

# Weather Publisher

1.5

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Weather Publisher is a powerful system that lets you make the most of your weather sensor. With Weather Publisher you can track in real time your sensor data, create statistical reports, presentations and charts, publish on the web or create alarms.

This chapter gives you an overview of the system and the different features of the software. It presents the different options of installations and the architecture of the system.

This chapter covers:

- System presentation
- System architecture
- The Weather Server component
- The graphical user interface: Elements

## System presentation

Weather Elements is a complete system of data processing for the Vaisala WXT510 / WXT520 multi sensor and Davis Vantage Pro weather station. Elements Weather System provides very easy-to-use features but also more complex tools. With the software you can:

- Visualize in real time your sensor data, but also calculated data produced by the computing module, for example the daily air temperature variation.
- Generate charts to visualize data for different period of time.
- Generate reports containing statistical data.
- Create alarms that can just play a sound but also send a mail or an SMS.
- Publish documents on the internet or on your intranet: you can publish HTML pages or charts in PNG or JPEG format.

The system provides several levels of use. You can use the software in a very easy way using the different wizards allowing you to generate in a few clicks charts or reports. But you can also use advanced tools to make presentations completely customized to your needs.

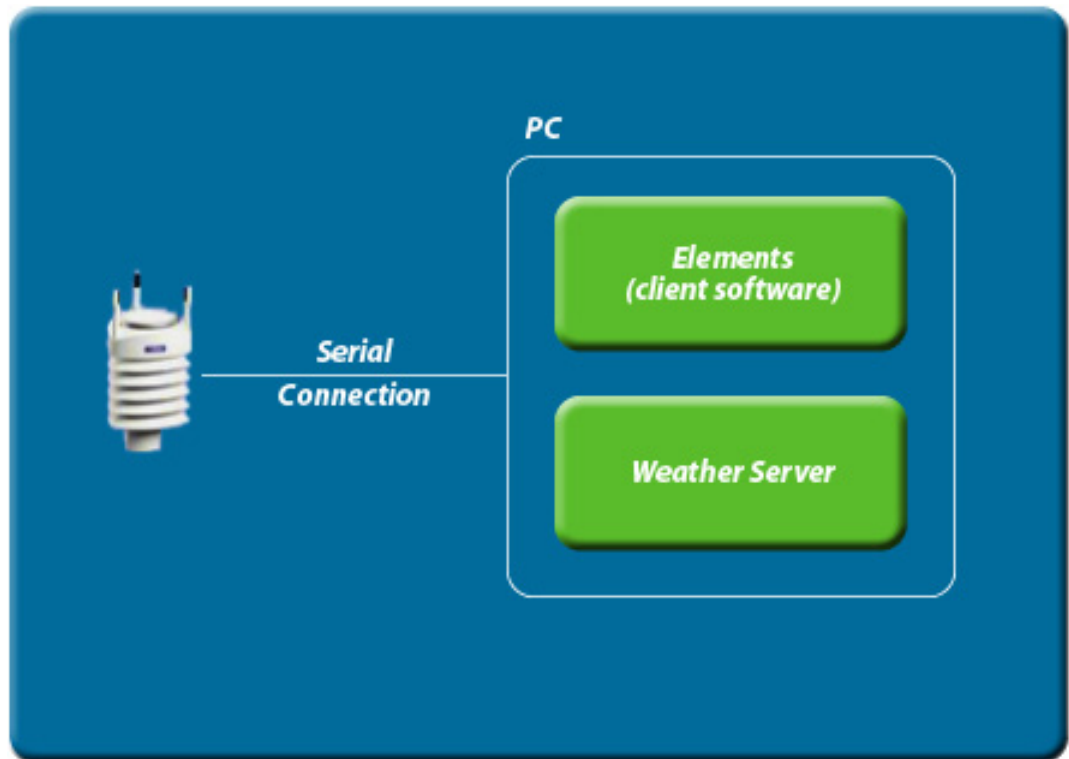
## System Architecture

It is important to understand the architecture of the system and its components. The key point is that the software is designed for a network environment. In many cases, you need to work on an other PC than the one which is connected to the sensor. Elements can be used anywhere on the network.

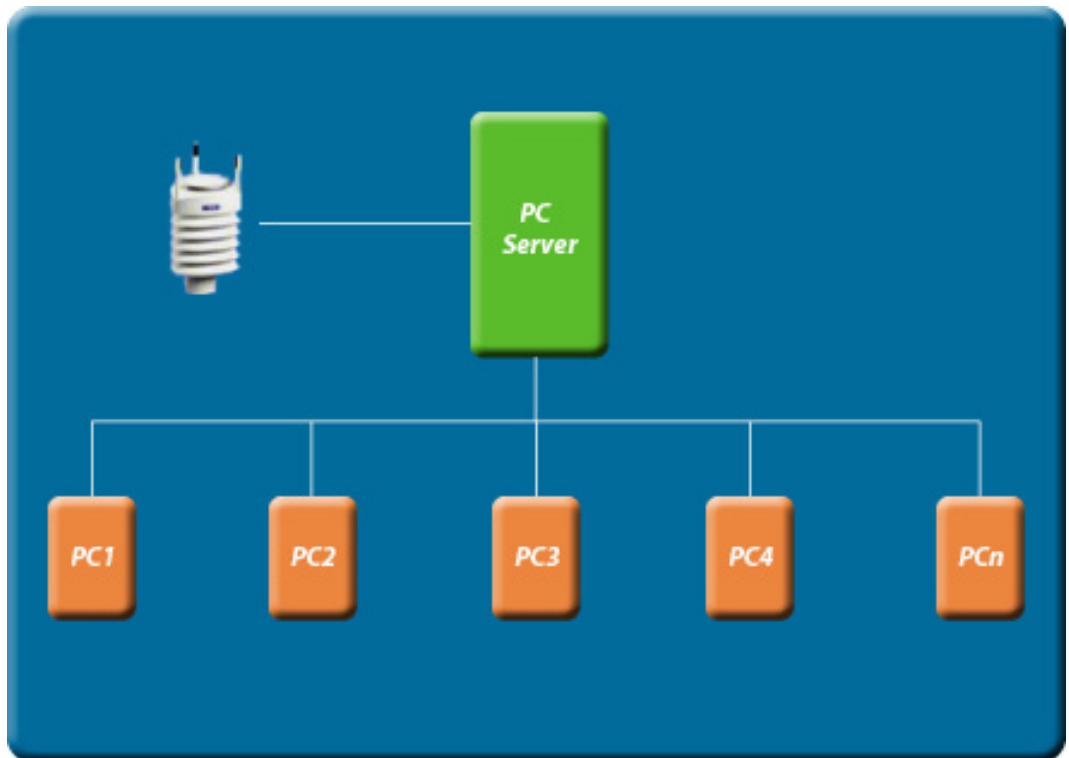
The system is made of two different parts:

- The Weather Server: collects data from the sensor, process it and stores it in the database.
- Weather Elements is the graphical user interface. It is connected to the Weather Server and provides everything to work with it.

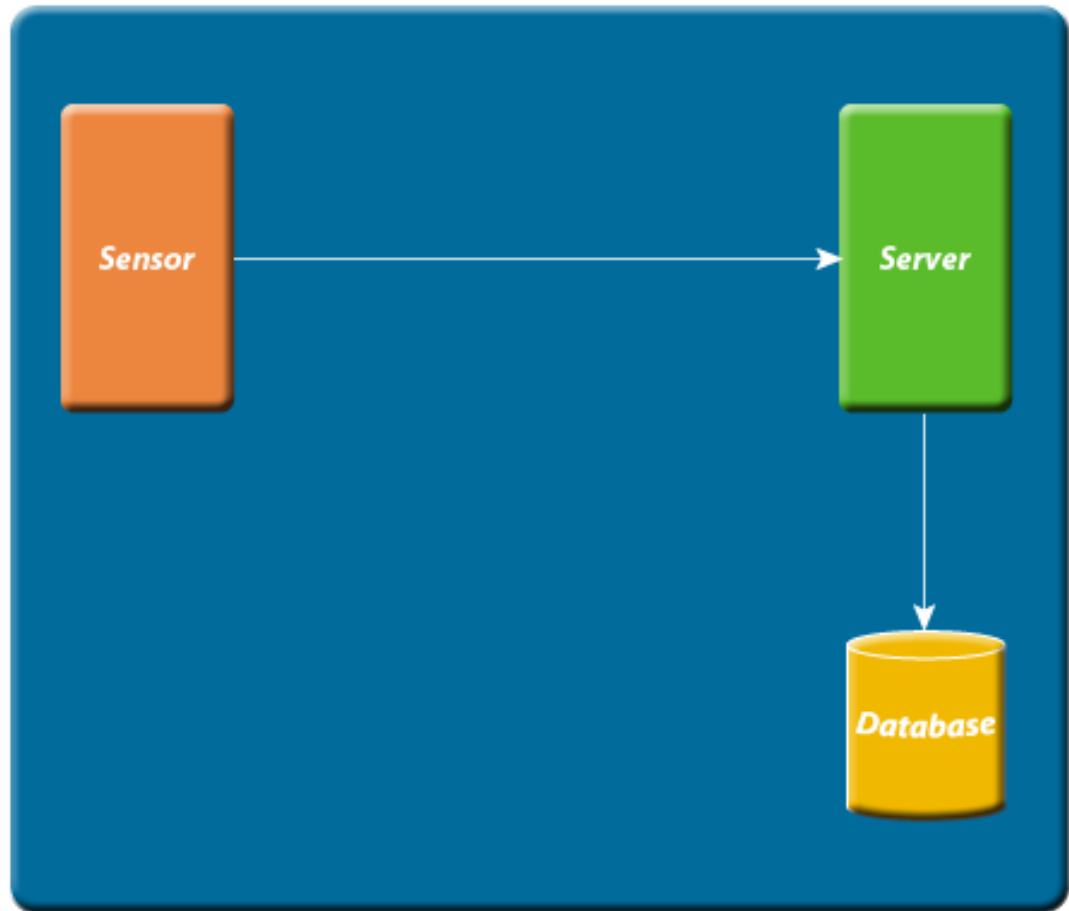
The most simple installation is to use Elements and the server on the same computer.



This diagram shows you several computers connected to the Weather Server. Don't forget you can also use a Wifi connection between computers. This can be very helpful if the sensor is far away from your network.



It is not necessary to choose between these two architectures. When you install the software the server and client components are installed on the same machine. Later you can decide to install the client on another machine.



## The Weather Server component

The server performs the following tasks:

- Collecting data from the sensor and storing them in the database.
- Managing derivative variables with the computing module.
- Managing alarms
- Managing tasks
- Generation presentations

The server is a Windows service that starts up automatically when the computer is started. This means you don't need to start manually the application when you restart your computer.

## The graphical user interface: Elements

Elements is the graphical user interface application that allows you to connect to the server. You can use the software on the same computer than the one the server is installed or on a different one.

It is also possible to use simultaneously several client applications.

When Elements application starts it connects to the server and gets all the necessary data it needs. Then each user action makes queries to get data from the server, for example to draw a chart or generate a report.

The client software subscribes to the weather message service. This allows the client software to be notified of changing values in real time. The delay between a message from the sensor and the time you will see it on your screen is only of a few milliseconds



The following information is intended to get you up and running with Elements as quickly as possible.

This chapter describes the different steps of the installation process, explains the different database options and eventually how to make a remote connection.

This chapter covers:

- System requirements
- Setting up the database
- Software installation
- Launching the software for the first time
- Creating your station and connecting to the sensor
- Starting and stopping the server
- Installing the client on a remote machine

## System Requirements

These are the minimum requirements for the system.

Name	Server	Client
Operation system	Windows 2000, Windows 2003, Windows XP, Windows 7	Windows 2000, Windows 2003, Windows XP, Windows 7
Processor	1Ghz	2Ghz
RAM	2Go	1Go
Storage	At least 5Go for DB storage	100Mo

Charts generation is both CPU and memory intensive work for a computer. The more RAM and the faster CPU you have, the faster the application will work for you.

## Setting up the database

Sensor data is stored in a relational database and not in a simple file. This allows much better performance and security for your data.

When you install the software you will be asked to choose the database you want to use:

- Derby is a small database bundled with the server. You have nothing special to do to activate it, just choosing this option when you install the software.
- Oracle Express Edition is a free database you can download from Oracle site. However the maximum storage is limited to 4 Go.

- You can also choose Oracle 10g/11g which is not limited.

We strongly suggest that you use the Oracle Express Edition (or of course Oracle 11g). This database has much more features than Derby and is much faster (for example when you generate a chart). This is especially true when the database contains more than one year of data. Furthermore the limit of the 4 Go allows at least ten years of storage.

When the system is running only for a few months there is no major difference between Derby and Oracle. But after two or three years Oracle performance will remain the same. This is not the case for Derby. For example, after five years you can expect to get the daily high and low temperature within one or two seconds with Oracle but you will have to wait 30 seconds or more with Derby. Derby is great for quickly testing the software but for long-term storage you should use Oracle.

When the system is running only for a few months there is no major difference between Derby and Oracle. But after two or three years Oracle performance will remain the same. This is not the case for Derby. For example, after five years you can expect to get the daily high and low temperature within one or two seconds with Oracle but you will have to wait 30 seconds or more with Derby. Derby is great for quickly testing the software but for long-term storage you should use Oracle.

Oracle Express edition is very easy to install and to use. The following section gives you the different steps of installation.

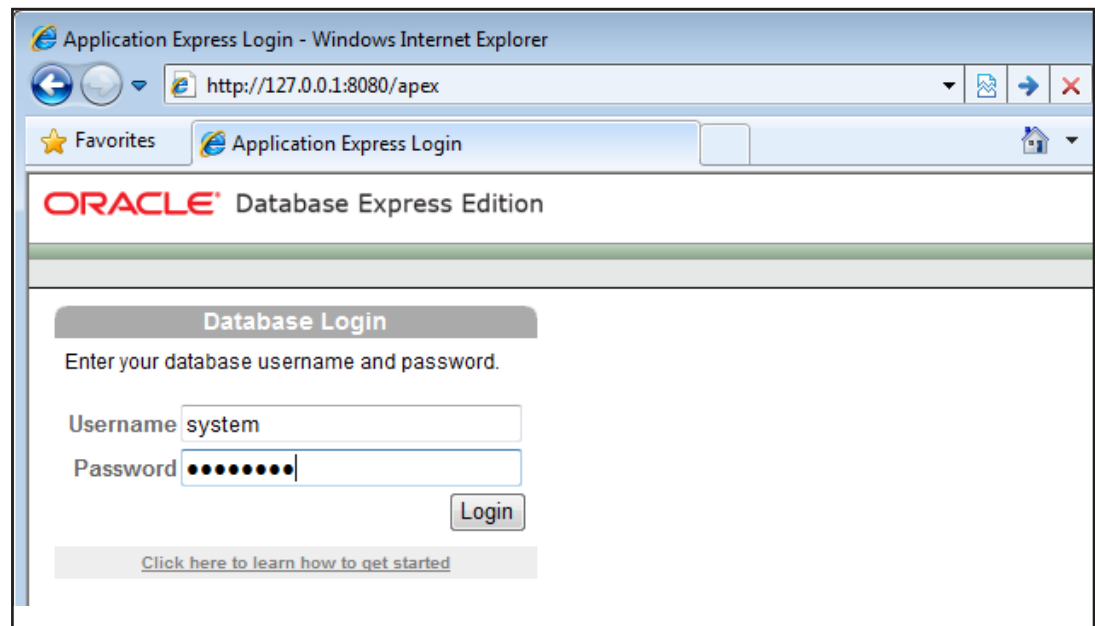
## Installing Oracle express edition

The first thing to do is to download Oracle Express from

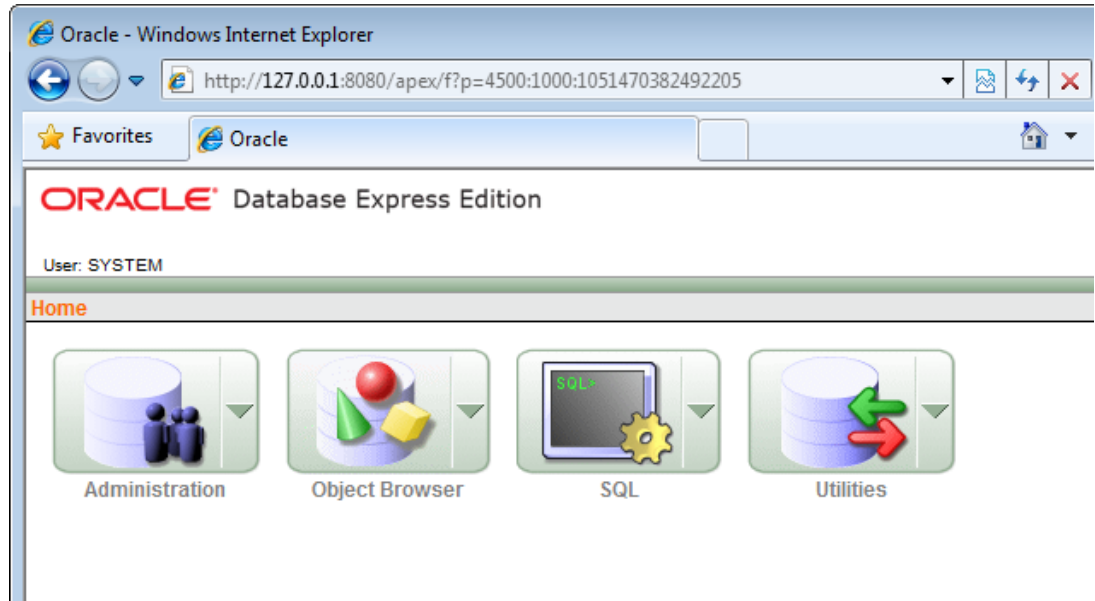
<http://www.oracle.com/technology/products/database/xe/index.html>.

The setup process is very easy. Once the product is installed you have to create a user for the weather database.

In your browser just type <http://127.0.0.1/apex/> and login.



Click the Administration button and then the 'Database users' button.



Create the user w15 with password weather (both in lower case). Leave all options to their default.

Create Database User - Windows Internet Explorer

http://127.0.0.1:8080/apex/f?p=4500:2611:1051470382492205::NO:RP,2611::

ORACLE Database Express Edition

User: SYSTEM

Home > Administration > Manage Database Users > Create Database User

Create Database User [Cancel] [Create]

\* Username

\* Password

\* Confirm Password

Expire Password

Account Status Unlocked ▾

Default Tablespace: USERS

Temporary Tablespace: TEMP

User Privileges

Roles:

CONNECT  RESOURCE  DBA

Direct Grant System Privileges:

CREATE DATABASE LINK  CREATE MATERIALIZED VIEW  CREATE PROCEDURE

CREATE PUBLIC SYNONYM  CREATE ROLE  CREATE SEQUENCE

CREATE SYNONYM  CREATE TABLE  CREATE TRIGGER

CREATE TYPE  CREATE VIEW

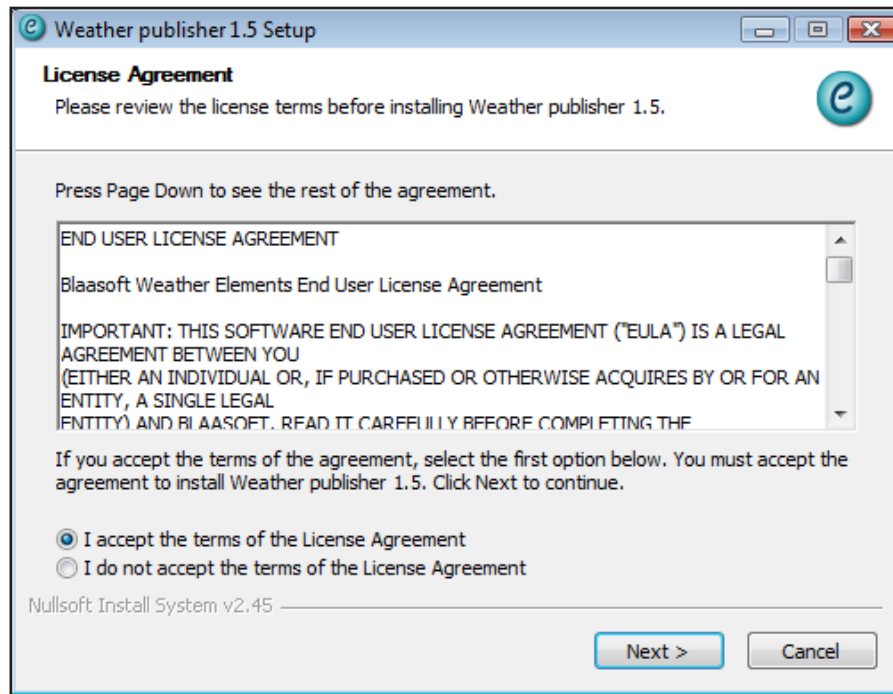
[Check All](#) [Uncheck All](#)

## Software Installation

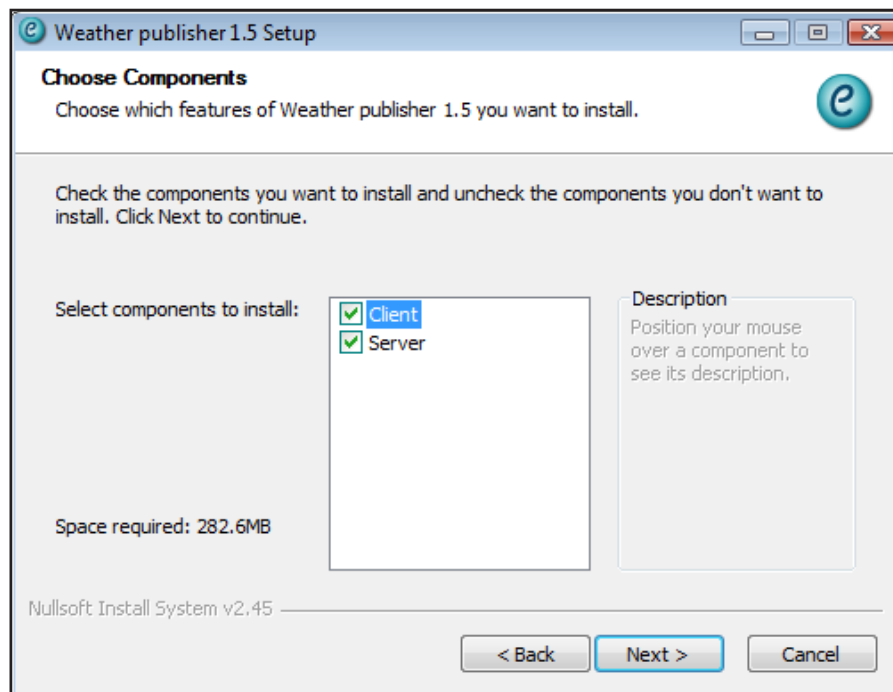
Just click the Setup file to start the installer.

If you choose to use Oracle (10g or Express) be sure Oracle is running and the user weather, password weather is declared.

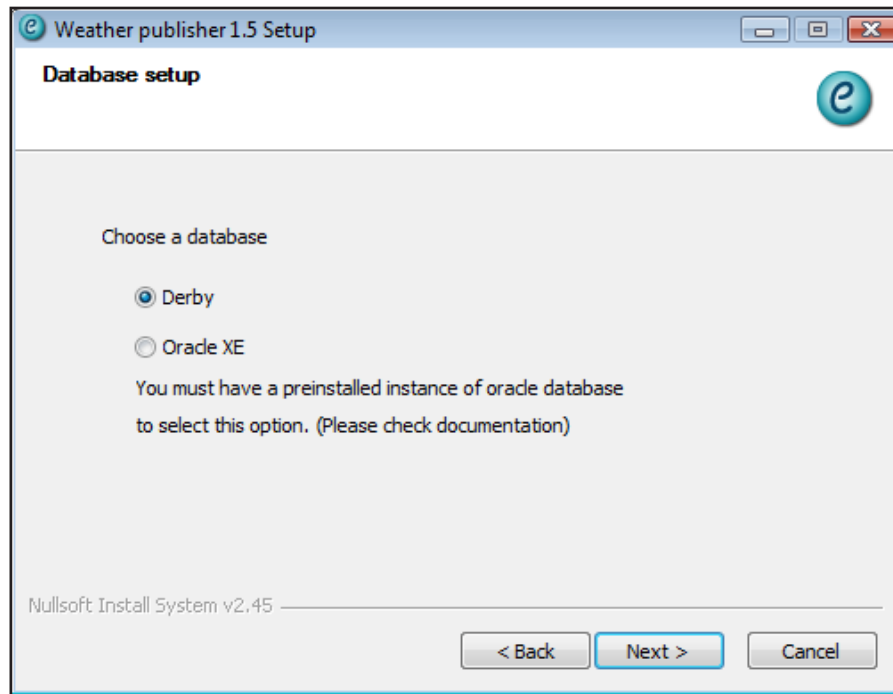
The installer presents the license agreement.



Let the server and client components selected.



Select the database you want to use. Remember that if you choose Oracle database must already be running on your computer.



Once the installation is done the server is automatically started as a Windows service.

