

## 1. SUMMARY

The MedCLIVAR/HYMEX/MedFRIEND session has been organized within the Plinius Conference. This Conference has provided the opportunity for the organisation of the Session and this has greatly increased its visibility.

The objective of the 11th Plinius Conference on Mediterranean Storms, held in Barcelona between 7-11 September 2009 has been to provide an interdisciplinary forum for presentations and discussions of our current state of knowledge, as well as motivating new research and applications within the variety of disciplines related to Mediterranean storms and concomitant human hazards. The "MedCLIVAR-HyMeX-MedFRIEND" on side event has been focused on the recovery and extension of precipitation time series. This session has allowed progressing in the drafting of the HyMeX international science, implementation and operation plans and offer visibility to MedCLIVAR as well as a contribution to its scientific objectives (networking actions, metadata base constitutions). It has been the first occasion that three projects, MedCLIVAR, HYMEX and MedFRIEND (UNESCO) have met together. The MEDEX project (WMO) has also participated through his coordinator and different members of the steering committee. The major part of the participants in this onside event has also presented their scientific contributions along the different sessions celebrated in the framework of the Plinius Conference, including the Open Ceremony Session. The most important conclusions of the MedCLIVAR-HYMEX-MedFRIEND event have showed that nowadays it is not possible to assess data precipitation at regional Mediterranean Scale and that currently available public archives are not sufficient. This workshop has put premises for fruitful interaction among different initiatives including complementary data recovery programs

The Plinius Conference has been very successful, with 212 abstracts submitted, the biggest amount of all the editions. The Conference has been attended by approximately 250 scientists and technicians, from more than 20 countries, including non European ones like United States, Libya and Brazil. New topics like topic 3 and 11, or enhanced interdisciplinary topics like topic 1, have recorded an important number of contributions. Besides the participation from Academic and Research Centres, we have also received contributions from Meteorological Services or Civil Protection. The distribution of contributions has been the following: 40% oral contributions, 53% posters, 6% invited speakers.

The Opening Ceremony of Plinius Conference has been opened by the rector of the University of Barcelona, the ministry of Catalonia of Environment, the Director of Civil Protection and the two directors of the two Meteorological Services in Catalonia. The Open Conference has been given by the adjoint-secretary of the ISDR of UN and followed by different invited speakers, including the President of the NH Division of EGU and the MedCLIVAR coordinator. In order to have a major social resonance, the Inaugural Plinius Session and the onside MedCLIVAR/HYMEX/MedFRIEND session have been opened to general public, and personalized invitations to stakeholders, policymakers and mass-media have been distributed. The press service of the University of Barcelona has advertised the Conference in different occasions. The Conference and on side events and their main conclusions have been referred in more than thirty media, including TV and radio (direct interviews on the News programs and participation on specific programmes), press, diffusion platforms and institutional sites. Another new of this year has been to close the Conference with a round table that has allowed to the different disciplines to show their conclusions and potential synergies. A draft document has been prepared with the conclusions of each session in order to distribute it between the participants and to prepare a paper to be published in the special number of NHESS relative to this Conference.

ESF has appeared as sponsor in the website, programme and has been cited in the Inaugural Act. Besides, documentation about ESF and MedCLIVAR has been distributed throughout the Plinius Conference days.

## 2. DESCRIPTION OF THE SCIENTIFIC CONTENT OF AND DISCUSSION AT THE EVENT

### 2.1. MedCLIVAR\_HYMEX-MedFRIEND

Initially, two parallel on side events had been proposed: the MedCLIVAR-HYMEX meeting and the MedFRIEND meeting. However, in order to coordinate efforts and making more visible the MedCLIVAR meeting, both onside events have been joined. This fact has benefit a lot the collaboration between researches in similar disciplines, as well as the incorporation of a project like FRIEND with a long experience in Africa. Then, the main motivation of MedCLIVAR-HyMeX-MedFRIEND has been to offer a forum for discussing the present state of data recovery initiatives aiming at improving the present knowledge of time-space distribution of precipitation in the Mediterranean region, since water is a crucial resource. The objectives of the session have been:

- To improve monthly climatology and trends
- To compute climatology of extremes for the Mediterranean region
- To explore links with large scale patterns
- To provide gridded high resolution time series
- To identify/Provide new long "historical" time series
- To built a free regional precipitation archive for climatologists, meteorologists and hydrologists

During the meeting it has been shown:

- Description of MEDCLIVAR Initiative (scientific priorities, works done...)
- The most important and recent advances in precipitation data recovery in different Mediterranean countries including Africa and Asia.
- FRIEND Project and linked international projects.
- HYMEX Program (experimental program dedicated to the hydrological cycle in Mediterranean)
- MEDARE Initiative
- MEDEX database

The main conclusions have been the following:

- It is important to improve spatial coverage density since the second half of the 20th century and also explore the potential for long "historical" instrumental time series.
- On the basis of the existing datasets and initiatives, future coordinate activities are required
- The involvement of North African and Middle East countries is crucial for the success of this scientific effort.
- It is need to define the optimal strategies for producing useful and quality controlled sets of data and make them freely accessible by researchers.

## 2.2. Plinius Conference

At this Plinius Conference, we have encouraged an even greater focus on interdisciplinary participation. This has been achieved by continuing to reach out to scientific experts in the fields of meteorology, climatology, hydrology, and geomorphology, but also extending our reach into the disciplines of oceanography, sociology, economics, engineering, and the government management sector. Experts from these additional disciplines have been able to present their own unique perspectives on how to understand and manage storm-related disasters across the Mediterranean basin.

Scientific topics have been wide ranging, including: (i) the nature and physical processes of extreme events; (ii) possible changes in storm behaviour resulting from anticipated changes in climate; (iii) advanced techniques to observe, monitor and forecast hazardous storms; and (iv) relationships between atmospheric and surface processes for both land and sea situations, with particular emphasis on the effects of coupled processes in generating damaging floods and landslides. This 11<sup>th</sup> conference have been enhanced by lectures addressing socio-economic implications of hazardous storms, as well as lectures focused on risk mitigation and resilience in the framework of sustainable development.

Due to the great diversity of presentations and topics a great number of conclusions have been proposed, being the most important the following ones:

- There is an increasing social impact of Mediterranean storms. (*Topic 1*)
- It is need to define all the actors involved in the risk assessment, management and resilience, as well as and their responsibilities. (*Topic 1*)
- There is a strong dependence between trends and anomalies, and the selected period (length and starting and ending date) as well as the selected method of analysis. It is need to be cautious with the conclusions achieved. (*Topic 2*)
- It should be necessary the use of proxy data to enlarge the record period of extreme events. (*Topic 3*)
- Multidisciplinary approach related to various types of data is required: Documentary sources, natural proxies (marks on trees, flood sediments). (*Topic 3*)
- There are a variety of technology sources being used to monitor precipitation within the Mediterranean basin in consideration of societal impacts vis-à-vis rainfall location, duration, intensity, and propagation. These sources include: (1) from high frequency radar observations (e.g., using C-band, X-band, or Ku-band radar networks), (2) from space-based satellite retrieval (e.g., using SSMIS, AQUA, or MSG operational and experimental weather satellite data), (3) from lightning discharge detection (e.g., using ATD, LINET, or Zeus field mill networks), and (4) from exploitation of cellular communications transmission data (e.g., using microwave cell phone support networks). (*Topic 4*)
- The association of cyclonic storms formed over the Mediterranean, including so-called Medicanes, with upper level PV anomalies and thermal and humidity structures was shown to be ubiquitous. This suggests an important role of baroclinic processes in the dynamical construction of these storm not typical of purely tropical storms and perhaps more consistent with sub-tropical storms or polar lows. (*Topic 5*)
- Results suggest that probabilistic forecasting, involving ensembles are needed for sub-synoptic scale weather governed by flow features having life time and space scales not resolved by the observation network or life time scales less than the forecast period. (*Topic 5*)

