Actions speak louder than words!

Role of IFMS in assisting WMO & WBG: In Capacity Building through E&T
Presented by: Dr. Patrick Parrish & Prof. Sushil Dash
Moderated by: Prof. Liz Bentley

There is no point in dreaming if we do not work hard to Make it happen!
# Agenda

## Program

1. **Welcome to attendees by Dr. Harinder Ahluwalia & Introduce IFMS & Prof. Liz Bentley – Moderator of the Webinar**  
   5 minutes

2. **Prof. Liz Bentley – Moderator of the Webinar**  
   IFMS Council Member for RA6 & Chair Accreditation and Certification  
   5 minutes

3. **Presentation by Dr. Patrick Parrish – Chief of Training at WMO**  
   Presentation on WMO Global Campus Initiative  
   30 minutes

4. **Presentation by Dr. Sushil K. Dash**  
   IFMS Chair E&T and Webinar  
   20 minutes

5. **Q&A Session Moderated by Prof. Liz Bentley**  
   All Questions to be asked through Q&A facility of Zoom Webinars  
   25 minutes

6. **Wrap up Dr. Harinder Ahluwalia**  
   President IFMS  
   5 minutes

**Total: 90 Minutes**
Major Activities

- Uniter of all Meteorological Societies of the world
- S&T Collaboration
- Creating Societies and strengthening existing ones
- Education and Training
- Many other activities like keeping members aware of WMO and WBG Programs
- Best Practices, Certification, etc.
- Promoting Financing NMSocs & NMS
- Your door to WMO and WBG
I believe...

No Excuses.....

IF IT IS IMPORTANT TO YOU, YOU WILL FIND A WAY. IF NOT, YOU'LL FIND AN EXCUSE.

Difficult doesn't mean impossible. It simply means that you have to work hard.

WHEN THE ROOTS ARE DEEP, THERE IS NO REASON TO FEAR THE WIND.

A RIVER CUTS THROUGH A ROCK NOT BECAUSE OF ITS POWER BUT ITS PERSISTENCE
Reactive vs Proactive
When you are not &
When you are prepared ....

Disaster response expert explain why the U.S. wasn’t more prepared for the pandemic
Offer your Services as Volunteers

Don’t expect others to do it

Offer yourself as Volunteers
Moderator: Prof. Liz Bentley, CEO of Royal Met Society, IFMS-Rep RA-6

Prof. Liz Bentley is the Chief Executive of the Royal Meteorological Society and a visiting Professor at the University of Reading.

She completed her PhD in mathematics at the University of Manchester and worked at the UK Met Office for 15 years as a research scientist, weather forecaster, forecasting instructor and Chief Instructor at the Met Office College. She has also worked at the BBC Weather Centre and the Ministry of Defence looking after their environmental research programme.
WMO Global Campus: Open Educational Practice in Action
Prepared for the IFMS Webinar, 17 Feb 2021

Patrick Parrish
Chief, Education, Training and Fellowships Division
Education and Training Office
WMO Member Services Department
Open Educational Practices (OEP)

Open educational practices (OEP) is a broad descriptor of practices that include

- Creation, use, and reuse of **open educational resources** (OER)
- **Open sharing** of teaching practices
- **Open research** practices, such as sharing of raw data
- Promoting use of **open access** tools
- Use of **open pedagogies** that encourage dialogue with and between learners, such as problem-based learning
- Supporting learners in creating flexible, **personal** learning networks
- Developing peer **learning communities** (students and professionals) or communities of practice
WMO Global Campus Fundamentals

Collaboration, Cooperation, Sharing

Builds upon the existing WMO ETR Programme, or ETRP (RTC network, national centres, other national and international training partners, universities, regional partnerships, and allied communities, such as professional societies)

Activities should increase learning opportunities for Members, through (a) increased visibility, (b) sharing resources, (c) facilitating innovations, (d) promoting compliance with international (WMO) standards, (e) enhancing quality of learning.

