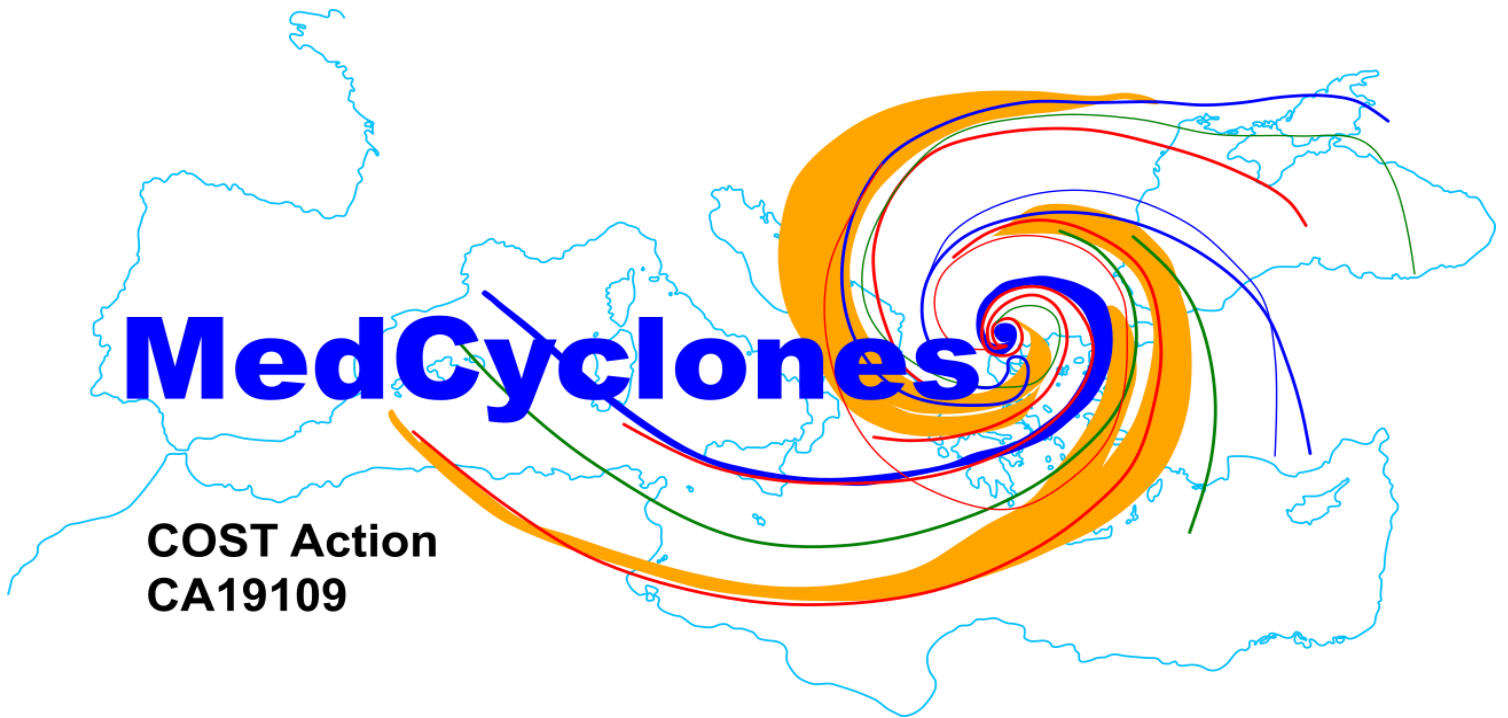


NEWSLETTER #1



**MedCyclones**

**COST Action  
CA19109**

All the latest updates from  
Working Groups

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Funding opportunities for  
Young Researchers

**The European network for  
Mediterranean cyclones in weather  
and climate**

@medcyclones



COST is supported by the Horizon 2020 Framework Programme of the European Union

The objective of [MedCyclones Cost Action 19109](#) is to establish an efficient networking between stakeholders, operational weather forecasters and researchers, which is timely and essential to address both challenges of research coordination and operational implementation of scientific results into weather and climate services.

The Action coordinates the activities of researchers in meteorology and climatology and scientists from weather/climate services with the main aims to provide a deeper understanding of Mediterranean cyclones and to improve significantly the European capacity to predict their environmental and climate impacts.

In this context, the network aims to identify and involve relevant stakeholders with different backgrounds (e.g. civil protection, re-insurance companies) to co-develop cyclone prediction products tailored to their needs.

29 COST countries have signed the [Memorandum of Understanding](#) and joined the Management Committee:

Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Malta, The Netherlands, The Republic of North Macedonia, Norway, Poland, Portugal, Romania, Serbia, Slovenia, Spain, Switzerland, Turkey and United Kingdom.

MedCyclones also accounts with the participation of a number of researchers of [International Partner Countries \(IPCs\)](#) from America.



