



THE IFMS NEWSLETTER

VOL. 5, SPECIAL ISSUE OF GM #6, 2020



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International Forum of
Meteorological Societies

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MESSAGE FROM IFMS PRESIDENT

Dr. Harinder P. S. Ahluwalia
President of IFMS

On January 14 and 16, 2020, IFMS held its global Meeting #6 (IGM-06) in Boston, Massachusetts concurrently with the American Meteorological Society's (AMS) Centennial celebration Conference. First of all, I would like to thank AMS on behalf of IFMS for hosting IGM-06 and providing us with very congenial facilities, including sumptuous lunches and a nice booth in the Exhibition. IFMS would also like to congratulate AMS for having had such a successful operation over the first century and showing the way to other societies the recipe for creating a strong Society about which I have written an article in this Newsletter.

Our IGM-06 was completed successfully and as per the program book, all guest speakers, Chairs of IFMS committees and the Representatives of Member Societies made their presentations in a timely manner. We are thankful to all speakers and participants for taking time out of their busy schedules to attend this meeting. We wish that we could have financed the travel expenses of some more deserving societies so that they could have benefitted from the meeting. We hope we will be able to do that next time in IGM-07.

This Newsletter presents the Summary of the IGM-06 and a detailed Report has been prepared and is available on our website (www.ifms.org) on its first page. We are thankful to Prof. Petteri Taalas, Secretary General of WMO and Dr. Vladimir Tsirkunov, Head of GFDRR for their participation and interesting presentations summarized in the Report.

We are thankful to Mr. Michel Jean, President of Infrastructure Commission of WMO, for contributing an important article on WMO reforms agreed to in Cg-18 in Geneva in June 2019. We hope that in the future, he will continue to inform a wide audience about WMO Infrastructure Commission progress through our Newsletter.

Education and Training are two of the most important issues for IFMS because they deal with the basic issue of Capacity Building, especially in developing countries. This task is being handled by Prof. S.K. Dash, the Chair of our Training and Webinar Committee who has written an article on this topic in this Newsletter.

In Cg-18 in June 2019, WMO approved the Global Campus Initiative (GCI) in which IFMS can assist WMO through our volunteer force which we are in the process of building. In order to introduce our members to the GCI, we organized a session in IGM-06 devoted to GCI which was led by Dr. Tim Spangler with the kind assistance of Dr. Patrick Parrish, Chief of Training Activities Division of the WMO Education and Training Office. In order to ensure that practitioners of our profession understand the concept of GCI, we have an article by Dr. Parrish on "where is the Global Campus?" to emphasize that it is a virtual campus in the cyber space. In the IGM-06, we also organized a session on Volunteer Force presented by Dr. Walter Dabberdt.

Given that the growth of the Public Sector is slow, the Private Sector is growing strongly and the Academic Sector has the knowledge and capacity to produce future practitioners and do quality R&D, it is believed that all three sectors (known as PPA) working together can create maximum value to combat Global Warming and Climate Change (GW&CC) as has been shown in the USA. Both the World Meteorological Organization (WMO) and the Global Facility for Disaster Reduction and Recovery (GFDRR) of the World Bank Group (WBG) are making a strong effort to strengthen this collaboration. In Cg-18, WMO Congress backed the new Public-Private Engagement Plan. On January 15, 2020, the GFDRR-WBG held a workshop, on the side of the AMS Centennial Celebration, which was attended by the IFMS Council Members, in which the GFDRR-WBG Plan for promoting PP collaboration was presented. In this edition of our Newsletter we have an interesting article on GWE written by Dr. Jack Hayes in which he covers the Plan of WMO as well as GFDRR-WBG.

We also have a Report from Australia on their AMOS2020 Conference in which they emphasized participation of women and provided a Photograph taken on the International Day of Women and Girls in Science and STEM fields.

In addition, in this Newsletter, we have included the outline of our proposal to regularly hold World Weather Open Science Conferences (WWOSC) of the type which was organized by WMO in Montreal in 2014 with the assistance of Environment Canada, the National Research Council of Canada and ECMWF. That is where the concept of the Future Global Weather Enterprise (GWE) took formal shape.

Moreover, other important issues such as plans for our Newsletter, Call for Volunteers and how to donate to IFMS are also covered. In addition, we have described in the article on Volunteer Force, what type of tasks we would like volunteers to undertake.

Since IGM-06 Conference, a new calamity, called COVID-19, has befallen the world which is unlike anything world has ever seen before. The modern world being well connected, which is a great asset for commerce and tourism, it has also made it easier for localized epidemics to become a pandemic. Unfortunately, we were not well prepared to handle this calamity despite warnings from various sources. It is always better to be prepared and have capacity to handle such calamities.

Although, the disasters caused by GW&CC might not be as widespread simultaneously as COVID-19 is, being prepared for any eventuality is a smart undertaking. WMO and WBG are playing their roles in building capacity around the world and IFMS is trying to assist them. We urge National Governments to make strategic investments in their National Hydrometeorological Services and National Hydrometeorological Societies to build infrastructure and create capacity.

We believe that Global Warming and Climate Change (GW&CC) are real issues. Considering the loss of life and property caused by inadequate institutional and societal capacity, we should be convinced that we need at least a basic infrastructure and knowledge base (capacity building through training) in all countries to reduce the adverse effects of GW&CC. I have written an article on this very important issue which will appear in the next IFMS Newsletter.

We hope that you will enjoy reading this edition of our Newsletter and contribute to the next one with the type of articles we have specified in the article on "IFMS Newsletter" included in this Newsletter.



PLEASE VISIT WWW.IFMS.ORG WHERE A LOT OF NEW INFORMATION HAS BEEN ADDED.

PLEASE KEEP INFORMATION RELATED TO YOUR SOCIETY ON OUR WEBSITE UP-TO-DATE BY SENDING UPDATES TO IFMS.WEBSITE@GMAIL.COM.

THE REFORM OF THE WORLD METEOROLOGICAL ORGANIZATION: A PERSPECTIVE FROM THE PRESIDENT OF THE NEWLY ESTABLISHED COMMISSION FOR OBSERVATION, INFRASTRUCTURE AND INFORMATION SYSTEMS (INFRASTRUCTURE COMMISSION)*



Mr. Michel Jean

President, Infrastructure Commission, WMO

1. Context

For the past 25 years, the technical work supporting Members of the World Meteorological Organization (WMO) has been organized under 8 Technical Commissions. During that period, the advancement of brilliant technologies and the rhythm of innovation has been increasing at an unprecedented pace. We are flooded by earth observations, social media provides access to contextual information and unprecedented dissemination mechanisms and high performance computing platform allow us to tackle previously unsolvable problems through the convergence of scientific discipline. It is only a matter of time before the fusion of weather, big data technologies and business applications go mainstream and change the way people and businesses view weather and water data, and experience the force-multiplying effects it will have on improving life and weather sensitive business decisions.

This unprecedented evolution is forcing all of us to rethink our business models, our recruitment, training and our partnership strategies at the national and international levels and it will also have a fundamental impact on the global meteorological enterprise. In this context, WMO Members have initiated a Reform process during the 17th WMO Congress in 2015 which culminated in the approval of the Reform package at the 18th WMO Congress in June 2019. The Reform supports the science to services process and integrates observations in an Earth system approach to produce a wide range of multihazard weather, climate, water and ocean services. In so doing, it broadens the opportunities for the whole WMO community and individual experts from the public, private and academic sector to contribute to the work of the Organization.

The Congress resolution states that the fundamental working structure will be organized around two Technical Commissions, one dealing with Infrastructure and one dealing with Services, and a Research Board in a way that optimize Research to Operations to Services technology transfers (R2O2S) in a way that ensures the inclusiveness of the weather, climate, water and other relevant environmental areas covered by the WMO. It notes that, due to the multidisciplinary nature and increased work volume, the composition and working arrangements of the new commissions should be elaborated to ensure balanced representation of relevant disciplines, active and balanced regional engagement and gender considerations.

To ensure seamless and coordinated interactions between those bodies, a Technical Coordination Committee (TCC) has been established. The TCC acts as a two-way interface between the Executive Council and the technical bodies of the Organizations: the Infrastructure and Service Commissions, the Research Board, and other relevant bodies. The TCC ensures the coordination between these bodies and shall provide the necessary analytical information to inform Executive Council decisions on technical matters. The Committee shall oversee the level of coordination between the technical bodies and the regional associations to ensure that the technical work of the Organization is properly guided by the needs and priorities identified by WMO Members.

2. The newly established Infrastructure Commission.

Guided by the WMO Strategic Plan, the Commission for Observation, Infrastructure and Information Systems (Infrastructure Commission) contributes to the development and implementation of globally coordinated systems for acquiring, processing, transmitting and disseminating Earth system observations, and related standards; coordination of the production and use of standardized analysis and model forecast fields; and development and implementation of sound data and information management practices for all WMO Programmes and their associated application and services areas.

The work of the Infrastructure Commission shall encompass all approved WMO application areas, as listed in the Rolling Review of Requirements, as well as updated and emerging observing, information and infrastructure requirements. The Infrastructure Commission shall promote the development of integrated systems to cover all application areas wherever possible, and shall ensure that these systems:

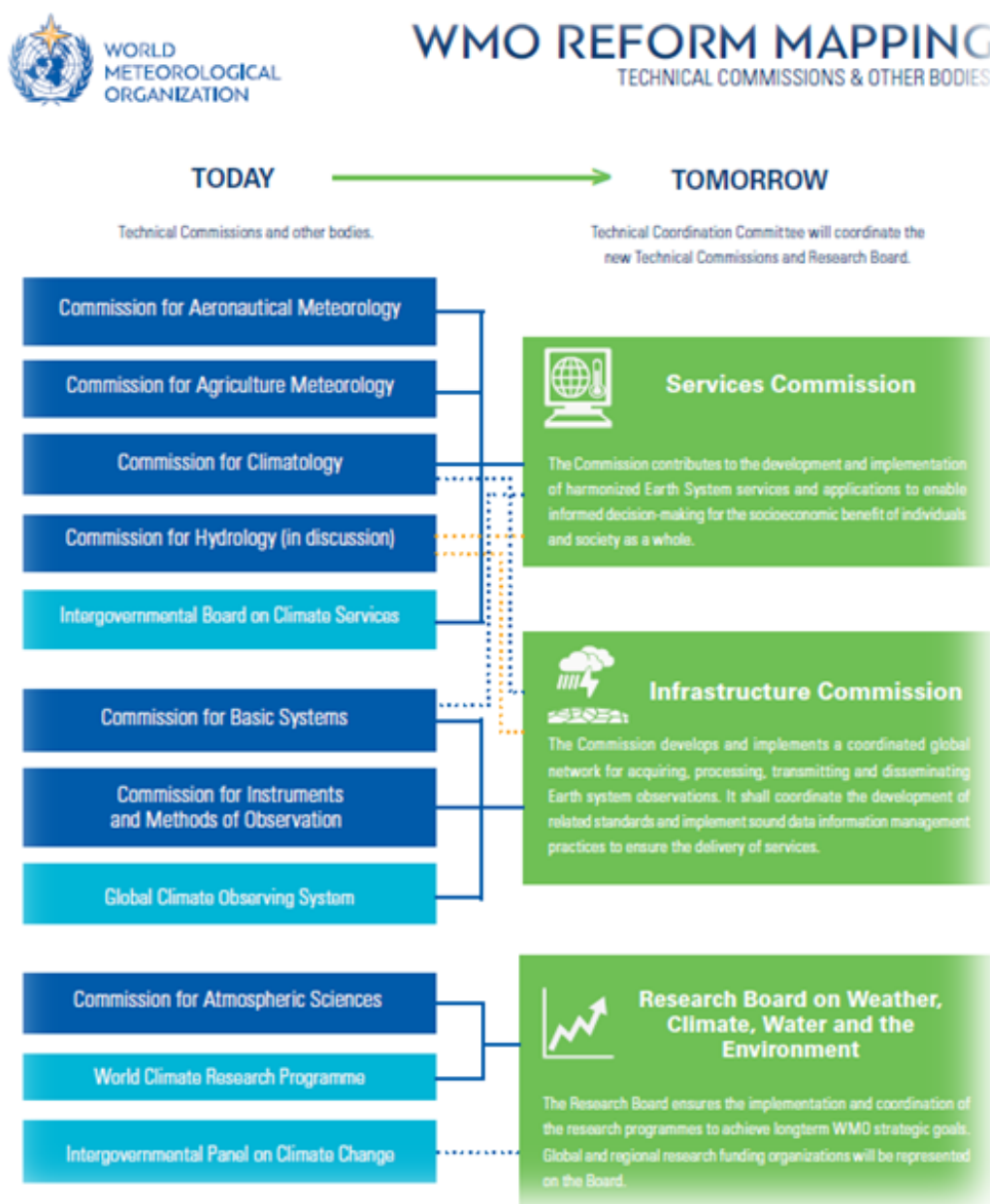
* The material has been adapted from the latest available information on the WMO web site at the following addresses :
1. <https://public.wmo.int/en/governance-reform>
2. <https://public.wmo.int/en/governance-reform/infrastructure-commission>

- a) Are user-driven and provide earth system observations, processed data and relevant services products and information to Members
- b) Are applicable, accessible and with life-cycle management across the full range of WMO Members
- c) Are built on a modular and scalable principle to the extent possible
- d) Make full use of existing WMO and other relevant standards and regulations
- e) Make use of and promote public-private engagement where advantageous
- f) Incorporate state-of-art optimal and fit-for-purpose technology
- g) Are based on user requirements developed in coordination with CSA and the Research Board
- h) Are building upon existing partnerships and networks among communities of practice within the service areas, which are beneficial for WMO Members.

3. Moving toward the future

Since June 2019, massive amounts of work has been accomplished to ensure a smooth and uninterrupted transition from the old Technical Commissions to the new technical structure (see figure below). It is understood that the reform will be an evolving process which requires flexibility and readjustment of the implementing actions while maintaining the main objectives, milestones and targets. Therefore, the transition plan will be a living document continuously monitored and reviewed with well-established feedback mechanisms and ability for corrective actions.

I firmly believe that this 'WMO of the 21st century' will allow us to tackle the challenges associated with climate and environmental changes. Those problems can only be resolved and mitigated through leveraging existing and planned space-based Earth Observations Platforms, Earth Systems Modeling approaches, Big Data best management practices, coordinated use of technologies (cloud storage and computing) and Artificial Intelligence along with a properly trained workforce to add value throughout the sub-systems of the full value chain.



SUMMARY OF IFMS GLOBAL MEETING #6

Dr. Harinder P. S. Ahluwalia
President of IFMS

1 Introduction

The IFMS Global Meeting #6 (IGM-06) was held on January 14 and 16, 2020 concurrently with the AMS Centennial. It was attended by all 11 IFMS Councilors, members of member societies and many other attendees. There were three types of presentations:

1. Specially Invited Presentations
2. Presentations by Council Members (Committee Chairs) about progress of their Committees and future plans
3. Presentations by Member Societies on their activities.

In addition, we have also provided a very short summary of the GWE Forum Meeting organized by the World Bank and attended by our Council members.

2 IGM-06 Presentations

2.1 Specially Invited Presentations

The Secretary General of WMO Prof. Petteri Taalas presented the main outcomes of the 18th World Meteorological Congress, held in June 2019, related to the WMO constituent bodies reform, the new WMO Strategy 2020-2023, and the new approach to partnerships across the public, private and academic sectors. Dr. Vladimir Tsirkunov, Lead specialist, Hydromet Program/GFDRR, World Bank, stated that the latest technologies are not reaching developing countries and despite the significant increase of investments in NMHSs by the World Bank, WMO and other development partners, it's difficult to make the results of these investments sustainable: the NMHSs are not receiving adequate government funding to retain qualified NMHSs' staff and support operations.

We were also pleased to have the presence of the now current and incoming Presidents of AMS both of whom spoke about their commitment to strengthen IFMS. Dr. Michael Farrar who spoke on the first day welcomed the IFMS attendees on behalf of the AMS and provided a brief historical perspective on the genesis and evolution of IFMS. He also commented on the role of the AMS and discussed the ongoing and future AMS support for the IFMS.

Dr. Mary Glackin, who spoke on the second day, stated that both economic health and social well-being are dependent on quality weather, water and climate services which are also key drivers because of rising global population and extremes from a changing climate. It is believed that the Private Sector has become increasingly capable of making contributions across the value chain. It can be an important additional party to the existing collaboration between the Public and Academic sectors – to make it a Global Weather Enterprise (GWE). Although there is a significant distrust among the sectors, there are some successful examples of cooperation and collaboration. Her talk focused on those examples and highlighted the roles Meteorological Societies can play in enabling these successes.

Dr. Tim Spangler, with assistance from Dr Patrick Parrish Head of Training Branch of WMO, presented an overview of the WMO Global Campus. The Global Campus which began in 2013 was endorsed by WMO Congress Cg-18 held in June 2019. Its major components were described including the “WMO Learn Portal”, the Events Calendar, the E-library, translations resource center, and activities to develop partnerships. The benefits of collaboration with universities were outlined along with a few thoughts about collaboration with IFMS. A brief review of upcoming activities was presented. This was followed by a discussion on how IFMS can get involved in this Program.

Prof. S. K. Dash, the Chair of IFMS Webinars and Training Committee is in touch with Dr. Patrick Parrish of WMO and Dr. Elizabeth Page of COMET to define the role of IFMS in the Global Campus Initiative. Dr. Walter Dabberdt made a presentation on Volunteerism and described AMS' International Academic Volunteering Program. This Program seeks to identify AMS members who are interested in providing specialized expertise and services to international professionals in academia and certain non-profit NGO institutions. Typically, these institutions will be in need of assistance in course and curriculum development, research planning, public engagement, and other not-for-profit activities. Such services would be provided on a pro bono basis except for travel, per diem, communications, and other support costs as necessary. The role of the AMS will be to function as an exchange mechanism to facilitate the matching of those in need of relevant volunteer services with those AMS members desiring to provide them. The AMS Volunteering Program role may also include an assessment of the need for pro-bono services by NGOs.

IFMS suggested that this Program should be done in collaboration with IFMS because it can find volunteers from all over the world. Its member societies can coordinate the activities to be carried on the other side. A separate discussion was held between Dr. Tim Spangler representing the AMS and Dr. Jack Hayes, Dr. Elizabeth Bentley and Dr. Harinder Ahluwalia representing IFMS. This discussion will be continued to find ways of collaboration because both IFMS and AMS are interested in creating capacity in developing countries and they should be partners in this noble mission.

The meeting also involved address by the Director of US-NWS Dr. Louis Uccellini who spoke extensively about the history of the National Weather Service of the USA, addressed the importance of a Volunteer-based Organization like IFMS for strengthening the Global Weather Enterprise. He also noted the outcomes of the WMO Congress cg18 related to public private engagement, with a focus on the importance of partnerships to deliver core mission goals and address vulnerability consistent with the WMO Strategic Plan. He highlighted both the NWS-WRN effort and the international Weather Ready Nations (WRNs) effort.

Dr. Bob Riddaway, the President of the European Meteorological Society (EMS), spoke about creation and maintaining the European Meteorological Society. He stated that EMS was established in 1999 after a long gestation period. Since then, the number of Member Societies and Associate Members has grown. The EMS now forms an important component of the European meteorological community. An outline was given of the membership and activities of the Member Societies. Also, the role of the EMS was described with emphasis on the development of the EMS Annual Meeting and the action taken to ensure the financial sustainability of the EMS. More information about EMS can be found on www.emetsoc.org.

2.2 Presentations of Committee Chairs (Council Members)

In this part of the IGM-06, each Committee discussed below provided the summary of its mandate, the progress it has made and the plans for the next year. The main objective of IFMS is to create S&T collaboration between member societies and through collaboration strengthen each other's capabilities – especially stronger societies helping developing societies to make them strong. Another objective is to assist National Hydro-Meteorological Services to create National Meteorological Societies in those countries where no such Society exists. The Value Propositions described above are managed and handled by Committee 3. The rest of the activities are in support of Committee 3 and they include those described in the following paragraphs.

Committee 1 is responsible for creating economical and effective communications channels which include IFMS Website, Newsletter, Facebook Page and other social media. In order to serve societies in various regions better, we collaborate with Regional Met Societies which include EMS, FLISMET, African Met Society, and yet to be created Asian Meteorological Society. The mandate of Committee 2 is to determine the areas in which IFMS can collaborate with Regional Societies for mutual benefit. This committee then takes steps to implement the areas of cooperation. The vision of World Meteorological Organization (WMO) is to provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources and related environmental issues and thereby contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations. WMO is an employee-based organization and hence is limited in manpower resources. IFMS being a volunteer-based organization can assist WMO and also World Bank (WB) in many different ways. On the other hand, WMO and WB can help IFMS in its development which will benefit them. The mandate of Committee 4 mandate is to find different ways we can help WMO and WB and vice versa. In order to meet its basic expenses, IFMS needs to arrange finances which is the task of Committee 5 – the Finance Committee. This committee is exploring various ways to finance IFMS needs. In order to standardize the profession of meteorology, many nations would like their meteorologists to be accredited/certified. Usually this activity is carried out by the National Meteorological Society because it is a neutral body. Currently known societies which have developed such a Program are the American Meteorological Society (AMS), the Royal Meteorological Society (RMetS) and the Canadian Meteorological and Oceanographic Society (CMOS). IFMS Committee 6, also known as ACT Committee, is prepared to assist any of its member societies in implementing this Program with the help of these experienced societies. In order to stream line its operation, each society normally develops Best Practices for many of its activities. Many developed societies have a wealth of such Best Practices. Committee 7 is tasked with identifying these Best Practices and coordinating the creation of any additional ones. For example, this Committee has created a new very comprehensive Best Practice for creating a National Meteorological Society in those countries which do not have such a society. We also plan to put currently available Best Practices from our member Societies on our Website. This Committee is tasked with achieving that.

