

# User Guide: Features of REBOM\*

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This tutorial describes the main features of REBOM applet that can be accessed through the following link: <http://www.ifi.uzh.ch/dbtg/research/amv.html>.

## 1 Main Window

REBOM main window incorporates three tabs that are:

- Recovery of time series with missing values using different techniques.
- Display simultaneously multiple time series data

These features are accessed through three separate tabs of the application named: Missing Values Recovery, Display Time Series and Tutorial as shown in Figure 1

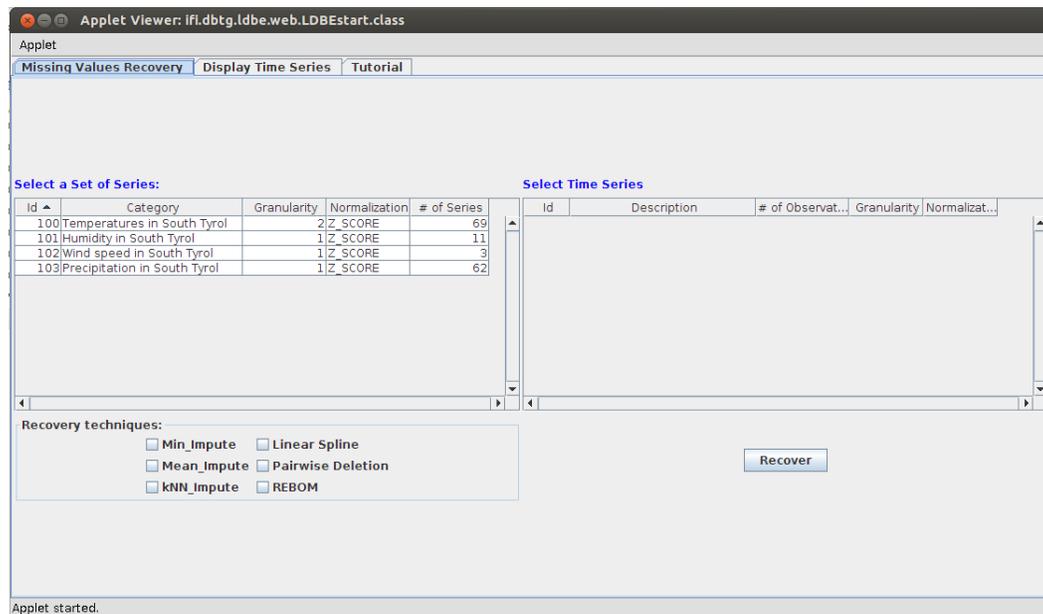


Figure 1: Main Window of REBOM

## 2 Display Tab

The Display tab is used to browse original time series data. In the right hand side of the window the list of sets of time series is displayed. By choosing one set of time series, the list of time series per set will be displayed in the right hand side of the window. In order to select more than one time series to display, we use *Ctrl* key together with mouse key as shown in Figure 2.

