

IFMS NEWSLETTER

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IFMS

Connecting National and Regional
Meteorological Societies Worldwide



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Preamble



IFMS Building Capacity around the World through NMSocs

Dr. Harinder P. S. Ahluwalia – President of IFMS

In the December 22, 2020 issue of the Scientific American, Andrea Thompson wrote “the last year has been a standout year for all the wrong reasons, including its devastating natural disasters. Wildfires have ravaged the western U.S. and many other parts of the world, and tropical cyclones have popped up left and right, with several causing significant damage to coastal areas”. In addition to the loss of life, as per NOAA, the cost of these losses exceeds the \$1 billion threshold in just the US.

Though they are called natural disasters, the toll they take comes in part from human actions. The buildup of communities in vulnerable areas, such as along the coasts and fire-prone areas, means more people are in harm’s way. Climate change, fueled by greenhouse gas emissions from energy use and industrial processes, has also upped the ante. Hotter weather dries out the grasses and forest debris that can ignite, fueling bigger and longer-lasting wildfires. And rising seas and heavier downpours mean higher flood risks during storms. The terrible experience the human kind has gathered from the Covid-19 pandemic can make us smart enough to reduce, if not completely eradicate, the impending loss due to future climate changes.

The devastating losses caused by severe weather can be significantly reduced by more accurate and timely weather forecasts and Early Warning Systems in all nations, including developing and least developed countries. This is why IFMS has made “contributing to capacity building” as one of its major objectives. *We believe that National Meteorological Societies (NMSocs) can play an important role in achieving this objective.* Therefore, we would like to see every country have an NMSoc, no matter what its size is. The activities to be carried out by each society can be tailored to fit the size of the professional community it needs to serve. Whereas one time it may have been difficult to justify an NMSoc in a very small country, today, thanks to organizations like the Regional Meteorological Societies (RMSs), e.g., European Meteorological Society (EMS) and IFMS, even Andorra (population 77,265, NMSoc created in 2006 and has 15 members) and Iceland (population 341,243, NMSoc created in the 1950s and has 25 members) have an NMSoc. This has become even more possible due to the guidance being provided by IFMS to start an NMSoc and additional opportunities for collaboration and learning provided by IFMS and RMSs through Conferences, Journals, Newsletters, Webinars and Education & Training (E&T) Programs, etc.

WMO has a membership of **187 States** and **6 Territories**. However, there are only approximately 70 NMSocs which means that there is a large scope in creating new societies. In addition, two RMSs, EMS and FLISMET, currently exist. A third RMS, the African Meteorological Society, has been created and is being registered in Addis Ababa, Ethiopia where WMO’s Region 1 Office is located. In cooperation with the existing Societies in Asia and ASEAN countries, we would like to create an Asian Meteorological Society. Similarly, we also would like to create a Regional Meteorological Society in the South Pacific Region.

On their own, the professionals in a given country can achieve only so much, but as a part of their NMSoc, they can achieve a lot more. In addition, by their NMSoc becoming a part of an RMS, they can work on a continental level and finally extend their horizon to the whole world through membership of IFMS.

We have started a strong campaign to create NMSocs in those countries where they do not exist today and we are offering assistance to strengthen the NMSocs in those ones where they do exist. We conducted a Webinar on

April 5, 2021 on “Why and How to Create an NMSoc” and we plan to repeat it in the October-November, 2021 time frame either in English or French.

In addition, we also offer our members a great opportunity to work with our associate members, such as American Geophysical Union (**AGU**), International Society of Biometeorology (**ISB**), International Association of Broadcast Meteorology (**IABM**), International Association of Urban Climate (**IAUC**), International Association of Meteorology and Atmospheric Sciences (**IAMAS**) and Association of Certified Meteorologists (**ACM**). Our synergy with these Societies is obvious and, in our Newsletters, we will be including some articles from these Societies related to what they do and how we can cooperate. In this edition, we have articles by AGU and ISB.

Finally, we would like all readers to contribute meaningful articles for which we have included some instructions in this Newsletter.

IFMS Global Meeting #7



IFMS’ role in creating collaboration between National (and Regional) Meteorological societies and be a unifying force for making progress in a coordinated manner is quite obvious.

In order to meet that goal, we would like to consult our member societies about the future activities of IFMS. IFMS is planning to have a Global Meeting of its members and any observers from non-member societies in the second half of November. More specific dates will be announced before mid-October, 2021. This meeting will be conducted like a conference and there will be many sessions spread over a week’s period at different times of the day to be convenient for all members around the world. The Conference will be recorded so that those for whom a given session is at an odd time, they can watch it later. One session will allow all member societies make a presentation on their society in approximately 5 minutes each. We will also have a session on Education and Training. In another session we will make a presentation on the planned activities of IFMS and have an open discussion on what the member societies think IFMS’ role should be. Please show your intention of making a presentation and send us the abstract. We are also planning to have a session on some important topic such as the role of Early Warning Systems in the era of Global Warming and Climate Change.



WMO Unified Policy for International Exchange of Earth System Data

Public-Private-Academic Sector Collaboration

Dr. Jack Hayes – Councilor – IFMS Region IV



This article draws extensively from Cg-Ext (2021)/Doc 4.1 – Draft 1

Global Warming and increasing incidence and impact of severe weather are increasing the need for improved weather forecasts and warnings. Advances in the science used to make these forecasts and warnings are strengthening the potential for services provided to societies worldwide by the global weather enterprise. The critical foundation for these services is data (observations, forecasts and warnings) and their exchange, and there continues a critical need to increase the collection and exchange of these data.

At the 18th WMO Congress in 2019, and the World Meteorological Organization (WMO) committed to addressing this need, by improving the policies for international exchange of earth system data. A first step at the Congress was passage of the Geneva Convention which included a commitment to strengthening the engagement and collaboration among the Public, Private and Academic Sectors. Afterward, a thorough review of the WMO policies governing the exchange of weather, water and climate data was initiated. This effort has produced a draft WMO policy designed to unify the policies and procedures associated with the exchange of all earth system data. This draft policy has been distributed and it will be considered at the WMO Extraordinary Congress planned for this October.

This article presents a brief overview of current data exchange policies and the draft proposal to unify them into a single data exchange policy that will be considered at the WMO Congress. It recommends IFMS members become familiar with and support WMO action to implement a data exchange policy which will strengthen services and benefit societies worldwide.

Unifying international data exchange

Currently, three WMO resolutions govern data exchange:

- **Resolution 40 (Cg-XII)** — Exchange of Meteorological and Related Data and Products,
- **Resolution 25 (Cg-XIII)** — Exchange of Hydrological Data and Products,
- **Resolution 60 (Cg-17)** — Exchange of Climate Data and Products.

Developed at different times to address specific needs for the collection and exchange of earth system data, it is not surprising that there are differences among them and, in some cases a lack of clarity and consistency in how they are used. The review directed by the WMO Congress was designed to address these weaknesses and provide a forward-looking policy which leverages technology and innovation and better meets the weather enterprise needs for earth system information. After two years of effort

that entrained experts worldwide from all three sectors, a draft policy entitled “WMO Unified Policy for the International Exchange of Earth System Data”, has been developed.

The draft policy on the international exchange of Earth system data:

As a fundamental principle of WMO and in consonance with the expanding requirements for its scientific and technical expertise, WMO commits itself to broadening and enhancing the free and unrestricted international exchange of Earth system data.

WMO will maintain a two-tiered approach to the international provision and exchange of Earth system data via the following practice:

- (1) Provision on a **free and unrestricted basis** of the **core data** that are necessary for services in support of the protection of life and property and for the well-being of all nations, which are required to monitor and predict seamlessly and accurately weather, climate, water and related environmental conditions.
- (2) Provision of the **recommended data** that are required to support Earth system monitoring and prediction activities at the global, regional and national levels and to further assist other Members with the provision of weather, climate, water and related environmental services in their States and Territories.

Members should provide without charge access to all recommended data exchanged under the auspices of WMO to public research and education communities, for their non-commercial activities. All users of Earth system data are encouraged to honor reasonable requests for attribution of input data wherever possible.

Free and unrestricted means available for use, re-use and sharing without charge and with no conditions on use. **Without charge**, in the context of this resolution, means at no more than the cost of reproduction and delivery, without charge for the data and products themselves. In the context of this resolution, **conditions on use** may be applied only to recommended data; such conditions may be applied using licenses. Note that **attribution** is not considered a condition on data use and is strongly encouraged in all cases.

Guiding principles for data exchange between public and private sectors are also included of core and recommended data. For core data, the draft policy reinstates the obligation of ‘free and unrestricted’ international exchange of core data and provides a detailed description of core data. Furthermore, the new definition of ‘free and unrestricted’ makes it clear that these data shall be freely available, with no conditions on use. For the exchange of core data, the draft policy includes direction that: users from all sectors — public, private and academic — be granted free and unrestricted access, without charge and with no conditions on use; and core data sets purchased from the private sector are appropriately licensed for free and unrestricted international exchange. For provision and exchange of recommended data, the draft policy encourages Members to exchange them freely internationally with no restrictions, though such data sets may have conditions on their use.

Recommended IFMS actions in support of WMO and its policies

IFMS can and should participate in the ongoing development of this new WMO Data Exchange policy. Members are strongly encouraged to review and become familiar with the draft WMO policy, to provide comments to their country's Permanent Representative with WMO and to work with NMHSs to facilitate a dialogue among the public, academic and private sectors active in their countries as advocated in the Geneva Declaration.