In order to assist with creating a strong Knowledge Base in the countries of our member societies we organize Webinars and coordinate Training Programs – especially through WMO. Currently, we are working with the Training Branch of WMO to assist them in the Global Campus Initiative. This task is handled by Committee 8 – also known as the Webinars and Training Committee. It is very important to recognize the contribution of scientists and volunteers who are the lifeline of our profession. IFMS has established Committee 9 to define the ways to recognize outstanding contribution to S&T and to volunteerism and the required qualifications for, and form of, “Contribution Recognition”. For the past few years WMO and WB have been promoting collaboration between Public, Private and Academic (PPA) Sectors. WMO has recently launched Open Consultative Platform (OCP) for Partnership & Innovation for the Next Generation of Weather & Climate Intelligence. This will complement the activities of the Global Weather Enterprise Forum of WB which is also promoting PPA collaboration. For many National Meteorological Services and National Meteorological Societies, it is a new concept and they need to be assistance. Dr. Jack Hayes participates in OCP and GWEF meetings and keeps our members informed through Council Briefings and articles in IFMS Bulletins. Jack chairs our Committee 10 which deals with GWE Promotion. IFMS holds its Global Meeting approximately every 2 years. In addition, IFMS is encouraging Regional Meteorological Societies to hold World Weather Open Science Conference (WWOSC) every three years. This effort is supported by Committee 11 – Conferences and Meetings. The host Regional Society will be supported by IFMS and we are expecting WMO to support it. Finally, we believe that in order to attract greater attention and finances, we need to educate governments and public about the wisdom of providing adequate finances to the National Hydro-Met Services and Societies. Committee 12 is meant to educate governments and public.

2.3 Presentations by Member Societies

As a part of the IGM-06, Member Societies were given an opportunity to make presentations on their activities. We have presented a short summary of these reports in this article. More details are available in the IGM-06 Report available on IFMS Website. The following three National Societies (CAM, TMS and EtMS) and one Regional Society (FLISMET) made presentations in this part of IGM-06:

Dr. Oscar Frumento made a presentation on the Argentine Meteorological Society (CAM) which was founded in July 1969 in the city of Buenos Aires basically with the simple promise: “to promote the professional activities of meteorologist”. Currently it has 172 members. The principal initiatives of CAM include:

- Preparation for a draft report for a National Legislation on meteorological activities;
- Holding a National Congress on Meteorology;
- Publishing a scientific journal.

In 1986, the Argentine Meteorological Society (CAM) together with the Brazilian Meteorological Society (SBMET) and the Mexican Organization of Meteorology (OMMAC) founded the FLISMET which currently has membership of the societies of following countries: Argentina, Brazil, Bolivia, Colombia, Cuba, Chile, Ecuador, Spain, México, Peru, Portugal and Uruguay. Met Graciela Salaberri, General Secretary of FLISMET made a presentation on “FLISMET, institutional strengthening, collaboration and exchange” with assistance from her colleague Dr. Rúben Mario Caffera of Amigos del Viento. FLISMET has been conceived as an organ that supports and contributes to the strengthening of capacities in the meteorological societies of Ibero-Latin America and the creation of new societies. What are the synergies that we can develop between IFMS and FLISMET as a bridge that contributes to it?

- Increase collaboration and exchange between our entities.
- Synergies: that involves the Federation and the Forum - Introduce opportunities for members to participate
- **Common Points of our Agendas**
- Get to know each other
- Status of the situation: regional trends
- Looking back and to the future to build a common strategy.

Dr. Buruhani Nyenzi, President of the Tanzania Meteorological Society (TMS) spoke about “Sustainability of Climate Services Initiatives in Africa - Challenges and opportunities”. Speaking about activities of TMS, he stated that since IGM-05 two meetings were organized which were the TMS Annual General Meeting and a National Workshop to present results to various stakeholders on Weather and Climate Information Services for Africa (WISER) Phase II project. He concluded his presentation with the following points:

- TMS made a step forward in revitalization of its activities;
- Recruitment of members continued and the members participated actively in implementation of donor funded activities and succeeded to build capacity and some trust in that area;

- TMS is looking forward to finalizing its strategic plan and start to implement it; and
- TMS believes that implementation of its Strategic Plan will further contribute in revitalizing its activities.
- There are plans to hold an Annual general meeting early February, 2020.

Mr. Workneh Degefu presented a report in the activities of the Ethiopian Met Society (EtMS). The Report addressed the activities carried out, events participated in and planned activities of the Ethiopian Met Society (EtMS). Activities carried out included awarding of scholarships, strengthening cooperation with stake holders, establishment of Female Research Award, Preparation of Guide for Users of Meteorological Information, preparation of a new website, organization of the 12th EtMS General Assembly and the revision of EtMS Regulation. Participation in events included attendance in several civil society organizations arranged meetings, other meetings EtMS was invited to, EtMS members excursion, etc.

3 GWEF Monitoring: Meeting organized by WB on January 15, 2020

We had decided to have our IGM-06 on January 14 and 16, 2020 because the GFDRR-WBG had scheduled their Global Weather Enterprise Forum meeting in Boston on January 15, 2020. IFMS Council members attended this meeting. Here is the Summary of that meeting provided by Dr. Jack Hayes. Three focus area- World Bank will be forming an expert team in the coming months to develop strategy and action plans for GWEF in three focus areas:

- 1) Developing a regulatory framework in developing countries to enable public-private sector collaboration;
- 2) Establishing a pilot program to enable and improve the tender process for modernization programs in developing countries.
- 3) Improving international weather data exchange between public and private sectors.

The World Bank plans to form Expert Teams in the coming months to develop strategies and action plans.

- The World Bank plans a meeting between private sector suppliers and the World Bank procurement section to review and improve its tender process.
- The next GWEF meeting is planned for July in Singapore during the InterMet Asia conference. Should the Corona Virus require cancellation, the Met Tech International meeting in Paris in September is being planned as a backup.

Any questions or input for GWEF can be sent to Dr, Hayes through ifms.collaboration@gmail.com.



Please Submit Articles for IFMS Newsletter #6 as soon as possible but no later than May 31, 2020.

VALUE PROPOSITION OF IFMS

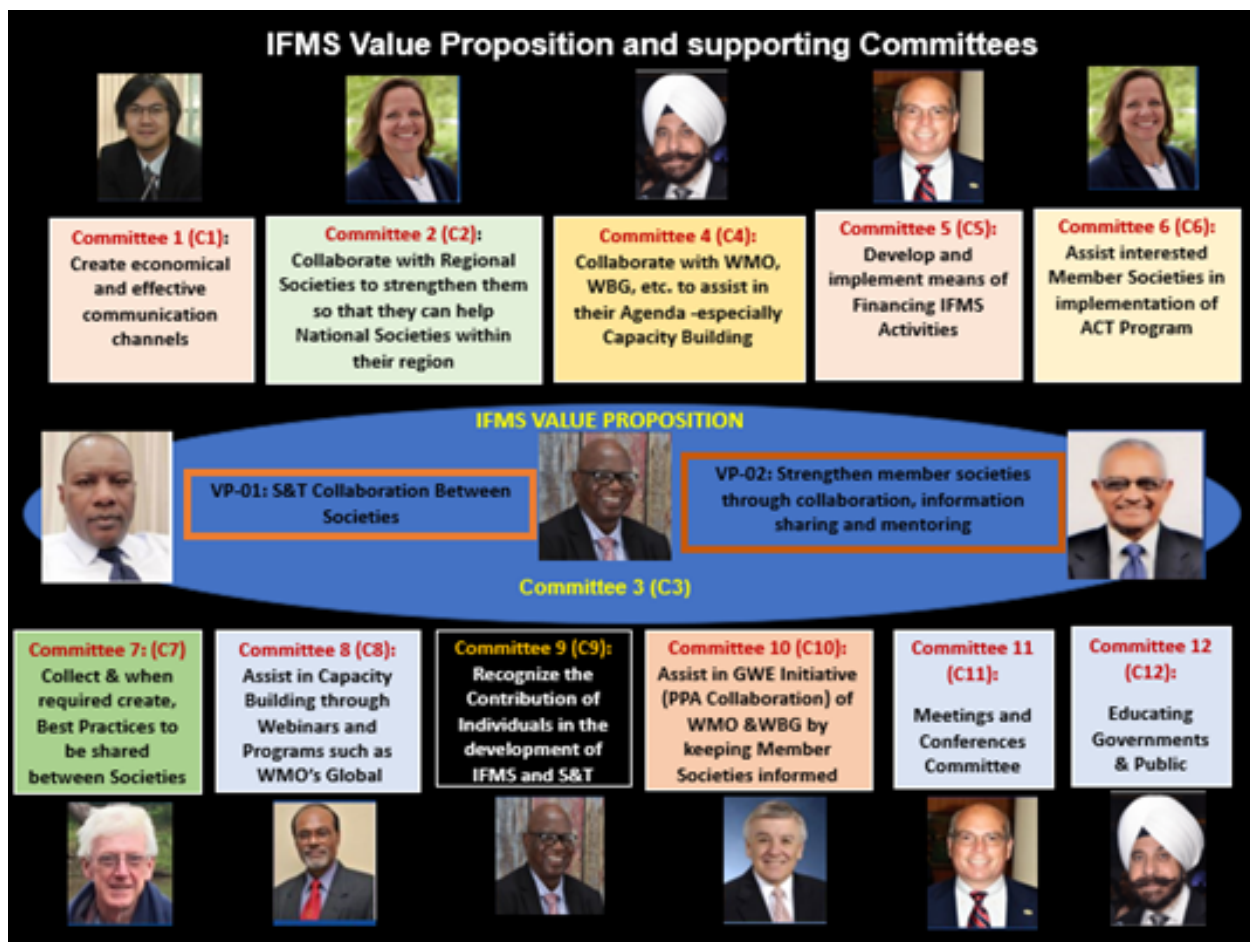
The main objective of the International Forum of Meteorological Societies (IFMS) is to strengthen International Cooperation in S&T and helping National Meteorological Societies to become stronger to help build capacity in their countries. We are also creating Met Societies in those countries where none exists. This objective is being fulfilled by Committee 3. We have various other activities in support of our core Value Proposition e.g.:

1. Developing cost-effective communications channels – Committee 1.
2. Creating Collaboration with Regional Societies (like EMS, FLISMET, AFMS, and so on to be created Asian Met Society, etc.), if required, to strengthen them and take their assistance in strengthening Met Societies within their Region – Committee 2.
3. Collaboration with WMO and WBG to assist in their Initiatives such as Global Campus Initiative (GCI), PPA Collaboration Initiative, etc. - Committee 4.
4. Assisting interested Societies implementing ACT (Accreditation/Certification Training) Program – Committee 6.
5. Sharing Best Practices with each other e.g. Best Practice to create a Society, to run a Conference, etc. – Committee 7.
6. Training and Webinars e.g. we are planning to help WMO in their GCI – Committee 8.
7. We are keeping track of PPA Collaborations Initiatives of WMO (OCP) and GFDRR-WBG (GWEF) through participation of IFMS representative taking part in their meetings and writing Reports and IFMS Newsletter Articles as well as conducting Webinars on this subject – Committee 10.
8. Proposing that the World Weather Open Science Conference to become a regular feature assisted by WMO and conducted by Regional Societies. This will bring the whole international community together to discuss S&T and the Future of GWE – Committee 11.
9. Hoping to conduct some Programs for educating Governments and Public to convince the Governments to spend more money in building infrastructure and Capacity Committee 12.
10. For organizing our finances for all these activities, we have a Finance Committee – Committee 5.
11. Finally, we would like to honor those who very strongly assist us in carrying out above activities and also excel in doing and promoting S&T collaboration internationally – Committee 9.