<https://medcyclones.utad.pt/>



<https://twitter.com/medcyclones>



<https://youtube.com/medcyclones>



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MedCyclones is endorsed by:



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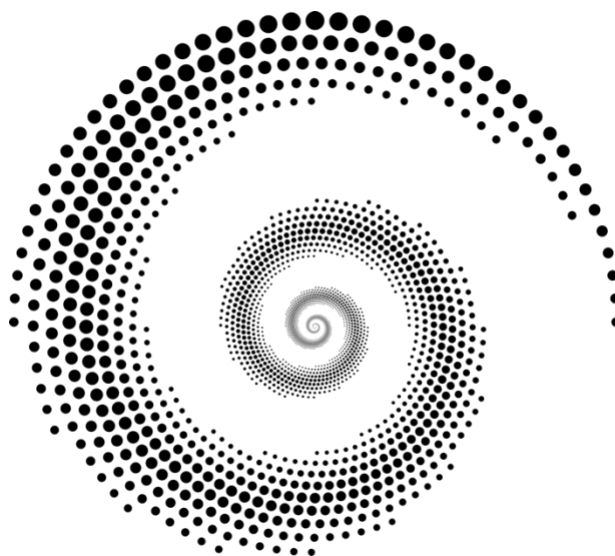
# INTRODUCTION

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Cyclones are the main weather modulators in the Mediterranean region and constitute a major environmental risk, often producing windstorms and heavy rainfall. Moreover, cyclones play a key role in the regional climate variability by controlling the oceanic circulation and regional water cycle, and by mobilizing and transporting large amounts of dust from North Africa.

Despite the recent achievements of the scientific community to provide deeper insight into the atmospheric processes and impacts associated with Mediterranean cyclones, there are still unaddressed scientific challenges that require a coordinated approach. In addition, the lack of direct interaction between academic researchers and weather/climate prediction scientists working in operational centres inhibits the efficient exploitation of fundamental research results to improve atmospheric models in a tangible way. Therefore, it is undeniable that there are potentially large societal benefits from improving cyclone predictions for weather and climate timescales.

Efficient networking between stakeholders, operational weather forecasters and researchers is timely and essential to address both challenges of research coordination and operational implementation of scientific results into weather and climate services. This Action will coordinate the activities of researchers in meteorology and climatology and scientists from weather/climate services with the main aims to provide a deeper understanding of Mediterranean cyclones and to improve significantly the European capacity to predict their environmental and climate impacts. In this context, the network will identify, and involve in the network, relevant stakeholders with different backgrounds (e.g. civil protection, re-insurance companies) and co-develop cyclone prediction products tailored to their needs.



# STRUCTURE OF MEDCYCLONES

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## **The Action Management Committee (Action MC)**

The Action Management Committee (Action MC) is the group of representatives of the COST Full or Cooperating Members having accepted the Memorandum of Understanding (MoU). They are in charge of the coordination, implementation, and management of an Action's activities as well as supervising the appropriate allocation and use of the COST funding with a view to achieving the Action's scientific and technological objectives.

<https://www.cost.eu/actions/CA19109/#tabs+Name:Management%20Committee>

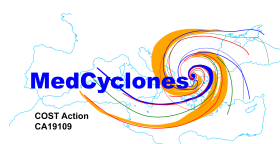
## **The Working Group (WG) and members**

The Working Group (WG) is a group of Action Participants whose activity, composition and leadership shall be defined by the Action MC in order to achieve the Action objectives. The objectives of Working Groups (WG) are to perform the tasks required for a COST Action to fulfil its scientific objectives in line with those objectives defined in the COST Action's MoU. It is expected that every Action MC Member actively participates in at least one WG.

<https://www.cost.eu/actions/CA19109/#tabs+Name:Working%20Groups%20and%20Membership>

## **The Core Group (CG)**

The Core Group typically consists of key leadership position holders and any other leadership positions within the COST Action deemed necessary by the Action MC. The Core Group can take decisions on matters for which it has been mandated by the MC. The Core Group should assist the Action Chair in determining, on behalf of the Action MC, from amongst eligible participants those who are entitled to be reimbursed. Whenever issues arise, which can directly impact the Work and Budget Plan and are not in the mandate of the Core Group, or for any other key decision regarding the COST Action's management, the Core Group must first consult with the Action MC and by no means must decide exclusively.

