2023

CALMet XV

Program Book

13 - 17 November 2023

Deutscher Wetterdienst

Wetter und Klima aus einer Hand

DWD

Welcome to CALMet XV Conference

The international CALMet community gathers for sharing best practices in training for the meteorological, hydrological, and climate workforce. The German Weather Service, will host this 15th biennial, gathering, in an online format.

This year leading themes will be;

- Collaboration
- Lessons learned
- Future challenges & opportunities

About CALMet

CALMet nominally stands for the *Community for the Advancement of Learning in Meteorology and related Disciplines*.

Beginning with the first international conference in 1993, the purpose of CALMet has been to offer forums to share experiences, expectations and new ideas for applying emerging technologies and strategies in education and training to support meteorology, hydrology and related fields. CALMet organizes face-to-face and online conferences and provides opportunities for information and idea exchange through a website and social media. CALMet conferences have served to build international working relationships that continue to have a large impact on meteorology education worldwide.

CALMet activities are conducted recognizing that we are:
• An open and diverse community - who learn from, and demonstrate respect for, each other;
• Considerate and collaborative; and,
• Mindful of our surroundings and of our fellow participants.

We value a diversity of views and opinion, communicate professionally and openly, criticize ideas rather than individuals.

Welcome from organizers

The organizers are pleased to welcoming you to the CALMet XV 2023 Conference. We are optimistic that all of us will gain many valuable results for taking home. Our Conference takes place in connectionto the “Thirty-years-anniversary of CALMet”, a truly reason for celebrating the success story that began 1993!

This booklet contains all abstracts for the sessions, along with a timetable of the programme. Pleasekeep it available as your guide to events.

Please be engaged, open and do not hesitate to share your experiences and ideas during this Conference and afterwards!

Your organizer team (organizers@calmet.org):

Heleen ter Pelkwijk (KNMI)
Roro Yuliana Purwanti (BMKG)
Wilfried Jacobs (DWD, local organizer)Luciane Veeck (WMO)
Vesa Nietosvaara (Eumetsat)
Barbara Bourdelles (Météo France)Mick Pope (BMTC)
Tsvet Ross-Lazarov (COMET)Felipe Vannucci (SMI)
Sun Jingrong (CMATC)

How is CALMet XV going to work?

As 2021, we have chosen for this conference a 'flipped-learning' conference approach. This means wewill made all conference material available in advance for you to explore. During the Conference week,we will host live plenary sessions, as well as opportunities for asynchronous interactions.

Before the Conference starts
The Conference area will be available to you from the 7th of November onwards. Please explore the conference site and get familiar with all the material. Consulting the conference material in advance will help you to prepare yourself for discussions and activities taking place during the conference week.

The programme contains the following subject matters and overarching pedagogical themes:

- Fostering collaboration with communities
- Inspiration for the training sessions you provide
- Artificial Intelligent (AI) in Training and Professional Development
- Educational tools related experiences, best practices, and lessons learned
- Supporting Training for Meteorological Professionals
- Supporting Satellite Meteorology training
- Supporting the Training for Other Professionals and Public

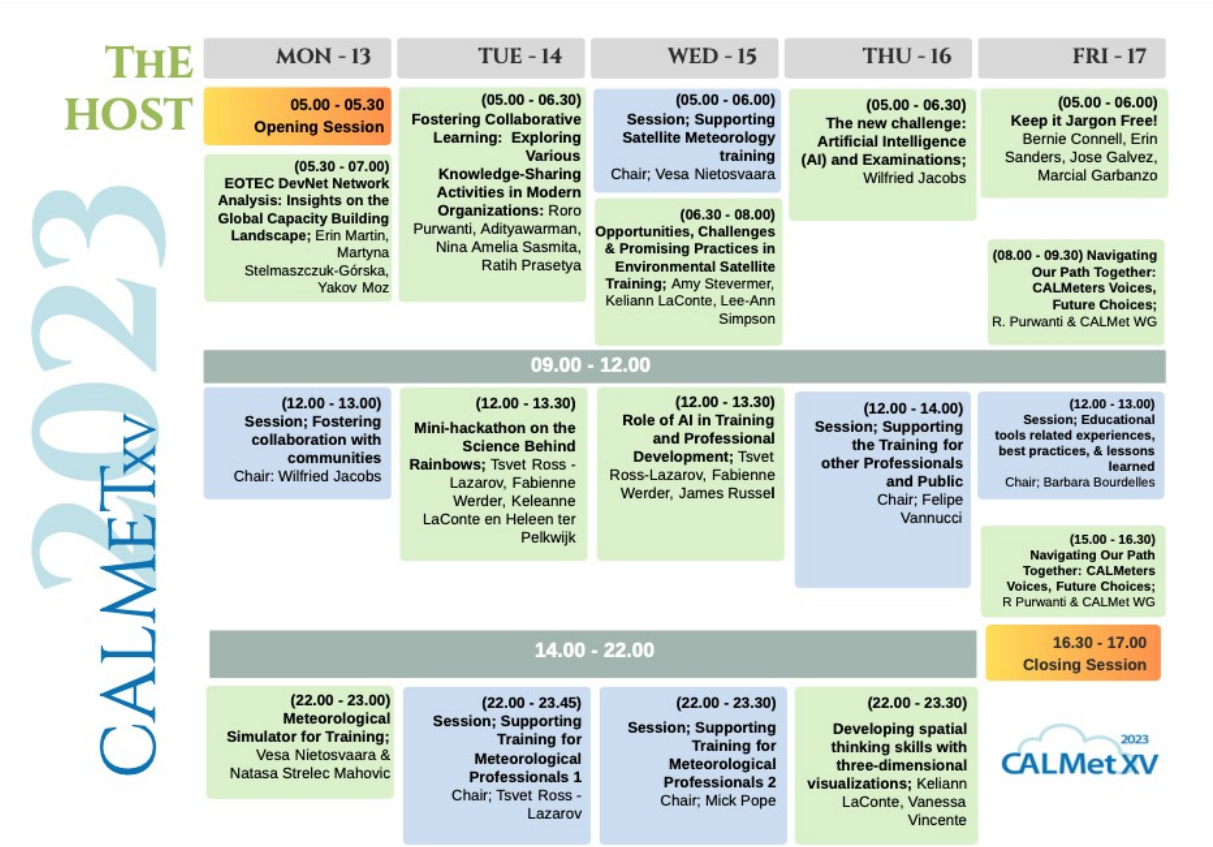
During the Conference
The Conference will take place from Monday 13 to Friday 17 November. Because we will be attendingthe conference from different parts of the world, synchronous live interactions at various times will happen and will be recorded, too. There will also be plenty of opportunities for asynchronousinteractions.

Participating in asynchronous discussions
After reading the materials shared by authors as resource contributions or workshops, you will be ready to participate in the asynchronous discussions. The CALMet XV Forums will be used for these discussions, and they will open on the first day of the Conference. There will be a Forum for each of the seven themes. As these are Group Forums, please keep the forum discussions focused by reactingto the posts within the same thread (just reply to the posts).

Attending the live sessions
Live sessions will take place in different conference management systems provided by the community.You will find the links to each live session in the conference timetable and in the each Information forSynchronous Sessions page available in each Group.

Altogether, we are hoping to experience a highly interactive CALMet XV Conference. We count on yourcommitment and support to make this online flipped learning conference a success, and we are very much looking forward to meeting you online!

