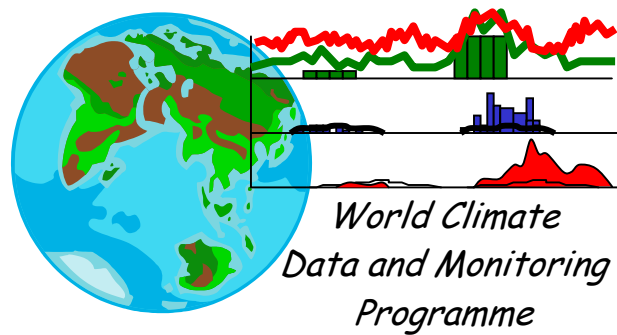


REPORT OF THE RA V DATA MANAGEMENT WORKSHOP
(Melbourne, Australia, 28 November-3 December 2004)

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1. OPENING

The RA V Data Management Workshop commenced its work at 09:00 on Monday, 28 November 2004. Dr G. Love, Director of the Bureau of Meteorology (BoM) welcomed the participants and emphasized the importance of such workshops in capacity building and facilitating the exchange of data and information among WMO Members in Region V. He expressed hope that the workshop would provide a good opportunity among participants to familiar themselves with the new techniques in data management and develop networking for further exchange of information in the future.

WMO's representative, Mr A.H. Delju, Acting Chief of the World Climate Data Monitoring and Programme Division (WCDMP), conveyed the best wishes of Mr J-M. Jarraud, the WMO Secretary General and pointed out that WMO, through the WCDMP, has always given high priority to search for existing data and metadata, retrieving, documenting, preserving and archiving them, performing quality control, forming datasets of original and derived data, and making data and metadata accessible to potential users. He then gave a brief history of the CLICOM Project since its beginning and added that the project had served as a valuable capacity building purpose bringing computer technology and expertise to hundreds of NMHS staff members in developing countries. Nevertheless, he noted that WMO then decided in 1999 to lay down the foundations for the development of the next generation of multi-tier Climate Database Management Systems. He added that NMHSs were entering a dynamic new phase comprised of three components to meet evolving requirements.

In continuation, Dr Bruce Stewart, Assistant Director of the Australian Bureau of Meteorology (BoM), welcomed the participants and presented a report on current activities of the Bureau and briefed participants on major climatic features of Australia in the past year.

The last speaker in the opening ceremony was Mr Jeff Wilson, Superintendent, Training Center of the BoM. He presented a brief report on the activities of the Training Center and recent courses on CLICOM and especially data management. He also noted that a group of meteorologists would soon be graduated from the Center to serve Meteorological Services in Small Islands in the region.

2. PARTICIPATION

The Workshop was attended by participants from seventeen RA V countries; Australia, New Zealand, the Cook Islands, Federated States of Micronesia, Fiji, Indonesia, Malaysia, Niue, Papua New Guinea, the Philippines, Samoa, the Solomon Islands, Tokelau, Tonga, Tuvalu, Kiribati and Vanuatu. In addition, the workshop benefited from nine lecturers and instructors from the Bureau of Meteorology, Australia, two from Météo-France, France, one from the UK Met. Office, UK, and one from Austria. A participant from Fiji and the Pacific Island GCOS Coordinator (SPREP) also contributed as lecturers to the training sessions. The list of participants is given in Annex A.

3. BACKGROUND INFORMATION

The World Climate Data and Monitoring Programme (WCDMP) frequently run data management and other climate workshops, principally for capacity building purposes, and also to explore new developments and possible options for meeting either general requirements or needs that are specific to one or more particular regions.

This workshop was planned for RA V for the following reasons:

- Several RA V countries need to make the transition from CLICOM to a more modern database system, and a broadly based data management workshop will be useful in acquiring a more precise understanding of the needs of the region for future systems;
- The Pacific Island GCOS (PI-GCOS) initiative has expressed interest in fostering data management activities for Pacific Island Countries (PICs); and,
- There is a need to provide training to RA V NMHS staff in recent developments in climate data processing and management.

4. OBJECTIVES

The workshop has the overall aim of improving the capacity of countries within RA V to manage climate data effectively along with the following specific objectives:

- To enhance the capacity of countries within RA V to manage climate data effectively,
- To stress the importance of sound climate data management,
- To enhance participant's knowledge of climate data management practices and procedures,
- To provide guidance on understanding data structures, quality processes, data rescue, data access and other priority areas of data management,
- To demonstrate modern database systems and principles, and,
- To seek feedback on the climate data management needs of RA V with the aim of collecting information on current requirements.

5. FORMAT OF THE WORKSHOP

- **Opening** (Welcoming speech by the Director of BoM, the WMO representative, Dr Michael Coughlan and Dr Bruce Stewart).

- **Why data management is important?**

UNFCCC climate monitoring principles, importance of working with Observation Programs, supporting climate prediction systems and climate change, importance of sustaining systems, where to go for further guidance.

- **RA V presentations** (to be found in Annex D)

- **Best practice climate data management**

Essentially an overview of the components below.

- **The desirable properties of a climate database system**

- **Data entry systems**

Essentials, demonstrations, including Pluvio, ergonomic/productivity issues.

- **Metadata**

Why important? Essential Metadata, how to manage? Demonstrate sites.

- **Quality process**

Supporting quality framework, guidance, documentation, standards, practices, monitoring performance, quality control procedures, including flagging and demonstrations.

- **Data rescue, preservation and digitization**

Climate records management, demonstrations of scanning/imaging/digital camera technologies.

- **Data access**

Principles, presentation/format issues, country benefits, interacting with end-users, demonstrating TCZ and possibly EVE.