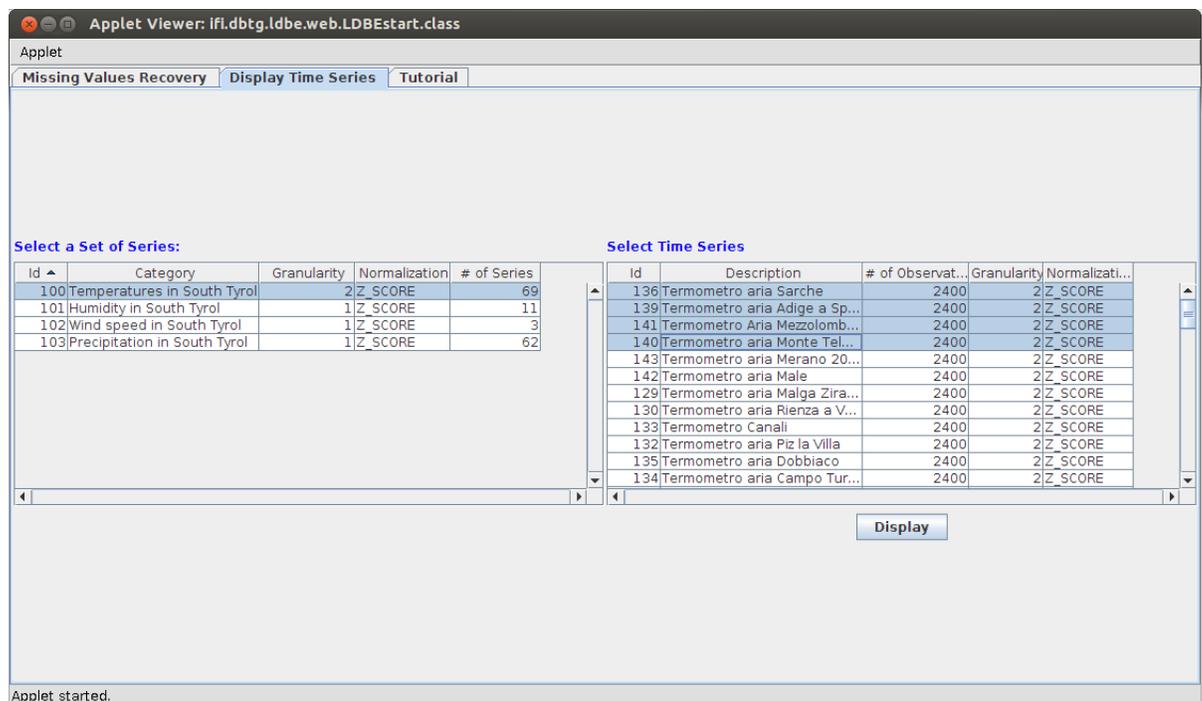


Figure 2: Display Time Series per set

All selected time series will be displayed together on a  $2d$  plot where the x-axis represents the timestamps of observations and the y-axis represents the value of observations. The display tab helps to graphically illustrate the trend similarities between original time series. Figure 3 graphically illustrates the result of display applied to 3 different temperature time series containing blocks of missing values.

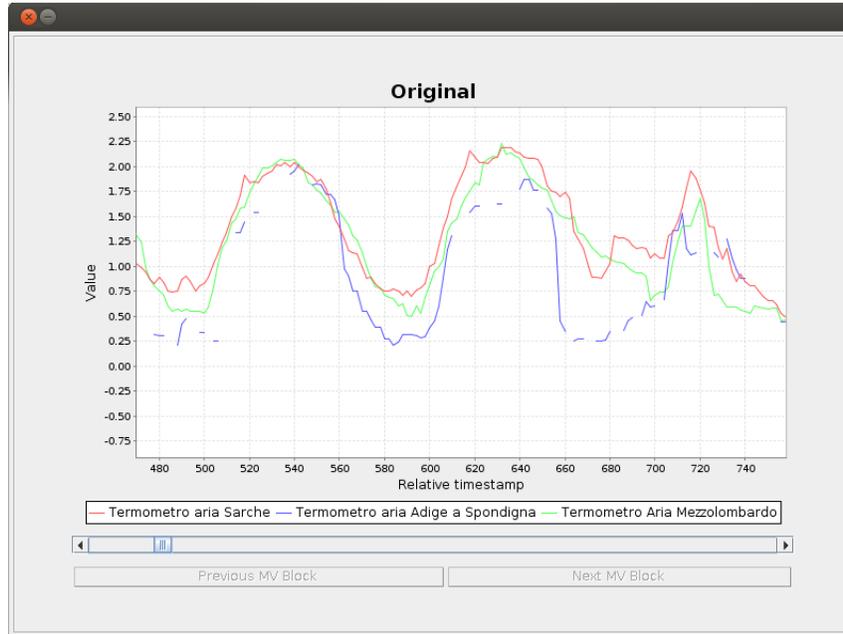


Figure 3: Result of the Display tab for 3 Different Time series

### 3 Recovery Tab

The recovery tab is used to perform block recovery for time series containing blocks of missing values. In order to perform a recovery using REBOM technique, the following steps have to be performed:

- *Step 1:* Select a set of time series, e.g., Temperatures in South Tyrol.
- *Step 2:* select time series from the list of time series, e.g, Termometro aria Ridana
- *Step 3:* Select REBOM from the set of Recovery Techniques

The result of recovery performed by REBOM is shown in Figure 4. The figure shows two different plots. The right hand side plot represents in black color the original time series with missing blocks that can be browsed using the 2 buttons Previous MV Block and Next MV Block. The left hand side plot represents in black color the recovered time series together with its most correlated time series (red and blue time series). Different missing blocks

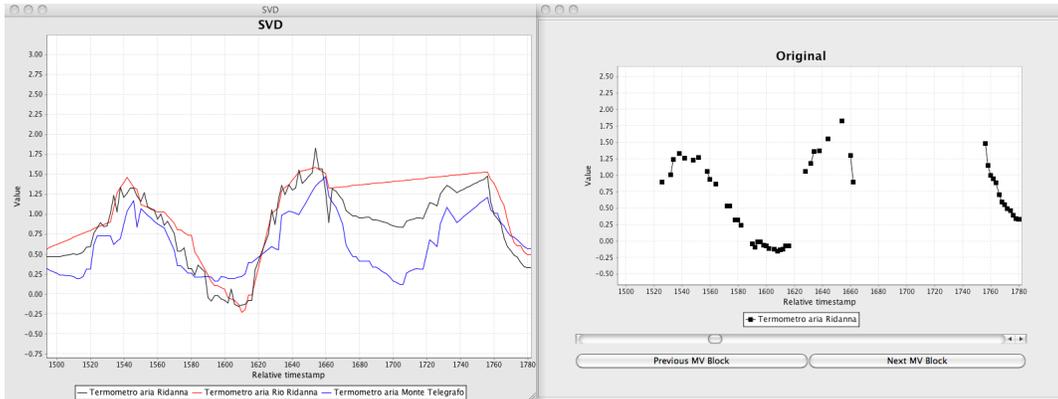


Figure 4: Block Recovery performed by REBOM

have been recovered using REBOM, e.g, the block having the timestamps  $\in [1662, 1755]$ .

The recovery tab can also be used to compare the recovery of REBOM with respect to other recovery techniques. This can be done by selecting the recovery technique you want to display. Figure 5 illustrates the block recovery result of 6 different techniques, i.e., Mean\_Impute,  $k$ NN\_Impute, Min\_Impute, Pairwise Deletion, Spline interpolation and REBOM. The recovery of REBOM can be compared to other techniques.

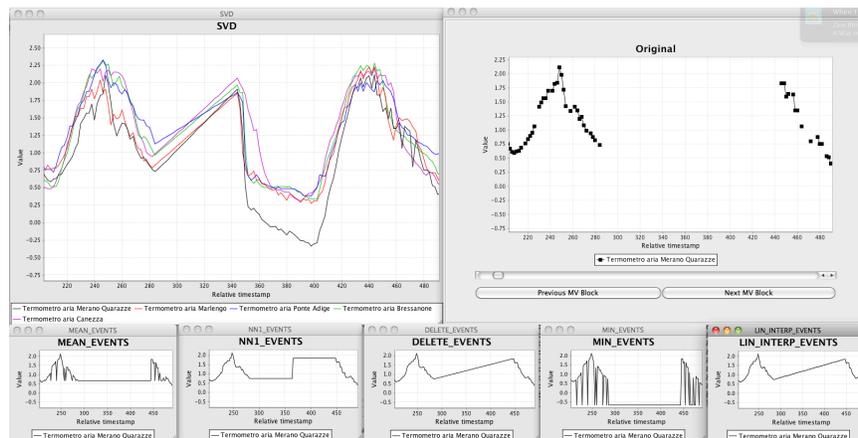


Figure 5: Recovery Performed by Different Techniques