

Primary author: **Stuber, Denis** (Météo France, Direction de la Climatologie, Production Tools department), Denis.stuber@meteo.fr

Abstract ID: 203

Tasks and tasks's progress of the CCL working group on Climate Data Management including Metadata.

The Expert Team on Climate Data Management including Metadata (ET 1.1) is one of the several teams that belong to the Open Program Area Group which is part of the WMO Commission for Climatology. If its "Terms of reference" includes a large panel of Climate Data issues this presentation will focus on 3 of its current tasks which are :

- to monitor the use of Climate Data Management Systems (CDMSs) in NHMSs,
- to identify and to specify CDMSs requirements,
- to provide guidance on metadata and to establish standards for the exchange of metadata.

Tasks and tasks' progress of the working group on Climate Data Management including Metadata

Commission for Climatology (CCL)
Open Program Area Group (OPAG) 1 on Climate Data and Data Management
Expert Team (ET) 1.1



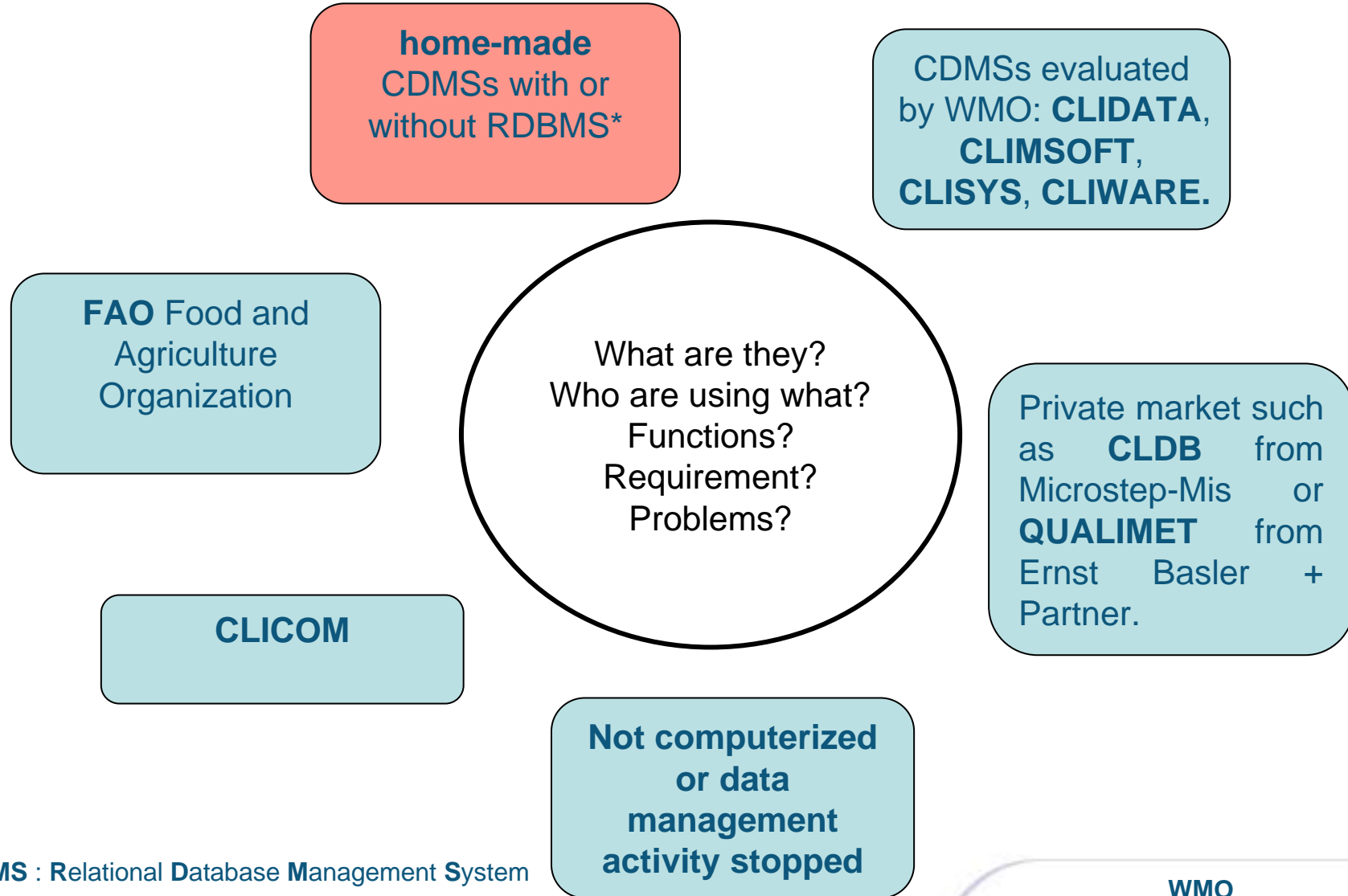
CONTENT

- **CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : CONTEXT**
- **WHAT IS THE EXPERT TEAM 1.1 OF THE CCL?**
- **CDMSs STATUS IN THE WORLD**
 - STATUS IN 1995
 - STATUS's ASSESSMENT IN 2009
 - NEW QUESTIONNAIRE FOR 2010
 - HOW TO MONITOR CDMSs?
- **WHAT ELSE HAS BEEN DONE SO FAR?**
- **WHAT ELSE IS EXPECTED?**
 - MODEL OF DESCRIPTION FOR CDMS
 - REQUIREMENTS FOR CDMS
 - DATA EXCHANGE
- **WHO WANTS TO WORK WITH US?**

CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : CONTEXT 1/2

- **1985** : WMO initiates the CLICOM project that aims to bring computing technology to developing countries (Hardware, Software & Training). NOAA develops and maintains the software.
- **1990s** : WMO estimates that 100 CLICOM have been distributed and installed.
- **1996**: NOAA decides to stop the maintenance of CLICOM. The announcement of the “death” of the CLICOM software.