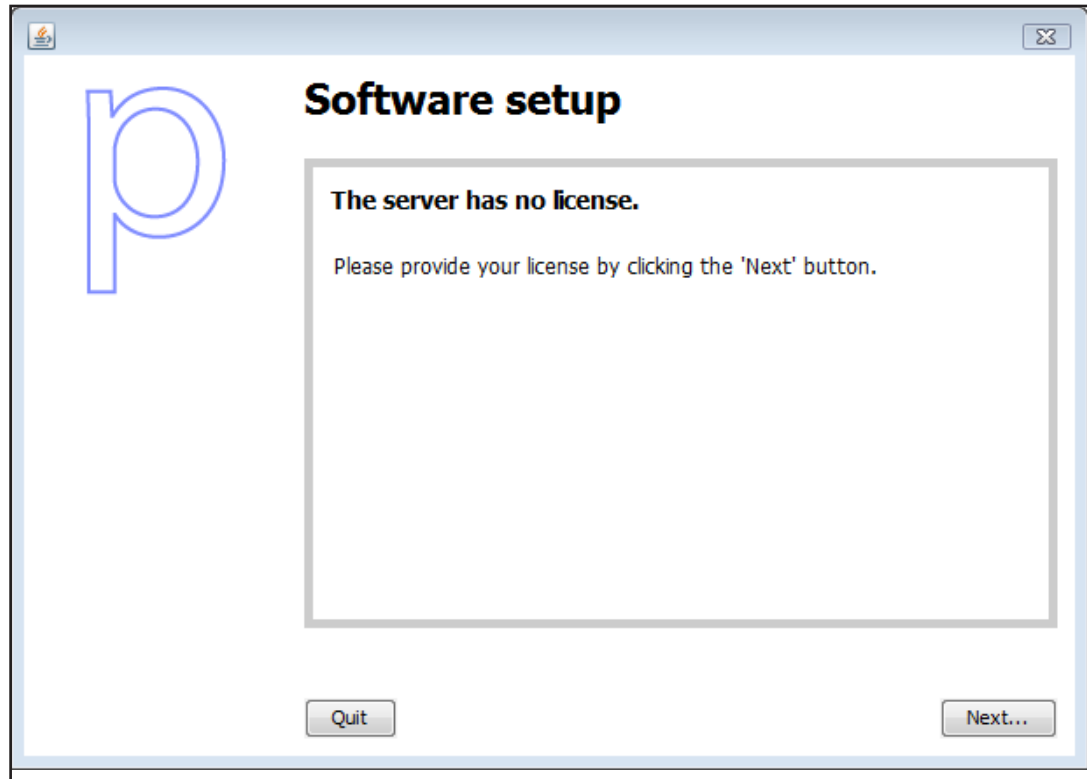
You can check the server is running by opening the windows configuration panel, then clicking 'Administration tools' and then 'Services'.

The service name is 'WeatherServer'. You can stop and restart it with the mouse right click. As you can see the service is in auto start mode. If you stop and restart your PC, the server will automatically restart.

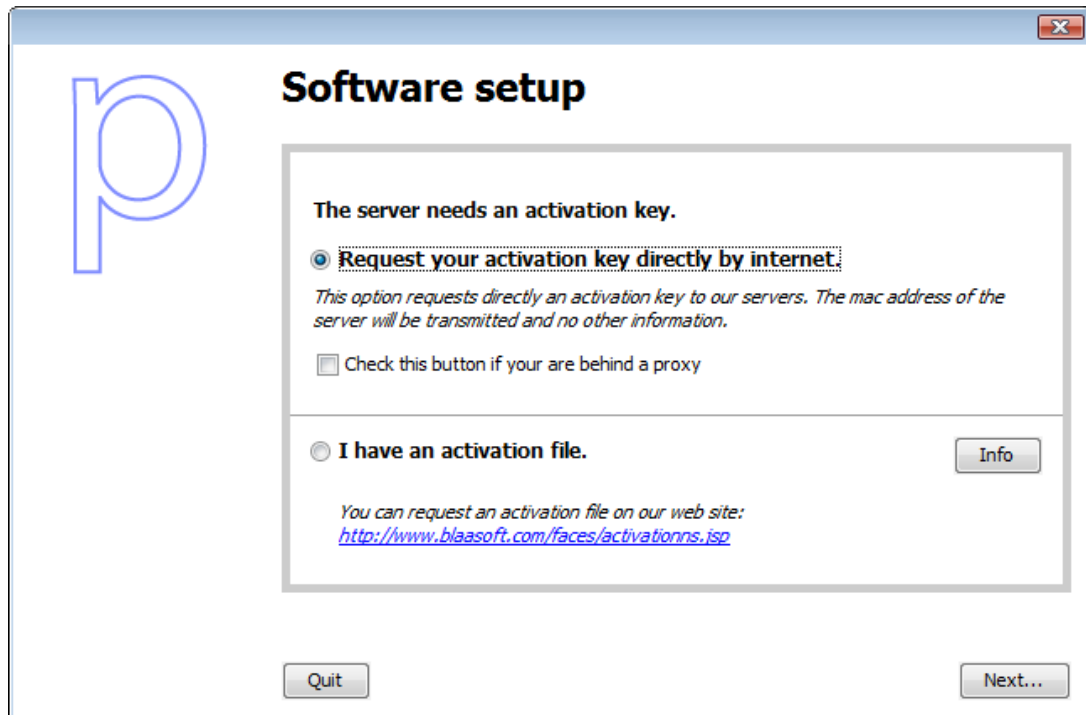
## Launching the software for the first time

Now that the server is installed, you can launch Elements. When you start Elements for the first time it tries to connect to a Weather server.

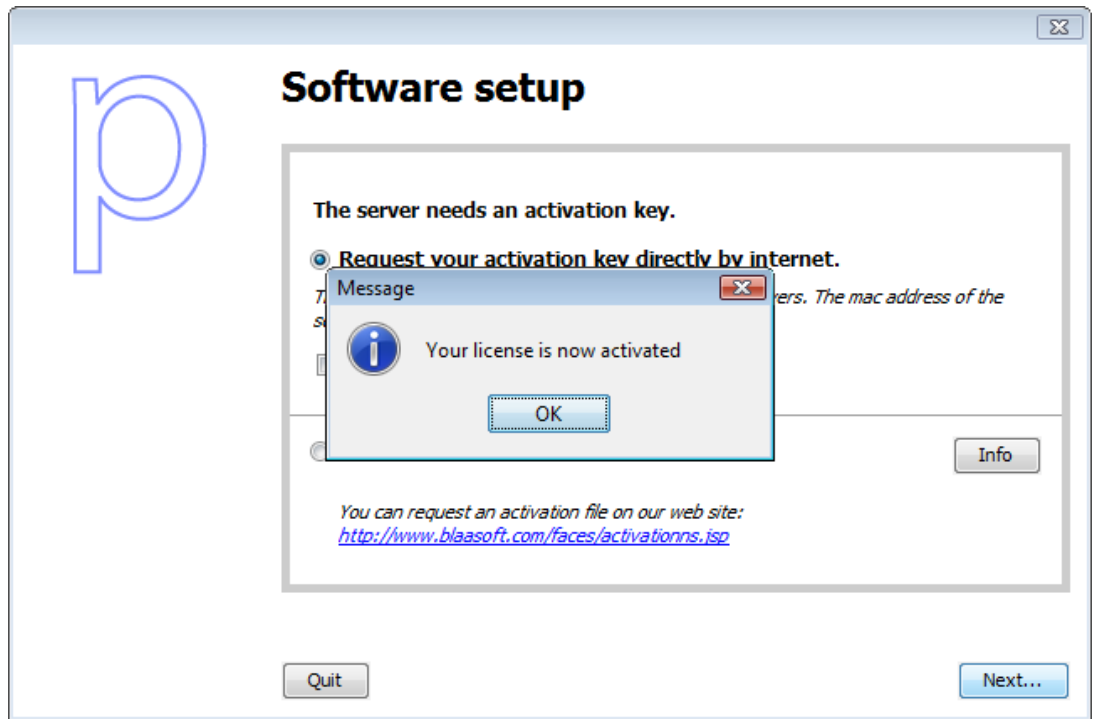
Since this is the first time you're connection to the server, it will asks you your license.  
Clicking the Next button will prompt you to provide your license file 'license.xml'.



You need to activate the software. If your computer is connected to the internet let the default option selected and click next.



An activation key will be automatically provided by our servers. When you see this message your server is activated.



## Creating your station and connecting to the sensor

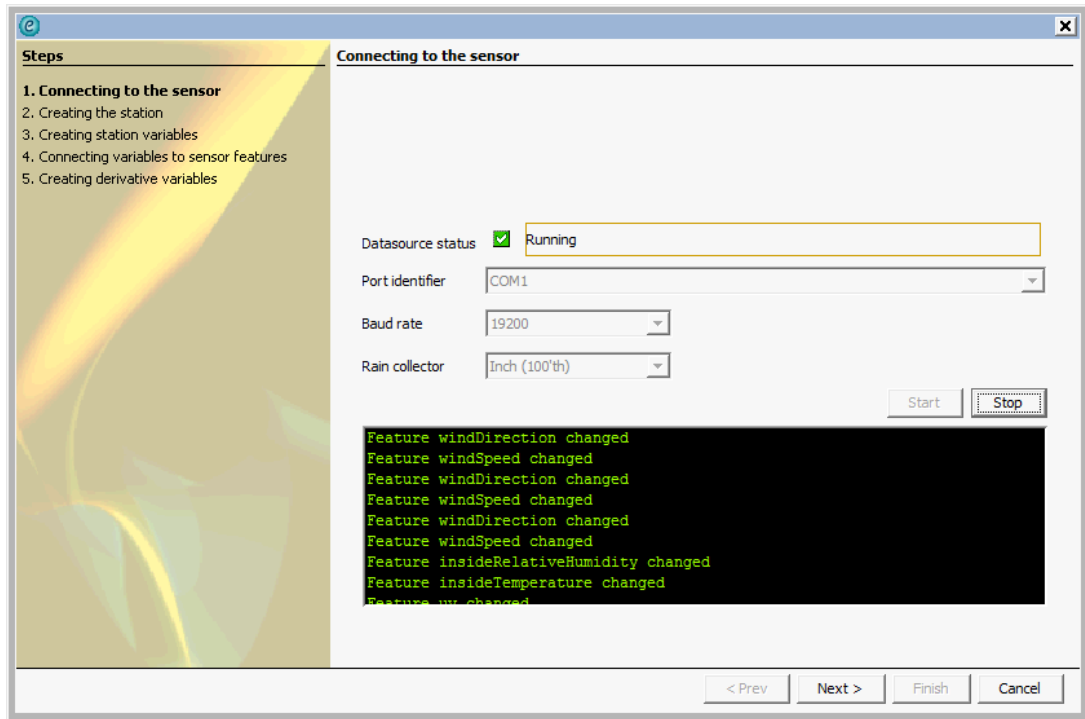
Once this step is done and since you have not defined your station, Elements will show you the 'New station' wizard. This wizard is made of five steps:

- Connecting to the sensor
- Creating your station
- Creating stations variables
- Connecting sensor features to variable stations
- Creating derivative variables

### Step 1: Connecting to the sensor

This panel allows you to establish a connection to your sensor.

As soon as the server starts it tries to connect to the sensor on COM1 at 115200 baud. You can change the COM port and baud rate on the connections tab.



For more information on how to connect your sensor, see 'Datasource' in chapter 4.

Once the communication is established you can click next.

## Step 2: Declaring the station

You create your station in the next panel. You should complete the following fields:

- The country
- The country subdivision (for example the state in the USA)
- Eventually a METAR identifier for METAR stations
- The place name, for example the city where the station is
- Longitude and latitude
- Elevation (in meters)
- The time zone

The time zone field is very important because data is stored in the database both in UTC and local time zone. If you don't know longitude, latitude or elevation you can let the default values and change them later. These fields are only used for display purpose.

Once these fields are completed, you can click 'next'.

### Step 3: Creating stations variables

The third panel is the most important one that allows two things:

- Create stations variables
- Define database policy for each variable

This panel allows you to tell the server how and when variable values are stored in the database.

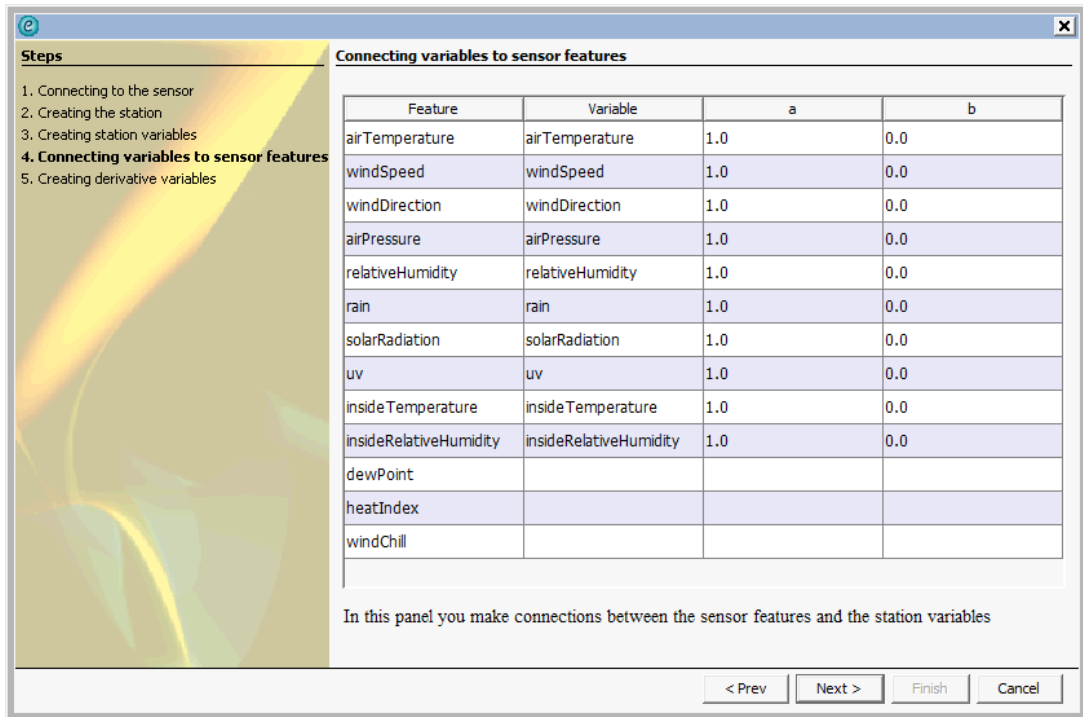
Variable name	Database policy	Periodicity
airTemperature	Change [Spot]	
relativeHumidity	Change [Spot]	
airPressure	Change [Spot]	
rain	Change [Delta]	
windSpeed	Periodic [Spot]	15 minutes
windDirection	Periodic [Spot]	15 minutes
solarRadiation	Change [Spot]	
uv	Change [Spot]	
insideTemperature	Periodic [Spot]	1 hour
insideRelativeHumidity	Periodic [Spot]	1 hour

The database policy defines how data is stored in the database. For more information see 'Stations and

variables' in chapter 5.

## Step 4: Connecting sensor features to the stations variables

The fourth panel associates sensor features to stations variables.



It allows you to make a calibration of your data according to the linear formula:

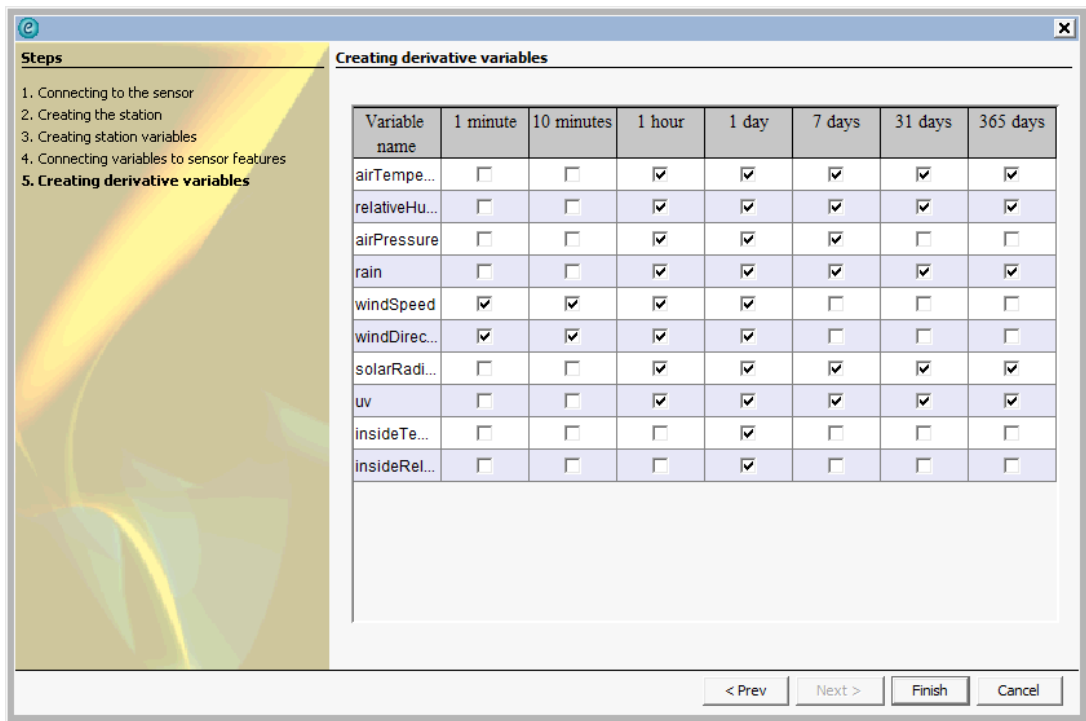
$$V=ax+b$$

Normally the station is correctly calibrated and it is not useful to change default values ( $a=1$  and  $b=0$ ) for most variables.

Atmospheric pressure is the exception and you should modify the value of  $b$  to take into account your altitude. Although you can modify this value later it's a better to do it now because values stored in the database are based on calibration. Since the server uses internally Hectopascal the value of  $b$  must be in Hectopascal.

## Step 5: Creating derivative variables

Derivative variables are studied in depth in the next chapter. You can let the wizard create these variables for you. It is anyway very easy to add and remove derivative variables.



Once your choice is made, just click 'Finish'. The wizard will create you station with its variable, create the connections between the WXT510 datasource and the variables and create the derivative variables you specified.

Then you can start to work with the software.

## Starting and stopping the server

The setup program installs a Windows service that you can stop and start by opening the Services panel from the Windows Configuration Panel. The service is installed in automatic mode. This means that the service is automatically restarted when you starts Windows. You can also start and stop the server with the menu items 'Start Weather server' and 'Stop Weather server'.

## Installing the client on a remote machine

If you want to install the client software on another computer, just launch the Setup file and unselect the 'Server' check box.

The next chapter explains in detail how to connect to a remote server.

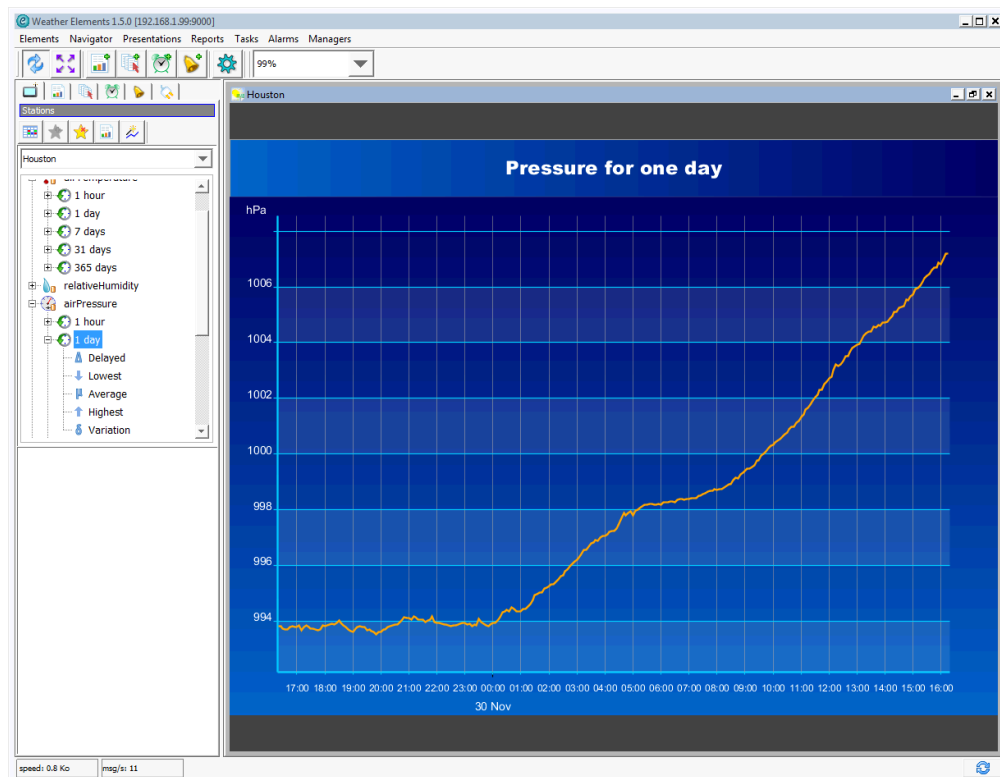
Elements is the client software that allows you to work with your sensor data.

This chapter covers:

- Elements overview
- User preferences
- The navigator
- Server connection
- Elements configuration file

## Elements overview

Elements main window contains the following areas:



- The main menu and the tool bar
- On the left side the navigator allows a fast access to the different features of the software. The navigator is made of six tabs allowing you to manage stations, presentations, reports, tasks, alarms and datasources. All these concepts are detailed in the next chapters.
- The main part on the right is the working area. You can open as many as you want of windows

displaying data.

- The bottom part of the software is the task bar, displaying the status of the connection to the server.

## User preferences

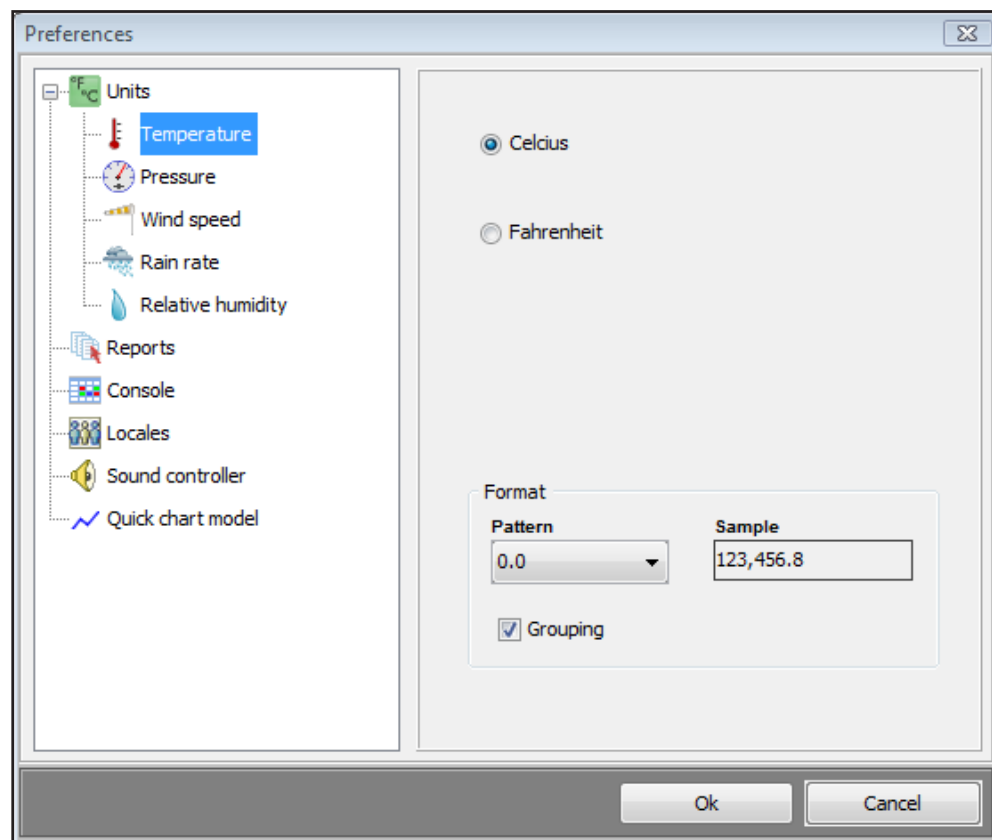
To open the Preferences panel, just select “Preferences...” in the ‘Elements’ menu or click directly on the icon in the tool bar. You can then navigate through the preferences by clicking on the items of the selection tree. The items you can select are:

- Units
- Reports
- Console
- Internationalization
- Sound controller
- Chart model

Preferences relative to reports, console, Sound controller and the default Chart model are studied in the next chapters.

### Choosing units

Configuring units is important since the software uses them by default.