Schedule of live sessions



A more advanced schedule including the links to the live sessions can be found at

https://bit.ly/CALMetschedule

Thematic groups

Group 1 - Supporting Satellite Meteorology training

Case study of severe Weather in Sudan

ID; 1

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Abstract;
the case talks about server weather that happened during the fall season...we used a satellite to monitor the weather at that time... the ppt describes the steps of the phenomena stages

Training in observing the Earth's surface using satellite imagery in a hybrid environment: resources and challenges

ID; 24

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Co-Author(s);
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Abstract;
In recent years, the rapid and sustained progress in remote sensing observations has led to a significant increase in the utilization of satellite images and products across a wide range of meteorological and oceanographic applications. The observation of surface characteristics through meteorological satellites currently serves numerous essential purposes, both from an academic and operational point of view. These applications include activities such as initializing and validating numerical models, conducting climatological studies on land use or ocean temperature changes, and operational monitoring of droughts, damages caused by severe weather events, wildfires, and even drifting iceberg movements.

In this context, we propose the creation of an educational module as a part of a two-month program offered by the Departamento de Ciencia de la Atmósfera y los Oceános - Universidad de Buenos Aires. This module aims to provide fundamental knowledge for comprehending the operational principles and applications of meteorological satellites. Specifically, the proposed module focuses on the practical and laboratory aspect of this subject. Its primary objective is to provide students with the skills to comprehend, interpret, and utilize satellite observations of the Earth's surface. This involves training in the manipulation of satellite data, including familiarization with available databases, data inspection, and visualization techniques.

Moreover, the module seeks to encourage critical analysis of observations and products derived from remote sensors. Students are encouraged to develop an awareness of the limitations and advantages inherent in these observations, enabling them to engage in a critical utilization of the generated products.

In summary, this educational module will contribute to the development of key competencies in students, empowering them to apply satellite observations in the fields of meteorology and oceanography, while also fostering a deep and critical understanding of the capabilities and limitations of these technologies.

SAR Data Analysis of Flood Extent Using the Google Earth Engine

ID; 37

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Abstract;
Flood has been identified as one the hazardous natural events in densely populated areas located within the tropical regions. In this laboratory module, Synthetic Aperture Radar (SAR) data, from the Sentinel-1 satellite, and other satellite derived data, obtained and processed through the Google Earth Engine (GEE), will be used to monitor flood events. In a simplified hands-on manual, a GEE Code for Time Series Flood Mapping is modified to observe the 2022 flood incident in the food basket state of Nigeria. This code will be used to prepare the map of the flood inundation extent and estimate the magnitude of the cropland destroyed by the flood. The module includes a step-by-step instruction manual, on how to adapt the code generated for the analysis, to suit other regions and period of interest. This laboratory module is an example of one of the best practices, used to implement learning on disaster management, for the Post Graduate Diploma Program of the United Nations affiliated African Regional Centre for Space Science and Technology Education in English (UN-ARCSSTEE), located in Nigeria.

Testing and evaluating the Australian Bureau of Meteorology Training Centre Basic Satellite Meteorology (SATIN*) Online Module. *Satellite Interpretation

ID; 14

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Abstract;
This self-paced online Moodle quiz permits CALMet attendees to work through questions pertaining to cloud and water vapour boundary identification using satellite and other related meteorological data. This quiz has been adapted from an assessment piece for the 2023 Radiation and Basic Satellite Meteorology subject. The subject is a component of the BMTC Graduate Diploma of Meteorology. The quiz has been peer reviewed previously.
The quiz will give the attendees a better understanding of the characteristics of different cloud types when viewed in visible (VIS) and infrared window (IR) satellite imagery, related image composites and other meteorological data.
This will give the attendees a better understanding in interpreting water vapour imagery, through identifying various water vapour boundaries.
Attendees are encouraged to provide feedback to further improve this resource. Feedback can be submitted by answering the last question of the quiz.
For an attendee with basic experience in identifying clouds and water vapour boundaries using satellite imagery the quiz should take between 45 minutes and 2 hours to complete.

The Success Story of Building Bridges: Hosting and Conducting the Online Monthly Gathering for Middle East Knowledge Sharing

ID; 41

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Abstract;
The resource contribution will take the form self-explanatory poster. It will provide a detailed but summarized description of the history of Center of Excellence for Satellite Applications (CoE-Muscat) and its experience in organizing and hosting monthly online gatherings for knowledge sharing in the Middle East.

These gatherings serve as a platform for professionals from various fields, including meteorology, climatology, environmental sciences, hydrology, and more, who come together from the region to enhance communication and exchange expertise and knowledge. These discussions are focused on a wide range of topics within the realms of atmospheric and earth sciences, as well as the field of earth observation from space.

The poster will offer a historical overview of CoE-Muscat, tracing its development from inception to the present day. It will highlight the challenges faced and the remarkable successes achieved along the way, emphasizing the global impact of the circumstances during the last years , in additions to the technologies and methods developed worldwide influencing the region's communication and knowledge exchange .

Moreover, the poster will provide insights into the future trajectory of training and development initiatives relevant to these fields in the region.

Opportunities, Challenges, and Promising Practices in Environmental Satellite Training

ID; 12

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Abstract;
Preparing forecasters and others to successfully use new-generation satellite products requires careful thought and planning. In this session, we'll bring together trainers interested in helping diverse audiences build skills related to using environmental satellite data and products across various applications. Learners will be able to address such questions as: What new training is needed? Among existing defined satellite competencies, what areas are most lacking in training opportunities? When is the training needed? What lessons from user preparation for the US GOES-R Series satellites and other observing systems can be relevant to new systems like MTG? What existing training resources are usable and relevant across regions? What weather phenomena or other applications are currently not well addressed within the global training community?

In this session, participants will work on their own plans to prepare users to effectively use satellite data and tools. The group will work toward filling the gap between wishes, visions, and reality by curating a list of existing resources, identifying training needs, and developing a plan to address gaps and expand learner skills across satellite competencies. Finally, the group will compile possible instructional goals to support the next stage of satellite training. Examples of satellite related exercises from the facilitators and from participants will help demonstrate the varied modes for addressing the skills, practice, or competencies underlying a specified training need and can inform the development of initial prototypes.
Technical requirements include a Web browser, internet connection, and access to Google Drive and other potential open-source collaboration tools.

Group 2 - Inspiration for the training sessions you provide

Developing spatial thinking skills with three-dimensional visualizations

ID; 2

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Abstract;
Spatial thinking is a critical part of many scientific endeavors, and it is necessary to think spatially in order to progress from a novice to an expert in a given scientific domain (NRC 2006). To provide learners with practice in this area, the lesson "Monitoring for Potential Flash Flood & Debris Flow Threats" (Vincente and LaConte 2023) includes an innovative spatial visualization approach for training. Various software, including Sketchfab, Autodesk, Photoshop, and Google Earth, were used to simulate a post-fire landscape, which was overlaid with three different types of hydrological and geological data. The lesson engages learners in connecting how four key factors contribute to the likelihood of a flash flood and debris flow event occurring at a given location in that landscape. The three-dimensional visualizations allow learners to interact with data as they develop new perspectives for how the four factors interact. Using this example as a springboard, participants will discuss how 3D visuals can engage learners in interacting with data and developing conceptual models. Through small-group discussions, participants will generate new ideas for including 3D visualizations in future training efforts. They will also be invited to share resources and examples of how 3D visualizations can support learners in mastering complex concepts.