- Basic research was reported that is leading to a better understanding of the relationship between atmospheric structure and the structure, intensity and positioning of convective – orographic rain. (*Topic 5*)  
Forecasting is a business: it is need to evaluate the cost and the benefit of two different approaches (*Topic 6*):
  - High resolution deterministic forecasts, together with data assimilation (e.g. lightning, radar)
  - Ensemble prediction approach: build large ensembles at high resolution
 It is need to establish the different hydrological modeling strategies, the interactions among different components of the hydrological cycle at catchment scale (runoff, precipitation, wind, groundwater); the evaluation of performances and verification of hydrological models; and the statistical methods for hydrological processes characterization. (*Topic 7*)
- Flash floods require a solution of specific local/national problems. (*Topic 8*)
- The analysis and flash floods forecasting implies a massive data analysis and different operational model applications. (*Topic 8*)
- It is important to obtain simple models to understand the underlying physics and sources of uncertainty. (*Topic 8*)
- The improvement of the study of the evolution of thunderstorms requires to combine the use of radar, satellite, lightning and GNSS. (*Topic 9*)
- There is an important development of novel techniques for real-time nowcasting applications. (*Topic 9*)
- The end users, in particular the civil protection services, need the best meteorological and hydrological information. There is still room for the improvement of the deterministic forecast, though improving the models and some questions connected with their use. In particular, better models are still possible, through increasing of the resolution and improving their physics, but it is especially important the improvement in the data assimilation process. (*Topic 10*)
- There is no doubt that a certain degree of uncertainty will remain in the operational forecasting, particularly with reference to high social impact phenomena. In this sense, the end users need to know with precision the degree of uncertainty that any forecasting includes and have to evolve to the acceptance of probabilistic predictions, instead of only deterministic forecasting. The use of ensemble predictions instead of single predictions, give an instrument to properly formulate probabilistic forecasts and to determine the degree of uncertainty. Much work is being done in the development and testing of different kinds of ensemble prediction. The statistical prediction is another and a complementary way to improve the forecast and to determine the uncertainty. (*Topic 10*)
- Thinking on the end users, verification of the forecasts is another important chapter. The improved models and the probabilistic forecasts demand an effort to develop more appropriate verification methods. (*Topic 10*)
- Heat and mass air/sea exchanges and their effects on atmospheric circulation or on hydrological cycles, although crucial, have been poorly addressed during the Conference. (*Topic 11*)
- It is need to introduce a major effort in analysing the effects of storms on coastal systems and sediments through wave generation, as well as on ocean circulation and life in the sea. (*Topic 11*)
- The contributions presented on session PLC12 were mainly addressed to:
  - New tools to model rainfall-triggered landslides and debris flows, taking into account the spatial distribution
  - Definition of rainfall thresholds for the possible initiation of landslides
  - Development of landslides warning systems by coupling rainfall meteorological and hydrological models

- Analysis of the importance of rainfall drop size characteristics for splash erosion
- Modelling the activation of confined debris slides
- It is necessary to review the rainfall thresholds defined so far (mainly for local downpours) and redo the existing inventory of mass movements. (*Topic 12*)
- Aerial photographs and remote sensing data coupled with GIS tools have revealed as useful tool in the reconstruction of the inventory of historic mass movements. (*Topic 12*)
- The results show that the historic rainfall events occurred in some Mediterranean mountains has yielded many more mass movements than those reported in the literature. (*Topic 12*)
- The design of systems to forecast the possible occurrence of rainfall-induced landslides requires doing the hazard and risk zonation in basis to extensive catalogues of historical landslides with human consequences. It is important to establish if the expected slope failures occur in areas that are considered highly prone to landslides, or where landslide risk is severe or significant. (*Topic 12*)

### 3. ASSESSMENT OF THE RESULTS AND IMPACT OF THE EVENT ON THE FUTURE DIRECTION OF THE FIELD

The major impact of the event on the future direction is that it has been the first time that all the disciplines involved in the analysis, management, forecasting and resilience on Mediterranean Storms have met together. In the same line it has been the first time that the major part of projects dealing with Mediterranean Storms and recovering precipitation data, have met together and have open the possibility of working together in the future. Specific questions for future are:

- Increase public awareness to understand risk, vulnerability and disaster reduction globally
- Stimulate interdisciplinary and intersectoral partnerships, including the expansion of risk reduction networks
- Improve scientific knowledge about disaster reduction
- Nowadays it is not possible to assess data precipitation at regional Mediterranean Scale. Interaction among different initiatives including complementary data recovery programs is necessary.
- Currently available public archives are not sufficient. The organism responsible of these archives should change their strategy making easier the access to them for research.
- An important point is the assessment of uncertainties that affect both the meteorological forecasts and the hydrological applications. How should uncertainty be communicated to citizens and policymakers?
- It is responsibility of scientists to communicate or policy makers to try and understand?
- Which are the legal responsibilities of scientists in terms of NH
- Which is the chain of responsibilities
- More strong collaboration between experts and administration is needed, but how?
- A common language is needed, but is it possible?
- How increase the public awareness? Are the citizens interested in this?
- Collaboration from the insurance companies and more data about impacts are required
- Studies on trends of climatological parameters must be carried out with caution as analyses for different time periods may give different results and lead to ambiguous conclusions.
- Similarly, the results of synoptic climatology studies must be carefully verified as similar results may be found by other studies for completely different situations, leading to uncertain conclusions.
- Furthermore, climatological studies must be based on a large number of stations with reliable time-series but the spatial dependence between them must be taken into account.
- Nowadays, the climate change studies should be also followed by studies on the assessment of this change on hazardous events.
- Our studies on future climate, which mainly deal with the temperature and precipitation regime as well as their extreme values by the end of the century, must take into account new parameters as for example soil moisture, vegetation dynamics etc.
- The reliability of the simulated climate forcing must be verified beyond the observed mean climatology. For example, a comparison with observational dataset should also focus on the statistical features of alternating extreme value periods etc.
- Apart from winter and summer which usually attract the interest of the researchers, the transitional seasons, spring and summer, must be also examined in detail.

- Detailed analysis of old extreme events and their variability amongst large periods and climate change will be necessary
- Uncertainty analysis on natural hazard using additional paleo and historical information
- The development of an integrated observation system (IOS) represents the optimal approach for making use of these technologies in mitigating societal impacts within the Mediterranean basin, recognizing that there are different capabilities and data access policies across and within the national boundaries.
- Given the heterogeneity of the precipitation monitoring capabilities within the Mediterranean basin, what is the most cost effective method of combining the existing capabilities into an effective system for protecting society from the hazards of precipitating storms?
- How does the dynamic and thermodynamic construction and genesis processes of Mediterranean cyclones, including medicanes, fit into the continuum of synoptic and mesoscale cyclones ranging from middle-latitude baroclinic cyclones to tropical warm core cyclones?
- It should be need to improve the data assimilation system itself, but also in the optimization of the observational availability. Sensitivity computations and targeting data strategies are promising ways of improvement that need more tests and studies.
- An effort to open next Plinius Conferences to enlarge air-sea interaction topics would be advisable

Future Plinius Conferences should follow the initiative started in this present edition and highlight what is still poorly known or unknown about Mediterranean Storms, giving hints about how observations and modeling can improve this knowledge and indicate priorities in future lines of research. Next conferences should enlarge interaction between topics as well as the issue of Mediterranean Storms and their impact requires an interdisciplinary and multidisciplinary task.