WMO Global Campus is an ETRP initiative, not a new programme or a proposal to move all training online.
Global Campus Endorsements

**SYMET-13 (2017):** “…the feasibility activities in the WMO Global Campus demonstration show positive progress. SYMET-13 recommends the WMO Global Campus concept is further developed by the WMO Education and Training community for operational implementation during the 2020 to 2023 Financial period.”

**EC Panel on ETR-28th Session:** “…decides to endorse the WMO Global Campus initiative for developing a coordinated and collaborative network of institutions that work together to meet the growing education and training needs of WMO Members…”

**Executive Council-70, Dec. 48:** “…decides to endorse the WMO Global Campus initiative …, building upon the existing network of WMO Regional Training Centres (RTCs) and other WMO training partners.

**WMO Congress-18, Res. 72:** “…Decides to endorse the WMO Global Campus for developing a coordinated and collaborative network of institutions the work together to meet the growing education and training needs of WMO Members... Urges Members to take an active role in the WMO Global Campus by forming regional and global collaborations…”
WMO Global Campus Thematic Areas

Drivers

Members’ needs
WMO strategic plans and priority areas

Increased collaboration and sharing between training providers

Quality assured learning opportunities and resources
Alignment to WMO competency and qualification frameworks

Adoption of new curriculum advances and training practices
Shared platforms and tools for delivering training
Shared certificate and credit sharing systems

Increased training capacity for WMO Members
WMOGlobal Campus is the collaborative network of WMO Member institutions and National Meteorological Hydrological Services involved in the development and delivery of education and training. Its goal is to address the evolving global priorities for learning. It is the fruit of the synergies, sharing and cooperation within this community of institutions. The WMO Global Campus was approved by WMO Congress 18 with Resolution 72.

The WMO Global Campus is based on the WMO Regional Training Centres and other WMO-designated centres engaged in learning activities, but embraces all institutions contributing to the learning needs of WMO Members. The WMO Global Campus Roadmap offers an overview of the feasibility study, the rationale behind the concept, the underpinning goals and plans for its design and implementation.

WMOGlobalLearn is a communication mechanism for the WMO Global Campus. It provides portals for sharing and discovering learning events and resources, information about collaborative projects, and fora for stimulating collaborative efforts. WMOGlobalLearn will facilitate collaboration, raise awareness of successful Global Campus efforts and foster innovations for learning by WMO Members.

Featured Content:

- Responding to Challenges Beyond the New Normal: A WMO Global Campus Event (20-22 January 2021)
  - (Proceedings in preparation) Event flyer EN.pdf

http://learn.wmo.int
## Upcoming Events

### ADVANCED METEOROLOGICAL TRAINING COURSE
- Dates: 19-Sep-2019 to 30-Sep-2019
- Event Format: Classroom course
- City: Pune
- Country: INDIA
- Language: English
- Host: Ministry of Earth Sciences, Government of India

### OPERATIONAL METEOROLOGY FOUNDATION COURSE (OMFC)
- Dates: 02-Jan-2016 to 08-Aug-2016
- Event Format: Classroom course
- City: Exeter
- Country: UNITED KINGDOM
- Language: English
- Host: Met Office

### OBSERVATION AND IDENTIFICATION OF CLOUDS FOR WMO TRANSLATORS AND INTERPRETERS (2ND EDITION)
- Dates: 25-Feb-2016 to 08-May-2016
- Event Format: Online course
- Country: ONLINE
- Language: Spanish
- Host: AEMET

### ENTRY LEVEL METEOROLOGICAL TECHNICIANS' COURSE NO. 89/19
- Dates: 01-Mar-2019 to 25-Jul-2019
- Event Format: Classroom course
- City: Husbands
- Country: BARBADOS
- Language: English
- Host: RTC Barbados - Caribbean Institute for Meteorology and Hydrology

### FORECASTER'S TRAINING COURSE
- Dates: 11-Mar-2016 to 07-Sep-2016
- Event Format: Blended course
- City: Pune
- Country: INDIA
- Language: English
- Host: Ministry of Earth Sciences, Government of India