Education and Training (E&T)

Education and Training (**E&T**) are very important components for capacity building; especially so in Developing Countries (**DC**) and Least Developed Countries (**LDC**). We have formed a team of some outstanding experts in the field of meteorology. Our objective is to ensure that our work helps as many of our member societies and through them as many of their members as possible to learn from identified websites and courses available on them. We believe that if IFMS can make a central repository of Training Material available from various sources, that will be a very useful contribution to Capacity Building effort of WMO and the World Bank (**WB**). In addition, if after doing a Gap Analysis between what is available and what is required, we determine that some courses should be developed and we see some interested societies and their members prepared to develop any of those courses, we will be pleased to coordinate that development effort and involve members of other interested societies. Our stress on E&T is illustrated by the fact that out of the eight Webinars we have conducted till now, three were on E&T. We also plan to have a session on E&T in our forthcoming IFMS Global Meeting #07 (**IGM-07**).



Since by preparing training courses for the Teacher and Students we can get a multiplying effect, we are paying special attention to this area right now. We also believe that some societies already have such programs and others are planning to start them. We are planning to coordinate these efforts through our E&T Committee.

Please let us know your views about what direction our E&T Program should take to be most valuable to your society. Please also let us know if you are working on developing any training programs for your country. We might be able to find a partner to assist in developing that program.

We are also looking for additional members for this E&T Committee. Please offer your volunteer services.

Climate Change Continues to be Evident Across UK

The UK's climate has continued to warm, with 2020 the first year to have temperature, rainfall and sunshine rankings all in the top 10.

The latest analysis of the UK climate, *State of the UK Climate 2020* published in The Royal Meteorological Society's '[International Journal of Climatology](#)', has shown that climate change is already being felt across the UK. All of the top-ten warmest years for the UK in records back to 1884 have occurred since 2002, and, for central England, the 21st century so far has been warmer than the previous three centuries. The last 30-year period (1991-2020) has been 0.9°C warmer than the preceding 30 years (1961-1990). The warming trend is evident across all months and all countries in the UK. The greatest warming compared to 1961-1990 has been across the east Midlands and East Anglia where average annual temperatures have increased by more than 1°C, with the least warming around western coastal fringes and parts of Northern Ireland and Scotland. As well as increased temperatures, the UK has been on average 6% wetter over the last 30 years (1991-2020) than the preceding 30 years (1961-1990). Six of the ten wettest years for the UK in a series from 1862 have occurred since 1998.

2020 was the first year that the annual values for rainfall, temperature and sunshine were all in the top ten in the same year. 2020 was third warmest, fifth wettest and eighth sunniest on record for the UK. Lead author and Senior Climate Scientist at the Met Office, Mike Kendon, said: "2020 was another notable year for the UK climate, with records broken for daily rainfall and monthly sunshine hours. Average temperatures for the UK continue to climb, with nearly a degree of warming when comparing the most recent 30 years with the preceding 30-year period. Last year saw some significant weather extremes including severe flooding from heavy rainfall in February and a major heatwave in early August."

Storms [Ciara](#) and [Dennis](#), hitting the UK only one week apart, were part of the UK's wettest February on record, and brought devastating flooding affecting many homes and businesses. Most of the UK received more than twice the February long-term average rainfall, with 300% quite widely in the north and west, and over 400% in parts of the Pennines.

The UK has had its wettest February in 2020, December in 2015, April and June in 2012 and November in 2009 – five out of 12 months – in little over a decade.

It was a dry and exceptionally sunny spring in 2020, especially across the southern half of the UK with over 150% of normal sunshine across England and Wales. The UK recorded 626 hours, 144% of the 1981-2010 long-term average. This was the UK's sunniest spring on record by a very wide margin, and remarkably also sunnier than all but three summers in UK sunshine series from 1919. May 2020 was England's driest calendar month since August 1995, with the dry weather making conditions difficult for farmers and growers.

Other notable weather extremes from 2020 include [8 further named storms](#) (in addition to Ciara and Dennis), the UK's third warmest day on record with 37.8°C recorded at Heathrow on 31 July, the southern England heatwave in August, extreme rain fall in Norfolk on 16th August and exceptionally heavy widespread rainfall on 3 October making this the UK's wettest day on

record.

Prof Liz Bentley, Chief Executive of the [Royal Meteorological Society](#), said: “We recognise the importance of this annual report, published in our International Journal of Climatology, for climate monitoring and collating observations in the UK. This rich legacy of observational data in the UK, stretching as far back as the 17th century, is extremely valuable for ongoing work in climate science, highlighting our changing climate in the UK and our understanding of climate trends, variations and extremes. “Publishing this data and updates to the trends in an international, peer reviewed journal offers scrutiny and validation of the work, ensures there is a permanent record of the report and increases the reach of this important work that can be cited in other scientific studies. The report can help to update government, businesses, scientists and the public about changes in our climate and the impacts. I’d like to take this opportunity to congratulate and thank the authors who compiled this report.”

The average sea-surface temperature in 2020 for near-coast waters around the UK was 11.9°C, 0.5°C above the 1981-2010 long-term average. This was the eighth-warmest year for UK near-coast sea-surface temperatures in records dating back to 1870. In the most recent decade (2011-2020) sea-surface temperatures have been 0.7°C warmer than the 1961–1990 average, and nine of the ten warmest years in near-coast sea-surface temperatures have occurred since 2002. Sea level rise has accelerated in the UK over recent years. The rate of sea level rise has been 1.5mm/yr from the start of the 20th century, however, for the period 1993-2019 it has increased to over 3mm/yr.

Professor Ed Hill, Director the UK’s [National Oceanography Centre](#), the organisation which manages the global database of average sea levels from tide gauges around the world, commented: “Based on five long-running stations dating back to the beginning of the 20th century, UK sea level has risen by nearly 2 cm per decade over the 60 years to 2018 and an immediate consequence will be higher extreme sea levels during high tides and storms which cause flooding. It’s encouraging to see that investments are being made to prioritise upgrading five sea level index sites. This will enable the UK to contribute to accurate scientific measurements tracking global sea levels and variability.” These climate variables all have an impact on UK wildlife, with 2020 seeing notably early first leaf dates and also earlier bare tree dates across the UK of four common shrub/tree species: Elder, Hawthorn, Silver Birch and Pedunculate Oak. Elder first leaf was the earliest in its series (15.9 days earlier than the 1999-2019 baseline), occurring in late February. Oak first leaf was also the earliest in its series (8.9 days earlier than the baseline). The early first leaf dates were associated with generally mild conditions through January and February and some notable warmth and sunshine in April.

Professor Tim Sparks, Nature’s Calendar founder and contributing author from the [Woodland Trust](#), said: “Nature's Calendar has now coordinated data collection for over 20 years, and can combine that with records going back to the 18th century. These clearly show how responsive nature has been to a changing climate and are a clear indicator of future change to our natural environment.”

UK 2020 climate extremes

Table 1: UK 2000 Climate Extremes:

Extreme	Observation	Date	Station
Highest daily maximum temperature (09-09 GMT)	37.8°C	31 July	Heathrow, Greater London
Lowest daily minimum temperature (09-09 GMT)	-10.2°C	13 February 30 December	Braemar, Aberdeenshire & Dalwhinnie, Inverness-shire
Lowest daily maximum temperature (09-09 GMT)	-1.9°C	30 December	Carlisle, Cumbria
Highest daily minimum temperature (09-09 GMT)	22.3°C	8 August	Langdon Bay, Kent
Lowest grass minimum temperature (09-09 GMT)	-12.7°C	31 December	Aboyne, Aberdeenshire
Highest daily rainfall (09-09 GMT)	239.9mm	16 August	East Wretham, Norfolk
Greatest snow depth (09 GMT)	23cm	24 February	Copley, County Durham
Highest daily sunshine	16.8hr	16 June	Fair Isle, Shetland
Highest gust speed	92Kt 106mph	27 December	Needles Old Battery, Isle of Wight
Highest gust speed (mountain)	115Kt 132mph	3 February	Cairngorm Summit, Inverness-shire



Power of Collaboration

Why have a National Meteorological or Hydrometeorological Society?

If you do not have one, you might not be knowing what you are missing!

In order to safeguard the society at large and fight the perilous effects of Global Warming and Climate Change (GW&CC), it is important to build capacity in each country. With limited resources available to the National Meteorological and Hydrological Services (NMHS), there is a need for a volunteer-based organization in each country which can assist NHMS in creating capacity. Given a feeling of accomplishment and assistance to the society at large, very capable current and retired professionals can assist in capacity building at an optimum cost.

In addition, it is important to create and promote Public Sector and Private Sector Partnership (PPP) and also Public, Private and Academic (PPA) collaboration to achieve greater success.

National Meteorological Societies (NMSoc) are ideally suited to achieve both above objectives because they have membership from all three sectors - PPA. Detailed benefits of having an NMSocs can be found on the IFMS Website.

