

The CCI Role Fostering Climate Data Availability Through OPACE 1 & 2 Activities

2nd WMO/MEDARE Workshop
Nicosia, Cyprus, 10-12 May. 2010

Serhat Sensoy

Vice-President of WMO CCI

Chief of Climatology Division of TSMS

ssensoy@dmi.gov.tr

Technical Conference

Title: Changing Climate and Demands for Climate Services for Sustainable Development

- 76 countries, more than 200 experts,
- Venue: Antalya, Turkey
- 32 lectures incl. JSG for WCRP
- 15 poster presentations
- Main results stressed:

To discuss an action plan for providing improved climate services



CCI-XV

- 110 delegates from 76 countries,
- 12 participants without credentials
- 8 Int'l Org.s representative
- 13 WMO staff
- 6 Local staff
- 45 JSC participants
- **182 Total**
- Venue: Susesi Hotel, Antalya
- Opened by WMO SG, Ministry of Env.& Forestry and PR of Turkey with WMO

WMO CCI 15th Session, Group Picture

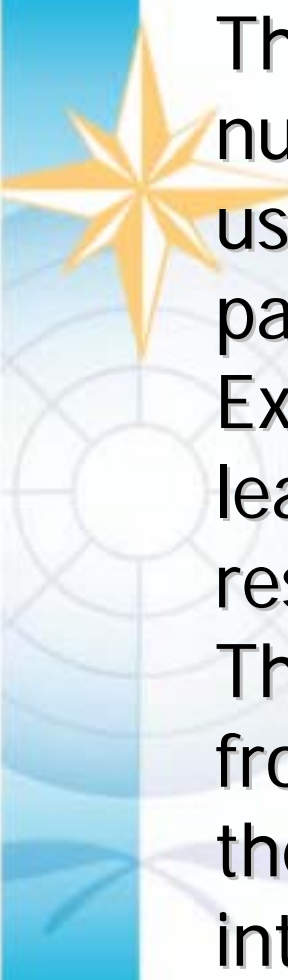


Outcomes from CCI 15th Session

The Commission, considering the recommendations of the MG and the emerging priorities including through the expected implementation of the GFCS, agreed to establish a new and more flexible structure consisting of following four Thematic Areas of work:

1. Climate data management;
2. Climate monitoring and assessment;
3. Climate products and services; and
4. Climate information for adaptation and risk management.

Outcomes from CCI 15th Session



The Commission, decided to minimize the number of Expert Teams, and to continue the use of task teams of experts to manage particular tasks and establish Open Panel of CCI Experts (OPACE) for each of the Thematic Areas lead by two co-chairs who would share the responsibility of implementing the work of their Thematic Areas with the support of the experts from the respective OPACE. The membership of the OPACE will be open for the entire intersessional period.

Preparations for MG Meeting 18-21 May, Geneva

OPACE 1 Teleconference, 8 May 2010 at 13:00

Key issues and outcome

- 1) Establishment of ET on climate data base management systems
- 2) Establishment of an ad-hoc Task Team on Data Rescue
- 3) Possible amendment of the list of deliverables
- 4) Information on GFCS and other WMO initiatives as well as the international conference on climate data
- 5) General discussions on issues relevant to AWS, CDMS, QC, Data homogeneity and satellite data .