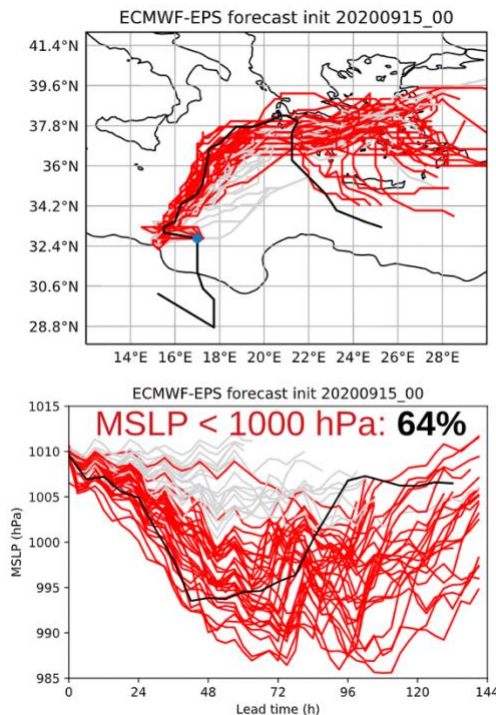


# WORKING GROUP 1

As of April 2022, there are 3 initiatives within the Working Group 1 (WG1): a) **DynForMed**, b) **Medicane definition** and c) **Modellnt**.

## a) DynForMed (lead: Philipp Zschenderlein and Florian Pantillon)

The initiative is dedicated to the Dynamics and operational Forecasts of Mediterranean cyclones. The main goal is to develop a prototype website with operational forecast information on Mediterranean cyclones. As a reference, the National Hurricane Center delivers trajectories, intensity and categories for tropical cyclones over the North Atlantic. Currently, there is a lack of such information for the Mediterranean. For instance, this led to a confusion during the recent cyclone Ianos that hit Greece in mid September 2020, which emphasized the need for reliable and centralized information. The goal is not to replace weather services, but to provide a prototype platform for information on Mediterranean cyclones for scientists, forecasters, stakeholders and potentially also the general public.



Three online meetings took place on 24 March, 13 July 2021, and on 14 January 2022 to discuss the format of forecast data and the wished graphical products. Currently, deterministic forecasts from 8 operational systems are provided daily by members of the DynForMed initiative and a tracking algorithm is routinely applied for cyclones over the Mediterranean up to 7 days ahead. The resulting tracks and intensities, as well as the current and predicted large-scale weather situation, are available on an internal web page. Recently, additional forecast products (winds and precipitation) have been also added in order to provide some hints about the impact of Mediterranean cyclones.

In addition to the website, the initiative provides a database that can be used for research as well as a benchmark for whoever wishes to contribute to the initiative. For instance, case studies of recent Mediterranean cyclones and their predictability can be assessed by comparing the performance of the forecasts with reference data. All forecasts are archived at ETH and are open to the whole COST Action to profit from the database. Further researchers and forecasters are welcome to provide additional operational forecasts and to contribute to the initiative.

**b) Mediane definition (lead: Mario Marcello Miglietta)**

The purpose of this initiative is the definition of what exactly is a "Mediterranean tropical cyclone" (TLC), aka Mediane. In the literature, the term "Mediane" has been adopted in different ways, depending on the purpose of the study and the tool adopted for the analysis. Although there is still no consensus on the definition, Medianes are generally considered to be baroclinic cyclones that evolve into vortices with structural characteristics similar to tropical cyclones, i.e. axisymmetric, deep warm core with a windless center surrounded by strong winds. The synergy between baroclinic instability and diabatic processes is fundamental for the intensification of a Mediane.

Stimulating discussion emerged in four online meetings (26 February, 30 June, 2 November 2021 and 25 January 2022) and in the subsequent debate. The need to differentiate a definition for the general public (including morphological characteristics and possibly the definition of a wind speed threshold) from a definition more appropriate for the academic environment, was underlined. The latter one should include adequate diagnostics, including the Hart diagram and a tool (to be defined) to discriminate diabatic from baroclinic processes (see Figure). At present, a shared document is being populated with information about mediane events, cyclones' characteristics and available data and publications ([click here for access](#)).

**c) Model intercomparison (lead: Silvio Davolio and Florian Pantillon)**

The aim of this initiative is to perform a model intercomparison for case studies of Mediterranean cyclones, in order to better understand their dynamics and predictability, which are often linked. The rationale behind the model intercomparison is to look for a systematic response of changes in the representation of physical processes (e.g. convection, cloud microphysics, air-sea interactions) among a range of models and configurations. This initiative will exploit results from the "DynForMed" and "3T" initiatives and it is open to all modelling systems, including high resolution and coupled systems that are not available for operational forecasts.

A first brainstorming took place on 22 March 2021 and emphasized the need for a clear protocol to guide the initiative. A second meeting took place on 18 May 2021 to detail the common model setup and expected output. The recent cyclone Ianos that hit Greece in mid September 2020 was chosen as a first case study and to prepare the technical framework of the intercomparison. Several additional cyclones were discussed as potential case studies and will be addressed in the future by following the same procedure.

Currently, 10 participants are running 5 different models and 5 different configurations of WRF, all with relatively coarse 10-km horizontal grid spacing and over the same domain, initialized from both IFS and ERA5 data at various times. The analysis of the model results is going on: a first thorough discussion took place during the online meeting on 12 January 2022; further discussions steps towards convection-permitting resolution and advanced coupling strategies have been discussed in the last meeting on 8 April 2022. A detailed protocol is available to help any member of the COST Action to join the model intercomparison ([click here for more information](#)).



