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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,

As you know, our in-person Congress which was to take place in Brazil in July this year has gone virtual. The sub-Committee of Executive Board is working hard at organizing this. Relevant information and a new Calendar of Important dates will be published on the [ISB website](#) as they become available.

As previously stated, we would like to thank the Local Organising Committee for the effort and energy they put into the in-person Congress. We also thank everyone for their patience, particularly those who had already expressed an interest in the in-person Congress.

As mentioned in the last edition of Biometeorology Bulletin the following are being worked on:

- Reviewing and updating the Statutes
- Equity and Diversity Statement
- Review of our international affiliations

The Statutes and the Equity and Diversity Statements will be available prior to the Virtual Congress. The Executive Board is in discussions with a few like-minded Societies, the outcomes of which should be known shortly.

ISB is a member of the International Forum of Meteorological Societies (<https://ifms.org/index.cfm/ifms/>). IFMS led the development of a Joint International Climate Communique highlighting the critical importance of addressing climate change, which was released on World Meteorological Day 2021 (23 March). ISB was a signatory, along with another 42 national meteorological societies and organisations (see the full list at the end of the bulletin*) working on climate and sustainability. The Communique can be found [here](#).

ISB has observer status with the WMO and in this capacity has been represented at the following WMO online meetings:

- In February by Pablo Fernandez De Arroyabe Hernaez at the Technical Commission for Weather, Climate, Water and Related Environmental Services and Applications SERCOM-1 (II). Meeting details and presentations may be found [here](#).
- In March by Jennifer Fitchett at the 18th session of the Regional Association I (Africa): Meeting details and presentations may be found [here](#).

As always if you have suggestions for improving our Society please feel free to contact any member of the Executive Board or Commission Chairs.

Kind Regards

Marie

New Study on the History of Health, Wealth, Weather Climate, and Environment

Master's Thesis by Ronald Hes

Dr. Peter Hoeppe and the ISB Executive Board are happy to share a new Master's Thesis by Ronald Hes: "Under the Weather – a History of Health, Weather, Climate and Environment", which predominantly is a comprehensive analysis of the history of biometeorology and the ISB. The full thesis can be found [here](#).

Timely Biometeorology Publications

Damialis A, et al. Higher airborne pollen concentrations correlated with increased SARS-CoV-2 infection rates, as evidenced from 31 countries across the globe. PNAS. 2021; 118(12):e2019034118.

<https://doi.org/10.1073/pnas.2019034118> with ISB co-author Paul Beggs.

Commissions Reports 2017 – 2020

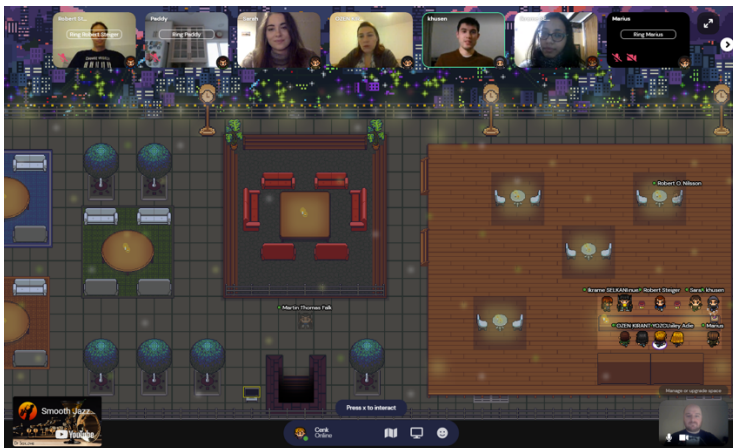
Climate, Tourism, and Recreation Commission

Members Activities and Commission Actions

The Sixth International Conference on Climate, Tourism and Recreation - CCTR 2021

March 17-20, 2021, Online

CCTR 2021, organized by the Commission on Climate, Tourism and Recreation of the ISB, with the support of the Arctic Research Centre at Umeå University (Arcum), was successfully gathered on March 17-20 through online platforms. During the consecutive sessions of the four days; three keynote speeches, one panel, and 38 presentations, four of which were dealt separately under a PhD Workshop, met an audience of around 70 registered participants in total. The presented themes were diverse and including but not limited to climate vulnerabilities of different tourism and recreation types, sensitivity of tourism demand to weather, mitigation and sustainable tourism, implications for the Covid-19 pandemic, and media impacts. At the end of the conference, the participants found their chances to celebrate the event together at a virtual rooftop party (below).



