

Installation of the Meteorological, Climatological & Hydrological Data Base Management System
and the related training in the Institute of GeoSciences, Energy, Water and Environment

Tirana, Albania
21 – 25 October 2013



MISSION REPORT

SUMMARY

This mission to Albania was carried out from 21 to 25 October 2013 by Dr. José Antonio Guijarro (AEMET) and Mr Nirina Ravalitera (WMO Secretariat) within the framework of the IPA 2012 project “Building resilience to disasters in Western Balkans and Turkey”, funded by the European Commission (IPA project task: 3.1.2).

The main objective of the mission was to install the English version of the Meteorological, Climatological and Hydrological (MCH) Database Management System (DBMS) in the Institute of GeoSciences, Energy, Water and Environment (IGEWE) of Albania and to provide the related training. The training was attended by Ms Liljana Lata, Mr Metodi Marku, Mr Rrezart Bozo (an IT expert) and Mr Denis Saatciu (an IT expert).

After a successful installation on the participants' laptops, MCH DBMS has been considered as a very valuable solution to digitize historical data and gather stations' metadata on a unique platform. This platform will also allow initiating internal discussions on how to better define and use metadata.

As result of the mission, additional tutorials were requested to be provided on the User Community platform, particularly on how to generate and use geo-referenced maps and to draw isolines on these maps. Professor Petrit Zorba, Head of the Department on Climate and Environment, stressed the need for information on how to rapidly export graphics in picture format (to provide this information to the mass media for example) and also, on the module to digitize recording bands.

The main recommendation is the further digitisation of historical data in MCH DBMS as well as to follow the status of the transmissions of the data from the automatic stations.

Introduction

The main objective of the mission was to install and train the participants on the use of the Meteorological, Climatological and Hydrological (MCH) Database Management System (DBMS) in the Institute of GeoSciences, Energy, Water and Environment (IGEWE) of Albania.

1. Activities

1.1 Installation and training on MCH (Meteorological, Climatological and Hydrological database Management System)

- Welcome meeting with Professor Zorba, Head of the Department on Climate and Environment and the other participants.
- Installation of MCH DBMS on the laptops of the participants (Ms Lata Liljana, Mr Metodi Marku and Mr Bozo Rrezart).
- Training on the stations definition interfaces (station definition, station groups, metadata)

Encountered problems during the installation phase:

Connection error between MCH DBMS and the internal database was solved by using the ODBC connector (a standardized database driver) for 64 bits processors.

- Training on the “definitions of the variables” interfaces
- Presentation of the importation and exportation interfaces
- Meeting with Mr Denis Saatciu (IT specialist)
- Preparation of the importation files (preparation of exportation and importation files and data formatting)
- Importation of daily temperature data for ten years (2002-2011)
- Importation of station data (117 georeferenced stations)
- Meeting with Mr Denis Saatciu and visit of the server room
- Discussions about the advantages of MCH for the Institute with the participants (outcomes in Annex I)

Encountered problems during the installation phase:

Problems in modifying station definitions were solved and corrected by Etna Cervantes (updated exe file and/ or use of the Free Pascal version of MCH DBMS).

- Visit of the National Centre for Forecast and Monitoring of Natural Risks
- Meeting with Mr Alessio Valgimigli from ETG (Italian Private company)
- Presentation of the map interface (using a map prepared by Etna and José)
- Review of the main functions of MCH DBMS presented during the training
- Presentation of MCH DBMS to Mr Valgimigli and discussions about compatibilities between ETG’s DBMS and MCH DBMS.
- Presentation of MCH DBMS to Prof. Zorba (definitions interfaces, graphical interfaces, maps)

- Presentation of DARE and homogenization activities in RA VI and worldwide (<http://www.climatol.eu/DARE/>) by Dr. Guijarro.
- Discussions on the above listed items.

2. Major issues and outcomes

2.1 Data homogenization and digitization

Currently all the stations metadata are stored on different computers in various format (Word, Excel). For Mr Marku, MCH DBMS is a good solution to gather all this information on a uniformed and easily exportable format, which will allow to easily retrieving the history of the stations as well as the contact details of the observers of each station.

Historical data are for the time being only accessible from one computer in the server room and, due to the complexity of the system, any corrections or modifications on the data need an IT expert (Mr Denis Saatciu). Using MCH DBMS as server-client will allow accessing it on several computers and depending on the level of the user, it will also allow correcting directly data without the help of an IT expert.