Preparations for MG Meeting 18-21 May, Geneva

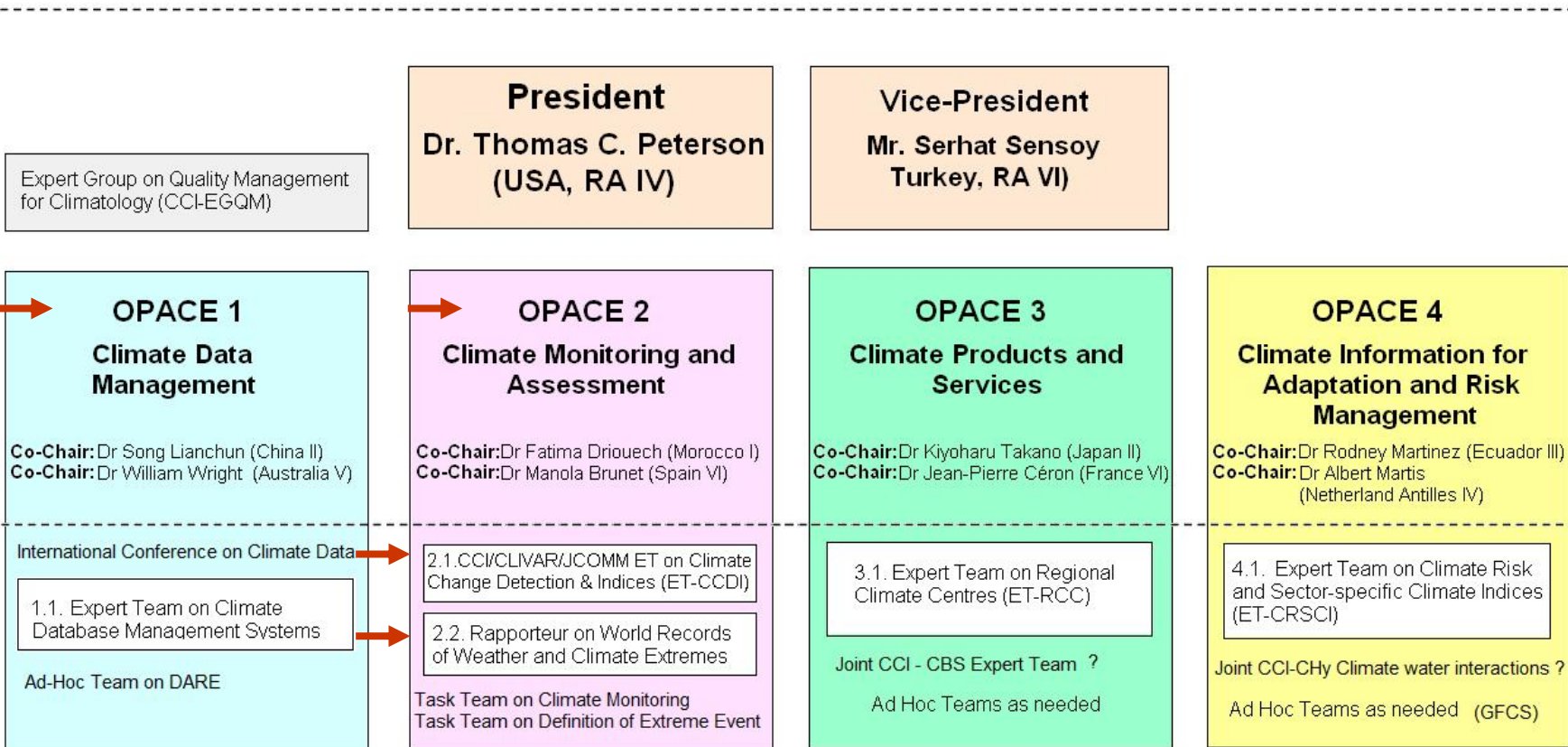
OPACE 2 Teleconference, 8 May 2010 at 16:00 **Key issues and outcome**

- 1) Establishment of CCI/CLIVAR/JCOMM ET on Climate Change Detection and Indices
- 2) Designation of Rapporteurs for World Records Of Weather and Climate Extremes
- 3) Designation of members for Ad Hoc Task Team On Climate Monitoring
- 4) Establishment of Task Team on definition of Climate Extremes

CCI-XV Management Structure

WMO COMMISSION FOR CLIMATOLOGY (CCI)

MANAGEMENT GROUP (MG)



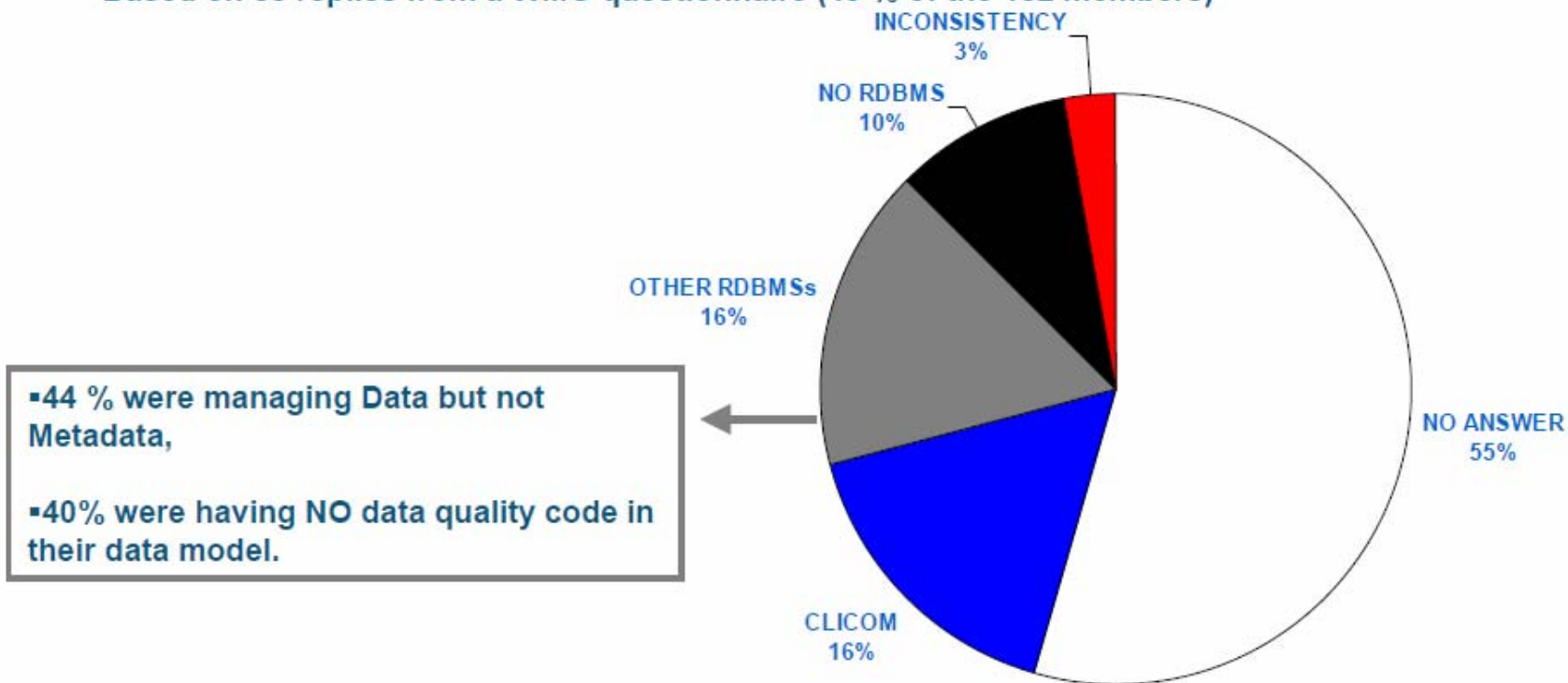
OPACE: Open Panel of CCI Experts, ET: Expert Team, Ad Hoc Team: Team for a Special Purpose

