

# BIOMETEOROLOGY BULLETIN

A publication of the  
International Society of Biometeorology  
November 2020  
VOLUME 22, NUMBER 2



International Society of Biometeorology



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Compiled by Elena Grigorieva and Jennifer Vanos

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# New Executive Board for 2020 – 2023

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# A Message from the President

Marie R Keatley

Dear Colleagues,

A sombre note to commence on but it is not possible to welcome everyone to the 2020-2023 triennium of our Society without acknowledging the impact that COVID-19 has had and continues to have from individuals to countries.

I would like to acknowledge the work of previous Executive Board ably lead by Pablo Fernández de Arróyabe Hernáez. Much of the work for the running of the Society is administrative and goes unheralded. An example of this and a significant achievement was the re-negotiation of the contract with Springer for the publication of our Journal.

Several members of the Executive Board stood down at the end of the last triennium. Each of these members have made significant contributions to the Society and I would like to thank them on the Society's behalf.

- Lynda E Chambers
- Luis Bartolomé Lecha Estela
- John Gaughan
- Simon N. Gosling
- Hesham H. Khalifa
- Hayati Koknaroglu
- Mark D Schwartz

At the latest elections there were several positions for which there were multiple nominations – to me this reflects an interest in and a willingness to contribute to our Society – a Society cannot exist in the long-term without active engagement of its members. So, I offer my sincere thanks to the members who stood for election.

Also, one of our strengths is our interdisciplinary nature and this is reflected in our Commissions and Study Groups:

- Animal Commission
- Climate and Human Health

- Climate, Tourism and Recreation
- Phenology Commission
- Student and New Professionals

Over the last triennium they have been active and their reports for this period will be published in the Bulletin.

The Executive Board has already met several times to develop a workplan for this triennium - and this is no mean feat given we are spread across the globe - it is either very early mornings or late nights for several, these include:

- Reviewing and updating the Statutes (these changes will be put to a vote)
  - This includes a change to gender neutral language, a review of membership categories and voting rights
- Drafting of an Equity and Diversity Statement (there will be consultation and then a vote)
- Review of our international affiliations
- International Congress of Biometeorology

As we know the Society exists to promote the interdisciplinary science of biometeorology, enable networking between members and provide benefits to its members. The Executive Board are considering what additional benefits the Society can provide. One of which is

- The re-introduction of an annual funding round to facilitate biometeorological research
  - Criteria, amount and number are being developed

As a reminder what the Society already offers (compiled by the SNP group):

- Ability to participate in Commissions and Study Groups
- Subscription to the Biometeorology Bulletin
- 20% Discount on books published in the Springer Biometeorology book series
- Rebates at ISB international congresses and symposia
- Subscription to “Biometnet” email-list, a forum for online discussions and information exchange

- Access to additional resources through the ISB Internal Site (“members only” web pages), which includes access to the International Journal of Biometeorology (IJB)
- Eligibility to apply for the Tromp Scientific Award.
- Having a strong and acknowledged partner for the representation of biometeorological issues at international organizations and authorities

As you know the Congress has been postponed until 2021. The Local Organising Committee will provide updates on a regular basis. If you have further questions or require additional information, please contact the Local Organizing Committee: [22.icb@unesp.br](mailto:22.icb@unesp.br) or the Scientific Commission [sc.22icb@unesp.br](mailto:sc.22icb@unesp.br)

If you have suggestions for improving our Society please feel free to contact either myself, any member of the Executive Board or Commission Chairs.

Kind regards and I look forward to working with and for you over the next triennium,

Marie

## Commissions Reports 2017 – 2020

### Phenology Commission

#### Members Activities and Commission Actions

#### **Phenology 2018: *One Planet, Two Hemispheres, Many Regions***

Phenology 2018 – the fifth in the series – was held very successfully in Melbourne, Australia from September 23<sup>rd</sup> to September 27<sup>th</sup>. The success was due in no small part to the efforts of the Organising and Scientific Review Committees (listed below), as well as the support of the delegates.