Citations
National Research Council. 2006. Learning to Think Spatially. Washington, DC: The National Academies Press. https://doi.org/10.17226/11019.
Vincente, V. and LaConte, K. 2023. Monitoring for Potential Flash Flood & Debris Flow Threats. https://www.meted.ucar.edu/education_training/lesson/10162

Keep it Jargon Free!

ID; 29

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Co-Author(s);
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Abstract;
The Science of learning and our experiences as educators tell us that learning is a lifelong process. People develop expertise by the continual process of adding new knowledge to foundational knowledge. New information is remembered and applied if it is retrieved and used in a relevant way. The forecasting process and the information and tools used by a forecaster are complex. It takes years to develop the expertise that integrates all types of direct an integrated information from real-time and climatological observations with model forecasts for a particular area and season. Rarely are forecasts perfect.
What are the implications for trainers? We have a variety of trainees that range from novice to experienced. For new satellite imagery and products, we must present information in a language and manner that will be understood and highlight the strengths and weaknesses of the product. If done properly, this will allow the forecaster to use the product to improve the forecast and their confidence and hence the public confidence in the forecast. Education and social science provide us with many models and guidelines on how to do this.
The people we train are diverse and we need to be cognizant of that aspect when developing the training. Our disciplines contain many technical terms and long names that are shortened to jargon and acronyms. In order to reach more people across various disciplines, with various levels of expertise, spoken languages, and cultures, we are re-training ourselves to use the simplest language possible. This exercise provides a few examples and ways we have tried to reduce confusion and simplify. We will have a moodle thread and/or a virtual board for your examples. By sharing examples, we hope to seed creative ways to deal with the next bout of 'complex' language.

Meteorological Simulator for Training

ID; 36

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Abstract;
Meteorological simulators have been used for quite many years in training events. The simulators present a canned weather situation, that the user investigates by using the given meteorological data, preparing forecasts while the time goes on and more data comes in.

The objective of these simulator exercises is to give an opportunity for meteorologists to work with a real data for a real case, and to prepare forecasts and verify them. By doing this, they will have a more engaging learning experience than just by viewing a case study presentation. For the meteorological trainers and assessors, the simulators offer a way to assess the participants' competencies, and to help the participants practice in a safe environment the correct procedures during high impact weather events.

An important part of simulation is to offer an authentic working environment, where the data flows in as it does in an operational environment. To build such an authentic working environment may be tedious. It takes time to retrieve the meteorological data for the case, to build the user interface and to organize the data in the interface.

EUMETSAT has recently developed a simple meteorological simulator that runs on European Weather Cloud (EWC), allowing the simulator to be available for anyone willing to build simulator exercises. During the CALMet conference, we will demonstrate this simulator and exchange experiences with the CALMet community. We hope that the simulator will be a useful contribution to a wider WMO Global Campus community.

Group 3 - Fostering collaboration with communities

Community of Practice - how or if to hold the reins?

ID; 39

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Abstract;
Community of practice (CoP) is indeed a living organism with its biological, physical, physiological and sociological laws and aspect, each to be treated accordingly. Guidance for these different aspects of CoP have to be line with present status of the community, dynamics of the group, internal needs and external trends. The environment in which this organism resides, as well ass internal status of the community needs to be monitored and assessed regularly, keeping in mind the mutual and/or individual goals of integral parts of the group. Only than a group can be shepherded properly, and the guiding individuals or group can pose actions on if and how to hold the CoP reins. All that can sound worse than Tamagotchi story, but in fact that is a challenging but exciting activity that many of us have to deal with on smaller or bigger scale. EUMETSAT Training Team would like to share experience of guiding a CoP, gained through a 3T Forum, but also hear other ideas from community of experts on how to best continue with orchestrating the group.

EUMETCAL Hackathon, the Method and Our Experiences

ID; 33

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Abstract;
From the 24th to the 28th of April, the very first EUMETCAL hackathon took place in Norrköping (Sweden). The goal of this hackathon was to collaboratively develop 3-4 online learning modules on topics that are relevant to the EUMETCAL Community. With this we jointly worked on solving the Training Needs that exist within the EUMETCAL Community.

Hackathons offer the opportunity to bring talents with different capabilities together in a kind of pressure cooker to jointly find an answer or solution to an issue in a short period of time. In our case, we used this method to create meaningful and engaging learning experiences on pre-selected topics in a short period of time that can be used for learning materials in our community.

During this session we will focus on the methods used and the experiences we had with this hackathon. The event proved to be so inspiring, productive, and successful, resulting in substantial progress that would not have been possible without this hackathon. Therefore we plan to continue organising such hackathon events to foster and to support the community with their collaborative work to solve our community's training needs.

Reflections on training impact

ID; 28

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Co-Author(s);
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Abstract;
When the pandemic hit, our virtual monthly weather and climate Regional Focus Group Discussions thrived. It had not always been this way, there were many years when we struggled to attract new participants. When we offered virtual new topic sessions and workshops, the increased attendance surprised us. We are now in the post pandemic phase and attendance for formal and informal virtual training remains high, maybe not as high as during the peak of the pandemic, although definitely higher than pre-pandemic. Why is this so, particularly for the informal sessions? In this story/presentation, we reflect not only on the content, but also the people, the growth of the WMO VLab RFG over time, the networks the people are part of, the importance of a welcoming environment, and plenty of patience. It will highlight small steps we took to improve training impact and potential ways we can demonstrate the impact.

Sharing experiences: Your contribution to the new edition of the WMO Global Campus Innovations

ID; 43

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Co-Author(s);
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Abstract;
In 2020 the first edition of the WMO Global Campus Innovations was published. The thirty-nine papers it contains, describing innovative approaches to meeting the education and training needs of WMO Members, were all produced in 2019. That was one year before the outbreak of the Covid pandemic and a global-scale lockdown. That was three years before the release of ChatGPT, the new large-language model AI tool that has amazed people around the world and led to speculation about a more rapid immergence of AI in work and learning places. That year was also in the middle of the eight hottest years on record, a streak that is expected to extend to nine years at the end of 2023, bringing with it an unprecedented series of severe weather and climate disasters.

The world in which meteorologists, hydrologists and related professionals work and are educated and trained continues its rapid change. For this reason, it is time to again take stock of the innovative approaches that education and training professionals are applying to the needs of their constituencies.

We are confronted by many questions:

- How has the subsidence, but not complete eradication, of the Covid pandemic altered our instructional methods and logistics? Has there been a return to past norms with new enthusiasm, or do we now take advantage of good practices learned from the innovations force upon us to help in the post Covid era?
- How has the rapidly progressing impacts of climate change and accompanying severe weather changed job performance needs, and therefore education and training needs?
- How is the evolution of operational systems, like enhanced NWP and improved and more cost-effective observations instruments, changing the role of forecasters and the skill requirements of new staff to take on these roles?
- How are educators and trainers reacting to the opportunities or perceived threats from the unexpected successes in large language models and other Artificial Intelligence? Given its growing successes in mining and presenting useful information and intelligently constructing responses and explanations, what are its impacts to teaching, content development, learning interactions and student evaluation methods? How might the role of teachers and trainers be altered in positive ways?
- What will be the impacts of AI on job performance requirements and the education and training to prepare the workforce for this new environment?

