



MedCLIVAR 2022

Climate Change in the Mediterranean Region:
Lessons Learned and New Perspectives from
Regional to Local Scales



MARRAKECH
جامعة القاضي عياض
UNIVERSITÉ CADI AYYAD



GEORESOURCES
GÉOENVIRONNEMENT
GÉNIE CIVIL



UNIVERSITÉ CADI AYYAD

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University Cadi Ayyad
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www.medclivarconf.eu



This conference will have a special focus on the effects of climate change in the Mediterranean Region that are already threatening human societies and ecosystems. As the Mediterranean region is particularly exposed to climate-related risks, advances are needed for their understanding, assessment, and the development of suitable adaptation measures. The conference will bring together scientists from the whole range of disciplines involved in the MedCLIVAR community, to assess, through observations and modelling, climate change in the Mediterranean region and risks for terrestrial and marine biodiversity, water resources, food production, touristic activities, health development, and migration processes. The research presented will consider all relevant scales of the climate system, regional, local and urban scales. Special emphasis will be on North African climate and tropical-mid-latitudes interactions. Studies will present results, tools, and methods for better understanding the complexity of the Mediterranean climate, for the estimation of past, present, and future changes, and on implications for Mediterranean societies.

Sessions and conveners:

S1: Observing and understanding the processes relevant for the Mediterranean climate system (Ileana Bladé and Katrin Schroeder)

S2: Climate Predictions and their applications in the Mediterranean region.
(Silvio Guadi and Kristina Fröhlich)

S3: Paleo-climate at multiple time scales including the human-climate co-evolution in the recent millennia (Rachid Cheddadi, Martin Finné and Eleonora Regattieri)

S4: Detection and attribution of the recent human-induced climate evolution including extremes. (Philippe Drobinski and Gianmaria Sannino)

S5: Characterizing and understanding the future climate evolution. Session dedicated to the future projections including climate extremes (Fatima Driouech and Georgios Zittis)

S6: Past, Present and Future change of Mediterranean-type climates (Jelena Lukovic and Richard Seager)

S7: Climate change impacts and adaptation in the Mediterranean agro-food systems: challenges, options and solutions (Andrea Toreti, Elena Xoplaki and Ana Iglesias)

S8: Living in the Mediterranean cities in the context of climate change (Panagiotis Nastos and Hadas Saaroni)

Wednesday 5th October 2022 (morning)

9:00-9:30	Opening and welcome	Pr. Fatima-Zohra IFLAHEN (Vice President, Cadi Ayyad University) Pr. Moha TAOURIRT (Dean of FST faculty, Cadi Ayyad University) Pr. Abdelfattah BENKADDOUR (Earth Studies Department, FST, Cadi Ayyad University) Pr. Piero LIONELLO (Chair of MedCLIVAR, University of Salento)	
Chair: Marco Reale			
9:30-10:00	Plenary	Ivana Herceg - Bulic	ENSO related signal and predictable components of atmospheric circulation in the North Atlantic-European region
10:00		Roberta Dagostino	Northern Hemisphere subtropical expansion: time-of-emergence of forced signal versus internal variability and regional impacts
10:15		Bodo Ahrens	On the role of the Mediterranean Sea in Vb-cyclone precipitation
11:30		Hamid Chaabani	Snow cover changes in the Atlas-mountains: from observations to large scale models
10 :45-11 :15 Coffee break			
Chair: Stefano Matera			
11:15	Plenary S2	Esteban Rodríguez-guisado	Sources of predictability over the Mediterranean at seasonal time scale: building up an empirical forecasting model
11:30		Carmen Alvarez-castro	Mediterranean high-resolution seasonal forecast using Analogs
11:45		Massimiliano Pasqui	A drought climate service for society in the Mediterranean
Chair Philippe Drobinski			
12:00	Plenary S4	Christian Ferrarin	Multiple drivers of extreme sea levels in the northern Adriatic Sea in the recent past
12:15		Melania Michetti	Climate change and air pollution impact on present and future mortality in Rome and Milan
12:30		Yonatan Givon	The Mistral wind: large-scale controlling mechanisms and impact on evaporation from the Mediterranean Sea
12:45		Julie André	Evolution of precipitation regimes in the Mediterranean region with climate change: from drought to extreme rainfalls
13:00-15:00 Lunch			

