

# International Aerobiology NEWSLETTER

JULY 2012

ISSUE N° 73

ISBN 0357 451

BI-ANNUAL PUBLICATION OF THE INTERNATIONAL ASSOCIATION FOR AEROBIOLOGY

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IAA 2010-2014

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## Dr. Bill Frankland's 100th birthday



On the 19th March Dr A. William Frankland celebrated his 100th birthday being born in Sussex on 1912.

He attended St Bees School in Cumbria before studying medicine at Oxford and St Mary's Hospital Medical School. After the war, in 1946, Bill Frankland began working in the allergy department at St Mary's Hospital in Paddington, London, and in the 1950s, he worked with Prof Fleming in the same Hospital. From 1961 to 1977 he has been the Director and consultant of the Allergy Clinic, St Mary's Hospital, and from 1977 to 1997 allergist at Guy's Hospital.

He carried out the first double-blind control trial of an allergic condition which came to be known as seasonal hay-fever. It was Frankland who championed the view that an allergic reaction is due to a malfunctioning immune system. In doing so, he and his colleagues opened up the possibility of radical new treatments for lifelong sufferers by using small doses of an allergen to, in effect, retrain the errant immune system.

He has been called "Grandfather of Allergy", but we can also consider Dr Frankland the "Grandfather of Aerobiology" as a pioneer of the pollen count scale on the allergy treatment: he started the daily pollen count given to the news media from 1950! In 3rd September 1959, during the 4th European Congress of Allergy in London, he arranged and chaired one session entirely dedicated to Aerobiology with Phillip Gregory starting the first lecture on Sources of airborne allergens and Jim Hirst talking about his original trap. Maureen Bunce Lacey presented a talk on Mould hay, and R.R. Davis presented a lecture on Mould fungi of Housdust. During the session, Elizabeth Hamilton, who was doing the pollen counts at the Wright-Fleming Institute of Microbiology, presented a demonstration on Daily spore and pollen counts as aids to diagnosis, using, for the first time, a colour television to show moulds!

First president of the British Society of Allergy and Clinical Immunology, Dr Frankland has also been the first president of the International Association for Aerobiology. In the 70s there was a preliminary discussion about the possibility to found an association to collect all who were working in aerobiology. Mrs. Leuschner reported that Dr Benninghoff from Ann Arbor, USA, took the initiative and Dr. Frankland was also very active in this duty. The foundation of the IAA was completed in 1974 in den Haag (NL) and the association was registered under Dutch law: Dr Frankland was chosen as President, Siwert Nilsson as vice-President, Herman Frinking as Secretary and Ruth Leuschner as Treasurer.

Bill Frankland is perhaps the most eminent and senior practitioner in the management and treatment of allergy being still working as a consultant and he is named as an emeritus Professor at the London Allergy Clinic.

On behalf of the whole international aerobiological community I'd like to thank Dr Frankland for his dedication and commitment to the aerobiological researchers and wish all the best on his hundredth birthday and good luck with his work: I'm sure that he can make still significant contributions to world allergy and aerobiology.

**Giuseppe Frenguelli**  
President of the IAA

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## Editorial Note

Our IAA President Dr. Giuseppe Frenguelli opens this issue with a piece about the 100<sup>th</sup> birthday of Dr. William Frankland who devoted his life to Allergy studies but can also be considered as the “Grandfather of the Aerobiology” due his important role in the start of this science. From the infancy of Aerobiology as a scientific discipline, we move on to the present day where we look at the fight to maintain quality standards in the modern pollen-monitoring networks. In this sense the European Aerobiology Society (EAS) explain the implementation of their minimum quality requirements, as the Spanish Aerobiology Network (REA) which examines their latest results in Quality Control.

Dr. Irma Rosas sends us a report from the last Meeting of the PanAmerican Association of Aerobiology (PAAA) where they commemorated the 25<sup>th</sup> anniversary of the organisation. From India, Dr. A.B. Singh speaks about his defence of the importance of Aerobiology in Allergy practice, during the most recent Allergy congress to be held in his country.

Dr. Albertini shows how the Italian Aerobiology Association celebrated the Italian National Pollen Day with the aim of presenting issues concerning the quality of air and risk factors for the health of allergic subjects to the general population, policy makers, health care organisations, local administrators and in the national media. We also have news from the other side of the Mediterranean Sea in Africa, where a Tunisian team is using aerobiology as a tool to evaluate variations in olive crop production and the adaptation of olive tree to climate in this Mediterranean area. This was achieved by collaborating with two European groups, from Italy and Spain.

Some important aerobiological events will be held this summer including the XIII International Palynological Congress in Tokyo and the 5th European Symposium on Aerobiology in Krakow. They provide a great opportunity to hear about the latest advances on Aerobiology and to meet colleagues from all around the world. Enjoy yourselves there!

