A Strategy for Gaining the Involvement of International Universities in WMO Global Campus Initiatives

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Background

Brief History of the Global Campus Initiative

The Global Campus concept was introduced at the WMO SYMET meeting in 2013, and was followed up with a feasibility study and implementation plan detailed in the *A Global Campus Roadmap* prepared for the WMO Congress 19 in 2019.

The stated definition for the Global Campus initiative is:

> "The 'Global Campus' is a collaborative network of education and training institutions and NMHSs involved in the development and delivery of training in meteorology, climatology, hydrology and other related sciences. It is built on the synergies, sharing and cooperation between these institutions and will address global priorities and the growing and changing requirements and needs for training of the community."

As we move toward implementation, it has become increasingly clear that international universities have an important role to play in meeting the education and training needs related to the Global Campus. With this in mind, this report presents a strategy to engage the international university community in this initiative including activities such as sharing curricula, innovation, resources, and engaging in collaborative projects.

The University Environment

Most universities have moved well beyond traditional in-person degree programs, rapidly expanding a variety of distance learning courses, modules, and on-line degree programs in the atmospheric, hydrologic, and climate sciences. Universities have numerous efforts (e.g. Penn State World Campus, University of Reading FutureLearn). These for-credit programs are highly driven by ROI, making them generally too expensive for the broader WMO learner community. However, universities have also invested in freely accessible Open educational resources (**OER**) to help provide training to a wide variety of students who could not otherwise have access. OER are openly-licensed educational digital assets, including text and media for use in instruction and assessment that can be provided to learners at much less cost than traditional instructional programs. Some universities are even willing to give nearly free access to OER for non-credit offerings, provided non-compete issues can be resolved regarding use of the material. However, to more fully involve the university community, there will need to be funding sources identified to build capacity for their support of the Global Campus Initiative.

Successful engagement of the international university community will ensure leveraging of academic and professional expertise in support of Global Campus while providing universities unique and unparalleled access to the worldwide community of water, climate and weather professionals.

Cultural Training Issues

There are a variety of challenging issues to address when developing training resources for the WMO's diverse, international community of practitioners:

- The international WMO learner community has a history in and strong preference for traditional, in-person training, which is increasingly cost prohibitive for many members.
- There is a need for regional and local relevance of training offerings, meaning customized courses, requiring additional resources and funding.
- The wide disparity in student capability to meet WMO competencies calls for training offerings designed for a variety of learner backgrounds and experience.
- Language is also a challenge, with some training and resources that will need to be available in the six WMO languages (English, French, Spanish, Russian, Chinese, and Arabic).

The increasing availability of OER and blended learning approaches used by the international university community presents the potential for increased accessibility and affordability for the WMO learner community. Working with the university community to address the challenges listed above, OER and blended courses can provide highly-modular, regionally relevant offerings to meet the needs of the WMO Global Campus Initiative.

The Path Forward

Future Directions to Encourage University Participation

Encouraging international university engagement in WMO Global Campus initiatives will require a coordinated effort with governance residing with GC committees and/working groups. Promoting a collaborative approach with multiple providers can be especially beneficial and effective. Universities can provide training topics ranging from introductory and basic concepts to cutting edge research skills to generic skills and competencies for employment. And universities can benefit from partnership with operational trainers to better understand basic skills in forecast operations and operational practices; this knowledge can then better inform curriculum development needs. To accomplish active university engagement in WMO Global Campus, specific tasks should include:

1. Identification of an appropriate governance group to coordinate university participation in WMO Global Campus, with a new group to be formed should there be none deemed currently appropriate to the task.
2. Establish a forum to identify and specify training needs of NMHSs and other users, especially those that are widely shared and/or cannot currently be met in an accessible way. Some ideas include:

    a. Annual users meeting to outline education and training needs and priorities
    b. A "help wanted" board for specific user organisations to request specific support
3. Issue call for participation to international universities to determine their interest and capability to engage in the GC.
    a. Use call for participation in GC working group as means to solicit EoIs for membership of the network
    b. As a part of this – request submission to Library, Calendar, etc.
4. Target sessions focused on international university engagement at various meetings and conferences (e.g.CALMet). Could focus on innovations such as:
    a. Delivery of courses NOT for credit (Universities are currently very focused currently on core for-credit activity)
    b. More agile process – especially in response to specific regional needs
5. Identify RTCs (see Appendix A) that might have strong regional alliances with the university community that might assist in gaining university engagement through collaborative training partnerships.
    a. Short staff exchanges to collaborate on and learn new educational techniques/ideas
    b. Formalize course evaluation partnerships (e.g. U.K. External Examiner role)
    c. Promote future student exchanges (e.g. exchanges between Reading/NUIST and Reading/Oklahoma)
    d. Exchange of trainers (e.g. University of Reading/UK Met Office for operational forecasting and tropical meteorology)
6. Identify universities who might host and/or provide instructors for GC regional training workshops
7. Identify universities who might assist in translation of training materials to other WMO languages, as appropriate
8. Establish a centralized repository for university contributions to GC and invite them to contribute training offerings services including, but not limited to:
    a. A "network" that provides:
        i. Opportunities to develop skills, knowledge and understanding through events, courses and learning resources
        ii. Accessible, respected, high-quality education and training resources
        iii. New insights to universities about the market
        iv. Opportunities to foster collaboration and exchange of ideas
    b. Online course design and content:
        i. Materials that are modular and adaptable to meet the variety of NMHS regional training needs.
        ii. Preference is for online/blended offerings providing wider accessibility
        iii. Availability of low-cost OER-based training is essential to achieve greatest accessibility and impact
    c. Specialized short course design and delivery
        i. Offerings tailored to specific country/regional training needs
    d. Quality Assurance and Assessment
        i. Establish editorial board/process for the library

      ii.   Develop guidelines for the quality of resources and have providers demonstrate that their resources meet them

      iii.   Certify providers as qualified to provide resources – at the point at which "Providers members" are accepted it is assumed they will provide quality resources