Wednesday 5th October 2022 (afternoon)

Chair: Marco Reale				
15:00	Parallel A	S1	Rachida El Ouaraini	Connection between geopotential-jet North-Atlantic weather regimes and surface weather and climate extremes over Morocco
15:15			Zaher Alabadla	Evaluation of Heat Waves and Climate Indexes Correlation Between Northern and Southern Mediterranean
15:30			Virginia Edith Cortes-Hernandez	Investigating the added value of the Convection Permitting Model CNRM-AROME over the Mediterranean Island of Corsica
15:45			Sabrina Derouiche	Comparison between statistics of observed and the ERA-Interim reanalyses for the northern region of Tunisia at rainfall event scale
16:00			Ehud Strobach	The role of small-scale sea features in the January 2020 flooding in Israel
16:15			Maaian Rotstein	A Factor Separation Study of the Effect of Synoptic-Scale Wind, Atmospheric Moisture and of Their Synergy on the Diurnal Temperature Range During the Israeli Summer
Chair: Stefano Matera				
15:00	P. B	S2	Dario Nicoli	Predicting Mediterranean climate on annual-to-decadal timescales — perspectives from the CMCC Decadal Prediction System
15:15			Eirini E. Tsartsali	Predicting precipitation at decadal timescale — Developing a climate service for the energy sector in Southern Europe.
Chair: Rachid Cheddadi				
15:30	P. B		Maria Triantaphyllou	Mediterranean climate at multiple temporal scales, from Deep Time to the recent Past
16:45			Katharina D. Six	Climate variations in the Mediterranean Sea during the last 21,000 years: insights into biogeochemical implications with a regional ocean model
Chair : Philippe Drobinski				
16:00		S4	Radan Huth	Climatology and long-term variations in short-term variability of temperature and precipitation
16:30-18:00	Posters Viewing (Sessions S1 & S2)		Denisa Navrátilová	Associations between atmospheric fronts and day-to-day temperature changes: A preliminary study
			Imane El Bouazzaoui	New insights on the dynamics of El Haouz aquifer: a comprehensive analysis of hydrological and climate data
			George Kotsias	Comparing and combining different approaches for the objective definition of the Mediterranean seasons
			Gutiérrez Fernández	Characteristics of Medicanes using ERA-5 reanalysis
			Olga Sukhonos	Recent anticyclonic activity changes in the Black Sea–Mediterranean region
			Konstantinos Varotsos	A gridded dataset of daily temperatures and precipitation for Greece
			Mario Rodrigo	The role of natural variability over the historical period in the Mediterranean region
			Stefano Matera	Data-driven seasonal forecasts of European and Mediterranean heat wave propensity
			Jose M Costa-saura	Reviewing seasonal forecasting tools for the agricultural and forestry sectors

Thursday 6th October 2022 (morning)

Chair: Abdelfattah Benkaddour				
9:00	Plenary	S3	Matthew Jacobson (Martin Finné)	The Aegean: a paleoclimate synthesis
9:15			Rachid Cheddadi	Relating the Mediterranean climate to the green Sahara
9:30			Elisavet Skampa	Early Pliocene environmental conditions in the South Aegean Sea (NE Mediterranean): calcareous nannofossil paleofluxes and evidence of the Zanclean reflooding in the ...
9:45			David Kaniewski	Storms, coastal submersions, climate change: what human societies had to face to settle on the Mediterranean coast during the Holocene
10:00		Roberta Dagostino	Mechanisms for past and future changes of atmospheric moisture budget in the Mediterranean region	
10:15		S6	Richard Seager	Recent trends in impacts-relevant climate in the world's Mediterranean-type climate regions
Chair: Hadas Saaroni				
10:30		S8	David Pearlmutter	Made in the shade: Thermal stress and pedestrian behaviour in a Mediterranean city
10 :45-11 :15 Coffee break				
11:15	Plenary	S8	Christos Zerefos	Climate Change Challenges for Cultural and Natural Heritage UNESCO Monuments in the Mediterranean Cities
11:30			Iliana Polychroni	Combined climate extremes occurrences driven by multi-scale atmospheric variability and their impacts on Mediterranean metropolitan cities
11:45			Yohanna Michau	Projecting the evolution of the urban climate of coastal Mediterranean cities using a convection-permitting model
12:00			Elissavet Feloni	Daily precipitation maxima over Mediterranean cities: analysis on future monthly trends and spatial patterns
12:15			Chrysoula Konteli	Elemental analysis of PM2.5 in the center of Xanthi in Greece using X-ray fluorescence
12:30			Dimitrios-Michael Rodanas	Experimental investigation of suspended particles levels inside the stations and trains of Athens city Metro network, Greece
12:45			Constantinos Nefros	Interconnection of floods, forest fires and mudflows under the prism of climate change. The case of Lamia airport, Greece
13:00-15:00 Lunch				

