities and differences across the regions, with varying roles for modes of atmosphere-ocean variability. Further, despite the common perception of subtropical drying and expansion under climate change, projected climate changes differ across the different Mediterranean climates. Notably, the Mediterranean proper is projected to dry severely due to rising GHGs and southern hemisphere Mediterranean climates are also expected to dry but California is projected to potentially even get wetter. Commonalities and differences in climate change in Mediterranean-type climates are likely found in the details of stationary waves, storm tracks and stratosphere-troposphere coupling and regional dissimilarities in the response to rising GHGs and ozone recovery in the southern hemisphere. For this session, we invite contributions that examine the character and mechanisms of Mediterranean-type climate variability and change in the past, present and future both for specific regions and, especially, comparing and contrasting across regions.



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Bridging multiple space and  
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# Detailed session descriptions

## **SESSION 9 – Mediterranean climate at multiple time scales since the Pliocene to the historical past**

*Conveners: Maria Triantafyllou (National and Kapodistrian University of Athens, Greece), Belen Martrat, (Institute of Environmental Assessment and Water Research, Spain)*

This session considers the evolution of the Mediterranean climate since the establishment of its present paleogeography at the base of the Pliocene Epoch (ca. 5.33 million years ago). It will summarize the most important available evidence across different time scales (annual-to- millennial), highlighting the short-to-long term external forcings. It will explore past-present-future connections and internal dynamics that are relevant to current regional climate issues under rising greenhouse gas concentrations. This session will aim to facilitate data-model comparison from Deep Time to the recent Past, integrating the use of paleoclimate data with simulations and testing the capability of models to describe climate evolution at regional scale.

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## **SESSION 10 – Artificial Intelligence at the service of climate sciences in the Mediterranean region**

*Conveners: Valentina Bacciu (Italian National Research Council, Italy), Silvia Torresan (University of Ca'Foscari, Italy)*

Artificial intelligence (AI) is increasingly playing a significant role in addressing the multifaceted challenges posed by climate change and its associated impacts. This session explores the evolving intersection of AI and climate science research, gathering the diverse array of applications and studies aimed at deepening our comprehension of climate dynamics and bolstering our capacity to devise robust mitigation and adaptation strategies. Researchers are encouraged to present cutting- edge advancements and innovative applications, showcasing the transformative potential of AI across various climate science domains, from refining climate models to enhancing risk assessment and disaster management protocols. Abstract submissions should not only highlight the opportunities supplied by AI but also critically examine the inherent challenges and limitations, such as the need for robust validation and interpretability, as well as the importance of policy frameworks and international cooperation to leverage AI effectively in addressing climate change challenges



# Detailed session descriptions

## SESSION 11 – Climate adaptation strategies

*Conveners: Roberto Barbiero (Provincia Autonoma di Trento, Italy), Paola Mercogliano (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)*

The session focuses on gathering diverse ongoing experiences and best practices related to climate change adaptation in the Mediterranean region. It is directed towards both local authorities and the scientific community to provide an integrated perspective on this issue. Professionals from regional and local domains are encouraged to share their practical experiences in sectoral and cross-cutting multi-sector adaptation strategies, highlighting both successes and challenges. The scientific community involved in adaptation projects, including participants in the European program "Mission Adaptation to Climate Change", is invited to showcase the tools they are developing to support adaptation. This session aims to promote collaboration and underscore how research, innovation and communication can tangibly support the implementation of adaptation strategies.

## SESSION 12 – Open Session on Mediterranean climate issues

*Conveners: Maria Cristina Facchini (Italian National Research Council, Italy), Silvio Gualdi (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy), Piero Lionello (Univ. of Salento, Italy)*

This open session invites presentations on all aspects of the Mediterranean Climate including observations, remote sensing, process studies, modelling and theoretical research. This session is meant to host any contribution which is of interest for the wide scientific community active on different issues of the Mediterranean Climate and does not fit more naturally into one of the specialised sessions of the programme.



