

Summary Report
Start-up meeting of CCI ET2.2 Climate monitoring
including satellite and marine data sets

20-22nd September 2006, Tarragona, Spain

Zuqiang Zhang

The start-up meeting of Commission of Climatology (CCL) expert team(ET2.2) for climate monitoring including satellite and marine data sets was held on 20-22nd September 2006, Tarragona, Spain. Some invited guests and experts, Pierre Bessemoulin, President of CCI, Tom Peterson, Chair of OPAG2, Manola Brunet-India, Co-chair of OPAG2, Hama Kontongmode, Scientific officer of CCI Secretariat, Prof. Mark D. Schwartz from University of Wisconsin, Prof. Randy Cerveny from Arizona State University, Prof. Enric Aguilar from University of Rovira I Virgil, Mr. Jose Antonio López from INM of Spain, together with six team members of ET2.2, took part in this meeting.

In the welcome session, Mr. Hama expressed the high expectations from WMO members for the application of satellite and marine data sets in climate monitoring. Mr. Pierre recognized to have the meeting early in the inter-session. Besides the already identified 4 top-level Term of Reference to be prioritised for the work plan of ET2.2, He put forward another two key issues to be addressed, e.g. translation of the annual Bulletin of the American Meteorological Society Statement of the Climate Article and the need for a training workshop for the capability building in developing countries. In addition, Mr. Pierre suggested that the Et.2.2 can call on more experts to support the commission and Look for project partners for the team activities.

In the session for overview on the status and issues of climate monitoring, 12 presentations were given and some options for ET2.2 actions were brought out based on the full discussion on each presentation.

Tom Peterson gave a talk on what a small group of volunteers can accomplish in climate monitoring. The strong points of the group would be international recognition for the global coordination and inspiration of local and regional activities, while some individuals may not follow through with their agreed upon actions. So, the expert team is expected to do something that are important, doable, unlikely to be done without you and beyond what any one of you acting alone without the WMO banner could do.

Jay Lawrimore from NOAA/NCDC overviewed climate monitoring activities in the United State and RA IV which includes several major elements within the climate monitoring program, that is, state of the climate report State of the Climate, drought monitoring on a weekly basis, climate Impact Indicators, extremes monitoring and miscellaneous products.

Wan Hassan reported the status of climate monitoring in Malaysia, such as the observation network in Malaysia (36 stations in coastal areas), database management system, fire danger rating system, 10-day & monthly bulletin on weather and climate assessment, annual climate summary and air quality summary of Malaysia and some climate change signals detected in Malaysia. Urgent needs for new capability and shortcomings in climate monitoring in Malaysia include gaps (temporal and spatial) in data, quality of observations from volunteer stations, inadequate Malaysian interoperability, inadequate user involvement, lack of processing systems to transform data into climate indicators, better AWS systems, applications facility in radar and satellite system etc..

Xiaolan Wang introduced each element of Canadian climate monitoring networks which consist of reference climate station network, surface weather network, volunteer climate (Temp. & Precip.) network, partner stations, Doppler radar network, moored and drifting Buoys and upper air radiosonde network. Some climate monitoring products, drought monitoring, climate trends and variations bulletin, climate extremes, plots of daily extremes

(mean, max, min, climate normal etc), monthly update climate and storm summaries etc. were also presented.

Rainer Hollmann presented achievements and future plan of the European climate monitoring with satellite. Currently, the EUMETSAT's Satellite Application Facility (SAF) has been established in ocean & sea ice monitoring, support to nowcasting and very short range forecasting, Climate monitoring, numerical weather prediction, land surface analysis, ozone monitoring, support to operational hydrology and water management, and Global Positioning System (GPS) receiver for atmospheric sounding. Particularly, relevant products of climate monitoring SAF were introduced and their potential usage and caveats were discussed. Visiting Scientist program of the SAF network may be a potential chance for CCL ET2.2 to collaborate the international climate community. Rainer also provided the latest information on European plans for the Continued Development and Operations Phase (CDOP, 2007 - 2012) and proposed the requirements of climate monitoring for future satellite missions.

Zuqiang Zhang gave a view on the current activities in climate monitoring in China which involved some essential variables or events in atmosphere, oceanosphere, cryosphere, petrosphere, biosphere and the effect of human activities. The operational drought monitoring system, some attempts for climate extreme monitoring, and application of satellite data in climate monitoring in China were specially shown as a response to the decided priorities for the work of ET2.2. Some urgent needs for capability building, for instance, the application of satellite data in ocean data assimilation system, were proposed. This talk ended with the latest progress on efforts of China Meteorological Administration to build its national climate observatory network.

Crag Donlon talked in detail about advantages and issues for satellite and marine data and products in climate monitoring, with special focus on the

observations on SST, ocean biology, sea level and sea ice. His talk also involved the GCOS climate monitoring principles on satellite application.

A brief overview on components of a regional climate monitoring in WMO RAVI were brought by Rainer Hollmann, including the annual bulletin on the climate in WMO region RAVI, generate climate monitoring products and its successor platform, and WMO Regional Climate Center's functions on climate monitoring.

