

WMO Climate Database Management System Evaluation Overview

Evaluation Team:

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Evaluation Date:

May 27 - June 1, 2002

Members Submitting Systems for Evaluation:

Australia¹ Czech Republic France Jordan
 Russian Federation Tunisia Zimbabwe

Notes:

1. The Australian system was not sufficiently developed to allow for a comprehensive evaluation. Evaluation of this system will occur at a future date.

Description of Evaluation Categories

Category	Description
FC	Fully complies with WMO CDMS guidelines where they exist, or fully complies with professional software standards.
PC	Some aspect related to this issue is lacking in the design and/or implementation of this system.
DNC	Does not meet accepted standards for a professional software system on this issue.
NI	Developers did not address this issue in the design and/or implementation of this system.
N/A	Not Applicable
	Not observed, or not enough information to make an evaluation. Contact Member to obtain this information.

System Name and Software Release Information

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	System Name	CLIDATA	CLISYS	JCDMS	CliWare	SDCLIM	CLIMSOF T
2	Version	21.16.13	1.1	1.1	1.1	1.0	1.0

Installation Procedure

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Hardware Requirements	See the Evaluation Team documents describing Administrative Requirements and System Costs					
2	Software Requirements						
3	Brief Description of Installation Process						
4	Time Required to Perform the Installation						
5	Level of Expertise Required to Perform Installation	I	E	I	E	I	N

Comments

N - Novice; Installer has basic knowledge of using a computer and is able follow simple installation directions.

I - Intermediate; Installer has experience with installing software systems that are packaged using installation scripts. Some tuning of system parameters may be required.

E - Expert; Installer has extensive experience with installing software systems that are not packaged within a comprehensive installation bundle. Installer should be able to resolve problems that arise during the installation process and should be able to tune system parameters to obtain optimal performance.

Level of Assistance Available From Source Country

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	The user will be expected to solve their problems using the provided documentation	Yes	Yes	Yes	Yes	Yes	Yes
2	A user group email facility will be established that will allow users to exchange questions and comments with each other to obtain help.	Yes	Yes	Yes	Yes	Yes	Yes
3	The developers of this system will monitor this facility and provide answers and advice as needed by the users.	Yes	Yes	Yes	Yes	Yes	Yes
4	An archive of Frequently Asked Questions (FAQs) will be maintained as part of this user group facility	Yes	Yes	No	Yes	No	Yes
5	A help desk facility will be established and maintained to answer questions that a user may encounter.	Yes	Yes	Yes	Yes	No	Yes
6	The help desk will provide help on system usage (data entry, data extraction, etc.)	Yes	Yes	Yes	Yes	N/A	Yes
7	The help desk will provide system administration assistance. Assistance will be provided by the following method(s)						
7a	Telephone	Yes	Yes	Yes	Yes	N/A	Yes
7b	Fax	Yes	Yes	Yes	Yes	N/A	Yes
7c	E-Mail	Yes	Yes	Yes	Yes	N/A	Yes
8	On-site service and assistance will be provided to users when requested	Yes	Yes	Yes	Yes	No	Yes

Comments

General Criteria

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Does the system include on-line documentation?	FC	FC	FC	NI	FC	FC
2	Do forms and menus provide context sensitive help?	FC	FC	FC	NI	FC	FC
3	Do forms prevent illegal user input in entry fields?	PC	FC	FC	FC	FC	FC
4	Are error messages generated for illegal inputs?	FC	FC	FC	FC	FC	FC

Comments:

Language Support

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	List the language(s) supported by this system.	Czech ¹ English multi	French, English ³	Arabic English	mult ^{1,4}	French	multi ¹
1	Will the developer provide additional language support if requested by a Member ?	Yes ²	Yes ²	Yes ²	Yes ²	No	Yes

Comments:

1. Language support is implemented in a flexible system limited, only, by the underlying capabilities of the RDBMS
2. Yes, provided funding is available
3. Spanish support is planned
4. When connecting to the remote server, the server responds in the language of the underlying OS of the user