**Herminia García Mozo**

**Newsletter Editor** (e-mail: [bv2gamoh@uco.es](mailto:bv2gamoh@uco.es)).

## European Aerobiology Society (EAS) Working Group on Quality Control: Quality Control 2012

Dear readers,

Since the “minimum requirements for managing aerobiological monitoring stations in national networks involved in the EAN” were published in the last Newsletter, the EAS Working Group on Quality Control has been involved with implementing a Quality Control (QC) exercise for examining slides. We have invited coordinators of national and/or regional aerobiological networks that are involved in EAN (<https://ean.polleninfo.eu/Ean/en/start>) to participate. A total of 16 networks are included in this exercise, 9 of which also carry out internal QC surveys. The EAS QC exercise focuses on identifying grass and birch pollen grains in Northern Europe and grass and olive pollen grains in Southern Europe

Two slides with moderate values have been supplied to participating sites:

- Minimum: 40 pollen grains/m<sup>3</sup> for all pollen types
- Maximum: no more than 200 pollen grains/m<sup>3</sup> for olive or birch
- Maximum: no more than 100 pollen grains/m<sup>3</sup> for grasses

The Medical University of Vienna (coordinator Matt Smith) has supplied two slides, one containing birch and one containing grass pollen, for sites in Northern Europe.

The University of Córdoba (coordinator Carmen Galán) has supplied two slides, one containing olive and one containing grass pollen, for sites in Southern Europe.

As a first step, slides are being sent to Network Coordinators so that they can decide who will participate in the QC exercise.

The method for determining error will be as follow, following the REA proposal:

- Outliers detection by z-scores analysis.
- Calculation of certified values of reproducibility of a reference sample:
  - \* Calculation of central value of reference for any taxa.
  - \* Calculation of dispersion measure of reference for any taxa.
- Calculation of accuracy, error (e.g.  $ER = ((X_i - LC)/X) * 100$ ).

Results will be presented in the frame of the 5th European Symposium on Aerobiology, 3-7 September in Krakow, Poland.

**Carmen Galán and EAS Working Group on Quality Control**

**21 March 2012: 5th ITALIAN NATIONAL POLLEN DAY**  
**WORKSHOP: "URBAN GREEN AND ALLERGIES. PREVENTION STRATEGIES FOR PUBLIC HEALTH".**

On 21 March 2012, first day of spring, the Italian Aerobiology Association (A.I.A.) celebrated the National Pollen Day, which in 2012 has reached its 5th edition, and encouraged all Members to organize events all over the country.

Within this initiative, A.I.A., together with Federasma and ISPRA, the National Institute for Environmental Protection, organized the workshop "Urban Green and Allergies. Prevention Strategies for Public Health", sponsored by the Italian Federation of Allergology and Clinical Immunology Societies (I.F.I.A.C.I.).

The workshop was held in Rome, at the Council for Agricultural Research and Experimentation (C.R.A.), where the Research Unit for Climatology and Meteorology applied to Agriculture (C.M.A.) is located.

The whole initiative aimed to involve the population, political and health institutions, local administrations and mass-media in issues concerning the quality of air and risk factors for the health of allergic subjects by emphasising the importance of a sound management of parks and public gardens as an effective prevention measure.

After the opening speeches of Giuseppe Alonso, President of C.R.A., dr. Stefano Laporta, Director of ISPRA, and Luigi Fontana, President of I.F.I.A.C.I., the issue of urban green was addressed by adopting a multi-disciplinary approach: the clinic, the environment, the study of vegetable phenomena in relation to climate changes, forecast models for flowering seasons.

The first part of the day was dedicated to talks having high scientific value, chaired by Gianna Moscato, President of A.I.A., and Vincenzo De Gironimo, coordinator of Pollnet.

Once again the fundamental role of Aerobiology was confirmed in the prevention, diagnosis and treatment of allergies, and the new frontiers of the dosage of aero-dispersed allergens and the definition of thresholds were identified (S. Voltolini, San Martino Hospital, Genoa).

The analysis of the environment in Rome, with its rich flora of spontaneous and exotic species and a vast population made up of tourists, commuters and inhabitants, highlighted the need for a correct management of green areas and the need to face urban decline even with simple actions (such as timely cutting the grass), as has been proven by the positive experience of the pilot project for schools carried out by "Baccano" Comprehensive School (A. Travaglini, University of Tor Vergata). At the same time, it was shown the great potential of A.I.A. in the fields of environmental education and design of public green.

The Tuscan experience allowed to define the guidelines for the design and management of green areas by introducing the notion of "absence of harmfulness" as a requisite for planting new trees in the green areas of schools and hospitals (M. Onorari, ARPAT).