IFMS believes that because of all the benefits of an NMSoc, every country – no matter how big or

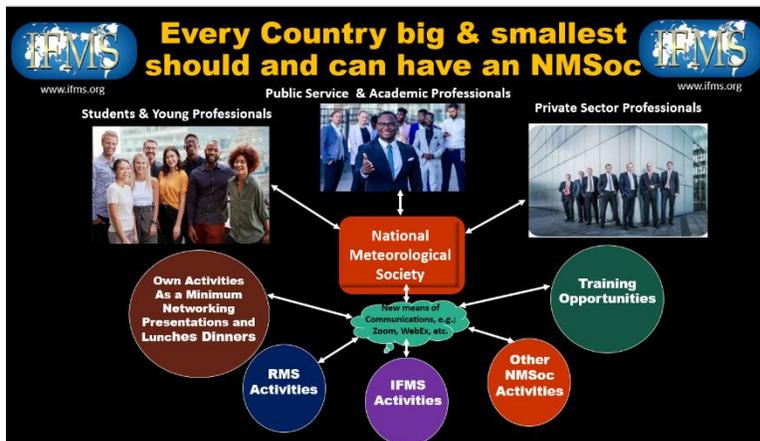
CREATE YOUR OWN NMSOC IF YOU DO NOT HAVE ONE YET!



how small – can have such a Society. Whereas one time you were on your own, today, the activities of IFMS and Regional Meteorological Societies (RMSs) like EMS, FLISMET & AfMS as well as the modern

means of communication and being able to conduct meetings and conferences without having to travel and spend a lot of time and money, makes it feasible to have an NMSoc even for a small

country (see the adjoining picture). Finally, only NMSocs can become members of IFMS and RMSs. There-fore, if your country does not have an NMSOc, you are missing a great opportunity of Capacity Building.



In conclusion, having an NMSoc is a very useful addition to the capacity and knowledge building

in your country. It is important that these societies become members of their RMS and IFMS to benefit on regional and world-wide arena.

We strongly urge you to start an NMSoc in your country which in turn becomes member of IFMS and RMS to strengthen and grow the profession of Hydrometeorology in your nation.

IFMS Detailed Survey

If not yet done, please complete it as soon as possible!



In order to fully understand the status of all NMSocs with respect to various aspects of their operation, a Survey is underway. A Report will be published to document the results and we will use those results to make an even better-defined Value Proposition. NMSocs will learn to fine tune their activities.

We very warmly thank the following 22 NMSocs which have completed the Survey already.

(1) Tanzania Meteorological Society, (2) Ethiopian Meteorological Society, (3) Sudanese Meteorological Society (SUMS), (4) American Meteorological Society (AMS), (5) CAM Centro Argentino de Meteorólogos, (6) Hungarian Meteorological Society (in Hungarian Magyar Meteorológiai Társaság), (7) Societa' Meteorologica Italiana (Italian Meteorological Society), (8) Canadian Meteorological and Oceanographic Society (CMOS), (9) Nigerian Meteorological Society (NMetS), (10) Indian Meteorological Society, (11) Meteorological Society of New Zealand, (12) Royal Meteorological Society, (13) Australian Meteorological and Oceanographic Society, (14) Meteorological Society of Japan, (15) Czech Meteorological Society, (16) European Meteorological Society (EMS), (17) Philippine Meteorological Society, Inc., (18) Geofyysikkojen liitto (Finland), (19) Sociedad Cubana de Meteorología (SOMETCUBA), (20) Swedish Meteorological Society, (21) Veðurfræðifélagið (Icelandic Meteorological Society), (22) Uganda Meteorological and Allied Professionals Association.

Representatives of all other societies whether you are currently IFMS member or not, are strongly requested to fill the survey available on the following link:

https://docs.google.com/forms/d/e/1FAIpQLSfOCmivP1X0S23sET1OZFPClJk3N81dNfIRMu37SR1XFJ93g/viewform?usp=sf_link

This will help us greatly in chalking out our future direction and provide very useful information to us and all NMSoc about activities of others and how we can help each other in building Capacity around the world.



Creating Collaboration with Associate Member Societies



Dr. Harinder P. S. Ahluwalia – President of IFMS

1 Introduction

IFMS is an organization which unites all those societies which are directly or indirectly related to the field of meteorology. It leverages the strengths of stronger societies to help each other and more so to help developing Societies to become stronger through E&T Programs so that they can participate in S&T collaboration with confidence and improve their capabilities.

We believe that there are other societies which deal with the different aspects of meteorology which can contribute to the betterment of overall society at large. Normally, any given society would concentrate mostly on its own mandate but an organization which has an objective to leverage the strengths of all related societies would explore opportunities to select the best characteristics of each society to create a whole which is much greater than the sum of all individual societies.

As we all know, there are the following six Societies which work in the areas closely related to meteorology and they are Associate Members of IFMS. They have synergy with us in various different ways which we need to explore and create cooperation in. *I have written to them to update their information on our website and also asking them to suggest ways in which we could collaborate.* It is quite obvious that due to meteorology being a major common factor, there must be a number of ways we can leverage the strengths of each other in helping the Society at large.

The purpose of this article is to let our members be aware of these very important organizations with which they can collaborate in various aspects of meteorology and atmospheric sciences.

2 Summary of Activities of related Associate Member Societies

The following are the missions of our Associate Member Societies which have activities world-wide. This information has been taken from IFMS Website.

2.1 American Geophysical Union (AGU)

The **American Geophysical Union (AGU)** supports and inspires a global community of individuals and organizations interested in advancing discovery in Earth and space sciences and its benefit for humanity and the environment.

As they look to the decade ahead, their mission is focused on supporting individuals in their scientific endeavors and on convening groups interested in working together on discovery and

solution-based science. They are also dedicated to educating and inspiring the next generation of scientists needed to advance this mission.

Their mission is to meld their deep commitment to scientific discovery with an urgent desire to contribute to solution pathways for 21st century societal challenges for this and the next generation. They are committed to a culture infused with the following values: Excellence, Integrity, Respect, Diversity, Collaboration and Science Education and Outreach.

2.2 Association of Certified Meteorologists (ACM)

They were previously known as **National Council of Industrial Meteorologists (NCIM)**. The purpose and objective of ACM are to:

- Promote professional standards to uphold the dignity and honor of meteorological consulting through the application of sound scientific principles and ethical business practices,
- Serve society by providing thought leadership on issues of international significance relevant to the practice of professional meteorology,
- Create opportunities for networking, development of business partnerships, and peer mentoring with colleagues to advance the business interests of members and their organizations,
- Cooperate with other weather, climate and water related professional societies to promote meteorological consulting best practices and the interests of constituent private sector **Certified Consulting Meteorologists (CCMs)**.

2.3 International Association of Broadcast Meteorology (IABM)

The mission statement of **International Association of Broadcast Meteorology (IABM)** is:

- To represent the worldwide broadcast meteorology community,
- To collaboratively work with WMO through our Observer Status, and with other appropriate organizations including IFMS, SMF/FIM, AMS, EMS and NMHSs, to support and promote the profession of Broadcast Meteorology,
- To support and encourage members in the improved delivery of weather and climate services to the public, especially those from developing countries,
- To promote, encourage and organize conferences and other opportunities for members to network and engage in Continuing Professional Development,
- To actively encourage members to maintain the highest professional standards through promoting appropriate initiatives and mechanisms,

- *To encourage members to contribute to disaster risk reduction through the provision of timely and accurate weather forecasts and warnings to the public,*
- To actively support and develop regional sub-groups to enhance the focus on national and regional weather broadcast issues.

2.4 International Association of Meteorology and Atmospheric Sciences (IAMAS)

The International Association of Meteorology and Atmospheric Sciences (IAMAS) is one of the eight associations dealing with the Earth system and its environs that make up the International Union of Geodesy and Geophysics (IUGG).

The scope of IAMAS includes the atmospheres of the **Earth and other planets**. IAMAS is made up of ten international commissions and one committee which together play a major role in implementing IAMAS' activities. The ten commissions cover: Atmospheric Chemistry and Global Pollution (ICACGP), Atmospheric Electricity (ICAE), Climate (ICCL), Clouds and Precipitation (ICCP), Dynamical Meteorology (ICDM), the Middle Atmosphere (ICMA), stratospheric Ozone (IOC), Planetary Atmospheres and their Evolution (ICPAE), Polar Meteorology (ICPM), and atmospheric Radiation (IRC). The Committee on Nucleation and Atmospheric Aerosols (CNAA) brings together scientists covering the areas of Nucleation Theory and Experiment, Tropospheric and stratospheric aerosols, Cloud Drop and Ice Nucleation and Aerosol-Climate Interactions.

Many of these commissions play international leadership roles in their specialist areas [see <http://www.iamas.org/commissions-within-iamas/>]. The commissions provide an important supplement and extension to the leadership and research role of the World Meteorological Organization (WMO), which is the governmental body with a scientific scope that is comparable to that of IAMAS.

2.5 International Association for Urban Climate (IAUC)

The International Association for Urban Climate (IAUC) is an international, non-governmental organization that represents scientists and other experts with interests in urban climate and meteorology - a very important aspect for the betterment of the society at large. They have over 1000 members from 100 countries. They are researchers, academics, urban designers, architects, health scientists, meteorologists, climatologists, air quality scientists. They represent educational, research, government, non-profit and private sector interests.

Their mission: to represent the urban climatological and meteorological community internationally, providing a forum for discussion for those in the community through triennial

meetings and to support communication among its members via electronic means. Their primary goals are to:

- Foster an interest in education and scholarship related to urban climate and meteorology.
- Facilitate communication with policy makers and applied end-users of urban meteorological and climatological data.
- Encourage the use of urban climate and meteorological information into the design, planning and operation of urban areas in order they may become safer, healthier and more sustainable.

2.6 International Society of Biometeorology (ISB)

The **International Society of Biometeorology (ISB)** provides an international forum for the promotion of interdisciplinary collaboration between meteorologists, health professionals, biologists, climatologists, ecologists, and other scientists.