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# WORKING GROUP 2

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As of April 2022, there are 4 main initiatives within the Working Group 1 (WG1): a) **3T**, b) **MedCPM**, c) **AIR-SEA** and d) **MedCyClass**.

## a) **3T - MedCyclones Tracks Task Team (lead: E. Flaounas)**

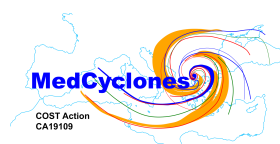
This initiative has a twofold objective: first to combine a wide number of cyclone tracking methods in order to provide a climatological "best tracks" dataset and second, to develop a methodology that performs daily tracking of cyclones, applied to forecast simulations. Two meetings took place during the first grant period of MedCyclones.

Three meetings took place. The first meeting on 7 April 2021 was attended by a group of about 20 participants who contributed with 9 different cyclone tracking methods. E. Flaounas presented a new tool that combines the cyclone track outputs from different tracking methods and rejects the ones that were only identified by single methods. For a rather short target period of one month (September 2006), it was demonstrated that the new tool was able to reject a high number of "bogus" tracks. Most of these tracks were artifacts of the tracking methods and did not correspond to organized mesoscale vortices. As a result, the tool was shown to be promising for reasons of operational forecasting and for providing a climatological dataset of cyclone tracks.

In the second meeting (20 July 2021), it was decided to repeat the same exercise by performing an ensemble of cyclone tracking approaches. However, every cyclone tracks contributor now provided different datasets using alternative versions of same tracking methods. Therefore, the same analysis as in the first meeting was repeated with about 45 datasets, i.e. an ensemble of 5 datasets, produced from each cyclone tracking method. This was done to artificially increase the robustness of the outcome of tracks combination, under the hypothesis that different versions of same tracking methods would yield significantly different tracks (but retaining the robust cyclone tracks rather intact). Results were inconclusive with the hypothesis being hardly verified for some of the cyclone tracking methods.

As a result, a third meeting was organized on 11 January 2022 with the contribution of the same 9 tracking methods but for a climatology of 42 years. This climatology derived from ERA5 in the period 1979-2020. Results confirmed the capacity of combined cyclone tracking methods in providing a climatological dataset that reduces dramatically "bogus tracks" and includes all major cyclone cases in the region.

A "best tracks" dataset will be released within the second grant period and a method applied to operational forecasting will be developed and tailored to the needs of WG1.





**b) MedCPM - MedCyclones in convection-permitting models (lead: S. Berthou)**

The idea of the initiative is to analyse Mediterranean cyclones in a set of hindcast simulations first and then in future simulations at km-scale resolution with explicit convection. Such simulations are increasingly available (e.g. CORDEX FPS - Convection over the Alps and H2020 EUCP simulations) for at least part of the Mediterranean.

First step is to run a common tracker on all of the simulations. Léo Aragão (Uni. Bologna) did a Short Term Scientific Mission (STSM) at the UK Met Office, he adapted the Aragão & Porcù (2021) algorithm for Cyclone Detection and Tracking Methods (CDTMs) to km-scale models data; he tracked year 2006 of the Met Office HadREM3-2.2km hindcast simulation on sea level pressure (6- hourly) and showed an 84% agreement with tracking on ERA-5 hourly 1000hPa geopotential height. It is planned in a next step to do a similar analysis to Ragone et al. (2018), but adding precipitation.

Available simulations are:

- GUF COSMO (MedCordex domain, 0.0275°; 2000-2009) (Erwan Brisson)
- Météo France AROME 3km (Western Med, 30 years hindcast/present/mid-century/farfuture) (Samuel Somot - EUCP)
- MOHC UM 2.2km (Western Med, 20 years hindcast/ 10 years present/mid-century/farfuture) (Ségolène Berthou - EUCP)
- Uni. C. Louvain: WRF 4km (30years hindcast) (Claudia Pasquero)

Potentially available (EUCP partners):

- ETHZ 2.2.km (Western Med - EUCP)
- ICTP RegCM (Eastern Med - EUCP)

Simulations not yet run:

- Uni. of Bern WRF (driven by inhouse CESM) (Christoph Raible)

**c) AIR-SEA - Effects of air-sea interactions on Med Cyclone intensity and rainfall (lead: C. Pasquero)**

In regions with a stable atmospheric boundary layer, as usually in the Mediterranean, sea surface temperature structures, such as eddies and thermal fronts, influence the buoyancy of the overlying air and modify the stability of the air column favoring or inhibiting the vertical fluxes between the surface and the free troposphere. As a consequence, surface winds are generally stronger, due to a more intense vertical mixing, over warm than over cold patches. Winds blowing from a warm to a cold sea surface are thus associated with convergence and viceversa. The link has been shown to be relevant on long term averages that remove synoptic scale variability and recently also at the daily time scale and in presence of strong wind convergence, such as in occluding cyclones (Meroni et al. 2020). Strong wind convergence tends to occur



preferentially over SST fronts, resulting in increased cloudiness and rainfall when winds blow over a warm to cold SST front (Desbiolles et al. 2021). This suggests that frontal rainfall, even in very intense cases, can be impacted by small scale SST structures and that those structures should be considered when forecasting intense precipitation events.