#### **Organising Committee**

Marie Keatley (Chair), The University of Melbourne, Creswick, Victoria, Australia (ISB Member)



Paul Beggs, Macquarie University, NSW, Australia (ISB Member)

Lynda Chambers, Victoria, Australia (ISB Member)

Junhu Dai, Chinese Academy of Sciences, Beijing, China (ISB Member)

Rebecca Darbyshire, Climate Unit, Dept. of Primary Industries, NSW, Australia (ISB Member)

Tim Entwisle, Director and Chief Executive, Royal Botanic Gardens, Victoria, Australia

Justin Foster, Victoria, Australia

Trevor Keenan, Lawrence Berkeley National Lab, Berkeley, USA

### **Scientific Review Committee**

Lynda Chambers, Victoria, Australia (ISB Member)

Xiaoqiu Chen, Peking University, Beijing, China, (ISB Member)

Rebecca Darbyshire, Climate Unit, Dept. of Primary Industries, NSW, Australia (ISB Member)

Alison Donnelly, University of Wisconsin-Milwaukee, Milwaukee, USA (ISB Member)

Ellen Denny, USA National Phenology Network, USA (ISB Member)

Alfredo Heute, University of Technology Sydney, NSW, Australia, (ISB Member)

Marie Keatley, The University of Melbourne, Creswick, Victoria, Australia, (ISB Member)

Trevor Keenan, Lawrence Berkeley National Lab, Berkeley, USA

Patricia Morellato, Sao Paulo State University (Unesp), Rio Claro, Sao Paulo, Brazil, (ISB Member)

Mark D Schwartz, University of Wisconsin-Milwaukee, Milwaukee, USA, (ISB Member)

## Delegates



The conference attracted 99 delegates from 30 countries (highlighted in orange with small countries such as Niue not readily visible).

It should be noted that the attendance of

meteorological staff from Pacific Islands was supported by the additional funds from the Australian Bureau of Meteorology. This support was obtained by the Oceania Councillor, Dr Lynda Chambers.

- 23 ISB members
- 66 Non ISB members
- 7 unknown as day registrations
- 3 Student Helpers

Matching the delegate list against the 2019 Phenology Commission members I believe ISB gained five new members.

## Themes

The sessions covered 8 themes (listed below):

- Phenological Methods
- Agricultural Phenology
- Remote Sensing



Darbyshire (NSW Department of Primary Industries) and Paul Beggs (Macquarie University and ISB member). The panel covered topics and address questions from the audience, ranging from thunderstorm asthma to the influence of a warming climate on crop production.

**ClimateWatch Trail Walk** run by EarthWatch and the Royal Botanic Gardens on the Friday following the Conference for the both the conference delegates and the general public. ClimateWatch trail walks are a regular event at the gardens, where trained guides introduce the general public to Phenology, climate change and the ClimateWatch recording app.

### Student Awards

Springer sponsored student prizes and there was fierce competition, but the winners were:

Best Oral: Shweta Basnett, Ashoka Trust for Research in Ecology and the Environment, India, for Fine-scale reproductive phenology of high altitude Himalayan *Rhododendron* species: Influence of phylogeny and abiotic factors,

Highly Commended – Oral: Emily De Stigter, Monash University, for

Incompatible within-species phenology leads to lowered seed output in an invasive shrub.

Best Poster: Shawn Taylor, University of Florida, for Evaluating a near term ecological forecast of



plant phenology.

Shawn Taylor, Shweta Basnett and Emily De Stigter (left to right holding certificates) with Rebecca Darbyshire, Chair of the Judging Panel.

### **General Phenology Commission Meeting:**

The meeting was attended by 40 delegates: 21 ISB members, six of which were not Phenology Commission members. These ISB members have since joined the Phenology Commission.

### **EGU General Assembly 2018, 2019 and 2020 – Phenology Sessions**

Members of the Phenology Commission have convened sessions at European Geophysical Union's General Assembly meeting in Vienna – all with the title *Phenology and seasonality in climate change*

In 2018 Kjell Bolmgren was the primary convenor and in 2019 and 2020 by Iñaki Garcia de Cortazar-Atauri

The 2019 session was co-sponsored by ISB. The sessions were well subscribed with 42 abstracts being accepted: 14 oral and 28 posters. Each session attracted approximately 100 delegates.