### USING EARTH OBSERVATIONS TO MONITOR WATER BUDGETS FOR RIVER BASIN MANAGEMENT
- Dates: 19-Mar-2019 to 03-Apr-2019
- Event Format: Online course
- Country: UNITED STATES
- Language: English
- Host: NASA Applied Remote Sensing Training Program (ARSET)

### CAMBIO CLIMÁTICO, RIESGOS Y OPORTUNIDADES PARA EL SECTOR VITIVINÍCOLA
- Dates: 22-Mar-2019 to 10-May-2019
- Event Format: Classroom course
- City: Vielfranco del Poblet
- Country: SPAIN
- Language: Spanish
- Host: Wine Business School

### WMO ONLINE COURSE FOR TRAINERS
- Dates: 26-Mar-2019 to 31-May-2019
- Event Format: Online course
- City: St. Petersburg, the Russian Federation
- Country: RUSSIA
- Language: Russian
- Host: Radionov

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[http://learningevents.wmo.int](http://learningevents.wmo.int)
The WMO Global Campus E-Library

The WMO Global Campus initiative is proud to offer this WMOlearn Library of resources. This library provides a searchable collection of educational resources, including WMO publications and education and training materials from various contributing organisations and individuals. Search by WMO competency framework, Main Topics, Region and Country, and/or Nature of Information to find materials useful for training or self-directed learning.

Please note that resources contributed by Members will reside on other websites and may allow limited access or require login. For copyright information, see the WMO Global Campus Copyright Practice Standards and the contributor’s website.

WMO Global Campus resources provided on this site are provided "as is", without warranty of any kind, either express or implied, including, without limitation, warranties of merchantability, fitness for a particular purpose and non-infringement. The WMO specifically does not make any warranties or representations as to the accuracy or completeness of any such resources.

You can search resources by using the filters on the right of the screen or by clicking "Refine your search" below. This will display advanced search criteria.

Add the result to your favourites | Refine your search

Sorted by [Issue date desc]
Why should WMO promote OERs?

- To drive innovation
- To improve quality of content
- To reduce costs
- To allow for customization and translation
- To promote accessibility
- Social justice—to increase opportunity
Initial Global Campus Activities

- WMOLearn Portal (learn.wmo.int)
- WMO Global Campus Calendar (learningevents.wmo.int)
- Global Campus E-Library (https://library.wmo.int/)
- Translations Resource Center
- Assistance in developing partnerships
- Promoting innovation in E&T (including new WMO ETR publication)*
- Database of experts and institutional capabilities
- Standard competency achievement certificates
- Building a global E&T community of practice

*WMO Global Campus Innovations
Regional and university contributions to WMO Global Campus

Regional coordination and leadership expected from the WMO Regional Training Centres and other institutions and programmes that address regional training needs.


Coordination meeting of RA-I (Africa) RTCs and allied training partners led to action plans for innovations.

Links between WMO Global Campus and Eumetcal-2 embedded in programme goals.

Planning has been discussed for a meeting of a WMO Global Campus consortium of universities.
Benefits of university collaboration and contributions

Universities see the WMO Global Campus as one mechanism for expanding their offerings beyond traditional on-site degrees.

Global Campus can help them to reach a wider variety of students and understand the market for more advanced topics.

Global Campus can expand brand awareness of universities.

Can make online courses and short-courses more viable through greater visibility.

Many benefits in institutional collaborations in course and resource development (both University-University and University-NHMS).
Timeline: Where we are now