2.2 Data transmission

Mr Alessio Valgimigli (Technician of the ETG private Italian company (www.etgsrl.it) for the world watch technology) noted that the automatic stations are not transmitting the data since the 4th of September 2013 because the fees for the SIM cards have not been paid and also due to the poor quality of the internet connection the data cannot be transmitted automatically to the central server of ETG (located in Italy, which is also used as a backup for the data from the automatic stations) nor to the internal database developed by Mr Denis Saatciu.

2.3 Structural instability within the Institute

The mission was informed that every two years the Institute is reorganized, which means that there is no real stability regarding the different positions within the institute and this situation does not allow any cooperation project involving, for example, the University.

3. Findings and problems encountered

The mission was informed that the ETG private Italian company (www.etgsrl.it) for the world watch technology is configuring a server within the Institute in order to collect the data from automatic stations. For the time being the collected data are covering only six months (starting from May 2013).

3.1 DEWETRA working platform

The mission was informed that the working platform of the National Centre for Forecast and Monitoring of Natural Risks is DEWETRA (<http://www.geo.edu.al/newweb/?fq=cimady&qj=qj2>)

4 Conclusions and recommendations

The installation of the software has been successful; it has been quickly installed on all the participants' laptops. As result of the training the participants could easily define stations and variables, capture data and used the graphical interfaces of MCH DBMS.

A great interest has been expressed especially regarding the metadata interface and to the fact the MCH DBMS allows to process quality control during the digitization of the data and also through the different graphical interfaces, which give a quick overview on anomalies or gaps on large series of data.

It has also been seen as a solution for them to start a discussion among all the collaborators to better define their stations and have a global overview of their data series.

As MCH DBMS uses the same databases (MySQL) then the two databases currently used in the Institute, it will be easy to gather all the data under a unique platform and to synchronize automatically the databases.

Recommendations:

Metadata

- The institute should define keywords (installation, maintenance, observer, etc...) for the metadata of their stations, in order to easily classify them and export all this information to Excel for example. This will also allow easily sorting and/or filtering these data by using the integrated sort and filtering functions in Excel, and quickly providing an overview of the history and equipment of each station.
- All stations should be renamed without special characters like “()” or “_” “neither with blanks. An alphanumeric code would be the best practice to name the stations.

Data backup

- Before starting to process data with MCH DBMS, a backup of all raw data series should be performed and kept on at least two different supports (external hard disk, DVD, memory stick) outside the server or the computer(s) used to run MCH. If the backup is done on a CD or a DVD it is highly recommended to “re-burn” it at least every two years (the mean life time for CD is 5 years).

Historical Data digitization

- In order to respond to the lack of staff to digitize historical data, Dr Guijarro suggested collaborating with the University with the view to involve the students in the data digitization process.

Follow up

- There is a need to follow up the situation to verify that the historical data have been properly imported;
- Internet connection and GSM fees issues should also be followed up as these are the main data transmission network used for the automatic stations;
- Add more tutorials on the user community platform, especially on the utilization of maps and graphics;
- Compile a list of standard names and definitions for variables and to make them available online.

ADVANTAGES OF MCH DBMS IMPLEMENTATION

- Possibility to **digitalize** and provides some **quality control** of the data;
- Centralize the stations' **metadata** (coordinates, altitude, maintenance etc.) in the MCH system within our server, displaying the stations on a geo-referenced map.
- Possibility to record all the information of the type of instruments installed in the station (and export this information to Excel);
- Remote observer can digitize data using a web browser;
- Scan of **charts**, and analyzing;
- MCH DBMS is **free of charge**;
- Fully customizable;
- Correction of historical data can be directly done within MCH without the help of an IT;
- Different quick visualization of data (**isolines**, graphs, tables, etc.)
- Automatic Calculation of derived variables from the daily data (weekly, decadal, monthly, annual and their normals);
- Export the data in CSV, Tab Separated, MCH DBMS formats;
- Import data from Text Files generated by other database management systems or Excel or equivalent files;
- No need for an IT in normal operational use (User Friendly Interface);
- Allows different Levels of Access to the system (from Administrator to Basic); *Four access levels are currently defined. Administrator, level 1, which have access to all system functions, Full User which has access to all system functions except Security, User which has access to edit information but not to define tables (variables, stations, etc.) and the Basic User which can query and digitize data;*
- MCH DBMS can be used as a “stand-alone” solution or connected to a network (web-based or physical network);
- The whole database can be easily back-uped (even without an IT knowledge);
- A User Community Platform (including some developers) will facilitate its use.

DISADVANTAGES OF MCH DBMS IMPLEMENTATION

There are still few developers & few users of the English version.