- How has the demand for increasingly sophisticated teleconferencing systems changed the capabilities for synchronous distance learning and expanding the reach of education and training?
- How have other advances in technology, both learning and performance technologies, altered the learning needs and opportunities of students and new staff members?
- How can we bridge the increasing gaps in education and training opportunities among the nations of the world to develop sufficient professionals to meet growing needs?

This contribution to the CALMet XV Conference will announce a call for contributions to a new edition of WMO Global Campus Innovations. All CALMet participants will be encouraged to contribute and provided guidance on making their submissions.

EOTEC DevNet network analysis: insights on the global capacity building landscape

ID; 26

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Co-Author(s);
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Abstract;
EOTEC DevNet's recent network analysis includes the question: Which organizations and individuals are key connectors in the global capacity building network? The resulting findings and visualizations show linkages between global and regional providers of EO-related capacity building – while also highlighting gaps. Using EOTEC DevNet's analysis as a springboard for discussion, this interactive session will engage audience members in dialogue on practical, implementable ideas for increasing collaboration of the EO capacity building network. It will emphasize forward-looking approaches to building and reinforcing connections among and between global and regional capacity building providers, including Global Campus. After sharing a few of the visualizations, presenters will ask participants to 1) analyze the gaps, 2) offer examples (based on their experience) of success factors for and challenges to collaboration with other partners, and 3) suggest ideas for improving the connections, especially through virtual collaboration. The outcome will be a read-out covering: perceived gaps, lessons learned, and recommendations for the future. Our background presentation would include slides on what is EOTEC is, how it operates, what it has accomplished so far (global use case analyzing flood extent tools; flood tools tracker); an overview of the network analysis, and detail on EOTEC's new online member platform, available at www.eotecdev.net. The session and the background presentation will underscore the conference themes of Collaboration, Lessons learned and Future challenges & opportunities. Background: EOTEC DevNet (Earth Observation Training and Education Development Network) is a global network that seeks to promote cooperation and collaboration among the leading providers of EO related capacity building. They include: WMO Education and Training, WMO-CGMS Vlab, UNOOSA, CEOS and GEO. The network analysis, an approach powered by social network analysis techniques, was developed and implemented in late 2022 to guide EOTEC activities and inform monitoring and evaluation.

Mini-hackathon on the Science Behind Rainbows

ID; 10

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Co-Author(s);
Heleen Pelkwijk, Fabienne Werder, Keliann LaConte

Abstract;
Are you ready to unleash your creativity and scientific knowledge to create captivating and educational exercises on rainbow formation? The Rainbow mini-hackathon is a collaborative event aimed at developing interactive and hands-on exercises that explore the fascinating phenomenon of rainbow formation. You will work in a team with other participants and design prototypes of exercises that will captivate learners and enable them to understand the science behind rainbows.

Hackathons bring together participants from various fields and they share ideas, insights and prototype creative learning experiences. In this session, you will experience the rapid prototyping process that is used during hackathons to create engaging learning experiences on the science behind rainbows. Guided by experienced Instructional Designers, you will create exercise prototypes incorporating multimedia elements and interactive features.

Fostering Collaborative Learning: Exploring Various Knowledge-Sharing Activities in Modern Organizations

ID; 31

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Abstract;
Effective knowledge sharing has turned into a pillar of organizational success in today's quickly changing corporate environment. This abstract provides a discussion of the various knowledge-sharing practices that foster collaborative learning in modern organizations. We explore the complex world of information acquisition and dissemination and facilitate of an engaging discussion session.

The discussion session is built around a number of interactive exercises intended to clarify the nuances of knowledge sharing. In order to create an immersive learning environment, participants get involved in brainstorming sessions, case study analyses, ethical issue discussions, and action plan building. We investigate real-world difficulties faced during implementation and cover the "why, what, and how" components of knowledge sharing.

Join us and contribute to this issue by sharing your best practices and lessons learned. We will be navigating the changing landscape of knowledge-sharing activities, identifying solutions for challenges, and collectively imagining a time when collaborative learning will drive businesses to new levels of innovation and development.

CONECTing the dots: WMO Global Campus & cooperation in meteorological training

ID; 44

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Abstract;
In April 2023, over 120 individuals from meteorological agencies and universities of 46 member countries of WMO attended the first hybrid meeting (95 participants online and 26 in Geneva) of CONECT, the Consortium of WMO Education and Training Collaborating Partners. CONECT will complement the work of the WMO Executive Council Capacity Development Panel, by being a formal mechanism to achieve the goals of the WMO Global Campus Initiative. The Consortium aims assisting building critical mass of support for ensuring technically sound, coherent, consistent and timely input of stakeholders towards the provision of desirable strategic direction for education and training activities; being a viable ground for minimization of duplication, to complement efforts, maximize impacts, and enhancing cost-effective use of resources. Sharing ideas and solutions to challenges in education and training will be at the heart of all CONECT activities. The Management Group of CONECT was selected during the first meeting in April, with representation across the six WMO regional associations. Working Groups were also established to define the scope of CONECT's activities.

Navigating Our Path Together: CALMeters Voices, Future Choices

ID; 42

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Co-Author(s);
CALMet Working Group

Abstract;
In this event, we will take a deep dive into CALMet community's current state and envision its future, scrutinise the issues and impediments impeding our path to growth, and identify answers. The World Café method will be used to ensure interactive activities take places. Participants will be groupped into three groups: Participants, Contributors, Organizers/ Co-Chairs . Every group will be facilitated with the group facilitatators, who will provide asisstance in discussion, collecting gorup ideas, initiatives, suggestions and advise.

To start with, the introduction session will be available to welcome participants and provide a brief overview of the session's objectives. Explanation of the World Café format will be delivered for those unfamiliar to ensure that all participants are in the same page.

Our journey begins with a reflective analysis of the present. In the first session " Reflecting the Path We Walked ", we will explore to what aspects of CALMet community contribute to an ideal environment for enhancing CALMeter's professional development in the field of meteorological education and training, as well as fostering collaborative learning.

As our conversation continues, we will delve into the current status of our community. In the second session, Picturing Our Community's Future, we assess our ability to address the different demands of our valued members. We examine the hurdles and roadblocks that stand in our way of progress. Equally essential, we open the door to novel solutions. Participants explain why these elements promise a happier, more prosperous future for all of us.

Moving on to the Session three, "Nurturing Our Sustainable Community Together", participants are invited to share their personal commitments, pledges intended to strengthen the community's foundations and assure its long-term viability. Furthermore, we offer an invitation to anyone who want to play a more active role in our working group.

We will conclude this session by sharing call-to-action rings throughout the event as we collect insights and commitments from each group. We create a strategy for our community's growth, discuss upcoming next actions, and express emotional gratitude for the CALMeters' persistent devotion and engagement. The result of the workshop will be summarized and reported to CALMet Working Group for the Improvement of Upcoming CALMet Conference.