List of 214 volunteers

Past activities on CDMS

CDMSs STATUS IN 1995 1/1

Based on 83 replies from a WMO questionnaire (45 % of the 182 members)



→ Authors of the analysis, F. Benichou and Daniel Lee, reported that the management of metadata was not sufficient

WMO
Commission for Climatology ET 1.1

CONTEXT

ET 1.1

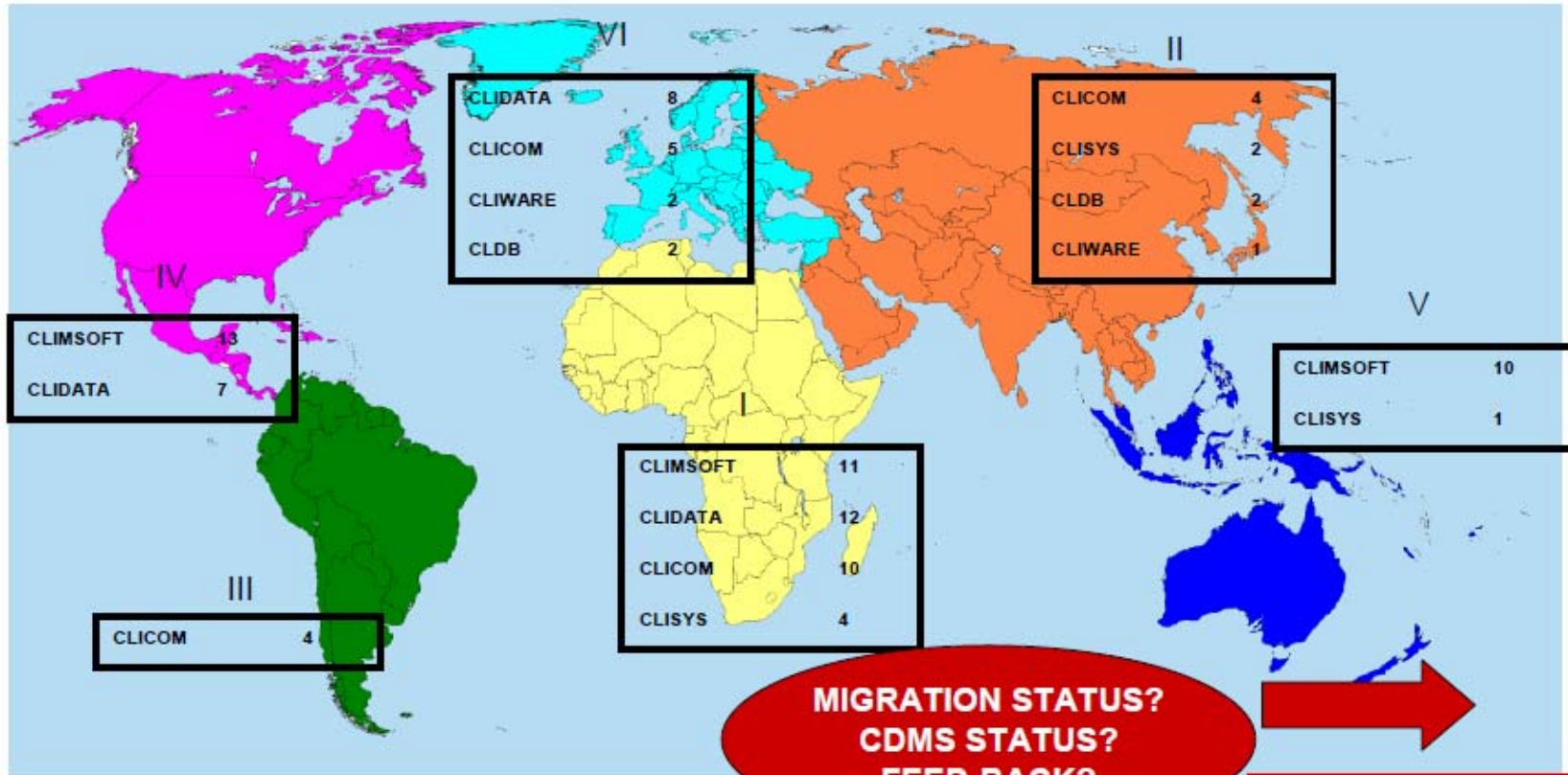
CDMSs' STATUS

DONE

EXPECTED

STATUS'S ASSESSMENT IN 2009 2/2

And for 227 country/area (Volume A).