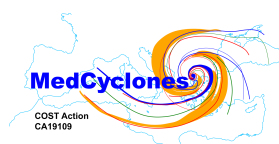
On sub-daily timescales, cold air advection over the warmer Mediterranean sea (such as in the cyclone cold sector, Givon et al. 2021) induces turbulent ocean heat loss (sensible and latent), locally lowering SST and warming the lower troposphere. It is yet unclear how this air-sea heat exchange affects the cyclone life cycle and precipitation impact.

The purpose of this action is to study the above described air-sea interactions in Mediterranean cyclones on variable timescales. To this aim, Med-CORDEX simulations and 9 additional high resolution simulations, either coupled or run with high-resolution SST boundary conditions, are collected and/or under production.

**d) MedCyClass - Mediterranean Cyclone Classification (lead: S. Raveh-Rubin)**

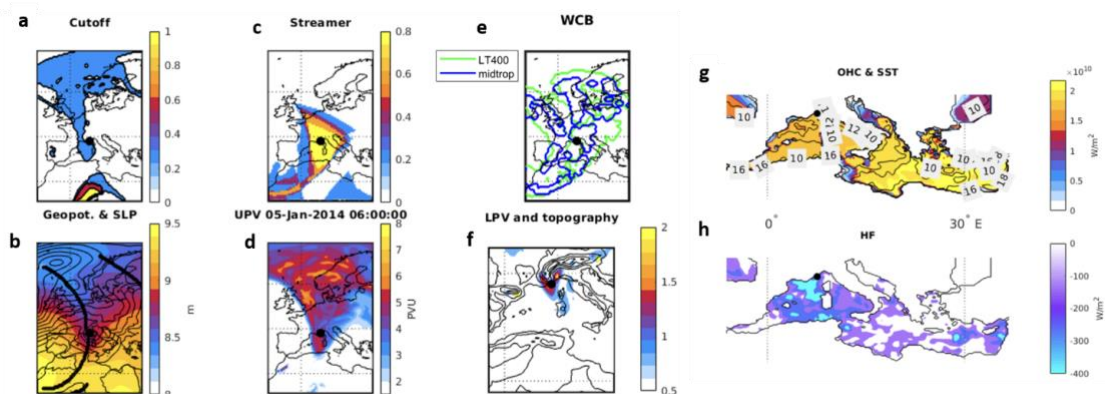
The purpose of this initiative is to classify Mediterranean cyclones to categories, based on the governing processes at their genesis. We collected diagnostic data, including identified featurebased products from members who joined the initiative. Data are currently available for a test period of June 2013 - May 2014, based on ERA5, unless noted otherwise.

Data product	Description	Contact
Upper- and mid-tropospheric PV	Vertically averaged PV over the isentropic (320-340 K) levels for upper-tropospheric PV, and isobaric (900-600 hPa) levels for mid-tropospheric PV	Weizmann Institute of Science Yonatan.givon@weizmann.ac.il
PV cut-offs	Cut-off lows identified on the isentropic levels 290-350K every 5K, following Portmann et al. (2020) and adapted for ERA5	ETH Zurich Philipp Zschenderlein (philipp.zschenderlein@env.ethz.ch) Michael Sprenger (michael.sprenger@env.ethz.ch)
PV streamers	PV streamers identified on 5 isentropic levels, 320-340K in 5-K intervals, in ERA Interim, following the methodology in Wernli and Sprenger (2007)	ETH Zurich



Warm conveyor belts (WCBs)	Gridded WCB trajectories from ERA Interim, calculated according to an ascent criterion >600 hPa in 48 h, in Madonna et al. (2014)	ETH Zurich
Trough/ridge axes	Calculated based on 300-hPa geopotential height (Schemm et al. 2020)	ETH Zurich
Ocean data products	Available C-GLORS variables are ocean heat content (0-300-m layer), computed using the CMCC eddy-permitting global ocean reanalysis, CGLORS v7 (Storto and Masina 2016). Sea surface temperature (SST) and net downward heat fluxes are provided at daily frequency from 1993-2019	CMCC Enrico Scoccimarro (enrico.scoccimarro@cmcc.it) Dorotea Iovino (dorotea.iovino@cmcc.it)
Convective parameters	MU CAPE, 0-6 km wind shear and storm relative helicity, following Taszarek et al., 2021)	Mateusz Taszarek (mateusz.taszarek@amu.edu.pl)

The following figures show an example of the data gathered together in a region around a cyclone (big black dot is the cyclone centre). There is a high variability among cases already examined, and classification methods are currently discussed.