Group 4 - Supporting Training for Meteorological Professionals

LVRossby: a simple numeric model to teaching Rossby Waves in Southern Hemisphere

ID; 21

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Abstract;
Rossby waves (RW) play a crucial role in weather systems and energy propagation on synoptic and larger scales due to their dispersive nature, where the speed of the wave train differs from that of individual disturbances (Holton, 2012). To study the kinematic characteristics of RWs is essential for understanding their impact on the Earth's climate in different scales.
During our teaching experience in courses on Waves in the Atmosphere at the University of Buenos Aires, we have identified some difficulties in explaining —for teachers—, and assimilating —for students— the concept of RW dispersion. Traditional teaching methods, such as non-animated figures and limited practical exercises, have shown limitations in enhancing students' understanding of these complex phenomena.
To address these challenges, we have developed and tested an interactive and visual learning tool with the aim of facilitating students' comprehension of RW dynamics and their dispersive characteristics. A group of simple numeric models were developed, called "LVRossby" (from Laboratorio Virtual, Virtual Laboratory in english). They focus on the superposition of RWs with different wavenumbers, and each one of these models represents increasing levels of complexity
focus. We have successfully implemented this tool in the course "Waves in the Atmosphere 1" in different semesters , employing different methodological approaches.
Here we will share the interactive learning tool "LVRossby" and the outcomes of these teaching experiences. We hope to encourage a deeper understanding of RWs among students and educators, by providing an accessible and engaging learning resource for climate education and research.

Using the Cloud to Teach Linux System Administration

ID; 23

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Ronald Robinson

Abstract;
Moving Towards Cloud Computing at NWSTC

As technology moves forward do training organizations need dedicated local data centers to support their training activities? Depending on types of training, complexity of computing resources needed and numbers of users expected, using cloud computing may be a viable alternative to local data centers or servers.

This resource contribution shows what is being developed using cloud resources to teach Topics in Linux System Administration. This activity was prompted when due to IT security concerns of having training servers outside the NWS network. This course is scheduled to be released in 2024 to support Advanced Weather Interactive Processing System (AWIPS) System Administration.

Our objective for the conference is to complete a Linux Lab and provide a link to the participants so they can see the technology in action. We will also describe the skills necessary to implement. The cost of setting up and running cloud applications will be explored

Bringing Meteorological Services and Universities together: An example on an Aeronautical Meteorology course in Argentina.

ID; 40

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Abstract;
I will show a success experience in an aeronautical meteorology course where doctorate and undergraduate students visited the forecast office at International Jorge Newbery airport in Buenos Aires, Argentina. This course, where I was the lab professor, was given during the first semester of 2022 and we visited the airport office on June, 2022. The students learned about airplane characteristics, atmospheric phenomena that affects aviation such as fog, ice formation, turbulence, among others topics. This classroom had 9 undergraduate students and 4 doctorate students. The goal of the visit was to interact with the aeronautical forecasters to show the students real time job. The synoptic situation during the previous days of our visit was of great interest. A humid and stable airmass with calm winds was present over the airport area. A large number of flights were delayed because of the presence of dense fog. Therefore, the students could ask the forecasters how they managed the situation, how they interacted with pilots, airport employees and other persons connected with the airport operation during a fog scenario. This interaction was very valuable for their training and showed us the importance of connect the university classroom and the national meteorological service. Then, I would like to ask the conference participants and discuss together: How can we bring together meteorological services and universities? How do we teach in university courses to train future professionals in meteorology that reach NMS's scopes? What are the challenges that teachers have to face to achieve these goal

Example of online content delivery with Articulate 360

ID; 6

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Abstract;
The Bureau's Introduction to Meteorology course offered to our stakeholders, customers, and members of the public has recently been replicated in an online self-guided course built using Articulate 360 due to a need to meet ever-increasing demand with increasingly limited training resources. This resource is one of 10 Articulate modules used to introduce students to the basics of meteorology and the Bureau's forecast and warning services. All 10 modules in this course were created from content that was delivered via PowerPoint presentations with a meteorology trainer. This particular module introduces (1) MSLP charts and the weather information we can discern from them, and (2) the key synoptic-scale weather systems that influence Australia and their seasonal movement.
Whilst making the conversion to a self-serve online course we have found that Articulate offers a good effort to reward ratio when building online content, with a number of ready-made assets that are easily inserted as needed and then simply filled with content. Course maintenance has also been found to be quite straightforward with both minor and major updates to content (e.g. to fix typos or to reflect service changes) easily achieved.

Online content delivery with Articulate 360 - Numerical Model Fundamentals

ID; 7

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Abstract;
The Bureau of meteorology offers a Graduate Diploma of Meteorology program, which covers the broad WMO Basic Instruction Package-Meteorology (BIP-M) learning outcomes. This online course was adapted from presentations included in the Graduate Diploma Numerical Weather Prediction subject unit. This online course introduces:
(1) model grid spacing vs resolution and resolvable features in models;
(2) approximating dynamic equations and the forecast errors introduced; and,
(3) numerical stability and grid choice .

The training material in this course is created in Rise articulate. Activities include knowledge checks, on-screen drawing to investigate grid spacing versus model resolution, and running python code in Google Code Laboratory to investigate forecast errors associated with time-integration methods. A Moodle quiz captures knowledge retention after completing the training material.

Rise Articulate was very easy to use, enabling fast development of content. Review Articulate enabled easy collaboration and review of content before publishing. Publishing as a SCORM package for upload to Moodle was also a simple process. All videos were edited in Camtasia and hosted on Vimeo with embed-links in the Rise course.

Activity completion (training and passing the quiz) is tracked in Moodle for overall course completion reporting in the Bureau's Enterprise Business System (EBS). Learners and managers can view records of course completion.

Information Technology Helps Optimize Network Training Mode

ID; 16

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Abstract;
Information Technology Helps Optimize Network Training Mode
In February-May 2023, we organized a three-month online training program to popularize the basic knowledge of atmospheric science among 363 new liberal arts graduates in the meteorological department, laying a necessary knowledge foundation for them to work in meteorological management and services.
During the training, the teaching management team used information technology to carry out some creative work to help optimize the monthly network training activities. The specific approach is to produce a mind map and a 3-minute micro-video to introduce the learning schedule of the training class, Design and distribute training needs questionnaire and training effectiveness questionnaire to find out the basic situation, learning needs and training results of the students; All participants in the course can get 7 * 24 teaching support service when joining the instant messaging groups, and the teaching team answers students' questions in a timely manner, shares learning resources, and publishes teaching arrangements; We organized 12 live webcast teaching activities to answer students' questions and expand their knowledge lectures, enhancing the interactivity of online training; Made a comprehensive online evaluation statistical table for students to evaluate the online activity of the training course and explore online learning behavior evaluation methods; Assign 3 theme assignments to inspire students to write small articles based on propositions and teaching team gathered essays to share in class instant messaging group.
The use of information technology has improved our work efficiency, strengthened network teaching monitoring and immediate support services, solidly promoted network teaching organization and management, optimized and formed a network training model of "pre-training mapping + autonomous learning + live Q & A + interactive lectures + Live video review + whole-process teaching support services + post-training evaluation", and also improved the quality and effectiveness of network training.
Participants mentioned these new ways in the training summary one after another, so that they also experience a sense of belonging and honor in online learning, and no longer feel that they are studying alone. During the training, the trainees not only learned basic meteorological knowledge, but also expanded their meteorological professional knowledge, and had new thoughts on career development planning. And apply the knowledge learned in the training to practice in time by writing a small article. One trainee won an award by participating in a meteorological science popularization knowledge competition during the training.
In the future, we will face the development of meteorological operations, the needs of departments and posts, as well as the increasingly personalized learning needs of a large

number of employees in meteorological departments. Many new tasks and new requirements will inevitably arise for network training. We must actively respond, make full use of the development of information network technology, embrace the application of new technologies to meteorological network education and training, expand the ways and methods of meteorological network education and training, and promote the high-quality development of meteorological network education and training.