S. Marchesi (ARPA Emilia and Romagna) presented data on the influence of climate changes on the trends of the pollen seasons of Urticaceae and Graminaceae, whilst G. Dal Monte (C.R.A. - Council for Agricultural Research and Experimentation) reported on the experience of IPHEN and the phenological forecast models of cypress and olive trees as a prevention tool.

During the round table the different Institutions and Associations tried to identify, each within their competencies, the future commitments aimed to improve management of green areas and citizens' health, especially as regards the role of coordination of the scientific associations (R. Albertini, A.I.A.), training of allergologists in environmental issues within the specialization schools (L. Fontana, I.F.I.A.C.I.), design of new green areas and school buildings (C. Dello Vicario, Province of Rome), recognition of the influence of pollutants on allergens (C. Afferni, National Institute for Health), importance of allergen monitoring in diagnosis (R. Ariano, A.A.I.T.O.).

Informational and educational material was distributed during the day. Finally, the book by Adriana Giannini and Gianbruno Guerriero "Defending yourself from allergies", a simple guide up-to-date with medical research, was presented.

**Dr. Roberto Albertini**  
**Vice-President Associazione Italiana di Aerobiologia**





## THE 25th ANNUAL MEETING OF THE PANAMERICAN ASSOCIATION OF AEROBIOLOGY

This year the meeting was held at the Universidad Autonoma de Yucatan (University of Yucatan) in the city of Merida from June 3 to June 5, 2012. A workshop at SISAL (experimental station of Mexico's national university in Yucatan) on June 6 was also part of the event.



Participants of the 25<sup>th</sup> Annual Meeting of the Panamerican Association of Aerobiology

For the first time in history, the study of aerobiology brought such a diverse group of researchers and students. The participants came from the United States, Spain and Mexico (Mexico City, Merida, Sonora, Tamaulipas and Morelos). One of PAAA12 most important special attendees was Dr. Mary Jelk who coordinated the unknown bio-particles session with Dr. Barnes.

The meeting featured aerobiological topics related with public health and agriculture. Dr. Galan discussed the atmospheric

impact associated with changes in land use and the importance of the quality control and certified aerobiological stations to compare results. Dr. Baumgardner presented his research on the Caribbean transport of African dust and its chemical composition. He discussed the scarcity of biological information in this topic. Results on various studies were also presented at the meeting, such as bioaerosols and bioparticles represented by pollen and fungal spores and results on the application of molecular techniques. In some presentations, the seasonal and diurnal variation and of bioparticles was correlated with local meteorological parameters and regional trajectories.

Although the June 6 workshop "Introduction to Aerobiology", only lasted one day, it became an important forum where participants discussed sampling techniques, of pollen and fungal propagules identification collected in Merida. The participants also observed and counted bacteria and fungi sampled with 2 and 6 stages Andersen sampler in Merida.

Dr. Comtois presented error calculations associated with pollen and fungal spore counts, which prompted an interesting discussion. Health authorities in Merida followed the PAAA12 meeting closely as they will soon initiate their own aerobiology research in both indoor and outdoor environments.

**Irma Rosas , Chairman of the 25th PAAA Meeting.**



The 25th Anniversary of the Panamerican Association of Aerobiology was celebrated during the meeting. In the photo, from left to right: Dr. Michael Muilenberg, Dr. Irma Rosas and Dr. Paul Comtois.

## ICAAICON 2011

The 45<sup>th</sup> National Conference of Indian College of Allergy, Asthma and Applied Immunology was held on Aurangabad in December 16-18, 2011. Dr. A.B. Singh from Delhi University and secretary of the Indian Aerobiological Society (IAS) participated in this event discussing about the importance of Aerobiology in clinical practice of Allergy. In this communication he presented his latest findings published in different international journals.

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## REA Quality Control: Proficiency Testing in Aerobiology

The *Spanish Aerobiology Network* (REA) was founded in 1992. The main goal of this network was to work under a standardized methodology, in order to generate information about the biological load content in the atmosphere at a national level, mainly pollen grains and fungal spores. Different research studies published through time have been focused on methodological matters: i.e. comparison of results based on different sampler locations, both altitudinal and latitudinal (Galán et al., 1995; Alcázar et al., 1999; Velasco-Jiménez et al., 2012), the sampling media (Tormo et al., 1996; Comtois et al., 1999; Galán et al., 1997; Carvalho et al., 2008), the counting method (Cariñanos et al., 2000; Sikoparija et al., 2011) or the pollen season definition (Jato et al., 2006).

Taking into account all these studies, it has been published the *REA Management and Quality Manual* (Galán et al. 2007), taking into account different topics related to Standardized Method, Interpretation of Results, Air Quality, Network management, Training Programme and Quality Plan and Quality Management.