Societies and Individuals are urged to offer assistance in implementing above tasks. By doing so, you can help this cause greatly.

Working together with passion for the “cause” and not personal or organizational glory, we will achieve a lot more.

THE IFMS NEWSLETTER
IFMS' UPDATES



IFMS Welcomes its New Council Members



Ammar Gaber
Sudanese Met Society



Dr. Oscar Frumento
Argentinian Met Society



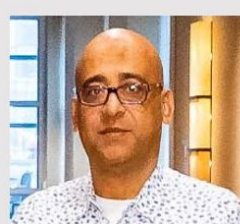
IFMS Warmly Welcomes new Volunteers



Mr. Ramesh Bhatia
Past President IMS &
Retd. DG-IMD



AVM Dr. Ajit Tyagi
Past President IMS &
Retd. DG-IMD



Mr. Mohammed Azouz, Eng.
Member AMS



GLOBAL WEATHER ENTERPRISE FORUM



Jack Hayes, Council Member, IFMS

Background

The Global Weather Enterprise consists of the Public Sector (largely WMO and NMHSs), the Private Sector (international businesses producing weather and climate equipment, systems and services) and the Academic Sector. Also included in this group are non-governmental organizations, professional societies, and users of weather information. The primary goal of the Global Weather Enterprise is to provide and exploit high-quality and timely weather information to protect life and property and the enhance national economies and quality of life.

Over the past four decades, the world has seen an increase in both the incidence and impact of severe weather. As a result, there is an increasing need for accurate, reliable, timely and actionable weather information. At the same time, rapidly evolving science and technology offers the potential to meet this need. There are significant challenges to realizing its potential; these include transitioning promising research results into weather forecast and warning operations, and overcoming the growing gap between weather forecast operations in developed and developing countries. Increased cooperation among the three sectors of the Global Weather Enterprise offers the potential to meet these challenges, to minimize operational limitations, and improve weather forecasts and warnings to meet society's need on a global basis.

Current Initiatives to Increase Cooperation across the Global Weather Enterprise

There are two complementary international initiatives created to increase cooperation and collaboration internationally across the Global Weather Enterprise: The Global Weather Enterprise Forum (GWEF) and the WMO Open Consultative Platform (OCP).

The Global Weather Enterprise Forum

The Global Weather Enterprise Forum was created by the World Bank's Global Facility for Disaster Risk Reduction (GFDRR) in the Spring of 2018 as a follow up action from a World Bank-sponsored meeting in late 2017. Among the 30+ attendees at that day-long meeting were the WMO Secretary General, Permanent Representatives from Meteorological Services with WMO, several representatives from weather industries in the US, Europe and Japan, and Research leaders from academia and labs. At the follow up meeting in Singapore, the GWEF was formed and consisted initially of 12 members, four from each of the three Weather Sectors; a core management group consisting of World Bank, WMO and other leaders from the Weather Enterprise was formed to monitor and provide over arching strategic guidance. Four goals were established:

- Mutually beneficial engagement: strong trust and cooperation among WMO, NMHSs, private industry, the academic sector, international funding institutions, and the societies they all support.
- Sustainable capacity building: cooperation between the GWE and development partners leading to increased capabilities of the weather enterprise in low- and middle-income countries.

- Education and training of the next generation scientists and technologists: increased research and development, operational expertise, and the implementation of innovations that support weather and disaster readiness globally.
- Improved access and exchange of global weather information of high quality capable of appreciably improving the range and accuracy of weather forecasts and warnings.

Over the past two years, initial results include agreement on critical GWE challenges, a broad and constructive dialogue across the three sectors, the opening of debate on important issues related to the global observing system and filling critical data gaps, and development of strategies for educating, training and sustaining the GWE work force.

The WMO Open Consultative Platform

Seeing a broader strategic need, the WMO formed the Open Consultative Platform (OCP) at its 18th WMO Congress in June 2019. Its purpose is to create a high-level and structured dialogue among executive leaders in the Public, Private and Academic Sectors at national and international levels across the weather enterprise. Goals include:

- Strengthening the authoritative voice of NMHSs for weather warnings and other critical weather and climate information,
- Establishing legislative arrangements to enable cross-sector partnerships,
- Encouraging international data sharing,
- Making weather data available for public purposes such as disaster risk reduction.

The planned OCP way ahead will involve creating public-private-sector cooperation models and a code of ethics, organizing and conducting a WMO Global Data Conference in 2020, and hosting annual OCP high-level meetings to provide monitoring and strategic guidance to WMO and GWE initiatives.

GWEF direction following the WMO Congress

Following the creation of OCP, World Bank and WMO leaders met and decided the GWEF provides a supporting capability focused on disaster risk reduction initiatives which complements OCP. In the coming months, GWEF will take action to broaden its international participation from all sectors. In addition, WMO will support and participate in and contribute to GWEF, and the World Bank GFDRR will participate in and contribute to OCP. A GWEF meeting that included WMO and a number of leaders from the international global weather enterprise was held during the annual AMS meeting in Boston to refine the way ahead. How Can IFMS Help? Professional Meteorological Societies can provide a valuable working level resource to both the OCP and the GWEF. Members should:

- Become and stay informed of critical science and service issues within the GWE,
- Be open to and supportive of an active dialogue among the three sectors, including the testing of new concepts,
- Contribute to the growth of cross-sector partnerships within their countries,
- Offer ideas and support to the OCP, GWEF and other strategic initiatives to modernize, improve and sustain weather services.

As stated earlier, weather and climate pose increasing risks and impacts to society; the growing population densities worldwide, especially in environmentally vulnerable areas, make action to mitigate them time critical. The OCP and GWEF initiatives described in this summary represent important actions that can succeed through cooperation and collaboration across the three sectors of the Global Weather Enterprise.



WHERE IS THE WMO GLOBAL CAMPUS?

Dr. Patrick Parrish,
Chief of Training Activities Division,
Education and Training Office at WMO

Contrary to popular misunderstanding, the WMO Global Campus is not a place, and not a website. It is all around us, including all WMO Members states that offer education and training services. Some ask, how can I join? You do not need to join in any official way. It is not a club, not a programme, and not a constituent body of the World Meteorological Organization.

Instead, you will be a part of it whenever you use the resources it offers and make your own collaborative contributions to the initiative. I believe that any confusion about the initiative may originate in the name itself, a surreal combination of contrasting words, “global” and “campus,” one immense and unbounded, one a local community of educators working together, which when placed together become a metaphor for the potential linkages between all education and training institutions serving WMO Members. Some may immediately think that “Global Campus” refers to a move to online learning through its perceived reference to the World Wide Web. But while online options are considered an important component to meeting the learning needs of WMO Members, these are just one learning solution, one means to increasing opportunities. The WMO Global Campus is an ambitious initiative that began in the years leading up to the WMO Executive Council (EC) Session 66 in 2014, which made the decision to launch a feasibility study on the concept as a way of increasing collaboration, cooperation and sharing between education and training institutions. It reached its culmination when the 18th World Meteorological Congress approved the initiative in 2019.

The goal of the WMO Global Campus is to increase capacity to educate and train professionals within WMO Member states and territories. While individual institutions are continuously working to meet expanding learning needs, Member surveys and requests have shown that supply is still not meeting demand. However, through collaboration and sharing, it is expected that this gap can be bridged. The more ambitious and innovative a concept, the more time it can take time for tangible results to appear, and for consensus on its meaning to gel. The initial excitement and high expectations can fade while teams work diligently, but sometimes invisibly, to create viable plans and effective solutions. The WMO Global Campus initiative has followed this pattern. Nonetheless, there are impressive outcomes to report.

The WMOLearn portal (<https://learn.wmo.int>) was established early in 2017 on the WMO public website. This portal points to all external tools and resources related to WMO Global Campus activities, as well as news and highlights on collaborative projects.

A WMO Global Campus Roadmap was completed leading up to Congress-18 and is available for reading on the WMOLearn portal. This Roadmap provides information on the background, justification, priorities, activities and implementation goals for the initiative. “A map is not the territory,” and similarly, the Roadmap does not reveal all that can be done under the initiative. Ongoing implementation and a growing number of collaborators will create new ideas and opportunities.

The WMOLearn Events Calendar was launched in mid-2017, thanks to host and developer, the Caribbean Institute of Meteorology and Hydrology, and the Task Team advisors. The calendar is based on the EUMETSAT/WMO VLab calendar, which provided the technical solution to support it. Further refinements have led to its current implementation at <https://learningevents.wmo.int>, which features information on courses and other learning opportunities in all WMO regions. This calendar, as it continues to be adopted for use by Member education and training institutions, will more fully function as a one-stop location for information on upcoming events, including a search capability to narrow in on specific needs, and the possibility to receive customized notifications when events are announced in topics areas of your interest.

The WMOLearn Library is a new addition to the WMO E-Library (<https://library.wmo.int>). Using this section of the E-Library, users can find learning resources from both WMO Publications as well as from external providers. The WMOLearn Resource Catalogue already offers hundreds of learning resources representing nearly all service areas of Members. Special attention is being given to resources related to WMO competency frameworks. The resources will be useful for both training providers, to aid in the creation of courses and course materials, and for individual learners. Collaborative projects between institutions are promoted and their products made accessible from WMOLearn. The project descriptions on the portal are intended to inspire new collaborative ventures and new offerings from the community. See a new project from WMO Region III, “Virtual Workshop on Meteorology in the Framework of Disaster Risk Reduction,” in which eight countries collaborated with civil protection agencies to improve DRR outcomes in the region. Other mechanisms for promoting collaboration and sharing best practices are in planning, including a database of experts.