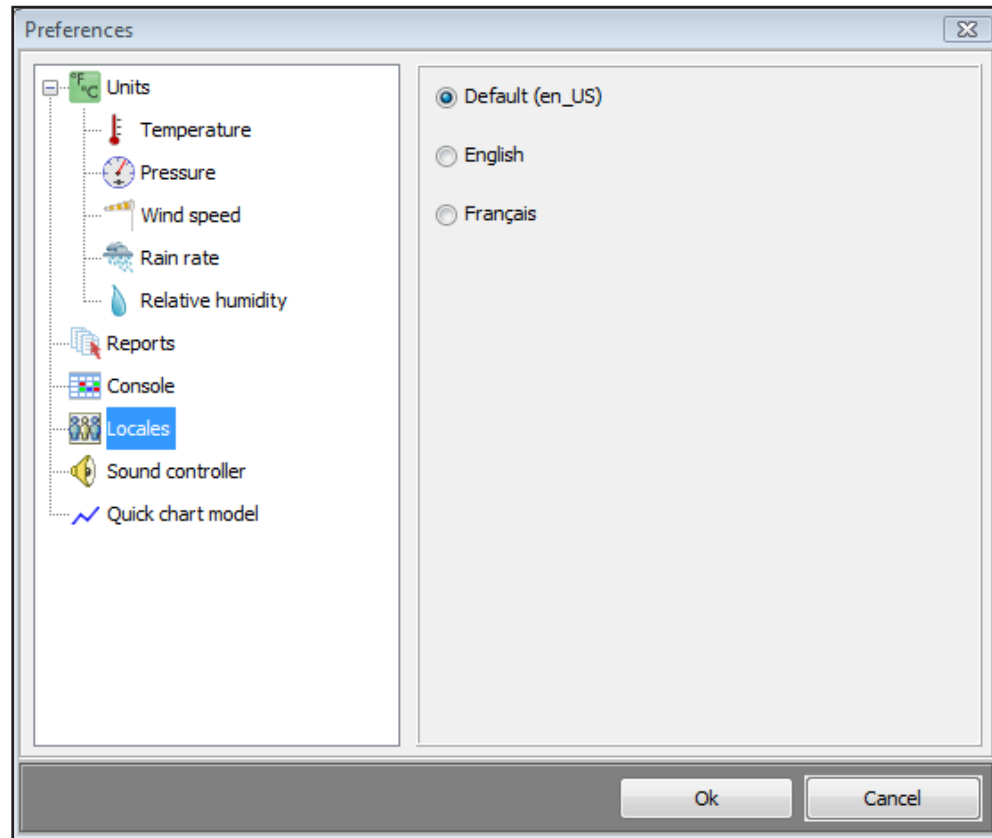
For each type of variable you can choose:

- The unit
- The display format with the number of digits after the decimal point
- The activation of digits grouping, i.e. inserting of a space character every three digits. This last

option is mainly used when displaying pressure in hectoPascal.

## Internationalization

The software works in the language of the operating system Windows. However you can force to choose the English or French language.

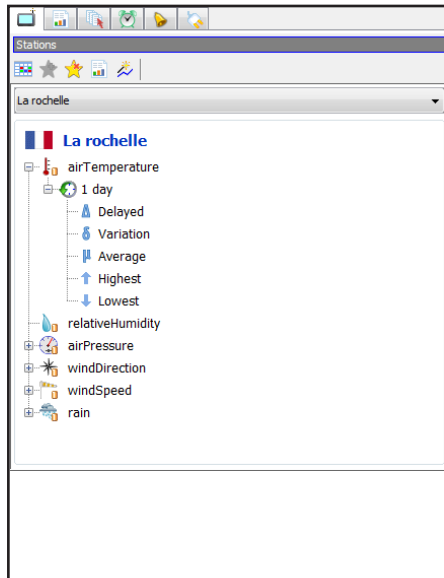


If you make a change in this panel you need to restart the software.

## The navigator

The navigator provides an easy access to the different components of the software. It contains six tabs allowing you to select one of the six views.

- The stations tab provides an access to your stations and is fully covered in chapter 5
- The presentations tab provides a list of all your presentations and is covered in chapter 9
- The reports tab provides a list of your reports and is covered in chapter 8
- The tasks tab provides a list of your tasks and is covered in chapter 14
- The alarms tab provides a list of your alarms and is covered in chapter 15
- The datasources tab provides information about your datasource i.e. the sensor itself and is covered in the next chapter.



The navigator, showing here the stations view.



Stations tab



Presentations tab



Reports tab



Tasks tab



Alarms tab

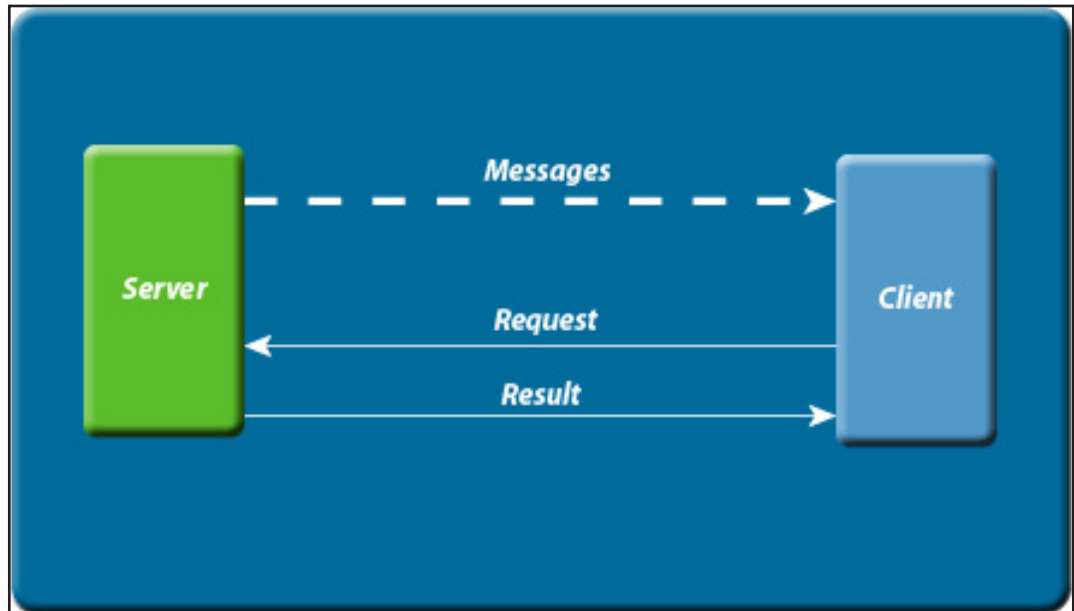


Datasources tab

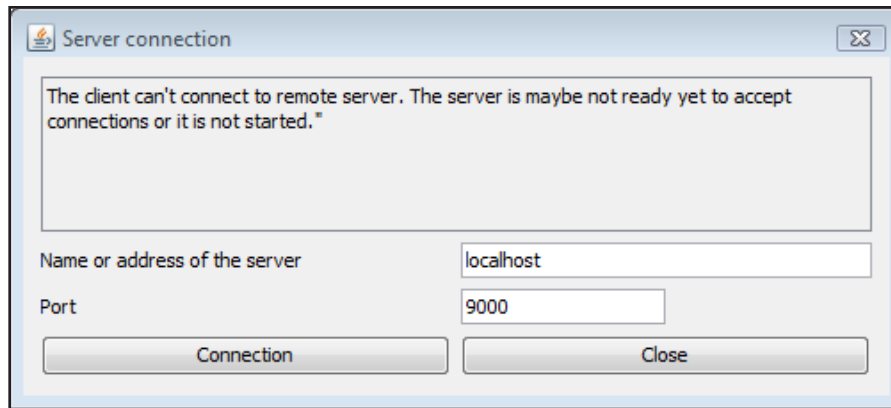
## Server connections

Elements is connected to the server in two ways:

- Once the client is connected to the server, the client and server exchange a sequence of request response messages. Every time the user does something like getting a presentation or making a chart the client sends a request to the server.
- Another connection is always opened and allows the client to be notified in real time of the values of the variables, sensor status...



When you launch Elements for the first time it tries to find a Weather server on the same machine with the port 9000. If it can't find a server the connection window is displayed.



You can type here the server name or the IP address of the server.

Unless you have changed the server connection port, let the value to its default 9000.

## Elements configuration file

Elements configuration file is located in the user directory (C:\Documents and Settings\YourWindowsAccount) and is called elements2.xml.

If you want to connect to a different server, you can delete this file. It will be regenerated the next time you launch Elements.

You can also manually edit this file and change the host of the server (see example below). You can set an host name or an IP address.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<elements uuid="8b2fdc9b-c98f-4858-b30f-89a5d90ccf96">
<connection>
<provider host="localhost" port="9000"/>
</connection>
```



## A datasource is a software component connected to the sensor.

Currently there are two types of datasources: one for the Vaisala WXT510 / WXT520 and the other one for the Davis Vantage Pro station.

This chapter covers:

- Checking the datasource with the navigator
- The datasource manager
- The WXT520 configuration
- The Davis vantage pro configuration

## Checking the datasource status with the navigator

Clicking on the datasources tab of the navigator allows you to monitor your datasource.

This part shows the sensor status.

In this table you can check the status of each feature of your sensor.

The feature name

- A small LED that can be green, yellow or red. It becomes yellow when no signal has been received since one minute and red when no signal has been received since ten minutes.
- The battery status is unused for the WXT510 sensor.
- The monitor displays in real time the raw data received from the sensor.

The screenshot shows the 'Datasources' tab in a software interface. Underneath, 'Wxt510Datasource' is selected and its status is 'Running', indicated by a green checkmark in a box. Below this is a table with three columns: 'Feature', a status LED, and a battery icon. The features listed are airPressure, airTemperature, hail, heatingTemperature, internalTemperature, rain, refVoltage, relativeHumidity, supplyVoltage, windDirection, and windSpeed. All LEDs are green, and all battery icons are full. At the bottom of the screenshot, there is a log of raw data received from the sensor, showing values for Dn, Dm, Dx, Sn, Sm, and Sx.

Feature	Status LED	Battery Icon
airPressure	Green	Full
airTemperature	Green	Full
hail	Green	Full
heatingTemperature	Green	Full
internalTemperature	Green	Full
rain	Green	Full
refVoltage	Green	Full
relativeHumidity	Green	Full
supplyVoltage	Green	Full
windDirection	Green	Full
windSpeed	Green	Full

```

7r1, Dn=167D, Dm=167D, Dx=167D, Sn=0.1M, Sm=0.2M, Sx=...
7r1, Dn=178D, Dm=178D, Dx=178D, Sn=0.2M, Sm=0.3M, Sx=...
7r1, Dn=165D, Dm=165D, Dx=165D, Sn=0.4M, Sm=0.4M, Sx=...
7r1, Dn=271D, Dm=271D, Dx=271D, Sn=0.6M, Sm=0.7M, Sx=...
7r1, Dn=205D, Dm=205D, Dx=205D, Sn=0.3M, Sm=0.3M, Sx=...
    
