s032-04 Valida

Data validation

User manual

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1 Introduction

1.1 Document purpose

This document is the user manual for the software module MeteoGIS, which can be used for the presentation of the meteorological data in a geographic coordinate system.

1.2 Coverage of the manual

Valida is a project that grew up during the time, with always new features developed for the needs of the different plants. This means that some function of the software may not be used in your project. In particular, all the features useful to the current plant are explained in this manual. All other features of the software are reserved for different type of installations and, so, may do not be available.

1.3 General overview

The software module Valida use the Meteonet LT package database:

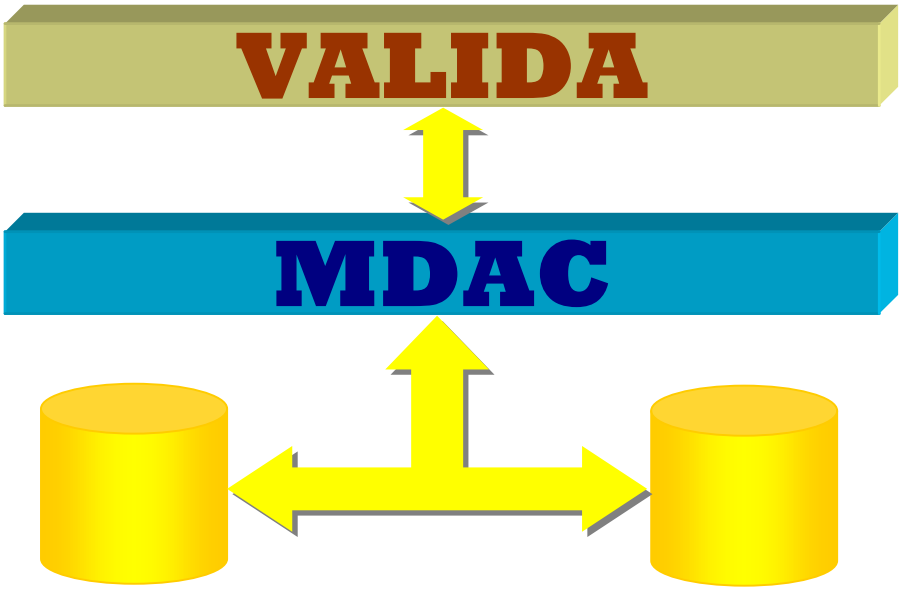
- Configuration database
- Data database

It access the databases using the Microsoft Data Access Components, distributed with the Meteonet LT package. The configuration database contains all the information about the stations, the measures, the scheduled activities, the user and their alarms notification method, while the data database contains all the measures acquired by the data loggers.

Using the data access components brings two important features:

✓ Valida is independent from the type of database used

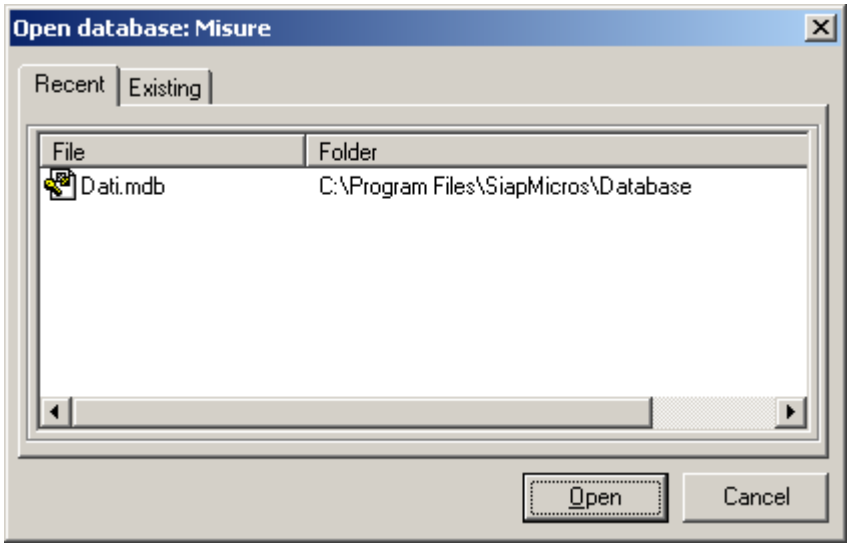
✓ Better performance in network applications