Manuals

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Getting Started Overview	NI	PC	NI	NI	NI	NI
2	Installation Guide	NI ¹	FC ²	FC	FC	FC ²	NI
3	User's Guide	FC	FC ³	PC	FC	NI	NI
4	System Administrator's Guide	FC	FC	PC	NI	NI	NI
5	Programmer's Guide	FC	FC	NI	FC	NI	NI
6	Database Model and System Design Concepts	FC	FC	PC	FC	FC	NI

Comments:

1. Installation taught in training session
2. Installation guide written in French
3. On-line documentation appeared to be good, providing the user the option of viewing documentation in a separate window during the operation of the system or printing the manuals for off-line reading. Manuals were produced in HTML or PDF formats. Manuals included detailed examples of common user operations and graphical images that depicted menus, data entry screens, and output displays.

Key Entry of Paper Forms

#	Criteria	Czech Republic ⁶	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Is the on-screen layout of the data input form similar to the layout of the paper form containing the data?	FC ¹	NI ⁷	FC	FC	FC	FC
2	Does the system allow the user to design customized data input forms?	FC	FC	NI	FC	FC	FC
3	Is language support provided in this capability?	FC	FC	FC	FC	NI ¹²	FC
Form entry data commit to database							
4	Can the user commit data to the database from the data input form?	FC	NI ⁸	FC	FC	FC	FC
	Can the user produce a data file						

#	Criteria	Czech Republic ⁶	France	Jordan	Russian Federation	Tunisia	Zimbabwe
5	from the data input form and enter the data to the database as a separate process?	DNC	FC	DNC	FC ¹⁰	FC	FC
Validation checks during key-entry							
6	Are checks made to test the validity of data types for numeric, text, and tick mark entry fields?	FC	FC	FC	FC	FC	FC
7	Are checks made for valid data ranges?	FC	FC	FC	FC	FC	FC
8	Are these validity checks station dependent?	DNC	DNC	FC	DNC	DNC	FC
9	Do the validity checks test for impossible combinations of data values? (ex: maximum temperature < minimum temperature)	FC	FC ⁹	FC	FC	FC	DNC
10	Does the system allow key entry personnel to ignore validity checking and continue entering data?	FC	FC	FC	FC	DNC	FC
Double key entry (form data must be entered twice to ensure accuracy of data key input)							
11	Does the system allow for double key entry?	NI	NI	NI	NI	FC	NI
12	Does the system allow for single key entry?	FC	FC	FC	FC	FC	FC
Quality Control							
13	Are quality control procedures applied during key entry as the form data are entered by the data entry personnel?	FC	PC	FC ¹¹	NI	FC	FC
14	Are quality control procedures applied during the process of committing data to the database?	FC	FC	FC	NI	FC	NI
15	Is the quality control process performed as a process independent of the key entry process?	FC ²	FC	NI	FC	FC	FC
	Can default valued fields be						

#	Criteria	Czech Republic ⁶	France	Jordan	Russian Federation	Tunisia	Zimbabwe
16	excluded from the key entry process?	FC ³	FC	FC			
17	Are default value fields masked during the key entry process?	NI ⁴	N	FC	NI	FC	NI
18	Does the system allow key entry personnel to skip entry fields	NI ⁵	FC	FC	FC	FC	FC
19	Is the key entry process documented?	Yes	Yes	Yes	Yes	Yes	NI
20	Is on-line documentation available?	FC	FC	NI	FC	FC	NI
21	Is the on-line documentation available to the operator during the key entry process?	FC	FC	NI	FC	FC	NI
22	Does the documentation include key entry examples	FC	FC	NI	FC	NI	NI

Comments:

1. Forms created with ORACLE tools in a tabular format
2. Checks are more comprehensive during this phase
3. A very flexible system of applying defaults
4. Defaulted fields can be overwritten
5. Cursor moves through the field and entry can then be skipped
6. The data entry process is very advanced. Forms can be easily generated that approximate most written commonly designed forms. Depiction of the form is represented as a tabular display on the screen. Validation and quality control is performed on an entry-by-entry basis. Values are written directly to the database as they are entered. Quality control procedures are defined for each form within database tables linked to each form. Definition of QC procedures is flexible and extensive. An especially useful feature is the provision that allows a user to define cursor movement between fields as row-wise (along a single data entity) or column-wise (along a single observation set). One noticeable omission in the key entry process is the inability to enter a value or observation as missing (not observed). The user is expected to skip entry of missing values that are then loaded into the database as a null valued Thus, a null value in the database could be interpreted as a truly missing observation or as an observed value that was overlooked by the key entry operator. A provision to distinguish between these two possibilities during key entry would eliminate this ambiguity.
7. Data are entered in an external process written in JAVA. Form definition is done via a definition file. The process of defining a form requires knowledge of the use of parameter files and object-oriented principles. Full documentation describes the process of form definition. The form is highly configurable and allows for definition of limited error checking that includes global limit checks, only. The data entry form was unique in allowing data entry one-day at a but included a data table display that was updated as new entries (records) were entered. It was surprisingly easy to move from record-to-record.

8. The use of an external data entry process allows for data entry from any workstation that has the JAVA data entry program installed. Many different workstations can be employed for manual key entry of data. Output files from the key entry process are copied to a specified data directory and are automatically processed by a daemon process.
9. QC flags have many levels to show source of data and level of QC. No spatial QC procedures are available in this version.
10. Key entry program can work on-line or off-line. Can also be used to enter data from an external file or output to file or to the database.
11. QC is performed as data are being entered into the form. Operator must fix a number that fails QC checks before data entry can proceed.
12. Language support is inherently supported by the Oracle RDBMS but the feature is not implemented in this system.

Import of Digital Data

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Indicate the standard GTS message format this system can ingest into the database.						
A	TEMP	FC	NI	NI	FC	NI	NI
b	PILOT	NI	NI	NI	FC	NI	NI
c	METAR	FC	NI	NI	NI	NI	NI
d	CLIMAT	FC	NI	NI	FC	NI	NI
e	BUFR		NI	NI	FC	NI	NI
f	SYNOP	FC	NI	NI	FC	FC	FC
g	Other (specify)						
2	Does this system have the ability to import data files containing multiple stations?	FC	FC	FC	FC	FC	FC
3	Does this system have the ability to import multiple data files containing single stations?	FC	FC ¹	FC	FC	FC	FC
4	Does this system have the ability to import data from Automated Weather Stations (AWS)?	FC	FC ²	NI	NI	FC	FC
5	Does this system have the ability to import data from other digital sources? (Specify)	FC	FC ³	N/A	FC	FC	FC
6	Does this system allow the user to define the input format of data files that a user wants to import to the database?	FC	FC	N/A	NI	FC	FC
7	Can this system import data from CLICOM?	Yes	Yes ⁴	Yes ⁴	Yes ⁴	NI	Yes ⁴
8	Indicate the type of CLICOM data formats that this system can import						
a	15-minute observations	FC	FC	FC	FC	N/A	FC
b	Hourly observations	FC	FC	FC	FC	N/A	FC

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
c	3-Hourly observations	FC	FC	FC	FC	N/A	FC
d	Daily observations	FC	FC	FC	FC	N/A	FC
e	10-day observations		FC	FC	FC	N/A	FC
f	Monthly observations	NI	FC	FC	FC	N/A	FC
g	Upper air observations	FC	NI	FC	FC	N/A	FC
h	Station Normals	NI	NI	FC	FC	N/A	FC
	Daily	NI	NI	FC	FC	N/A	FC
	Weekly	NI	NI	FC	FC	N/A	FC
	10-day	NI	NI	FC	FC	N/A	FC
	Monthly	NI	NI	FC	FC	N/A	FC
	Annual	NI	NI	FC	FC	N/A	FC
	Other	NI	NI	NI	NI	N/A	FC
i	Station Metadata	FC	PC ⁵	FC	FC	N/A	FC
9	Can this system automatically schedule when a data file is imported into the database? (for example, off-line import of data during non-peak hours)	FC	FC	NI	NI	NI	NI

Comments:

1. Process can be controlled from a batch file.
2. Data must be in ASCII format
3. Any formatted or delimited ASCII data source
4. CLICOM data must be exported as an ASCII file
5. Metadata import is not easily automated due to complexity of the metadata structure.