- No information for 42 % of country/area;
- Climsoft, Clidata and Clicom are the most installed CDMs:84 installed.

WMO
Commission for Climatology ET 1.1

CONTEXT

ET 1.1

CDMSs' STATUS

DONE

EXPECTED

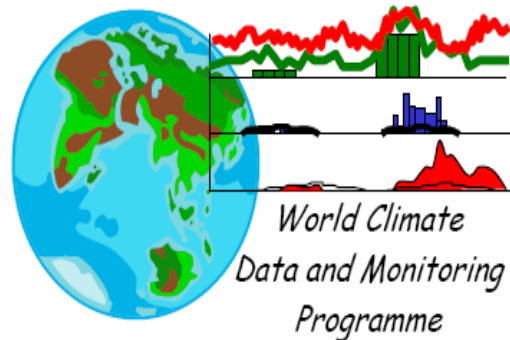
Revision and publication of the WCDMP n°60/ WMO-TD n°1376 :
GUIDELINES ON CLIMATE DATA MANAGEMENT

by N. Plummer, W. Lipa, S. Palmer, G. Prank, J. Shortridge & D. Stuber
(<http://www.wmo.int/pages/prog/wcp/wcdmp/documents/WCDMPNo60.pdf>)

GUIDELINES ON CLIMATE DATA MANAGEMENT

WCDMP-No. 60

WMO-TD No. 1376



Climate data management and organizational context

- User requirements and supporting priority need
- Climate Data Management Systems: Desirable properties
- Security issues
- Database management and monitoring
- Documentation management

Essentials of climate data flow management

- Metadata documentation and management
- Data acquisition, entry, storage and archiving
- Managing original records and data rescue
- Quality assurance and quality control
- Data exchange
- Data access and product development
- Data administration and monitoring
- Change management issues

Transition to a database management system

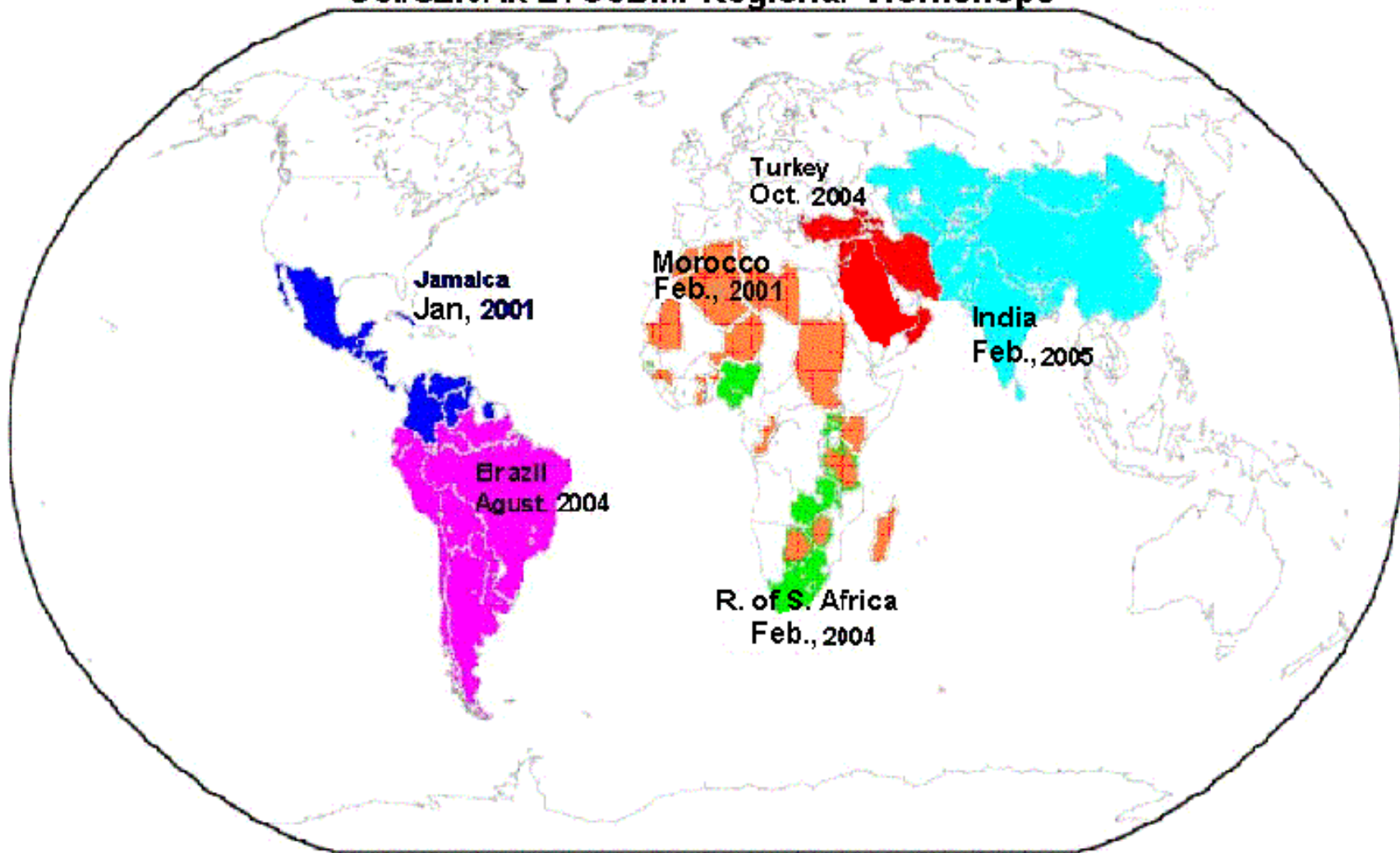
- Choosing a climate database management system
- Database architecture considerations
- Computer hardware and software considerations
- Making the transition from CLICOM