Thursday 6th October 2022 (afternoon)

Chair : Philippe Drobinski				
15:00	Parallele A	S4	Roger Clavera Gispert	Pyrenees streamflow tren analysis combining observations and simulations
15:15			V. Kotroni	Long term climatology and trend of heatwaves over Greece from 1950 to 2020
15:30			Majid Mathlouthi	Risk assessments of longest dry spells phenomenon in Northern Tunisia
Chair: Georgios Zittis				
15:45	Parallele A	S5	Cécile Caillaud	Fall Mediterranean Heavy Precipitation Events as seen by a large ensemble of CP-RCM future projections
16:00			John Kapsomenakis	Spatia and temporal variability of the Aridity Index in the Mediterranean under different emission scenarios
16:15			Sally Mahmoud	Validation of multiple reanalysis data against Egyptian meteorological stations
Chair: Hadas Saaroni				
15:00	Parallele B	S8	George Spyropoulos	The contribution of electric vehicles to the reduction of thermal emissions to the urban environment
15:15			George Vlahakis	Changing Climate, Changing Lives. Climate and Society in Greek cities from the antiquity to the present
15:30			Panagiotis T. Nastos	Climate dependent tourism over the Mediterranean cities based on human thermal perception under global warming
15:45			Athanasios Sfetsos	Climate knowledge in support of health systems resilience in the Mediterranean Region: The LIFE-RESYSTAL project
16:00			Nadia Politi	Investigation of SPI and SPEI trends for wet and dry periods under climate change in Greece
16:15		S3	Yochanan Kushnir	What do past interglacials teach us about the response of climate of the Levant and the East Mediterranean to external forcing and to global climate variations
16:30-18:00	Poster Viewing (Sessions S3, S4, S6 & S8)		Mohamed Ayache	Modelling of the isotopic compositions of neodymium and oxygen in the Mediterranean Sea using a highresolution regional model
			Gamil Gamal	The rainfall extreme indices in the northern coast of Egypt based on CMIP5 model projections
			Iason Markantonis	Validation of cold season extremes in Greece
			V. Kotroni	Regional Precipitation Index: ranking storms in Greece
			Diego Flores	Decomposing temperature variability in global Mediterranean-type climate regions
			Loubna Bouhachlaf	Climate Change and Its Impacts in Morocco
			Ece Gizem Çakmak	A look at the Cities' Climate Change Adaptation Action Plans for Mediterranean Coast of Turkiye: Challenges and Opportunities

Friday 7th October 2022 (morning)

Chair: Andrea Toreti			
9:00			Camille Labrousse Expansion of land use for agricultural purposes in the Arava valley: what consequences for the local climate?
9:15		S7	Andrea Toreti Climate extremes and adaptation in agriculture: the role of climate services
9:30			Elena Xoplaki BioValue: Mediterranean underutilised crops for augmentation of the European agri-food biodiversity
Chair: Fatima Driouech			
9:45			Marco Reale Mediterranean cyclones in a warmer world: an analysis using the Med-CORDEX ensemble of coupled regional climate system models
10:15		S5	Shifa Mathbout Projected changes in temperature and precipitation over Syria based on CMIP6 projections.
10:30			Danila Volpi Influence of the Tropical Atlantic on the Euro-Mediterranean region under future climate conditions
10:45-11:15 Coffee break			
11:15	Plenary	S5	Piero Lionello The Mediterranean region in the IPCC AR6
11:30			Saloua Balhane Simulation of the Moroccan climate using a variable resolution GCM
11:45			Marlene Tomaszekiewicz Increasing droughts, sand and dust storms, and other extreme events across the Mashreq and North Africa
12:00			George Zittis Climat change in the Eastern Mediterranean and Middle East
12:15			Florence Sevault What future evolution of the ocean surface off the large Mediterranean cities? A study based on the Med-CORDEX high resolution coupled multi-models ensemble.
12:30			Josep Cos Constraining CMIP6 projections in the Mediterranean region: on the road towards user-oriented climate information
12:45			Samuel Somot Regional Climate Model emulator based on deep learning: concept and evaluation of a novel hybrid downscaling approach to study the Mediterranean climate change at
13:00-15:00 Lunch			