Validation and Quality Controls

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Does this system provide quality control flags to indicate the original data capturing methods for each observation? (For instance, was the observation from a real-time data feed, a key entry process, or an electronic data import?)	PC	FC	DNC	DNC	FC	FC
2	Does this system store the most recent QC results at the entity level?	FC	FC	FC	FC	NI	FC
3	Does this system offer replacement estimates for observations that "fail" QC?	NI	NI	NI	FC	FC	NI
4	Can a user override the value suggested by the QC process?	N/A		N/A	FC	NI	N/A
5	Does this system record the date of the QC change?	FC	FC	NI	NI	FC	NI
6	Is the date recorded at the record level?	FC	NI	N/A	N/A	FC	N/A
7	Is the date recorded at the entity level?	NC	FC	N/A	N/A	NI	N/A
8	Does this system maintain a copy of the original observations that are replaced during the QC process?	FC	FC	NI	NI	NI	NI
9	Is the original observation, replaced by the QC process, stored as an entity in a relational database?	FC	FC	N/A	N/A	N/A	N/A
10	Does this system provide QC status flags to indicate the level of QC applied?	FC	FC	NI	NI	NI	NI
11	Are the QC status flags stored at the record level?	FC	NI	NI	N/A	N/A	N/A
12	Are the QC status flags stored at the entity level?	NI	FC	N/A	N/A	N/A	N/A
13	Does this system provide QC flags	NI	PC ³	NI	NI	NI	NI

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	that indicate the reason for replacing an observation?						
QC and validation processes details							
14	Are observed values compared to the valid range of values for the particular observation type?	FC	FC	FC	FC	FC	FC
15	Are the range of values obtained from defined or calculated range limits?	FC ¹	FC ⁴	FC	NI	FC	FC
Indicate how these range limits are determined by highlighting all methods that apply.							
	Station Specific			Seasonal		Other (specify)	
	Regionally specific			Globally determined			
16	Is the consistency of a set of observations validated by comparing an element to other elements in the same observation record?	FC	FC	NI	FC	FC	NI
17	Is temporal coherence validated by comparing elements to other elements (of similar type) in the time series?	FC	FC	NI	FC	FC	NI
18	Is spatial coherence validated by comparing an observation to similar observations from adjacent stations?	FC ²	FC	NI	NI	FC	NI
19	Are graphical displays of QC information provided?	Yes ²	Yes	NI	NI	NI	NI
20	Are observations tested using statistical methods?	FC	Yes	NI	FC	FC	NI
21	Are the QC routines compliant with WMO guidelines?	FC	PC ⁵	PC ⁶	FC	FC	PC ⁶

Comments:

1. Defined by the operator
2. The validation is performed in a process following key entry
3. Flags are held in a temporary *faults* file.
4. Range values are defined.

5. Quality control is minimal at the key entry process but the external file created during key entry is subjected to rigorous quality control during the process of loading the data into the database.
6. QC is done using extreme value checks, only. No checks made between days.

Database Model Used for Climate Data Storage

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Is documentation available which describes the definition of each table in the database and the relationship between tables?	FC	FC	FC	FC	FC	NI
2	Is the data model type described in the documentation?	NI ¹	FC	FC	FC	FC	NI
3	Does the system use a consistent naming convention for tables, entities, indexes, and views?	FC	FC ⁴	FC	DNC	FC	FC
4	Does the database support internal unicode and/or implementation of programming language support?	FC ²	FC	FC ⁷	FC	FC	FC
5	Are variables calculated from observed values stored in the database or they calculated dynamically at the time that they are requested?	FC ³	FC ⁵	FC ⁸	FC ⁶	FC	FC

Comments:

1. This differs from the self-evaluation
2. Language support can be implemented for any language supported by the current version of the ORACLE database
3. Both the data model is well thought out and provides the capabilities needed for efficient storage of climatic data. Some values calculated from the data are stored in the database while other values are calculated dynamically at the time of a data request. Those values that are stored, and dependent on other values in the database, are updated when the underlying values are changed (edited or replaced). This feature is controlled through the use of database triggers that control scheduled processes (user definable processing schedule) that update the derived values.
4. Naming of tables is controlled by the database administrator within a database table in a consistent manner. The data model is very flexible and allows for storage of many types of climatic and other types of hydrologic data. Data tables are defined by the observation interval / frequency (hourly, daily, etc.) Table names that store data observations can be re-defined by the site administrator. Queries that use these tables are generated dynamically and reference the data tables through cross references in system definition tables. A unique feature of this system is apparent when navigating data extraction and management screens. The data model is clearly

displayed on the screen. Primary and secondary keys are highlighted in different colors. Non-keyed data are not highlighted. Linked tables are shown in a sidebar. They can be accessed from the sidebar by clicking on the table name. In this way, associated records in different tables can be readily accessed.

5. Dynamic

6. Both static and dynamic methods are used

7. This differs from the self-evaluation. Unicode support is provided within the Oracle RDBMS.

8. Summary data (means, extremes, sums, etc) are calculated as the form is being generated. Monthly means, extremes, etc are automatically changed as new daily data are entered.

Data Extraction

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	The following statement describes the initial amount of training required for a user to begin extracting data from the database.						
a	Data extraction training requires <= 1 hour training (intuitive)						
b	Data extraction training requires <= 1 day of training				Yes		Yes
c	Data extraction training usually requires > 1 day training	Yes	Yes	Yes		Yes	
d	Typical time required for of training:	5 ¹ days	5 days	8 days	1 day	3 days	1 day
Graphical User Interface (GUI)							
2	Does the system have a GUI that allows users to enter data extraction parameters into defined fields?	FC	FC ³	FC	FC	FC	FC
3	Is online documentation available to the operator during the GUI data extraction process?	FC	FC	NI	NI	NI	NI
4	Does this documentation include examples of simple queries?	FC	FC	N/A	N/A	N/A	N/A
5	Does this documentation include examples of more complex queries?	FC	FC	N/A	N/A	N/A	N/A
Command Line Interface							

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
6	Does the system allow users to enter data extraction queries (such as SQL) at a command line prompt?	FC ²	FC	FC	FC	FC	FC
7	Does the system include documentation for queries entered from a command prompt?	FC	FC	NI	NI	FC	NI
8	Does this documentation include examples of simple queries?	FC	FC	NI	N/A	FC	N/A
9	Does this documentation include examples of more complex queries?	FC	FC	NI	N/A	FC	N/A
10	Does the system provide references to external documentation sources, such as SQL language manuals?	FC	FC	FC	NI	FC	NI

Comments:

1. The self-evaluation submitted by the Member indicates that five (5) days of training is required for an operator to begin extracting data from the database. While this may be indicative of the level of training required for full proficiency of all data extraction option, the reviewers feel that basic data extraction can be accomplished with much less effort. The process of basic data extraction is clearly documented and the user interface is intuitive. Basic data extraction using this system should be possible within several hours of system use.

2. Data extraction is defined by the user during the data query process. The production of data listings is flexible and comprehensive. However, the process of data extraction could be enhanced by the provision of pre-defined output reports that would simplify the production of reports required by the user. This would reduce the skill level required of the user and reduce time spent on producing repetitively produced reports. Basic data extraction reports could be designed and saved as stored procedures that would satisfy the needs of many Members.

3. Data extraction forms provide a very powerful query facility. The form presents the user with many fields that describe station parameters (station id, station name, and geographic qualities), date, and observation entities. The user can enter exact matches for the options (station id, start date, end date, etc) or SQL-like conditions such as like '1999%' (for a date parameter that will extract an entire year of data) or between 1999 and 2002 (for a date parameter that will extract 3 years of data). The syntax for entering these conditions is fully documented and includes examples of their use.