The Society also supported the attendance of Eike Luedeling, Head of Department, Department of Horticultural Sciences, University of Bonn who spoke on *Dormancy Model for Warming Orchards*  
(<https://meetingorganizer.copernicus.org/EGU2019/EGU2019-10835.pdf>)



I Garcia de Cortazar  
@IGarCotAt

Eike Luedeling is presenting dormancy modelling approaches tested on orchards. His talk was supported by the #ISB @biometeorology Thank you!! #Phenology #EGU19

[Traduire le Tweet](#)



11:02 AM · 10 avr. 2019 · [Twitter for Android](#)

In 2020, the EGU General Assembly was not a face-to-face conference because of COVID19. However, an online presentation and chat was organised. The online presentations had 12 of the original 14 talks presented. These had 90 participants attend.

### **Session on Responses of Vegetation Phenology to Global Change in China - The 55th session of 110th Anniversary of the Geographical Society of China & China Conference on Geography 2019**

The session was chaired by Junhu Dai. The Conference was held in November 2019 at the Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences, Beijing, China

About 50 people attended the session and there were 17 reports and talks on phenology included in the session, including "Study on growth rhythm and characteristics of xylem" by Prof. Yuan Jiang, "A new mechanism for thermo-photoperiod coupling regulation of spring phenology" by Prof. Yongshuo Fu, and "Asymmetric influences of daytime and night warming on spring phenology of temperate steppe in China" by Prof. Xiangjin Shen et al.

### **The 4th Symposium on Phenological Observation and Research of China Phenological Observation Network.**

The symposium was chaired by Junhu Dai and was held at Sichuan University, Chengdu, Sichuan Province, China in December 2018. Over 60 people attended. There were 8 keynote speeches and other 15 talks on the conference covering topics on advances in phenological research and observations.

### **ISB-PC and WMO-CAGM Working Group**

A meeting with Roger Stone, President, Commission for Agricultural Meteorology and Vice President, Commission for Services Applications has resulted in the first steps in this collaboration. Members of the ISB-PC Working Group (Katharine Abernathy, Xiaoqiu Chen, Marie Keatley, Patrícia Morellato, Mark D Schwartz, and Raul Zurita-Milla) assisted the CAGM's Expert Team 1.3 on the *Revision of guidance material on the use of phenology for climate monitoring and crop phenology for agrometeorological monitoring and assessments*.

### **Mini workshop: Building Next-Generation Data Infrastructure for Plant Phenology**

Phenology Commission members attended via zoom the international workshop organised by USA-NPN which in part examined the questions 1) how to make plant phenological data more accessible and easier to use; 2) which high-value phenological datasets are still missing; 3) what kinds of analyses you wish you could do with phenological data; and 4) what barriers are limiting large-scale plant phenological research.

## **New Phenology Networks in Oceania**

Phenology networks have now been set up in five South Pacific nations, Niue, Samoa, Solomon Islands, Tonga, and Vanuatu. Work is continuing on developing similar networks in other Pacific nations. More information is provided in the report from Oceania.

## **Spatiotemporal Processes of Plant Phenology: Simulation and Prediction**

The book authored by Xiaoqiu Chen has been published by Springer and has nine chapters ranging from Natural Landscape Dynamics to Spatiotemporal Coupling Effects of Plant Phenology.

## **Future Plans**

### **Continue to work with WMO-CgM to meet the goals:**

- (i) Internationally agreed upon standards for analyzing and communicating phenological metrics and products.
- (ii) Bridging, converging or calibrating national monitoring protocols,
- (iii) Phenology and the collection of weather data - to assist with the ground-up validation and the understanding of the climate effect on carbon cycling particularly in the tropics.

### **22<sup>nd</sup> International Congress of Biometeorology**

Four phenology sessions are planned for the 22<sup>nd</sup> International Congress.

### **EGU General Assembly 2021 – Phenology Session**

This is being considered.

### **Phenology 2022: Phenology at the crossroads**

As the Society's Congress had to be rescheduled to July 2021 because of COVID the conference organisers generously agreed to move the conference to 2022.

The Conference is scheduled to be held in Avignon France. Broad details are provided below.

Organisers: Dr Iñaki Garcia de Cortazar-Atauri (INRA US1116 AGROCLIM – Avignon, France) and Dr Isabelle Chuine (CEFE-CNRS – Montpellier, France)

Climate change is modifying the phenological cycle of many species, directly affecting agroecosystem functioning, species distributions and biosphere's feedback to the atmosphere. Phenology has become an important subject for many societal and economic issues. Therefore, the community working on phenology greatly enlarged during the past 20 years, integrating other actors than scientists thanks to participatory research action programs. Phenology also gained interest from an increasing range of scientific disciplines (functional and evolutionary ecology, physiology, agronomy, genetics, climatology, remote sensing, aerobiology...). For these reasons, we want to emphasize during this conference the fact that phenology is now at the crossroads of many different disciplines and actors, all working together in the same direction: adapting to climate change.