Cyclone of 5 January 2014 (black dot) and the data products (a) cutoff mask, (b), geopotential at 300 hPa and trough axis, (c) streamer mask, (d) upper-tropospheric PV, (e) upper and mid-tropospheric gridded WCBs, (f) topography and mid-tropospheric PV, (g) ocean heat content (shading) and SST (black, °C), (h) net downward heat fluxes.

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## WORKING GROUP 3

As of April 2022, there are 4 main initiatives within the Working Group 1 (WG1): a) **Mediterranean cyclones and lightning**, b) **Impact of cyclones on dust mobilization and transport**, c) **Socio-economic impacts** and d) **ImCyCoast**.

### a) Mediterranean cyclones and lightning (lead: David Schultz)

The group involves about 20 scientists with expertise on convection and lightning activity and led by prof. David Schultz. A MedCyclones Lightning Group meeting was organised on 27 October with the following presentations:

Georgios Papavasileiou: Convection and lightning activity associated with Medicane Ianos

Emmanouil Flaounas: Cyclones contribution to lightning activity in the Mediterranean and the relationship of lightning activity to cyclones intensity

Mihaela Brancus: Assessing the lightning risk in severe storms

Barry Lynn: The potential impact of aerosols on eastern Mediterranean mesoscale storm intensity

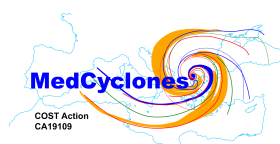
Stefano Federico: Lightning data assimilation over Italy for the improvement of very shortterm precipitation forecast (0-6h time range)

Colin Price: Why is lightning more intense over the oceans? The initiative is expected to lead to tools that could potentially homogenise lightning activity modelling and visualise relative risk towards accommodating the needs of meteorological services and early warning systems.

### b) Impact of cyclones on dust mobilization and transport (lead: Jonilda Kushta)

This initiative, led by the Cyprus Institute, is oriented towards the study of specific cases of Mediterranean cyclones and associated dust events. The initial Med Dust group consists of scientists from countries located in the East Mediterranean, mostly affected by such phenomena. The first case study is the Ianos Mediterranean Cyclone during the 14th to 20th of September 2020. It was considered of high priority to first assess the impact of wind data assimilation on model performance.

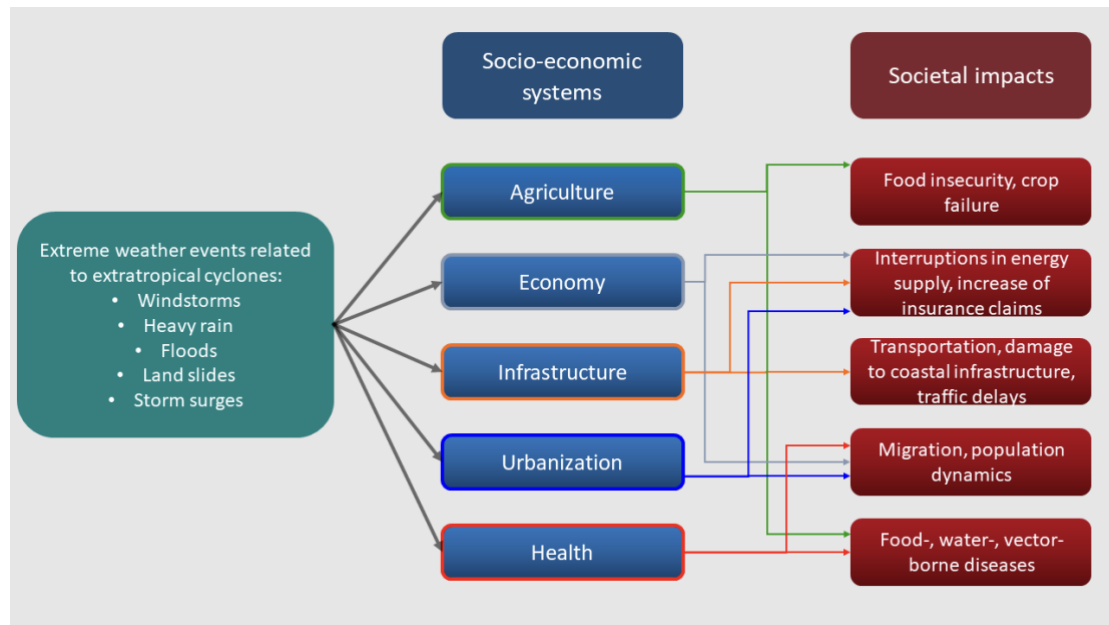
The AELOUS wind lidar, launched in 2018, developed by the European Space Agency, captures wind vector component profiles along the line of sight of the instrument. These datasets, which include Rayleigh-clear and Mie-cloudy winds, have been assimilated into the WRF-Chem model input data and were tested for the potential improvement in the model's predictive capability. From the group collaboration it was made feasible to compare the Dust Optical Depth to total atmospheric column observations from the spaceborne MIDAS (ModIs Dust AeroSol) instrument. Comparisons were also made with dust surface concentrations of coarse particulate



matter (PM10) using the open-access database of the European Monitoring and Evaluation Programme (EMEP). Lastly, model outputs were compared against satellite Lidar climatology of Vertical Aerosol Structure, LIVAS, observations for a spatially detailed analysis, available from the partners. In the framework of the Med Dust initiative one STSM, from the Cyprus Institute (Cyprus) to the National Observatory of Athens (Greece) was completed.