Continuous training process in Impact-based forecast and alerts

ID; 9

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Abstract;
The impact-based forecasting approach promoted by the World Meteorological Organization (WMO, 2015 and WMO 2021) is now echoed around the world. Some countries have begun its implementation, and many others are going through the long path of transformation, as is the case of Argentina. The paradigm shift proposed by impact-based forecasts is a communication challenge in itself, both for meteorological services and users. In order to carry it out, it is necessary to build capacities in the subject. In this sense, this paper describes the ongoing training process on the subject implemented in the National Meteorological Service (NMS). This process is part of the current 2020-2023 NMS Strategic Plan (https://www.argentina.gob.ar/smn/institucional/plan-estrategico), under the general objective of "Efficiently contributing to the reduction of disaster risks enhancing the provision of meteorological and climate services".
This paper describes a series of activities and actions that are part of the training plan to lay the foundations that enable a possible implementation of alerts based on impact in the future. The importance of collaborative and interdisciplinary work is highlighted, both nationally and internationally, and the development of a training plan sustained over time. It is expected that the experience can become a replicable precedent through the Regional Training Centers to build capacities in forecasts based on impacts in other countries of the region.

Agrometeorologist Training Course: A Collaborative Venture into Education and Training

ID; 15

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Abstract;
The Philippines and most of the World Meteorological Organization Regional Association V (WMO RA-V) members in the South-West Pacific are composed of nations whose main economic sector relies on agriculture. Annually, there is a number of hydrometeorological hazards that pose a threat on this sector and the people who rely on it. Thus, there is a need to empower and upgrade the skills of National Meteorological and Hydrological Services in providing information and warnings to its stakeholders.

The Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) recognizes the importance of updating the skills of its Farm Weather Services and field personnel on the practice of Agrometeorology. In this regard, the Agrometeorologist Training Course, a three (3)-month course was conceptualized based on the Guidelines for Curricula in Agricultural Meteorology as highlighted in the Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology - Volume I (WMO 258, Supplement No. 2, 2009). The course focuses on its main components including (1) Fundamentals of Meteorology and Climatology; (2) Weather, Climate, Crops and Aquaculture; (3) Meteorological Hazards and Agriculture; (4) Agrometeorological Measurements and Instrumentation; (5) Micrometeorology; and (6) Disaster Risk Reduction and Management for Agriculture.

The course boasts its strength on the collaboration and linkages it has developed among Philippine government agencies including the Department of Science and Technology - PAGASA and Department of Agriculture and the academe, particularly with the University of the Philippines – Los Baños, Laguna. The collaboration among the three sources of information allowed for a balance between theory, practice and science communication. The lessons and activities conducted were beneficial in building knowledge on key principles of agrometeorology, skills in applying that information in current work setup, and communication of pertinent information for its end users. It has also opened renewed partnerships for continuity of the program and other future projects as we aim to replicate its success to other WMO RA-V members.

SGI001E - Quality Management at SISCEAB

ID; 34

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Abstract;
With 29 international airports, spread over 8,500,000 square km, training MET Personnel in Quality Management has become a challenge. For this, an distance learning course was created, specifically aimed at meteorological observers. The course lasts 30 days, with the disciplines covering the applicability of ISO 9001 in meteorological observation processes. The SGI001E - Quality Management at SISCEAB. It has been applied since 2017, and has already trained more than 350 meteorological observers in different parts of the country. As a result, this training has proven to be effective and efficient as MET Personnel are being trained based on the requirements of ISO 9001:2015.

Group 5 - Supporting the Training for Other Professionals and Public

Workshop "Why is the planet heating up?": a classroom-based approach to climate change

ID; 25

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Abstract;
Amidst the constantly evolving landscape of climate change education, our efforts found their genesis in 2021 within the participating students of the Science Week organized by the Faculty of Exact and Natural Sciences at the University of Buenos Aires. This propelled the inception of a meticulously structured workshop scheme, with the primary objective of elucidating the fundamental principles of climate change physics and unraveling its potential scenarios. Our initial focus was to empower secondary school students with a comprehensive understanding of this pressing global imperative.

From these initial steps, our initiative gathered momentum, transcending the confines of Science Week to encompass a broader educational horizon. Over the course of three transformative years, we embarked on a journey of refinement, adapting our workshop to a variety of academic contexts. This culminated in the development of both the workshop itself and a corresponding webpage, both thoroughly crafted to facilitate seamless integration across diverse educational levels, particularly within university courses.

The forthcoming conference presents an opportunity to disseminate our innovative workshop scheme—capturing the principles of climate change physics alongside its scenarios. Anchored within a meticulously crafted framework, the workshop unfolds across distinct phases:
1) Exploration of Climate Change Indicators and Impacts: Participants engage in an in-depth exploration of various indicators and observed impacts attributed to climate change.

2) Climate Change Scenarios: A prospective examination of climate scenarios unfolds, revealing the intricate interplay between present actions and future trajectories. To facilitate this, we have developed an interactive exploration employing the dynamic web simulator: C-Roads.

3) Exposition of Climate Change Inequities: The Carbon Map emerges as a powerful instrument, casting a spotlight on and dissecting the inherent inequities within the realm of climate change.

4) Discussion around Collective Actions: Culminating the workshop, dynamic deliberations catalyze actionable steps spanning diverse scales, fostering a collective commitment to initiate meaningful change.

Our accompanying webpage stands as a guiding light, elucidating the intricate flow of the workshop while serving as a comprehensive repository of indispensable resources.

In light of our dedicated efforts, we eagerly anticipate the occasion to share our extensive resources and insights, thereby nurturing an engaged interaction with students. Central to our initiative is the spirit of active participation, fostering interactions that are not only instructive but also profoundly engaging. It is noteworthy that the incorporation of cutting-edge information and communication technologies (ICTs) infuses dynamism and innovation into the educational experience.

As we stand on the cusp of this impending conference, we find ourselves poised to contribute to the ongoing narrative of climate education—a narrative characterized by active participation and pioneering innovation.

Social educational practices as a methodology for teaching and service production around hydrometeorological events.

ID; 27

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Abstract;
Social Educational Practices (PSE) represents a dynamic approach in education, fostering the integration of curricular contents with the demands of society within teaching and learning environments. The University of Buenos Aires (UBA) has made significant progress in establishing these transformative training spaces. One good example of this progress is evident in the endeavors of the Department of Atmospheric and Oceanographic Sciences (DCAO), which operates as a training center of meteorologists and oceanographers. Within the “Anticipating the Flood” (ALC) project framework (http://anticipandolacrecida.cima.fcen.uba.ar/), the DCAO has introduced a PSE named "Collective construction of community maps of urban flooding". In this work we will present our three years experience in teaching in this PSE and the progress achieved during this period.