- **2013**: Concept introduced: WMO SYMET meeting in Toulouse, France, in October 2013
- **2014**: Further definition: WMO SCHOTI-COCOM meeting in Geneva, September 2014
- **2015**: Feasibility study requested: Executive Council (EC-66), Geneva, June 2015
- **2015**: Themes refined, priority activities decided, task team formed: RTC Directors meeting in Langen, Germany, March 2015
- **2015**: Extended feasibility study requested: Seventeenth World Meteorological Congress (Cg-17), Geneva, May 2015
- **2016**: Update on milestones and prototypes, decision to develop the WMO Global Campus Roadmap: Executive Council (EC-68), Geneva, June 2016
- **2017**: WMO Global Campus Side Event to share progress: Executive Council (EC-69), Geneva, June 2017
- **2017**: Endorse progress and goals: WMO Symposium on Education and Training (SYMET), 2017
- **2018**: Review progress/revise: EC Panel of Experts on Education and Training, 2018
- **2018**: Endorse progress on Feasibility study and make recommendations to Cg-18: Executive Council (EC-70), Geneva, June 2018
- **2019**: Decision on endorsement of WMO Global Campus: Eighteenth World Meteorological Congress (Cg-18) in May 2019
- **2019**: Meetings with Regional Training Center Directors and Collaborating Institutions to review and expand the initiative
- **2020**: Publish Global Campus Innovations and hold Online Global innovations course (250 participants)
- **2021**: Workshop: Responding to Challenges Beyond the New Normal (175 participants)
- **2021**: Consult with EC Capacity Development Panel and establish Global Campus structure and new initiatives.
Workplace changes occurring each day and more rapidly call for significant innovations in the way we educate and train people for their professional careers. The new global and digital economies call for fluidity, resilience, and readiness for rapid reskilling to meet changing demands. The many papers collected in this publication reveal just a small sample of the innovations being explored in education and training around the world. Many of these originated as goals to increase access for learners, to make learning more efficient, or to increase the impacts of training initiatives to ensure the investments of learners and teachers are well rewarded.

The papers represent innovations within the community that includes educators and trainers preparing people to work in meteorology, hydrology, climate services and related fields, as well as the communities that these professionals serve. It is just a snapshot of what is possible, but an eye-opening picture nonetheless.
2020 WMO Course on Education and Training Innovations
2021 WMO Global Campus Event

Responding to Challenges Beyond the New Normal
A WMO Global Campus Event

- Current and Upcoming Challenges
  - Reflecting on training challenges that have been identified
  - Gathering new input on challenges faced by RTCs and Training Partners
  - Prioritizing and setting actions and milestones

- Alignment with WMO Strategic Plan
  - Coordinating training decisions with the WMO Strategic Plan
  - Alignment with WMO Competency Frameworks and Qualification standards
  - Referencing and utilizing key WMO guidance

- Distance Learning Delivery
  - Developing increased capacity for distance learning delivery
  - Learning from successful practices through collaboration and sharing
  - Increasing quality and reach of our training
Global Campus Challenges

- Estimating, justifying and identifying budget and human resources to support defined activities.
- Complexity of activities requires many partners and shared leadership.
- Strong outreach required to inform stakeholder communities of benefits and encourage participation.
- Monitoring and reporting framework to evaluate use, usefulness, and efficiency.
- Success requires participation by ALL Members.
Possible WMO Global Campus Advisory and Oversight Structure

WMO Education and Training Office

EC Capacity Development Panel

Technical Commissions and other WMO Bodies

WMO Global Campus Integrated Collaboration Group

WMO Community Platform

WMO Global Campus University Component
(Expert Teams, Regional Groups)

Joint University & NMHS Initiatives
(Expert Teams, Regional Groups)

WMO Global Campus NMHS Component
(Expert Teams, Regional Groups)

Global, Regional, Multi- and Bi-lateral initiatives
How IFMS Members can contribute to the WMO Global Campus initiative?

• Agree to promote the Global Campus within societies globally
• Contribute learning resources, course plans, and expertise
• Utilize WMOLearn tools and communication mechanisms (http://learn.wmo.int) to announce learning events
• Organize international gatherings to explore paths for collaboration and sharing to meet global needs
• Work with the WMO ETR Office and EC Capacity Development Panel to propose and help collaboratively implement projects
Thank you
Merci
IFMS Approach to Education and Training in Weather and Climate

Sushil Kumar Dash

Chair, IFMS Committee on Webinars & Training
Immediate Past President, Indian Meteorological Society
Formerly Professor & Head, CAS, IIT Delhi
Education, Training and Capacity Building/Development

• **Education**: Learning in the area of interest. It continues life long.