The COMET Translations Resource Centre (TRC) has been developed as a collaboration between the COMET Programme and the Meteorological Service of Canada, and with input from WMO. The TRC offers A Guide to Translation Project Management; several Glossaries related to meteorology topic areas; a guide to Writing and Editing for Adaptation, Translation, and Localization; information on Planning and Preparing a translations projects; and information on translation tools. A community forum is also provided (courses.comet.ucar.edu/course/view.php?id=181). Recent discussions with IMS President, Dr. S.K. Dash, identified the need for better sharing of public outreach information and training related to climate and climate change, with international meteorological societies leading the way to gather links to available resources. In the future, there is potential to highlight links to such materials via the WMOLearn portal as a new aspect of the WMO Global Campus.

Quality assurance has been a consideration each step of the way, and processes are in place for both the Events Calendar and Resource Catalogue to encourage the sharing of only high-quality learning opportunities. All contributors are made aware of quality standards and must acknowledge that they are followed by their host institutions. The portals are monitored by expert teams.

The WMO Global Campus aims to build a wide community of practice of education and training providers in WMO disciplinary areas. A new publication, “WMO Global Campus Innovations,” is now moving into the publication phase. This large collection of contributions by Members will highlight innovations in education and training in four areas: technology-enhanced learning, pedagogical innovations, curriculum advancements, and collaboration in education and training. A community site to support discussion about the publication is being investigated.

Promotional materials are needed to encourage participation, and publicity is encouraged to ensure high visibility of all WMO Global Campus activities and tools. Social media will play a key role with WMO Global Campus Connect, including both a Facebook group (www.facebook.com/groups/1879738025638713/) and a WMO Global Campus Connect LinkedIn group (www.linkedin.com/groups/7403773). The Global Campus is also regional (“think globally, act locally” is good practice) and Regional Associations are being encouraged to increase regional collaborations on education and training activities, including needs assessments and cooperative projects. Regional resources are also highlighted on WMOLearn, and meetings of training providers in many regions are being planned. Meetings of Regional Training Centres have already been conducted in WMO Regions III and I.

The only way for this initiative to be fully successful is with the involvement of all Members. You are encouraged to visit WMOLearn and use the Calendar and Catalogue to find learning opportunities. If you are a training provider, you are encouraged to share your courses and products there as well. And of course, we hope you will find inspiration to collaborate with other training providers to achieve your development goals.

PROPOSAL & MODUS OPERANDI OF WORLD WEATHER OPEN SCIENCE CONFERENCES (WWOSC)

Dr. Harinder P. S. Ahluwalia
President of IFMS

1. Background

In 2014, a WMO Open Science Conference (WWOSC-2014) was held in Palais des Congrès Montréal which was organized with the assistance of Environment Canada, the National Research Council of Canada and European Centre for Medium Weather Forecast (ECMWF). It was co-chaired by Alan Thorpe of ECMWF and Michel Beland of Environment Canada. In addition to scientific presentations and discussions, the future of Global Weather Enterprise (GWE) was also discussed in three panels consisting of some of the top experts from Public, Private and Academic (PPA) Sectors.

By all accounts, it was considered to be a very successful Conference sponsored by WMO because it brought scientists from around the world together to discuss the scientific issues as well as, it resulted in formal discussions on the concept of the GWE. However, it has been over 5 years since that Conference was held and to the best of our knowledge, no new such conference has been held or even currently planned.

2. Introduction

One of the major activities of Meteorological Societies is organizing conferences which can be leveraged to hold International Conferences such as WWOSC with the assistance of WMO, WBG, IFMS and Regional Meteorological Societies. We would like to make the following Proposal to WMO after discussing it with the Regional Meteorological Societies. Therefore, this article must be construed as only a Proposal to hold WWOSC.

3. Objective

To hold an International Meteorology Open Science Conference of the type (WWOSC) regularly. With the experience gained in the WWOSC-2014 Conference, a detailed road map can be developed. This conference can discuss not only S&T but also provide a forum for coordinating various activities being undertaken by various leading organizations such as WMO, WBG (World Bank Group), etc. For example, we can discuss progress of GWE, collaboration between Public, Private and Academic sectors.

4. Proposal to hold a World Weather Open Science Conference (WWOSC)

The Proposal is to organize a WWOSC every third year with the assistance of WMO, WBG, IFMS and Regional Met Societies. The idea of PPA (Public, Private and Academic) Collaboration was also solidified in WWOSC-2014 (please see those very interesting GWE Reports on IFMS Website www.ifms.org. These Reports provide unabashed views of various leaders of the Global Weather Enterprise).

To facilitate its organization, societies like, AMS, EMS, and other Regional Societies such as the Asia Meteorology Society (AsMS) currently being developed are requested to collaborate on this idea. Although AsMS does not yet exist, there is an ongoing collaboration between strong players like Japan, Korea and China – India is still to be included. We understand that AMS is not a Regional Society – it is a National Society – but we believe that strong collaboration can be created between Region IV (North & Central America) members with the active leadership of the American Meteorological Society (AMS) – especially, for implementing the idea of WWOSC.

5. Modus Operandi & Frequency

Every third year with one of the following societies in lead: AMS/CMOS, EMS and AsMS, we can organize the WWOSC type Conference with very active support of WMO, WBG, IFMS, etc. Once other Regional Societies such as FLISMET (The Federation of Latin American and Iberian Meteorological Societies) and AfMS (African Meteorological Society) become strong enough to hold it, we can hold a Conference every other year at 5 potential locations. The Conference will be in lieu of the Annual Conference of that society for the selected year. For example, currently AMS, EMS, etc. hold annual conferences. We can request AMS to make its 2022 Conference WWOSC-2022 with full support of above organizations. Similarly, EMS-2025 Conference can be converted to WWOSC-2025 and so on.

6. Organizers

Selected society with the assistance of WMO, WBG and IFMS and other Regional Societies in that Region.

7. Conclusion

It is feasible to hold regular World Weather Open Science Conference (WWOSC) if the Regional Meteorological Societies and WMO are prepared to accept this Proposal and WBG is ready to support it. IFMS could play a strong coordination role.

The purpose of this article is to seek the opinion of all the players proposed in this article.

HOW TO DONATE TO THE INTERNATIONAL FORUM OF METEOROLOGICAL SOCIETIES



The International Forum of Meteorological Societies (IFMS) is meant to coordinate the efforts of the National Meteorological Societies of the World in the same manner as the World Meteorological Organizations (WMO) does for the National Meteorological Services.

Ways to donate to IFMS

Please note that the following mechanisms for sending Contributions/Donations to IFMS can be used:

1. When a society wishes to contribute to IFMS, it should use the Bank Transfer information which has been provided to all member societies.
2. You can also send an international money order or cheque directly to IFMS on AMS address (45 Beacon St, Boston, MA 02108, USA) c/o Keith Seitter clearly indicating that the contribution/donation is meant for IFMS. Please remember that societies can claim such a donation as an expense and a receipt for this purpose will be issued by IFMS with its Charitable Registration Number clearly indicated on the receipt.
3. When an individual in a given country wants to make a financial contribute to IFMS, he/she can donate it to his/her National Meteorological Society clearly indicating that the donation is meant for IFMS. The local National Meteorological Society can issue its own charitable receipt to the donor and then the money so collected from all donors needs to be transferred say on a quarterly or biennial or annual basis to IFMS. An official receipt will be issued by IFMS.
4. The Crowdfunding we have established is most useful for American citizens or citizens of those countries which accept receipt from an International Charity like IFMS and also can donate in US\$. in this case, please use the following link to donate funds to IFMS:
<https://www.classy.org/campaign/IFMS-Funding-2019/c244490>

We would greatly appreciate the contributions made by all practitioners and well wishers to assist IFMS in strengthening existing societies and creating new ones.

CALL FOR VOLUNTEERS FOR IFMS ACTIVITIES

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

1 Introduction

The IFMS is a key organization working for the promotion of hydrometeorology. It is also a very important component of the promotion of the Global Weather Enterprise. Although we plan to have a small secretariat to run the day to day affairs, fundamentally it is a volunteer-based Organization. In order to implement its Value Proposition (see the Article of IFMS Value Proposition in this Newsletter) we need volunteers for the following activities:

1. Webinars
2. Best Practices
3. Campaign to attract additional Member Societies and also create new societies
4. Fund Raising Campaign Coordinator
5. Coordinating Website Updates
6. Coordinating Collaboration
7. Reviewers for Newsletter
8. Evaluation of best ways of using Social Media by IFMS.

2 Description of Duties

For each if the items discussed below, we are looking for a Chief Coordinator Volunteer who can form his/her own team to implement the stated item.

2.1 Webinars

One of the activities of IFMS is presenting Webinars on various topics including technical ones. We are looking for a Volunteer to be the Chief Coordinator of this activity. Kindly offer your services. The tasks will include:

- 1) Looking for interesting Webinar Topics
- 2) Getting it approved by the Council
- 3) Sending messages to all societies asking them to contact their members so that interested ones can register for the Webinar
- 4) Organize the Webinar.

2.2 Best Practices

One of the Value Propositions of the IFMS is to promote professional standards and best practices across meteorological service providers and practitioners around the world. Best Practices are an important component of running an organization efficiently. Normally each Society creates such documents and spends considerable effort in doing so. The idea here is that all IFMS member Societies can help each other – especially by developing Common Documents related to Best Practices which can be tailored by each Society to meet its local requirements and governance.

The duties of the Chief Volunteer for this activity are:

- 1) Look for available Best Practices
- 2) Get them approved by the IFMS Council
- 3) Receive suggestions and think of creating new Best Practice items and details.

2.3 Campaign for Membership

The IFMS would like to have all existing National Hydro-Met Societies (NHMSoc) to become member of IFMS. In addition, there are many countries which should have an NHMSoc but they do not have such a society. We are starting a campaign to convince the local National Hydro-Met Service to start such a society in its country. We have included a couple of articles on this issue in this edition of our Newsletter.

The typical tasks of the Chief Volunteer for the Membership team are to:

- 1) Identify countries which have an NHMSoc but it is not a member of IFMS
- 2) Send a letter from the IFMS President behalf
- 3) Identify countries where there is no NHMSoc but should be one
- 4) Send the material we have prepared for such countries to them
- 5) With the assistance of IFMS pair them with societies in their region who are prepared to help such countries.