Several localities in the Buenos Aires Metropolitan Area, Argentina, have their population facing social vulnerability, subject to the frequent impacts of hydro-meteorological events such as heavy rains and river overflows, leading to periodical floods. The speed at which operational technical information on the climate is produced is high, and in many cases the times that a community requires to assimilate said information are different. Access to hydro-climatic information generated by the technical scientific sector in many cases is inefficient. This requires rethinking the way we produce knowledge and make it available. The aim of the PSE is to co-produce essential knowledge on water movement in urban areas, recognizing its paramount importance in collaboratively designing community-based water disaster risk management strategies. Likewise, community early warning systems are strengthened, with a focus on the affected communities. In that way, and within the ALC framework this PSE engages community members from primary and secondary schools, alongside PSE students and teachers, to collaboratively construct community flood risk maps.

To construct these maps, PSE`s students actively participate in the surveying of neighborhood characteristics to flooding, with the emphasis in identifying vulnerable areas. Students are trained in image processing and geo-referencing techniques, enhancing their capacity for interdisciplinary work in dialogue with local stakeholders. As a result, publicly

accessible risk maps are generated. These maps not only contribute to raising awareness of flood risk management but also to highlight the benefits of collaborative work.

The co-production of knowledge through meetings with local stakeholders, complemented by autonomous work by students, culminating in constructive discussions and reflective sessions facilitated by teachers. This combination empowers students to systematize and consolidate the information and knowledge they gather, contributing to the collective construction of a more profound understanding of urban flooding and the strategies to reduce and mitigate its impact. Furthermore, the interactions with researchers and experts from other institutions provide PSE students with a comprehensive perspective on the problem of urban flooding, inspiring multifaceted approaches to address its challenges effectively. The intergenerational injustice that climate change generates requires working together with young people, because they are the ones who will feel its consequences in the future and because their perspective is different from that of adults. For this reason, the PSE proposes to work in schools.

Conducted thrice since the end of 2021, the PSE witnessed active participation from over ten students from diverse fields of study, including biology, geology, atmospheric sciences, and oceanography. The outcome of these collaborative efforts is the development of numerous flood maps for different neighborhoods in La Matanza and Quilmes, Buenos Aires, Argentina. This PSE, within the ALC project, shows a successful approach to understand urban floodings through the interaction between researchers, students and local communities on building collaborative knowledge.

This presentation shares the success and challenges of the "Collective Construction of Community Maps of Urban Flooding" PSE. It highlights the PSE's contributions to comprehending urban floodings and the benefits of collaborative knowledge co-production.

An assessment of users' needs for and providers' capacities of climate service in Ukraine

ID; 35

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Abstract;
Implementation of the Global Framework for Climate Services has demonstrated that there exiist subsatntial discrepances in the availability of competencies necessary for provision of climate services in all WMO Regions, especially in less developed countries (WMO Global Framework for Climate Change: Science and Solutions - No. 67 (2), 2018), which requires development of large-scale educational programmes for training and advanced training of specialists in the field of climate services. In Ukraine, despite having an extensive system of national meteorological services, in view of the complex and turbulent political and economic situation, climate services are in the early stages of development. One of the most pressing issues at this stage is training of specialists and bridging a gap between users and climate service providers.
In order to develop an informed and complete understanding of needs of providers and end users/decision-makers in Climate Service in Ukraine Odessa State Environmental University (National Project Coordinator) in collaboration with Kyiv National University of Construction and Architecture, O.M. Beketov National University of Urban Economy in Kharkiv, Lviv Polytechnic National University, Bila Tserkva National Agrarian University, Odessa National Medical University, and two ministries – Ministry of Education and Science of Ukraine and Ministry of Energy and Environment Protection of Ukraine, within the framework of the Erasmus + project 'Multilevel Local, Nation- and Regionwide Education and Training in Climate Services, Climate Change Adaptation and Mitigation – ClimEd', 619285-EPP-1-2020-1-FI-EPPKA2-CBHE-JP, http://climed.network/, conducted a survey where appropriately filled out questionnaires were obtained from 297 responders from 7 climate-dependent economy sectors such as agriculture, health care, urban economy, water management, energy, infrastructure/construction and nature preservation along with 48 providers of climate service from territorial subdivisions of the Ukrainian Hydrometeorological Center. Analisys highlights that despite their potential and societal benefits climate services are still not easily accessible beyond the research contexts. Educational measures aimed at enhancement of environmental and climate literacy of end users/policy- and decision makers and fostering climate service providers' awareness of users' requirements enables bridging the gap between climate services and users, incentivizing introduction of climate services through emphasizing their importance and benefits, thereby encouraging a wider user base.

On the trail of extreme events in Italy

ID; 4

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Abstract;
The workshop allows the experience of a virtual journey to places where natural events have altered the Italian territory and triggers a process whereby, by looking critically at visible traces, evidence of fragility can be identified. There will be interactive maps to recount, with panoramic photographs, video footage, interviews with direct witnesses, etc., some of the most striking cases on the national territory. It will be possible to discover abandoned hamlets that testify to the traumatic impact of certain events on local communities forced to start afresh elsewhere, recognize faults that have moved along impervious territories, or imagine what risk scenarios are possibly caused by intense rainfall on an urbanized territory. Finally, an interactive questionnaire will allow users to check their understanding of what they have seen and read.

Lesson learned : Building Communication, Building Trust, for Better Collaborative Action

ID; 13

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Abstract;
Since 2022 I led the development project of the IBF over West Java with a disaster aspect chosen to be the first development object. It is in line with the provincial Government's program "Jabar Resilience Culture Province" which has been initiated since 2020. During the process of developing this project, we often communicate with the Regional Agency for Disaster Management (provincial and district level) to build collaboration and influence the policymakers for climate sustainability and resilience policies.
In additional I am going to share about my initiation in women empowerment program in early warning and early action and BREAK Program (BMKG Ready Kids) as the brand new program that aimed to educate children in disaster mitigation in fun way..

ET.MMO International Workshop on PMO and VOS Implementation Experience Exchange for RA.III & IV

ID; 38

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Abstract;
One of the first activities developed under the recently created Expert Team on Marine Meteorology and Oceanography (ET.MMO) from the World Meteorological Organization (WMO) and its Regional Association for South America (RA.III) and the Caribe (RA.IV), was an on line International Workshop for Experience Exchange about the Implementation of the Port Meteorological Officers (PMO) and the Voluntary Observations Ship (VOS), within national practices and the adoption of International Maritime Organization (IMO) regulations for completion the Audit for Members States (IMSAS).
The activity were conducted in spanish by the Chile Navy Weather Service (SERVIMET), with the support of the Regional Formation Training Center (CFRT) from National Meteorological and Hydrological Service of Peru (SENAMHI), in two hours weekly sessions, with zoom platform and practical reviews of the materials generated by the Ship Observations Team (SOT), Global Ocean Observation System (GOOS), Convention for Safety of Life at Sea (SOLAS) and the WMO Guidelines for Marine Services.
The goal was to familiarize other marine weather services with the PMO's duties (includes courtesy visits, instrument checking and weather reports training) and to activate the VOS recruitment at national levels, by choosing the better candidates from the scientific research vessels, navy and merchant marine, antarctic logistics, fisheries and yachts.