The general objectives of the International Society of Biometeorology (ISB) are:

- The development of biometeorology, which is an interdisciplinary science studying the interactions between atmospheric processes and living organisms (plants, animals, and humans)
- The dissemination of knowledge relevant to the relation between meteorological factors, physical-chemical systems and living organisms
- The exchange of current information on the physical environment of plants, animals and humans, between ISB members (from some 100 disciplines)

3 Potential Cooperation Areas

IFMS believes that the ultimate goal of benefitting the society at large and keeping it safe from impending disasters caused by Global Warming and Climate Change is served better through collaboration with all synergetic societies. The above six organizations which can provide the following benefits to our members are important organizations to collaborate with. We plan to explore the areas of cooperation with each of these societies. However, following are some current ideas.

AGU looks to the decade ahead and its mission is focused on supporting individuals in their scientific endeavors and on convening groups interested in working together on discovery and solution-based science. Their capability and experience can be leveraged by IFMS not only to work with them but also with other meteorological societies and potential partners listed in Section 2 above.

With **ACMs** mission to promote professional standards to uphold the dignity and honor of meteorological consulting through the application of sound scientific principles and ethical business practices is very much applicable to IFMS members. They serve society at large by providing thought leadership on issues of international significance relevant to the practice of professional meteorology, and they create opportunities for networking and partnerships. All these activities are of interest to IFMS members.

IABM endeavors to represent the worldwide broadcast meteorology community to support and encourage members in the improved delivery of weather and climate services to the public, especially those from developing countries. IFMS believes that in addition to providing timely warnings about impending adverse weather, better means of educating public, bureaucrats and politicians are required to convince them to support investment in improving infrastructure for weather data collection and weather forecasting capabilities. The return on investment will be multifold. IABM with its capability to develop and convey such a message is a very important partner for us.

IAMAS deals with Atmospheric Chemistry and Global Pollution (ICACGP), Atmospheric Electricity (ICAE), Climate (ICCL), Clouds and Precipitation (ICCP), Dynamical Meteorology (ICDM), the Middle Atmosphere (ICMA), stratospheric Ozone (IOC), Planetary Atmospheres and their Evolution (ICPAE), Polar Meteorology (ICPM), atmospheric Radiation (IRC) and Nucleation and Atmospheric Aerosols (CNAA). All these areas of great importance to meteorologists. Therefore, collaboration with IAMAS can be quite fruitful.

IAUC represents scientists and other experts with interests in urban climate and meteorology and their membership represents educational, research, government, non-profit and private sector interests. Their mission is to represent the urban climatological and meteorological community internationally, to foster an interest in education and scholarship related to urban climate and meteorology. Again, all these areas are of great importance for health and prosperity and are of great interest to IFMS members.

Finally, **ISB** provides an international forum for the promotion of interdisciplinary collaboration between meteorologists, health professionals, biologists, climatologists, ecologists, and other scientists. The activities of ISB are related to the effects of climate on health, an area very important for society.

4 Conclusions

The mission of IFMS is to build capacity around the world against negative effects of Global Warming and Climate Change and by leveraging and creating collaborations among related

professionals. In order to achieve that we need to explore what capabilities exist in our member and associate member societies.

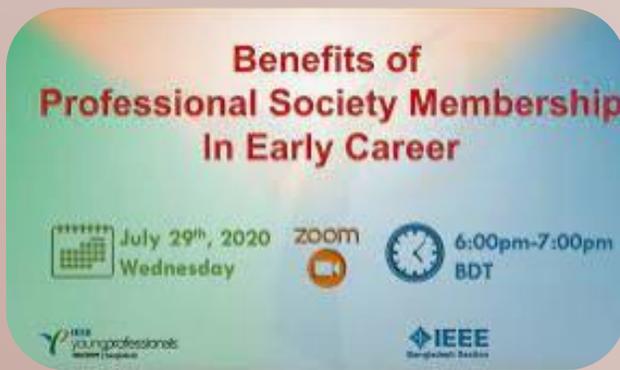
We are just starting to explore the synergy and potential collaboration with these societies. We have contacted these societies to first introduce themselves to our membership and others who receive our Newsletter and then we will explore the areas in which we can collaborate. It is a medium-term project and its success will produce significant benefits for society at large in terms of strengthening R&D through collaboration and knowledge dissemination.

We have asked these societies to provide articles starting with their introduction followed by potential areas of collaboration in subsequent Newsletters. In this edition of our Newsletter (NL), we are carrying short articles from AGU and ISB. In subsequent NLS, we will carry similar articles from other four societies. This will be followed by exploratory articles on areas of potential collaboration. Any ideas from our members and those from these associate members would be greatly appreciated.

Membership of IFMS and Creating New NMSocs

We urge all existing societies to become a member of IFMS despite being a member of your Regional Society. Regional Societies are continental in nature, whereas IFMS covers the entire world. It provides you a forum for collaboration with any society in the world and if you are a larger society and are interested in helping developing and still to be developed societies, you should certainly become a member of IFMS.

If your country does not have a society, probably you do not know what you are missing. IFMS assists National HydroMet Services or other qualified professionals (e.g., University staff) in creating an NMSoc in their country which can provide great benefits to them. Please note that, whereas we expect financially strong Societies to make some financial contribution to IFMS, there is no mandatory fee to join IFMS.



IFMS has assisted Africans in creating the African Meteorological Society and formalities required for registering the society in Addis Ababa (where its headquarters will be located), have been completed. The final paper work and the final application to get registered should be submitted during the week of October 18, 2021. As soon as it is registered, we will plan for its inauguration.

We are assisting Cameroon and Sierra Leon to create their own Societies. We are also encouraging other countries to start their own society as soon as possible so that they can take advantage of the services provided by IFMS and those of AfMS once it starts functioning. We should soon be encouraging Asian Meteorological Societies to create an Asian Meteorological Society and also create NMSocs in those countries where they do not exist.



An Article on AGU Background Provided By AGU



As we sit here today, the effects of climate change are playing out all over the world. From devastating fires to unprecedented flooding to extreme heat, we are seeing firsthand that human activities are changing Earth's climate and causing disruptive societal and ecological impacts. AGU and its members are at the forefront of much of the science around the climate crisis, but it is only through broad and inclusive partnerships that we will be able to advance both discovery and solution science to accelerate knowledge and address the challenges ahead. In 2020, AGU released a new **strategic plan** that embraces the idea that the AGU community is comprised of our members and partners around the world who share our mission of addressing scientific and societal challenges.

Our new strategic plan lays out a future where scientific discovery continues to be valued and celebrated for its role in advancing human knowledge. We also envision a future where knowledge of Earth and space sciences are used, in collaboration with advances in natural, physical and social sciences, medicine and engineering, for the benefit and prosperity of people and the planet. As we look to the decade ahead, our mission is focused on supporting individuals in their scientific endeavors and on convening groups interested in working together on discovery and solution-based science. We are also dedicated to educating and inspiring the next generation of scientists needed to advance this mission.

AGU is also focused on being an innovator among scientific organizations. We pioneer new approaches to growing the exchange of scientific knowledge through publishing and meetings. We encourage and facilitate new and transdisciplinary fields of study, transforming our programs and operations as we anticipate the changing needs of our worldwide community. We promote excellence in scientific research by setting and promoting standards and best practices, strengthening the integrity of published and presented research and leveraging our science to help society worldwide.

We are committed not only to advancing the Earth and space science workforce but also to creating ethical, inclusive and diverse work environments. Having more diverse voices at the table leads to new perspectives and unique ways of thinking which in turn leads to better science and novel solutions.

Working with related disciplines, like meteorology, is a key part of our new strategic plan. Many AGU members are already collaborating with colleagues in meteorology, and AGU often partners with meteorology organizations, like the American Meteorology Society and the World Meteorological Organization, on meetings, policy issues, and growing and supporting the STEM workforce.

AGU recently joined with AMS and other societies to launch a **portal for community science** with a goal of advancing collaborative, multi-disciplinary and solutions-oriented scientific work done in close partnership with community leaders and community members. AGU and WMO have co-organized sessions at the AGU Fall Meeting and co-hosted a **meeting** focused on the climatological, meteorological and environmental factors of the COVID-19 pandemic. The recently reinstated **June Bacon-Bercey Scholarship in Atmospheric Sciences for Women** honors the legacy of June Bacon-Bercey, America's first female television meteorologist, by supporting female students with a demonstrated interest in atmospheric sciences. We hope that these collaborations are only the beginning of our partnership with meteorological societies. We look forward to working with you to advance discovery and solution science that accelerates knowledge and creates solutions that are ethical, unbiased, and respectful of communities and their values.

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IFMS Elections this Year



This year we are having elections for all members of the Executive Committee as well as Regional Representatives of Region 1 and 4. Since we allow a maximum of two consecutive terms and this is only the second official election, all current members are eligible for nomination.

IFMS Newsletter



Please note that IFMS Newsletter is meant to serve its member societies and to take their message far and wide through its very wide circulation. **Please submit interesting articles and news items for our Newsletter.** (Please see the article on Newsletter in this issue). We are also planning to carry paid advertisement from private sector companies in the field of meteorology, hydrology and environment monitoring to take their message to a very wide audience of our Newsletter. If you are interested in putting your advertisement, please write to: ifms.collaboration@gmail.com.

Donate to IFMS



In order to create strong value in the activities of IFMS which include but are not limited to creating capacity through S&T collaborations and Education and Training coordination, Creation of NMSocs, keeping members abreast of the developments in WMO, WB and their PPP and PPA Programs, etc., we need some finances to carry out these activities. At least a couple of permanent staff being paid honorarium are required. Some individuals have shown interest in making financial contribution, please consider making some contribution. If a large number of individuals and corporations make some contribution, IFMS could have sufficient money to carry out the above activities and many more in a more effective manner.