#### Session themes

1. Phenological communities and networks
2. Phenological data : standards and protocols for collecting, processing and sharing
3. Phenology as a bio-indicator of climate change
4. Ecophysiological and genetics determinism of phenology
5. Impacts of phenology on organisms' ecophysiology and life history traits
6. Remote sensing and alternative technics to monitor phenology
7. Phenology modelling
8. Impacts of phenological match and mismatch

#### **Report Compiled by** Dr Marie Keatley

**Contributions from:** Dr Lynda Chambers, Prof Xiaoqiu Chen, Prof Junhu Dai, Dr Iñaki Garcia de Cortazar-Atauri, Prof Patricia Morellato, Prof Mark Schwartz

# A long-standing monitoring program on airborne pollen abundances and observations on flowering phenology

Dr. Athanasios Damialis

The Aerobiology Research Group from Aristotle University of Thessaloniki, Greece (Department of Ecology, School of Biology), has recently published, in Atmospheric Environment, a long-standing monitoring program on airborne pollen abundances and observations on flowering phenology (<https://doi.org/10.1016/j.atmosenv.2020.117708>). The research is part of more than 3 decades of pollen monitoring and several years of phenological observations of the flowering of the associated anemophilous most representative species.

The highlights of the study were:

- Both flowering and airborne pollen abundances were studied for 14 woody taxa.
- Flowering phenology was examined in differing elevations and directions, so as to check for effects of spatial and climatic variability and change.
- The salient finding was that flowering occurred earlier in 10 species at lower elevations or south directions, which showed the strong dependence of phenological features (like onset, peak and end of the season) on air temperature, especially the cumulative since the formation of the inflorescences.
- When compared to the associated airborne pollen of the studied taxon, a flowering mismatch with pollen season indicated long-distance pollen transport.

Overall, flowering and pollen seasons are sensitive to environmental variability and are well known as climate change indicators. What has not been concluded yet, though, is to what extent flowering phenology is indeed reflected in airborne pollen season locally. Most airborne pollen monitoring programs operate based on one station per large metropolitan areas. The aim of this study was to investigate, for a wide spectrum of plant species, the

responsiveness of flowering to different environmental regimes and also to check for commensurate changes in the respective pollen seasons.

To do so, 14 woody taxa were selected representing the families of Corylaceae, Cupressaceae, Fagaceae, Oleaceae, Pinaceae and Platanaceae. Each was studied in at least two sampling stations differing in elevation or direction within the period 2004–2011. Flowering observations were made at least 3 times a week, from flower differentiation to flower desiccation; daily observations were made in 225 plant individuals, in total. Data were regressed against meteorological parameters in an attempt to identify the driving factors of flowering onset and offset. Flowering dates were compared with dates of the related airborne pollen seasons per taxon; airborne pollen monitoring took place daily using a Hirst-type volumetric sampler. For all taxa, flowering started earlier at lower elevations or southern direction. Cumulative temperature proved to be the factor most significantly affecting flowering onset and end for all species with a consistent coefficient of determination higher than 0.70. For the majority of the taxa examined, airborne pollen season did not coincide locally with the respective flowering periods of the selected species: flowering could precede pollen season, even for more than one month (as in *Corylus avellana*), or start after the pollen season onset (as in *Pinus brutia*).

The strong sensitivity of flowering to air temperature is not the case in the respective pollen seasons, where more environmental variables affect not only the production and release of pollen, but also their transport, horizontally and vertically. This raises questions on the relationship between flowering times and airborne pollen seasons and on the rather underestimated role of long-distance transport of pollen. If we translate this into impacts on human health, it is obvious that under extreme weather conditions flowering may not finally be a good proxy for forecasting airborne pollen abundance and seasonality, which raises concerns on the accuracy of the traditional local pollen forecasts and on the increasing need for novel, real-time health information services for personalized, allergy risk alerts.