## 4. FINAL PROGRAMME OF THE MEETING

### MEDCLIVAR-HYMEX-MEDFRIEND SESSION

8:45 Welcome: M.C.Llasat

#### **Introductory talks:**

- 8:45 Intro and project presentations (chair: M.C.Llasat)  
 8:50 MedCLIVAR, P.Lionello (University of Salento, Italy)  
 9:00 Hymex, V.Ducroq (Météo-France, France)  
 9:10 MedFriend, E.Ferrari (University of Calabria, Italy)

#### **9:20-11:00 Precipitation data recovery part I (chair: P.Drobinski)**

9:20 Introduction to the meeting P.Lionello

9:30-11.00

- Data recovery within Hymex, Isabelle Braud (CEMAGREF Lyon, France)
- Rainfall data recovery in Portugal and hydrological applications (Joao Luis M. Pedroso de Lima (University of Coimbra, Coimbra, Portugal)
- Data recovery in the Middle East, Pinhas Alpert (Tel Aviv University, Israel)
- Data potential and data recovery in Libya, Khalid.I.Elfadli (Libyan National Meteorological Centre, Lybia)
- Data recovery in African countries, Gil Mahé (IRD Montpellier, France)

11.00-11:20 *Coffee break*

#### **11:20-13:05 Precipitation data recovery part II (Chair: P.Lionello)**

- Precipitation data in the MEDEX Database, Agustí Jansà (AEMET, Spain)
- The MEDARE project activity : Manola Brunet (University Rovira I Virgili, Spain)
- Data recovery in Greece and their spatial and temporal distribution, Christos Zerefos (National Observatory of Athens, Greece).
- An assessment on the precipitation data in Turkey, Murat Turkes (Canakkale Onsekiz Mart University, Turkey)
- Precipitation data management in the FRIEND programmes, Jean-François Boyer (University of Montpellier 2, France)
- Automated recovery of rain data from paper records of tipping-bucket rain gauges, Roberto Deidda (University of Cagliari, Italy)

13:05 Discussion

13:30 End of the meeting

13:30 *Lunch at the Sciences cloister (courtesy of FLASH and MedCLIVAR)*

### 2009 PLINIUS CONFERENCE

Issues addressed have been contemplated in one of the following 12 topic areas:

- Topic 1:** Societal Impacts, Risk Management, Responses, and Education  
**Topic 2:** Climate Change Impacts on Mediterranean Storms  
**Topic 3:** Paleofloods and Historical Information Concerning Damaging Mediterranean Storms (floods, tornadoes, heavy winds, ground effects, etc.)  
**Topic 4:** Remote Sensing of Storms

- Topic 5:** Storm Processes (genesis, cyclogenesis storm track, precipitation physics, water cycling, etc.)
- Topic 6:** Mesoscale Modelling and Data Assimilation
- Topic 7:** Hydrological Processes and Modelling
- Topic 8:** Flash Floods: From Observations to Forecasting
- Topic 9:** Nowcasting
- Topic 10:** Operational Meteorological and Hydrological Forecasting
- Topic 11:** Air-Sea Interactions, Ocean Waves, and Coastal Surges
- Topic 12:** Rainfall-Triggered Landslides and Coastal Landslides / Erosion