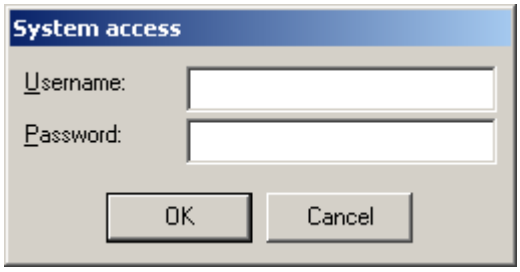
Picture 1

2 Access to the database

On the start up of Valida, the user is prompted to select the database on which he want to operate (Picture 1). Usually this is the data database of Meteonet LT package. To access this database, the user must insert a valid username and password (Picture 2). The accounts are stored in the configuration database of Meteonet LT and can be configured with the software module GestConf (see the GestConf manual).



Picture 2



Picture 3

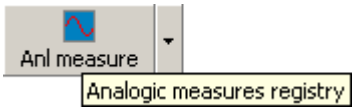
2.1 User limitations

Only user with administrative privilege will be allowed to modify the data with the software Valida.

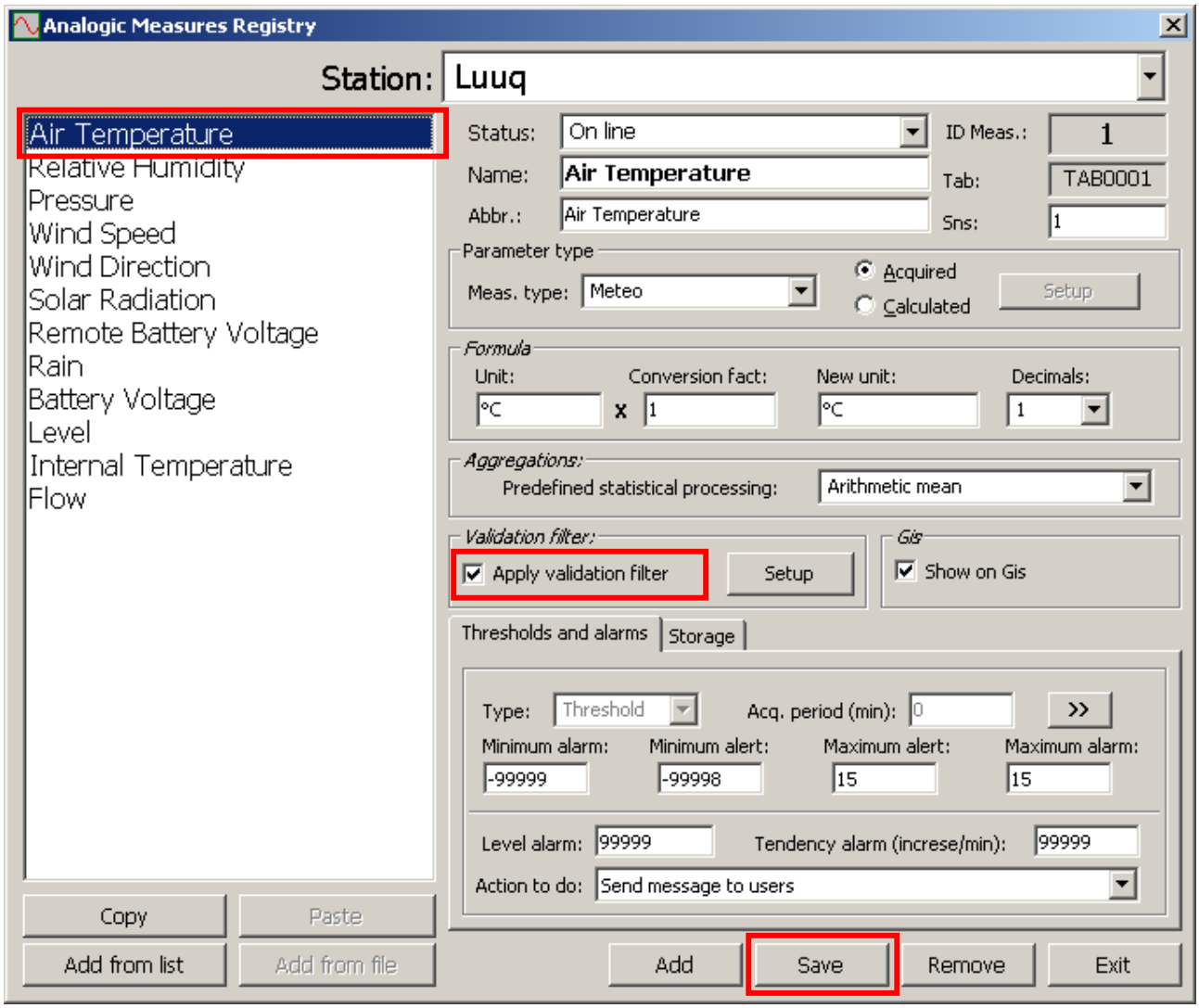
3 Apply the validation to a measure

The validation can be applied to the measure using the software GestConf for the configuration of the network. In particular the procedure steps are:

- ✓ Start GestConf and access the database (with the same procedure seen in before)
- ✓ Select the button **Anl measure** from the toolbar



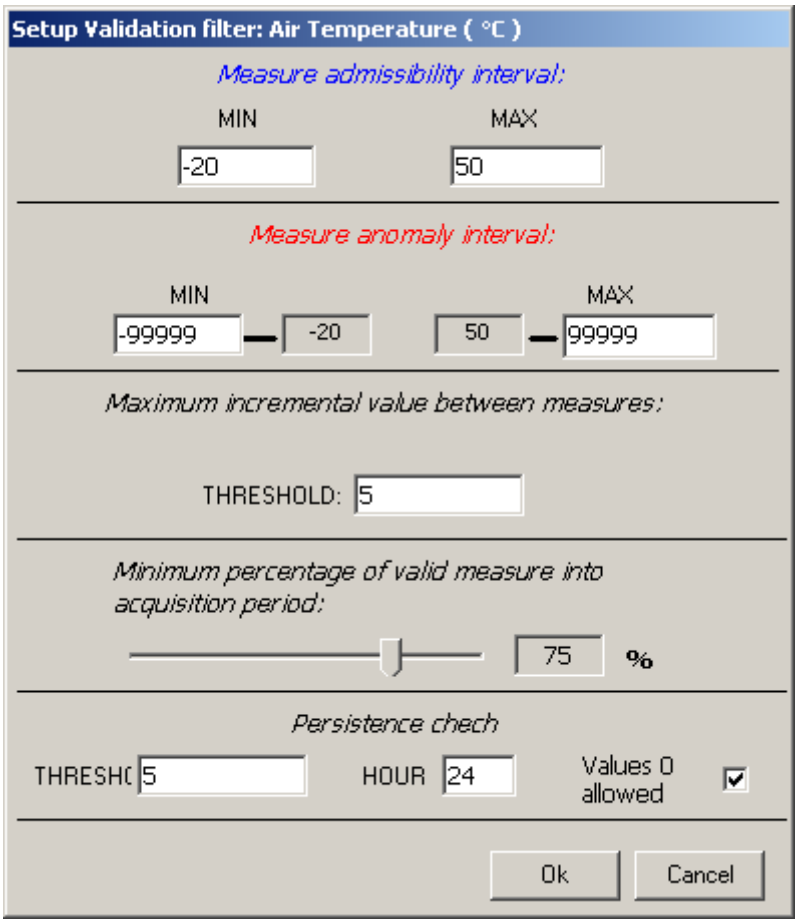
- ✓ From the next window, select the desired measure, mark the check box **Apply validation filter** (Picture 4) and click the button **Save**



Picture 4

3.1 Validation criteria

The measures are validated against different criteria, that can be configured clicking on the button **Setup** of the window shown in Picture 4.



Picture 5

- ✓ **Measure admissibility interval**: specifies the minimum and maximum values allowed for the measure
- ✓ **Measure anomaly interval**: used for water chemical parameters
- ✓ **Maximum incremental value between measures**: specifies the maximum difference allowed between two consecutive values
- ✓ **Minimum percentage of valid measure into acquisition period**: each measure stored by the data logger is the result of the average of more values. This parameters specifies the minimum percentage of valid measures (according to the validation thresholds in the data logger) the data logger must have when evaluate the average.
- ✓ **Persistence check**: this parameter specifies that in the interval of n HOURs, the difference between minimum and maximum values of the measure must be at least THRESHOLD. In the example of Picture 5, the measure is valid if in 24 hours the difference between the minimum and maximum air temperature is at least 5 Celsius degrees. The control is bypassed if the measure is always zero and the checkbox **Value 0 allowed** is marked.