Dr. Athanasios Damialis, Department of Ecology, School of Biology, Aristotle University of Thessaloniki, Greece

## Upcoming Conferences

### 22<sup>nd</sup> International Congress of Biometeorology and 8th Brazilian Congress of Biometeorology, Ambience and Animal Welfare

The INOBIO-MANERA, together with the International Society of Biometeorology and the Brazilian Society of Biometeorology, Ambience and Animal Welfare (SBBiomet), invites all professionals, researchers, and students to the 22<sup>nd</sup> International Congress of Biometeorology and the VIII Brazilian Congress of Biometeorology, Ambience, Behavior and Animal Welfare.

These events will take place at the Convention Center of São Paulo State University (UNESP), Jaboticabal/SP campus, Brazil, from July 18<sup>th</sup> to 21<sup>st</sup>, 2021. Our website <https://inobio-manera.fcav.unesp.br/>

The 22<sup>nd</sup> ICB will feature nationally and internationally renowned participants in the areas of human, plant and animal biometeorology, with the theme “One Earth One Life”.

### 6th Conference on Climate, Tourism and Recreation (CCTR 2021)

Cenk Demiroglu

6th Conference on Climate, Tourism and Recreation (CCTR 2021) will be organized in Abisko, Sweden, and online on March 18-20, 2021.

This is a Save the Date announcement, and details will follow later.

# Updates on the ISB website

ISB website is updated: an Upcoming Events Calendar and a Job and Positions page are added to the website: <https://uwm.edu/biometeorology/>

The screenshot shows the ISB website homepage. At the top, there is a navigation menu with links: Home, Biometeorology, Commissions and Study Groups, Communications, Membership, About, and Contact Us. Below the menu, there is introductory text about the organization's mission and a welcome message. The 'Commissions and Study Groups' section features three columns: 'Animal Biometeorology' (with a cow image), 'Climate and Human Health' (with a landscape image), and 'Climate, Tourism & Recreation' (with a lake image). Each column has a brief description of its focus. To the right, there is an 'Upcoming Events' calendar for November 2020, with the 10th highlighted. Below the calendar is a 'News' section with two bullet points: 'Jobs and Positions' and 'Phenology 2018 Conference Abstracts'.

## Announcement for an open PhD position in climate and health modeling in Prague

Dr. Ales Urban

The research group of “Hydrological and climate variability” at the Faculty of Environmental Sciences (FES), the Czech University of Life Science in Prague, announces an opening for a PhD position in modeling of relationships between climate and human health. The PhD position is embedded in the REES project (Research Excellence in Environmental Sciences) led by Dr. Ales Urban (researcher ID: H-6476-2014). The aim of the REES project is to investigate the impacts of climate variability and change on human health. The title of the PhD project is: Modeling of relationships between climate

variability and seasonal patterns in mortality The aim of the PhD project will be to clarify associations between climate variability and seasonal patterns of mortality and morbidity in the Czech Republic using modern methods of time series analysis. Special focus will be given on the analysis of seasonal patterns of the incidence of infectious diseases, how these patterns are associated with climate variability, and how they affect the general seasonal patterns in mortality and morbidity.

The candidate should have a M.Sc. degree in Environmental Science, Environmental Modeling, Environmental Epidemiology, Climate Science, or related field. We expect the candidate will be self-motivated and interested in the research topic. Good knowledge in statistics, scientific programming and data analysis, and experience in working with tools for the analysis and visualisation of time series data (e.g. R/RStudio, Matlab, or similar) are expected. Additional skills are expected to be gained and improved during the PhD project. The successful candidate will participate in the REES project, will contribute to preparation and submission of research grants, and is expected to participate on these grants in case of successful submission.

The position is limited to 3 years. In case of good results, a follow up postdoc researcher position may be possible. The candidate will receive a monthly net scholarship 350-500 EUR (based on performance), additional salary from the REES project, up to 410 EUR and publication rewards.

The place of employment will be Prague. The targeted starting date is 1<sup>st</sup> October 2021 but earlier start of the collaboration (e.g. on online basis) is beneficial. Most of the foreign PhD candidates get place at on campus dormitories.

As a PhD student at the Faculty of Environmental Sciences, the Czech University of Life Sciences, the candidate is expected to publish results in international peer-reviewed journals, to participate at international conferences, etc.

For further information please contact Dr. Ales Urban (<[urban@ufa.cas.cz](mailto:urban@ufa.cas.cz)>).