Following the REA Quality Control (QC) and also the *European Society for Aerobiology* (ESA) QC working group recommendations, REA has been involved under internal QC exercises. In this way, during 2010 REA started to work in an inter-laboratory study for proficiency testing that means the use of inter-laboratory comparisons to determine the performance of individual laboratories for specific tests.

The University of Córdoba, as REA coordinator, provides scientific support for the inter-laboratory comparison activity development. Three aerobiological samples, from winter, spring and summer, were distributed to 24 staffs from 16 different REA researching groups: Badajoz, Bilbao, Cartagena, Córdoba, Donostia, Granada, León, Madrid, Málaga, Ourense, Oviedo, Santiago, Sevilla, Toledo, Vitoria y Zaragoza. Different pollen types have been studied: *Alnus*, *Fraxinus*, Cupressaceae, *Pinus*, *Populus*, *Platanus*, *Betula*, *Quercus*, *Morus*, *Urtica*, *Olea*, Poaceae, *Castanea*, *Rumex*, *Plantago*, Chenopodiaceae/ Amarantaceae and total pollen count. Data have been expressed as daily average of pollen grains per cubic meter of air.

The main goal of this study was to perform a proficiency test to detect the performance of technician staffs and to lay the groundwork for future studies. The performance of each staff has been expressed as the relative error committed on pollen counts.

In general, all the staffs have shown a good performance. Although the main aim of the study was to determine the performance of each technician staff, as a secondary objective we set to identify the source of errors, so we developed a short protocol to detect the source of errors and, therefore, to facilitate corrective actions and increase the effectiveness of quality improvement plans of the REA.

Data distribution and outliers have been checked prior to calculate statistical parameters. First, we have analyzed the normality of the data, by using the Lilliefors test. Second, we have detected and removed outliers to build a solid assigned value. Trying eliminating outliers we have used a 95% of the data, by calculating the Z-scores.

For outliers we have considered the ISO 5725-2 recommended confidence levels, i.e. 95% for outliers termed “stranglers” and 99% for outliers termed “statistical outliers”.

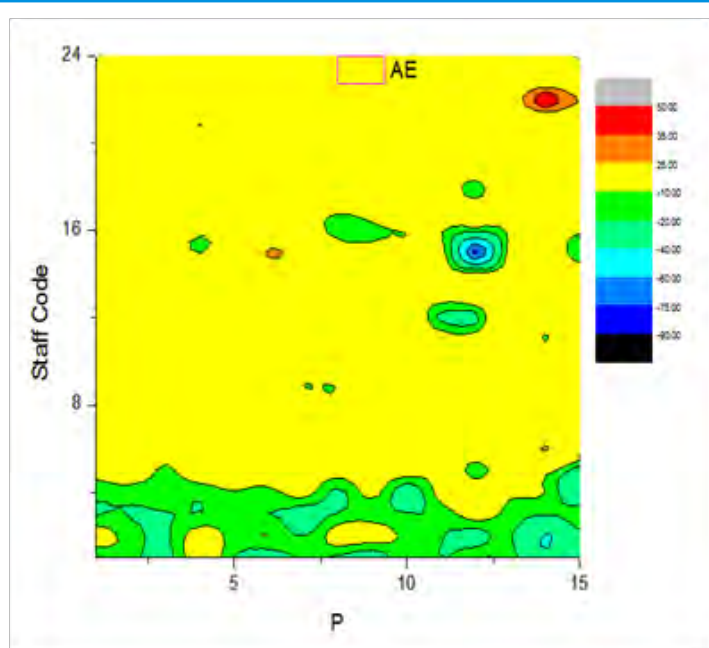
Trying to calculate the Relative Error, it has been necessary to compare pollen count with the Assigned Values. The Assigned Value of a sample is an estimate for the True Value. Due to these samples not count with a certified reference value; we have also calculated the assigned values and another summary statics, following in this case the ISO 13528 and IUPAC

instructions. Mean, Standard Deviation, Confidence Limits, Variation Coefficient and Absolute Errors was built prior to calculate the Relative Error.

The coefficient of variation was 11%, but as the coefficient of variation is highly dependent on the sample average, if we consider only coefficients of variation of pollen types with over 300 grains per sample, the coefficient of variation is reduced to 7%. The percentage of pollen types in which was committed significant relative errors was 2%. For this reason, we consider that these parameters showed a good performance in general.

After analyzing the relative errors, we proceeded to identify the source of errors (in our case the 2% of total counts), by following this procedure:

1. To detect statistical errors, we proceeded to represent the absolute errors sorted based on the total pollen grains, as shown in the figure. There are some cases where we can see a negative bias on results.



Colors represent absolute errors committed by staffs in every pollen type. P: Pollen type.

## REA Quality Control: Proficiency Testing in Aerobiology

These technician staffs observed very low pollen counts for all taxa, which suggest an error in applying the microscope correction factors. Technician staffs, who committed error in applying the correction factor, have an internal bias in its results.

