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| **World Meteorological Organization**  **Commission for Instruments and Methods of Observation & Global Cryosphere Watch**  **CIMO-GCW Collaborative Workshop**  Geneva, Switzerland, 19-20 June 2017 | **CIMO-GCW/INF. 4** |
| Submitted by: The Secretariat  15.06.2017 |

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# Concept plan for A ra-vi – cimo workshop on observations at mountain stations

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| **Summary and purpose of document**  This document provides the concept for carrying out a RA-VI/ CIMO Workshop on Observations at Mountain Stations that had been developed been developed in the past years based on a request from RA-VI. There are currently no plans to conduct that workshop because of a perceived low interest for the matter. The meeting is invited to take this information in to consideration, when consider whether other joint activities between CIMO and GCW would be desirable, as on the possible conduction of training activities, and/or survey of members on their requirements for specific training related to both CIMO and GCW. |

**Appendices:** I Draft concept for the RA VI / CIMO Workshop on Mountain Observations

II Background to the request/proposal

**Concept plan for A ra-vi – cimo workshop   
on observations at mountain stations**

*(status as of Q2 2016, as submitted to CIMO MG-14)*

1. RA-VI had proposed to collaborate on the organization of a workshop addressing challenges related to meteorological observations at mountain stations, and in particular related to their automation. CIMO-16 and Cg-17 supported this proposal, as summarized in Appendix II.
2. As the topic of this workshop is closely related to the interests of EC-PHORS and the Global Cryosphere (GCW) Watch, it was proposed to invite them to contribute to its organization to ensure the workshop outcomes are relevant to a variety of WIGOS stakeholders. In particular, at the Second GCW Cryonet Asia Workshop (Salekhard, Russian Federation, 2-5 February 2016), it was noted that in Asia, there is currently only very sporadic meteorological and cryospheric information available from high elevation regions over 4000-5000 m a.s.l. The workshop agreed that efforts ought to be made in order to address those gaps, and proposed establishing an ad hoc Steering Group to set up a project for Asian High Elevation Cryosphere Observation (AHECO) (High Mountain Tibet, Pamir and Himalaya). That would include not only cryospheric measurements (snow, glaciers) but also supporting meteorological measurements.
3. In view of the approaching completion of the WMO Solid Precipitation Intercomparison Experiment (SPICE), it seemed timely to organize this workshop as a follow-up of SPICE to be able to capitalize on the experience gained during SPICE and which are of relevance to the subject.
4. Therefore, in 2016/2017, CIMO again tried to obtain more details on the requirements from RA-VI Members to refine the concept. It also invited RA-VI to express its continued interest for this workshop. In view of the limited clarifications received, it was felt that it would not be appropriate to conduct the workshop. Prior to reviving the concept, it would be needed to first assess the need for such workshop(s) on a larger scale, and to clarify the requirements of interested participants before further developing the concept.

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**APPENDIX I: Draft concept note for the RA-VI/CIMO Workshop on Observations at Mountain Stations**

**Theme**

A need for, and challenges of, the operation of AWSs at mountain stations

**Objectives**

Assess the need for observations in mountain regions. Address specific operational problems that mountain stations are facing , such as the maintenance of instruments, siting, and selection of appropriate instruments, provision of data in real/near-real time, including logistical problems related to access to site, power supply and communications. Specific topics mentioned by RA-VI were also the measurement of wind in icing conditions and of precipitation

**Duration, Date and Place**

Duration: 3 days

Date: (Late) March 2017

Place: Davos, Switzerland

**Participants**

Maximum number of participants may have to be limited because of the room capacity (TBD), and to enable fruitful round-table discussions.

* Participants from all WMO Members are welcome to attend (at own costs), provided room has sufficient capacity.
* Involvement of experts from several CIMO Expert Teams (Operational In-Situ Technologies, Developments in In-Situ Technologies, Instrument Intercomparisons) and SPICE.
* Participants should be originating from organization operating stations at alpine/mountain stations, such as NMHSs, universities, academia, research institutes, etc.