• **Training**: Short term, task oriented and skill development in a specific area.

• **Capacity-building**: Core concept of development policy. It suggests building something new from the ground up.

New term ‘**Capacity Development**' has been coined. It is an approach that builds on existing skills and knowledge, driving a dynamic and flexible process of change, borne by local actors. *(Ref: European Parliament Briefing April 2017)*
IFMS E&T Initial Steps

• Capacity development based on existing knowledge and skills in Weather and Climate is one of the objectives of IFMS.

• E&T efforts of IFMS was initiated in Boston AMS Annual Meeting, Jan 2020 with some invited talks and follow up discussion.

• Meeting between Dr. Patrick Parrish, Chief, WMO Training Programme; COMET Director Dr. Elizabeth Page and myself was held on 17 Feb 2020 in New Delhi.

• Discussions in the IFMS Council has lead to a Survey of the current E&T activities of its member societies.

• Webinar by COMET Director Dr. Elizabeth Page on 29th Jan 2020 which most of you joined.

• The just concluded presentation by Dr. Patrick Parrish, GCI, WMO.

• This is just the Beginning which will be followed by (Staying together) Progress and (Working together) Success (Henry Ford) with effective collaboration with international programmes such as COMET and GCI and among the Met Societies.
IF YOU WANT TO GO FAST, GO ALONE.
IF YOU WANT TO GO FAR, GO TOGETHER.

AFRICAN PROVERB
IFMS Education and Training (E&T) Committee

IFMS is grateful to the following E&T Volunteer Experts

Prof. S.K. Dash, Chair
E&T Committee
Retd. Director CAS-IRT

Mr. Ramnath Bhatia
Past President IMS & Retd. DG-IMO

Dr. Anda Dr. Akhilesh Yadav
Past President IMS & Retd. DG-IMO

Prof. Elizabeth Bentley
IFMS - Region 6 Rep.
CEO Royal Met Society

Dr. Harinder Ahluwalia
President IFMS

Mr. Michael Martens
IFMS - Region 5 Rep
President NEMS

Dr. K. K. Datta
Director at MERIT
New Delhi

Dr. L. S. Rathore
Past President of IMS & Retd. DG-IMO

Dr. Someshwar Das
Director at MERIT
New Delhi

Mr. Narayan Gautam
Asst. Professor
Tribhuvan University, Nepal

IFMS Needs many more Volunteer Experts for E&T Committee. Please offer your service by sending an email to ifms.collaboration@gmail.com

Also Need Experts in Spanish, Portuguese, French and other languages.
IFMS – Assisting in Capacity Building through Education and Training

Prof. Sushil K. Das, Dr. Harinder Ahlawat, Mr. Ramesh C. Bhate, Dr. Ajit Tyagi, Dr. Rattan K. Datta, Prof. Someshwar Das and Asst. Prof. Naman Gautam

1. Introduction

Global Warming and Climate Change (GW&CC) are having serious effects on the weather patterns resulting in great loss of life, property and quality of life. All nations need to be fully prepared to handle all challenges resulting from the effects of GW&CC. As Covid19 has shown unpreparedness for calamities, whether natural or man-made, can cause great disruption in life on top of loss of life and economic development. A very important part of preparedness is capacity building in all countries – especially in Developing and Least Developed countries through Education and Training (E&T). World Meteorological Organisation (WMO) plays a very important role in the area of capacity building. However, due to the vastness of this task and limited resources, WMO can use assistance of other organizations such as IFMS, which can provide assistance through its member Societies.

Since climate change affects all sections of the society, all stakeholders need to be educated adequately to understand and contribute to the climate change, take appropriate measures to adapt to the situation, make proper policies to safeguard the society, make adequate scientific progress to deliver early warnings, etc. Therefore, E&T related to climate change issues must not be limited to the professionals working in meteorology and students in educational institutions and researchers in research organizations. Appropriate E&T should also be imparted to the general public, school teachers and students, policy makers, administrators and stakeholders in the fields of agriculture, human health, tourism, fishing industry, etc.

