

## **5 WIDENING THE SCOPE OF THE VL TO SERVE TRAINING NEEDS OF EMERGING SCIENTIFIC COMMUNITIES IN DEVELOPING COUNTRIES**

### **5.1 Background**

It will be recalled that at CGMS37 there was a first discussion on widening the scope of VLab training activities in order to provide remote sensing education and training to evolving science communities in less developed countries. In many of these countries students frequently endeavour to pursue their research without learning how to understand, acquire and make proper use of the data. The wide range of satellite data available via the internet and other sources can make such research daunting. It is generally agreed that the best way forward is to provide the more isolated researchers, new to the field of satellite data applications, with access to subject experts who, through the Internet, could play the role of local mentors.

As examples, NASA has developed and supported a series of training workshops, initially primarily focused on MODIS atmosphere products, and geared towards graduate students, undergraduates and researchers new to remote sensing in Brazil, India, Israel, Mexico and the USA. On occasion, they have been held in conjunction with training on the use of ocean products, atmospheric chemistry/aerosol products and land product applications using data from an assortment of EO satellite sensors. In Europe, EUMETSAT has sponsored training activities related to land applications in Brazil and for Portuguese speaking African countries, and the application of sand and dust storm products in Arabia and Africa. Additionally, support has been provided to a training workshop addressing marine applications, cosponsored by NOAA, which is expected to be repeated in 2011.

### **5.2 Implementation**

The acquisition by students and researchers of greater expertise in the use of remote sensing products would be achieved through regional training centres providing short courses and dedicated lectures (classroom and/or online) addressing particular aspects of remote sensing and which cater to more specific needs of the local scientific communities, even providing information in the appropriate local language.

It was generally agreed at CGMS-37 that it would be appropriate to make use of capabilities of the WMO/CGMS Virtual Laboratory for Satellite Education and Training (VLab) to achieve this goal by widening the scope of current VLab activities accordingly. This fits with VLab long term strategic planning and is seen as a cost-efficient use of existing global infrastructures and pools of subject expertise (e.g. international science working groups).

It was also pointed out at CGMS-37 that the CGMS R&D satellite operators would be major participants in such activities and support scientific institutes offering education and training to their scientific user communities. Indeed, the active involvement of CGMS R&D satellite operators within the framework of the VLab will

establish a broader, networked training programme that will, in turn, benefit global scientific user communities.

Widening the scope of VLab in this way will also help to leverage resources needed to locate the human resources (topic experts) required to coordinate this wider international network and identify travel funds for participating graduate scientists from developing countries when taking part in the regional training activities away from their home base.

Since the scope of VLab training areas is beginning to expand, it is proposed that an *initial* list of such areas would include:

- Land and ocean surface monitoring and resulting applications.
- dust (including volcanic dust cloud), fire and smoke monitoring,
- floods monitoring,
- atmospheric chemistry,

It can be noted that several of these topics are already beginning to make the transition from being merely research activities to being more of an operational nature and supporting such a transition is clearly a key objective of future VLab activities.

It is now time to identify an initial team of topic experts from both developed and developing countries, the former to provide expert training support, the latter, once trained, to go back to their countries and conduct their own scientific training programmes in Universities and training institutes. A VLab-based scientific training programme will also allow selected trainees to possibly spend time with the CGMS R&D satellite operators in addition to the operational CGMS met satellite operators, in order to gain the latest expertise in a particular field, develop the all-important contacts and networks of expertise, and collate materials that would allow them to create training resources suitable for home consumption.

### **5.3 Proposed Road Map**

- a) The VLab Co-chairs will continue discussions with the WMO Space Programme and other WMO Departments, together with all CGMS meteorological and R&D satellite operators, VLab training CoEs and other relevant training institutes with the aim of developing a list of topics catering to the education and training needs of emerging scientific communities in developing countries.
- b) To assist the Co-Chairs in Task 1, a special CGMS VLab Task Force should be set up to identify gaps in specific expertise, and where special effort should be focussed to fill them.
- c) This Task Force, with support from the parties mentioned in 1 above will then endeavour to identify sources of information required 1) to fill the gaps and 2) to support the development of appropriate training resources by the trainees.

It is well known that several R&D satellite operators already have considerable amounts of sophisticated training resources, often freely available via their web sites. In parallel, access by VLab members to well established educational archives such as ESRC is expected to be of great benefit to this endeavour.

- d) The VLab Co-Chairs will report on the progress of Task Force activities and achievements at CGMS-39.

## **6 CONCLUSION AND PROPOSED ACTIONS**

- 6.1 CGMS-38 is invited to comment upon and endorse the proposed roadmap to widen the scope of VLab training activities to serve the needs of emerging scientific communities in the developing countries,
- 6.2 CGMS-38 is also invited to endorse the *initial* list of training areas to be addressed by the widening of the scope of VLab training activities.
- 6.3 On the basis of this *initial* list of topics, CGMS-38 is invited to agree that the Co-Chairs initiate a procedure to nominate members of the CGMS VLab Task Force.
- 6.4 Upon request, all CGMS members, with the support from VLab CoEs and other appropriate training institutes will indicate to the Task Force:
  - sources of information and training programmes that could already fill, or are required to fill gaps in expertise,
  - potential topic experts,
  - their level of support to the development of appropriate training resources to be used by the scientific trainees. This support could also include inter alia, the availability of nominated subject experts in a consultation (mentor) role for trainees and the provision of some support for travel for developing country trainee scientists, in the situation where the supply of required information cannot be provided to them in their home country online.

- 6.5 VLab Co-chairs to discuss with VLab sponsoring agencies the funding of the Technical Support Officer (TSO) position from February 2011 onwards.
  - 6.6 WMO to continue dialogue with ISRO regarding the establishment of a CoE and the co-sponsoring of the CoE in Oman.
  - 6.7 CGMS-38 to comment on reviewed expectations from CoEs, Satellite operating agencies, WMO-CGMS and the Terms of Reference.
  - 6.8 CGMS-38 to approve the application submitted by KMA as a Centre of Excellence of the VLab, as summarized in Annex IV.
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