**Collaborations:**

* RA-VI: Originator of the request to CIMO to collaborate on the organization of such a workshop
* EC-PHORS and GCW Steering Group
* Mountain Research Initiative (MRI)

**Organization**

A Programme Committee will be established, composed of 2 CIMO experts, 2 RA-VI experts, 1 GCW representative, 1 MRI representative)

Mix of presentations from various communities, including among others Meteoswiss, MRI, RA-VI, GCW and CIMO experts

Organize approximately 4 sessions on specific topics, consisting each of:

* 1 keynote presentation,
* 2-4 contributed presentations
* A panel discussion moderated by the chairman and the presenters (out of which 4-5 recommendations should emerge)

There will also be a half a day excursion to a mountain observation site.

**Draft Programme (very tentative)**

Possible topics for the individual sessions (half day) would be:

* Official opening, together with registration (first morning)
* Requirements for observations in mountain regions
* Design of an AWS in mountain areas (incl. layout of the station, siting of instruments, …)
* Operation and maintenance of a mountain station (incl. data exchange/access, calibration, power requirements, …)
* Strategies for selecting instrumentation for an AWS in mountain regions (including considerations of roads, power grid/supply, staff, remote access, ...)
* Field trip (afternoon of day 2 or 3)

**Tentative Planning:**

* April/May 2016: Establish Programme Committee
* June 2016: First announcement
* October 2016: Draft programme / open registration & abstract submission

**Funding**

* Meteoswiss: Room, print-outs, excursion to observing site, conference dinner.
* WMO: Selected participants expected to provide/develop/coordinate the development of specific guidance documents.

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**APPENDIX II: Background to the request/proposal**

1. CIMO-MG-9 (Geneva, Switzerland, 5-8 April 2011):

7.3 Dimitar Ivanov from the Regional Office for Europe addressed the meeting on behalf of Regional Association VI (RA-VI, Europe) on a proposed collaboration between RA-VI and CIMO addressing observations at mountain stations. Specific problems that those stations are facing include the measurement of wind in icing conditions and of precipitation, as well as logistical problems related to power supply and telecommunications. RA-VI is about to develop a plan for the automation of such stations and would welcome guidance on most appropriate instruments for use. The meeting stressed that CIMO is not certifying specific instruments and also noted that some documents were already published, or about to be published on this subject. These included the report of the action COST 727: Atmospheric Icing on Structures and the EUMETNET Severe Weather Sensor II report. The meeting requested the CIMO President to provide references to relevant documents and the contact of some experts on the topic to Mr Ivanov. The MG welcomed the possibility of a close collaboration with RA-VI, but requested more information on RA-VI requirements/needs in view of identifying suitable actions from CIMO and assessing whether they could be included in CIMO ET workplans.

1. In 2013, the president of WMO Regional Association VI (Europe) formally approached the CIMO president “As you might be aware, there is strong need of the improvement of the mountain observations in the RA VI that goes along with the requirement of RA VI Members to provide relevant Guidance by the CIMO on the instruments suitable for harsh weather conditions at the mountain stations. This topic is under the concern of the RA VI Management Group and has high potential to be quite a good showcase of closer cooperation between RAs and TCs. In my personal conversation with Dr. Christian Plüss, I have notified that MeteoSwiss has expressed interest to host a RA VI Workshop on this topic.”
2. In 2014, the Sixteenth Session of CIMO (St. Petersburg, Russian Federation, 7-14 July 2014) stated:

4.26 The Commission noted that Regional Association VI (Europe) has proposed collaboration between RA VI and CIMO in addressing observations at mountain stations. Specific problems faced at those stations include the measurement of wind in icing conditions and of precipitation, as well as logistical problems related to power supply and telecommunications, in particular in the context of the automation of such stations. The Commission welcomed the proposal from the president to host a workshop on this topic in Switzerland and agreed to jointly organize with RA VI such a workshop on the challenges of operating instruments in mountainous conditions. The Commission expressed its appreciation for the offer from Switzerland to host this workshop and encouraged all Members to provide resources to support this activity. In addition, the Commission recognized that this workshop would be relevant to Members outside RA VI, and encouraged the President of CIMO to engage with all the Regional Associations for consideration of their involvement and support.

1. In 2015, the Seventeenth WMO Congress (Geneva, Switzerland, 25 May - 12 June 2015) stated:

4.2.2.70 Congress was pleased that CIMO and RA VI had agreed to collaborate on the observing challenges faced at mountain stations and encouraged collaboration between CIMO and regional associations in furthering implementation and operation of efficient observing technology in high mountain areas and the development of guidance for Members on best practice in this challenging area of observations.

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