A brief Overview of the International Society of Biometeorology



Dr. Marie R Keatley, President International Society of Biometeorology

The International Society of Biometeorology (ISB) was formed in 1956 with its first meeting held in Paris at the UNESCO headquarters. Its mission is to provide one international organization for the promotion of interdisciplinary collaboration of scientists concerned with the direct or indirect interaction between the atmosphere and all living organisms, and the development of the field of meteorology in relation to humans, other animals, and plants. To pursue its purpose of advancing the science of biometeorology ISB has had its own journal the **International Journal of Biometeorology** since 1957 and in 2009 introduced a book series: Biometeorology. ISB holds Congresses usually triennially – COVID has resulted in the 22nd Congress becoming virtual and being delayed until September 2021. Since it was formed ISB has had its Executive Board and Commissions and Study Groups. The Executive Board not only has the usual positions (e.g. President, Vice-President, Secretary, Treasurer etc.) but Councillors elected to represent six regions: Africa, Asia, Europe, Latin America and the Caribbean, Oceania, and Northern America. The Councillors are there to ensure board geographical representation. The Commissions and Study Groups accommodate both the diverse and interdisciplinary nature of the research interests of ISB members for example the Agricultural Commission, the Climate and Human Health Commission and the Students and New Professionals Group. **ISB** also engages with like-minded societies and organisations such as the International Forum of Meteorological Societies, World Meteorological Organization and the American Meteorological Society. In doing so, ISB recognises the value of a shared vision of advancing all aspects of meteorology worldwide and that a community of scientists with similar interests, fulfil an important role in providing information and expertise.

Volunteers Required



IFMS being a volunteer-based organization, we are always looking for volunteers for various tasks such as: IFMS Website Support, Communication strategy, Operating Webinars, keeping contact lists up to date, reviewing Newsletters, members of various committees (e.g., finance, S&T Collaboration, Creating new NMSocs, GWE-PPP-PPA, partnership with associate member societies, etc. Please offer your services.

Please offer your services to the Education and Training by becoming a member of that Committee. We would like to assist developing societies in E&T to build capacity.

Recognizing Victor Massam who won AfMS logo design Competition

As most of you must know, the African Meteorological Society (AfMS) was created on February 10, 2021 with the assistance of IFMS in a meeting of the professionals of the African Nations. This was followed by a competition to select a logo for the newly created Society. Twelve entries were received in the competition. An open voting was conducted through Internet and the following Logo created by **Victor Jackson Massam** got the highest score and hence was selected as AfMS logo. This logo has been adopted as the official logo of AfMS.



**Victor Jackson Massam – ICT Officer
Tanzania Meteorological Authority**



Victor Jackson Massam is working at Tanzania Meteorological Authority (TMA) as a Computer System Analyst since 2009. He has Master of Science in Computer Science from The University of Dar e salaam (UDSM), Tanzania. He is interested in development and implementation of Website and dynamic Software; ICT Related consultancy and pieces of advice; Systems and Database administrations as well as Graphics designs.

He is also a WMO Expert <https://community.wmo.int/contacts/mr-victor-jackson-massam>

Can be reached by email at massam.victor@gmail.com or victor.massam@meteo.go.tz

or Mobile phone number +255-754-822841

Recognizing Federico Galati for his kind assistance in the AfMS Website Development



We would like to recognize the contribution of **Federico Galati** for his kind assistance in the development of the AfMS Website.

We would also like to recognize **Victor Jackson Massam** for assisting **Federico Galati** in the development of the AfMS Website.

We urge other professionals to offer their volunteer services to IFMS and AfMS for Capacity Building all over the world. Please write to us on: ifms.collaboration@gmail.com.

Thank you very much!

IFMS 2021 Election Announcement



Last Election of the full Council Members was held in 2018. Since the term of the Council members is 3 years, this year (2021) is the election year.

1. IFMS Council consists of 11 members out of which the 5 members are identified as the Executive Committee members and 6 as Regional Members, one member from each of the 6 Regions.
2. The Executive Committee consists of the following 5 members: President, Vice President Administration, Vice President Finance, General Secretary and Treasurer.
 - a) Due to their principal language being Spanish, many Central American countries are considered to be a part of Region 3 of IFMS, and
 - b) For the purposes of creating Asian Meteorological Society, ASEAN countries (Indonesia, Malaysia, The Philippines, Singapore and Thailand) are considered to be a part of the Region 2.
3. The term of IFMS Executive Committee Members and Region Members of the Council of IFMS is 3 years.
4. Each Council member can be nominated for a maximum of 2 consecutive terms i.e., after 2 consecutive terms the Council Member must have at least one term break to be nominated again. Since this is only the second official election of IFMS Council, all current Executive Committee members as well as Regional Members, who are to be elected this year, are eligible for renomination.
5. Election of Regional Members has been organized in such a manner that two Regional Members retire each year and new ones from those regions are nominated or renominated based on point 4 above.
6. We will be sending a Nomination Paper requesting each member society for nomination of 5 Executive Committee Members
7. We will be sending a Nomination Paper asking Region 1 and Region 4 members to nominate Regional Member for their own region.

8. Please nominate any of your members for any or all positions.
9. Please submit your nomination by November 15, 2021.
10. The following are the names of three Election Commissioners:
 - a. Prof. Liz Bentley (Liz.Bentley@rmets.org) - Royal Meteorological Society- UK (RMetS),
 - b. Dr. Kathy Allen (kathryn.allen@utas.edu.au) - Australian Meteorological & Oceanographic Society (AMOS).
 - c. Prof. Oscar Frumento (oafcnp@gmail.com) – Centro Argentino de Meteorólogos (CAM)



Grow through Collaboration



The whole is greater than the
SUM of its parts.

International Forum of Meteorological Societies (IFMS) Newsletter

Dr. Harinder P. S. Ahluwalia – President of IFMS

1 Introduction

The International Forum of Meteorological Societies (IFMS) is an organization to foster and encourage communication and exchange of knowledge, ideas and resources among the world's more than seventy existing meteorological societies to strengthen them – especially developed societies helping developing societies and those from Least Developed Countries (LDC). In other words, we plan to strengthen existing societies through collaboration between them and create new National and Regional Societies where no such Society exists today and it makes sense to have one.

The IFMS is meant to unite all the **Hydro-Meteorological Societies** of the world to help each other in the same manner as the World Meteorological Organization (WMO), a United Nations body, does for the **Hydro-Meteorological Services** of various nations.

Creating S&T Collaborations, strengthening existing societies and creating new ones where none exists, are our core Value Propositions. In order to achieve these Value Propositions, we have defined various tasks which include, establishing means of communication between societies and its members, creating best practices, liaising with WMO and WBG (World Bank Group) to assist in WMO and WB Capacity Building Programs (e.g. Global Campus Initiative), assisting in establishing Accreditation, Certification and associated Training (ACT), etc. In addition, IFMS is also trying to keep its members informed about GWE (Global Weather Enterprise) developments by having its representative participate in WMO's OCP (Open Consultative Program) and WBG's GWE through PPA Collaboration Committee and write articles in our Newsletters.

The purpose of this paper is to encourage our member Societies and also invited authors to submit articles of interest to the professionals of all countries to create capacity and amity between member societies for increased collaboration. Through this Newsletter we would also like to bring professionals from Public and Private Sector together to strengthen the Global Weather Enterprise.

2 Objective of IFMS Newsletter

The objective of the IFMS Newsletter (INL) is to keep our members informed about various types of activities and issues presented in the next Section. It is one of our means of communications channels between the IFMS and Meteorological Societies as well as between member societies. For example, if a society is looking for collaboration opportunities with any other society, it can advertise it in the IGMS Newsletter.

3 Contents of IFMS Newsletter

The IFMS Newsletter is planned to contain the following types of articles:

- 1) Preamble by IFMS President,
- 2) Messages from well-known leaders from Global Weather Enterprise e.g. WMO-Secretary General, WMO-President, other WMO senior management personnel, Head of GFDRR (Global Facility for Disaster Reduction and Recovery), Head of any Meteorological Service, etc.,
- 3) Articles about major and interesting events of a society about which it wants to inform the Hydro-Met Community e.g. its conferences, its capacity building programs, its ideas for supporting IFMS, etc.
- 4) Any articles from WMO, WBG and other organizations about subjects such as new developments in these organizations, any special programs and GWE/PPA Collaboration, any collaborations with IFMS, etc.
- 5) Articles about various ways of strengthening IFMS and on the activities of IFMS and its Progress Reports
- 6) Scientific articles which might have been published by a society and the society feels that it would like to inform other people on IFMS Distribution List. We will accept Abstract of such articles as well as pointer to the Journal in which full version is available.
- 7) IFMS related advertisements e.g. for donations, for volunteers, etc.,
- 8) In our IGM-08 – New Year Edition, we will also start accepting advertisements from the private sector related to Hydrometeorology and related fields only.

4 Production of IFMS Newsletter

We solicit articles from our Council members, our member societies and from WMO, WBG, Heads of Meteorological Services, etc.

- We compile the Newsletter and send it to our Council members.
- After feedback from Council Members, we send it to our Newsletter Review Board which currently consists of the following volunteers:
 - Dr. Gabriela Müller (Centro Argentino de Meteorólogos (CAM), Argentina) is available.
 - Graciela Salaberry (Amigos del Viento, Uruguay) can collaborate.
 - We are looking for a third Volunteer.