2. It has been also detected pollen identification errors by finding an inverse relationship between the absolute errors committed in different taxa in the same sample. For example, next table is a part of some statistical parameters for several technician staffs, in this case only for *Populus* and *Platanus* pollen types. I.e. staff 9 has made high Relative Errors in both pollen types;

Staff	RE		AE		Result	
	<i>Platanus</i>	<i>Populus</i>	<i>Platanus</i>	<i>Populus</i>	<i>Platanus</i>	<i>Populus</i>
2	0	11	-7	9	137	53
21	0	0	2	4	146	48
12	6	0	16	4	160	48
8	0	0	-10	3	134	47
4	8	9	19	8	163	52
9	31	-100	52	-44	196	0
5	5	7	14	7	158	51
15	-5	5	-15	6	129	50
13	0	0	5	5	149	49
6	0	14	2	10	146	54

Summary parameters of several staffs. RE (Relative error), AE (Absolute Error)

having an absolute error of 52 for excess in *Populus* pollen type and it corresponds to a default error of 44 in *Platanus* pollen type.

The relative errors which have not another inverse absolute error, neither statistical errors, was considered as counting errors.

As conclusions, these results have shown that REA technician staffs have in general a good performance. We want to take the opportunity of thanking all REA members for their work. This study has taken another step in Quality Control programs thank to developing a new methodology for correcting errors efficiently and to propose as a *Proficiency Testing in Aerobiology*.

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**Galán, C., Alcázar P., Oteros J. and all REA members involved on the QC Exercise**



## Aeropalynology Tunisian experience: a good starting to the best forecast olive crop modeling

Aeropalynology is an interdisciplinary science that studies the presence of pollen in the atmosphere; define their emission periods, their abundances and origins. Aeropalynological studies are important in the determination harvest forecasts in the agronomic field and also in understanding the role of pollen in human allergic reactions. Besides, aeropalynology can provide valid information on the impact of the climate warning on the biological behavior.

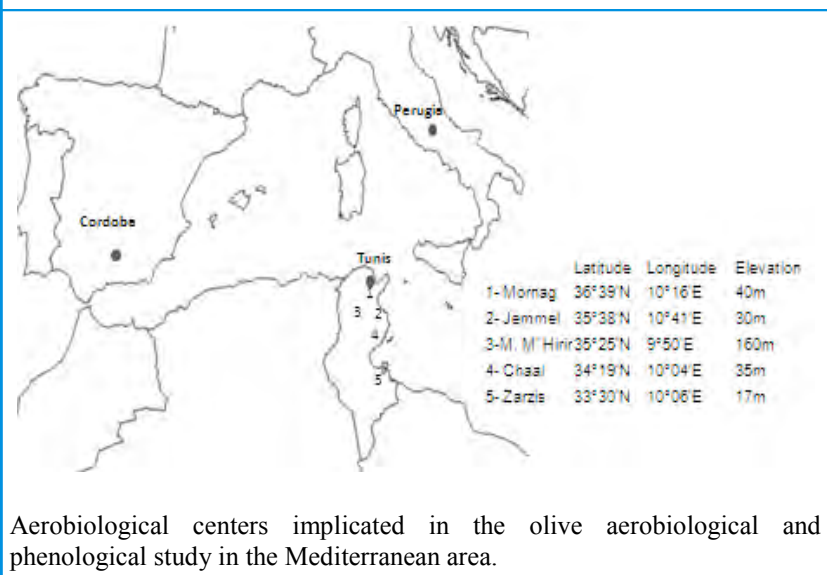
This science was applied to olive tree considered as a major crop in several Mediterranean countries and particularly in Tunisia.

Owing to the importance of this science, the olive tree institute in Tunisia had introduced two powerful techniques of pollen sensors: Cour, since 1993 as the first trap which was installed in five principal olive areas Mornag, Jemmel, Menzel M'Hiri, Chaal and Zarzis. These olive areas were selected according to regional statistics production of ten years. In 2007, the institute had introduced the Hirst trap, and installed the first sensor in the area of Sfax to reach at present five sensors placed in the same Cour olive areas. The aeropalynology studies were carried out in Tunis, with the support of phenology, agronomy and meteorology disciplines, which were applied in the five stations in order to evaluate the various components of olive-tree flowering and to determine the relationship between the biological, agronomic and environmental variables with the yield.

The forecasting yield by the aeropalynology tools and the impact of climatic parameters on the pollen emission are the main subjects of several projects between Tunisia and northern Mediterranean countries (Spain, France, Italy and Portugal).