- **2002**: WMO evaluates 7 CDMSs as potential candidates for CLICOM replacement:
 - ✓ **CLIDATA** from the Czech Republic,
 - ✓ **CLIMSOFT** from Zimbabwe,
 - ✓ **CLISYS** from France,
 - ✓ **CLIWARE** from Russian Federation,
 - ✓ **iADAMA** from Australia,
 - ✓ **JCDMS** from Jordan,
 - ✓ **SDCLIM** from Tunisia.

CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : wide diversity 2/2



*RDBMS : Relational Database Management System

WMO
Commission for Climatology ET 1.1

WHAT IS THE EXPERT TEAM 1.1 OF THE CCL? 1/3

OPAG: Open Programme Area Group
ET: Expert Team

Regional Representatives:
RA III: Luis Molion (*Brazil*)
RA V: Michael Coughlan (*Australia*)

President
Pierre Bessemoulin
(*France*)

Vice-president
Wang, Shourong
(*China*)

World Data Centres:
Aleksandr Sterin
(*Russian Federation*)

OPAG 1
Climate Data and Data Management

Chair: Raino Heino (Finland)

Co-chair: Peter Ambenje (Kenya)

1.1 ET for Climate Data Management including Metadata
Denis Stuber (France)

1.2: ET on Observing Requirements and Standards for Climate
William Wright (Australia)

1.3: ET on Rescue, Preservation and Digitization of Climate Records
Tom Ross (USA)

OPAG 2
Monitoring and Analysis of Climate Variability and Change

Chair: Thomas Peterson (USA)

Co-chair: Manola Brunet India (Spain)

2.1: CCI/CLIVAR/JCOMM ET on Climate Change Detection and Indices
CCI: Albert KleinTank (Netherlands)
CLIVAR: Francis Zwiers (Canada)

2.2: ET on Climate Monitoring including the use of Satellite and Marine Data and Products
Zhang, Zuqiang (China)

2.3: Rapporteur on Climate Extremes
Randall Cerveny (USA)

OPAG 3
Climate Information and Prediction Services (CLIPS)

Chair: Abdalah Mokssit (Morocco)

Co-chair: José Luis Santos (Ecuador)

3.1: ET on Research Needs for Intraseasonal, Seasonal & Interannual Prediction
Jean-Pierre Ceron (France)

3.2: ET on CLIPS Operations, Verification and Application Services
Operations: Philbert Tibaijuka (Tanzania)
Verification: Simon Mason (USA)
User Liaison: Jaakko Helminen (Finland)