**PROGRAMME OVERVIEW**

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY
08:30		PLC2	PLC5 - Richard Rotunno	PLC7 - Joao Luis Pedrosa
08:45		PLC2		PLC7
09:00		PLC2	PLC5	PLC7
09:15		PLC2	PLC5	PLC7
09:30	Flash Open Session	PLC2	PLC5	PLC7
09:45	Medclivar Hymex Medfriend	PLC2	PLC5	PLC7
10:00		PLC2	PLC5	PLC7
10:15		PLC2	PLC5	PLC7
10:30		PLC2	PLC5	PLC7
10:45				PLC7
11:00	Coffee break	Coffee break	Coffee break	Coffee break
11:15		PLC1	PLC5	
11:30		PLC1	PLC5	PLC6 - Vasso Kotroni
11:45	Flash Open Session	PLC1	PLC5	PLC6
12:00	MedCLIVAR Hymex Medfriend	PLC1	PLC8 - Marco Borga	PLC6
12:15		PLC1	PLC8	PLC6
12:30		PLC1	PLC8	PLC6
12:45		PLC1	PLC8	PLC6
13:00		PLC1	PLC8	PLC6
13:15		PLC1	PLC8	PLC6
13:30				
13:45	LUNCH	LUNCH	LUNCH	LUNCH
14:00				
14:15				
14:30				
14:45				
15:00	Open Ceremony	PLC3 - Varyl Thorndycraft	PLC8	PLC6
15:15	Salvano Briceño	PLC3	PLC8	PLC6
15:30		PLC3	PLC8	PLC9 - Daniel Sempere
15:45		PLC3	PLC10	PLC9
16:00	Franco Siccardi	PLC4	PLC10	PLC9
16:15		PLC4	PLC10	PLC9
16:30	Bruce Malamud	PLC4	PLC10	PLC9
16:45		PLC4	PLC10	PLC9
17:00	Coffee break	Coffee break		PLC11
17:15				PLC11
17:30	Piero Lionello	PLC4 - V. Chandrasekar		PLC11
17:45		PLC4		PLC12
18:00	Daniel Duband	PLC4		PLC12
18:15		PLC4		PLC12
18:30	Colin Price	PLC4	Visit to the city	
18:45		PLC4		
19:00	Isabelle Braud	PLC4		Round table and Closing Ceremony
19:15		PLC4		
19:30				
19:45	Ice Breaker			
20:00				
20:15				
20:30				
20:45				
21:00				
21:15	<b>Session Locations</b>			
21:30				
21:45	Flash Open Session →	Paranimf		
22:00	MedCLIVAR/Hymex/Medfriend →	Aula Magna		
22:15	Open Ceremony →	Paranimf		
22:30	All sessions of Tuesday,			
22:45	Wednesday & Thursday →	Aula Magna		
23:00	MEDEX Meeting →	Aula Ramón i Cajal		
23:15	PLC11 →	Philology room		
23:30	Coffee breaks →	Claustre		
23:45	Ice Breaker Reception →	Jardí de Ferran Soldevila		
				Gala dinner

## 5. FULL LIST OF SPEAKERS AND PARTICIPANTS

### a) MEDCLIVAR on side session

#### **SPEAKERS**

Maria Carmen Llasat (University of Barcelona, Spain)  
 Piero Lionello (University of Salento, Italy)  
 Veronique Ducrocq (Météo-France, France)  
 Ennio Ferrari (University of Calabria, Italy)  
 Isabelle Braud (CEMAGREF Lyon, France)  
 Joao Luis M. Pedroso de Lima (University of Coimbra, Coimbra, Portugal)  
 Pinhas Alpert (Tel Aviv University, Israel)  
 Khalid.I.Elfadli (Libyan National Meteorological Centre, Lybia)  
 Gil Mahé (IRD Montpellier, France)  
 Agustí Jansà (AEMET, Spain)  
 Manola Brunet (University Rovira I Virgili, Spain)  
 Christos Zerefos (National Observatory of Athens, Greece).  
 Murat Turkes (Canakkale Onsekiz Mart University, Turkey)  
 Jean-François Boyer (University of Montpellier 2, France)  
 Roberto Deidda (University of Cagliari, Italy)

#### **PARTICIPANTS TO MEDCLIVAR SESSION**

Pinhas Alpert (Israel)  
 Javier Alvarez (Spain)  
 Montse Arán (Spain)  
 Miguel Angel Arrabal (Spain)  
 Joan Carles Balasch (Spain)  
 Antonio Barrera (Spain)  
 Elisa Bartolini (Italy)  
 Reinhard Böhm  
 Jean-François Boyer (France)  
 Isabelle Braud (France)  
 Manola Brunet (Spain)  
 Enrica Caporali (Italy)  
 Chandrasekar Chandra (USA)  
 Eric Defer  
 Roberto Deidda (Italy)  
 Philippe Dobrinski  
 Veronique Ducrocq (France)  
 Fanny Duffourg (France)  
 Khalid Elfadli (Lybia)  
 Carme Farnell (Spain)  
 Ennio Ferrari (Italy)  
 Rosella Ferretti (Italy)  
 Lluís Fita (Spain)  
 Jose Carlos Gonzalez Hidalgo (Spain)  
 Agustí Jansà (Spain)  
 Dominique Lambert (France)  
 Piero Lionello (Italy)  
 Maria Carmen Llasat (Spain)  
 Gil Mahé (France)  
 M. Isabel Ortego (Spain)