Sustaining data management operations

- Resource requirements, including staffing
- Training
- Occupational health and safety issues

ETCCDI Past Activities

CCI/CLIVAR ETCCDMI Regional Workshops

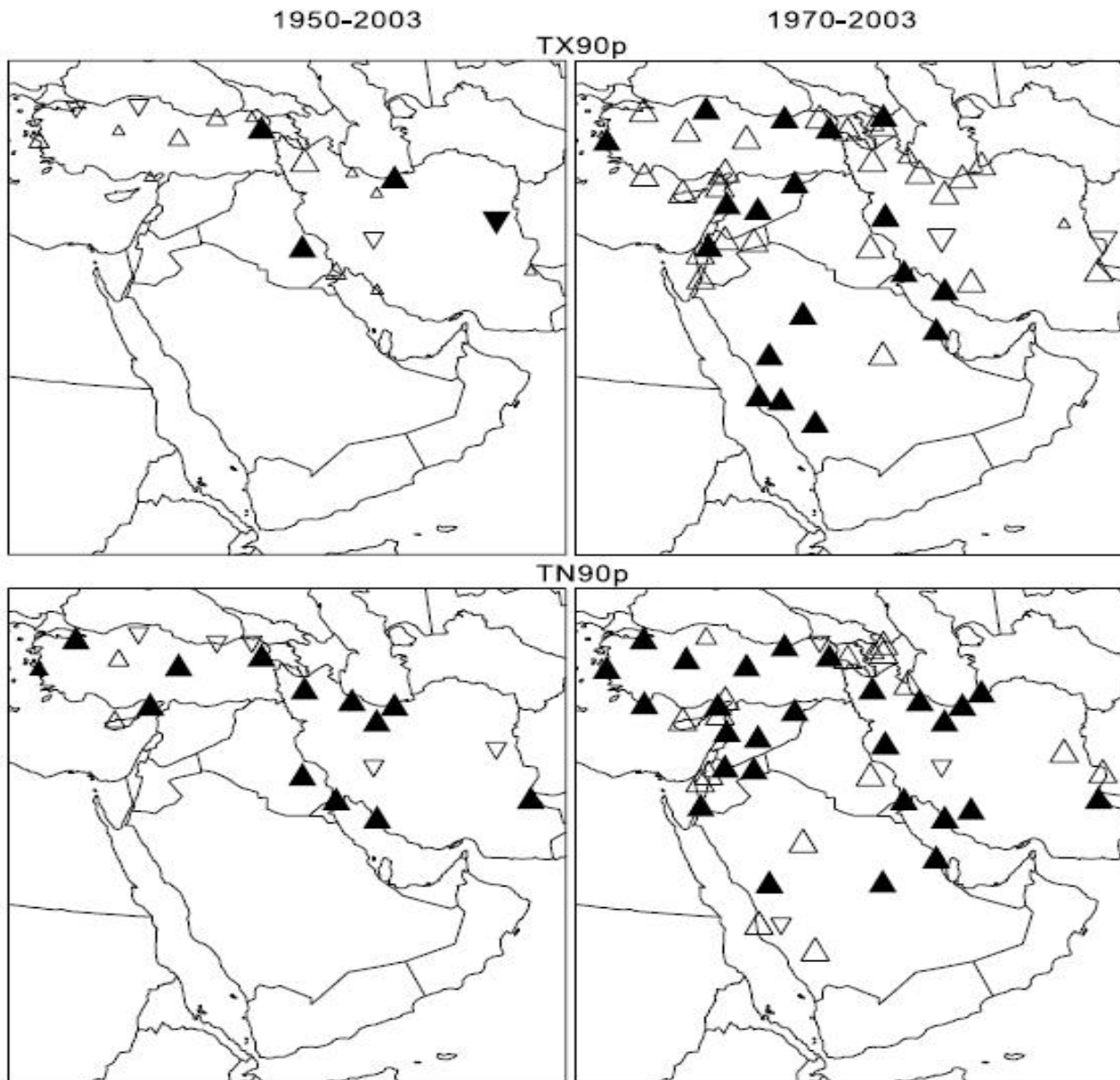


Six regional workshop were held to fill the gap in the global extreme analyses.