```

Status	Description
Running	The datasource is connected to the sensor and receives data from it.

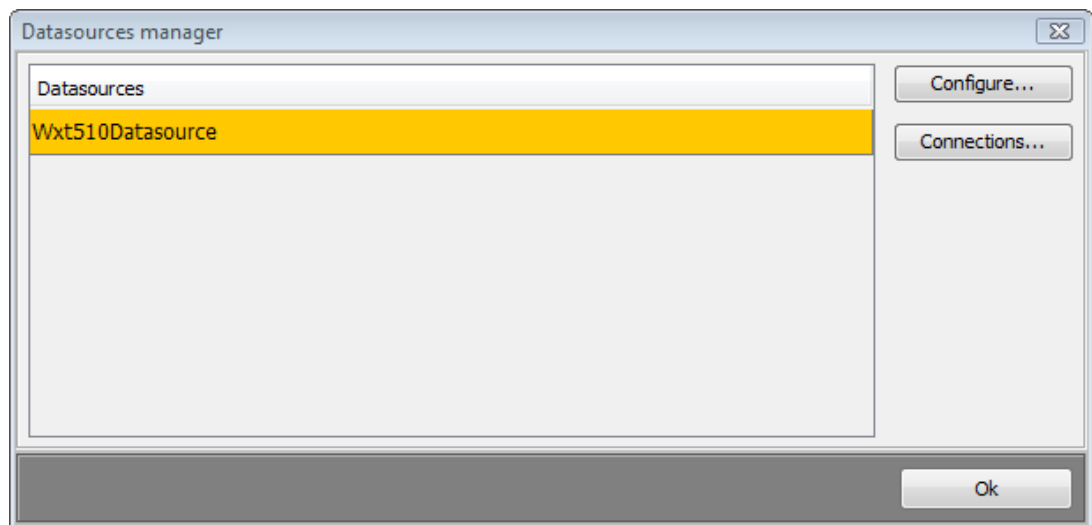
Connected	The serial port is opened but the datasource has not received any message from the sensor. This happens for example if the sensor is not connected, connected to a bad port or the connection baud rate is not the same on the device and on the datasource.
Error	The datasource cannot open the serial port. This generally happens when another software is connected to the same port. This status is generally associated with an error message.
Stopped	Datasource is simply stopped.

## The datasource manager

The datasource manager allows you to configure the different datasources.

To open the datasource manager just click "Datasources manager" in the "Managers" menu.

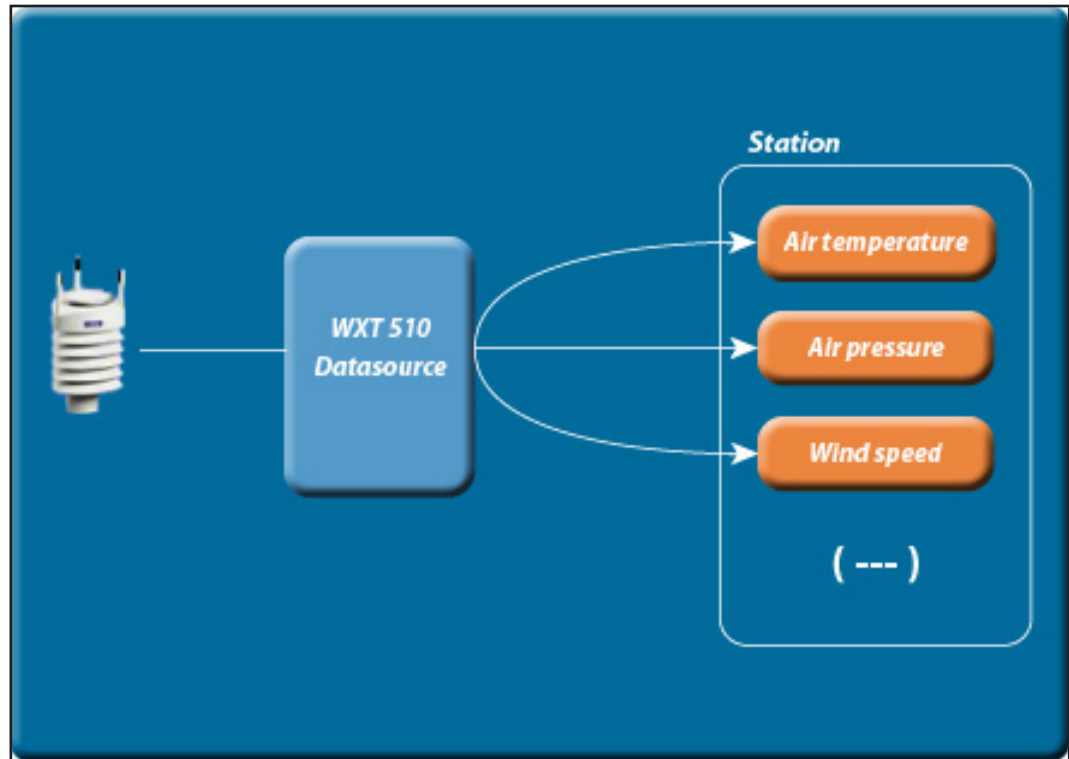
You should see the WXT510/  
WXT520 datasource or the  
Davis Vantage pro datasource.



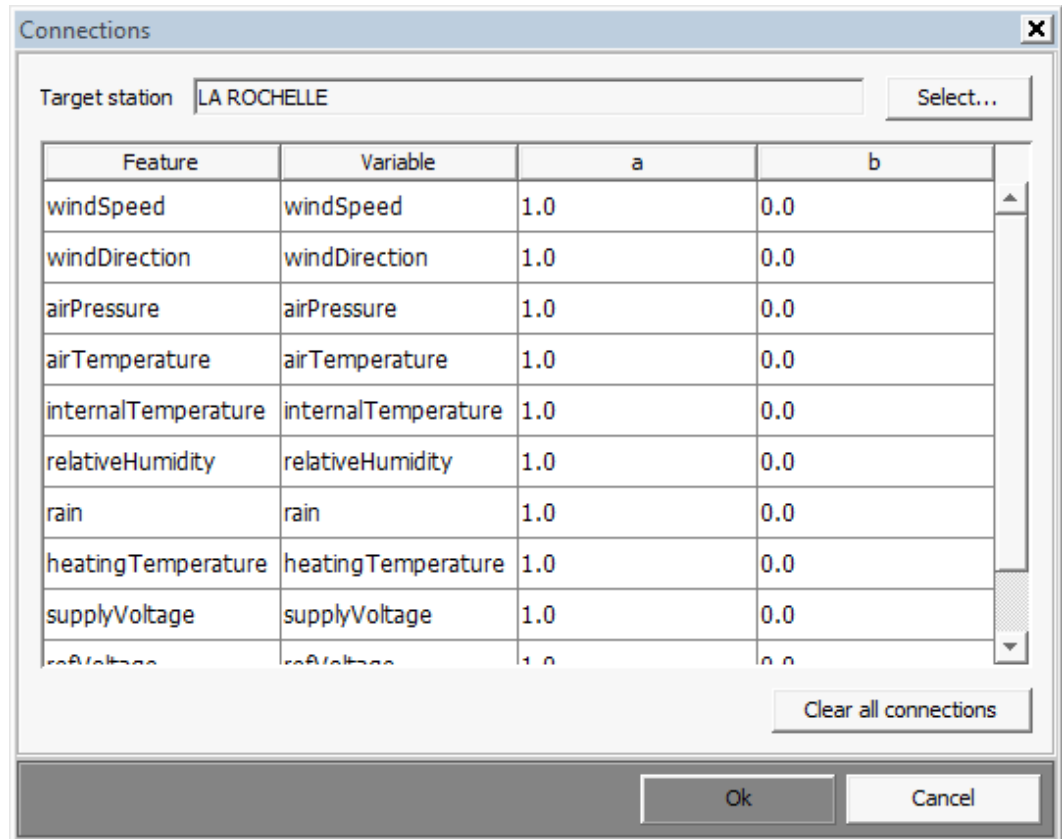
From this panel you can:

- Configure the datasource
- Establish or modify connections between the datasource and the station

Stations variables should be connected to datasource functions to get real time data from the sensor.



By clicking on the "Connections" button you can change connections and calibration between the datasource and the station.



This panel shows you the target station, i.e. the station on which the datasource will insert the data. The table makes the connection between datasource features and the stations variables.

Calibration is made by setting the a and b parameter according to the linear formula:

$$V = ax + b$$

Where V is the final value you will get in Elements and x is the value read by the sensor itself.

For example, if the atmospheric pressure read by the sensor is 1008.2 and you know that the sea level pressure is 1003.7 you can set b to -4.5 so that  $V = 1x - 4.5$ .

The variable value is  $V = 1008.2 - 4.5 = 1003.7$  hPa.

The software uses internally metric units, Celsius for temperature and HectoPascal for pressure. If you want to change default values for a and b, don't forget that the system uses internally metric units, Celsius for temperature and hectoPascal for pressure. Parameters a and b are applied to values in these units.

There are two main reasons to open this panel:

- You want to modify the calibration relative to a variable
- You want to target another station

You can also remove all connections by clicking the 'Remove all connections' button.

## Configuring the WXT520 sensor

The WXT520 sensor is connected to the system with the following parameters.

### Communications protocol

Most of these settings can't be modified. You can just modify the baud rate.

Name	Description
Communication protocol	Ascii automatic (A)
Serial interface	RS-232
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Data bits	8
Parity	None
Stop bits	1

### Wind sensor settings

To be internally consistent the update interval must be equal to the averaging time.

Name	Description
Update interval	1...60 seconds
Averaging time	1...60 seconds
Speed unit	M (m/s)
Direction correction	-180...+180
Sampling rate	1,2 or 4

### Pressure, Temperature and humidity settings

Name	Description
Update interval	1...60 seconds
Pressure unit	H (hPa)
Temperature unit	C (Celcius)

## Precipitations settings

Name	Description
Update interval	10...60 seconds
Precipitation unit	M (Metric)
Units for surface hits	M (Metric)
Autosend mode	T (Time based)
Counter reset	

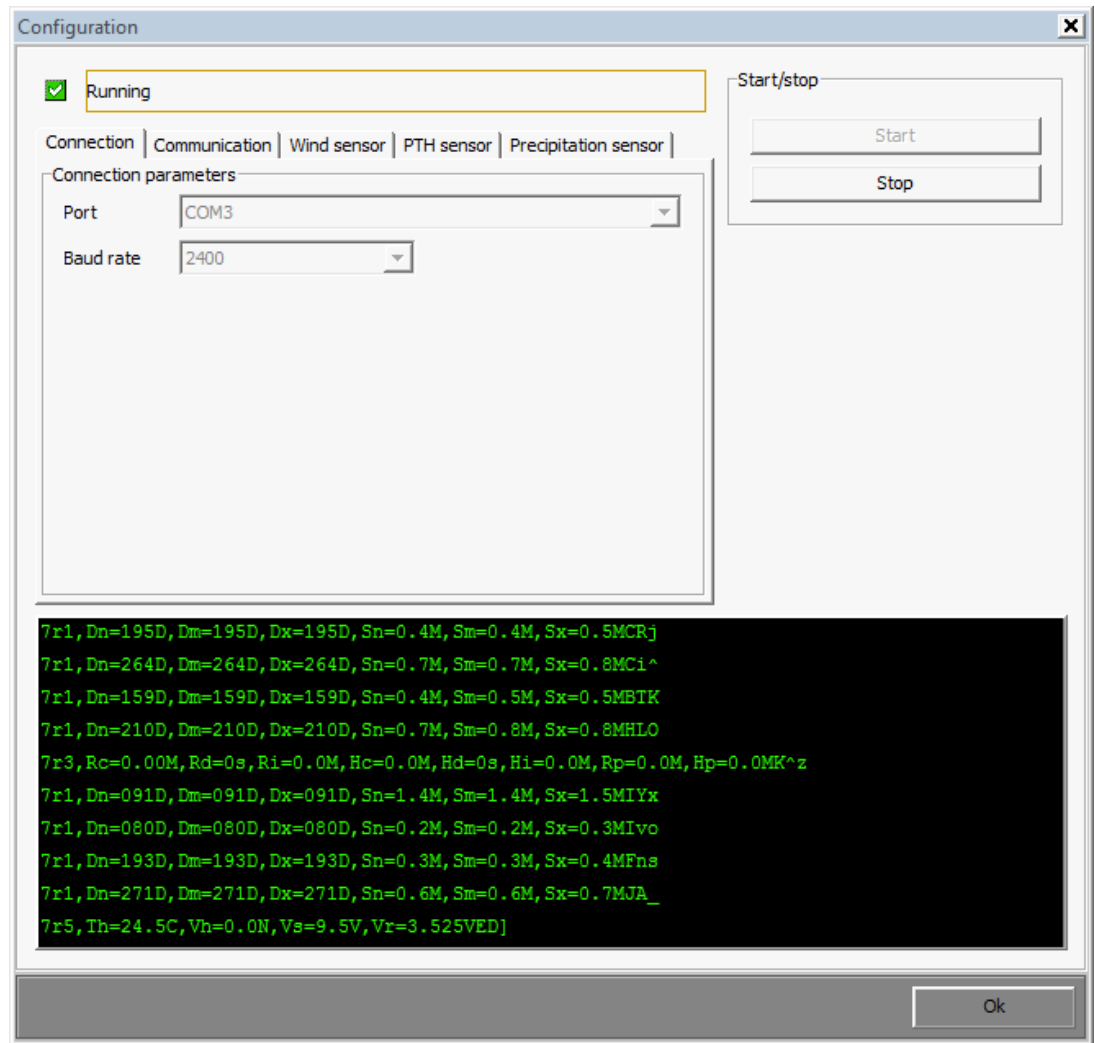
The WXT520 configuration panel contains six tabs:

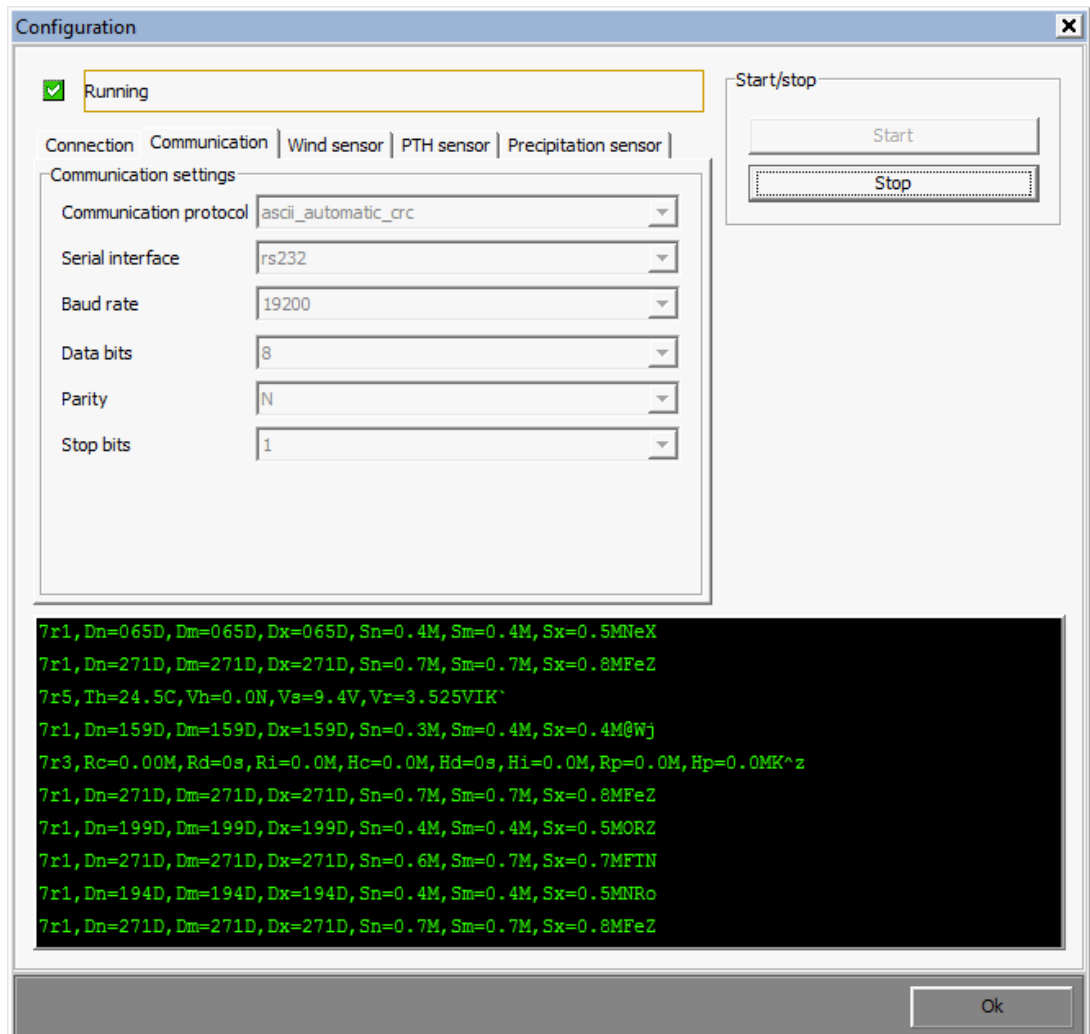
- Connection
- Communication
- Wind sensor
- PTH sensor
- Precipitation sensor

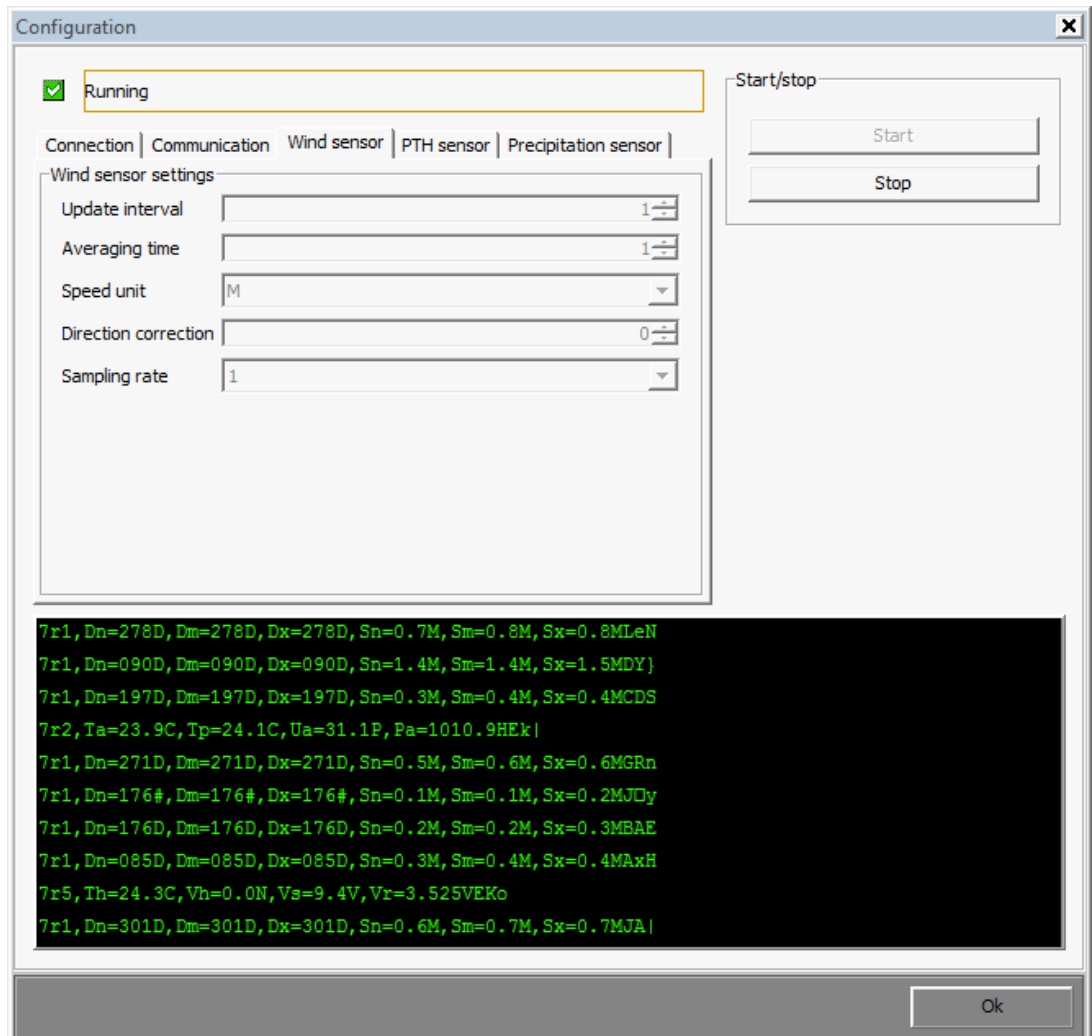
You can stop or start the datasource by clicking the control buttons on the right of the panel. You need to stop the datasource if you want to modify one or more parameters.

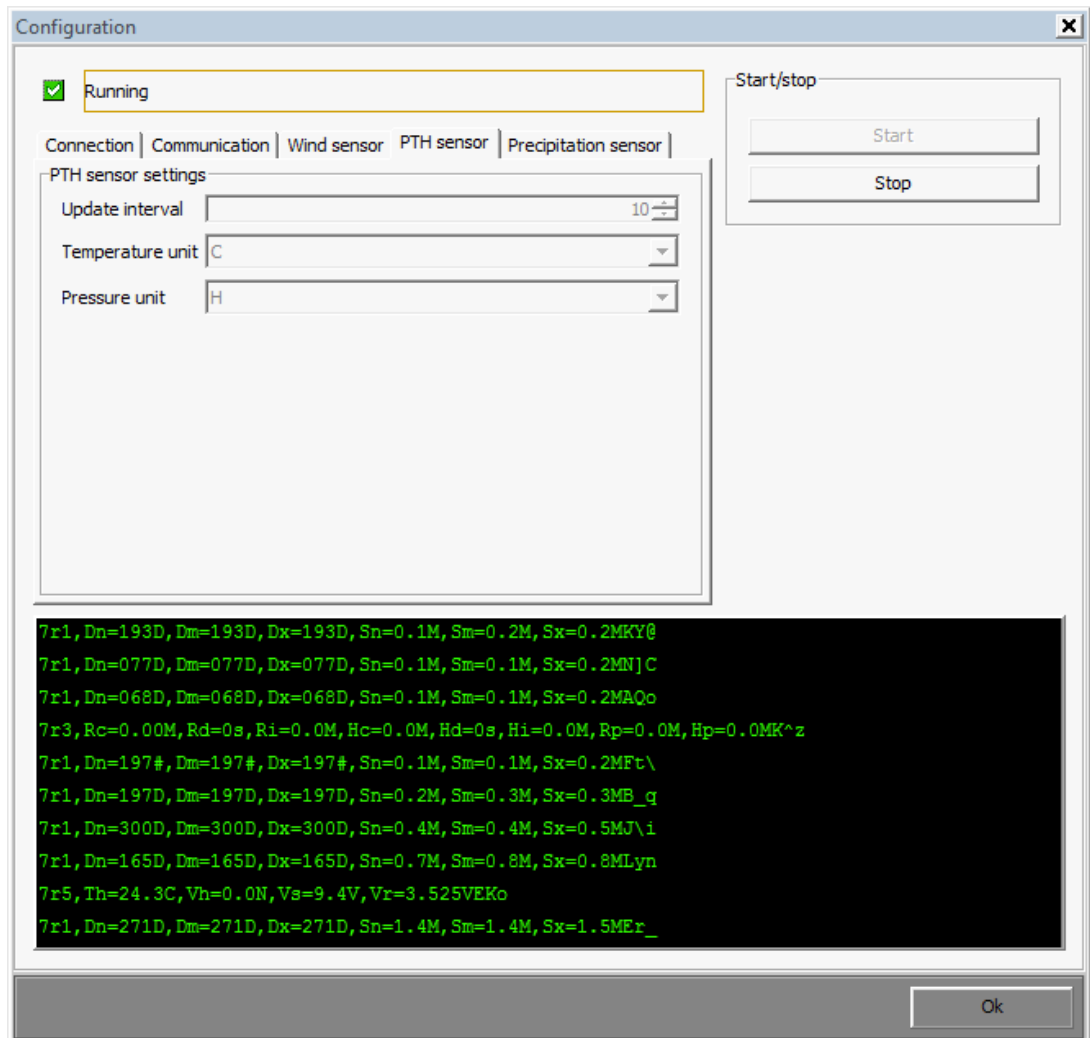
You can monitor in real time raw messages received by the server.

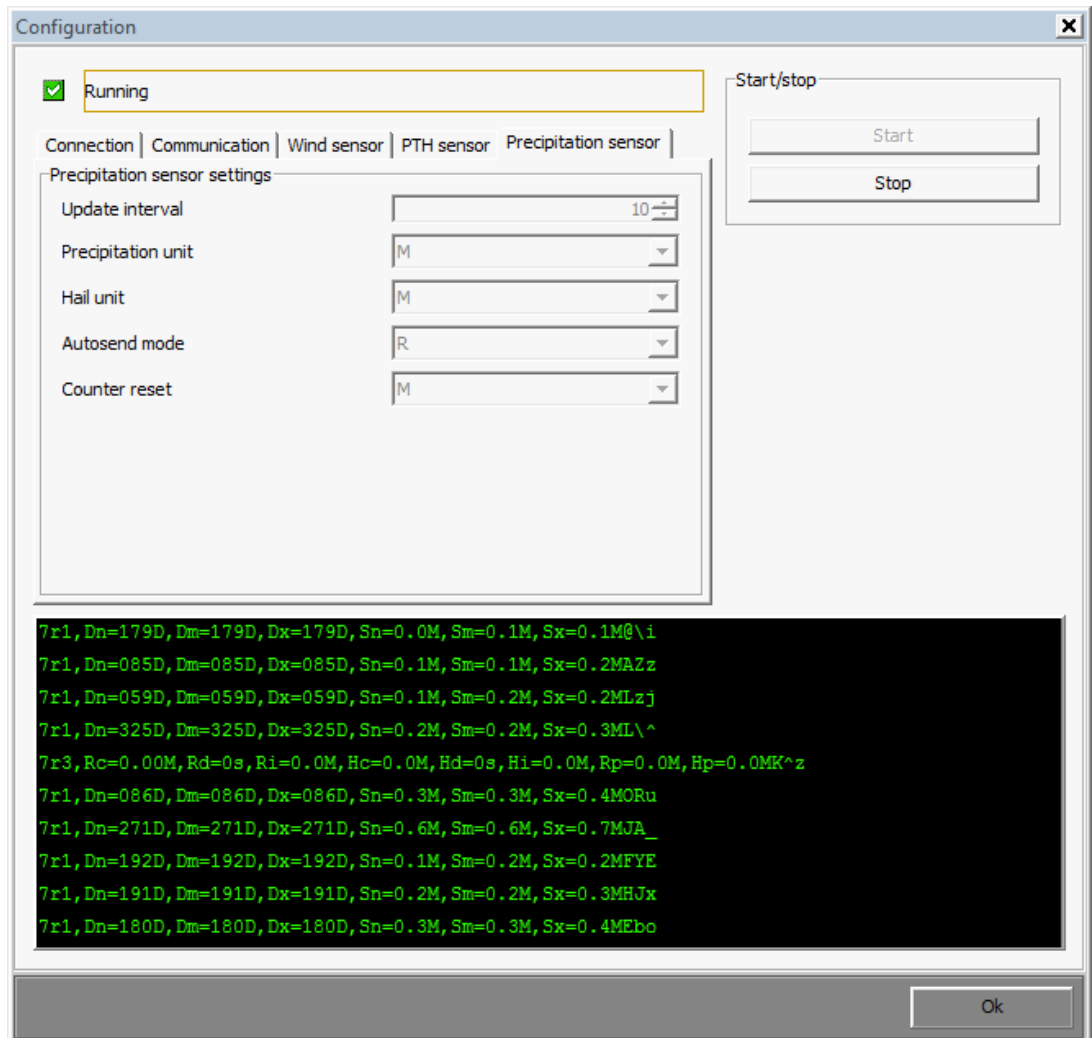
The connection tab allows you to set the COM port that is connected to your sensor. You should also set the baud rate used by the computer.











The concepts of stations and variables are the key concepts of the system.

This chapter covers:

- Concepts
- The navigator
- Managing stations

## Concepts

### Stations

A station is just a variable holder and contains attributes. When the station is created it gets a unique identifier that identifies the station. This one is in the license file you received.

Parameter	Comment
Country	The country of your station
Country subdivision	For some countries, subdivision are available
Station type	Wxt510, WXT520, Davis
Metar identifier	If your station has a METAR identifier
Place name	Any string, for example the city where the station is
Latitude	
Longitude	
Elevation	The elevation in meters
Time zone	The time zone is very important since determines how the data is stored in the database

### Variables

There are two kinds of variables.

- Basic variables are spot variable directly connected to your sensor
- Derivative variables

All variables have a name. These names are used by the system and it is important to have at least a small knowledge on the subject.

### Basic variables

Basic variables have a name made of a single word beginning with a lower case.

For example the system is delivered with these variable names.

Variable name	Pretty name (internationalized)
airTemperature	Air temperature
relativeHumidity	Humidity
airPressure	Pressure
windDirection	Wind direction
windSpeed	Wind speed
rain	Precipitation
internalTemperature	Internal Temperature
heatingTemperature	Heating temperature
heatingVoltage	Heating voltage
supplyVoltage	Supply voltage
refVoltage	Reference voltage
hail	Hail

Each variable name has a displayed name but the 'real' name of a variable is the one you can see in the first column.

### Derivative variables

Derivative variables provide a way to define the average, variation, lowest, highest values over a defined period of time.

Derivative variables are defined by three parameters:

- A simple variable V, for example air temperature
- A duration D, for example one day
- a derivation indicator

Indicator	Label	Value
mv_dl	Delayed	The value of V at (t - D)
mv_delta	Variation	The variation of V between t and (t - D)
mv_avr	Average	The average of V between t and (t - D)
mv_cum	Cumulated	The integrate of V between t and (t - D)
mv_high	Highest	The highest value of V between t and (t - D)
mv_low	Lowest	The lowest value of V between t and (t - D)
mv_cum_next	(Cumulated)	The integrate of V between t and (t + D)
mv_avr_next	(Average)	The average of V between t and (t + D)
mv_low_next	(Lowest)	The lowest value of V between t and (t + D)
mv_high_next	(Highest)	The highest value of V between t and (t + D)

### The computing module

The computing module is integrated to the server. The server computes in real time these values and broadcast them to the connected applications. To do this it keeps in memory all the variables values. However like memory is limited it's not possible for the module to keep all previous values. When this happens the module resynchronizes itself making a new request to the database. This is the reason why it is not possible to create derivative variables on variables that have no database support.

A derivative variable is written:

derivative(Indicator, BasicVariable, Duration)

### Generic and symbolic variables

The notation described in the previous chapter are called generic variables. They are called generic because they do not make any reference to a specific station.

Symbolic variables contain a reference to the station. As a station has a unique identifier, a symbolic variable contains both a generic variable and a station identifier (an integer).

Symbolic variable = Generic variable + Station identifier

More exactly a symbolic variable is described by the expression:

stationvar(StationId, GenericVar)

For example the following expressions represent symbolic variables:

- stationvar(1000, airTemperature)
- stationvar(1000, derivated(mv\_dl, airTemperature, duration(1, day))

### Examples

For example derivated(mv\_dl, airTemperature, duration(1, hour)) is the delayed variable on air temperature on a period of one hour. A spreadsheet representing this variables could look like this one:

Time	airTemperature	derivated(mv_dl, airTemperature, duration(1, hour))
7:00	15.2	14.8
8:00	16.3	15.2
9:00	17.1	16.3
10:00	18.3	17.1
11:00	20.6	18.3
12:00	21.5	20.6
13:00	21.4	21.5

Finally we need also to define the notion of duration. A duration is simply written duration(N, DurationType) where N is an integer. DurationType can be minute, hour or day.

For example duration(3, hour) represents a duration of three hours.

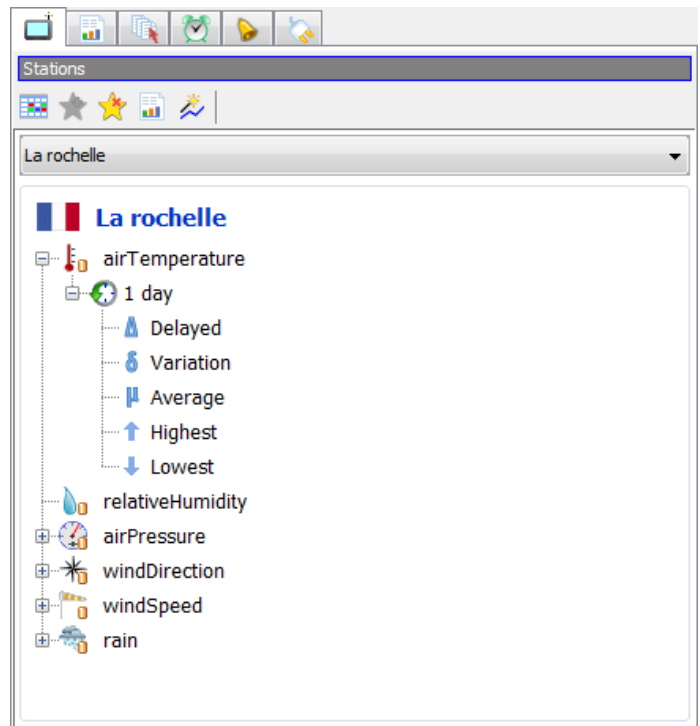
## The navigator

**The station tab is divided horizontally into two parts:**

- The stations and variables selection tree
- An access to variables charts that we will studied in the next chapter

The selection tree has five levels of hierarchy:

- The country
- The country subdivision (if any)
- The station itself: you will find here your station with the place name you completed in the initial wizard.
- Basic variables: if the variable is stored in the database you can see the database symbol in the lower right corner of the variable icon. The derivative groups
- The derivative variables themselves'



### Favorite stations

The favorite stations list allows an easy access to your station. The selection list box is in the upper part of the tab. You can get to one of your favorite station or show the entire tree. If you want your station to be added to the favorite list, just click on the 'Add to favorites' button once your station is selected. You can also right click the mouse button using the contextual menu.

You can remove a station from the favorite list by clicking the 'Remove from favorites' button or by right clicking the mouse button.

Of course if you have only one station in the tree, inserting it in the favorite list will avoid you to search in the whole hierarchy. This is why the initial installation wizard automatically insert the new station to the favorite list.

### The console

The console is probably the most useful window since it allows you to visualize all the data from your station, basic and derivative variables.

To open the console, select your station and click the console button.

Tabs allow you to select the durations of the derivative groups you created.

Units in the console are the one you choose in the preferences panel of the software. If you want to modify them just open it.

Variable name	Value	Delay	Delta	Average	Cumulated	Highest	Lowest
airTemperature (C)	16.7						
relativeHumidity (%)	40						
airPressure (hPa)	1,022.9						
windDirection	32	26	6	40		349	0
windSpeed (m/s)	9.6	8.1	1.5	8.5		12.2	2.8
rain (mm/h)	0.0						

You can change display options in the preferences panel. You can change the table options, the font used in the table and also blinking colors.

Even if cumulated variables are internally calculated, their values are not visible in the console except for precipitations. Indeed, cumulated values have a real signification for precipitation but not really for other variables like temperature.

### Creating derivative variables

It is not possible to create just one derivative variable. You have to create a group of derivative variables that will create automatically delayed, average, cumulated, delta, highest and lowest variables.

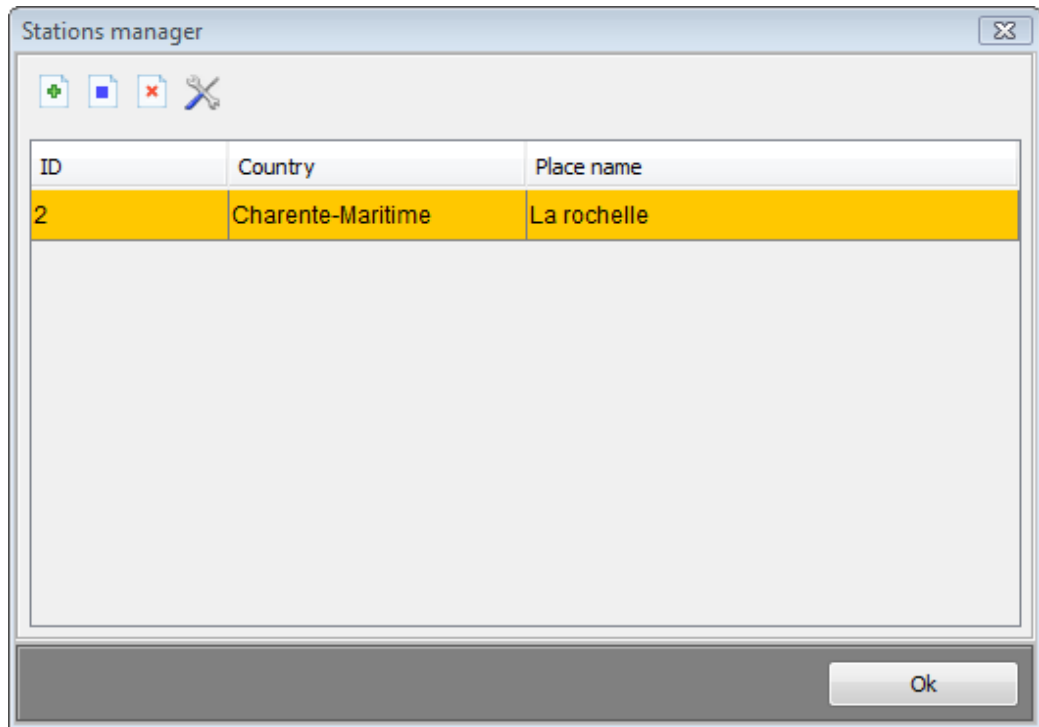
You just need to right click the basic variable you want to create the derivative group. A dialog box prompts for the duration. Then just click Ok.

It is also possible to delete a derivative variables group by right clicking the group, and choosing 'Delete' in the contextual menu.

The software lets you choose a large possibility of duration. You can choose a very small duration like one minute or a very long one larger than one year. But it is not possible to choose an ambiguous duration like one month or one year. You've got to choose thirty days or 365 days.

### The stations manager

To manage your station(s) select 'Stations manager' in the 'Managers' menu.

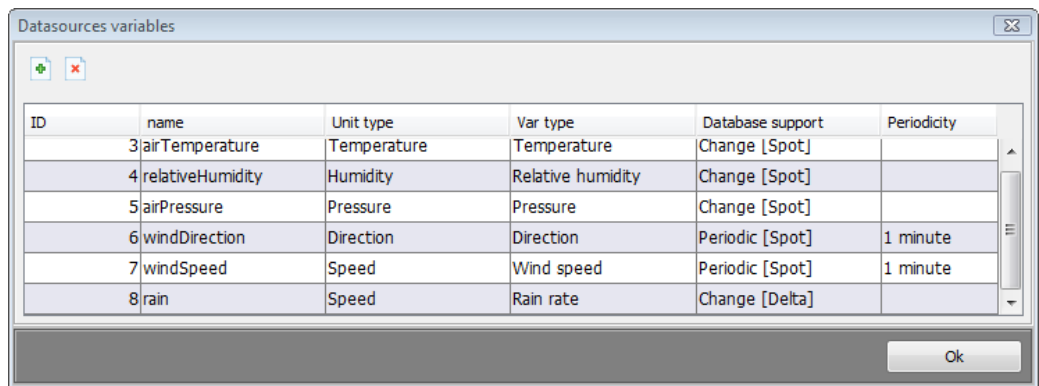