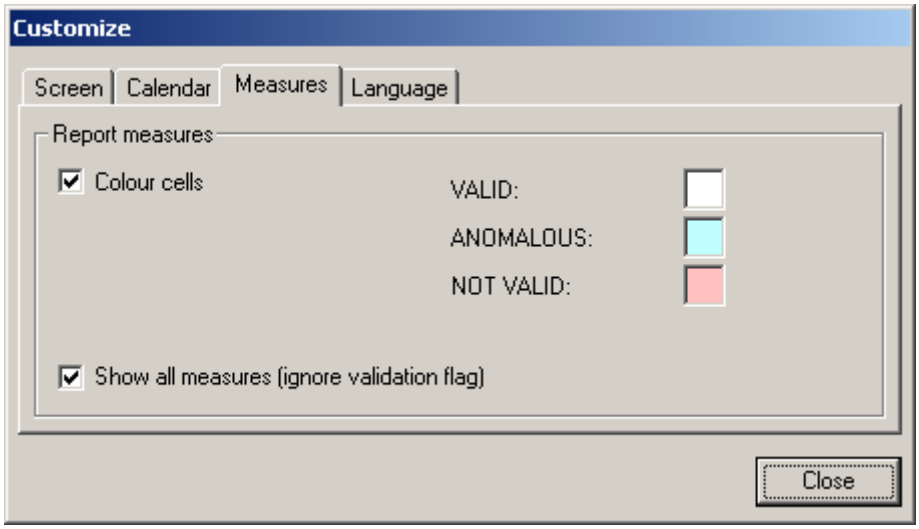
3.2 Bypass of the validation

When the validation is applied to a measure, the software Importa, which import the data downloaded from the stations into the data database, will store the data only in the raw field of the database and not in the validated field. Since the data visualization programs DataView and WebView, works with validated data, this means that the new values of the measure will not appear, until an administrator user will validate them following the procedure explained in point 5.5.

If the validation is not applied, the raw values will be automatically stored also in the validated field, and, so, they will be visible in the client programs. In any case the user can operate again on the data with the software Valida, to verify or change them later, without stop the visualization. **This is the suggested solution**.

4 Program set up

To enter the program option, select the main menu command Setup ▸ Customize. This section allows to customize some parts of the interface. An important parameter is located in the measures tab:



Picture 6

Show all measures (ignore validation flag): if this check box is marked, the user can operate on all the measures, even if they do not have the validation. So this check box should be marked in case of validation bypass. Otherwise the user will be able to operate only with the measures to which the validation has been applied.

5 Measures management

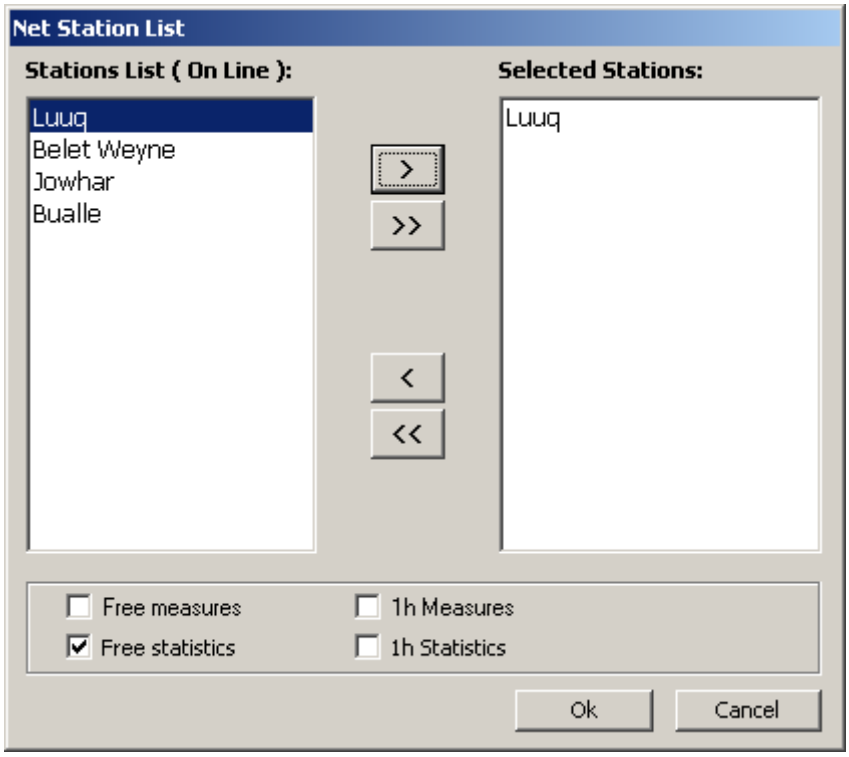
This section describes the detailed sequence for the validation of the data.