The workshop was composed combination of seminars and hands-on data analysis



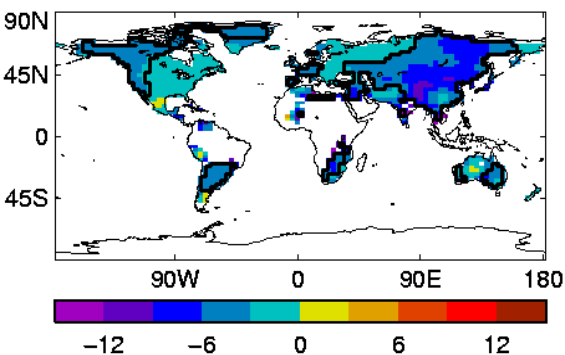
Middle East Climate Indices Study, 4-9 October, 2004 Alanya, Turkey



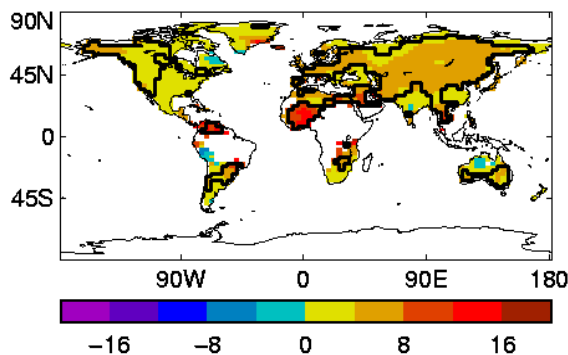
Warm days and warm nights have been increasing in most the stations. Filled triangles represent that trends are significant at 95% level.

<http://www.agu.org/pubs/crossref/2005/2005JD006181.shtml>

(a) Cold nights



(b) Warm nights

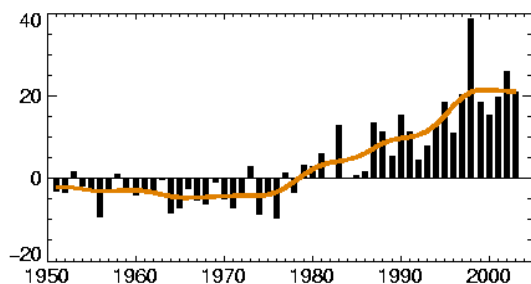
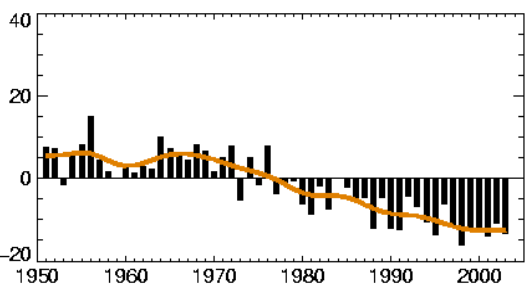


Global Indices Results

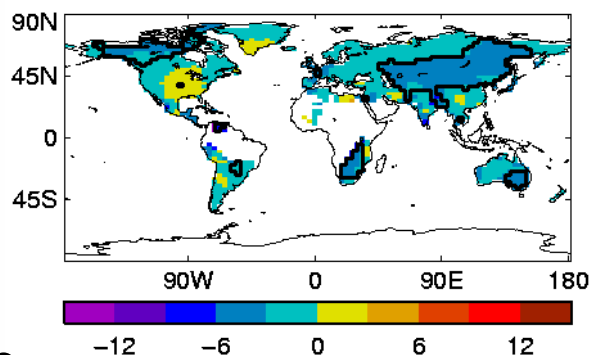
(By Alexander L., et al., 2006)

Trends in

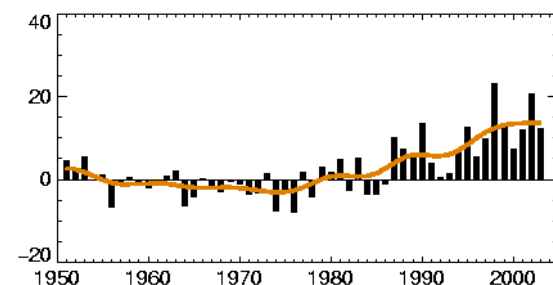
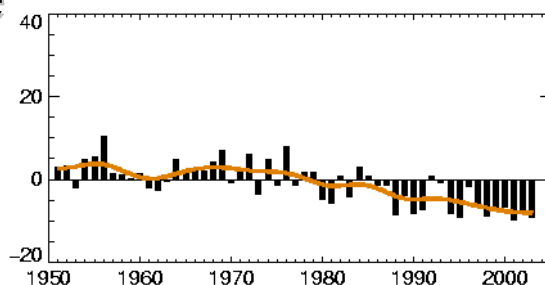
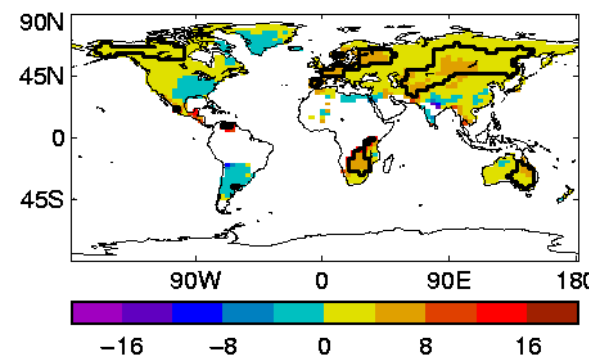
- (a) cold nights (TN10p)
- (b) warm nights (TN90p)
- (c) cold days (TX10p)
- (d) warm days (TX90p)