Indeed, the starting of palynology discipline in Tunisia was carried out in the framework of the first project between the

Olive-Tree Institute and the CNRS - USTL of Montpellier with the support of French Cooperation Institute entitled "Forecast of the olive yield by the aeropalynologic method". The objective of this project was to create a statistical forecast model of olive production using the pollen database. During this project, five Cour traps were installed in the main olive growing regions of Tunisia and a pollen database is now available. This database was used to build a statistical model that the biological parameters in terms of the pollinic emissions with the climatic parameters basing on the history of production in each olive-growing area. The established model was improved and progressed in order to minimize the error between real and estimated production.



Aerobiological centers implicated in the olive aerobiological and phenological study in the Mediterranean area.

In 2007 the first Hirst trap was introduced in Tunisia through a CFC/IOOC/2007 pilot project entitled "Relation between flowering and the olive production in the Mediterranean". This project was sponsored by the CFC and IOC and realized by three countries: Italy (University of Perugia), Spain (University of Cordoba), and Tunisia (Olive Tree Institute). Tunisia was selected to be the executor of the project. This project was started by the technical assets of Italy and Spain who's already developed the Hirst methodology on *Olea* pollen.

The objectives of the project were:

1/To communicate the first results and analysis of Tunisian pollinic data collected by Hirst trap;

2/To create a database implying the agronomic, physiological and environmental parameters with which we can create a statistical model optimized to each olive growing area and to explain the hourly and daily pollinic flows variability according to the various parameters of the model.

The CFC/IOOC/2007 project was enclosed by a workshop entitled 'Comparing olive flowering and crop yield in Mediterranean area in December 11th-12th, 2008.

After this project, we established several bilateral projects with Spain such as A/018023/08 entitled 'Study of the relationship between flowering and fruiting in olive trees' witch was renewed, and with Portugal entitled phenologic study and quantitative and qualitative olive-tree flowering forecast in north of Portugal and in Tunisia. The main objectives of these projects were first to optimize the statistical forecast model of olive yield by introducing other parameters that affect directly the crop

## Aeropalynology Tunisian experience: a good starting to the best forecast olive crop modeling



**Tunisian Aeropalynology research group, from the left to the right: Samira Malek, Ali Ben Dhiab, Monji Msallem, Abderrazak Bousselmi, Sahar Riahi & Kaouther Riahi.**

such the intrinsic value of pollen in terms of viability and germination and second to translate the climatic and geographic impacts climatic on the physiologic behavior of the olive-tree.

All the aeropalynology activities showed a close relationship first, between the pollinic emissions and the production, and second between the climate parameters and the biological behavior. Indeed, to explain better the second point, the periodic (Cour) and daily (Hirst) counting permitted to show that the temperature increase cause the improvement of atmosphere by the pollen, whereas the rain and high relative humidity decrease the pollinic concentration in the air like shown in the next curve.

The results of this collaboration dealing with the effect of the climatic and geographic parameters on the pollinic emissions and the phenophases are the subject of several participations in scientific manifestations during the last three years:(Olivebioteq, Sfax

2009). Therean oral communication entitled “Latitude and altitude effect on flowering phenology olive tree in two Mediterranean countries Tunisia and Spain”, was presented. In this communication we illustrated that the pollen emission trends have a close relationship between phenological phases and some geographical parameters, i.e altitude and latitude.

Another publication entitled “Climatic indices in the interpretation of the phenological phases of the olive in Mediterranean areas during its biological cycle” (Orlandi DOI 10.1007/s10584-012-0474-9). In this paper we analyzed some climatic parameters indicators of the climate change such as the temperature, the solar radiation and the evapotranspiration in each olive -growing area (12 regions from Italy, 4 regions from Spain and 5 regions from Tunisia) during the two last decades (1990-1999, 2000-2009). The results allowed creation of a Mediterranean phenological model adapted to the olive, which presents the contemporary climate requirements during winter and the warm summer season. The climate analysis and comparisons of these two decades has allowed us to reveal a reduction in the index according to the minimum temperature, which has particular consequences in the northern monitoring areas. This phenomenon seems to present new positive scenarios for the future regarding a northward shift of olive cultivation areas, due to the potential enlargement of the growing season in winter. However, negative scenarios can also be foreseen in consideration of the failure to satisfy the minimum chilling requirements in the traditional southern cultivation areas of the olive.

In the same context, a new project AECID 11-CAP2-0932 entitled “Application and optimization of pollinic analysis to develop a forecast olive harvest model in Tunisia”. Started in 2011 between the Olive Tree Institute of Tunes and the University of Cordoba, this project will offer a new opportunity to deepen in the relation between pollen and production through out the environmental parameters to find the best model for forecast crop.

In conclusion, the experiments performed in the framework of several collaborations with different Mediterranean countries are of interest and benefic for the Tunisian team. The finding open new horizons in the field of aeropalynology.