Implementation of the new meteorological systems in Kosovo ANSA

ID; 8

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Abstract;
Implementation of the new meteorological systems in Kosovo ANSA (Air Navigation Service Provider)
This is a project started and developed since 2016. Has been integrated in the main project named as “runway extension”. Was planned to be implemented in 2020. COVID 19 has postponed the implementation, and has been finished as a projects in August 2022. This project has included Forecasting System; ATIS/VOLMET System; New AWOS System and Backup AWOS System.
In the presentation will be shown all obstacles regarding planning, safety assessments, prolongations, factory and side trainings for MET, Technical and Air Traffic Services personnel. Difficulties on the implementation road while were involved two separate companies, and integration with other systems was an issue as well.
Before implementation of separated projects, a satisfaction was to prepare an operational directive/s on starting to use operationally the systems having in mind working with old systems as well in shadow mode.
Most of the SOPs (Standard Operational Procedures) where changed or adopted with new rules and technologies.
Having in mind that in aviation safety issues are crucial for keeping it in acceptable level, and due to the fact that in Prishtina International Airport there are weather issues (fog, heavy precipitations etc.), with new equipment and redundancy it is of great benefit and experience implementation of this project for our community.

Group 6 - Educational tools related experiences, best practices, and lessons learned

Innovating live Participants' Forums as a diverse teaching mode to facilitate creative collaboration for Meteorology Plus - Meteorology as an Enabler in other sectors

ID; 19

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Abstract;
The China Meteorological Administration (CMA) Training Centre (WMO Beijing Regional Training Centre, RTC-Beijing), a comprehensive, professional, and high-level meteorological education and training institution that integrates administration and meteorological professional continuing education, is a national base for high-level continuing education and on-the-job training in the meteorological sector. The CMA Training Centre (CMATC) was recognized by the World Meteorological Organization as the WMO Beijing Regional Training Centre (RTC-Beijing) in 2003. From 2003 to 2022, RTC-Beijing has held 99 international training courses for a total of 8,095 international participants from 168 countries and regions, covering all six WMO Regional Associations. RTC-Beijing undertook the largest amount of global distance training among all the WMO RTCs in 2021 and 2022, and was recognized as "one of the three most active regional training centres among the 43 regional training centres in WMO", "model for implementing competency training" and "trend-setter" for distance meteorological training.

Since 2013 when WMO first proposed the concept of global campus, RTC-Beijing has paid great attention to it by committing itself to developing relevant international training resources. In order to meet the needs of distance training, RTC-Beijing's MOOC website was developed in 2015, and from 2018 to 2022, 27 distance training courses had been launched, benefiting 6,956 participants from 153 countries and regions. RTC-Beijing has realized a paradigm shift by introducing a diverse instead of traditional monotype teaching mode that features modern distance/online delivery to make best use of resources for a richer and better performance, and has strengthened the development of international training resources for the benefit of developing and least developed countries in human capacity building and meteorological service delivery.

RTC-Beijing attaches great importance to group management, increasing the proportion of live lectures, organizing tests and Q&A sessions, etc. Since 2021, RTC-BJ has innovated live Participants' Forums, promoting friendship among participants, increasing instant interaction, promoting operation experience exchanges among participants from various

countries, promoting the dissemination and learning of good practice, and improving the effect of international training. The participants can benefit from a wide range of expertise of fellow colleagues including transportation, tedical care & health, energy, water conservancy, disaster prevention and mitigation, tourism, agriculture, ecology & environment, finance, insurance, etc, and have a better understanding on creative collaboration for Meteorology Plus - Meteorology as an Enabler in other sectors. Relevant courses have received positive responses from international participants, and at present, more than 1,000 messages have been uploaded and shared by participants, giving full play to the role of international training experience sharing and exchange platform.

ECMWF: a Machine Learning MOOC and a new Moodle LMS

ID; 20

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Abstract;
ECMWF is constantly evolving their training offerings to provide the meteorological community with information to understand, access, and use ECMWF forecast products and services.

Due to the rise of machine learning in meteorology and climate, in January 2023, ECMWF launched its first ever Massive Open Online Course (MOOC) on Machine Learning in Weather & Climate (MLWC). Through collaboration with iFAB and the University of Luxembourg Competence Centre (ULCC) a three Tier MOOC was developed with input from experts in the field. The MOOC featured a mixture of learning activities from videos and podcasts to forums, e-learning and interactive Jupyter notebooks.

In July 2023, ECMWF moved to a new Learning Management System (LMS) utilising the Moodle Platform developed by ULCC after the success of the MOOC. The new LMS (learning.ecmwf.int) combines Forecasting, Research, Software, Data and Computing and Copernicus Climate Change Services (C3S) e-learning modules into one place. The aim is for the LMS to grow and eventually encompass all ECMWF learning resources. Moodle was favoured for the new LMS as it will allow for interoperability with LMSs of other organisations with which ECMWF collaborates.

This resource contribution will share the successes and lessons learned from the MLWC MOOC and provide an overview of ECMWF's new LMS and what it aims to achieve through collaboration.

Interactive presentation softwares... trick or treat?

ID; 3

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Abstract;
Interactive presentation softwares, as Slido or Mentimeter, are now widely used in training activities, as a way to engage students. However, they can also be seen as a crowd sourcing technique, for example, using it in meetings with users. A few examples on using Slido in the past year will be shared and the different perspectives will be analyzed.

Research and Practice of Live Broadcast Teaching Mode Based on "Internet +"

ID; 18

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Abstract;
Live broadcast teaching is an important means of information teaching, which uses Internet as the support technology to carry out teaching activities. With the help of live broadcast system, online classroom is transformed into more realistic classroom.This paper discusses the definition and research value of live broadcast teaching model based on "Internet +". Four kinds of live teaching modes are studied in this research. It analyzes the characteristics and scope of application of each mode, applies four live teaching modes into daily teaching practice, and evaluates their effects. It is concluded that live broadcast teaching based on "Internet +" has the effects of spanning space, interactivity, and rapid generation of new teaching resources. In-depth research and application of live broadcast teaching should be promoted.

Group 7 - Artificial Intelligent (AI) in Training and Professional Development

The Role of AI in Training and Professional Development

ID; 11

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Abstract;
Recent advances in AI have raised many questions about the role it could play in education. In this session, we will discuss the capabilities and limitations of AI and their potential implications for the field of professional development and training.

If the only thing we do is present information (through text, images, and videos), ask our learners a few questions, or write reference materials, we may as well let AI do it! It is often just as capable and nearly always more efficient and is only likely to improve in the future! By using AI to get us started with ideas, we can create games, smart drills, and simulations in which we engage our learners in creative, challenging, fun and effective learning activities. Effective use of AI can improve the educational experiences we create, while allowing for more efficient production.

In this session, participants will use ChatGPT to search, organize and write reference information; obtain the basic outline of a game, get ideas for incorrect answers to multiple choice questions and translate information from and into other languages. Participants will also verify the information suggested by ChatGPT.

To prepare for this session, please create a free account at chat.openai.com.

The new challenge: Artifical Intelligence (AI) and examinations

ID; 32

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Abstract;
Artificial Intelligence (AI) becomes more and more relevant for written examination (tests, BSc, MSc, PHD). At the faculty „Wetterdienst“ at the University of Applied Science (Public Administration) strategies are being discussed how to tolerate AI as a modern tool that is just about to become common on one side and to ensure that personal deliverbles are clearly visible that meet the scientific demands on tests and final theses on the other side.

Till the pre-conference period (7-12 November) documents will be uploaded with information how we are dealing with AI and which plans we have or we are discussing. Interesting links to this topic will be added, too. Experiences and ideas of the audience are very welcome during this week. This collected material will enable us to arrange a Wokshop in the second week for elaborating a document about ideas and concepts that can be taken home and used for the next steps that are tailored to the individual requirements