Jose Antonio Loptez Diaz viewed the basic climate monitoring products in Spain, which include monthly climate bulletin, daily reports on the broken records, hydrological reports and reports on climatological unusual events.

Mark Schwartz addressed the importance of phenological monitoring, the status of global phenological monitoring and relevant issues (few networks, multiple standards, and little coordination), benefits of phenological application in co-location and coordination with climate data. At the end of this talk, the vision of a USA National Phenology Network was introduced.

The final two presentations were related to the monitoring on climate extremes. Jay Lawrimore reported recent activities related to verification of extremes in the United States via the National Climate Extremes Committee (NCEC). The main points of this talk were background and procedures of the NCEC, some existing records and four record investigations. Randy Ceverny's talk focused on the status of world climate extreme archive and existing issues. He brought out some suggested global weather extreme in pressure, rainfall, hail, aridity, wind, tornado, tropical cyclone.

On the basis of the presentations and associated discussions, the final session in this meeting came to 17 actions to be carried out by the ET2.2 on climate monitoring (referred to the appendix II). Each action agreed in the meeting has the corresponding volunteers and deadline date.

Appendix I: List of Participants

Craig Donlon (Met Office, UK)

Enric Aguilar (University of Rovira I Virgili, Spain)

Hama Kontongomde (WMO CCI Secretariat)

Jay Lawrimore (NOAA/NCDC, USA)

Jose Antonio López (INM, Spain)

Manola Brunet (WMO CCL OPAG2)

Mark D. Schwartz (University of Wisconsin, USA)

Pierre Bessemoulin (WMO CCI)

Rainer Hollmann (DWD, ERBE radiation, OSI-SAF)

Randy Cerveny (Arizona State University, USA)

Tom Peterson (WMO CCL OPAG2)

Wan Azli Wan Hassan (Met Office, Malaysia)

Xiaolan Wang (CRD, Environment Canada)

Zuqiang Zhang (NCC, China)

Appendix II

ACTIONS TO BE CARRY OUT BY THE ET 2.2 MEMBERS ON CLIMATE MONITORING AS AGREED IN ITS START-UP MEETING (Tarragona, 20-22 September 2006)

- **ACTION-1: PB** to send CD a Meteo France pamphlet describing satellite receiving systems useful for climatology development that can be included in the Capability Audit (Action 8, Target Date: Nov. 2006).
- **ACTION-2: (CD + XW + RH)** A Web-based 'Capability Audit' of satellite and in situ climatologies and related activities will be developed for the ET2.2 web site. The inventory should list data set descriptions, example data set outputs, links to GCOS CDR requirements, known problems and issues, data access points, appropriate data sets developer/maintainer contact points, and a summary of 'missing' CDR data sets that are yet to be developed under the GCOS requirement (Target Date: April 2007). Update continuously.
- **ACTION-3: RH + MB** will work with the CCI ET2.2 team to develop a proposal (Target Date: May 2007) to EUMETSAT SAF (Head: L Schuller) for a climate based visiting scientist activity in collaboration with the international climate community (Noting the following EUMETSAT and ET2.2 interests including: the ET2.2 emphasis on oceans and satellites, the need for capability building of satellite expertise and products in developing countries, the need for better international coordination for satellite climate products, the expertise of EUMETSAT and the CM-SAF, the recent purchase (by EUMETSAT) of the entire SSM/I brightness temperature archive, the need for new accurate and consistent products and climate indicators, the expertise within the entire SAF network and their desire to develop integrated products).
- **ACTION 4: RH + ZZ + PB** to create overview of what satellite data are available and appropriate for climate monitoring and place that overview on ET2.2's web site (Target Date: April 2007). As training and education is important, inputs are requested from every member of ET 2.2 on satellite training activities in their regions and contact points who can provide information. Demonstration projects may be appropriate, and examples will be provided on the web site if possible. Some comments about capacity requirements in terms of data transfer rate will be made as some satellite data sets are small and others are huge. Liaise with Space Programs to avoid duplication of effort. **PB** to provide contact information about the Space Program. **ZZ** to contact the Chinese Meteorological Satellite Center of CMA to see what assistance they can provide for training.
- **ACTION-5: (JL + XW + ZZ + WAWH)** Capacity building through demonstration. On ET 2.2's web site, provide information on how different groups are monitoring the climate along with various indices, such as the Palmer Drought Index. With links to what is being done by various countries around the world. Complimentary to Climate Watch work of previous CCI session, so include a link to the climate watch document. Target date: August 2007).