2.4 Fund Raising Campaign Coordinator

IFMS needs funds to progress to become a very strong organization for the betterment of the Global Weather Enterprise (GWE). We need funds for:

- i. Secretariat – with an Executive Director and an assistant
- ii. Very essential travel of staff and Council Members
- iii. Web site and its support
- iv. To cover the travel cost of needy
- v. Other miscellaneous costs.

We are hoping that looking at the utility of the IFMS, and the help it can provide them in their initiative to strengthen the GWE, the WMO and the WBG will help us financially. However, we need additional funds. We need to define ways in which we could generate additional funds. We expect this Volunteer Group to do the following:

- 1) Explore and define potential ways of financing IFMS
- 2) Produce a document discussing different ways of financing IFMS with the help of IFMS
- 3) IFMS will consider the suggested methods to finance IFMS and decide which ones to implement.
- 4) Make plan to implement selected items
- 5) Help implement them.

2.5 Coordinating Website Updates

Currently, the IFMS Website is maintained by AMS for which we are grateful. We need to request updates and plan regular updates. Volunteer is required to coordinate this effort.

2.6 Coordinating "Collaboration"

One of the Value Propositions of the IFMS is to create "Collaboration" between member societies and also between members of these societies. For this we have created a "Collaboration" tab on our website. Those member societies or their members who are interested in collaborating with another society or its members can make a request by filling the provided form and submitting it via email address: ifms.collaboration@gmail.com. The Chief Volunteer for this activity will monitor this email address frequently and check whether any collaboration request has been received. If yes, then he/she will take the required action which means advertise this request on the IFMS Website and find interested parties.

2.7 Reviewers for Newsletter

We are creating an IFMS Newsletter Review Board which will consist of three members. One of these reviewers will be the Chief Reviewer who will coordinate the activities of the Review Board. The duties of this Review Board will be to solicit material from member societies, review the received material for the relevance of the subject matter to the activities of the IFMS and quality of text.

2.8 Social Media usage by IFMS

One of the popular and effective ways of communication between all components of the IFMS (society to society, individual to society and individual to individual) is Social Media. The potential Social Media candidates for Professional Societies are Facebook, LinkedIn, Twitter, WhatsApp, Snapchat and Instagram.

We would like to have volunteers to determine the best ways of using these Social Media and steps to implement them. It would be very useful if proposed volunteers have already implemented it for some organization.

3 Conclusions

The IFMS is basically a volunteer-based organization. In order to implement its Value Proposition, we need assistance of volunteers. We are requesting members of our member societies to offer their service for important tasks discussed in this article. In turn, we will recognize our best volunteers through rewards and publishing their names in our Newsletter.



CALL FOR VOLUNTEERS

- **IFMS needs Volunteers for various Committees defined in this Newsletter**
- **Please offer your service by sending an email with the following information:**
 - a) **You contact Information: Name, Society affiliation, email and cell number**
 - b) **Area(s) from above Article you would like to offer your volunteer service**
- **Send it to the following address:**

ifms.collaboration@gmail.com

SELECTED ARTICLES

PROPOSED INTEGRATED EDUCATIONAL AND
TRAINING PROGRAMME ON WEATHER AND CLIMATE

Prof. Sushil Kumar Dash
President, Indian Met Society
Formerly Professor and Head, Centre for Atmospheric Sciences
Indian Institute of Technology Delhi, India

1 Background

Although recently COVID-19 has brought the world to its knees, let's not forget that amongst all the sciences relevant to the society, Climate Science is one of the most important issues facing the mankind today. It is an accepted fact that the climate is changing and climate crisis is knocking at the door. In addition to the rise in earth's mean surface temperature, sea level rise and snow/glacier melting, there are more serious weather changes in terms of extremes in rainfall and temperature. In addition, occurrence of more intense cyclonic circulations, thunderstorms and forest fires are the cause of concern. Urban heat island effects are felt increasingly all over the world. Air pollution is another deadly problem. All the above weather and climate related issues are creating challenges for the survival of mankind in terms of loss of life and property.

Weather and climate data archived from observational networks and also from several mathematical models have been helping scientists to arrive at important results concerning the contribution of mankind to the climate issues at hand. Simultaneously, efforts are going on to explore alternate methods of energy production so as to shift to the use of green energy and hence clean atmosphere. Further, state-of-the-art climate models are being used to project the future changes in climate. However, it should be noted that these models are not perfect and there are numerous uncertainties in climate projections.

Basically, weather and climate are the results of nonlinear interactions between the earth, atmosphere and ocean. The vagaries of weather and climate manifestation are not fully understood. There are several gaps in scientific understanding. In spite of these known scientific facts, the available climate information needs to be used effectively for the overall benefit of the society. In parallel, it is essential that all sections of the society should be aware of the scientific limitations in weather and climate related issues. It is very important for the school children to learn about the climate related issues so that they will think about the solution when they grow. The general public should be aware of the impending climate problems so that they will try for mitigation and adaptation strategies. Policy makers should be in the know of the climate information so that they will plan for suitable policies. In a way all sections of the society need education and training at different levels.

The national governments are doing their best to tackle the climate related unusual events. However, government actions have their own limitations. Expectations from the people are also high and the workload is so high that national meteorological agencies cannot always deal adequately with it. This is where the role of Met Societies across the world in general and that of IFMS in particular comes in. American Met Society and Royal Met Society are very much ahead of several other Met Societies in designing and implementing effective educational programmes which have yielded very good results. Some Met Societies are trying to implement educational programmes according to their resources and capabilities. There are other Met Societies which have not taken any step in regards to education and training concerning weather and climate. Even some countries do not have Met Societies at all. Education and Training are the most important aspects for the overall growth in any field. IFMS can play very important role by undertaking an integrated programme on training the teachers, conducting short term courses for the stake holders, training the impact study scientists on the use of climate data, conducting thematic workshops and conferences and by creating awareness through the observations of important days such as WMO day, Earth day, World Environment day, Ozone day etc. The most important objectives of IFMS is to help existing Met Societies enhance their weather and climate related scientific activities and to create more Met Societies in the countries where there are none. It is hoped that through the proposed integrated Education and Training programme, the main value propositions of IFMS will be realised. In each member society of IFMS, volunteers will be needed to undertake the proposed programme and there can be mutual exchange of such volunteers. A successful course developed for a particular region can be followed in another region with similar climate without duplicate efforts. In a way, mutual collaboration between member societies of IFMS will strengthen through the proposed programme.

2 Components of the Integrated Programme

The proposed project has five components which are summarised below. All the five component programmes will be undertaken each year. All existing member societies of IFMS will participate in some programme or the other depending on their convenience and funding available.

2.1 Teachers Training

Teachers are the backbone of any society. By training a teacher, one trains several others in the way of cascading effect. In several member countries, there are very few colleges/universities/organisations where weather and climate related teaching and research have been going on. There is hardly any climate science course at the school level of several Asian and African countries. Geography is the only subject taught at schools which covers some aspects of the climate.

Science of weather and climate is interdisciplinary in nature and it covers all important science subjects such as physics, chemistry, mathematics and geography in schools. Teachers, once exposed to climate science can easily explain their students all the salient present issues related to climate change.

It is proposed to formulate specific course materials for the teachers so that they will have good exposure to basics of weather and climate science, the observational set up, mathematical models, climate change, weather extremes and related other issues. Experts will also visit specific schools and give seminars so that students will be exposed to basics climate science and the challenges of climate changes. Such efforts will encourage students to know more about climate by opting for higher studies along this line. The duration of teachers training programme typically can be for one week, since teachers are otherwise very busy in school activities.

2.2 Short Term Certificate Courses

Climate change has impacts on several sectors of the society. The important stake holders of climate services include agriculture, human health, water availability, coastal ecosystem, forests, disaster management, NGOs, local administrators and overall the policy makers. Persons working in these sectors not necessarily have adequate knowledge and information about the basics of weather and climate science. Since climate services are going to be dominant in the coming years, the stake holders need to have reasonable training in the weather and climate science. It is the primary responsibility of Met Societies to keep the climate related stake holders well educated and informed about the present and future climates.

Every Met Society has experts and experienced scientists who can formulate short term courses of about two weeks each on specific sectors and also impart training in batches. In countries such as US and Europe, such courses exist and the society is getting benefitted. To add quality to such short term trainings, IFMS can award certificates to the participants. In due course, such training programmes will be welcomed by the people concerned and some fees can also be charged from the participants. Thus, these short term certificate courses can be made self-sustained financially. In order to issue certificates at the end of such courses, the duration should be minimum for two weeks.

2.3 Training on the Use of Climate Data

Today, weather and climate data are available from several sources freely online. These data are from the observed as well as model sources. Several weather and climate scientists are using such data in their R&D and publishing important results. Scientists in the impact sciences such as agriculture, human health, water availability and environmental sciences are eager to use climate data in order to examine the present and future relationships of important parameters in their sectors with the climate. However, many impact scientists are not well informed about the availability and use of climate data. Moreover, these climate data are archived on web sites in specific formats. In several platforms while discussing climate impact studies, it has been felt that there should be special training programmes organised for the scientists of non-climate science. One week training programme in several countries will definitely help the scientists from non-climate background in using the relevant climate data in their R&D. IFMS can identify the experts and request them to impart the designed trainings.

2.4 Region Specific Programmes and Thematic Workshops

World has several types of climates. In some large countries such as India, there are even six types of climate. Summer monsoon along with its cyclonic disturbances are dominant in the south of India while western disturbances are prevalent in the north. Every country has its own climate calamity peculiar to that region. Heat waves, Cold waves, Cloud bursts, Flash floods, Urban flooding, Landslides, Forest fires, Coastal inundation, Tropical cyclones, Typhoon, Tornadoes, sea level rise and several other weather phenomena are region specific and hence need focus in that region. Education and Training on these aspects when conducted in the concerned regions will be very effective and beneficial to the people. The education and training will be more effective when people relate their day-to-day experience with weather to the teaching materials. Therefore, there should be emphasis on the regional weather and climate and hence the same teaching material cannot be used in all parts of the world.

Currently, the following popular training courses in Weather and Climate are available.

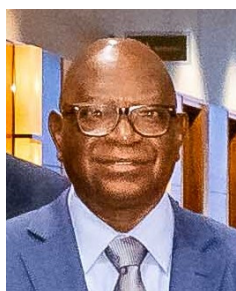
- i)EUMETRAIN International training project sponsored by EUMETSAT to support and increase the use of meteorological satellite data. EUMETRAIN Case Studies URL EUMETRAIN Training Modules.
- ii)MetEd: This website provides education and training resources to benefit the operational forecaster community, university atmospheric scientists and students, and anyone interested in learning more about meteorology, weather forecasting, and related geoscience topics. MetEd is populated and maintained by the COMET® Program, which is part of the University Corporation for Atmospheric Research's (UCAR's) Community Programs (UCP).
- iii)WMO CGMS VLab: The Virtual Laboratory for Training and Education in Satellite Meteorology (VLab) is a global network of specialized training centres and meteorological satellite operators working together to improve the utilisation of data and products from meteorological and environmental satellites.