3.3: ET on El Niño and La Niña
Luc Maitrepierre (New Caledonia)

3.4: Rapporteur on Climate And Water
Nakaegawa Tosiyuki (Japan)

3.5: Rapporteur on Climate and Agrometeorology
Roger Stone (Australia)

OPAG 4
Climate Applications and Services

Chair: Dong, Wenjie (China)

Co-chair: Mohammed Kadi (Algeria)

4.1: ET on Climate and Health
Glenn McGregor (UK)

4.2: ET on Climate and Energy
David Wratt (New Zealand)

4.3: ET on Climate and Tourism
Daniel Scott (Canada)

4.4: ET on Urban and Building Climatology
Sue Grimmond (UK)

Reporting to the President or Management Group:

5.1: Rapporteur on Climate-related Hazards (*Luis Molion, Brazil*)

5.2: ET on the Guide to Climatological Practices (*Ned Guttman, USA*)

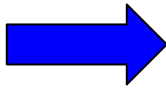
5.3: Gender Focal Point (*Juliana Ukeje, Nigeria*)

5.4: Rapporteur on GEOSS (*Stephan Roesner, Germany*)

7. Implementation/Coordination Team (ICT): CCI VP; Co-Chairs of OPAGs 1, 2, 3, 4; Chairpersons of the Working Groups on Climate-related Matters for RAs I, II, III, IV, V and VI.

Reporting to the OPAG Chairs:

6. CCI Experts serving on teams of other Technical Commissions



WHAT IS THE EXPERT TEAM 1.1 OF THE CCL? 2/3

Terms of Reference 2 major points

Climate Data Management Systems (CDMSs)

- to specify requirements;
- to monitor systems and utilization by WMO members;
- to report on new CDMS generation, develop guidance, assist developing countries.

Data Exchange

- requirements for Metadata;
- standard for Metadata exchange with particular reference to the needs of the WIS.

WHAT IS THE EXPERT TEAM 1.1 OF THE CCL? 3/3

Team Participants

Meteorologists from all regions

- R. Tolasz, **Czech** Hydrometeorological Institute
- A. Besprozvannykh, **Russian** Research Institute
- X. An'yan, **China** Meteorological Administration
- F.O. Adefuye, **Nigerian** Meteorological Agency
- J. Arnfield, National Climate Data Center/**NOAA**
- B.S. Lim, **Malaysian** Meteorological Service
- Luis Carrasco, Dirección Meteorológica de **Chile**
- D. Stuber, Météo-**France** Direction de la Climatologie
- J. Shortridge, **Australian** Bureau of Meteorology

Invited experts

- Rachid Sebarri, Direction de la Météorologie **Morocco**
- **FAO**
- Albert Mhanda, Climsoft developer from **Zimbabwe**



Association of Hydro-Meteorological Equipment Industry (HMEI)