Joao Luis Pedroso de Lima (Portugal)  
Pere Quintana (Spain)  
Giovanni Ravazzani (Italy)  
Romualdo Romero (Spain)  
Richard Rotunno (USA)  
Hadas Saaroni (Israel)  
Eric Smith (USA)  
Raimon Tolosana-Delgado (Spain)  
Maria Tous (Spain)  
Marco Turco (Italy)  
Murat Turkes (Turkey)  
Albert Zaragoza (Spain)  
Christos Zerefos (Greece)

## **b) XI PLINIUS Conferences**

### **SPEAKERS**

Isabelle Braud  
Helena Molin  
Daniel Duband  
Piero Lionello  
Bruce D. Malamud  
Colin Price  
Franco Siccardi  
Marco Borga  
Chandrasekar V. Chandra  
Vassiliki Kotroni  
João Luis M. Pedroso De Lima  
Richard Rotunno  
Daniel Sempere-Torres

### **PARTICIPANTS TO XI Plinius Conferences**

Enric Agud  
Sergio Alonso  
Pinhas Alpert  
Marco Altamura  
Javier Alvarez  
Jessica Amaro  
Emmanouil Anagnostou  
Montse Arán  
Francesc Ariño Santos  
Elisa Arnone  
Miquel Angel Arrabal Molinero  
Aitor Atencia Ruiz De Gopegui  
Cesar Azorin-Molina  
J. Carles Balasch  
Dolors Ballart  
Romeu Ballinas  
Francesc Baltasar  
Adriano Barbi  
Fausto Baroncini  
Toni Barrera  
Elisa Bartolini

Aristides Bartzokas  
Joan Bech  
Daniela Biondi  
Arieh Bitan  
Michael Bittner  
Anna Blanch Gironés  
Raimon Blasi  
Reinhard Böhm  
Giorgio Boni  
Marco Borga  
Eva Bosom  
Jean-François Boyer  
Isabelle Braud  
Manola Brunet  
Maria Teresa Brunetti  
Carlo Buontempo  
Kerstin Burckart (Guamis)  
Àngels Cabello  
Jordi Cabot  
Francisco Cadarso  
Francesco Cairo  
Alfons Callado Pallarès  
Ana Ma. Camarasa  
Joan Campins  
Enrica Caporali  
Giovanna Cappareli  
Mercè Casas Prat  
Daniele Casella  
Davide Ceresetti  
Chandrasekar V. Chandra  
Jean Pierre Charboureau  
Włodzimierz Chybicki  
Joaquim Coll  
Antonio Conesa  
Jan Cools  
Angela Corina  
Jordi Corominas  
Alvaro Corral  
Roberto Cremonini  
Jordi Cunillera  
Denis Dartus  
Paul Davies  
Silvio Davolio  
Uri Dayan  
Isabel De Lima  
Davide Luciano De Luca  
Eric Defer  
Roberto Deidda  
Guy Delrieu  
Núria Devanthery Arasa  
Francesco Di Paola  
Stefano Dietrich  
Philippe Drobinski  
Daniel Duband  
Véronique Ducrocq

Fanny Duffourg  
Xavier Duran  
Khalid Elfadli  
Pau Aitor Escriba Ayerbe  
Maurizio Fantini  
Carme Farnell  
Arnau Fernández  
Ennio Ferrari  
Luca Ferraris  
Rossella Ferretti  
Lluís Fita  
Marco Formenton  
Efi Foufoula  
Eli Galanti  
Antoni Garcia Rubies  
Lorena Garcies Artigues  
Luis Garrote De Marcos  
Núria Gasulla  
Nicolas Gauthier  
Ana Genovés  
Sabrina Gentile  
Igor Gómez-Doménech  
José Carlos González Hidalgo  
Antoni Grau  
Jaume Guamis  
Fausto Guzzetti  
Oliver Hernandez Navarro  
Victor Homar  
Marcel Hürlimann  
Vito Iacobellis  
Agustí Jansà  
Francesc Junyent  
Marek Kaspar  
Petros Katsafados  
Dimitrios Katsanos  
Stefan Klink  
Moriah Kohn  
Ioannis Koletsis  
Effie Kostopoulou  
Vassiliki Kotroni  
Kostas Lagouvardos  
Dominique Lambert  
Michel Lang  
Piero Lionello  
Maria-Carmen Llasat  
Montse Llasat  
Josep Enric Llebot  
Ramon Lletjós  
Marco Lomazzi  
Gil Mahé  
Ida Maiello  
Bruce D. Malamud  
Ignazio M. Mancini  
Federica Martina  
Giuseppe Mascaro