The four button icons at the top of the window allow to:

- Create a new station
- Modify a station: you can here modify data (like place name) relative to a station
- Delete a station
- Manage stations variables

### Managing stations variables

The station variables panel shows you variables in a table.



This table is made of six columns:

Name	Description
ID	The variable ID is generated by the system
Name	The variable name
Unit type	The unit type
Database support	The database support
Periodicity	The periodicity

There are three different options:

- 'None' does not store anything in the database. For example, this is the default option for the sensor voltage. In fact, keeping this information in the database is quite limited.
- 'Change' stores the value every time the value of the variable changes. For example if relative humidity value changes from 56.3% to 56.4% this new value will be written to the database default this option is enabled for temperature, humidity, atmospheric pressure and precipitations.
- 'Periodic' stores the value periodically according to a periodicity you should define. This option has been made for wind speed and direction since WXT510 sensor fires a message every second. It is not reasonable to store all these values in the database. By default wind values are stored every five minutes. We advise to keep these default values. If you set the period to one minute you need to use an Oracle 10g database with a real server machine



# Creating charts from the navigator

## 6

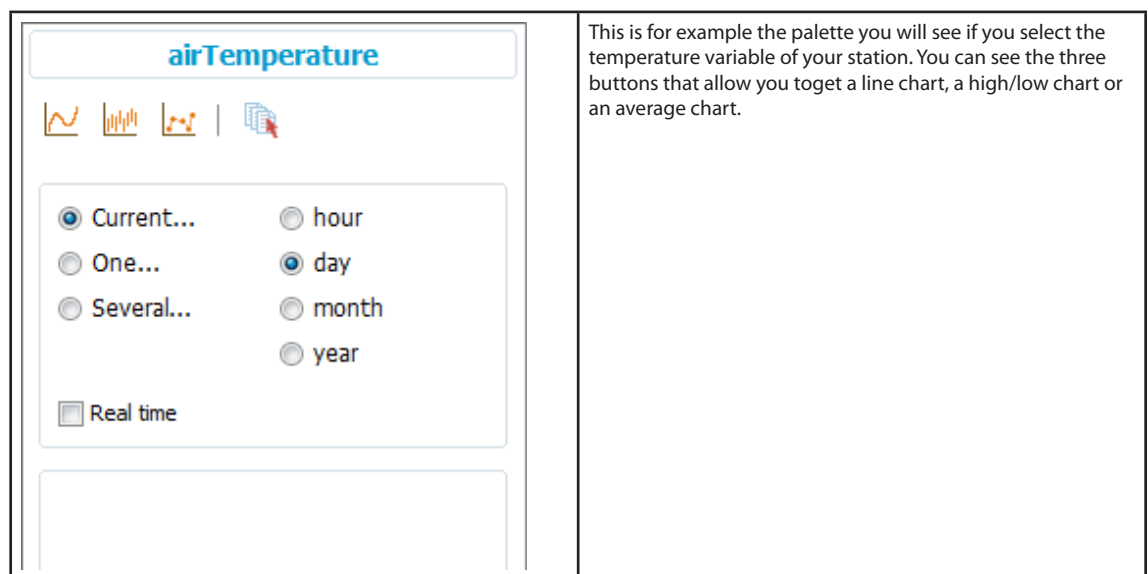
In a few mouse clicks you can easily make charts. To do this you have the choice between two powerful wizards. The variable chart wizard draws a chart for one variable. The station chart wizard can draw several variables in the same document.

This chapter covers:

- The variable palette
- Changing the default chart model
- The station chart wizard

### The variable palette

Selecting a basic variable in the stations panel will show the variable palette in the lower part of the stations tab. The variable palette allows you to create many types of chart.



Creating a chart is made in two steps: selecting the period and selecting the type of chart.

There are three ways to select the time interval of your chart:

- Selecting directly the current hour, month or year. To do this you just need to check the two radio buttons.
- Selection a day, a month or a year.

Selecting any time interval. In this case you will see two calendars allowing you to select the first day and last day of the interval.

airPressure

<input type="radio"/> Current...	<input checked="" type="radio"/> day
<input type="radio"/> One...	<input type="radio"/> month
<input checked="" type="radio"/> Several...	<input type="radio"/> year

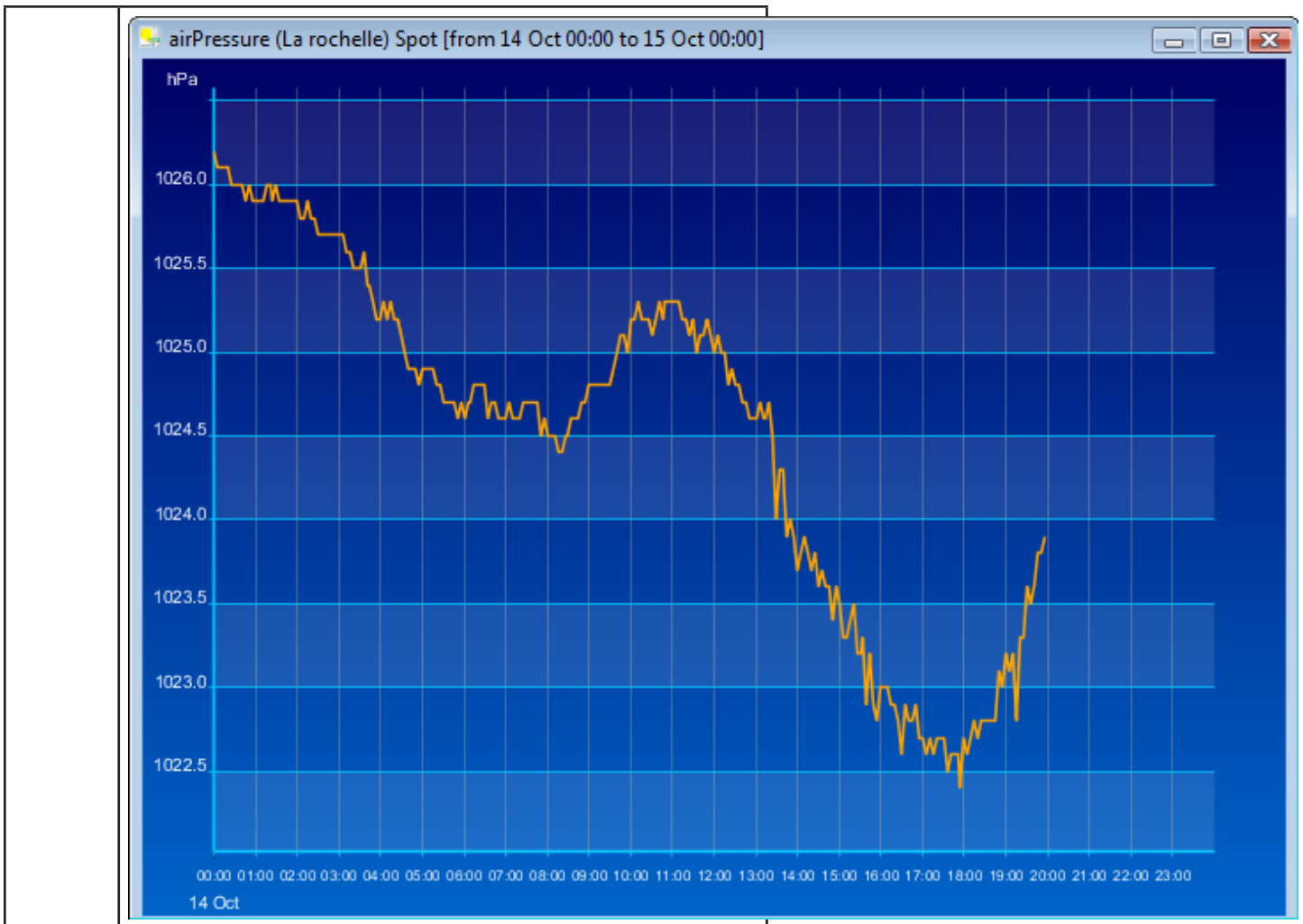
From date	To date
◀ October 2009 ▶	◀ October 2009 ▶
S M T W T F S	S M T W T F S
1 2 3	1 2 3
4 5 6 7 8 9 10	4 5 6 7 8 9 10
11 12 13 14 15 16 17	11 12 13 14 15 16 17
18 19 20 21 22 23 24	18 19 20 21 22 23 24
25 26 27 28 29 30 31	25 26 27 28 29 30 31

You can choose precisely the chart period. In this screenshot it starts from the 1st of November to the 5th of November.

The end date is always included.

In accordance with the selected time interval buttons allowing to select a chart type are shown or hidden. There are four different buttons:

- Continuous, draws a line plot of the variable.
- Average, draws the average variable on a daily or monthly basis.
- High/Low, draws an high/low chart of the variable on a daily or monthly basis.
- Cumulated, draw the cumulated value of the variable on a daily or monthly basis.



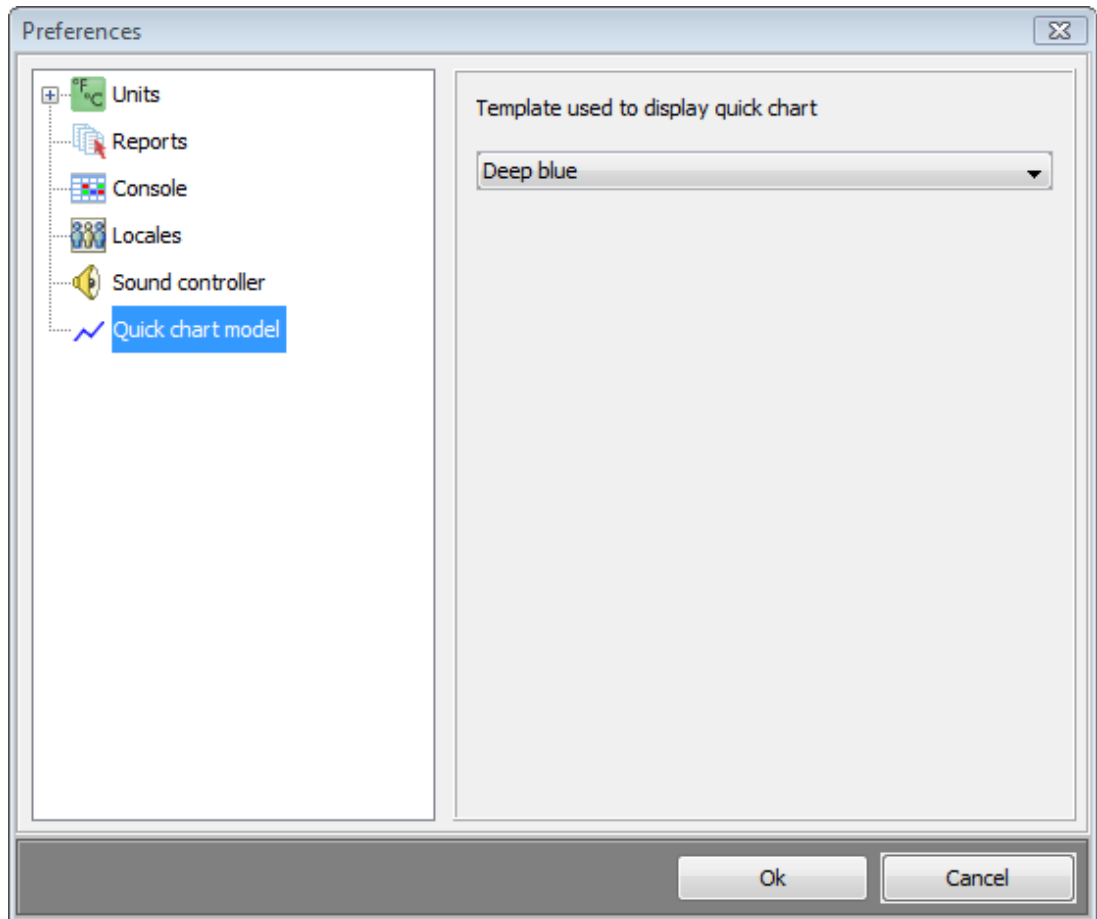
The software checks the duration of the chart and the variable type to offer the different types of chart. For example cumulated is only available for the precipitation variable.

By clicking one of the chart buttons you'll get the chart in the working area. In some cases, for example if you ask for average temperature during one week the software displays a contextual menu asking you to choose between a daily or hourly period.

For short chart period - one hour or one day - a check box named 'Real time' allows you ask the software to update automatically the chart.

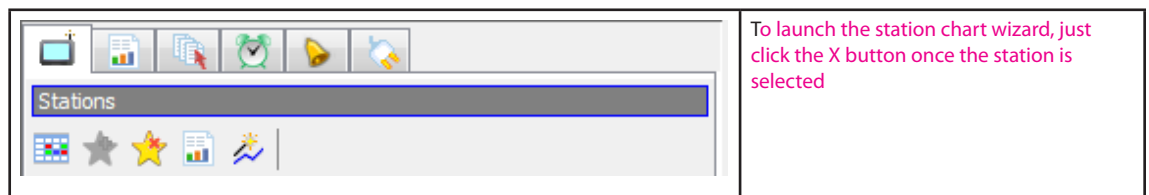
## Changing the default chart model

The system includes a few charting models with their own style. You can change the default model by selecting it the Preferences panel of the software.



## The station chart wizard

The station chart wizard is much more powerful than the variable chart wizard. It allows you to draw more than one variable in a single chart and also to choose the style of the charts.

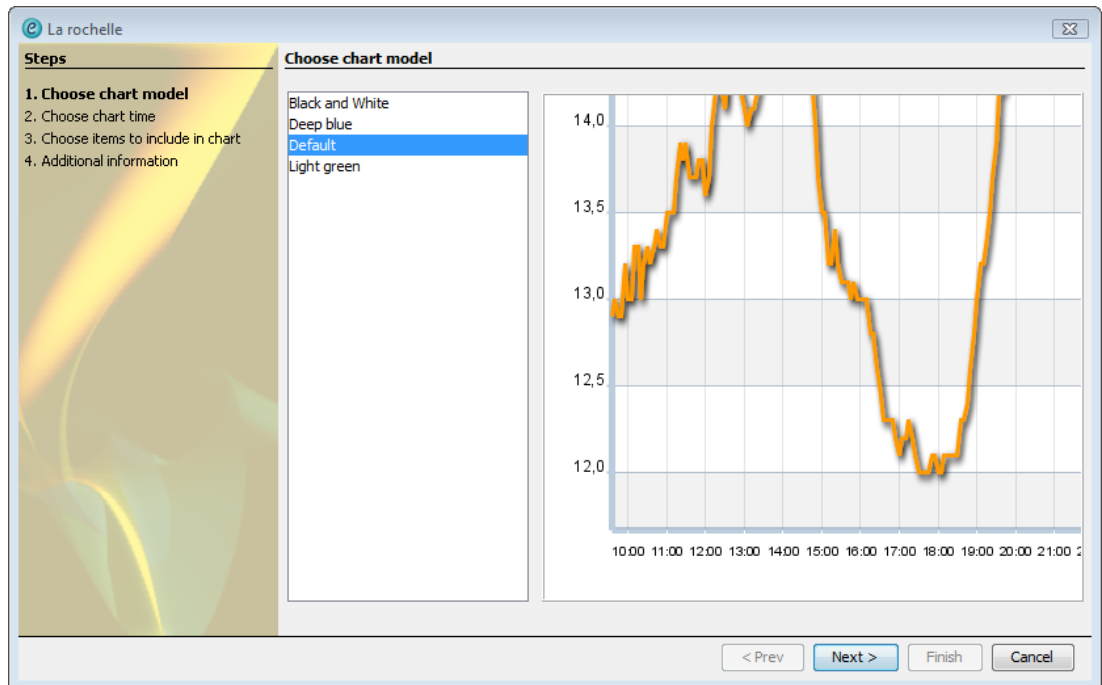


The wizard consists of four steps:

- Choose the chart model
- Choose the chart time interval
- Choose items (variables and styles) to include
- Setting a name to the chart

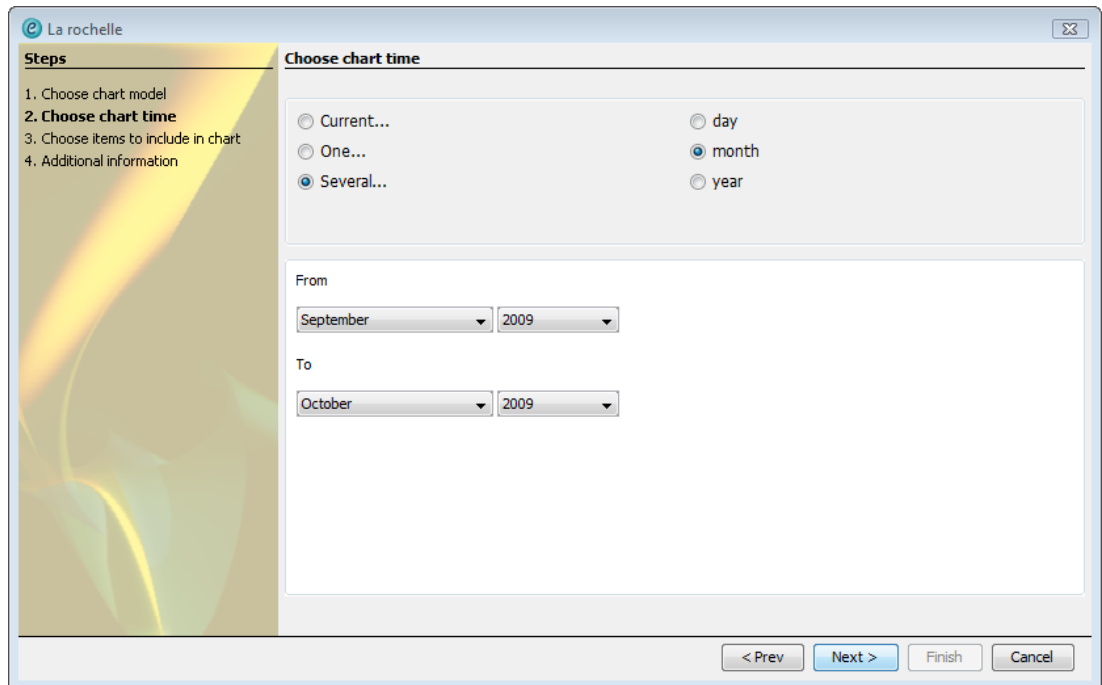
### Choosing the model

The first panel tells you to choose the chart model.



## Choosing the period

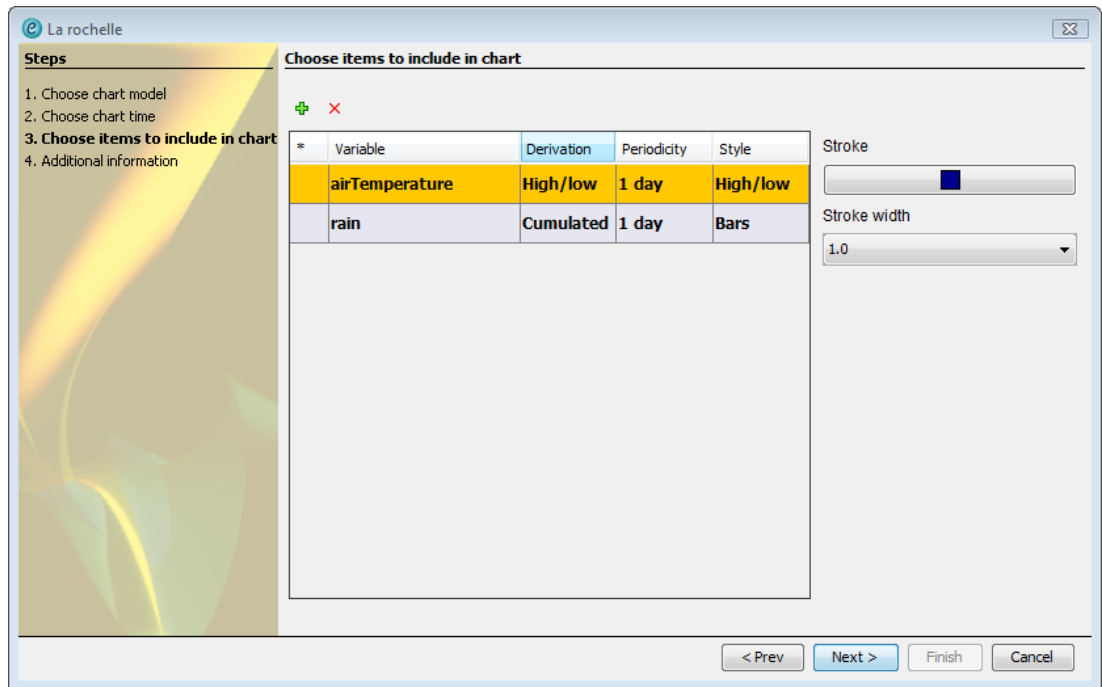
The second panel lets you select the time interval like in the variable palette.



The chart period starts the first of November and ends on the first of January at 00:00.

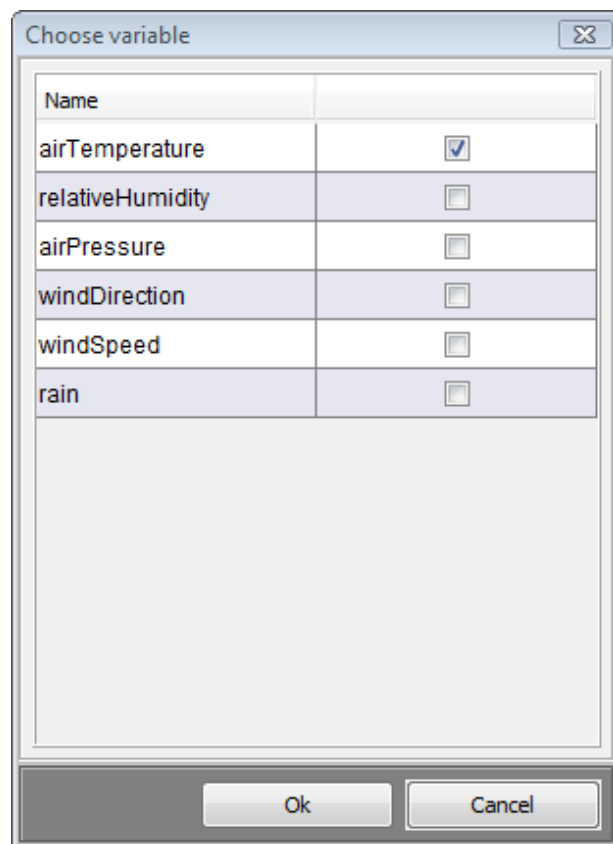
## Choosing chart items

In this panel you can add variables to the chart.



The upper part of the window contains two buttons allowing you to add and remove an item.

By clicking on the 'Add' button you can select the basic variable.



# Creating reports from the navigator

## 7

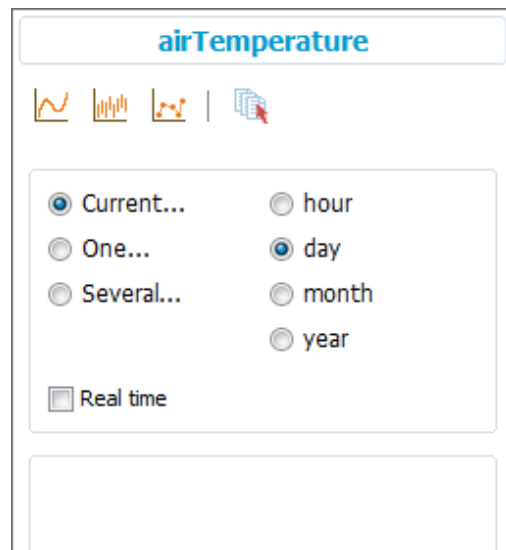
The variables palette allows you to generate charts as explained in the previous chapter but you can also generate reports.

This chapter covers:

- Generating a report from the variables palette
- Printing and exporting results

### Generating a report from the variables palette

Like for charts you should first create a variable in the stations tree of the station tab.



Selecting the time interval is the same as described for the chart wizard.

To generate a report instead of a chart you just need to click on the X button. According to the length of the time interval the software will generate an hourly, daily or monthly report. In some cases the software shows a contextual menu asking you to choose the report periodicity.

## airTemperature

Hourly report

Daily report

Current...

One...

Several...

day

month

year

From date

◀ December 2009 ▶

To date

◀ December 2009 ▶

S	M	T	W	T	F	S
	1	2	3	4	5	
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

S	M	T	W	T	F	S		
				1	2	3	4	5
6	7	8	9	10	11	12		
13	14	15	16	17	18	19		
20	21	22	23	24	25	26		
27	28	29	30	31				

For a time interval of four days the popup menu asks you to choose between an hourly or daily report.

According to the chosen variable the software displays in the working area a report consisting of several columns displaying useful information like the variable value itself, average, high, low and cumulated values.

Date / time	airTemperature (Average)	airTemperature (Highest)	airTemperature (Lowest)
Tue 01 September	19.9	20.9	18.6
Wed 02 September	19.8	21.1	18.5
Thu 03 September	18.4	19.8	16.1
Fri 04 September	17.5	18.6	16.3
Sat 05 September	16.4	18.6	12.2
Sun 06 September	18.5	25.6	11.9
Mon 07 September	19.1	24.7	14.2
Tue 08 September	22.3	29.3	15.9
Wed 09 September	22.9	29.8	17.3
Thu 10 September	22.7	28.7	17.6
Fri 11 September	19.8	23.4	15.9
Sat 12 September	19.1	23.8	14.1
Sun 13 September	19.0	24.1	14.3
Mon 14 September	16.9	20.5	13.0
Tue 15 September	14.7	16.7	12.7
Wed 16 September	14.8	17.2	12.0
Thu 17 September	16.8	20.5	15.2
Fri 18 September	17.6	21.7	14.4

A daily report for a month on the temperature variable.

## Printing and exporting results

You can print a report by selecting it, and choosing Elements -> Print in the main menu.

You can export a report as a CSV document by selecting it and choosing Elements-> Export in the main menu.



The previous chapter explained how to quickly generate a simple report relative to a variable. Reports can be completely customized to display exactly the data you need.

This chapter covers:

- Template and multistation reports
- Creating a new report
- Setting the report type and name
- Setting the time set
- Setting the report columns
- Managing reports
- A complete example

## Template and multistation reports

There are two types of reports: template and multistation.

In a template report the variables that it contains are generic variables. This means that they don't reference a particular station. When you run the report the software needs to know the target station.

In a multistation report the variables that it contains are symbolic variables. This means that each variable references a particular station. When you run the report the software knows already the station and will not ask you the target station.

Maybe you wondering if it is better to create template or multistation reports. Most of the time choose to create template reports - the default option - because the report is reusable for another station. You can create a multistation report if you want to make comparisons between two stations. For example if you have two sensors (and stations), the first one at un meter height and the other on at ten meter height, you can compare temperature at one and ten meters.

## Creating a new report

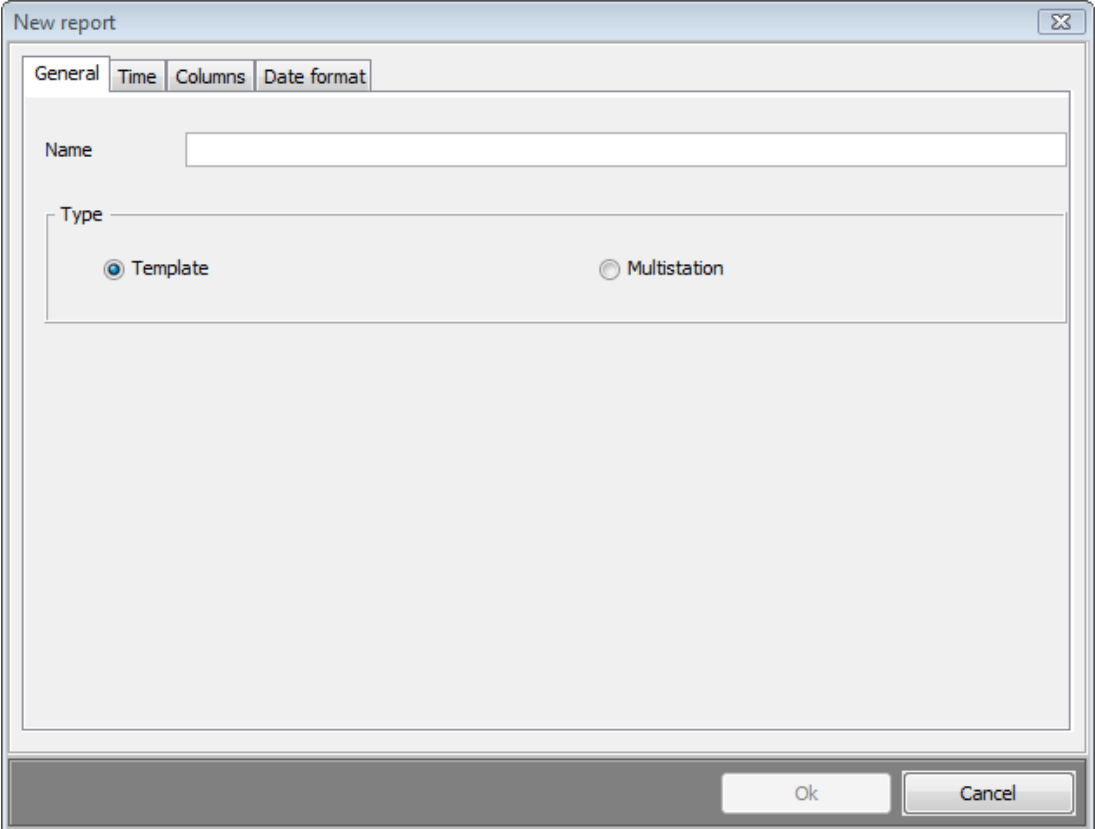
To create a new report you can choose Report -> New in the main menu or just click the 'New report' icon in the tool bar.

There are four steps to create a report each of them corresponding to the four tabs of the report panel:

- The type and name of the report
- The time interval of the report
- The columns to include in the report
- The date/time format

## Setting the report type and name

The first tab of the report panel allows you to set the report name and type.



The screenshot shows a dialog box titled "New report" with a close button in the top right corner. The dialog has four tabs: "General", "Time", "Columns", and "Date format". The "General" tab is selected. Inside the "General" tab, there is a "Name" label followed by a text input field. Below that is a "Type" label followed by two radio button options: "Template" (which is selected) and "Multistation". At the bottom right of the dialog, there are "Ok" and "Cancel" buttons.

## Setting the time set

The second tab allows you to define the set of date/times of the first column of the report. It is very important to understand how time set are defined since time sets are also used in chart generation.

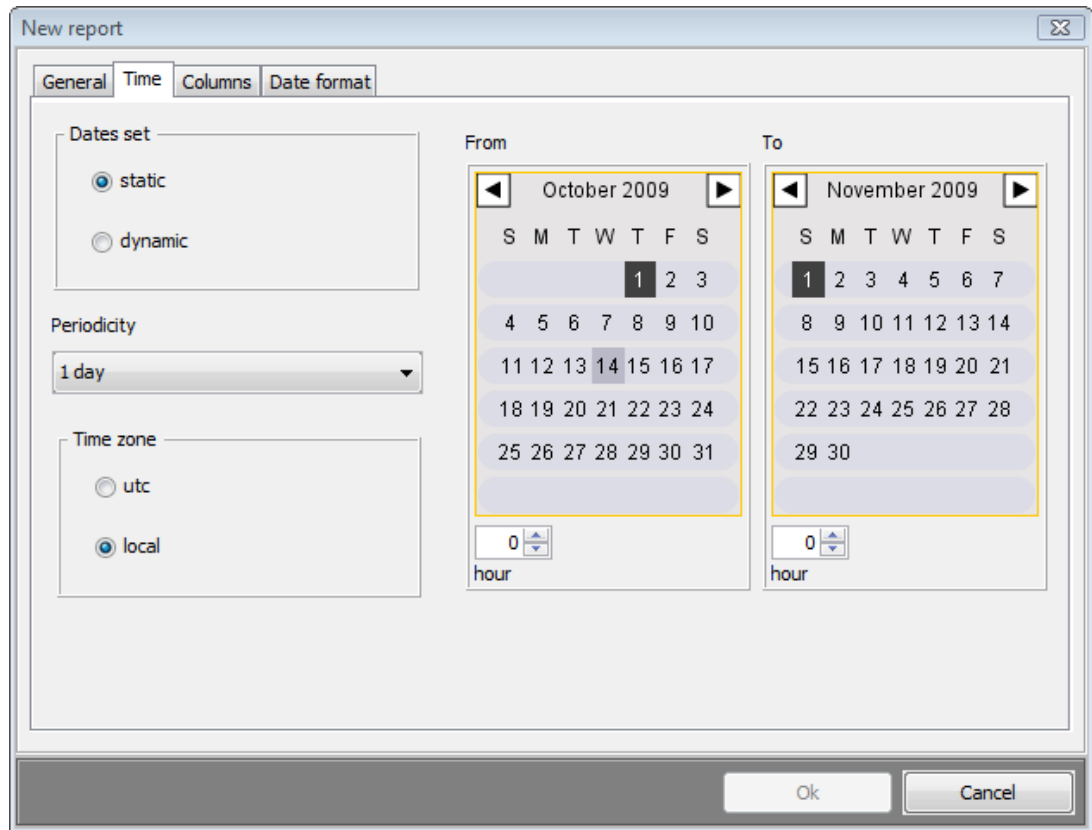
Selecting a static or dynamic set

There are two different ways to define a time set:

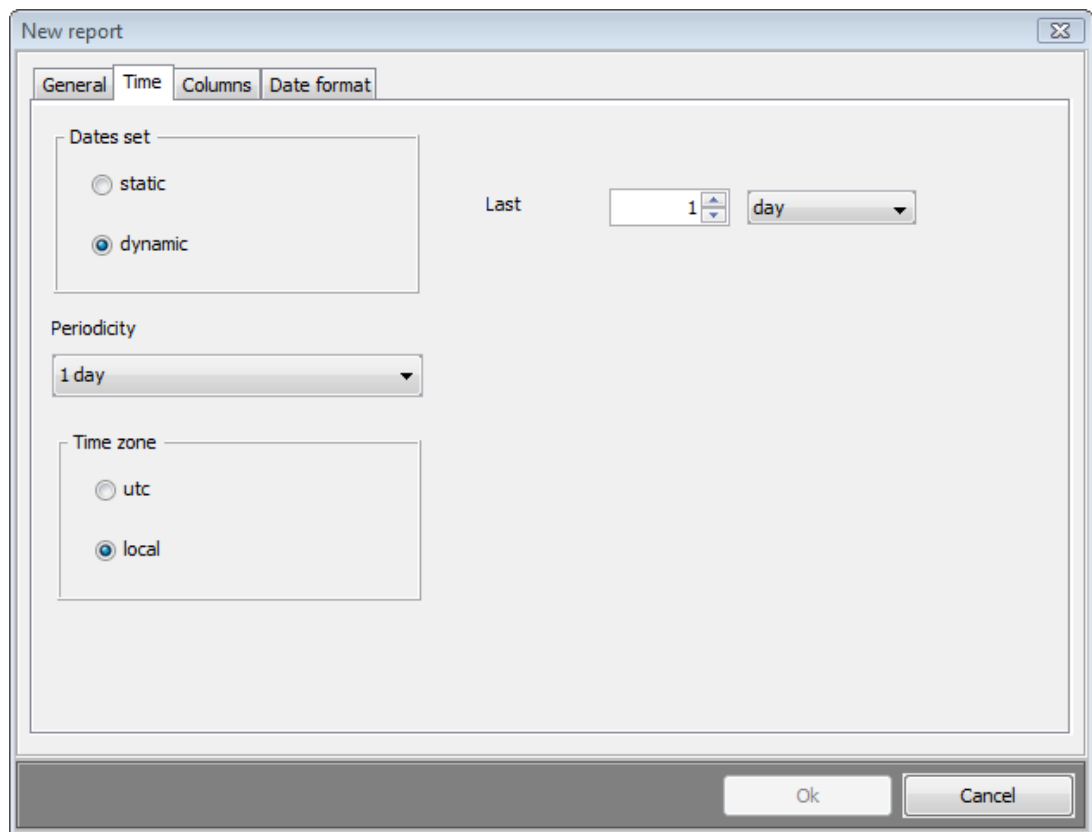
- Static time set means you select to dates
- Dynamic means that the starting date will be calculated each time you run your report

You need to select the static or dynamic radio button.

If you choose a static date set with a day periodicity you have to select the starting and ending date. The starting date is always included in your set but the ending date is not.



If you choose a dynamic set you have to specify the duration of your report in days, hours or minutes.



## Selecting the periodicity

The periodicity is the duration between two consecutive points.

According to the periodicity the starting date cannot have any value. This is the detail of available periodicities and available dates.

Periodicity	Date format
1 year	The starting date is a first of January at 00:00:00.
6 month	The starting date is a first of January at 00:00:00 or a first of July à 00:00:00.
3 month	The starting date is a first of January, April, July or October at 00:00:00.
2 month	The starting date if a first of January, march, April... November at 00:00:00.
1 month	The starting date is a first of January of any month at 00:00:00.
1 day	The starting date is any day at HH:00:00.  This periodicity allows you to get for example the temperature at 8:00 every day. In some cases this is very useful.
12 hours	The starting date is any day at 00:00:00 or 12:00:00.
6 hours	The starting date is any day at 00:00:00 , 06:00:00, 12:00:00 or 18:00:00.
3 hours	The starting date is any day at 00:00:00 , 03:00:00, 06:00:00, 09:00:00, 12:00:00, 15:00:00, 18:00:00, or 21:00:00.