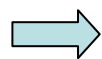
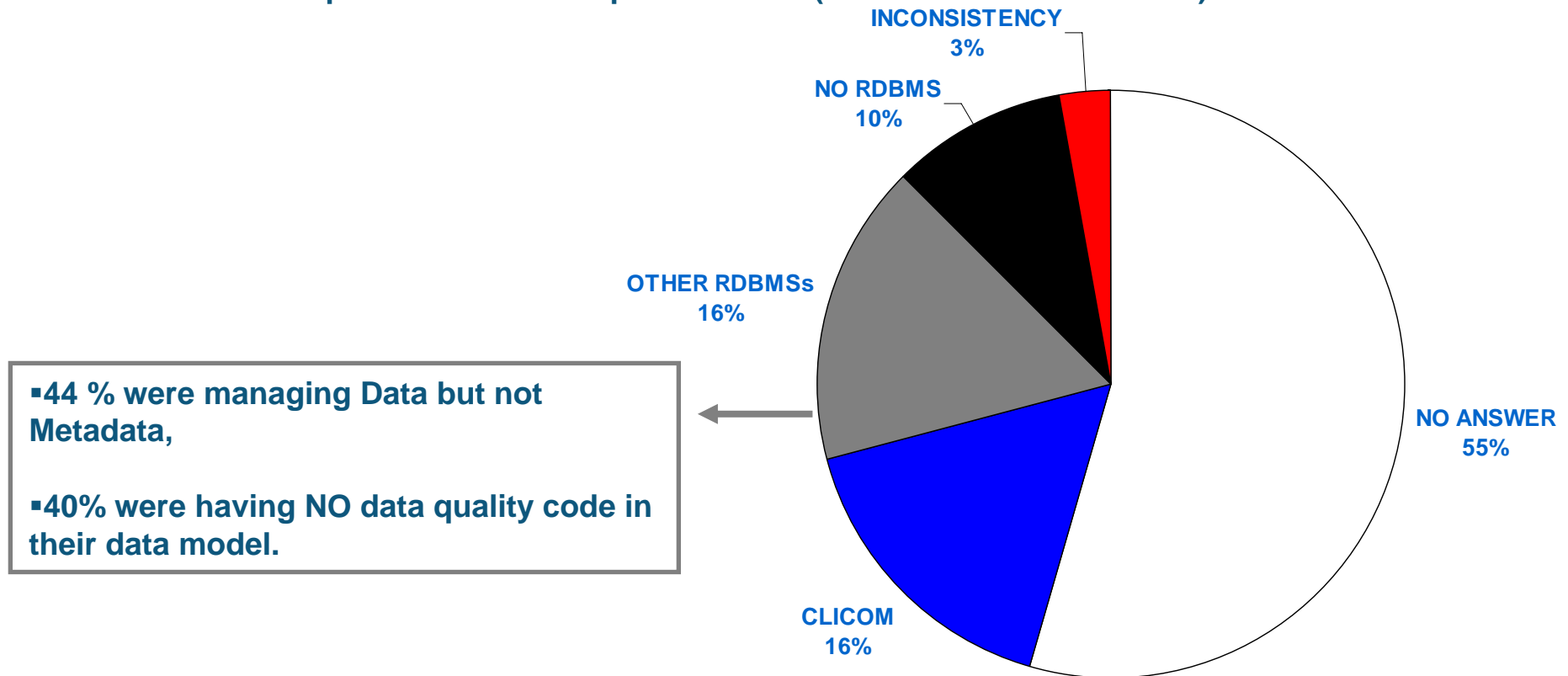
3 industry experts nominated by HMEI to participate in meetings of the ET 1.1

CONTENT

- CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : HISTORY AND CONTEXT
- WHAT IS THE EXPERT TEAM 1.1 OF THE CCL?
- **CDMSs STATUS IN THE WORLD**
 - STATUS IN 1995
 - STATUS's ASSESSMENT IN 2009
 - NEW QUESTIONNAIRE FOR 2010
 - HOW TO MONITOR CDMSs?
- WHAT ELSE HAS BEEN DONE SO FAR?
- WHAT ELSE IS EXPECTED?
 - MODEL OF DESCRIPTION FOR CDMS
 - REQUIREMENTS FOR CDMS
 - DATA EXCHANGE
- WHO WANTS TO WORK WITH US?