5.1 Station(s) selection

To operate on the data, the first step to do is select the stations to manage. The software Valida works basically with two type of windows: the calendar (see point 5.2) and the measures table (see point 5.3). The user will operate on copies of this windows, one for each station selected. For this reason, from this point on the manual will consider the operations done on only one station.

Click on the button **Stations** (Show ▸ Stations List…):

and in the following window select the stations to manage:



Picture 7

 Add the selected station

 Add all stations

 Remove the selected station

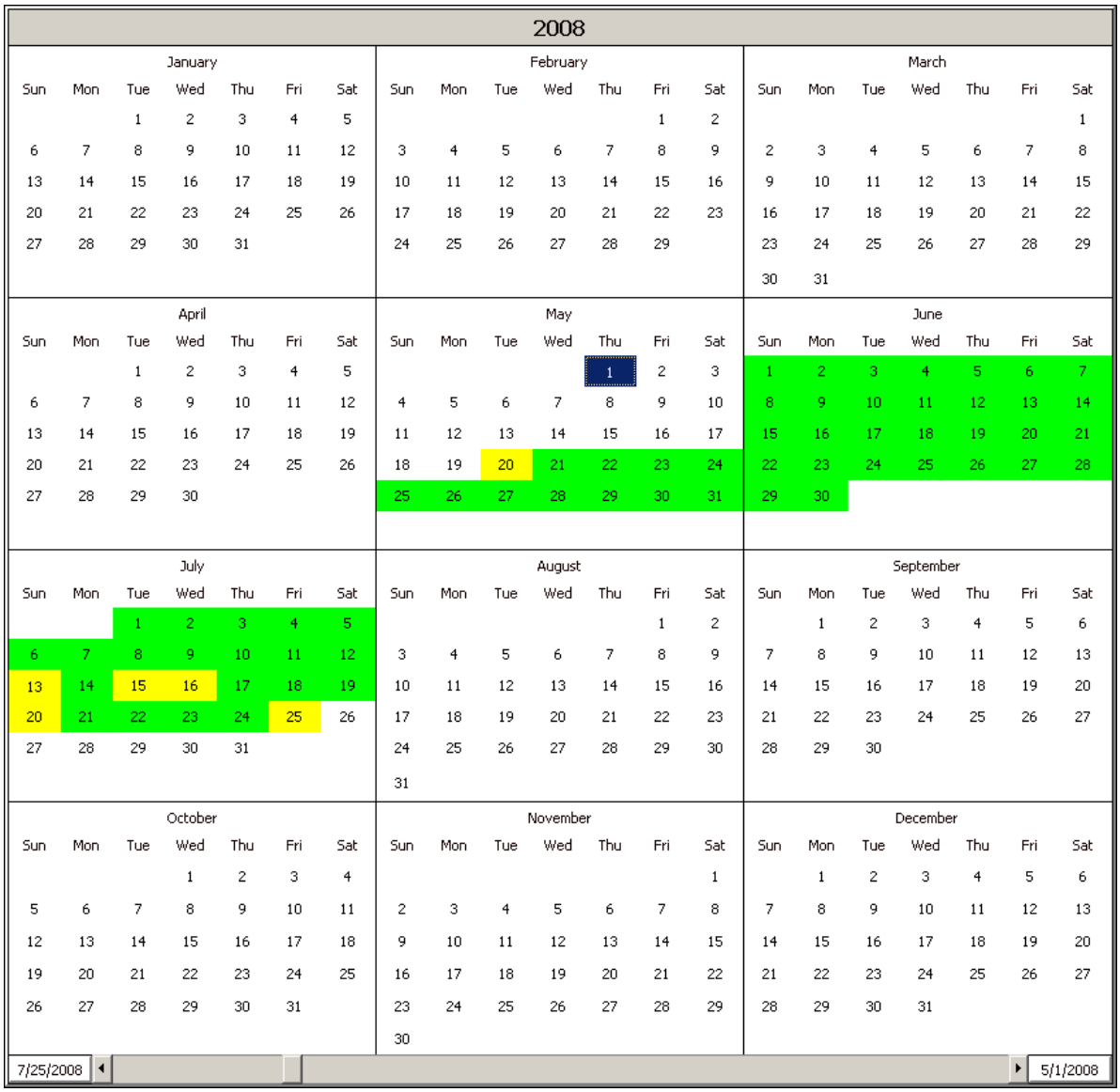
 Remove all stations

1h Measures and **1h Statistics** are not used. They were kept for compatibility with older installations. The checkbox **Free measures** will open the table of the measures (see point 5.3), while the Free statistics checkbox will open the calendar window (see point 5.2).

the calendar window open always pointing to 1st January of the current year. If the measures table is opened together, it will display the data available in the same day. If there are no data for the 1st January, the table will be empty. In this case it is necessary to select a different day on the calendar and click on the button **ReOpen** (see point 5.3).

5.2 The calendar

The calendar shows, for each day, if the data of the selected station are validated (green color) or not (yellow color). **Only the validated data will be displayed on the visualization programs DataView and WebView**.



Picture 8

To manage the data of a day, double click on the day to open the next window which contains the table of the measures.