**c) Socio-economic impacts (lead: Robert Stojanov and Ilona Lang)**

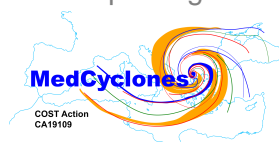
The third active initiative of WG3 is related to the socio-economic impacts of Mediterranean cyclones jointly led by the Finish Meteorological Institute (Finland) and Mendel University (Czech Republic). It aims to bring together scientists and stakeholders that work on the diverse areas of human activities affected by extreme weather as summarized from the initiative meeting as per the below diagram. The group aims to summarize the socio-economic impacts and highlight future perspectives on this subject in a review paper. The last meeting took place on 12 April 2022 to organize the next steps.



**d) ImCyCoast: Impact of cyclones on the sea state and coastal flooding (lead: Christian Ferrarin)**

This initiative, led by Christian Ferrarin (CNR-ISMAR) is strictly related with WG1 Model Intercomparison initiative, since it exploits simulation outputs provided by different modelling systems.

This initiative aims at investigating the response of coastal sea level (storm surge) and sea state (waves) to Mediterranean cyclones. Special effort will be dedicated to understanding the sensitivity of the ocean (models) to the meteorological forcing using model ensembles. This approach will allow us to evaluate the propagation of the uncertainty from meteorological simulations to sea state and wave prediction, associated with intense cyclones impacting the coast. Simulations at different



horizontal resolution will be exploited to assess the importance of grid spacing especially at the coast to characterize the impact of Mediterranean cyclones accounting for the combined action of storm surge and waves.

The initiative will benefit from the meteorological model simulations performed within the framework of the WG1-DynForMed action. Therefore, as a first step, medicane lanos will be considered as a case study but other events will be considered later (e.g. Zorbas). We are planning to perform several numerical experiments using coupled and uncoupled hydrodynamic-wave models.

This initiative can be integrated with the work performed by Klaipeda University (Erika Cepiene and Inga Dailidiene) on sea level rise impact on compound coastal-river flood risk.

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## FUNDING OPPORTUNITIES FOR CONFERENCES

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The Young Researchers and Innovators who are affiliated in the Inclusiveness Target Countries (ITC) and are members of the MedCyclones COST Action can benefit from funding to present their own work in high-level conferences (ITC Conference).

ITC Conference consists in a presentation of the own work given by a Young Researchers and Innovators affiliated in an Inclusiveness Target Country / Near Neighbour Country for their participation in high-level conferences.

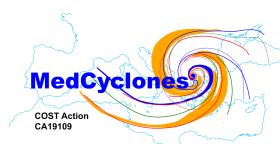
An ITC Conference is decided by the Action MC or Core Group on proposal of the evaluators and should reflect the duration and location of the Conference and the actual conference Dissemination fee. The succesful ITC Conference attendee will receive contribution for travelling, accommodation and subsistence expenses, registration fee, printing of scientific poster and overall effort.

The ITC Conferences:

- Serve COST Excellence and Inclusiveness Policy.
- Support Young Researchers and Innovators affiliated in a legal entity in an Inclusiveness Target Countries/ Near Neighbour Countries to establish a strong network and increase their visibility in the research community through sharing their work and to gain knowledge.
- Can contribute to increasing visibility of the Action.

ITC Conferences benefit to:

- ITC Conference Grantee: receives support for attending and presenting their work (poster/oral presentation) at a conference and can establish new contacts for future collaborations.



The Action MC of MedCyclones will support members who want to attend the European Meteorological Society (EMS) annual meeting 2022 (<https://www.ems2022.eu/>). The EMS2022 is planned as a hybrid meeting in Bonn, Germany from 4-9 September 2022 with online components and the abstract submission deadline is 26 April 2022.

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## THE MEDCYCLONES WORKSHOP AND TRAINING SCHOOL 2022

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The COST Action CA19109 "MedCyclones-European network for Mediterranean cyclones in weather and climate" organizes the 1st MedCyclones Workshop and the 1st MedCyclones Training School that will be held in Athens (Greece) from Monday 27 June to Saturday 2 July 2022.

The Workshop will take place within a three-day period from 27 to 29 June 2022.