IFMS with the help of its member societies and volunteers should undertake the task of modifying these courses specific to the weather phenomena and language of the region. This effort will help the programme to be more effective and will also reach the masses. Region specific programmes should be arranged for a week or so.

2.5 Awareness programmes

Considering the complexity of the climate change, its origin, uncertainties and tremendous adverse impacts on the society, it is of paramount importance that various facets of climate science and climate change reach the people of all sectors in the society. IFMS has a very responsible role to take science to the society by organising various types of events. There are several ways. Awareness about the extreme weather events and related safety issues can be explained to the people in batches. Human contribution to climate change can be told to the people in simple local languages by organising town hall seminars and also in schools and colleges. World over, International Days are observed on important topics and issues. Mostly, the meteorological community is involved with World Meteorological Day, World Environmental Day, Ozone Day, Water Day and Oceans Day. Several Met Societies across the world are observing these days to a limited extent. When specific funds are available to the Met Societies, they can involve more people and celebrate these important days by arranging invited talks that will educate the people. There can also be interactive sessions and specific field visits on these days. Such programmes will be mostly for very short durations, may be for a day or two.

MEMBERS' UPDATES (REGION I)



SUSTAINABILITY OF CLIMATE SERVICES IN AFRICA - CHALLENGES AND OPPORTUNITIES

Buruhani S. Nyenzi*, Philbert Tibaijuka, Faustine Tilya,
and Selemani Chillo

VP of IFMS* and Tanzania Meteorological Society

Climate change threatens to derail gains hence need scale-up and accelerate support for climate change adaptation. Climate change adaptation initiatives show good potential for economic viability and new generations of climate change adaptation initiatives need to enhance adaptive capacity. Adaptation is the main priority when it comes to addressing resilience to impacts of climate change.

In the 1980s, African countries especially the Eastern and Southern, experienced severe desertification and droughts situation. It was a few years later the international community adopted the major Conventions (UNFCCC (1992)) and (UNCCD (1996)). These emphasized the role of climate on drought in the desertification process and placed greater emphasis on drought preparedness and mitigation against reactive measures. The need to establishing and strengthening of Early Warning Systems (EWSs), preparedness and management which took into consideration of seasonal to inter-annual climate predictions was put forward.

In 1988, the Drought Monitoring Centre (DMC) was established for 22 countries in Eastern and Southern Africa with centres in Nairobi, Kenya and Harare, Zimbabwe with responsibilities that included addressing all climate-related risk challenges in the region. However in 1990 DMC Harare became a full Southern Africa Development Community (SADC) Centre. DMC Nairobi had also gone through changes that in 2003 it had become an institution of the Inter Governmental Authority on Development (IGAD) and it also changed its name to IGAD Climate Prediction and Application Centre (ICPAC).

In 1995, WMO responded by establishing the Climate Information and Prediction Services (CLIPS) project which adopted new science and technology during the development of climate information. This was an interface between the development of climate information and products and their applications. It was also to contribute in building capacity of National Meteorological and Hydrological Services (NMHSs) through regional institutions such as African Centre for Meteorological Application and Development (ACMAD) and DMCs and in collaboration with other international institutions such as NOAA and IRI from USA, UNDP and others.

Efforts were made to initiate a process that would make DMCs effectively produce and communicate seasonal to inter-annual products and information. This led to a Workshop held on 4th-6th October 1999 in Kadoma, Zimbabwe. The workshop also addressed the sustainability of the process for production and dissemination of seasonal and inter-annual climate services. Key recommendations from the workshop included a process at regional level that was called the Regional Climate Outlook Forum (RCOF). The RCOFs were supposed to: Enhance a two-way communication between producers and users of climate products; Carry more work at the producer level to improve the quality of the forecast; Train producers, extension officers, media and farmer communities on the use and value of Climate information and products; Collaboration among different stakeholders to take charge of various elements of the programme; and Need to improve timing of information, spatial and temporal accuracy of the products.

The RCOFs are given different names for each region. In Southern Africa and Eastern and Great Horn of Africa regions are referred as SARCOF and GHACOF respectively and are organized by Regional Centres in collaboration with NMHSs and other African and International Institutions and donors who are also major funding agencies of the process. They are usually held prior to the beginning of every major rainfall season with an aim of developing a single best regional consensus seasonal climate outlook product which later is downscaled at national level. The participants apart from Scientists include: media experts, policy-makers, user sectors and public community. The number of participants has continued to grow with others being ready to use their own sources of funding. They introduced the National Climate Outlook Workshop process for downscaling regional products to national level. They also triggered close collaborations amongst NMHSs and users, donors, UN bodies, some vulnerable communities, and integration of Indigenous knowledge and enhanced interaction with the users from various sectors thus improving the dissemination of climate information and prediction products. RCOFs are now spread worldwide in regions of common climatic conditions.

In 2009, WCC-3 recommended establishment of Global Framework for Climate Services (GFCS) which was a UN-led initiative spearheaded by WMO with a Vision to enable societies better manage risks and opportunities arising from climate variability and change. This was to be done through development and incorporation of science-based climate information and prediction into planning, policy and practices. The GFCS calls for countries to establish National Framework for Climate Services (NFCS) which underlines: The necessity of increased political support and institutional collaborations; the urgent need for enhanced weather and climate services delivery to end users; improved access to weather information and climate services for the five priority sectors; the need for strengthening partnership, increased support in the provision of weather and climate services; and strengthening research efforts.

Main challenges of climate services are inscribed in: Observations and monitoring; Research, Modeling and Prediction; Climate Service Information System; User Interface Platform; and Capacity Development both on human resources, equipment and data. Urgent actions are needed to address the following gaps:

- Raising awareness for broad ownership, support and communication to adapting to climate variability and change;
- In climate risk management for strategic planning and disaster risk reduction;
- Climate-based services support to governments, the private sector and civil society; and
- Improvement of observations, data management and infrastructure to provide essential data to cover the above first three gaps.

*The Full Paper will be Released on IFMS Website

MEMBERS' UPDATES (REGION III)

NEW RELEASE OF 'METEOROLOGICA', THE ARGENTINE SCIENTIFIC JOURNAL DEDICATED TO ATMOSPHERIC AND OCEANOGRAPHIC SCIENCE



Dr. Oscar Andrés Frumento, Council Member, IFMS

METEOROLOGICA is the semestral journal of the Argentine Meteorological Society (Centro Argentino de Meteoról). First of all, I would like to thank AMS on behalf of IFMS for providing us with very nice facilities, including lunches and a nice booth in the Exhibition. METEOROLOGICA is the semestral journal of the Argentine Meteorological Society (Centro Argentino de Meteorólogos), which is published since 1970 and serves on the Core of Argentine Scientific Journals since 2005. METEOROLOGICA publishes original papers in the field of atmospheric sciences and oceanography written in Spanish and/or English. Theoretical and applied research description, dataset description, extensive reviews about a topic related with atmospheric sciences or oceanography are within the journal scope. METEOROLOGICA publishes one volume (two issues) per year.

METEOROLOGICA is indexed in SCImago Journal and Country Rank, SCOPUS, Meteorological & Geoastrophysical Abstracts, included in LATINDEX catalog, SciELO e-Library and the EBSCO, SHERPA/ROMEO and DOAJ database.

As follows, it is included a short brief of articles published in its last issue, Volume 44 N° 2.

LONG TERM-TRENDS IN RAINFALL OVER TUCUMAN UNDER THE EFFECT OF CLIMATE

CHANGE - Flavia M. Bazzano, Teresita Heredia, Ana G. Elías, César M. Lamelas and Jorge Forciniti
The empirical evidence, as well as the simulations, indicates that the global warming would induce an increase in the humidity of the air and in the intensity of precipitations in some regions of the planet. Such is the forecast for the province of Tucumán in the area within latitudes 26.1°S and 27.8°S and longitudes 64.8°W and 66.0°W, located in an intermediate geographical region between tropical and subtropical. From the daily rainfall records of 20 stations in Tucuman, trends in total annual precipitation, maximum daily and number of days with precipitation greater than the 95th percentile were analyzed. Significant negative trends predominate over a few positive ones obtained in the region, both in the annual totals and in the number of intense episodes in the period 1973 to 2015. However, in the stations with longer periods prevail significant positive trends. On the other hand, in the annual daily maximum series prevail non-significant trends. The statistical analysis of the historical series is an important tool that collaborates in the decision making to mitigate the effects of climate change in the region.

SENSITIVITY OF DIFFERENT CONFIGURATIONS OF AN ENSEMBLE BASED DATA

ASSIMILATION SYSTEM IMPLEMENTED OVER SOUTHERN SOUTH AMERICA - María Eugenia Dillon, Yanina García Skabar, Eugenia Kalnay, Juan José Ruiz and Estela Ángela Collini

MEMBERS' UPDATES (REGION III)

One of the big challenges in numerical weather prediction is to reduce the uncertainty in the initial conditions. At the National Meteorological Service (SMN) of Argentina, many efforts have been carried out to address this issue. In this work, the regional Local Ensemble Transform Kalman Filter coupled with the Weather Research and Forecasting model (WRF-LETKF) system is evaluated. The domain covers most of Southern South America with a horizontal resolution of 40 km and a 2-month period is tested (November and December 2012). A 40-member ensemble is used to assimilate conventional and satellite observations. In this work a multi physics ensemble that includes different choices for the cumulus and planetary boundary layer parameterizations is evaluated. This experiment shows that, overall, the multi physics approach produce better results than a single physics configuration. The inclusion of boundary perturbations has also been explored although, it does not produce a significant impact in the current experimental settings. In addition, we explore the sensitivity to the assimilation of the Atmospheric Infrared Sounder (AIRS) temperature and moisture retrievals. The results indicate that the inclusion of these retrievals is a valuable alternative to deal with the scarcity of radiosondes observations in Southern South America. Finally, a comparison among the different WRF-LETKF ensemble mean forecasts and deterministic WRF forecasts initialized from the GFS (Global Forecast System) without assimilation, was carried on. Generally, a positive impact of the data assimilation technique was achieved, although it was found that the regional system needs to keep large scale information from the global model.