CDMSs STATUS IN 1995 1/1

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

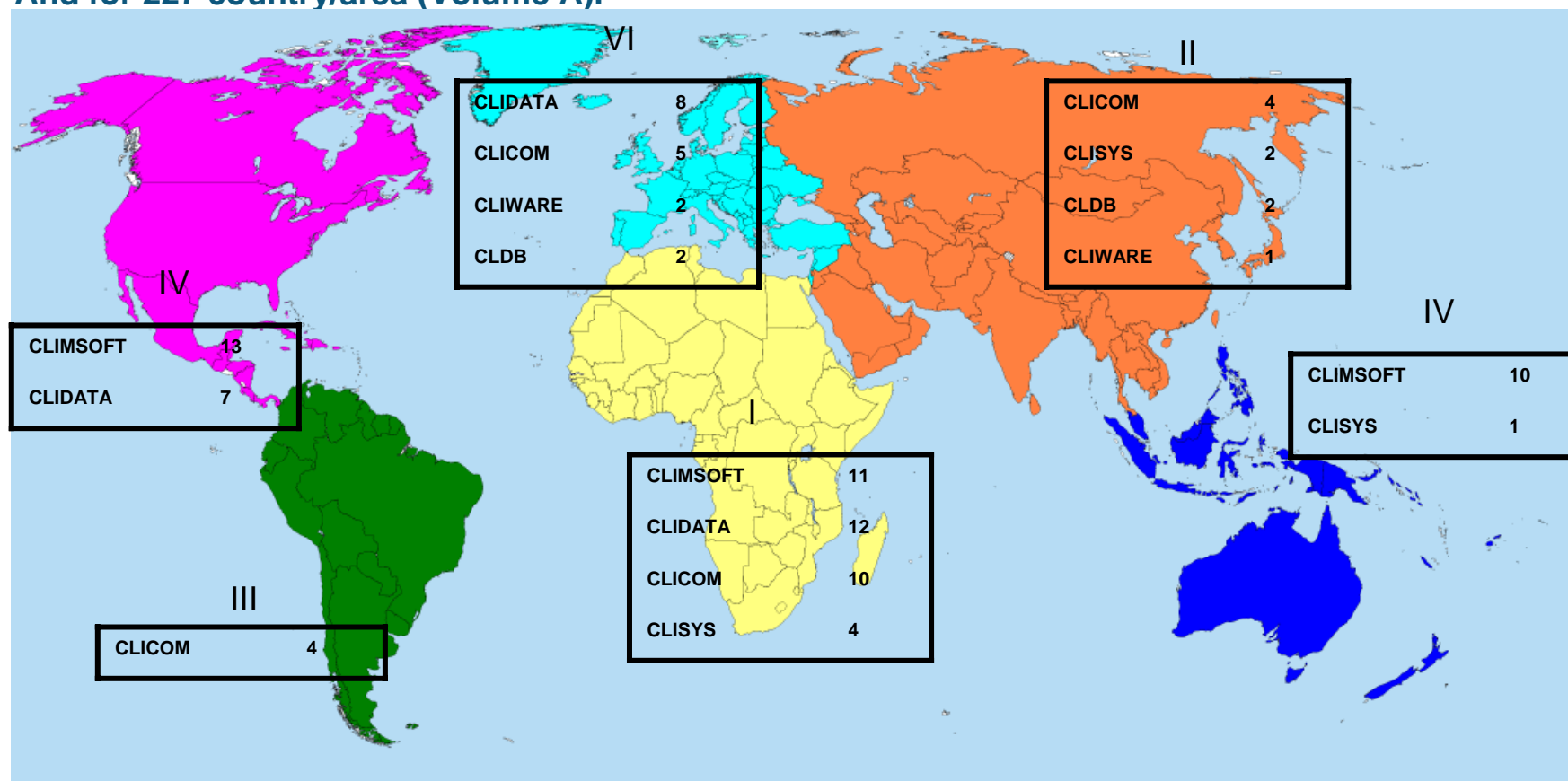


Authors of the analysis, F. Benichou and Daniel Lee, reported that the **management of metadata was not sufficient**

WMO
Commission for Climatology ET 1.1

STATUS'S ASSESSMENT IN 2009 1/2

Based on different sources : WMO information, meetings, workshops, CDMs suppliers, etc.
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);
- Climsoft and Clidata have replaced Clicom especially In Africa, Pacific islands and Caribbean area.

WMO

Commission for Climatology ET 1.1

STATUS'S ASSESSMENT IN 2009 FOR EUROPE 2/2

49 country-area into the Volume A for Europe, half is unknown (51%)

| CDMS | # |
|-------------|----|
| « UNKNOWN » | 25 |
| HOME-MADE | 7 |
| CLIDATA | 8 |
| CLICOM | 5 |
| CLIWARE | 2 |
| QUALIMET | 2 |
| CLIMSOFT | 0 |
| CLISYS | 0 |
| CLDB | 0 |



New questionnaire

- Assessment of Home-made CDMSs: unknown + home-made = $25+7 = 32 \rightarrow 65\%$
- CLIDATA + CLICOM = $8 + 5 = 13 \rightarrow 26\%$

WMO
Commission for Climatology ET 1.1

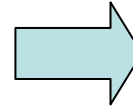
NEW QUESTIONNAIRE FOR 2010 1/1

Objective

- To set-up a database that will enable WMO to monitor the use of CDMSs and help in decision-making :
 - Who is using what?
 - What are the needs?
 - Who is in difficulty?