5 Distribution of IFMS Newsletter

Our intention is to have our Newsletters distributed to the following organizations and people:

- a) All Meteorological Societies and associated Societies which are expected to distribute it to all their members
- b) All Meteorological Services – we request them to send it to their staff
- c) WMO and WBG and hopefully their staff
- d) All people interested in development of GWE e.g., members from WMOs OCP and WBG's GWE/PPA Collaboration Program, Private Sector companies and universities.

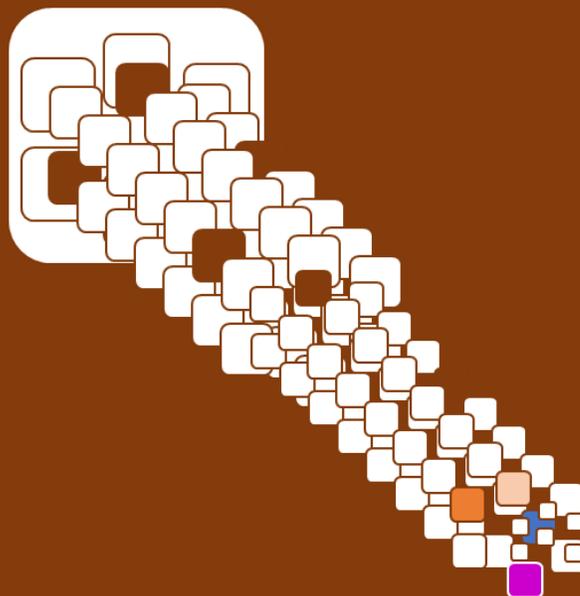
Wider the circulation bigger the chances of Private Sector companies to advertise by paying reasonable donation. We also put our Newsletter on IFMS website: www.ifms.org.

6 Conclusions

Along with our Website, IFMS Newsletter is a part of our communications strategy. Its main purpose is to act as a communication channel between our member societies (including their members), external agencies (e.g. WMO, WBG, National Meteorological Services, and other related organizations).

We wish to put quality articles from the contributors. Our current plan is to issue it on a quarterly basis. As the IFMS Newsletter becomes more known, we could publish it on a bimonthly (every 2 months).

We urge all potential contributors to be prompt in sending their quality articles. Deadline for the next Newsletter is November 30, 2021.



Professional Master Course in Climatology and Applications in CPLP Countries and Africa (MPCLimatologia)

Emerson Mariano da Silva^{1,2,3}; José Maria Brabo Alves^{2,3}

¹Brazilian Society of Meteorology (SBMET)

²Chief Editor the Brazilian Journal of Meteorology (RBMET)

³Ceara State University (UECE)

The Professional Master's Course in Climatology Applications in Community of Portuguese Speaking Countries (CPLP) and Africa is approved by the Coordination for the Improvement of Higher Education Personnel (CAPES). CAPES is a foundation linked to the Ministry of Education of Brazil that operates in the expansion and consolidation of stricto sensu graduate courses in all Brazilian states. Currently installed at the University of Ceará State (UECE), it has the support of the Brazilian Society of Meteorology (SBMET) in an international cooperation with the Center for Climate Research and Applications in the Countries of CPLP and Africa (CIICLAA). CIICLAA's activities started on May/2015 in Cidade da Praia - Santiago Island in Cape Verde with the objective of bringing together various institutions (teaching, research, and operational meteorological centers) of the (CPLP) in studies on the climate and applications in many regions of these countries.

The aim of MPCLimatologia is to promote research and development, with an interdisciplinary character, related to the climate and its variability, as well as to generate applications of outcomes obtained to produce innovative products or processes for the use of meteorological information, which can subsidize the elaboration of public policies and making of decision, aiming to contribute improvement of socioeconomic and environmental of the communities that live in the different regions member countries of CPLP and Africa - founding members of CIICLAA. The MPCLimatologia started on July/2016, divided in two classes, 42 (forty-two) professionals were trained and to celebrate the success of implementation and fulfillment of the training mission undertaken with CIICLAA, a partnership was signed with the Revista Brasileira de Meteorologia (RBMET) of SBMET for the publication of articles containing the results presented in the dissertations of the graduates of the course.

The articles published in the two special commemorative issues of RBMET were selected in an internal public notice by a selection committee, composed of professors

collaborating with the course. After this stage, following the procedures established in the RBMET publication process, articles are forwarded to RBMET's Ad hoc editors and reviewers via the Scielo® portal's ScholarOne® platform for due assessments/reviews until final approval of each article for publication. In two special commemorative editions of RBMET (vol.34, n.3 and vol.35, n.3), 25 (twenty-five) articles were published that present results of research carried out in MPClimatologia. These are interdisciplinary studies that address issues related to climatology and the scenarios of influence of climate change and its impacts on agriculture, water and renewable energy resources, health and defense and civil protection actions, in addition to studies that present the results of investigations. on the perception of students and teaching practices in the teaching of Climatology.

It is noteworthy that the support of SBMET was of great importance for the implantation and consolidation of MPClimatologia in Brazil and that with the support of CIICLAA and CAPES approval we have the possibility to start international classes, especially in CPLP countries and Africa.

Internet links:

SBMET - www.sbmet.org.br

MPClimatologia – www.uece.br/mpclimatologia

RBMET (vol.34, n.3) – https://www.scielo.br/scielo.php?script=sci_issuetoc&pid=0102-778620190003&lng=en&nrm=iso

RBMET (vol.35, n.3) – https://www.scielo.br/scielo.php?script=sci_issuetoc&pid=0102-778620200003&lng=en&nrm=iso



PhD. Emerson
Mariano da Silva

- Associate Professor of the Physics Course at the State University of Ceará – Brazil;
- Member of the Deliberative Council of the Brazilian Meteorological Society;
- Associate editor of the Brazilian Journal of Meteorology (RBMET);
- Coordinator of the Professional Master's Degree in Climatology and Applications in CPLP Countries and Africa

May 2021

- 18–20 [Ocean Visions 2021 Summit](#)
- 24–26 [Tropical Pacific observing needs workshop](#)
- 25–27 [2nd International Operational Satellite Oceanography Symposium](#)
- 26–27 [Climate Change In the Geological Record](#)
- 30 May–6 June
[Japan Geoscience Union Meeting 2021](#)

June 2021

- 08–09 & [International Workshop for Mid-latitude Air-Sea Interaction](#)
- 12–14 [Interaction](#)
- 27 June–02 July
[AMSA Conference – In the Anthropocene](#)
- 29 (TBC) AMOS & SWAQ Sensing In the City Workshop

29 June–01 July

[HEPEX Joint Virtual Workshop: Connecting global to local hydrological modelling and forecasting: scientific advances and challenges](#)

July 2021

- 08–11 [4th Workshop on Physics-Dynamics Coupling In Weather and Climate Models](#)

- 23–24 [Workshop at International Conference on Machine Learning: Tackling climate change with machine learning](#)

- 28–29 AMOS Probabilistic Forecasting Workshop

August 2021

- 01–06 [AOGS Virtual: Asia Oceania Geosciences Society 18th Annual Meeting](#)

- 23–27 [Advancing Earth Observation Forum](#)

September 2021

- 18–30 [IOC Ocean Best Practices Workshop](#)

- 27–29 [Atmospheric blocking virtual workshop 2021](#)

30 Sept–02 Oct

[WIMSIG Conference 2020: Celebration of women in Australian mathematical and statistical sciences](#)

November 2021

- 22–25 [Climate 2021: A resilient and sustainable Australia](#)

February 2022

- 8–12 [ICSHMO 2022 - 13th Annual Conference on Southern Hemisphere Meteorology and Oceanography](#)

August 2022

- 14–19 AOGS 2022 19th Annual Meeting

Due to the uncertainty around COVID-19, this is a list of online and/or Australia-based events only.

Climate Classrooms at the AMOS National Conference

Ian Macadam and Sanaa Hobeichi (on behalf of the Climate Classrooms Team)

The Climate Classrooms Team: Sanaa Hobeichi^{1,2}, Ian Macadam^{1,2}, Tahnee Burgess³, David Holmes¹, Angela Maharaj^{1,2} and Robyn Schofield^{1,4}

¹ ARC Centre of Excellence for Climate Extremes

² Climate Change Research Centre, UNSW Sydney

³ Monash Climate Change Communication Research Hub

⁴ University of Melbourne



Australian Research Council's Centre of Excellence for Climate Extremes School Resources Developer Sanaa Hobeichi working on assembling teams for the workshop.

Climate Classrooms is a joint project of the ARC Centre of Excellence for Climate Extremes and the Monash Climate Change Communication Research Hub. It has two main aims. Firstly, it aims to raise the profile of climate science in secondary school Science, Technology, Engineering and Mathematics (STEM) subjects. Despite having the name 'climate science', this topic often has a much lower profile because it sits under geography, which is not classified by schools as STEM. This can lead to a misconception among students that they do not need STEM skills to pursue climate science at university. It also means a lack of awareness among STEM students that their passions and skills can be applied to climate science, to the detriment of the field. However, Climate Classrooms is not only concerned with STEM subjects. It aims to build the

climate science literacy of students in other subjects too. This contributes to empowering the upcoming generation to make well-informed decisions related to climate change.

The approach taken by Climate Classrooms to bring climate science to the classroom relies on workshops in which school educators and climate scientists work together. Participants develop draft educational resources using examples from climate science to address objectives of the Australian curriculum. The Climate Classrooms Team then works to develop some of the content generated by the workshop into fully-fledged teaching resources aligned to the Australian curriculum, which are made freely available at <https://www.monash.edu/mcccrh/projects/climate-classrooms>. The team also works with TROP ICSU (Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding), a global project funded by the International Council of Science, to contribute to a repository of educational resources on climate change that can be used worldwide.