(c) Cold days



(d) Warm days



Trends were calculated only for the grid boxes with sufficient data (at least 40 years of data). Black lines enclose regions where trends are significant at the 95% confidence of level.

CCI Overview on Data Rescue

- **9.1.8** The Commission considered that data rescue and digitization of old climate records is still a challenging topic for many NMHSs in developing and least developed countries and needs further attention by the Members. It requested Members to increase their support to safeguard the old climate records and make them available for research and applications in the digitized electronic format. It urged Members and the Secretariat to continue the support given to the developing and least developed countries to implement DARE

CCI Overview on Data Rescue

- ***Observing requirements and standards for climate***
 - **9.1.2** The Commission noted with appreciation the establishment of a close linkage with the Global Climate Observing System (GCOS) at various levels... This was the case in the development of the WMO MEDARE Data Rescue initiative in the Greater Mediterranean Region (GMR) based upon a GCOS recommendation and the coordination between the CCI Management Group.
 - The Commission urged the Secretariat to continue facilitating this collaboration.

Priority for future CCI work in Climate Data

- To continue providing the international coordination and monitoring of Data Rescue and Digitization of Climate Records and promoting the development of regional DARE initiatives similar to the one being implemented in the greater Mediterranean region (MEDARE) and the use of web portals to inform on and monitor DARE activities and projects and related data inventories

CCI Overview on Data Rescue

- **CCI STRATEGIC PLANNING** (*agenda item 7*)
- **7.8** The Commission recognized the continued need for global and regional initiatives with respect to climate data including modern and inter-operable climate data management systems (CDMSs), Data Rescue (DARE) data digitization and data exchange.

CCI STRATEGIC PLANNING

(agenda item 7)

- 7.8 ...In this respect, it is noted that the UK Met Office/Australia/Chile/US and GCOS supported “Atmospheric Circulation Reconstructions for the Earth” (ACRE) project, involving extensive global data reconstruction and reanalysis, provides a very useful example of global collaboration in this area.

The purpose of monitoring climate and weather events

Earth's climate changes at different time-scales, thus impacting numerous societal, economic and environmental aspects, including safety, health, food security, tourism and energy. The need to cope with, and adapt to, these changes implies the need to understand their causes, magnitudes and extent and to predict their impacts. Climate monitoring provides users with the information they need for effective planning and operations to respond to climate variations in the frequency, intensity and location of extreme weather and climate events. This is particularly true in the case of heat waves, droughts, heavy precipitation, flooding and tropical cyclones (including hurricanes or typhoons), because of their often disastrous impacts on the socio-ecosystem (Figure 1).



Figure 1 – Clockwise from top left: the aftermath of the July 2007 flood in England; cyclone Sidr in Bangladesh (2007); Hurricane Katrina in the USA (2005); and cyclone Larry in Australia (2006)

events, such as major tropical cyclones, heat waves and heavy rain events can have profound impacts on societies and economies. With global warming, extreme events such as these are expected to occur with greater frequency and severity. Understanding how rapidly changes in climate and coincident impacts are occurring makes climate monitoring of critical importance. For instance, when a drought or severe heat wave hits a city, government leaders want to know if this is an occurrence of a rare event (e.g. once in 100 years on average) or a more frequent event (e.g. once in 10 years) and whether much worse events are possible within a couple of decades, so that a better plan (such as to increase their reservoirs or water use efficiency and to change water usage rules) can be put in place.

For example, droughts can cause reservoir and lake levels to fall sharply, even to the point of becoming completely dry (Figure 2). Crop yields and breeding stocks can be dramatically reduced, resulting in increased food prices, food shortages and famine and even political conflicts. At the same time, droughts frequently result in decreased drinking-water quality and availability, which puts additional strains on human health. Bushfires and duststorms often increase during dry times, threatening homes, crops and the lives of humans and livestock. Droughts compound the problem of limited water resources which are being further strained as populations grow and societies develop, bringing with them greater demands for food and water.