The questionnaire with 20 questions :

- Computerization status and software in use?
- Climate Data Management System (CDMS) in use?
- CDMS Status?
 - Operational? (Fully, Partially, Not operational)
 - Satisfaction?
 - Developments needed?
 - Difficulties?
- Who intends to develop or migrate to a new CDMS?
- Status on CLIMAT message (FM71- CLIMAT) generation and its migration to Table-Driven Code Forms (complete migration due on November 2010)?



Alternatives to a questionnaire have to be analyzed

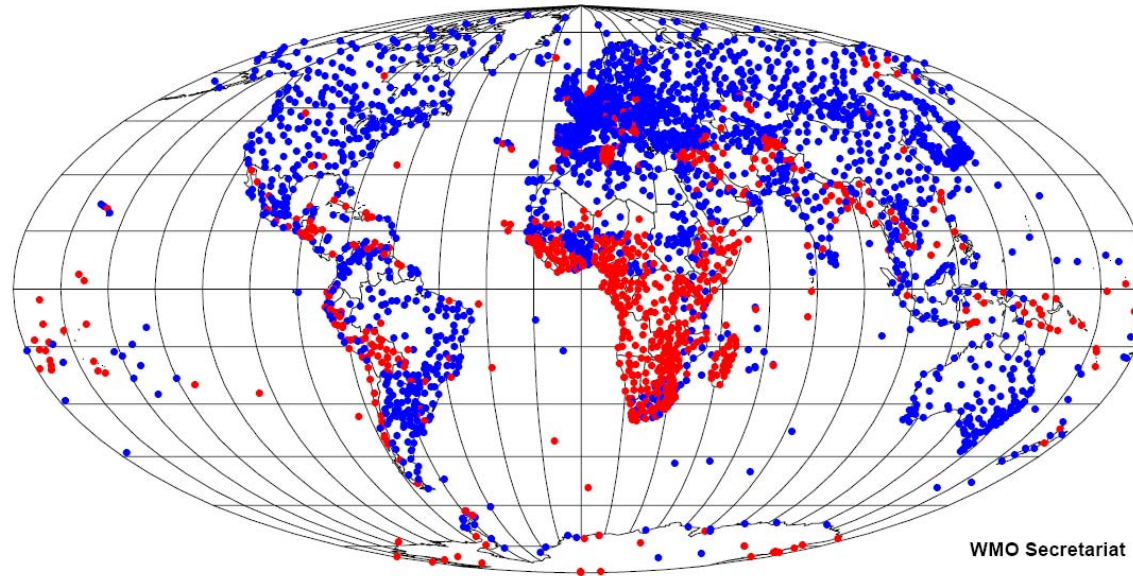
Questionnaire issue

- Try to have ...100% replies
- Time consuming process, what about questionnaire at regular intervals?

WMO
Commission for Climatology ET 1.1

HOW TO MONITOR CDMSs? 1/1

Annual Global Monitoring 1-15/10/2008
CLIMAT reports received from RBCN stations



- Reports received for August 2008 (2087 stations)
- Reports not received for August 2008 (804 stations)

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever of the WMO Secretariat concerning the legal status of any country, territory, city or area.

▪CLIMAT message indicator : quantity/quality/persistence?