The AMOS National Conference provides an ideal forum for the Climate Classrooms workshops. The inaugural workshop was held at the AMOS 2020 conference in Fremantle, Western Australia. It involved over 60 participants, mainly from the Fremantle and Perth area. It has so far resulted in the release of three lesson plans. The successful model of the Fremantle workshop was replicated at this year's AMOS conference in February. The conference was held online due to the COVID pandemic, so the associated Climate Classrooms workshop took the form of a half-day event run via Zoom.

Workshop participants fell into three broad categories. Firstly, there were 16 climate scientists and knowledge brokers from UNSW, Monash University, University of Melbourne, CSIRO and the Bureau of Meteorology. These ranged from PhD students to professors. Secondly—and most importantly—the workshop was attended by 30 school educators who were all passionate about enriching the teaching of the curriculum with examples from climate science. These were mainly teachers, ranging from pre-service teachers to deputy heads and assistant principals, but also included representatives of curriculum authorities.

Although the online format presented some challenges, it allowed educators from across the country to take part. Finally, the workshop was joined by guests from National Computational Infrastructure (NCI) and the Australian Data Science Education Institute, who were seeking avenues to promote the use of data by school students.

Prior to the workshop, those registering were put into ten teams, each containing one or two climate scientists and two to four educators. Each team had common interests. For example, educators interested in teaching Maths to school Years 7–10 were grouped together, as were those interested in teaching Earth and Environmental Science to Years 11 and 12. The workshop itself began with a welcome by AMOS President Angela Maharaj, an experienced academic and enthusiast for climate science education in both schools and universities. Sanaa Hobeichi, a researcher and school resources developer with the ARC Centre of Excellence for Climate Extremes, then introduced the format of the workshop. The lion's share of the remainder of the workshop was devoted to the different teams working in different Zoom breakout rooms and focussing on different parts of the school curriculum. This involved finding links between climate science topics and specific parts of the curriculum, considering how existing online climate science resources (e.g. videos, interactive maps, documents, data, online climate models) could be used to elucidate these and generating ideas for new educational resources.

At the end of the workshop, each team had packed a Google Drive folder full of fantastic ideas for incorporating existing online climate science resources into new educational resources to meet learning goals in the curriculum. For example, one team drafted a Maths investigation on interpreting and presenting

data that uses global mean temperature, sea level rise and atmospheric carbon dioxide data. Another team drafted a Year 10 Science lesson plan that uses climate data to address misconceptions in climate science. Another drafted a Year 7 Science unit involving analysing climate data to investigate natural and anthropogenic variations in climate.

The workshop provided a unique opportunity for secondary school educators to work closely with climate scientists and each other to identify existing climate science resources that can help integrate climate science into the Australian curriculum. It also allowed them to make sure that ideas for new educational resources on climate science aligned well with the school curriculum and could be used in practice. When asked what the best part of the workshop was, the educators highlighted the direct collaboration with practising climate scientists, getting inspiration from other school educators, the focussed teamwork in the Zoom breakout rooms and gaining an awareness of available existing climate science resources. For example, one teacher commented:

"I found the Climate Classroom workshop invaluable. As a Science teacher, I know how important it is for students to gain an understanding of both the mechanisms of climate change and implications of this on their own future. Working with other teachers as well as experts in the field allowed me not only to collaborate in making a useful lesson plan but also opened my eyes to a range of resources already available. I was able to take knowledge of these resources back to my science teaching colleagues who are already using them in lessons."

—Katrina Holewa, Science Teacher, Noosa District State High School.

Importantly, for many of the teachers, the workshop was endorsed by the NSW Educational Standards Authority (NESA) as officially contributing to their professional development.

Feedback from the workshop shows that the scientists who participated were passionate about climate science education and that they were struck by the enthusiasm of the educators to bring climate science to the classroom. For example:

"One of the reasons why I am pursuing a PhD in climate science is because I want to improve the climate literacy of the general public. During the Climate Classrooms Workshop I worked with three teachers to develop a lesson plan for Year 9 Geography. We discussed effective ways to teach concepts on climate change and food security. The teachers I worked with showed a lot of enthusiasm and interest to incorporate climate science into the school curriculum and that made the experience all the more rewarding for me. I am very happy that I participated in this workshop and was able to contribute in some way."

—Charuni Pathmeswaran, PhD student, UNSW.

"I am passionate about teaching, because to me it represents how we nurture and guide future generations. What could be more important?"

It was so great to meet these equally passionate secondary teachers and to facilitate the passing on of some knowledge directly using real-world scientific data and tools.

We have great mutual respect for each other's expertise, and I hope this is a blueprint for future collaborations between professional scientists and school teachers.

This is an important way for us to continue to break down the barriers which separate facts and data from deep knowledge and understanding."

—Benjamin Henley, Lecturer, Monash University.

The scientists clearly appreciated the opportunity to reach beyond the research community and make their science accessible to secondary school students, the decision makers and potential climate scientists of the future.

Please follow the Monash Climate Change Communication Research Hub on Twitter or Facebook to keep up to date with all things Climate Classrooms. The Climate Classrooms Team welcomes engagement with the readership of BAMOS, including feedback, questions and ideas, and can be reached via mcccrh@monash.edu. This email can also be used to express interest in future Climate Classrooms workshops.

Acknowledgements

The workshop received generous financial support from the ARC Centre of Excellence for Climate Extremes.

The success of the workshop relied on the time and enthusiasm of the participants.

News Story

Air Pollution and Climate Change

Paper from RMetS Journal

Climate Science Briefing Paper in *Weather* Journal

Our 11th Climate Science Briefing Paper has recently published on Early View in *Weather*. The topic of this paper is air pollution and climate change.

The Society's Science Engagement Committee (previously the Climate Science Communication Group) has produced a series of **Climate Science Briefing Papers** to clearly and concisely explain the science behind our changing climate.

This latest paper focuses on what we mean by air pollution, where it comes from, its impacts on human health and the environment, and how pollutants affect our climate.

[Read the paper here](#)

Podcast Episode 21 – Air pollution and climate change

Our Science Engagement Manager, Hannah Mallinson speaks to David Warrilow, Vice President of the Royal Meteorological Society, about the paper. You can listen to the podcast [here](#):

[Listen to all our other podcasts](#)

Some of the Lessons Learned for Disaster Management in Nepal

Water Management in Least Rainfall Occurring Place, Mustang



Narayan Gautam, Assistant Profesor at Tribuvan University, Kathmandu, Nepal

Mustang is located in the North Western part of Nepal and is also known as trans-Himalayan region. The author had visited Dhakarjun and Phalak communities of Mustang about four years ago. Mustang lies in the leeward side of Nepal. Due to this reason, the district gets the least amount of rainfall in Nepal.

I have seen one of the traditional systems, which is known by Mukhiya (Gamba in local language) still exists in Mustang. Mukhiya is a community-based system and it is not an authentic body of government though it has a crucial role to enhance developmental works including water management in their communities. It is found good practices of water management considering population, need of works in Dhakarjun and Phalak areas of Mustang. It is an example of local practice effectively working in order to reduce water conflict in the water scarce region of Nepal.

Role of Scientific and academic institutions

It is a fact that scientific as well as academic institutions can play a significant role to reduce water induced disasters in Nepal. In this connection, some of the institutions/organizations have started to make active participation of local school teachers along with students to measure rainfall, temperature and so on. Ultimately, such kind of works conducted at schools become helpful to analyze rainfall, temperature and the knowledge will be beneficial to the local societies.