Metadata

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Are station metadata elements <u>required</u> to extract climate data?	Yes	Yes		No		
2	The highlighted station metadata items are <u>required</u> to be in the metadata system in order to select climate data from the database.						
a	Station name	No	No	Yes ²	No	Yes	Yes
b	station number/identifier	Yes	Yes	Yes ²	No	No	Yes
c	period (dates)	Yes	Yes	Yes ²	No	Yes	Yes
d	latitude/longitude	No	No	Yes ²	No	No	No
e	elevation	No	No	Yes ²	No	No	No
f	country	No	No	Yes ²	No	No	No
g	climate element (temperature, etc)	Yes	Yes	Yes ²	No	Yes	Yes
h	other (specify)	Yes ³	Yes ³	Yes ²	No	No	No
3	Are the number and type of metadata elements managed by this system extensible to include other types of metadata information required by the user?	FC	FC	FC	FC	FC	FC
4	Does the system support graphical data types such as pictures of the climate station or scanned information such as instrument manuals?	FC ¹	FC	FC	NI	FC	FC
5	Does the system allow for the maintenance of historical metadata information that provides a history of changes to station behavior?	FC	FC	FC	FC	FC	FC
6	Does the system store information describing individual elements?	FC	FC	FC	FC	FC	FC
7	Does this metadata include information describing the instrument used to perform the observation? (Height, type,	FC	FC	FC	FC	NI	FC

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	exposure, change dates, maintenance,						
8	Are beginning and end dates recorded for each element?	FC	FC	FC	FC	NI	FC
9	Are these dates updated whenever an observation is inserted into the climate data archive?	FC	NI	FC	FC	N/A	NI
10	Does the metadata contain observation schedules describing when climate observations are supposed to be recorded by the observer?	FC	FC	NI	NI	FC	FC

Comments:

1. Multiple graphical images can be stored to document station characteristics.
2. Contact Member representative for clarification of these requirements.
3. See documentation provided by Member representative.

Output Products

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
Climate database management systems normally provide a collection of standard output products that use the stored data. Using the following list of standard types of products, indicate the products that this system can produce.							
1	Data listings and/or tabulated data						
	Hourly data	Yes	Yes	Yes	Yes	Yes	Yes
	Monthly data	Yes	Yes	Yes	Yes	Yes	Yes
	Daily data	Yes	Yes	Yes	Yes	Yes	Yes
	10-day data	Yes	Yes	NI	Yes	Yes	Yes
	Other (specify)	Yes	Yes		Yes	Yes	
2	Tabular summary of statistical analysis						
	Daily summary	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	Annual Summary	Yes	Yes	Yes	NI	Yes	Yes ⁵
	Monthly summary	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	10-day summary	Yes	Yes	NI	Yes	Yes	Yes ⁵
	Other (specify)						
3	Typical types of statistical analyses						
	Means, totals, and standard deviations	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	Frequency analyses	Yes	Yes	NI	NI	Yes	
	Normals	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	Count of missing values	Yes	Yes	Yes	NI	Yes	Yes ⁵
	Counts based on thresholds (ex: # days <> threshold value)	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	Extreme values	Yes	Yes	Yes	Yes	Yes	Yes ⁵
	Other (specify)						
4	Graphical products				Note 3		