2 hours	The starting date is any day at 00:00:00 , 02:00:00, 04:00:00, 06:00:00... 22:00:00.
1 hour	The starting date is any day at 00:00:00 , 01:00:00, 02:00:00, 03:00:00... 23:00:00.
30 minute	The starting date is any day but time format is HH:00:00 or HH:30:00.
20 minute	The starting date is any day but time format is HH:00:00, HH:20:00 or HH:40:00.
15 minute	The starting date is any day but time format is HH:00:00, HH:15:00, HH:30:00 or HH:45:00.
10 minute	The starting date is any day but time format is HH:00:00, HH:10:00, HH:20:00, HH:30:00, HH:40:00 or HH:50:00.
5 minute	The starting date is any day but time format is HH:00:00, HH:05:00, HH:10:00, HH:15:00, HH:20:00, HH:25:00, HH:30:00, HH:35:00, HH:40:00, HH:45:00, HH:50:00 or HH:55:00.
1 minute	The starting date is any day but time format is HH:MM:00.

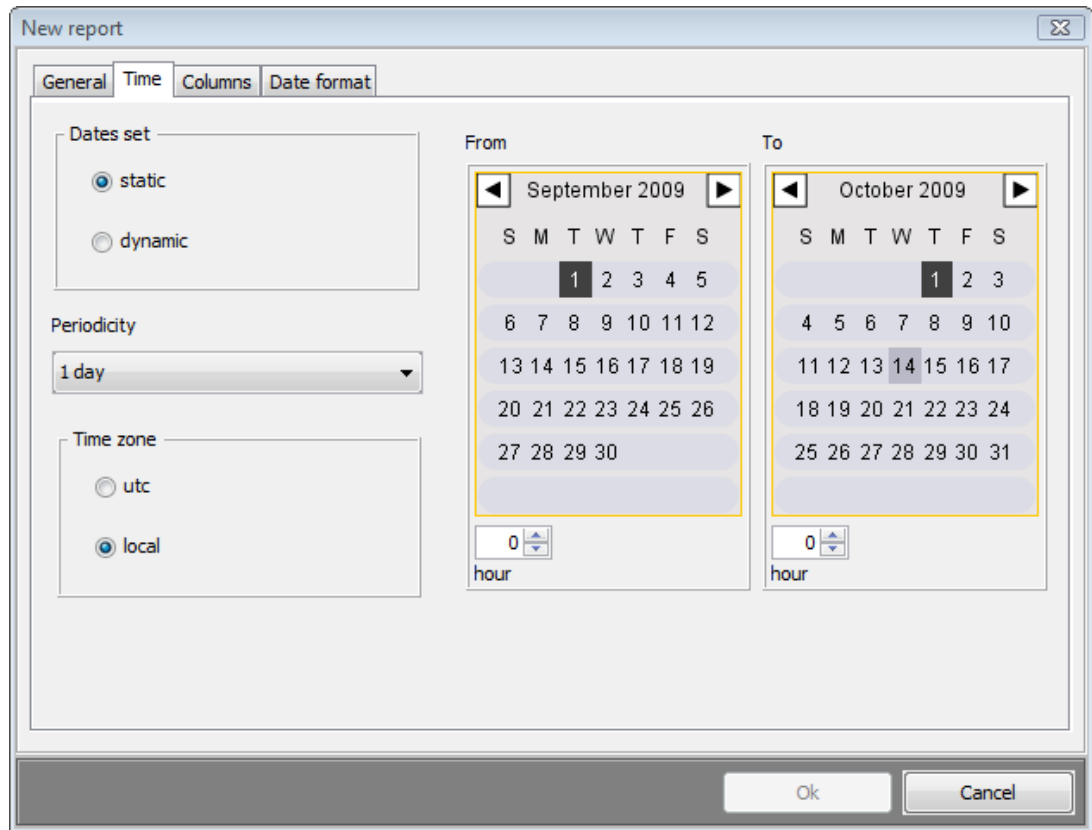
According to the periodicity you choose the right side of the panel allows you to select the starting and end dates.

## Selecting the starting and ending date

If you choose to create a static time set you need to specify the starting date and the ending date. The starting date is included in the time set but the ending date is not.

According to the periodicity the date you can select includes just the year, year and month, year, month and day of month...

In this example the periodicity is set to one day. You can choose two days in the two calendars and also the hour of the starting day.



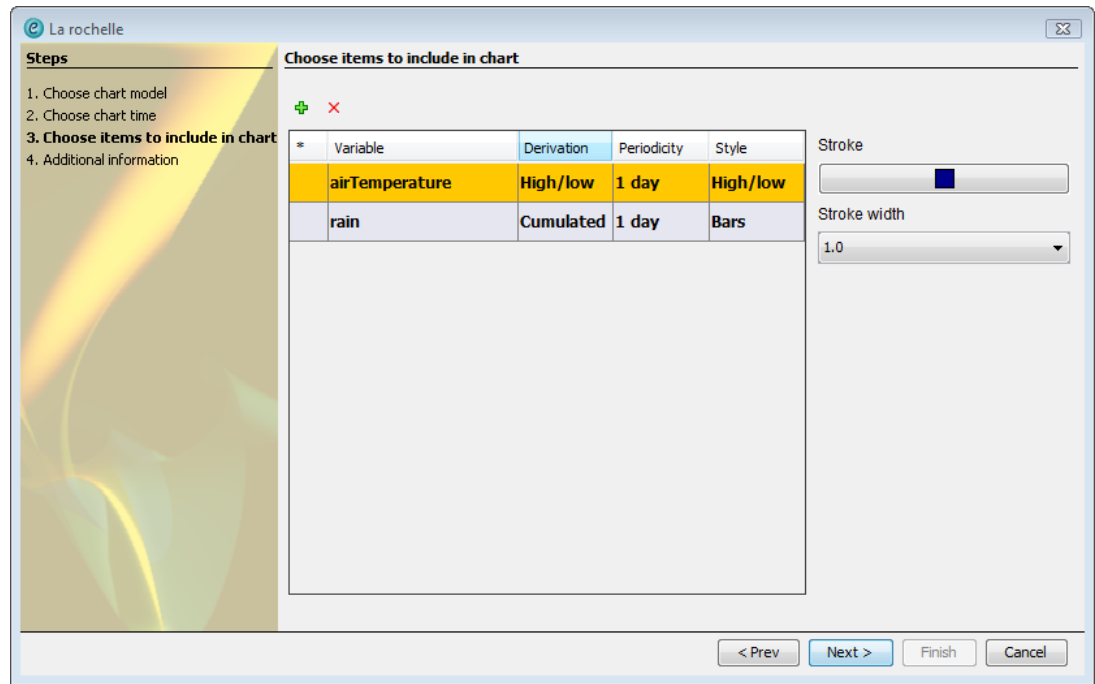
### Selecting the time zone

You need to specify the time zone. You can choose either UTC or local. Local means the station's time zone.

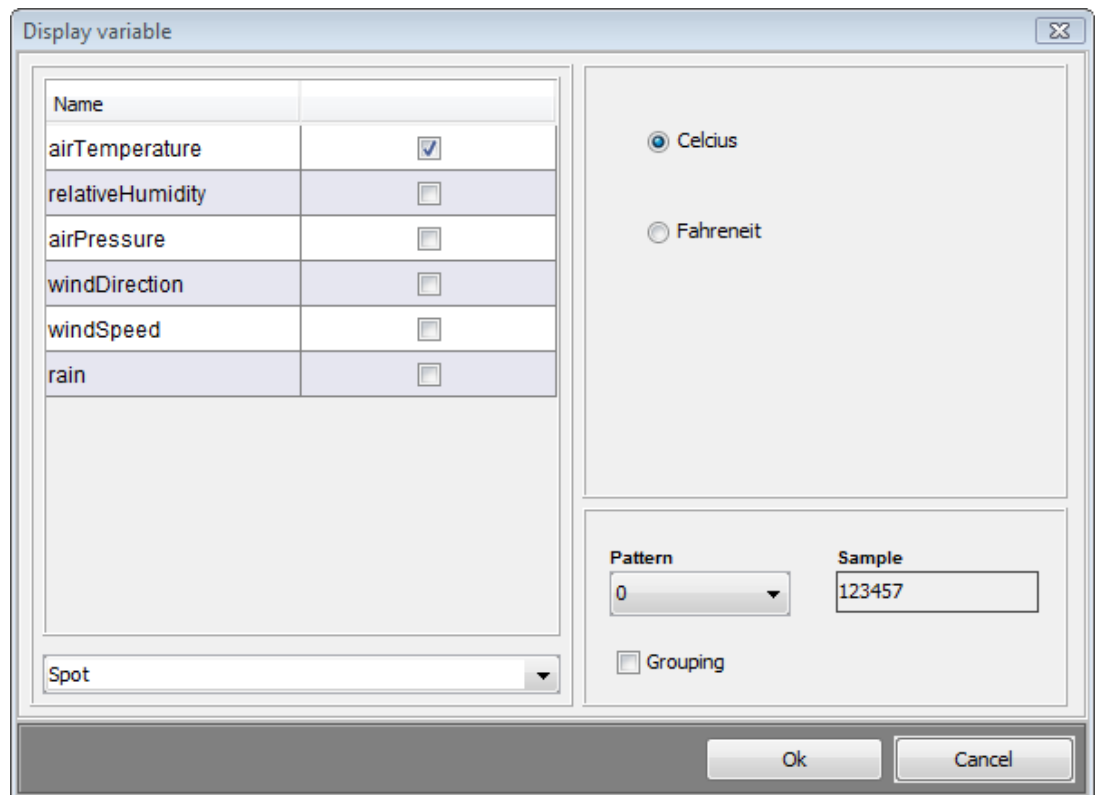
### Setting the report columns

The third tab allow you to insert the data you want to include in your report.

From the "Columns" tab you can add and remove columns with the buttons.



If you click the add button, the "Add column" window opens.

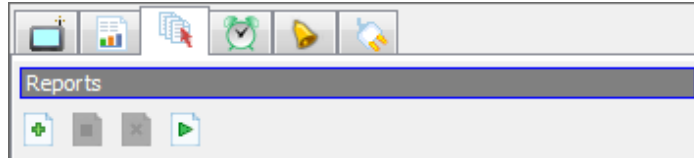


You need to select the variable you want to include, the unit and the decimal format.

You can let the default option to show the spot value of the variable. But you can also select a derivative variable. The combo box allows you to select a derivative variable by selecting a derivation indicator.

## Managing and running reports

Once you have created a report you can retrieve it from the navigator.



From the navigator you can easily manage your report.

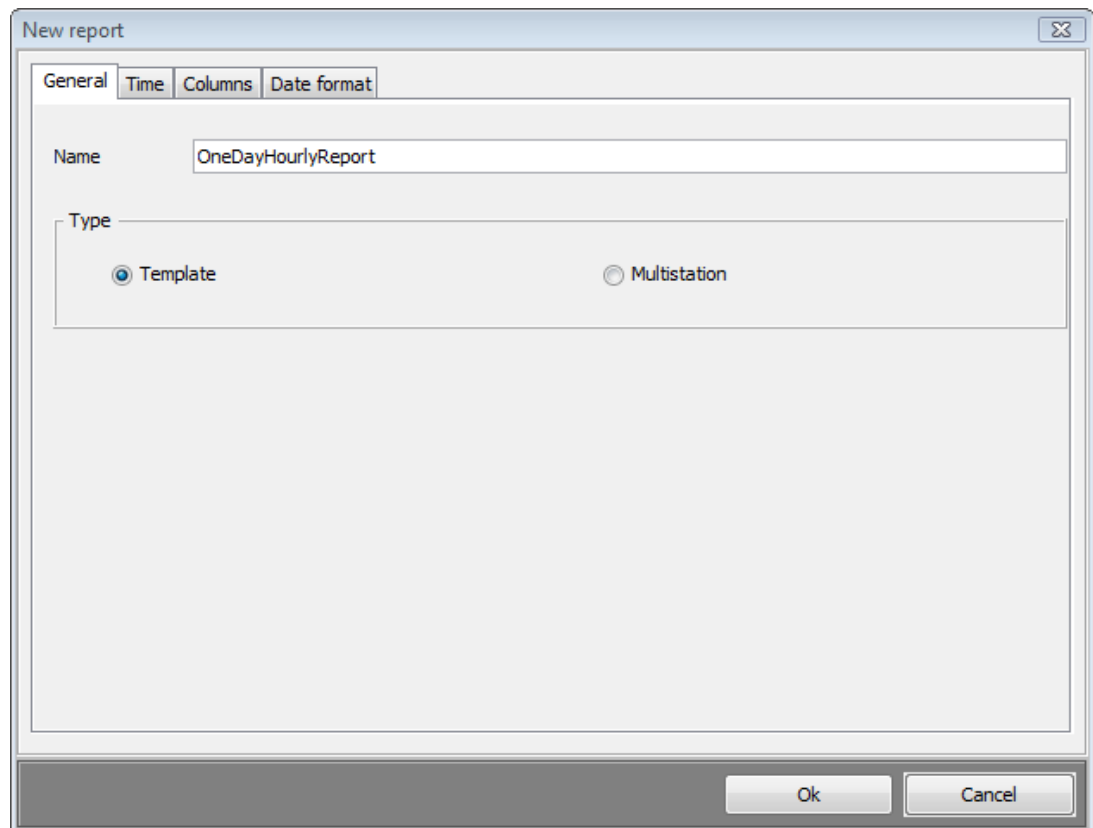
- The New button allows you to create a new report.
- The Open button allows you to edit and modify the selected report.
- The Remove button allows you to remove the selected report.
- The Run button runs your report. If the report is a template report you will be prompted to select the target station.

## A complete example

This example shows you how to make an hourly report (on one day) with useful information.

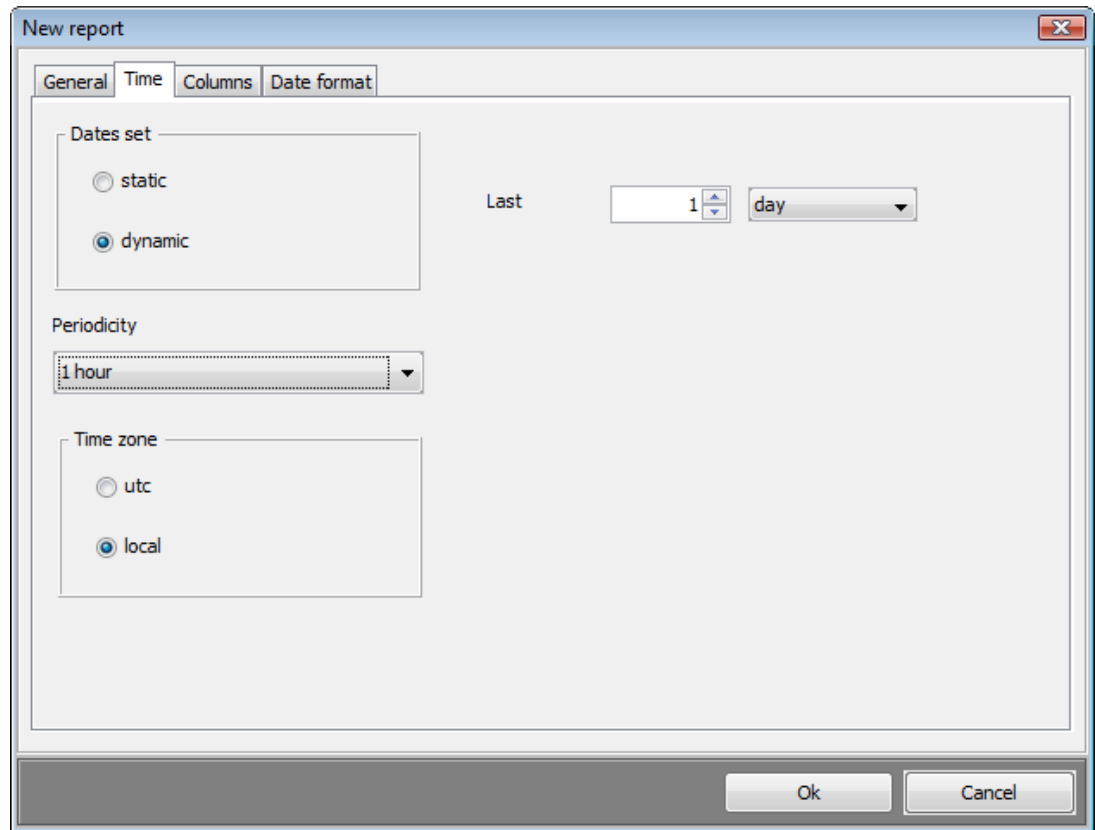
Click the new report button to open the “New report” panel.

Let the template report type selected and set the name to 'OneDayHourlyReport'.



Then click the time tab.

Select the dynamic radio button since we want a dynamic date set. Since we want an hourly periodicity select "1 hour" in the periodicity combo box. The report duration is of one day. So set the report duration to be the last one day.



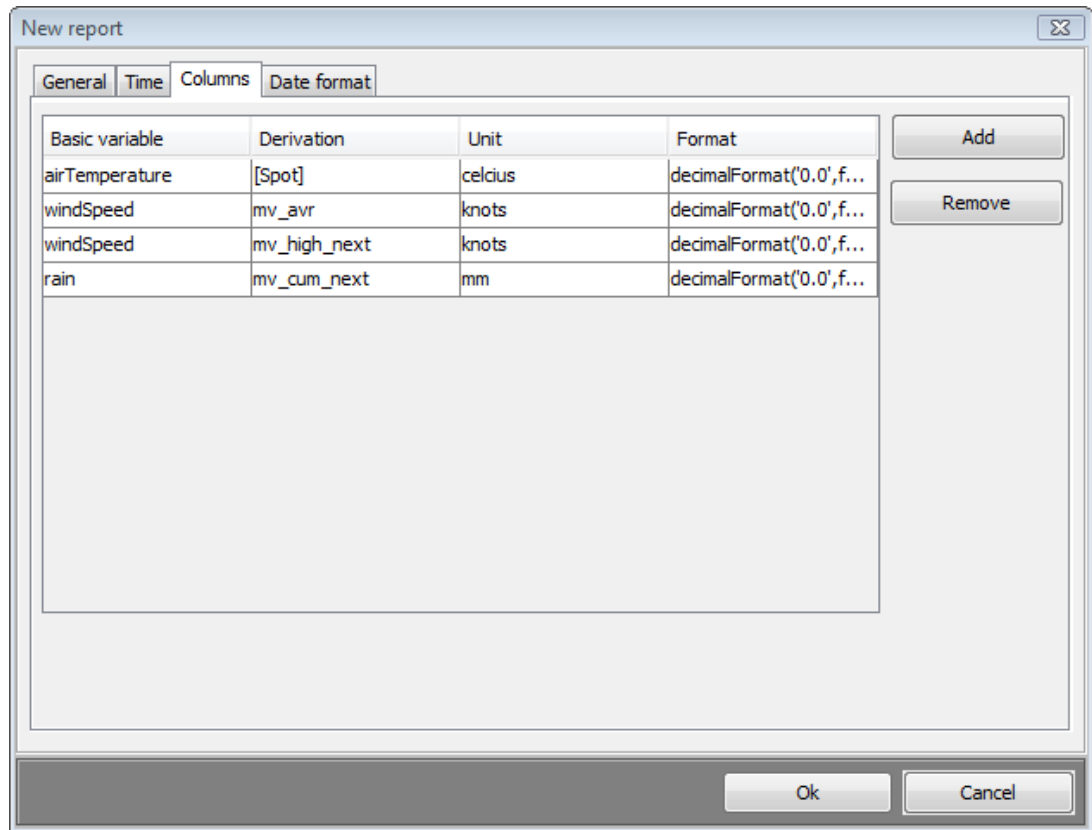
Once this is done click the columns tab to insert the columns to the report.

Our report contains four columns:

- The spot air temperature
- The average wind speed
- The highest hourly wind speed (gust)
- The cumulated rain fall

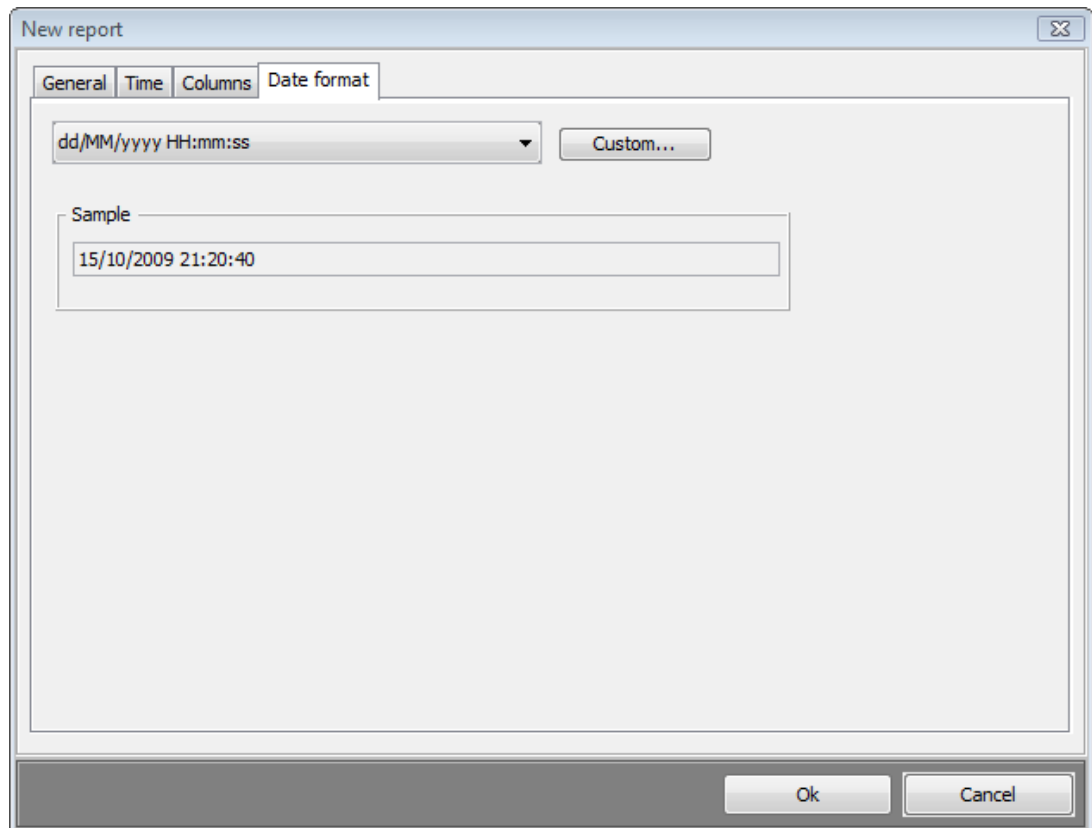
To do this click the add button and select the variables.

It is important to select mv\_avr\_next, mv\_high\_next and mv\_cum\_next. If you do not you will obtain the average, highest values of the past hour and not the forthcoming hour. Feel free to change the units if you are not comfortable with knots or Celsius.



Once you have set up the four columns click the Date format tab.

Select the 'yyy-MM-dd HH:mm:ss' (ISO format) in the combo box. Then click Ok to save your report.



You can now run your report by selecting it in the navigator, clicking the Run button and choosing your target station (your station in fact). You should obtain a window like this one.

Date / time	airTemperature	windSpeed Average	windSpeed (Highest)	rain (Cumulated)
14/10/2009 22:00:00	12.7	11.5	23.3	0.0
14/10/2009 23:00:00	11.8	12.9	19.6	0.0
15/10/2009 00:00:00	10.7	12.3	15.4	0.0
15/10/2009 01:00:00	9.7	10.6	17.5	0.0
15/10/2009 02:00:00	8.7	11.2	19.0	0.0
15/10/2009 03:00:00	7.8	12.8	17.7	0.0
15/10/2009 04:00:00	7.2	10.6	15.7	0.0
15/10/2009 05:00:00	6.4	10.4	18.3	0.0
15/10/2009 06:00:00	5.8	11.8	17.1	0.0
15/10/2009 07:00:00	5.0	7.6	12.1	0.0
15/10/2009 08:00:00	4.1	6.6	17.3	0.0
15/10/2009 09:00:00	4.3	9.1	18.9	0.0
15/10/2009 10:00:00	4.6	11.8	19.6	0.0
15/10/2009 11:00:00	6.6	12.0	26.4	0.0
15/10/2009 12:00:00	8.1	15.8	29.4	0.0
15/10/2009 13:00:00	9.2	17.2	27.4	0.0
15/10/2009 14:00:00	10.0	17.9	31.1	0.0
15/10/2009 15:00:00	10.8	17.2	29.9	0.0

Presentations are a generic term for visual documents allowing to visualize you station's variables. There are three types of variable: text presentations, HTML presentations and SVG presentations. This chapter explains the simplest one: text presentations.

This chapter covers:

- Introduction
- Presentations format
- Presentations context
- Creating a new presentation
- Inserting a station tag
- Inserting a variable tag
- Inserting a time tag
- Inserting a report tag
- Testing your presentation
- Running a presentation
- A complete example: an XML presentation

## Introduction

A presentation is a visual document stored in the server that allows you to visualize station's data.

A text presentation is a text document containing special tags that are replaced by values when the presentation is executed. You can write these tags by hand but it's much more easier to use the different tags generators.

## Presentations format

There are three presentation formats.

- The text format is the easier to use. Generally text presentations are used to get a simple information and to send it by mail or SMS.
- The HTML format allows you to get more pleasant documents and can be used to be published on the web. But you can also generate these documents by launching a simple browser without launching Elements.
- The SVG format.


## Presentations context

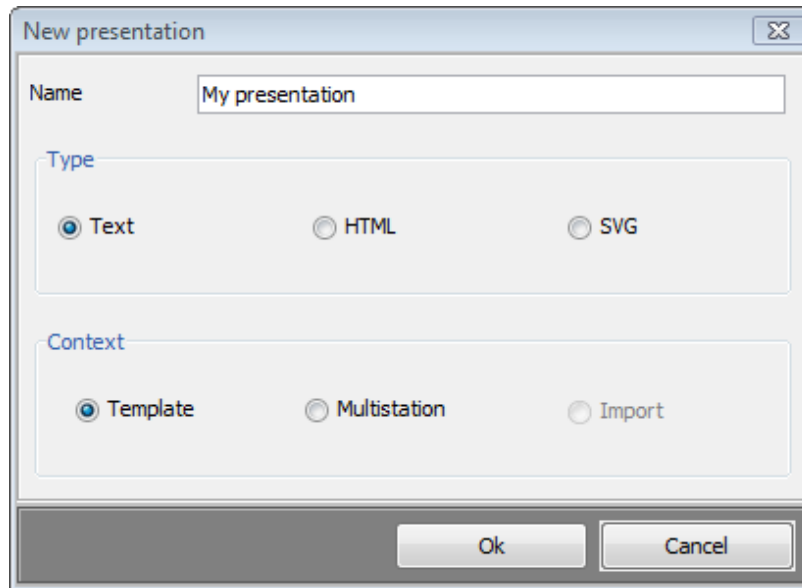
Each presentation has a context that you submit when you create a presentation.

- 'Template' presentations have no reference to a station. When you use it the runtime will ask you the target station. This is very useful because you can share these presentations with other users.
- 'Multistation' contains the reference to the station(s). This useful if you want to display in the same presentation data from several stations.

Most of the time, choose the 'Template' option.

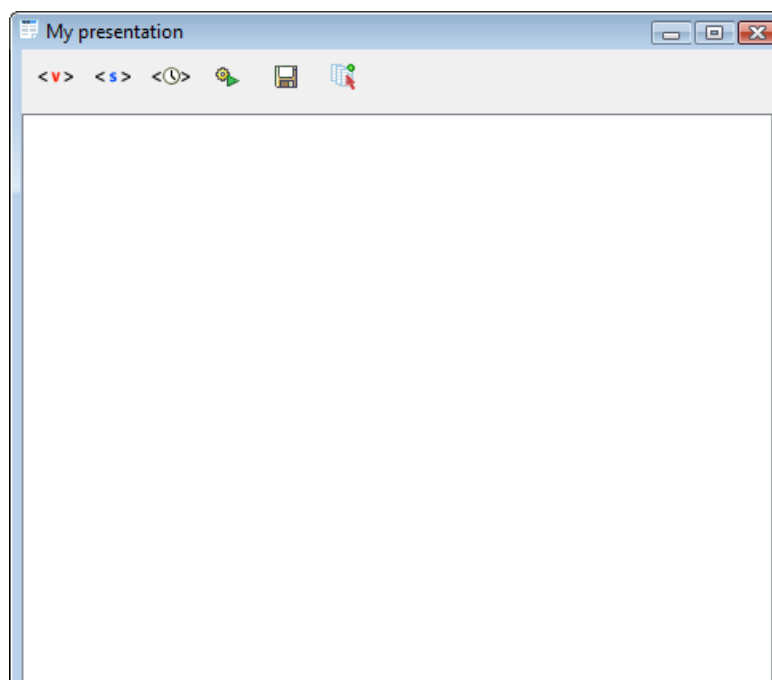
## Creating a new text presentation

To create a new text presentation, just choose Presentation -> New in the main menu. You can also click the icon  in the presentation panel.



The presentation name is limited to less than 100 characters.

To create a template presentation, leave the default option and click OK. If you want to create a multistation presentation select the multistation radio button. You can then compose your presentation.



A text presentation is made of any text and special tags that are replaced by real values when the presentation is executed. In a text presentation you can insert four types of tags:

- The station tag displays data associated the station like place name or elevation.
- The variable tag displays the value of a variable like air temperature.
- The time tag displays the date/time.

The report tag displays a report in your document.

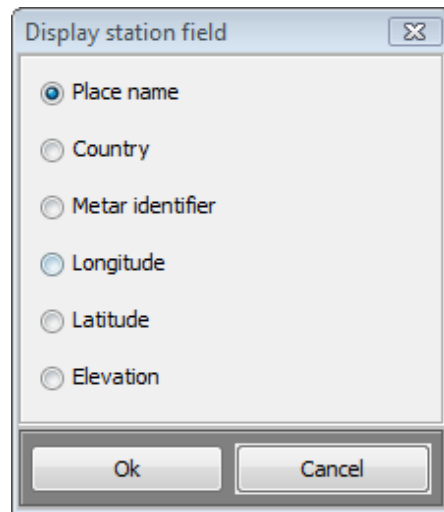
You don't need to know the exact syntax of all these tags. You just need to launch the tags generator doing the job for you.

Text presentations tags syntax is << ... >>.

## Inserting a 'Station' tag

Template station tag

If you click the  icon you can choose the information you want to display.



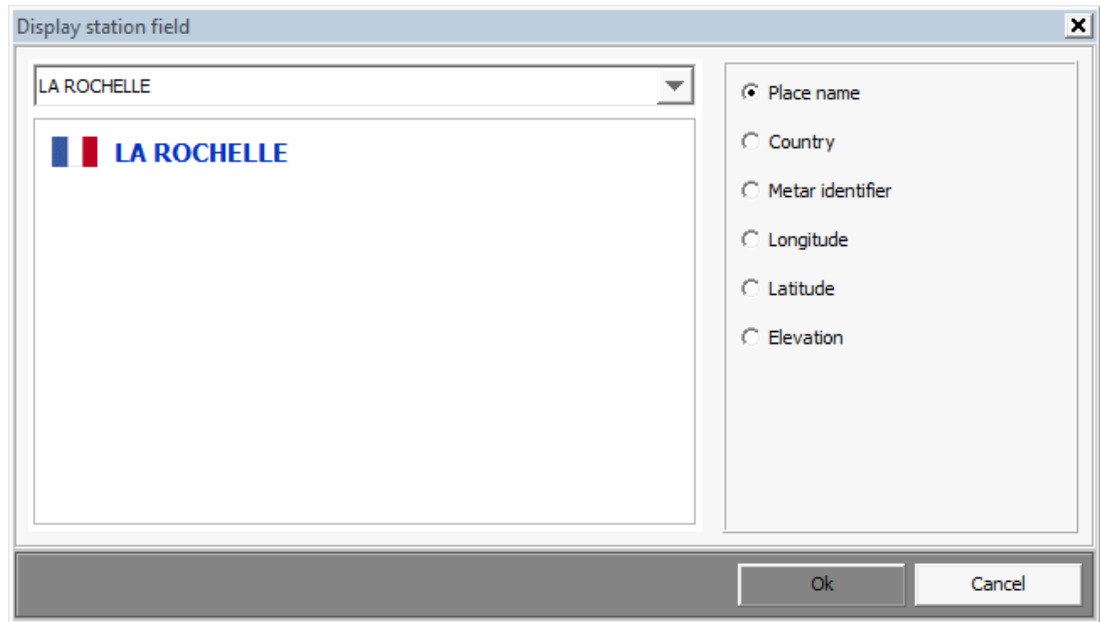
For example if select 'Place name' and click Ok, a tag <<display(station(placename))>> is inserted in your text document.

There are six different stations tag.

Name	Field name	Complete tag
Place name	placename	<<display(station(placename))>>
Country	country	<<display(station(country))>>
Metar identifier	metar	<<display(station(metar))>>
Longitude	longitude	<<display(station(longitude))>>
Latitude	latitude	<<display(station(latitude))>>
Elevation	elevation	<<display(station(elevation))>>

## Multistation station tag

If you are creating a multistation document you have to choose the target station in the tag.

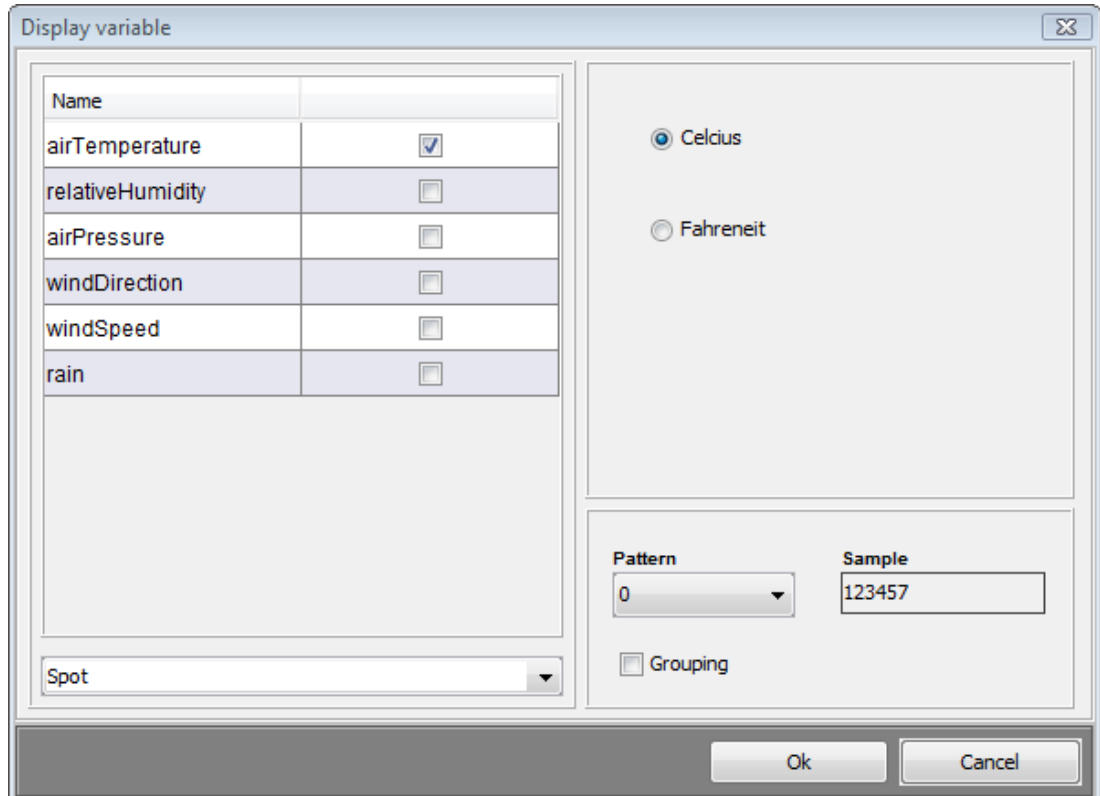


The resulting tag includes the station id, for examples `<<display(station(1000, placename))>>` where 1000 is the station id.

## Inserting a 'Variable' tag

Template variable tag

By clicking the `<v>` icon you insert a variable tag. You get the usual "Display variable" panel described in the previous chapter.



The dialog box allows you to choose the variable, the unit of the variable and the format you want to use. Choosing the unit and the text format is exactly the same panel as the one in the console parameters.

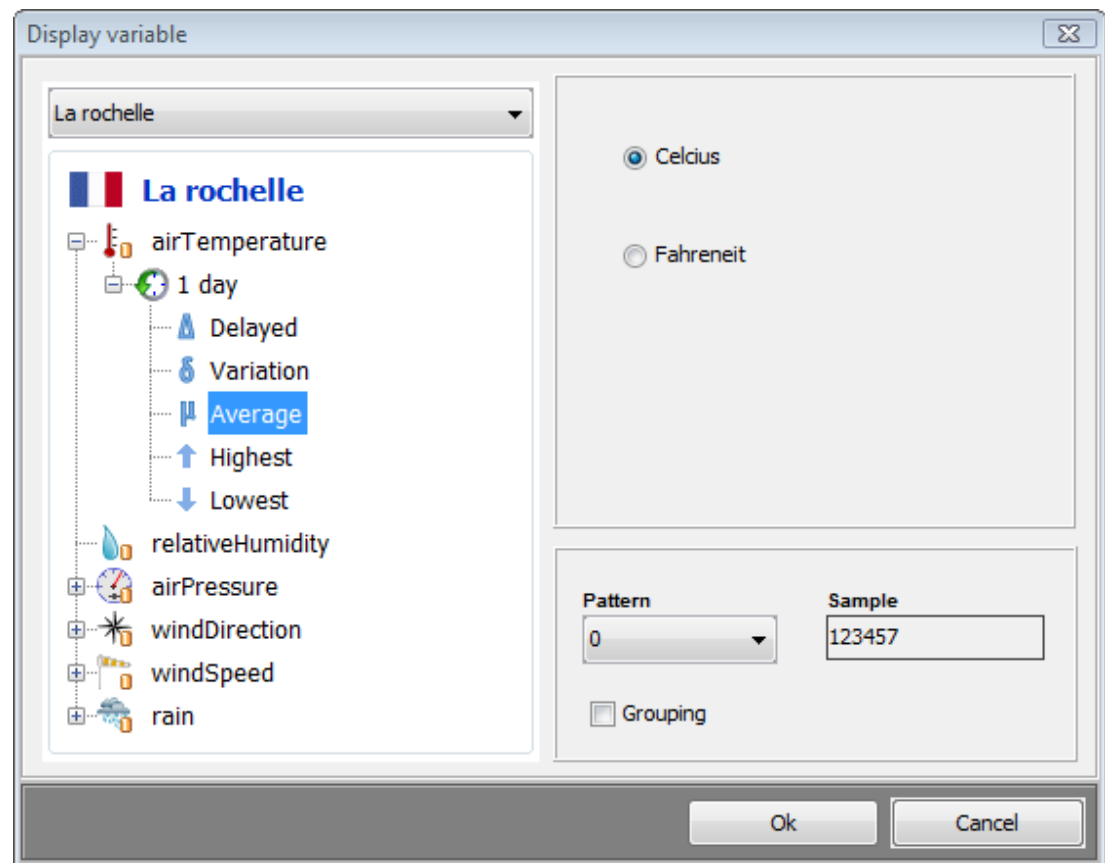
To choose the variable you want to select, you should first select the basic variable, and if you want to select the type of derivative. You can let 'Spot' as in the next example. You can also choose a derivative in the combo box. In that case you need to select the associated duration.

Generated tags are for example:

- `<<display(value(airTemperature,celcius,decimalFormat('0.0';false)))>>` to get the spot value.
- `<<display(value(derivated(mv_avr,airTemperature,duration(1,day)),fahrenheit,decimalFormat('0',false)))>>` to get a derivative variable value.

## Multistation variable tag

The multistation panel is very similar to the template one. You just need to select the variable you want to display.



Generated tags are for example:

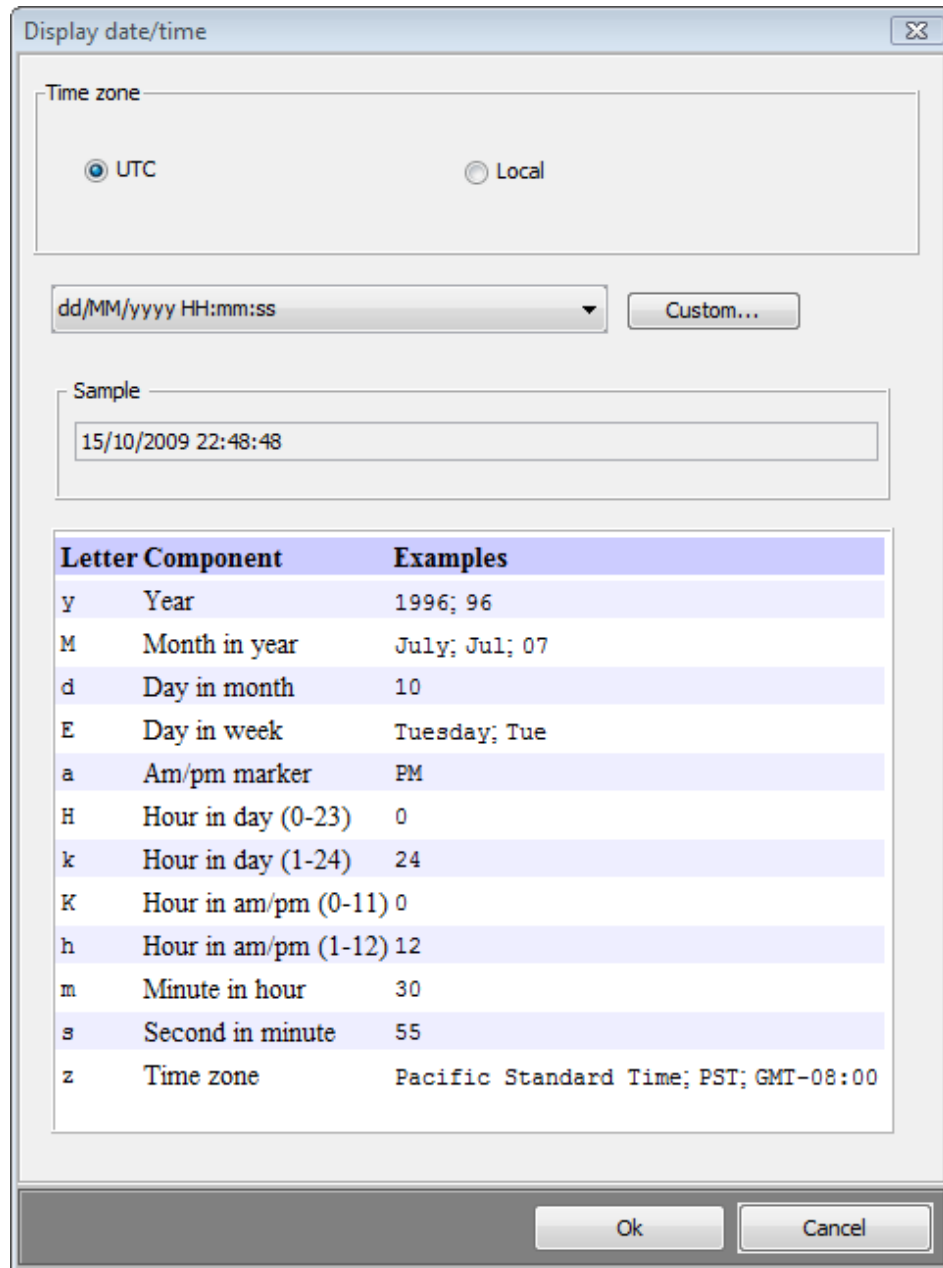
- `<<display(value(stationvar(1001,derivative(mv_dl,airPressure,duration(1,day))),hPa,decimalFormat('0.0';false)))>>`

## Inserting a time tag

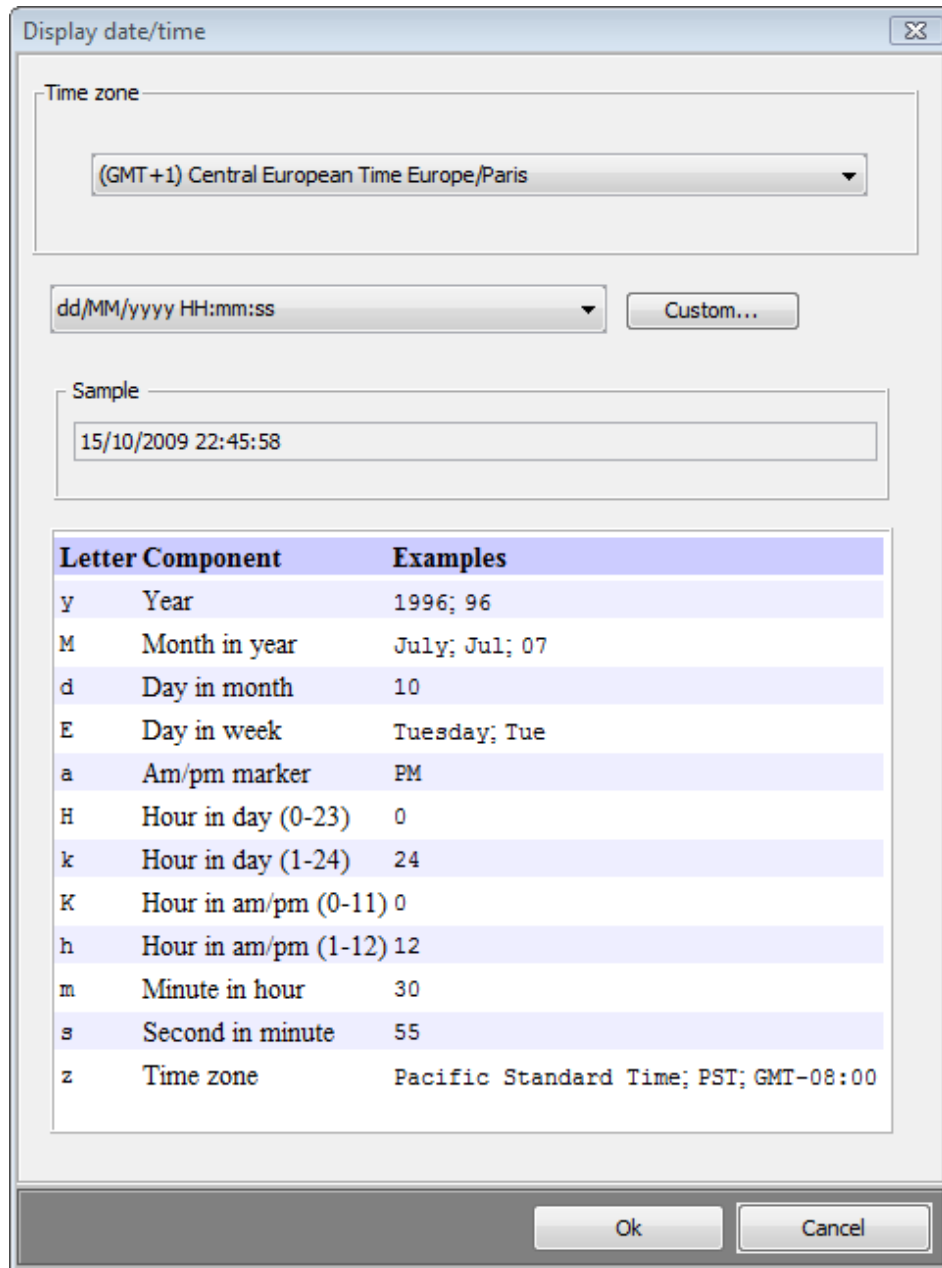
A time tag is used to display the time of execution of your presentation. You can choose the format of the date/time.

You can choose in the combo box between several date time format. You can also create your own custom format according to the Java Simple date format. You can get more information at this URL: <http://java.sun.com/javase/6/docs/api/java/text/SimpleDateFormat.html>.

For a template presentation you can choose either UTC time zone or local time zone i.e. the time zone of the target station when the presentation is executed.



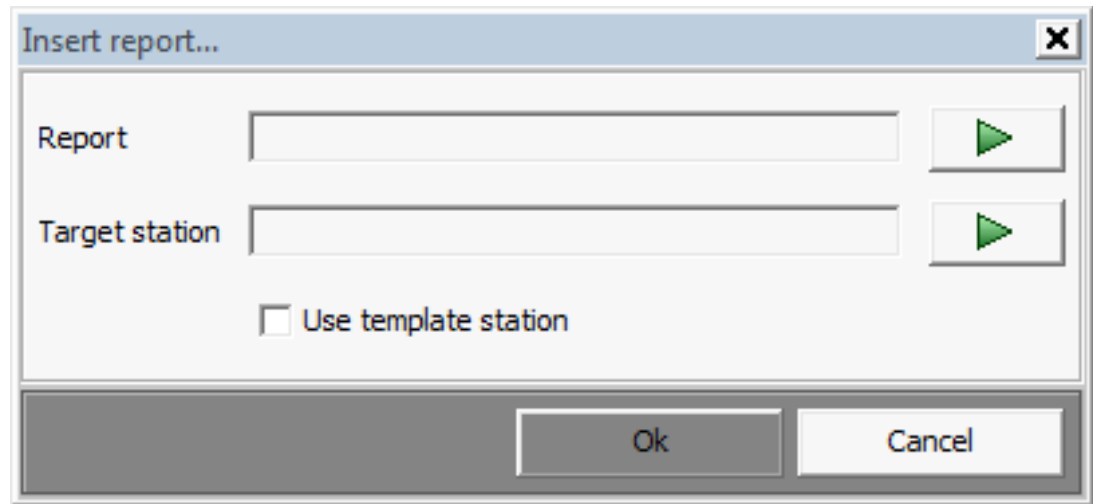
For a multistation presentation you can choose a time zone.



## Inserting a report tag

To insert a report into your text presentation, just click the “Insert report tag” button.

The display report tag panel allows you to select the report you want to insert in your document.



There are four possibilities:

- The most common is that you are in a template text presentation and you want to include a template report. In this case when you run your presentation the target station will be used to create the embedded report. To do this just select your report and select the "Template station" check box.
- You are in a template presentation and you want to insert a template report already associated to a station. In this case choose the target station.
- You are in a template or multistation presentation, and want to insert a multistation report. In that case just select the report.
- You are in a multistation report and want to insert a template report. In that case you need to select the report target station.


If all this sound a bit complicated remember that the easiest way to work is to always use templates. Multistation reports and presentations are useful to compare several stations.

Once you click ok the Ok button of the 'insert report tag' panel a tag like this one is generated.