5.3 The table of the measures

The table of measure shows two columns for each parameter:

- ✓ The raw value: is the original value, as it come from the data logger. It is displayed in bolt type font, to indicate that this value cannot be changed
- ✓ The validated value: is the value processed by the user validation and used by the visualization programs. There are two cases:
  - The validation is bypassed (see point 3.2): if the program setup allows to display all the measures, this column will be filled with the raw value
  - The measures must be validated: if the values match the validation criteria, the software will propose the raw value, otherwise this column will be empty. In any case the measure must be manually validated to be shown in the visualization programs.

An additional column is present, with the following meaning:

N value not present. The user did not validate the data

N value not present. The user already validated the data

Y value present. The user did not validate the data

Y value present. The user already validated the data

The raw values are displayed in bold type font, to indicate that they cannot be changed. If the value match all the validation criteria specified in the configuration (see point 3.1), the software Valida suggest the same value in the validated data column, otherwise this column will be empty (Picture 10).

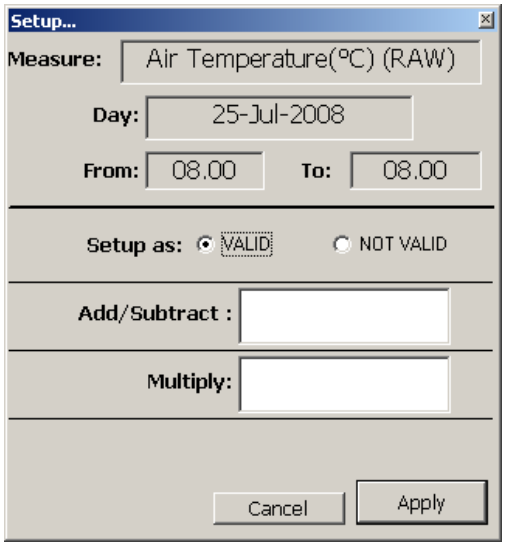
In the measures window all operations are done in the temporary memory of the server. To make the changes in the physical database it is necessary to confirm with the button **Confirm Validation !!**.