- **ACTION 6: ZZ** to contact members of ET2.2 who didn't attend the meeting and ask them to volunteer on some of these action items (any action item except #17). Target Date: October 2006.
- **ACTION-7: PB + RH:** To revisit the ToR for WMO Regional Climate Centres to check the satellite and marine references are appropriate. Target Date: October 2006.
- **ACTION-8: MB + JL + CD + ZZ + WAWH:** will investigate the possibility of hosting the ET 2.2 web page on URV web site. The web site content must be written by team members on their action items. General web site for ET 2.2 to be developed by **JL, CD, ZZ**. Add overview of ET 2.2, members, TOR (just put in links to CCI web site). This site should be simple so it is easy to download. Target Date: December 2006. If there is a problem with URV, **XW** will try to host it in Canada.
- **ACTION-9: (CD)** to develop and submit a presentation to the CLIMAR-III conference managed by the WMO/IOC JCOMM ET on Marine Climatology planned for 2007/8. **CD** should work with Scott Woodruff to develop stronger links between CCI and JCOMM marine climatology activities to ensure these are coordinated. ¿Target date: October 2007?
- **ACTION-10: (PB)** to write a Letter of support, as CCI President, to the Director of the Sir Alistair Hardy Foundation for Oceanographic Science (SAHFOS) expressing acknowledgement of the Continuous Plankton Recorder (CPR) data set noting the importance of the data set as the longest marine biology time series (1931-present). **CD** to provide input and the Address of the SAHFOS group. Target date: October 2006.
- **ACTION-11: (PB)** to write a Letter of support, as CCI President, to the Director of the Global Ocean Data Assimilation Experiment (GODAE) High Resolution SST Pilot-Project (GHRSSST-PP) expressing acknowledgement of the GHRSSST-PP plans to develop a modern era (1981-present) SST climatology exploiting the full power of satellite and in situ observations noting the importance of such a data set for seasonal forecasting, climate monitoring. The letter should express a need to make this data freely available to developing countries in an appropriate manner. **CD** to provide input. Target date: October 2006.
- **ACTION-12: (JL)** A web pamphlet (hard copy and pdf) describing the web based capability inventory and highlighting the work of the ET 2.2 will be developed after the web site is functioning as an outreach activity promoting the work of the CCI ET2.2 in developing and developed countries. Target Date: September 2007.
- **ACTION-13: (JL)** Noting the increasing importance of the annual Bulletin of the American Meteorological Society (BAMS) *Statement of the Climate (SC)* Article and, noting the discussions at the Commission in Beijing, and discussions at the ET 2.2-I meeting, there is a need to broaden the understanding of the authorship list to ensure appropriate international expertise, participation and contributions. The ET 2.2 requested that a review of how the BAMS SC Authorship selection is made and what the process is for people to make contributions and be included in the BAMS authorship. The review should help clarify how the article is created and what areas of expertise could be improved by additional authors. The review article should be developed and posted on the ET2.2 web site or on the NCDC BAMS article web site and linked via the ET 2.2 web site. Target date: December 2006. Consider this as a note to BAMS to be published separately.

- **ACTION-14: (JL + HK to lead + All ET2.2 members to participate)** Noting the importance of Action-11, the ET-2.2 requested that the BAMS Statement of the Climate Article should be translated in to the following languages: Spanish, Chinese, Russian, Arabic, French. Formal support from Russia has already been offered to CCI. **PB** to discuss translation of this document into French (Target Date: October 2006). **EA** has agreed to lead the effort to translate the document into Spanish. **HK** to talk to Omar Baddour about translation into Arabic. **ZZ** to pursue translation into Chinese. **HK** to talk to Omar to coordinate translation and publication by WMO. This is for the Climate of 2005 (published in June 2006) and the Climate of 2006 to be published June 2007. **JL** to provide the leads for various translations with the text to be translated in April 2007.
- **ACTION-15: MS** to Review of the CCI guide to phenological practices (see <http://www.bom.gov.au/wmo/climate/ccl/opag1.shtml> for a link to the document) and update content noting the need for international standardisation (especially reference species) and enhancement of international collaboration. The report should advise the Commission on the issues facing the phenological network and propose a strategy to potentially address these. Target date: December 2006.
- **ACTION-16: MS** to advise **JL** and **RH** on the appropriate contact for Phenological information in the European area that could potentially make a contribution to the BAMS Annual Statement. Target date: October 2006.
- **ACTION-17: RC** will create his official CCI web site on Arizona State University's web site (Target Date: April 2007). **HK** will discuss with WMO whether there should be a different web page location. New records will be determined by a committee consisting of the Rapporteur for extreme records, the chair of OPAG 2, the head of the working group on climate matters from the CCI ICT, and at least one outside expert in that field (e.g., hail, precip), this will be explained on the web site. **RC** will add one more column on length of that type of instrumentation, and a column on pending new records, etc. **PB** will recommend to CCI vice president to include this action in the ICT. **RC** to add station or location photographs where possible. Global and continental scale records. Create a 1 page brochure that can be handed out at press conferences and meetings.

Alphabetical List of the attendees to the ET 2.2-I Meeting (members and non-members of the ET 2.2) and their acronyms:

All: All ET 2.2 members
 CD: Craig Donlon
 EA: Enric Aguilar
 HK: Hama Kontongomde
 JL: Jay Lawrimore
 JAL: Jose Antonio López
 MB: Manola Brunet
 MS : Mark D. Schwartz
 PB : Pierre Bessemoulin
 RH: Rainer Hollmann
 RC: Randy Cervený
 TP: Tom Peterson
 WAWH: Wan Azli Wan Hassan

XW: Xiaolan Wang
ZZ: Zuqiang Zhang