The Training School will cover the whole six-day period, 27 June - 2 July, with afternoon lectures during the first three days, allowing the students to attend the workshop in the morning.

**Venue:** both events will take place at the University of Athens in the city centre (Panepistimiou 30, Athina 106 79, Greece)

**Organizing Committee:** Maria Hatzaki, Helena Flocas, Platon Patlakas, Emmanouil Flaounas, Silvio Davolio, Florian Pantillon, Shira Raveh-Rubin, Jonilda Kushta, Samira Khodayar Pardo, Margarida Liberato, Stavros Dafis

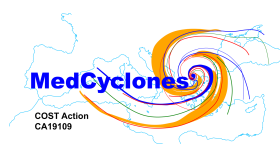
### 1<sup>st</sup> MedCyclones Workshop 27-29 June 2022

The general objectives of the workshop are to present and discuss recent scientific progress in understanding processes and impacts of Mediterranean cyclones, as well as in their monitoring and forecasting, from weather to climate time scales. We aim to establish and foster efficient networking and collaborations between stakeholders, professionals from weather/climate services and academic researchers.

The workshop program will consist of keynote talks, oral and poster presentations, round table discussions and parallel sessions devoted to research initiatives in the framework of the COST Action. Since networking is a priority for MedCyclones, there will be afternoon sessions devoted to the organization and progress of new and ongoing research initiatives.

We invite you to submit a short abstract for oral or poster presentations in the broad field of Mediterranean cyclones by following this link:

<https://emme-care.cyi.ac.cy/cost-action-ca19109-medcyclones-workshop-and-training-school/>





The venue is capable of hosting about 100 participants according to current COVID restrictions. This limit may be subject to changes in the following months. Participants from participating COST Full/Cooperating Members may be eligible for travel/accommodation reimbursement (for eligibility, please refer to <https://www.cost.eu/actions/CA19109>).

**Registration to the workshop is free of charge.**

The COST Action MedCyclones will be able to cover full traveling and accommodation expenses for about 50% of the participants. However, priority will be given to students and early career scientists who participate in the training school, to workshop presenters and initiative leaders. Gender and country balance will be taken into account, as well as participation from ITC countries.

**Important dates:**

Deadline for abstract submission: 30 April 2022

Notification of participation acceptance/reimbursement eligibility: 16 May 2022

**1<sup>st</sup> MedCyclones Training School 27 June –2 July 2022**

The Training school is primarily addressed to Master and PhD students, PostDoc and early career investigators as well as professionals and scientists from regional and national meteorological agencies. It will focus on weather-timescale aspects of Mediterranean cyclones: dynamics, processes, forecasting and predictability.

Covering the whole six-day period, the training school activities will develop through frontal lectures but also practical activities where the students will perform specific analysis in small groups. Each group will be coached by a tutor and final results will be presented in the form of short talks on the last day of the Training School to trigger interesting discussions, and provide the opportunity to enhance the collaborative spirit and develop new skills. All the students are encouraged to attend the plenary sessions of the workshop in the mornings.

The training school is open to max 30 participants and it is free of charge. Trainees from participating COST Full/Cooperating/Partner members (refer to <https://www.cost.eu/actions/CA19109>) will be reimbursed for their travel expenses, accommodation and meals (based on COST allowance rates). If a selection of applications will be needed, gender and country balance will be taken into account.

Please submit your application together with a short CV and a brief cover letter (in pdf) here:

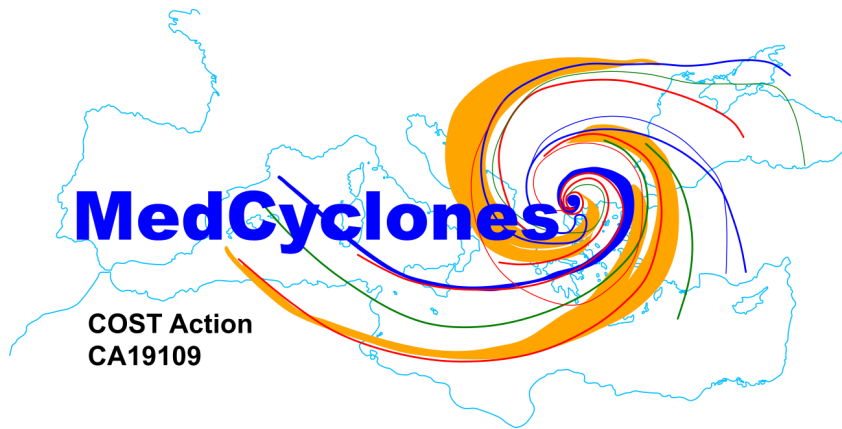
<https://emme-care.cyi.ac.cy/cost-action-ca19109-medcyclones-workshop-and-training-school/>

**Important dates:**

Deadline for application: 30 April 2022

Notification of acceptance/reimbursement eligibility: 16 May 2022





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