The conference web site, www.cctr2021.org will be maintained and soon be added with the Proceedings Book. The recordings of the keynote speeches held by Dr. Elena Grigorieva, Dr. Keith Larson and Dr. Michelle Rutty are also to be found on the web site's relevant page. During the closing remarks, the Commission also announced a full text call to the participants for a special issue to be published in the International Journal of Biometeorology.



2018 International Conference on Climate, Tourism and Recreation (CCTR)

CCTR 2018 was the fifth of the scientific series of events on state of the art research on tourism climatology, realized by our Commission since 2001. It took place on June 25-27, 2018, at Umeå University, Sweden, hosted by Umeå University Department of Geography and supported by the Arctic Research Centre at Umeå University (ARCUM), The Göstla Skoglund Foundation, Region Västerbotten, and Swedish Research Council for Sustainable Development (FORMAS).

The conference lasted three days with two keynotes and panels, 28 presentations under six consecutive sessions and three social events (welcome reception at Västerbotten Museum, Norrland dinner at Kassjöbacken, and a fieldtrip to the Norrbyskär archipelago). The presentations were held by participants from 16 different countries of affiliation, focusing on the main themes of “weather/climate and tourism/recreation relationship”, “climate change adaptation”, and “climate

services". The two leading researchers of the field, Daniel Scott, University of Waterloo, and Colin Michael Hall, University of Canterbury, held their keynotes on "Tourism Climatology: Past, Present, and Future" and "Polar Tourism and Climate Change", respectively, followed by discussions from the panellists Michelle Rutty, David Perkins, Robert Steiger, Linda Lundmark and Cenk Demiroglu.

Based on the panel on "Polar Tourism and Climate Change", Demiroglu and Hall published the article "Geobibliography and Bibliometric Networks of Polar Tourism and Climate Change Research" in *Atmosphere*, acknowledging CCTR 2018. The panel on "Tourism Climatology: Past, Present, and Future" will also be made into an article, led by Michelle Rutty, for the Commission's special issue in *IJB*. The special issue was open for all participants of the CCTR 2018 and was intended to be an alternative to a conference proceedings book. Commission chair Robert Steiger acted as Special Issue Editor. From 17 submitted papers, 9 have been accepted, one manuscript is under minor revision and an editorial integrating the collection of papers with the panel discussions at the conference is in preparation. A wide range of topics (e.g. winter, beach, park tourism) and how these forms of tourism are impacted by weather and or climate (change) is covered by various disciplines (e.g. economics, geography, environmental science, meteorology, etc.). In more than half of the papers, interdisciplinary teams have worked on the manuscripts.

Report Compiled by Dr Cenk Demiroglu, Dr. Michelle, Rutty, De. David Perkins IV, Dr. Robert Steiger

Climate and Health Commission

Members Activities and Commission Actions

The goal of the Climate-Health Commission of the International Society of Biometeorology is to examine relationships between climate and human health, and in this regard, the Commission has been productive researching a

diverse array of topics. Specific examples include: bioweahter forecasting, weather/climate impacts on vector-borne disease, the creation of climate-health indices, examinations of pollution on human health, extreme climatic events such as heat waves and cold spells, climate impacts on mental health, and beyond. Members of the Commission have also worked in concert with a large spectrum of parties such as international organizations and national governments, cities and local municipalities, environmental awareness associations, and private companies. These collaborative efforts have had important impacts across the globe. To further demonstrate the Commission's world-wide impact, its members organized a special issue of the International Journal of Biometeorology focused on indoor/workplace biometeorology, with research covering nearly every continent, including Antarctica. Humans spend a large amount of time in the workplace, yet this important environment has generally been underemphasized in previous literature. The lead authors and titles of the submissions to this special issue are:

- Elizabeth Hanna: Climate Change Amplifying Indoor Heat Stress Risks across Australia's Tropical North
- Yuxia Ma: A Review of the Impact of Outdoor and Indoor Environmental Factors on Human Health in China
- Richard Wolak: Social Dynamics in an Isolated, Confined and Extreme Workplace
- Fabio Goncalves: Estimate of the Heat Index in Indoor Environments during Heat Waves in Brazilian States Capitals: Present Analysis and Future Projections in Climate Change
- Carolina Abrahão Alves: Challenging buildings' thermal performance in a warming climate: the coupling of the urban heat island effect into the São Paulo current and future weather files
- Anderson Spohr Nedel: Analysis of indoor thermal comfort in Pelotas municipality in the extreme southern of Brazil

- Ana Santurtún Zarrabeitia: Air Pollution and Occupational Accidents in Madrid, Spain
- David Sailor: Potential Overall Heat Exposure Reduction Associated with Implementation of Heat Mitigation Strategies in Los Angeles

As serious environmental issues such as climate change and air pollution have increasing effects on human well-being, the Climate-Health Commission is looking forward to continuing as an international leader in state-of-the-art climate-health research.

Report Compiled by Dr. Adam Kalkstein

Regional Reports 2017 – 2020

European Region

General Report

The European section of the ISB membership is the largest of the 6 regional sections of the ISB, with 39 registered members as of 17th June 2020. In addition to members attending highly relevant conferences, such as the European Meteorological Society (EMS) annual meeting, and representing the ISB at such events, there have been two significant activities in the period 2017-2020:

1) The 1st European Biometeorologist Regional Meeting.

This meeting was held 22-24 May 2019 in Warsaw, Poland. It was coupled with the conference “UTCI – assessment measure in human bioclimatology – 10 years of application”. 53 oral presentations and posters were discussed at the meeting. The meeting minutes were submitted to the ISB EB in 2019 after the meeting.

2) The European members special issue of IJB.

This special issue was proposed ahead of the 1st European Biometeorologist Regional Meeting. It is anticipated that the issue will be published in 2020. 17

abstracts were submitted as expressions of interest. As of 21st July 2020 one article has been accepted, one is under review and eight are being revised following a first round of review.

Future Developments and Recommendations

- Another special issue in IJB for European ISB members, perhaps in 5 years time.
- Another European meeting for ISB members. Considering the relatively large size of the group this could be a very successful event akin to the 1st European Biometeorologist Regional Meeting that was held 22-24 May 2019 in Warsaw, Poland.

Report Compiled by Dr. Simon Gosling

North America

General Report

The North American section of the ISB membership has 21 members reporting on their profile from North America. An important point is that ~77% (16) of these members are either current or past members of the Students and New Professionals group, with 50% of the 16 members recruited directly by the NA Councilor at conferences (e.g., AMS, ICUC) or from teaching or research connections. North American members work to attend highly relevant conferences, such as the American Meteorological Society (AMS) Annual Meeting, and representation at ISB related or sponsored events. Below are significant activities attended or organized in the period 2017-2020 as part of the North American section of the ISB:

1) The American Meteorological Society (AMS) Annual Meetings – Conference on Environment and Health

Important Note: The AMS Board on Environment and Health (BEH) and in the ISB have a close relationship. Past ISB President, Dr. Glenn McGregor, was instrumental in establishing and making successful the Board on Environment and Health ~12

years ago, and AMS and ISB have a continuing strong long-term relationship. Supporting this relationship between AMS and ISB is important from both a North American and global perspective to help both societies grow their research and collaborations in biometeorology. Each of the years (2018, 2019, 2020), the ISB NA American Councilor has actively promoted the ISB, and is now the Vice Chair of the Board on Environment and Health for the AMS.

AMS 2019: With sponsorship from ISB to help bring in two global speakers on biometeorological related issues.

Session Details: *“Thermal Extremes and Health: Understanding the Biometeorological Pathways from Exposure to Outcomes”*. Session Chair: Jennifer Vanos

The recorded presentations can be found [here](#).

Drs. Jay and Lucas were hosted by ISB members Kristie Ebi (BEH Chair) and Jennifer Vanos (BEH Vice Chair), as well as Dr. Kim Knowlton. Other ISB members involved in Board on Environment and Health included David Hondula, Mary Wright, and Glenn McGregor. ISB members who presented in the AMS Environment and Health Sessions include Hunter Jones, Juli Trtanj, Scott Sheridan, Ariane Middel, Andreas Matzarakis, Paul Chakalian, Peter Crank, Castle Williams, Yuliya Dzyuban, and many others throughout the full program. Members of the Environment and Health Board were informed of the upcoming Biometeorology Congress.