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# Conference Organization

## Conference Chairs:

Maria Cristina Facchini (Italian National Research Council, Italy)  
Silvio Gualdi (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)  
Piero Lionello (Univ. of Salento, Italy)

## Scientific Committee:

Marta Álvarez (Instituto Español de Oceanografía, Spain)  
M. Carmen Alvarez-Castro (Universidad Pablo de Olavide, Spain)  
Valentina Bacciu (Italian National Research Council, Italy)  
Roberto Barbiero (Provincia Autonoma di Trento, Italy)  
Annalisa Cherchi (Italian National Research Council, Italy)  
Marinella Davide (European Commission, Joint Research Centre, Italy)  
Fatima Driouech (Mohammed VI Polytechnic University, Morocco)  
Emmanouil Flaounas (Hellenic Centre for Marine Research, Greece)  
Ricardo Garcia-Herrera (Universidad Complutense de Madrid, Spain)  
Alexandra Gogou (Hellenic Centre for Marine Research, Greece)  
Assaf Hochman (The Hebrew University of Jerusalem, Israel)  
José A- Jiménez (Universitat Politècnica de Catalunya, Spain)  
Jelena Lukovic (University of Belgrade, Serbia)  
Belen Martrat (Institute of Environmental Assessment and Water Research, Spain)  
Paola Mercogliano (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)  
Panagiotis T. Nastos (National and Kapodistrian University of Athens, Greece)  
Alfredo Reder (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)  
Katrín Schroeder (Italian National Research Council, Italy),  
Richard Seager (Columbia University, USA)  
Andrea Toreti (European Commission, Joint Research Centre, Italy)  
Silvia Torresan (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)  
Yves Trambly (Univ. Montpellier, France)  
Maria Triantafyllou (National and Kapodistrian University of Athens, Greece),  
Uwe Ulbrich (Freie Universität Berlin, Germany)  
Sergio M. Vicente-Serrano (Consejo Superior de Investigaciones Científicas, Spain)

## Organizing Committee:

Piero Lionello (Univ. of Salento, Italy)  
Mauro Buonocore (Centro Euro-Mediterraneo sui Cambiamenti Climatici, Italy)  
Riccardo Buccolieri (Univ. of Salento, Italy)  
Fabio Bozzeda (Univ. of Salento, Italy)  
Gianluca Pappacogli (Univ. of Salento, Italy)  
Martina Gambaro (Società Italiana per le Scienze del Clima, Italy)  
Luigi Marzo (Univ. of Salento, Italy)

# Conference Registration Fees\*



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|                       | Standard Registration rates | After 26th July 2024 | Middle and Low income countries <sup>2</sup> |
|-----------------------|-----------------------------|----------------------|----------------------------------------------|
| Regular               | 350€                        | 500€                 | 50€                                          |
| Students <sup>1</sup> | 175 €                       | 250,00€              | Free                                         |
| Emeritus              | 125,00€                     | 175,00€              | Discount of 50%                              |
| Accompanying persons  | 100,00€                     | 100,00€              | 100,00€                                      |

<sup>1</sup> maximum 3 years after PhD

<sup>2</sup> are entitled to the reduced fee maximum of 10 scientists or students with their affiliation in [Middle-Income Countries 2023 \(worldpopulationreview.com\)](https://www.worldpopulationreview.com). The selection will be made by the Scientific Committee of the conference and the applicants will be notified in advance.

\*The conference fees include ice-breaker, coffee breaks, buffet lunches, and the conference dinner!





# Lecce and the Salento Peninsula



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Located in the easternmost part of Italy, the Salento Peninsula and its capital Lecce are a territory kissed by the sun, where visitors can enjoy unique art, wonderful Mediterranean landscapes, and exquisite traditional cuisine...



For more information:

<https://www.viaggiareinpuglia.it/en/area/salento>

<https://www.essentialitaly.co.uk/blog/secret-salento>

<https://www.xrsalento.it/lecce-and-salento>