Friday 7th October 2022 (afternoon)

Chair: Georgios Zittis			
15:00	Parallel A	S5	Alok Kumar Mishra Does increasing horizontal resolution improve the model performance in the Mediterranean? Evidence from High-Resolution Model Intercomparison Project
15:15			Gianna Kitsara LIFE-IP AdaptInGR: climate change projections for Greece available at the national Geoportal, contributing to the implementation of national adaptation policies
15:30			Marco Reale Biogeochemical dynamics response of the Mediterranean Sea under two different levels of global warming: a study using eddy resolving projections for RCP4.5 and RCP8.5
15:45			Khadija Arjdal Towards an improved representation of the surface-atmosphere coupling over Moroccan semi-arid plains with the LMDZ-ORCHIDEE climate model
16:00			Tim Van Der Schriek Projecting Burnt Area under future climate change scenarios in the Mediterranean: developing a robust approach
Chair: Marco Reale			
15:00	Par. B	S1	Adam Najmi Evaluation of PERSIANN CCS-CDR precipitation product for drought assessment in a semi-arid watershed in Morocco
15:15			Tal Ozer Thermohaline temporal variability of the SE Mediterranean coastal waters (Israel) - long-term trends, seasonality, and connectivity
15:30			Milena Menna Impact of the Medicane Apollo on a cyclonic vortex of the Ionian Sea
Chair: Elena Xoplaki			
15:45	Par. B	S7	Carla S. Ferreira Fernandes Research in Environmentally Induced Human Mobility: An Analysis of Methodological and Theoretical
16:00			Loubna Bouhachlaf DAdimapetnastiioons of climate change in Morocco: impact and national strategies
16:15			Fatimazahra Mousli Climate Change Effects on Agriculture and Adaptation Measures in Mediterranean Region
16:30-18:00	Poster (S5 & S7)		Federica Rescio Mapping coastal inundation on regional scale, case of the Apulia region
			Marlene Tomaszekiewicz Mashreq Domain Climate Modelling Outputs and the Impacts in Selected Basins in the Eastern Mediterranean
			Ayoub Guemouria A System Dynamics approach for sustainable water management under global changes: a case study from the Souss Massa region.
			Victor Ongoma Morocco's performance is climate change adaptation and mitigation
			Amal Saad-Hussein The impacts of climate change on gastrointestinal and liver health problems related to the agro-food systems and possible solutions

Saturday 8th October 2022 (morning)

Chair: Piero Lionello				
9:00	Pl.	S4	H. Saaroni	Recent Changes in the Rain Regime over the Mediterranean Climate Region of Israel and its application on coastal floods
9:15			Katrin Schroeder	Long term changes in the deep sea: examples from two Mediterranean Channels
Chair: Bodo Ahrens				
9h:30	Plenary	S1	Simon Josey	Variability of Mediterranean Sea Winter Surface Heat Loss Over the Past 70 Years
10:00			Douglas Keller	Impact and Variability of the Mistral and Atmospheric Forcing on Deep Convection
10:15			Veronika N. Maslova	Cyclones in the Mediterranean Basin as a component of mechanisms in teleconnection schemes
10:30			Babita Jangir	Investigating the role of sea eddies on the intensity of cyclones in the Mediterranean Sea
10:45-11:15 Coffee break				
11:15-12:15	Panel discussion			
12:15-12:30	Poster Awards Announcement of MedCLIVAR2024 End of conference			