9. Map university contributions with other GC training to BIP-MT and BIP-M and associated competencies/curricula in specialized areas (e.g. aviation, marine)

10. Identify training gaps related to BIP-MT, BIP-M, and specialized areas. Encourage universities to collaborate on filling the gaps in training
    a. Identify pathways to BIP-MT and BIP-M certification (credit sharing, participant tracking, etc.)

11. Identify and engage potential funding sources that might allow universities to enhance their contributions to GC. Some potential source include, but are not limited to:
    a. World Bank
    b. VCP
    c. UNESCO/Others?

12. Investigate the feasibility of a centralized credentialing/badging organization. Note that many NMHSs may prefer to do this individually, tailored to their own service needs.

Initial Steps

Pending formal approval at Congress 19 in June 2019, there are several initial informal activities already underway aimed at engaging universities in the WMO Global Campus. Many of these are outcomes from the WMO Global Campus meeting that took place 29-30 November 2018. A detailed list of initiatives and milestones is contained below.

- An initial outreach to universities has already been accomplished through a RFP for chapter proposals (due 8 December 2018) sent to international university members of the CALMet community and to targeted universities in the U.S. for a 2019 WMO publication *Global Campus Innovations: New Directions for Education and Training*

- Nanjing Institute of Information Science and Technology will hold a symposium on challenges of contemporary meteorological education, 8-10 May 2019.

- An informal working group of university representatives was formed at the November 2018 WMO Global Campus Meeting and agreed to move forward to foster university participation. The group has representatives from several universities, including the University of Reading, Pennsylvania State University, and the University of Colorado. Specifically:
    o The group considers itself essentially an informal **Universities Board** whose job it is to identify what we can do to support the progress of the WMO Global Campus
    o Every university represented will ensure they have deposited at least one item to the WMOLearn E-Library by end January 2019.
    o Every university represented here will ensure at least one event or course is put into the WMOLearn Event Calendar by end January 2019.

- University or Reading (UoR) will lead on drafting a letter/email and accompanying descriptive info inviting relevant University departments to express an interest in participating in the WMO Global Campus and deposit material and events to WMOLearn E-Library and Event Calendar
- Each university represented will provide to UoR an **initial** list of institutions in their region (and ideally a named person there) to send to the letter to
- Letter will be completed and sent by 31 December 2018.
- UoR will hold and build the initial list of interested universities which will be finalised to provide Congress documents by 31 January 2019.
- The university working group representatives will meet (virtually) in February 2019 to report on the actions above and agree next steps – UoR has agreed to chair initially with the expectation that this can be rotated among participating universities
- Agenda to be agreed by consensus, but likely to touch on
- Quality management approach to Library items
- Student participation tracking system – possibly focused on BIP-M
- Increasing ability to deliver not-for-credit courses and react swiftly to demand requests
- Proposing governance/operational mechanisms – e.g. Provider and User members and Boards
- Other items for near-term consideration:
  - An equivalent "WMO GC Users Board" charged with specifying strategic and other needs
  - A facility to allow "users" to post "wants and needs" within or alongside the WMOLearn Event Calendar
  - This should fit within Calendar development priorities, but the working group can make it a priority item

Concluding Remarks

This paper has set forth a strategic path and some initial steps that have been taken to engage universities in the WMO Global Campus. University participation is a critical component to the successful development and delivery of training for the Global Campus initiative. Cooperation between the university community and WMO Global Campus institutions will help to effectively address global priorities and the rapidly evolving requirements and needs of WMO members.

Acknowledgements

Appendix A: RTCs and Universities to Potentially Target for Collaborative Participation in the WMO Global Campus Initiative

Potential RTCs to Facilitate Regional University Engagement on GC Initiative

- UKMet
- CIMH
- Argentina
- Netherlands
- Nanjing/Nanjing Institute of Science and Technology
- Kenya
- Korea
- Costa Rica
- Russia
- Niger or Madagascar (French)
- South Africa/SAWS
- Other Training Groups-EUMETCAL, EUMETSAT

Potential Universities to Collaborate with RTCs on GC Initiative

- Penn State
- Mississippi State
- University of Arizona
- Arizona State
- Reading UK
- University of West Indies
- Argentina/University of Buenos Aires
- Netherlands
- Universidad de Costa Rica
- University of Nairobi
- Russian State Hyrdrometeorological University
- University of Pretoria
- Monash University
- Federal University of Technology Nigeria
- University of Para (Belem) Brazil
- Meteorological Training Institute-Pune India
- Target COMET/Unidata International University lists*

*COMET has a list of over 1600 universities worldwide that are <u>already</u> actively using distance learning on the MetEd website (www.meted.ucar.edu). UNIDATA has a list of Universities that are reaching out to acquire data. Both the COMET and Unidata university user groups would be prime candidates for participating in the WMO Global Campus.