- **CDMSs: Demonstrations and exercises**

The Météo-France Database (CliSys)

The Zimbabwe system (Climsoft)

- **Demonstration of CliRep (CLIMAT and CLIMAT TEMP message generating software)**

- **Break out session: What are the difficulties in managing data in the region and potential solutions**

- **Workshop closure**

The Programme of the workshop is given in Annex B.

6. COUNTRY REPORTS

The participants from RA V countries made informative presentations and covered various issues that influence the operations and development of the NMHSs, particularly climate observation and data management matters. The presentations were followed by questions and discussions on main matters of interest of the Workshop in the Region. National Reports are available in Annex C.

7. TECHNICAL PRESENTATIONS AND LECTURES

Nine lecturers and instructors as laid out in paragraph 2 "Participation" above, technical presentations during the workshop. A participant from Fiji and the Pacific Island GCOS Coordinator (SPREP) also contributed as lecturers and reported on their latest actions toward climate observation and data management in the Pacific.

8. CONCLUSIONS AND RECOMMENDATIONS

The following recommendations were made to address particular regional needs on climate data management:

1. The participants noted with concern that there are large gaps in the data-processing capabilities of NMHSs in RA V countries. It was emphasized that such workshops and similar events would facilitate identifying problems and adopting response actions.
2. The participants believed that such workshops would facilitate the share of knowledge with other countries in the region. It was believed that short- and long-term solutions on climate data management challenges should be drawn up to deal with problems.
3. The workshop further recommended that there is a strong requirement for regional cooperation for the enhancement of capacity of NMHSs in RA V and the Pacific Islands in particular, and that **highest priority to be given to the following:**

Data collection and rescue

The workshop underlined that Members should continue to place special emphasis on the maintenance and modernization of the core functions of the NMHSs, particularly in support of the

climate and climate data issues, most especially data rescue in RA V Small Island countries. To this effect, WMO was requested to help in providing needy countries with a digital camera or scanner and to train staff in capturing images.

Telecommunication

The highest priority in the Regional Meteorological Telecommunication Network (RMTN) should be given to the establishment of a GTS connection in those countries that are still not connected or suffer from low communication speed. Furthermore, it was noted that low cost and easy access to Internet in the region, especially in Small Island countries, would solve their data exchange problem.

Applications to other sectors

NMHSs should develop capabilities to respond to the needs of various national economic sectors, such as agriculture, tourism, wind power, and solar energy while maintaining their primary role in traditional sectors. This will enhance their visibility, show their important role within the Government and community and also provide a reasonable basis for cost recovery challenges. In view of this, NMHSs are strongly encouraged to establish close contact, human networking and partnership at Governmental sectors to prove that they are among stakeholders for the economic benefit and safety of life in their country.

Human resources development

National human resources development plans should be formulated to include continuous training and specialized training in specific climatological and data management fields. Therefore, NMHSs should pay additional attention to capacity building activities, including optimum use of the WMO Regional Meteorological Training Centres (RMTTC) in the region.

In view of the above, the workshop recommended the following:

- (a) Rehabilitation and improvement of the climatological observing and transmission systems, data processing and data management would improve the quality of data and products available at the national and regional levels.
- (b) Introduction of new technologies relevant to NMHSs should be given high priority, such as the modernization of the Global Telecommunication System, including the Internet and using satellite systems.
- (c) NMHSs to provide authoritative information and advice to the public and national decision-makers on the potential impacts of climate change, water resources, agriculture, forests, land and coastal areas.
- (d) WMO assists NMHSs in a plan for development of human resources in the relevant areas; meeting both the short- and long-term requirements for qualified personnel.
- (e) The Directors of NMHSs of SIDS in RA V are encouraged to take advantage of the VCP scheme for high priority requirements through the sub-regional office and keep the president of the region informed of this process for his follow up actions. WMO should assist the RA V Small Island countries in their efforts for climate data management and data rescue.

4. The workshop emphasized that the national climate data should be considered as valuable assets and therefore NMHSs should seek resources to recover and digitize historical climate data.

The participants requested WMO to seek funding mechanisms, including Trust Funds to assist them in this respect.

5. The participants encouraged each NMHS to establish its own website if it has not been done so far, and to link it to the WMO website. These sites should include information on climate updates/warnings wherever needed and serve in a user-oriented manner.

6. The NMHSs should improve data management, communications, monitoring, resource management and marketing services. This would lead to a new and feasible concept of cost recovery. However, noting that most of directors of NMHSs have technical backgrounds, WMO was requested to organize special training seminars and technical conferences on resource mobilization, management and cost recovery for directors.

7. NMHSs should largely use the guidelines and criteria provided by WMO for the future Database Management Systems, Climate Metadata and Homogenization, and Data Rescue.

8. Adequate attention should be given to the improvement of visibility and status of NMHSs and to the strengthening cooperation with other governmental sectors concerned, the media, academic community, universities, non-governmental organizations and the private sector.

9. Regional and international cooperation is required for improved and effective climatological services. Therefore, a **Strategic Plan for Enhancement of the NMHSs in Region V** is a wider mechanism for the mutual benefit. The PI-GCOS can also offer some technical assistance to accomplish priority objectives in CDMS issues.

10. Developed NMHSs in the region were encouraged to contribute to the Trust Fund with WMO on Strategic Plan to provide technical and expert support to climate data management initiatives in Small Island countries.

11. The Working Group on Climate Related Matters of RA V should be kept updated of recommendations made in this workshop and similar events in the region to make better coordination for future follow up actions.

12. High priority should be given to the training of climatological personnel particularly in the area of new database management systems and data rescue.

9. CLOSURE OF THE WORKSHOP

The workshop concluded its work at 15:00 on Friday, 3 December 2004.