At the **2020 AMS meeting**, the North American Councilor met with Dr. Harinder P. S. Ahluwalia, Eng., President of the International Forum of Meteorological Societies (IFMS) to discuss the upcoming Biometeorology Congress. Further, ICB flyers were created and shared with AMS attendees.

2) International Conference on Urban Climate (New York, Aug 2018). In August of 2018, ~20 North American members of the ISB attended the International Conference on Urban Climates, presenting poster and conference presentations. The ISB and ICUC relationship is long-standing

(e.g., joint ISB-ICUC conference in Sydney in 1999 - <https://www.urban-climate.org/about-us/history-of-iauc/>).

3) Attendance at the UTCI Conference (“UTCI – assessment measure in human bioclimatology – 10 years of application”) and 1st European Biometeorologist Regional Meeting.

This meeting was held 22-24 May 2019 in Warsaw, Poland. The meeting summary was submitted to the ISB EB in 2019 after the meeting and attended by the NA Councilor with support from the ISB. At the meeting, the NA Regional Councilor shared information with the audience about the SNP



group, recruited SNP members, and presented research completed by four NA ISB members, now submitted to IJB.

Image to the left shows ISB Board Members Dr. Simon Gosling, Dr. Pablo Fernández de Arróyabe Hernáez, and Dr. Jennifer Vanos at the Institute of Meteorology and water Management in Warsaw Poland for the UTCI Conference and 1st European Biometeorologist Regional Meeting.

Future Developments and Recommendations

- Planning for the ICB in Phoenix in 2023 to ensure high participation.
- Participation in the ISB Executive Board to grow Society.
- Planning Special Journal Issue in preparation for ICB 2023.
- Significant increase on recruiting efforts and diversity of membership with new NA councilor and EB.
- Session on Biometeorology at AMS 2021 (virtual)

Report Compiled by Dr. Jennifer Vanos

Rediscovering Biometeorology in China in Recent Years

A contribution from: *Junhu Dai,^{1,2,3} Haolong Liu,¹ and Yanli Cao¹*

¹Key Laboratory of Land Surface Pattern and Simulation, Institute of Geographic Sciences and Natural Resources Research, CAS, Beijing 100101; ²University of Chinese Academy of Sciences, Beijing 100049; ³China-Pakistan Joint Research Center on Earth Sciences, CAS-HEC, Islamabad 45320.

In the past century, biometeorology, the interdisciplinary work between the biological and meteorological sciences, has occupied an important place in the modern scientific research system of China, especially after 1949 (Cao et al. 2014). It worth noting that this field of science has been undergoing renaissance under the background of strengthening ecological and environmental protection in China in recent years.

The continuous improvement of the ecological environment

In the past few decades, the government has attached great importance to ecological construction and environmental protection, and launched many very strict projects improving the ecological environment, such as the Shelter Forest System Program in Three-North (Northeast, North and Northern China) Region of China started in 1979, the Natural Forest Resources Conservation Program (NFRCP) and the Restoring Farmland into Forest Program (RFFP) (Delang and Yuan 2015) started in 1999, the ambitious blueprint of Ecological Civilization, as well as the Construction of Beautiful China Program that put forward by the central government report. Apart from these nationwide projects, there were also some key projects designed and implemented with striking regional characteristics, such as the Ecological Conservation and Restoration Project in Three-river Source Region, forest belt construction in the Yangtze River basin. All these projects have achieved great success in varying degrees. Taking the NFRCP and RFFP as examples, they have produced positive effects on biodiversity and further key programs continue to be launched, as a result, forest area, growing stock, and coverage rate all increased during the period from 2009 to 2013 (Xu 2014).