In addition to drought, other extreme

WMO
Bulletin
April 2008

by [Xiaolan L. Wang1](#),
[Thomas C. Peterson2](#), [Jay Lawrimore2](#),
[Manola Brunet-India3](#),
[Randall Cervený4](#),
[Craig Donlon5](#),
[Fatima Driouech6](#),
[Wan A. Wan Hassan7](#),
[Rainer Hollmann8](#), [Mark D. Schwartz9](#),
[Zuqiang Zhang10](#)



Thank You



Serhat Sensoy

10.05.2010

Climate Data Management International Conference on Climate Data (ICCD)

CCI-XV emphasized the critical and necessary collaboration of all Members to ensure high quality, timely and accessible climate data from all possible sources encompassing land and marine data and including in-situ, space based and proxy data. The conference should lead afterwards to the development of a High Quality Global Climate Data Management System (HQ-GCDMS)

Participants: (350-500 participants)

- Permanent Representatives of WMO Members
- Technical commissions
- International and regional climate related institutions and agencies
- Co-sponsored Programs
- Other partners as appropriate

OPACE 1: Climate Data Management (Deliverables)

- ❑ Finalize the ongoing work on climate observations requirements, including peer-reviewed guidelines on the use of AWS in climatology
- ❑ Undertake, in cooperation with CIMO, the establishment of standards
- ❑ A new Climate Metadata catalogue for improved climate data discovery and exchange through the WIS;
- ❑ Assessment report on the progress made in migration from CLICOM to new CDMSs and related management systems including GIS
- ❑ **Monitoring Report on Data Rescue worldwide including support to and progress review of the Atmospheric Circulation Reconstructions (ACRE) Project, the Mediterranean Data Rescue Initiative (MEDARE)**
- ❑ Guidance on minimum set of requirements for NMHSs to benefit from remote sensing (satellite, radar) data for climate studies/applications;
- ❑ Implementation of a High Quality Global Climate Data Management System
- ❑ Advise on the organization of seminars, conferences and training workshops on climate data including DARE, CDMSs, data exchange;
- ❑ Improved collaboration with WIGOS, WIS, GCOS, ETRP, IPY and WCRP which would benefit in developing climate observations and related climate data aspects.

Outcomes from CCI 15th Session

ToR for 1.1. Expert Team on Climate Database Management Systems OPACE 1

- (a) Assess the current WMO Climate Database Management Systems
- (b) Work in collaboration with WMO WIS project office on using inter-operable systems to integrate and exchange NMHSs climate data...
- (c) Keep technology watch on software and the capability of data transfer through various means including mobile phones; and develop guidance
- (d) Develop a monitoring mechanism for ongoing CDMSs;
- (e) Liaise with CBS, CHy, JCOMM and CAgM and the space programme related to climate data management
- (f) Assess new CDMSs operationally in replacement of CLICOM



Climate Data Management Task Team on Climate Data Rescue (TT-DARE)

The Commission decided that CCI MG would establish additional teams, groups or rapporteurs (as required) to undertake the tasks identified, for example for data rescue (DARE), with deadlines that respect the availability of the volunteers, as well as WMO Strategic Plans. Decisions and final work plans will be provided to the CCI MG as quickly as possible by correspondence, after which the MG will take steps to ensure that all critical activities will be completed within the upcoming fifteenth intersessional period

OPACE 2: Climate Monitoring and Assessment (Deliverables)

- (a) Review report on the existing indices and provision of peer-reviewed guidelines on new climate indices;
- (b) A new strategy for ETCCDI climate indices workshops considering the requirements of the GFCSS and the contribution to the IPCC AR5;
- (c) Guidelines on methodologies and standards for defining extreme weather and climate events that are of major societal impacts
- (d) Project proposal for developing standards for creating global, regional and national data bases on extreme weather and climate events;
- (e) Updated WMO Website on the world records on weather and climate extremes;
- (f) Guidance/advice on best practices in the use of satellite products for climate monitoring and climate change detection
- (g) Recommendations for improving WMO Climate System Monitoring including real time identification of extreme weather, methodologies and data sets for assessing climate trends and variations; and dissemination mechanism for timely informing on extreme weather and climate events;

Outcomes from CCI 15th Session

ToR for 2.1. Joint CCI/CLIVAR/JCOMM Expert Team on Climate Change Detection and Indices (ET-CCDI)

- (a) Provide international coordination and help organize collaboration on climate change detection and indices;
- (b) Further develop and publicize indices and indicators of climate variability and change and related methodologies, from the surface and subsurface ocean to the stratosphere
- (c) Encourage the comparison of modeled data and observations,
- (d) To engage with other appropriate working bodies including WCRP and JCOMM as well as others such as GCOS, CBS, CIMO, CAgM, CHy, IPCC and START; and regional associations;
- (e) Explore, document and make recommendations for addressing the needs for capacity-building in each region, pertinent to this topic;
- (f) Submit reports in accordance with timetables established by the OPACE 2 co-chairs.

Outcomes from CCI 15th Session

Rapporteur on World Records of Weather and Climate Extremes (OPACE 2)

- (a) Work with the OPACE 2 to create guidelines and appropriate mechanism (e.g. ad-hoc Assessment Committee) on verification of national, regional and global extremes;
- (b) Work on the creation, verification and documentation of a database of national, regional and global extremes;
- (c) Take the lead in creating and maintaining a database of extreme records, and in documenting such events, e.g. in peer-reviewed scientific papers;
- (d) Develop guidelines and recommendations for continuing this record of extremes beyond the fourteenth intersessional CCI period;
- (e) Promote quality management system in the work of the rapporteur including the provision of the guidelines and reports;
- (f) Submit reports in accordance with timetables established by the OPACE 2 co-chairs;