WMO
Commission for Climatology ET 1.1

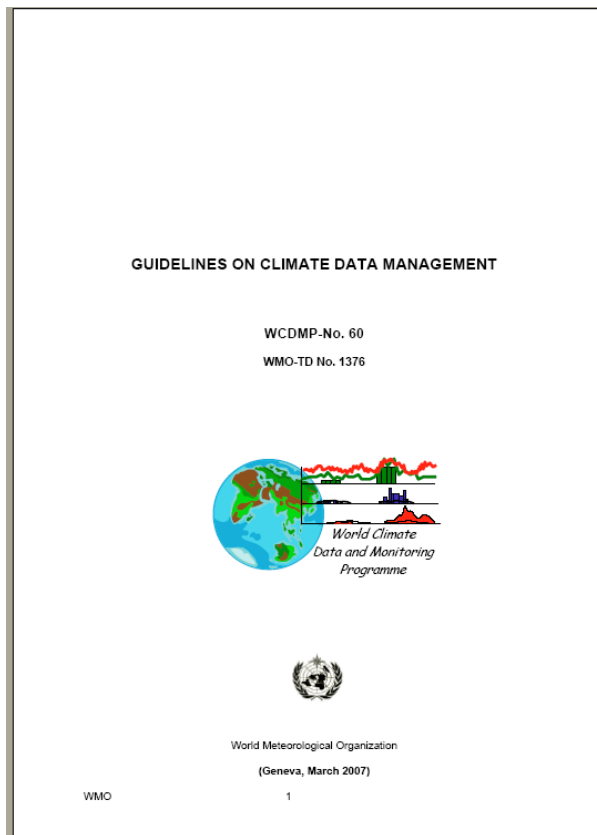
CONTENT

- CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : HISTORY AND CONTEXT
- WHAT IS THE EXPERT TEAM 1.1 OF THE CCL?
- CDMSs STATUS IN THE WORLD
 - STATUS IN 1995
 - STATUS's ASSESSMENT IN 2009
 - NEXT QUESTIONNAIRE FOR 2010
 - HOW TO MONITOR CDMSs?
- **WHAT ELSE HAS BEEN DONE SO FAR?**
- WHAT ELSE IS EXPECTED?
 - MODEL OF DESCRIPTION FOR CDMS
 - REQUIREMENTS FOR CDMS
 - DATA EXCHANGE
- WHO WANTS TO WORK WITH US?

WHAT ELSE HAS BEEN DONE SO FAR? 1/1

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>)



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

WMO
Commission for Climatology ET 1.1

WHAT ELSE IS EXPECTED? 1/2

1. MODEL OF DESCRIPTION OF CDMSs

A document that lists all CDMS's functions and presents to WMO members a clear description of available CDMSs.

2. REQUIREMENTS FOR CDMSs

A document that gives

- WMO members all necessary information :
 - on recommended/standard/best practices,
 - for decision-making,
 - on assistance in building a tender specifications, etc.

- Industry partners all desired requirements on CDMSs:
 - act in term of respect of WMO requirements and standards,
 - promote exchange between users & industry.

3. DATA EXCHANGE

A document that defines STATION METADATA & DATASET METADATA for climatological practices; Including tests against the WMO Core Profile of the ISO Metadata standard (WIS)

Inputs from NMHSs are welcome and needed!

WMO
Commission for Climatology ET 1.1

WHAT ELSE IS EXPECTED? 2/2

REQUIREMENTS FOR CDMSs

Example with policy to apply for missing data when computing an average of daily parameters from hourly parameters (source: Eumetnet project gathering Normals data for 1971-2000)

| | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FRANCE | Accept 1/24 missing hourly values Accept 1/8 missing hourly values from the 8 main synoptic observations. If 1 of the 8 synoptic observations is missing then the mean is missing. |
| UNITED KINGDOM | Accept 2/24 missing hourly values Accept 2/8 missing hourly values from the 8 main synoptic observations. If 2 of the 8 synoptic observations is missing then the mean is missing. |
| GERMANY | if more than 3 consecutive hourly obs are missing then the daily mean is computed as the mean of the 4 main synoptic observations at 00, 06, 12, 18. if one of those 4 is missing the average is not computed. |
| NETHERLANDS | Accept 1/5 of missing data |
| HUNGARY | Accept 1/6 of missing data |
| NORWAY | Missing data are interpolated. New programs that accept missing data give the number of data used. |
| SLOVENIA | Missing data are interpolated. |
| SWEDEN | Missing data are generally interpolated. |
| Some... | No policy |

CONTENT

- CLIMATE DATA MANAGEMENT SYSTEMS (CDMSs) : HISTORY AND CONTEXT
- WHAT IS THE EXPERT TEAM 1.1 OF THE CCL?
- CDMSs STATUS IN THE WORLD
 - STATUS IN 1995
 - STATUS IN 2001
 - STATUS ASSESSMENT IN 2009
 - NEW QUESTIONNAIRE FOR 2010
 - HOW TO MONITOR CDMSs?
- WHAT ELSE HAS BEEN DONE SO FAR?
- WHAT ELSE IS EXPECTED?
 - MODEL OF DESCRIPTION FOR CDMS
 - REQUIREMENTS FOR CDMS
 - DATA EXCHANGE
- WHO WANTS TO WORK WITH US?



Thank you