### References:

Some Indicators Of The Effect Of Global Warming On Olive Tree Flowering In South Tunisia. 9th International Aerobiology Congresses, Buenos Aires-2010 Abichou, Mounir, Garcia-Mozo, Herminia; Ben Dhiab, Ali; Msallem, Monji; Domínguez-Vilches, Eugenio & Galan, Carmen.

Latitude and altitude effect on flowering phenology of olive tree in two Mediterranean countries Tunisia and Spain. Olivebioteq, Sfax-2009. Carmen Galán, Ali Ben Dhiab, Monji Msallem, Pura Alcázar, Mounir Abichou, Eugenio Dominguez ,Abderrazak Bousselmi & Herminia García-Mozo.

Relationship between olive flowering and latitude in two Mediterranean countries (Italy and Tunisia). 2010 F. Orlandi & M. Msallem & T. Bonofiglio & A. Ben Dhiab & C. Sgromo & B. Romano & M. Fornaciari. Theor Appl Climatol, DOI 10.1007/s00704-009-0239-1.

Climatic indices in the interpretation of the phonological phases of the olive in mediterranean areas during its biological cycle. 2012 F. Orlandi & H. Garcia-Mozo & A. Ben Dhiab & C. Galán & M. Msallem & B. Romano & M. Abichou & E. Dominguez-Vilches & M. Fornaciari. Climatic Change DOI 10.1007/s10584-012-0474-9.

**Tunisian Aeropalynology team:** Monji Msallem, Ali Ben Dhiab; Mounir Abichou, Samira Malek, Abderrazak Bousselmi & Sahar Hadj Hamda. Palynology laboratory, Olive tree institute, specialized unit of Tunis-Tunisia.

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In collaboration with:

**Spanish team:** Carmen Galán, Herminia García Mozo & E. Domínguez-Vilches University of Cordoba, Spain.

**Italian team:** Fabio Orlandi, Marco Fornaciari and Bruno Romano. University of Perugia, Italy.



# PHD SUMMER SCHOOL IN AEROMICROBIOLOGY



## MICROBIOLOGICAL AND MOLECULAR METHODS FOR **STUDYING BACTERIA** IN **ATMOSPHERIC SAMPLES**

Aarhus University, Roskilde, Denmark, 12 – 19 August 2012

5 ECTS points

### **Organization**

The summer school will be organized by Ulrich Gosewinkel and Tina Šantl Temkiv. The summer school will be held at the Department of Environmental Science, AU, Roskilde, from August 12<sup>th</sup> to August 19<sup>th</sup>, 2012. Roskilde is close to Copenhagen, where ISME14 starts on August 19<sup>th</sup>.

### **Registration**

Course fee, incl. accomodation and 2/3 of all meals: 3700 DKK (ca. 500 €)

To apply for the course: <http://envs.au.dk/summerschoolregistration/>

**Inquiries to:** Ulrich Gosewinkel, [uka@dmu.dk](mailto:uka@dmu.dk), tel.: +45 8715 8617

**Application deadline:** June 17<sup>th</sup>, 2012

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Frederiksborgvej 399  
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DK-4000 Roskilde  
Denmark  
<http://au.dk>

## NEXT EVENTS



### 2012 45th Annual Meeting of AASP

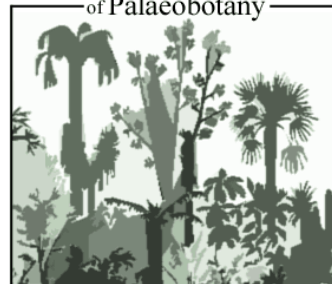
The 45th AASP Meeting will be held at the University of Kentucky, Lexington, KY, from July 21-25, 2012, co-hosted by Cortland F. Eble (Kentucky Geological Survey) & Jennifer M.K. O'Keefe (Morehead State University). Further Information is available at <http://www.palynology.org>

### 2012 IPC XIII / IOPC IX Joint Meeting in Tokyo, Japan, Aug. 23-30, 2012

The joint meeting of the 13th International Palynological Congress (IPC-XIII 2012) and the 9th International Organisation of Palaeobotany Conference (IOPC-IX 2012) will be held in Chuo University, Tokyo, Japan, under the theme: **Palynology and Palaeobotany in the Century of the Environment**.

Please see detailed information at <http://www.psj3.org/ipciopc2012/Welcome.html>

International Organisation  
of Palaeobotany



### 2012 5th ESA-European Symposium on Aerobiology, Krakow, Poland, September 3-7, 2012

The 5th European Symposium on Aerobiology will be held in Krakow, Poland, September 3-7, 2012, and will be organized under the patronage of the Rector of Jagiellonian University.