5.4 Validation/Unvalidation of the data (see movie 1)

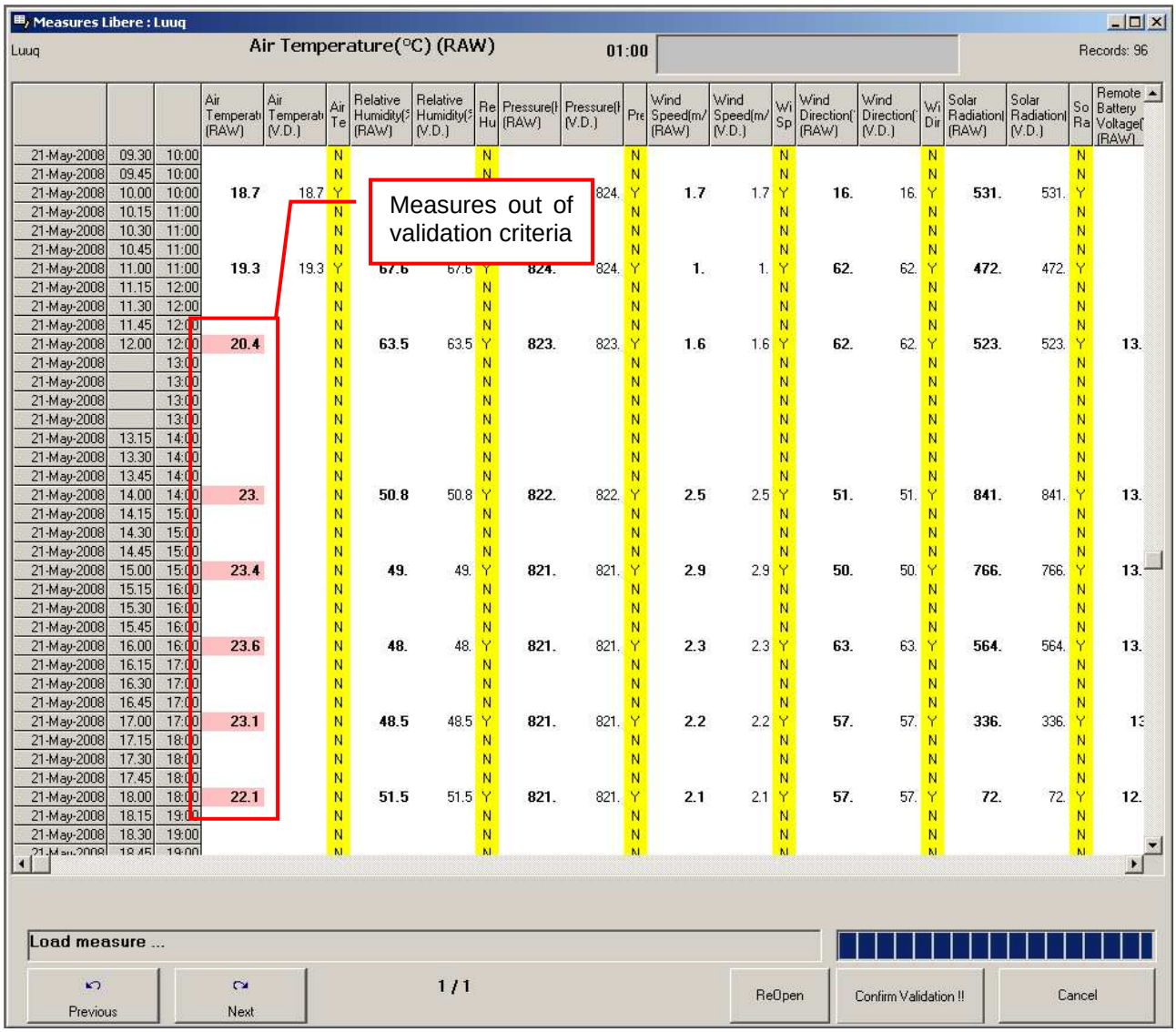
The procedure for data validation consists in the following steps:

- ✓ Select the values to validate: it is possible to select a single value, clicking on it, or a set of values, clicking on the first and dragging the mouse to the last (keeping the button clicked), but always in the same column.
- ✓ Right click on the selected data and give the command **Set up Validate**
- ✓ In the window of Picture 9 select the option VALID to validate, NOT VALID to invalidate the measure
- ✓ Click the **Apply** button
- ✓ If the NOT VALID option was selected, the value in the validated data column will be deleted

The procedure must be repeated for all the data. When done, confirm with the button **Confirm Validation !!**. Now, clicking on the **Refresh** button in the calendar window, the processed day will appear in green color.



Picture 9



Picture 10

5.5 Data correction (see movie 2)

Data correction allows to input manually values for the parameters. It can be done in two different ways, even after the validation.