```
<report('ReportName')><<col0>><<col1>>
</report>
```

Once you run your presentation, the tags <<col0>>, <<col1>> .... <<col(n)>> will be replaced by the values of the report columns. Of course this is repeated as many times there are rows in your report.

## Testing your presentation

To test your application just click the test  icon. You will get the result in a new window.

For example the following composition:

Station name: <<display(station(placename))>>

The air temperature is <<display(value(airTemperature,celcius,decimalFormat('0.0',false)))>>°C.

Yesterday the temperature at the same time was <<display(value(derivated(mv\_dl,airTemperature,duration(1,day)),celcius,decimalFormat('0.0',false)))>>°C.

Can give the result.

```
Station name: La Rochelle
The air temperature is 17,1°C.
Yesterday the temperature at the same time was 14,7°C.
```

When you use a derivative variable in your composition be sure that it is defined in the computing module (see the chapter 'Stations and variables') for example by checking its value in the console. If the variable is not defined the tag will be replaced by the ? symbol.

For example:

```
Station name: La Rochelle
The air temperature is 17,1°C.
Yesterday the temperature at the same time was ?°C
```

## Running your presentation

Once you have created a presentation there are two ways to execute it:

- Launch it in the software itself: Just click the 'Execute' button in the Presentations tab of the • navigator or double click the station itself. If you run a template presentation the software will ask you to choose the target station.
- Launch it in the browser.

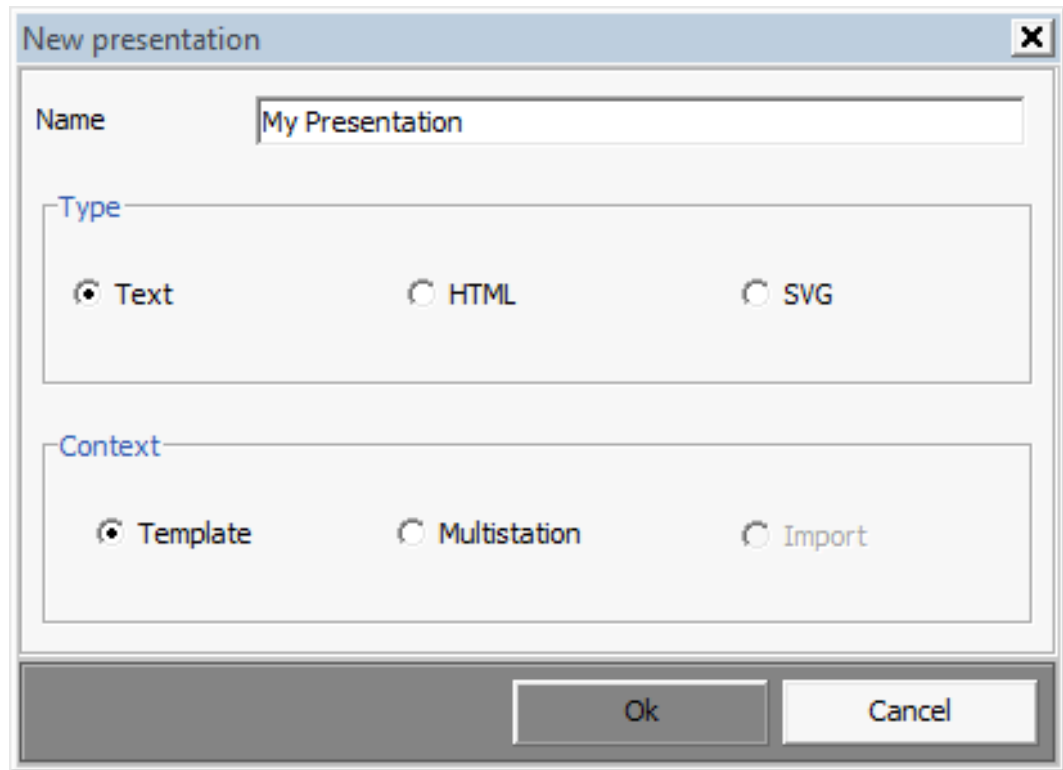
Text presentations are of course very limited, and in most cases you will want to use HTML or SVG as we saw in the previous chapters. However text presentations are necessary to send alarm mails or for sending a text SMS.

## A complete example: an XML presentation

This example shows you how to generate an XML document.

Click the "New presentation" button.

Let the document's type to Text and the context to Template. Set the name to MyPresentation or anything else.



Once this is done, click Ok: you can now design your document. In a first step we want to get temperature, relative humidity and the highest wind speed since an hour.

Type (or copy/paste) the following text in your document.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
  <temperature></temperature>
  <humidity></humidity>
  <windSpeedHigh></windSpeedHigh>
</weather>
```