Role of voluntary organizations

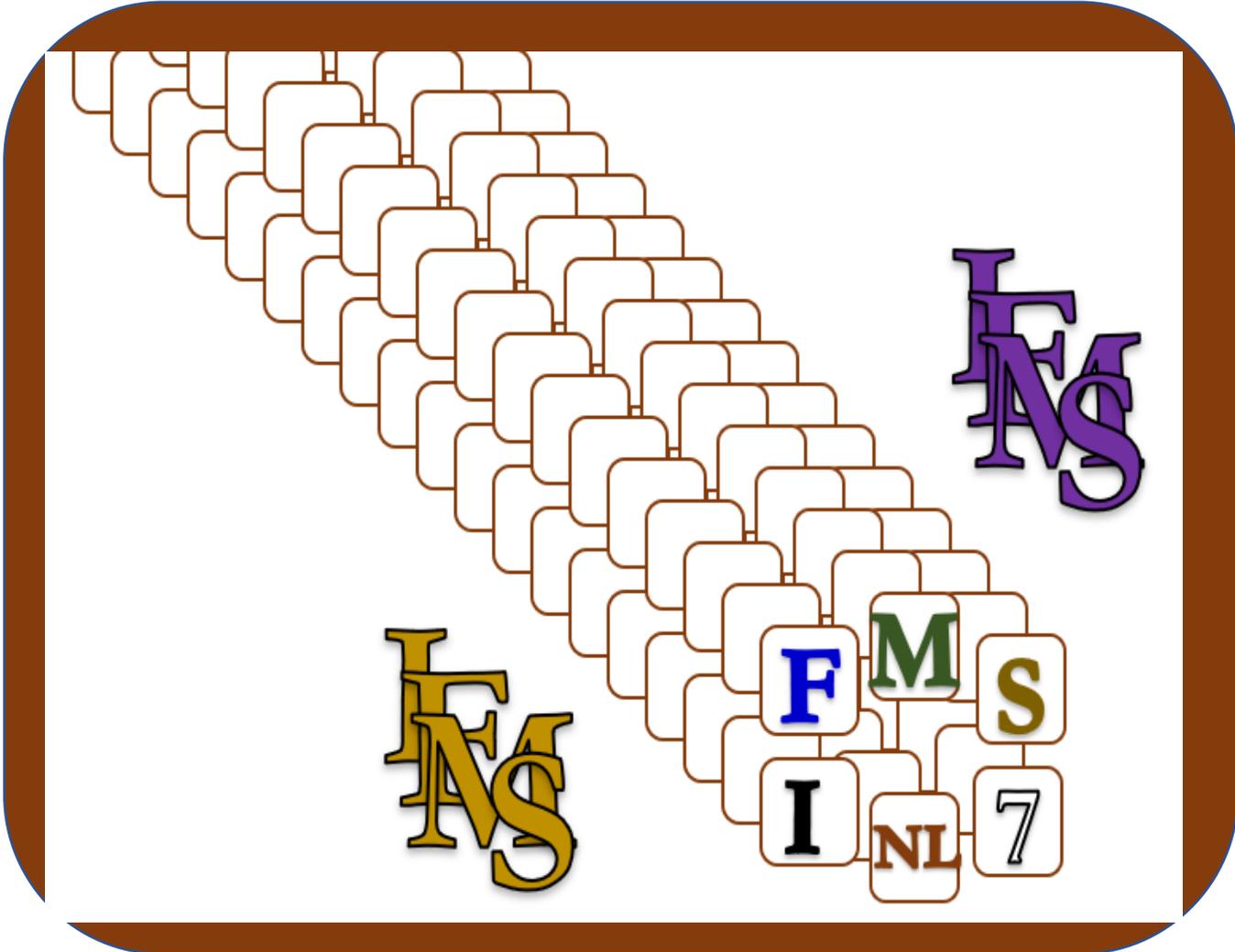
Some of the voluntary groups like mother group (Aama samuha) and father group (Babu samuha) are actively involved in the natural resource management especially in the mountainous parts of the country. One of the main organizations that have been contributing in the flood induced disaster (FID) from the national as well as local level is Nepal Red Cross Society (NRCS). Not only has it been contributing during and after flood disasters, it has also been contributing to create awareness about the early warnings of flood. In a knowledge

sharing program of NRCS, this author has participated and found that many volunteers are very eager to know about different types of disasters and their impacts in our societies.

Role of flood prone communities

In recent years, it is noticed that the flood prone communities are effectively working in flood induced disasters (FIDs). In an education tour at Rautahat district (Southern part of Nepal), the author personally found some consensus about future flood in their communities. It means they can guess a probable flood by getting the information about the total amount of rainfall occurring in the upstream area. It is a fact that Rautahat district has been affected by yearly flooding.

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Journal of Southern Hemisphere Earth Systems Science

The Journal of Southern Hemisphere Earth Science Systems (JSHESS) has undergone a significant make-over. CSIRO Publishing is now the official publisher, working with the Bureau of Meteorology and AMOS to present a more accessible and impactful journal. Our goal is for the community to



embrace and make JSHESS the journal of choice for our sciences. Steven Siems remains as Editor and Greg Ayers continues his role as Editor-in-Chief.

Bertrand Timbal is Chair of the JSHESS board.

JSHESS is free for authors to publish in. The costs of publication are covered by the Bureau of Meteorology and AMOS, removing a significant

barrier. For more information, visit the JSHESS webpage: <https://www.publish.csiro.au/es>

JOURNAL OF SOUTHERN HEMISPHERE
EARTH SYSTEMS SCIENCE



Australian Government
Bureau of Meteorology



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From Royal Meteorology Society

The Latest Research Summaries from our Journal's Portfolio

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As you may already know, we publish a series of **Research Summaries** on the Royal Meteorological Society's website, looking at a selection of recent articles from our journals and translating them into more accessible language. These summaries help make the often-complex research more available and easier to understand for a broader audience.

In the last six months, we have added nine more great reads to the collection. You can discover the latest thinking on a range of topics: lightning forecasts, bioclimatology thermal stress, hailstorms and even read about how climate change might be affecting our beer!

We are grateful to the authors for giving us an exclusive overview and highlights of their full article found within the journals' portfolio. Click on the titles below to read the research summaries.

- **Using machine learning to predict fire-ignition occurrences from lightning forecasts**

Ruth Coughlan, Francesca Di Giuseppe, Claudia Vitolo, Christopher Barnard, Philippe Lopez, Matthias Drusch.

Human activity is the leading cause of wildfires. However, lightning can also contribute significantly. Lightning ignited fires are unpredictable. Identifying the relationship between lightning and its causes for ignition is useful for fire control and prevention services, as they currently assess this danger mainly based on forecasts of local lightning activity.

- **A 41-year bioclimatology of thermal stress in Europe**

Bogdan Antonescu, Luminița Mărmureanu, Jeni Vasilescu, Cristina Marin, Simona Andrei, Mihai Boldeanu, Dragoș Ene, Alexandru Țilea

The results obtained in this study gives detailed information for decision-makers about the changes in the thermal stress for different European regions and cities. These results could serve as a starting point for the development of mitigation strategies for the current impact of thermal stress in Europe.

- **A comparison of statistical and dynamical downscaling methods for short-term weather forecasts in the US Northeast**

Marc J. Alessi and Arthur T. DeGaetano

Accurate weather forecasts in agricultural regions are critical for crop production. In this study, the authors look for a forecasting method that best predicts future weather for these agricultural regions. With better forecasts come better predictions of budding onset, when to harvest, frost avoidance, and disease and insect spread, which all increase the value of the agricultural economy.

- **Extreme precipitation events in the Mediterranean: Spatiotemporal characteristics and connection to large-scale atmospheric flow patterns**

Nikolaos Mastrantonas, Pedro Herrera-Lormendez, Linus Magnusson, Florian Pappenberger, Jörg Matschullat

Extreme Precipitation Events are associated with devastating consequences for our societies, economies, and environment. Locations in the Mediterranean are also affected by such events. Their magnitude, frequency, and associated damages have been increasing, with even more worrying future projections, as the Mediterranean is considered a "hot spot" of climate change. It is particularly important to understand natural hazards and their drivers so that we can mitigate their impacts and increase the resilience of our societies.

- **Understanding mechanisms for trends in Sahelian squall lines: Roles of thermodynamics and shear**

Megan E. Bickle, John H. Marsham, Andrew N. Ross, David P. Rowell, Douglas J. Parker, Christopher M. Taylor

Climate change is expected to increase extreme rainfall, but how much remains uncertain. A warmer atmosphere can hold more water vapour, allowing heavier rainfall, while extreme storms may also be enhanced in complex and uncertain ways. This is particularly true for the West African Sahel, a semi-arid region just south of the Sahara, where the West African monsoon brings the annual rainfall, on which millions depend, but where severe storms threaten lives and livelihoods.

- **Hailstorms in the Alpine region: Diurnal cycle, 4D-characteristics, and the nowcasting potential of lightning properties**

Luca Nisi, Alessandro Hering, Urs Germann, Katharina Schroeder, Hélène Barras, Michael Kunz, Olivia Martius

Hail, a low probability high impact weather event, has been a subject of scientific interest for many decades because of the severe damage it causes to agriculture, buildings and cars. Due to its strong local-scale variability (in time and space) and the chaotic nature of thunderstorms,

forecasting hailstorms still poses a major challenge to weather services. To learn more about these storms, we must analyse observations from the past. This is challenging due to the lack of historical observations and databases that are either incomplete or limited to a few case studies.

- **Examining trends in multiple parameters of seasonally-relative extreme temperature and dew point events across North America**

Cameron C. Lee, Omon Obarein, Scott C. Sheridan, Erik T. Smith, Ryan Adams

When people talk about the topic of ‘Climate Change’ usually the first thing that comes to mind is ‘Global Warming’. While an increase in the average global temperature is a great – and simple – indicator of how our climate is changing, an average temperature has relatively little impact on society compared to changes in extreme temperatures. This research investigates how extreme temperature events and extreme humidity events in North America have changed over the last several decades.

- **Vulnerability of hop-yields due to compound drought and heat events over European key-hop regions**

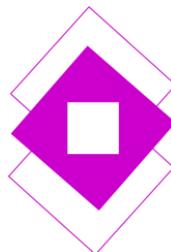
Potopová Vera, Lhotka Ondřej, Možný Martin, Musiolková Mariea

Policy assistance may be necessary for the adaptation of the EU hop-growing industry to changing climatic conditions. Even with the modest warming so far experienced, yields have stagnated, and quality has declined. This fact means further expenses for premium beer production, which also has aromatic hops.

- **North Atlantic centers of action and seasonal to sub-seasonal temperature variability in Europe and eastern North America**

Mahmoud Osman, Benjamin Zaitchik, Hamada Badr, Sultan Hameed

Temperature variability in eastern North America and Europe is often associated with the North Atlantic Oscillation (NAO) phenomenon. In this study, the authors have examined each of the NAO composing centers separately, in terms of their influence on the air temperature in both winter and summer in eastern North America and Europe on sub-monthly (10 days) to seasonal timescales.



Get Vaccinated



STAY SAFE DURING COVID-19!



Wash your hands with soap and water.



Don't touch your eyes, nose and mouth.



Sneeze or cough into a tissue or your elbow.



Stay away from people who are sick.



Stay at home if you feel sick and talk to a doctor.



Talk to an adult if you feel worried.

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