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	Time series plots of single data variables	Yes	Yes	Yes	Yes	Yes	
	Time series plots of multiple variables	Yes	Yes	Yes	NI	Yes	
	Upper air sounding	Yes	Yes	NI	NI	NI	NI
	Wind roses	Yes	Yes	NI	NI	Yes	
	Contour analyses	Yes	Yes	NI	NI	NI	
	Station model plots (surface weather map) of multiple stations	Yes	Yes	NI	Yes	NI	NI
	Other (specify)						
5	Other types of analyses (specify)						
6	Indicate the type of output formats supported for output data and/or products						
	ASCII text	Yes	Yes	Yes	Yes		
	PDF	NI	NI	Yes	NI	NI	NI
	HTML	Yes	Yes	Yes	Yes	NI	
	XML	NI	NI	NI	Yes	NI	NI
	Comma separated values (CSV)	Yes	Yes	Yes	Yes		
	Export to CLICOM (DataEase)	NI	NI	NI	NI	NI	NI
	Other (specify)						
7	WMO message formats						
	CLIMAT	Yes	Yes	NI	NI	Yes	Yes ⁵
	CREX	NI	NI	NI	NI	NI	NI
	CLIMAT TEMP	NI	NI	NI	NI	NI	Yes ⁵
	BUFR	NI	NI	NI	NI	NI	NI
	Other (specify)						
8	Gridded data output (specify)						
	GRIB	NI	NI	NI	NI	NI	NI

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	netCDF	NI	NI	NI	NI	NI	NI
9	GIS formats	Yes	Yes	NI	NI	NI	NI
	ArcInfo			N/A	N/A	N/A	N/A
	Grass			N/A	N/A	N/A	N/A
	Other (specify)						
10	Spreadsheet formats	Yes ¹	Yes ¹	Yes ¹	Yes ¹	Yes	Yes
	MicroSoft Excel						Yes
	CSV						Yes
	Other (specify)						
10	Other Output Formats (specify)						
11	Does the system provide the user with the ability to add additional products to the system by providing programming guidelines or a documented Application Programming Interface (API)?	Yes ¹	Yes ^{1,2}	Yes ¹	Yes ¹	Yes ¹	Yes ⁴

Comments:

1. See supporting documentation provided by the Member for details.
2. The system is coupled to a ZOPE application server that generates dynamic products and allows for external reference to python and C language calls. The data extracted from the database can be passed to these external procedures and passed back to the ZOPE application server for display. DTML is used to control the calling and display procedures.
3. Data can be viewed as graphical images produced dynamically.
4. No documentation is available for this feature.
5. During the evaluation there were errors present in the summaries and analyses that precluded a full evaluation of the system capabilities. It was not clearly determined if the problem was related to errors in the input data, the analysis routines, or both. Check with the developer of this system to determine the current state of output product development before making a decision about this system.

Data and System Administration

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
1	Are built-in facilities provided for routine backup and restore of the database?	Yes	Yes	Yes	Yes	Yes	Yes
2	Can the database be backed up while the system is operational?	Yes	Yes	Yes	Yes	Yes	Yes
3	Do the backup and restore facilities support a variety of hardware devices that can be added and configured by the user?	Yes	Yes	Yes	Yes	Yes	Yes
4	Does the system provide facilities to recover the database and database information in the event of a system crash?	Yes	Yes	Yes	Yes	Yes	Yes
5	Does the system provide logging of individual transactions?	Yes	Yes	No	Yes	Yes	Yes
6	Does the system provide transaction processing that allows the user to roll-back transactions to previous conditions following an update or insertion of data?	Yes	Yes	Yes	Yes	Yes	Yes
7	Are built-in facilities provided for security management and configuration?	Yes	Yes	Yes	Yes	Yes	Yes
8	Do facilities exist to provide different database access privileges at the user level? That is, can individual users be granted select, update, insert, and administrative privileges?	Yes	Yes	Yes	Yes	Yes	Yes
9	Can the system performance be optimized at each installed location to account for different hardware, software, and data usage configurations?	Yes	Yes	Yes	Yes	Yes	Yes
10	Are system monitoring tools provided to allow the administrator	Yes	Yes	Yes	Yes	Yes	Yes

#	Criteria	Czech Republic	France	Jordan	Russian Federation	Tunisia	Zimbabwe
	to monitor the system performance on items such as memory usage, number of transactions performed, status of system logs, and data storage space available?						
11	Does the system provide the capability of remote (off-site) administration?	Yes	Yes	Yes	Yes	Yes	No
12	Would you be willing to implement an on-line bug-tracking system if one were provided for your use?	Yes ¹	Yes ¹	Yes	No	No	Yes

Comments:

1. See supporting documentation provided by the Member for details