Further Information at <http://www.Sesa.cm-uj.krakow.pl/>

Contact person is Dorota Myszkowska ([dmyszkow@cm-uj.krakow.pl](mailto:dmyszkow@cm-uj.krakow.pl)). Symposium Secretary: [Sesa@cm-uj.krakow.pl](mailto:Sesa@cm-uj.krakow.pl)

# 5th ESA

## 3-7 September 2012

### Krakow - Poland

### 17th National Conference of Indian Aerobiological Society, Pune, India December 13-15, 2012

The 17th National Conference of Indian aerobiological society will be held at Pune from 13-15 December 2012. For details kindly visit IAS website [www.indianaerobiology.com](http://www.indianaerobiology.com). Also you can contact IAS secretary, [absingh@igib.res.in](mailto:absingh@igib.res.in) or [singha49@hotmail.com](mailto:singha49@hotmail.com)



### 2013 2nd International Joint Congress APLE-APLF

The 2nd International Joint Congress APLE-APLF will be held in Madrid, Spain, September 17-20, 2013. The Spanish and French Palynological Societies, APLE and APLF, join their efforts to organize for their next Symposium in Madrid, under the general title of "Pollen Diversity and Function in a Changing Environment" and organized by CSIC and Complutense University palynologists, the two societies will meet for presenting and discussing their last findings on the most relevant palynology areas. Further Information will be available in due times at <http://apple.usal.es> and <http://w3.laplf.univtlse2.fr>

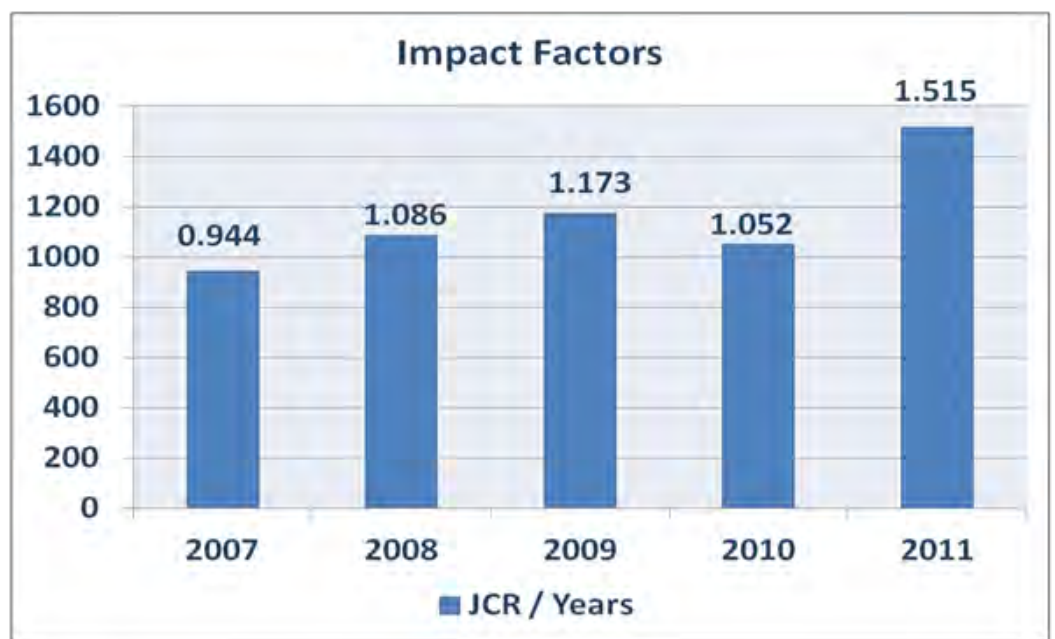


## AEROBIOLOGIA JOURNAL IMPACT FACTOR



Aerobiologia, the International Journal of Aerobiology, has just been released a significant higher Impact Factor. During 2010 Impact Factor was 1.050; during 2011 Impact Factor is **1.515**. These are good news, and we would like to thank all of you, as authors, as reviewers, as Editorial Board or Associated members, thank you for all your help in supporting AERO.

**Carmen Galán, Editor in Chief**  
**Herminia García-Mozo and Purificación Alcázar, Assistant Editors**



## Dr. Victoria Jato retirement



Last January 19-20<sup>th</sup> was held on Santiago de Compostela (Spain) the XIX Meeting of the Spanish Aerobiological Network (REA) and the XX Meeting of the Spanish Aerobiological Association. During these days their members celebrated the retirement of Dr. Victoria Jato from the Academic activity in the University of Vigo (Spain) who was named Honorary Member of the Spanish Association.

A lot of colleagues and her family attended the nice dinner that Dr. M<sup>a</sup> Jesús Aira and Dr. Javier Rodríguez-Rajo organized in the National Parador of Santiago. During the night Victoria remembered her fructiferous aerobiological career and transmitted us her intention to continue her research into the frame of the Galician Aerobiological Network. Congratulations Victoria!





## 2012 Membership Dues for the International Association for Aerobiology

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