Almost all nations have their own meteorological agencies which regularly monitor weather and climate related data and forecast the weather at different time scales. These weather agencies train their employees regularly and WMO helps these weather men get adequate training in their respective organisations. WMO has also set up Regional Training Centres (RTCs) set up for the benefit of its member states. In recent years, it has been felt that with the advancements of weather instruments and climate science, the training materials and methods need to be upgraded appropriately. From that perspective, the Global Campus Initiative (GCI) has been born. The basic objective of this initiative is to impart state-of-the-art training to the meteorologists working in National Meteorological and Hydrological Services (NMHSs) in order to get them educated on the advancements in the weather and climate science and to get them prepared for the future demands of forecasting. GCI also encourages the RTCs to collaborate with other educational and research organisations, where member societies of IFMS can contribute significantly through the extension of outreach programmes.
Why IFMS?

• IFMS consists of several Met Societies as its members which are very active and have close collaboration with NHMSs, Educational institutions, Stake holders, Associations and NGOs involved with the people at large.

• Members of Met Societies include not only several existing employees of NHMSs but also senior members who have long experience in the field and have potential to train others. Thus Met Societies can undertake the job of training the Trainers which will eventually lead to Chain reactions. This will have multiplying effects.

• IFMS can contribute significantly to the centrality of COMET and WMO-GC ie. Collaboration.

• IFMS will widen the scope of WMO-GC by encompassing Outreach programmes based on Citizens Science concept.

• IFMS with the help of Met Societies can contribute significantly in Climate Services where participation of the people is very important for last mile connectivity.

• IFMS can eventually contribute to the quality of training by modifying the existing course materials specific to the climate issues of different regions. Focus will be given on the regional languages and gender issues at the regional level.
Requirements of Collaboration, Volunteers and Funding

The success of this IFMS initiative very much depends on:

Collaborations with international organisations and also among National Met Societies. (Learning and Sharing)

Formation of Large Volunteers Group and adequate support. Involving Senior members from Met Socs is the best strategy.

(Providing facilities and ease at work)

Formation of new Met Societies and Regional Societies. (Support of NMHServices)

Joint PPA platform. (Division of responsibilities)
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<tr>
<th>Sl. No.</th>
<th>Important E&amp;T Themes in Weather &amp; Climate</th>
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<tr>
<td>1.</td>
<td>Teachers &amp; Students Training</td>
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<td>2.</td>
<td>Public Awareness of Weather &amp; Climate Disasters</td>
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<td>3.</td>
<td>Exposure to Numerical Weather Prediction</td>
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<td>4.</td>
<td>Satellite Data Use</td>
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<td>5.</td>
<td>Data Collection Instruments</td>
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<td>6.</td>
<td>Processing and Display System</td>
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IFMS needs to be selective in its approach

• E&T in Meteorology is not new. Several educational institutions, NMHSs, R&D institutions, Met Societies and similar organisations are on the job for years.

• Different types of course materials are available either on free platforms or on payment basis.

• Under the present circumstances, investing time (also funds) on the use of scientific knowledge for the Public Good is paramount.

• IFMS should focus on Teachers & Students and Public Awareness.
Teachers & Students Training

• Teachers are the backbone of any society. By training a teacher, one trains several others in the way of cascading effect. There is hardly any climate science course at the school level in 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 is schools. These subjects can be taught in the context of weather and climate, once the teachers are exposed to short training programmes.

• Course materials can be compiled which 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. Emphasis should be given on societal relevance.

• Experts can visit specific schools and give seminars so that students will be exposed to basics climate science and the challenges of climate changes. Real time participation will benefit in education. Sort of extracurricular activities. Examples are EcoClubs etc.

• Such efforts may encourage students to be innovative in combating the climate crisis.
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 explained 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.
Notable Sites in Weather and Climate

(1) CALMet Moodle Course for Trainers and Educators

• This course may be suitable for enhancing knowledge of the meteorologists who have some basic knowledge in the field.

