

## **RA III and IV (Spanish) Regional Working Group Discussion Results**

The group consisted of 11 participants from different institutions in 3 Latin American countries

**Chile:** Aeronautical Service, Marine Service

**Peru:** NHMWs, University

**Argentina:** RTC 3 components, Gulich Institute

This institutional diversity gave us the possibility of discovering an ample variety of needs in the region and opened the region to future collaborations.

### ***Which thematic areas did you choose to discuss?:***

Our discussion was first started under

*Theme #9 : How do we identify the critical regional needs for the professional development of operational staff? How do we ensure that appropriately qualified participants attend our training events?*

### ***Why do these have particular resonance for this regional group?:***

This thematic area was the most oriented towards a regional discussion which could encompass any other topic of interest which could emerge from the discussion group

## **Opportunities**

The Ibero-American RTC Meeting held in Lima, Perú was a key event for our region creating the bases for a network among RTCs. The meeting was rewarded by the Santiago Declaration (2018). The network should now be extended to include other institutions and countries and realise a really collaborative work.

### ***Ways of Identifying training needs***

- One of the ways national and regional training needs have been identified in the past was through surveys. There is a past experience of competency based survey completed by all the members of the region which identified common training needs. The results were shared with the different RTCs and constitute an important source of information to orient training different sectors within NMHSs.
- NHMs Strategic Plans for the future periods are another source to determine education and training needs.
- NHMSs also use international projects to identify training needs within the collaborating countries and which are common to the group. These projects are also identified as a possible funding source to develop and deliver required training for the region. (Examples are CLIMANDES, ENANDES, EUROclima and BRAVA)
- WMO Train the Trainers Spanish course delivered in 2021 is a third source of information where common and particular training needs to a region can be identified. It also creates the possibility to work in collaboration to create regional training on common topics.
- The WMO Marine course delivered in South America was later adapted by the Marine Service in Chile and delivered to other members of the staff which had not been able to participate in the first edition and also reorganized it to address needs of other components of the Marine Service. The course helped the institution to identify different needs including training which were included in future plans for the institution. The regional course also resulted in a new collaboration with the Marine Service of Colombia.

## **Potential Directions**

### ***Training needs Identified by countries***

The new technologies, methodologies and approaches used to deliver forecasts have created new training needs in the region which include

- Continuous life cycle training which is constantly being updated to meet international standards and keep up with IT innovations.
- Automatic weather service maintenance
- New computational modelling techniques, data assimilation, Machine learning, data mining-data science, HPC-cloud computing
- Training in the use of the new satellite products, not only focused on weather monitoring and forecasting, but also as part of a real time earth observation to be used in aid of an impact based decision support system
- Impact based forecasting techniques, there is an increasing demand for trained personnel particularly on account of the increase of extreme weather events and the impacts they are having on society.
- Soft skills: New communication skills to interact with different users and create tailored products; project impact assessment; interdisciplinary project management;
- Disaster Risk Reduction, social impact, vulnerability, exposure
- Credit system. Some institutions use a credit system to promote staff, hence trainees would benefit more from training delivered by other institutions if courses were under some kind of credit system.

### **Collaboration:**

Each of the institutions briefly commented on the different ongoing training programmes which could be available to other institutions and countries. There are several courses available for graduate and undergraduate students offered by universities and by Gulich Institute (which is specialized in satellite training)

More feedback between universities and NWS is needed. Though universities deliver education to comply with WMO standards, there is not always a close link between teaching and the research being developed by professors and their groups. Moreover, operational areas of particular interest to NWS, such as marine meteorology, aeronautical meteorology or polar meteorology, which are important for our region, lack university experts and therefore have serious training difficulties in these areas. A third gap identified is that NWS update technical or operational techniques to follow international standards but universities are not fully aware of these changes thus courses delivered by the university are not updated to meet NWS needs.

On the other hand, there are experts coming from universities in the field of water resources management, risk management and hydrological disasters, hydraulic and river engineering, hydrological simulation, hydrological forecasting and warning systems, new technologies in hydrological measurements, water security, eager to train in these fields.

### **What steps might be required:**

- Increase communication between ARIII and ARIV RTCs, with the WMO Permanent Representative in America, and among training institutes
- Identify hydrology training needs within the different NHMS in AR III and IV
- Link experts from different institutions within thematic areas of priority interest for the region.

***Proposed future steps:***

- Compile list of training institutes within the region
- Series of webinars where different institutions present their strengths (areas of research/training/expertise), opportunities (offered to the region) and needs(which could be addressed by other institutions in the region). Invite all institutions identified to attend these webinars.
- Promote regular meetings between NHMSs, RTCs and different training providers (universities, institutes, local, regional and/or international) to enhance collaborations, keep up to date with training needs in the region, create necessary adjustments to new technologies, methodologies, etc. These meetings should be at least once a year.
- As part of an activity within the Leadership Course delivered by Aemet, RTC Argentina will present the outcomes of this regional training discussion group to the Latin American NHMSs leaders.

**Who is willing to take responsibility to contribute (and contributions they can offer):**

***SERVIMET - Chile: is willing to collaborate and offers***

IMO/WMO audit process and ISO:9001/2015 certification in maritime weather forecasting

***GULICH INSTITUTE - Argentina is willing to collaborate and offers:***

- scholarships to complete master or PhD degrees (geomatics and space systems) for Latin American countries covering priority topics identified by WMO or WMO RTCs
- funding possibilities for training development

***RTC - SMN - Argentina is willing to collaborate and offers:***

- experts and developed courses on different areas including: Radar, satellites, automatic weather stations, atmospheric observations, instrumental maintenance, data management, aeronautic meteorology and observations, climate extremes, climate services
- social sciences group with high skills in communication - Guide to Disaster Risk training

***RTC - UBA/DCAO - Argentina is willing to collaborate and offers:***

- experts and courses on: Space Weather, climate change, climate extremes, atmospheric modeling, agrometeorology, statistical and dynamical downscaling, seasonal forecasting, satellites, data assimilation and other courses within the educational atmospheric and oceanography programs

***RTC - FICH- Argentina is willing to collaborate and offers:***

Courses and experts on: Integrated flood management; Integrated water resources management; Sustainable water management. Water Resources Engineering (master degree). In the near future, Sustainable Water Management (online master degree).

***RTC-PERU is willing to collaborate and offers:***

Funding possibilities through ongoing collaborative projects

**Recommended Actions (What recommendations does the group propose that could meet the chosen goals and contribute to the SYMET Statement?):**

- Enhance institutional communication within NHMSs, RTCs and universities encouraging active participation of education and training representatives in regional training meetings.
- Work forward to establish a regional training network coordinating efforts, resources and experts and identifying funding sources

- We recommend further discussion on a credit system common which might be recognized and adopted by the regional NHMS.
- Enhance interaction between universities and NHMS encouraging regular dialogue about changes in operational services and research which might require modifications of meteorology education and training programmes.
- Enhancing collaborations between universities (regionally and globally) to work on creating or adapting existing education programmes to local needs in order to keep up with IT advances and meet WMO standards.
- Support translation to different languages and adaptation to local cases of existing shared resources and the co creation in native languages of new resources