The renaissance of biometeorology in recent years

Under the above background, the research field of biometeorology has been paid closer attention to in recent few years in China for helping continuous improvement of ecological and environmental quality. The target-based assessment on actual effects for these ecological projects have been conducted systematically both for nationwide projects (Shao et al. 2017b) and regional ones (Shao et al. 2017a) recently. On one hand, this provides the material for theoretical practice in ecological and biometeorological researches. On the other hand, biometeorological theories was applied in the assessments for correcting the unsuitable ecological engineering in the course of the implementations of these projects. Related studies indicated that ecological conservation must be grounded in science. For instance, people found improper afforestation in dry lands could cause land degradation at last (Cao et al. 2010). Furthermore, it was also found in semiarid China that restoration programs could sometimes cause unintended consequences if ignore ecosystem service trade-offs (Li et al. 2021). Therefore, future ecological and environmental projects can be planned and designed more reasonably and scientifically, to avoid similar missteps to above.

Driven by the demands for government managements and decision making of these ecological and environmental practices, new signs and trends in academic community in China deserve close attention too. It is clear that biometeorology has been rediscovered in China. (1) The National Natural Science Foundation of China (NSFC) carried out reforms in building a national natural science funding system for the discipline of atmospheric sciences in 2020 to guide funding applications. Based on “problem orientation”, the most important goal for the reform was to optimize the funding layout in order to balance knowledge and application. A new sub-discipline called “ecological meteorology” was added to the new application code system, which is almost the same term as biometeorology (Liu et al. 2020). The reform aimed also to better meet the major demands for the development of the country and human society. If the applicants care about the feed-back system between atmosphere and the ecosystem on exchanges of matter,

energy and information, then the application code “D0507 ecological meteorology” is preferred. (2) Of particular concern is that China Ecological Society established “ecological meteorology” committee in January, 2019, and attracted many famous experts in this interdisciplinary field of biometeorology. There is no doubt that this initiative will greatly promote the advance of biometeorology and further strengthen its practice in the field of ecological and environmental protection (Zhou and Zhou 2021). (3) In the past two years, the government has launched more important projects in this area in a timely manner, echoing the ideas of ecological civilization mentioned in Report on the Work of the Government. For example, a new project named “Beautiful China Ecological Civilization Science and Technology” was initiated by Chinese Academy of Sciences in 2018, and hundreds of thousands scientists have been involved in the related research work, which aims to assess and diagnose the geographical basis, gaps and shortcoming for the building of a Beautiful China, to make innovations and breakthroughs in key technologies and equipment for ecological and environmental rehabilitation and resource recycling, as well as to establish and improve construction models of ecological civilization in different geographical regions in China.

Outlook

It can be predicted that, in the above context, biometeorology will develop more rapidly in China in the near future. Further ecological and environmental protection projects will be promoted and implemented in a more rational way, and finally, most probably, the harmonious coexistence between man and nature, and the sustainable development of human society in China can come true.

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Upcoming Conferences

[UN Climate Conference UK 2021](#), *in partnership with Italy*



The UK will host the 26th UN Climate Change Conference of the Parties (COP26) in Glasgow on November 1–12, 2021.

The COP26 summit will bring parties together to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. The UK is committed to working with all countries and joining forces with civil society, companies and people on the frontline of climate change to inspire climate action ahead of COP26.

European Meteorological Society Annual Meeting



September 10–14, 2021. Virtual.

Theme: Weather and climate research and services for the achievement of Sustainable Development Goals: a decade left for action

The Annual Meetings of the EMS aim at fostering exchange and cross-fertilization of ideas in the meteorological, climatological and related communities, focusing particularly on strategic issues relevant to the future of meteorology in Europe.

Until 2016, the EMS Annual Meetings were organised alternately with the European Conference on Applied Climatology (ECAC) and the European Conference on Applications of Meteorology (ECAM). In light of the growing role within and engagement with society, and the increasing intertwined nature of weather and climate services a new concept of the annual conference was developed with all stakeholders to meet these challenges, and since successfully implemented.

The alternating focus on weather and climate from year to year will be continued and highlighted through the conference theme. The theme for the 2021 virtual EMS Annual Meeting is Weather and climate research and services for the achievement of Sustainable Development Goals: a decade left for action.

American Meteorological Society Annual Meeting



Houston, TX 23–27 January 2022 (in-person)

Environmental Security: weather, water and climate for a more secure world

“We are seeing a growing influence of weather, water, and climate on the security of nations and their peoples due to a rapidly increasing global population (including a growing percentage that are migrating to coastal areas and/or away from areas of crises) coupled with evolving human and national security impacts from the disruption of weather and climate norms.