Daniele Mastrangelo  
Marina Mateu  
Nikos Mazarakis  
Ernesto Tonatiuh Mendoza  
Toni Mestres  
Davide Miozzo  
Helena Molin  
Tomàs Molina  
Gilles Molinié  
Vleria Montesarchio  
Josep Ramón Mora  
Carlos Morales  
M<sup>a</sup> Estefanía Morales Villalvilla  
Karine Moreau  
Efrat Morin  
Alberto Mugnai  
Miloslav Müller  
Luc Neppel  
Klentis Nicolaidis  
Katrin Nissen  
Elena Ojeda  
M.I. Ortego  
Joan Pallisé  
Nastasios Papadopoulos  
Manel Pardo (Guamis)  
Antonio Parodi  
Ramon Pascual  
A. Aurora Pasqua  
João Luis M. Pedroso De Lima  
Renata Pelosini  
Elvira Perekhodtseva  
Francesc Peters  
Olga Petrucci  
Monika Pfeifer  
Emanuela Pichelli  
Maria Piles  
Rui Pina  
Nicolau Pineda  
Ivan Portoghese  
Laurent Pouget  
Biswajeet Pradhan  
Miguel Angel Prat  
Colin Price  
Gemma Puig  
Abel Queralt  
Philippe Quevauviller  
Pere Quintana Seguí  
Didac Ramirez  
Climent Ramis  
Domingo Rasilla  
Giovanni Ravazzani  
Maura Rianna  
Marta Ribo  
Evelyne Richard  
Tomeu Rigo

Marta Roca  
David Rodriguez  
Ana Rodriguez  
Pablo Rodríguez  
Romualdo Romero  
Mauro Rossi  
Giorgio Roth  
Richard Rotunno  
Alix Roumagnac  
Hélène Roux  
Isabelle Ruin  
Virginia Ruiz-Villanueva  
Fabio Russo  
Rami Ruuska  
Hadas Saaroni  
Jordi Salat  
Paola Salvati  
Irene Sánchez Triadó  
David Sauri  
Daniel Sempere-Torres  
Franco Siccardi  
Eric A. Smith  
Julián Soriano  
Ryszard Staroszczyk  
Enric Terradellas  
Oreste Terranova  
Varyl Thorndycraft  
Ramon Toldra (Guamis)  
Raimon Tolosana-Delgado  
Maria Tous  
Yves Trambly  
Gregory Tripoli  
Ioannis Tsanis  
Marco Turco  
Murat Turkes  
Jordi Tuset  
Remko Uijlenhoet  
Mark Vella Gera  
Mar Vich  
Eliseu Vilaclara  
Joan Manuel Vilaplana  
Freddy Vinet  
Gustavo Ramon Wilhelmi  
Emerlin Williams  
Sabine Wüst  
Yoav Yair  
Albert Zaragoza  
Christos Zerefos  
Baruk Ziv

## 6. NUMBER OF ABSTRACTS BY COUNTRY

France	24
Spain	66
Greece	12
Italy	64
Portugal	3
USA	6
Slovenia	2
UK	3
Israel	11
Germany	6
Netherlands	1
Russia	2
Czech Republic	3
Poland	2
Brazil	1
Turkey	2
Cyprus	2
Belgium	1
Romania	1
<b>TOTAL</b>	<b>212</b>