- ✓ Manual input: it can be done only on a single value. Select it in the validated data column and enter the correct value. Confirm it with Return key
- ✓ Span/offset correction: it can be done on a single value or on a set of values. Select the values to correct, right click on them and select the command Set up Validate. In the window shown in Picture 9 enter a value in one of the fields **Add/Substract** or **Multiply**. The software will update automatically all the selected values applying the formula. The multiply field has higher priority on the offset: if the user enter both the field, only the multiply will be applied.

5.5.1 Linear interpolation

Linear interpolation is a particular way of automatic correction. It works on a set of value and allows to calculate new values in the interval that stay on a straight line. See the example table below:

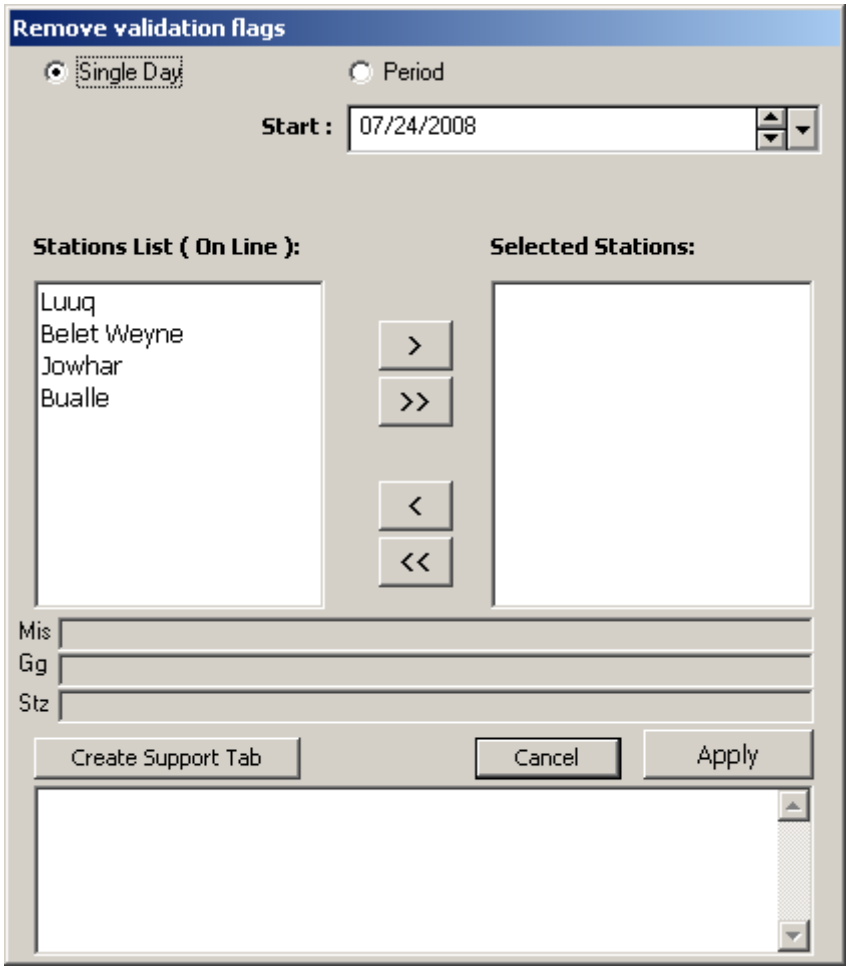
2.5
<not present>
<not present>
<not present>
20.4

2.5
7.0
11.4
15.9
20.4

5.6 Unvalidate the data

It is possible to remove the validation for all the data of one or more stations in a specified period. With this operation the user can declare that the data in the selected period, for the selected stations are not valid and, so, they will not be visible anymore in the visualization programs, until the user will confirm the validation again. For this reason, it is considered a critical operation.

To invalidate the data, select the command from main menu Tools ▸ Remove validation flags. In the window of Picture 11 select the period, which can be a single day or an interval of more days, and the stations whose data will be invalidated. Then click on the button **Apply** to invalidate the data. The button **Cancel** will close the window.


Remove validation flags
Single Day
Period
Start :
07/24/2008
Stations List (On Line):
Selected Stations:
Luuq
Belet Weyne
Jowhar
Bualle
>
>>
<
<<
Mis
Gg
Stz
Create Support Tab
Cancel
Apply

Picture 11