*The theme of **Environmental Security** will inform AMS members and meeting attendees on the connections between our scientific field and larger societal impacts, and it will demonstrate how important our contributions are to the basic security needs of the United States and the world, particularly for vulnerable groups.*

The 102nd Annual Meeting provides an opportunity to bring together world-class experts on extreme weather and climate with researchers in the fields of water quality/scarcity, energy, food, and health/diseases. This two-way exchange of expertise will inspire new insights into the linkages and impacts among these diverse scientific disciplines and illustrate how water, weather, and climate research can help shape policy to benefit all areas of environmental security.” – AMS, 2021

International Conference on Urban Climate (ICUC-11)



The next International Conference on Urban Climate (ICUC-11) will take place in Sydney, Australia, Aug 30 – Sept 3, 2022.

Theme: “Cities as Living Labs: Climate, Vulnerability, and Multidisciplinary Solutions”

Congratulations!

Congratulations to Dr. Victor Sinkalu who has been promoted to Professor of Veterinary Physiology at Ahmadu Bello University.

Congratulations to Dr. Ariane Middel who was awarded the 2021 John Russell Mather Paper of the Year Award for the Climate Speciality Group of the American Association of Geographers for her paper: “*Solar reflective pavements-A policy panacea to heat mitigation?*” by Ariane Middel, V Kelly Turner, Florian A Schneider, Yujia Zhang, Matthew Stiller in Environmental Research Letters. <https://iopscience.iop.org/article/10.1088/1748-9326/ab87d4>

*Full list of signatories to the IFMS Statement on Climate Change:

1. Alpine-Adriatic Meteorological Society
2. American Meteorological Society
3. Asociación Meteorológica Española (Spanish Meteorological Association)
4. Australian Meteorological and Oceanographic Society
5. Canadian Meteorological and Oceanography Society
6. Centro Argentino de Meteorólogos (Argentine Center of Meteorologists)
7. Česká Meteorologická Společnost (Czech Meteorological Society)
8. Chinese Meteorological Society
9. Copernicus Climate Change Service
10. Dansk Meteorologisk Selskab (Danish Meteorological Society)
11. Deutsche Meteorologische Gesellschaft (German Meteorological Society)
12. Eesti Meteoroloogia Selts (Estonian Meteorological Society)
13. Ethiopian Meteorological Society
14. European Centre for Medium-Range Weather Forecasts
15. European Meteorological Society
16. European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)
17. Federación Latinoamericana e Ibérica de Sociedades de Meteorología (The Federation of Latin American and Iberian Meteorological Societies)
18. International Association for Urban Climate
19. International Association of Broadcast Meteorology
20. International Association of Meteorology and Atmospheric Sciences
21. International Forum of Meteorological Societies
22. International Society of Biometeorology
23. Irish Meteorological Society
24. L'Associazione Italiana di Scienze dell'Atmosfera e Meteorologia (Italian Association of Atmospheric Sciences and Meteorology)
25. Météo et Climat (French Meteorological Society)
26. Meteorological Society of New Zealand
27. Nederlandse Vereniging ter Bevordering van de Meteorologie (Dutch Meteorological Society)
28. Österreichische Gesellschaft für Meteorologie (Austrian Society for Meteorology)

29. Philippine Meteorological Society
30. Royal Meteorological Society
31. Rete delle Università per lo Sviluppo sostenibile (Network of Universities for Sustainable Development)
32. Schweizerische Gesellschaft für Meteorologie (Swiss Society of Meteorology)
33. Slovenská Meteorologická Spoločnosť (Slovak Meteorological Society)
34. Slovensko Meteorološko Društvo (Slovenian Meteorological Society)
35. Societatea Meteorologică Română (Romanian Meteorological Society)
36. Sociedad Amigos Del Viento (Uruguayan Meteorology, Environment and Development Wind Friendly Society)
37. Società Italiana per le Scienze del Clima (Italian Society for Climate Sciences)
38. Società Meteorologica Italiana (Italian Meteorological Society)
39. Sudanese Meteorological Society
40. Svenska Meteorologiska Sällskapet (Swedish Meteorological Society)
41. Tanzanian Meteorological Society
42. Uganda National Meteorological Society
43. Veðurfræðifélagið (Icelandic Meteorological Society)