• This course is the result of the joint effort of different organizations. One can reuse and remix the material for educational purposes under the Creative Commons license. Different components are given below.

• ETRP Moodle Site (GCI Educational and Training Courses)
  https://etrp.wmo.int/course/index.php?categoryid=60

EUMETRAIN
EUMETRAIN Case Studies URL
EUMETRAIN Training Modules
WMO CGMS VLab
Notable Sites in Weather and Climate

(2) MetEd

• These courses are meant for experienced meteorologist as well as students in Universities and R&D organisations. MetEd is a free collection of hundreds of training resources.

• MetEd is the outcome of the COMET Program, which is part of the University Corporation for Atmospheric Research's (UCAR's) Community Programs (UCP).

https://www.meted.ucar.edu/registration.php

(3) GLOBE Weather

• This free five-week curriculum is suitable for middle school students who will be benefited in understanding weather at local, regional, and global scales. The basis of this course is storyline instructional approach.

• This website consists of material supported by the National Center for Atmospheric Research, sponsored by the National Science Foundation and managed by the University Corporation for Atmospheric Research.

https://scied.ucar.edu/globe-weather-curriculum
Notable Sites in Weather and Climate

(4) UN CC:Learn

• This source is suitable for E&T in general including public awareness generation.

• UN CC:Learn is the result of the partnership amongst more than 30 multilateral organizations in designing and implementing climate change learning. It has both global as well as national appeals.

https://www.uncclearn.org/
https://www.uncclearn.org/uncclearn@unitar.org

(5) UC San Diego: Bending the Curve

• This series of four short courses are based on the multidimensional aspects of the climate change along with possible solutions. These are suitable for general studies by students and people at large. The solutions to combat the effects of climate change are discussed in terms of technological innovation, ecosystem management, market mechanisms and even behavior changes.

• bnedingthe curve.ucsd.edu

https://online.ucsd.edu/programs/080c48a1-70bf-439c-9eac-a02b60282209/about?gclid=EAIaIQobChMIvZ_dxtad6wlVQiQrCh0ihwWbEAAYASAAEgKmbvD_BwE#courses
Notable Sites in Weather and Climate

(6) National Resource Centre on CC IISER Pune
• These courses are ideal for teachers and also beginners in weather and climate research. The purpose of these courses are essentially to see that a teacher representing any discipline can gain new knowledge and can eventually integrate climate science with topics of his interest. Mostly the science teachers will gain to a large extent since weather and climate science is interdisciplinary in nature. Customised lesson plans are available to teach climate change at undergraduate level.

https://onlinecourses.swayam2.ac.in/arp19_ap55/preview

(7) UNESCO Climate CC Education
• This site is related to education on sustainable development programme and hence may be suitable for policy makers, stake holders and general public at large.

Notable Sites in Weather and Climate

(8) MetLink, RMetS
• This provides separate links for teachers as well as students at different levels depending on their basic knowledge in weather and climate. Primary as well as secondary resources are available.
• There are plethora of lesson plans on weather and climate, information on the latest IPCC findings etc available which can be downloaded, but may not be free of cost.

https://www.metlink.org/

(9) AMS Education Program
• This programme is suitable for school teachers as well as undergraduate faculty.
• This programme includes course materials, in-classroom resources, educator instruction, and specialized training for educators in weather, water, and climate sciences. All course are not available freely.

https://www.ametsoc.org/index.cfm/ams/education-careers/education-program/
IFMS approach in the near future

• Based on the current survey conducted among IFMS member societies, compile their success stories in E&T.

• Identify the successful programmes of one society and try to implement those in other societies in collaborative spirit.

• With the help of volunteers from member societies, identify suitable courses from selected sites and help Met Societies in executing those E&T programmes.

• IFMS jointly with GCI, COMET and other such international initiatives shall achieve a great deal in expanding the scope of Outreach Programmes in Weather and Climate.
Without action, you aren’t going anywhere."

Mahatma Gandhi
Seeking your valuable suggestions,

Thank you for your kind attention.