REVISITING THE EXTREME COLD AIR OUTBREAK OF JUNE 1967 OVER CENTRAL ARGENTINA, FIFTY YEARS LATER - Ramiro I. Saurral and Juan J. Ruiz

During the month of June 1967 cold polar air moved from the Antarctic continent into central Argentina, where it brought extremely low minimum temperatures, snow and extensive damage to crops. Fifty years later, this paper revisits such synoptic situation making use of reanalysis data as well as numerical modelling in order to characterize the physical mechanisms at play. In a statistical context, this cold air outbreak was the most intense in the last 50 years in an extensive area covering central Argentina, not only at the surface but also at low and middle levels of the troposphere. The cold air outbreak was associated with the displacement of a cold front, behind which a polar air mass moved from subpolar latitudes onto central and northern Argentina. Although the air mass suffered a noticeable modification while traversing oceanic areas, as seen by the numerical simulations, temperature advection first and radiative cooling afterwards contributed to the extreme minimum temperatures.

PRELIMINARY EVALUATION OF A VERY SHORT-TERM PRECIPITATION FORECAST SYSTEM BASED ON THE EXTRAPOLATION OF RADAR SYNTHETIC DATA - Aldana Arruti, Juan J. Ruiz, Paola Salio and Yanina García Skabar

Central and northern Argentina are one of the most favorable regions for the occurrence of high impact meteorological events. These events can generate intense precipitation, large hail and/or extreme winds, causing enormous damages to the population. Therefore, it is essential to make progress in improving very short-term weather forecasts (0-6 hours) of this type of events. In this work, a very-short term forecast model based on extrapolation techniques of the reflectivity field is developed and evaluated. This method assumes that precipitating systems can be described from their movement, estimated from the latest available information and consists in two steps. Firstly, it estimates a vector field describing the displacement of the reflectivity field. Secondly, this motion field is used to extrapolate the reflectivity field displacement using a semi-lagrangian advective method. In this work we compare different variants in the algorithm that estimates the displacement of the reflectivity field and its impact on 2-hr reflectivity field forecasts. Experiments were performed for a case that represents the evolution of a convective system over central Argentina. We use synthetic radar data generated from a numerical simulation with high resolution that explicitly resolved convection dynamics.

MEMBERS' UPDATES (REGION IV)

CELEBRATING A CENTURY OF SUCCESS - AMS



Dr. Harinder P. S. Ahluwalia
President of IFMS

In mid-January 2020, the American Meteorological Society celebrated its centennial and also hosted the IFMS Global Meeting #6 (IGM-06). Over 5,000 people attended the AMS' grand celebration which had a nice amalgamation of science through presentations and celebration with a number of grand parties. I would like to congratulate AMS for its awesome progress over the past century growing from 600 members to over 13,000 members and more than 70 staff. AMS did not become such a strong organization just by wishing it; it happened with meticulous planning, open mindedness, and adjusting itself to grow with the need of time.

Today, AMS is the strongest National Meteorological Society in the world and an envy of all other Meteorological Societies. With its stewardship of science through conferences, journals, bulletins, special topical meetings, etc. it has been able to grow strongly and make a valuable contribution to the Global Weather Enterprise. Its strength, in my view, comes from the strong contribution it makes to the profession, support it receives from Public, Academic and Private sectors and its willingness to adopt to emerging situations. Knowing that government funding is not increasing much despite Global Warming and its adverse effects and the private sector is developing very fast, certainly in the US and also in many other countries, AMS works hard in promoting PPA Collaboration implicitly and explicitly. Whereas, before the "Fair Weather Report" in 2003, there was a strong conflict between the three sectors, thereafter, the three sectors are collaborating with each other and AMS has been providing the neutral forum to them to resolve any conflicts. AMS also makes a great contribution to GWE in other areas such as advancement of science, input to national policy, professional standards, etc.

Whereas, many other National Meteorological Services are reluctant to adopt to this new reality, the Director of NWS, Dr. Louis Uccellini, is promoting PPA collaboration in various forums and enunciating its benefits. Due to its strength and visibility, AMS attracts high quality volunteers and we had the benefit of having two of the best, Dr. Timothy Spangler and Dr. Walter Dabberdt, give presentations in IGM-06 on the Global Campus and Volunteerism, respectively.

In addition to all above, AMS is also outward looking; it has an International Affairs Committee (IAC) which is tasked to provide assistance to developing nations. AMS has created a number of bilateral Memoranda of Understanding with other nations for cooperation in different ways. Now that IFMS is strengthening itself, IAC can work closely with IFMS to avoid duplication.

AMS has already set a course for its second century which can be found at the following site:
<https://www.livingontherealworld.org/ams-second-century-countdown-five-new-starts/>

They plan to enhance and strengthen their existing programs to make a greater impact. Here is a summary of their second century initiatives extracted from the above site.

Assistance in Career enhancement & advancement of its members - a key benefit of membership in a professional society is access to knowledge and opportunities for learning and networking. The AMS will also renew and extend its partnerships with academic institutions, other professional societies, and the industry, whilst encouraging an agile mindset of lifelong learning from its members.

Local-collaboration networks. AMS recognizes that one way to greatly grow its impact is by emphasizing local activities. Local assets start with AMS local chapters but also encompass universities, NWS offices, broadcasters, companies, high schools, active retirees, and more. Effective local networking brings substantial benefit to each organization; in doing so, it expands AMS impact, builds value for AMS members, and potentially grows membership.

AMS Volunteering Program (AMSVP) to offer opportunities for AMS members to apply their expertise and knowledge to the solution and mitigation of serious problems that confront worldwide communities and populations. The purpose of the AMSVP is to promote opportunities for AMS members to make their expertise and experience available to non-profit and academic organizations worldwide and to facilitate service for the greater good.

MEMBERS' UPDATES (REGION IV)

Partner-Organization Web. Expanded partnering helps AMS leverage its resources and grow its impact through organizational collaboration. The goal of the Centennial's Expanded Partnering initiative is to build AMS's partnering capacity in two ways:

- Greatly amplify the depth of collaboration possible with AMS' core partnerships;
- Significantly grow the number of partner organizations.

AMS can effectively interact with partner organizations at all levels of collaboration, leveraging technology to accomplish this efficiently. AMS benefits from the collaborations and from its international leadership in building the underlying platform technology.

Historical Research Network. The AMS Historical Research Network (HRN), coordinated by AMS, is a virtual and scalable network of historical information and resources linking multiple institutions that bridge the historical and meteorological communities. AMS proactively supports projects that document and interpret the contributions of women and minorities. They also aim to identify issues of social relevance, preserve the historical record, and coordinate with educational and public outreach programs to reach new generations.

A documentary showing the journey of AMS through the past 100 years is available on the following website: (<https://www.youtube.com/watch?v=fkQOPESj4CE>).

Acknowledgement of some of those who have played a big role in the development of AMS

AMS acknowledged the contribution of Dr. Bill Gail (and his entire Centennial Committee and their extended network) for all their work in getting them to this 2020-moment. In addition, AMS recognized the great contribution made by their Executive Directors to bring them to where they are today:

Dr. Ken Spengler (AMS executive director from 1946-1988; died 2010).

Dr. Richard Hallgren (1988-1999)

Mr. Ronald McPherson (1999-2004)

Dr. Keith Seitter (2004- present).

Acknowledgement of Assistance to IFMS

AMS has been the strongest supporter and benefactor of IFMS for which we are eternally grateful. AMS has hosted three IFMS Global Meetings out of 6 held till today:

1. The original one in 2008 in Atlanta where IFMS was conceived when Dr. Walter Dabberdt was the President,
2. The second one in 2015 in New Orleans in cooperation with CMOS where it was decided to formalize IFMS by incorporating it and creating a Council when Dr. Alexander E. MacDonald was the President,
3. The third one is the current one (2020) in Boston when Dr. Jenni L. Evans was completing her term as President and Dr. Mary M. Glackin was beginning her term.

In addition to the above, AMS has supported IFMS in many other ways e.g. maintaining the website, helping and paying for incorporation, maintaining accounts and taxation; etc. In fact, whenever we have asked for help, AMS has been there. We wish that other strong societies were also magnanimous like that.

We hope that AMS will keep supporting IFMS even after IFMS is able to support itself financially. IFMS can jointly lead some of the Programs AMS is interested in and vice versa.

**IFMS Solutes and Congratulates the
American Meteorological Society on its
First very successful century and wishes
even more success in the next Century.**

Congratulations

MEMBERS' UPDATES (REGION V)

REPORT FROM AUSTRALIA ON THE
AMOS2020 CONFERENCE

Mary Voice, AMOS



The AMOS annual conference (AMOS2020) was held 10-13 February with adjacent workshops on the Sunday and Friday. The location was Fremantle, just south of Perth on the west coast of Australia and bordering the Indian Ocean. How relevant, since an unusually large Indian Ocean Dipole (IOD) episode during austral winter/spring preconditioned the land (desiccated and heated it) to the massive bushfires Australia has experienced over the past 6 months.

Sessions on the IOD demonstrated progress in understanding the frequency of severe IOD events, while sessions on fire weather explored the challenges of fine-scale forecasting of fire behavior and also the sometimes surprising and dangerous ember attacks.

There were extensive discussions on new CMIP6 climate modeling of 20th century runs and 21st century projections, compared with the former CMIP5 results. As well, there were discussions around new ideas for detection and attribution of extreme events, severe weather forecasting and improvement of prediction models for various applications.

Diverse sessions were run on topics ranging from modes of variability in the southern hemisphere, to decadal variability, to the role of Antarctica in southern latitude weather, to data rescue and to climate and history.

A feature of the AMOS conferences is the associated workshops - this year on data and programming prior to the conference, on equity and diversity in our sciences during the conference and a special teachers interactive workshop following the conference. This latter workshop enabled teachers across several subjects to design a teaching module that incorporated some element of climate science. These ranged from the chemistry curriculum, through physics, geography, biology, English, mathematics and environmental sciences.

It happened that the International Day of Women and Girls in Science and STEM fields occurred during the conference, so photos were taken of all the women attending and presenting talks at the conference. This photo (attached), courtesy of Christian Jacob from Monash University, shows how far women's participation in the AMOS sciences has come in the past few decades.

It is fair to say that this annual conference is now the premier conference in the Southern hemisphere for meteorology and oceanography, and all are invited to join us in February 2021 for AMOS2021.

You might find a couple of quotes from the conference interesting:

"Gaps in our knowledge are obvious when drought and/or big fires hit" (Dr Ben Henley)

"Every country may become lands of droughts and flooding rains" (Prof Yamagata)

"We are giving the climate system a huge shock, don't we expect something to happen?" (Dr Wenju Cai)

"You are never too old to have a mentor or coach" (A/Prof Leanne Armand)



Female scientists participating in AMOS2020. Photographed on the International Day of Women and Girls in Science and STEM fields. Photographer (with permission): C Jakob.

**A Volunteer-based Organization Assisting
World Meteorological Organization (WMO) &
World Bank Group (WBG)
In Strengthening Global Weather Enterprise
(GWE) and creating a “Weather Ready Globe”**



www.ifms.org

**Uniting World's Meteorological
Societies to Collaborate and
strengthen each other**

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