Then:

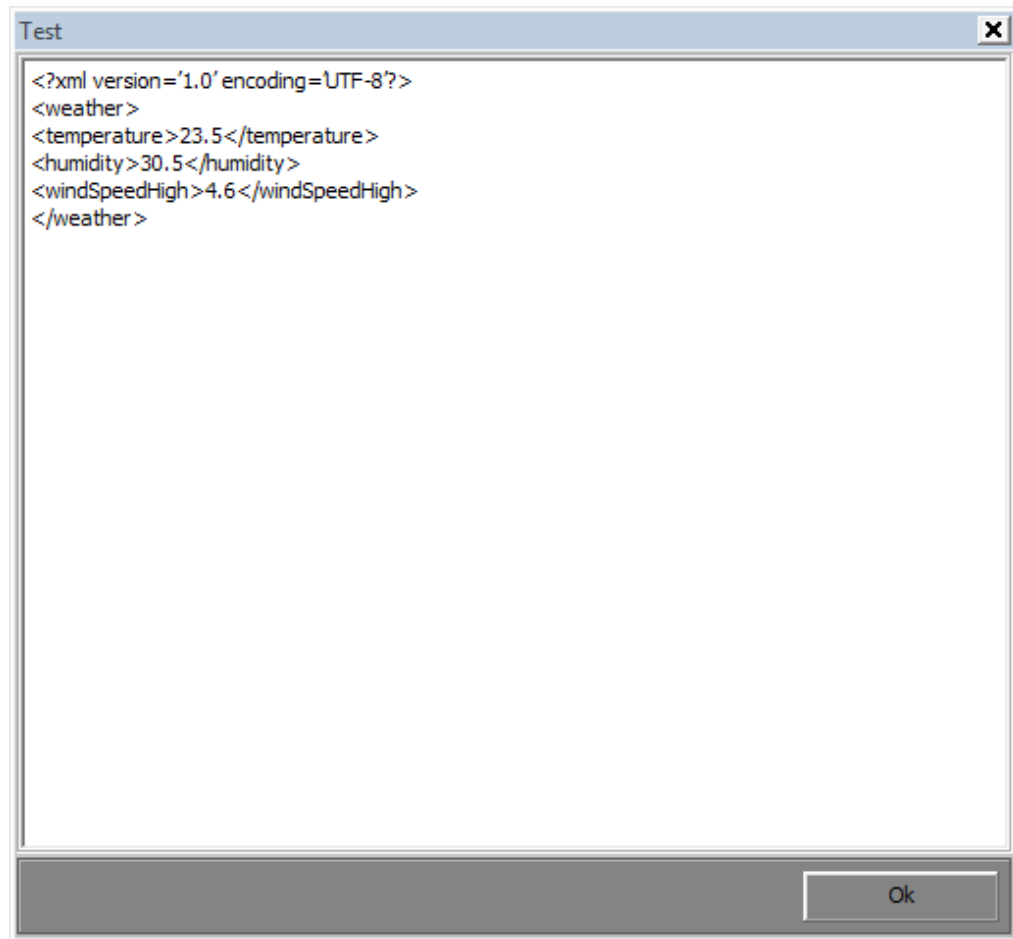
- Insert a temperature (spot) tag between <temperature> and </temperature>
- Insert a humidity (spot) tag between <humidity> and </humidity>
- Insert a Wind speed, highest one hour tag between <windSpeedHigh> and </windSpeedHigh>

You should obtain this document.

```
<weather>
<temperature><<display (value (airTemperature, celcius, decimalFormat ('0.0', false)))>><temperature>
<humidity><<display (value (relativeHumidity, '', decimalFormat ('0.0', false)))>></humidity>
<windSpeedHigh><<display (value (derivative (mv_high, windSpeed, duration (1, hour)), mps, decimalFormat ('0.0', false)))>></
windSpeedHigh>
</weather>
```

If you click the "test" button and select your station, the final document is opened.

The tags are replaced by the "real" values.



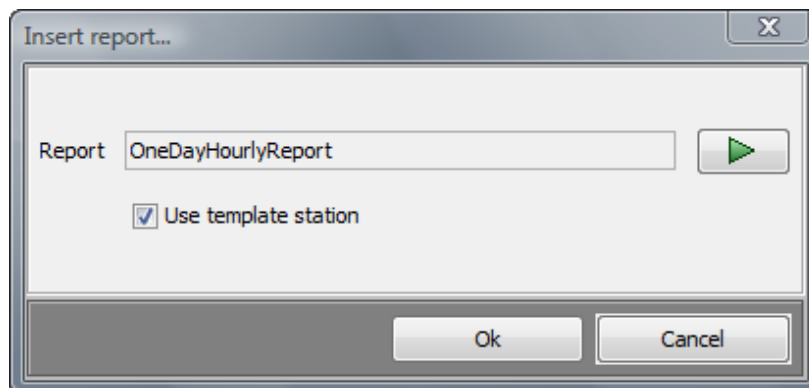
The next step is to insert previous temperatures during the last 24 hours on an hourly basis. This can be done by inserting the report we created in the previous chapter.

Modify your text presentation to insert a new XML tag named temperatureTimeSerie just after </windSpeedHigh>.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
<temperature><<display (value (airTemperature, celcius, decimalFormat ('0.0', false)))>></temperature>
<humidity><<display (value (relativeHumidity, '', decimalFormat ('0', false)))>></humidity>
<windSpeedHigh><<display (value (derivative (mv_high, windSpeed, duration (1, hour)), mps, decimalFormat ('0.0', false)))>></
windSpeedHigh>
<temperatureTimeSerie>
</temperatureTimeSerie>
</weather>
```

Position the caret just after <temperatureTimeSerie> and click the "Insert report..." button.

Select the OneDayHourlyReport report and check the template station check box. Then click ok



You should obtain this text:

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie><report ('OneDayHourlyReport')><<col0>>;<<col1>>;<<col2>>;<<col3>>;<<col4>><<
col5>>
</report>
</temperatureTimeSerie>
</weather>
```

We just want to keep the first (date/time) and second column of the report. So you can remove all the tags after <<col1>> on the same line.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report ('OneDayHourlyReport')><<col0>>;<<col1>>
</report>
</temperatureTimeSerie>
```

Insert an XML tag named <point> around <<col0>>;<<col1>>.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report ('OneDayHourlyReport')><point><<col0>>;<<col1>></point>
</report>
</temperatureTimeSerie>
```

Insert an XML tag named <time> around <<col0>>.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report ('OneDayHourlyReport')><point><time><<col0>></time>;<<col1>></point>
</report>
</temperatureTimeSerie>
```

Insert an XML tag <value> around <<col1>>.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report ('OneDayHourlyReport')><point><time><<col0>></time>;<value><<col1>></value></point>
</report>
</temperatureTimeSerie>
```

Remove the ; character.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report ('OneDayHourlyReport')><point><time><<col0>></time><value><<col1>></value></point>
</report>
</temperatureTimeSerie>
```

Finally to get a pretty page layout...

```

<?xml version='1.0' encoding='UTF-8'?>
<weather>
...
<temperatureTimeSerie>
<report('OneDayHourlyReport')> <point>
<time><<col0>></time>
<value><<coll>></value>
</point>
</report>
</temperatureTimeSerie>

```

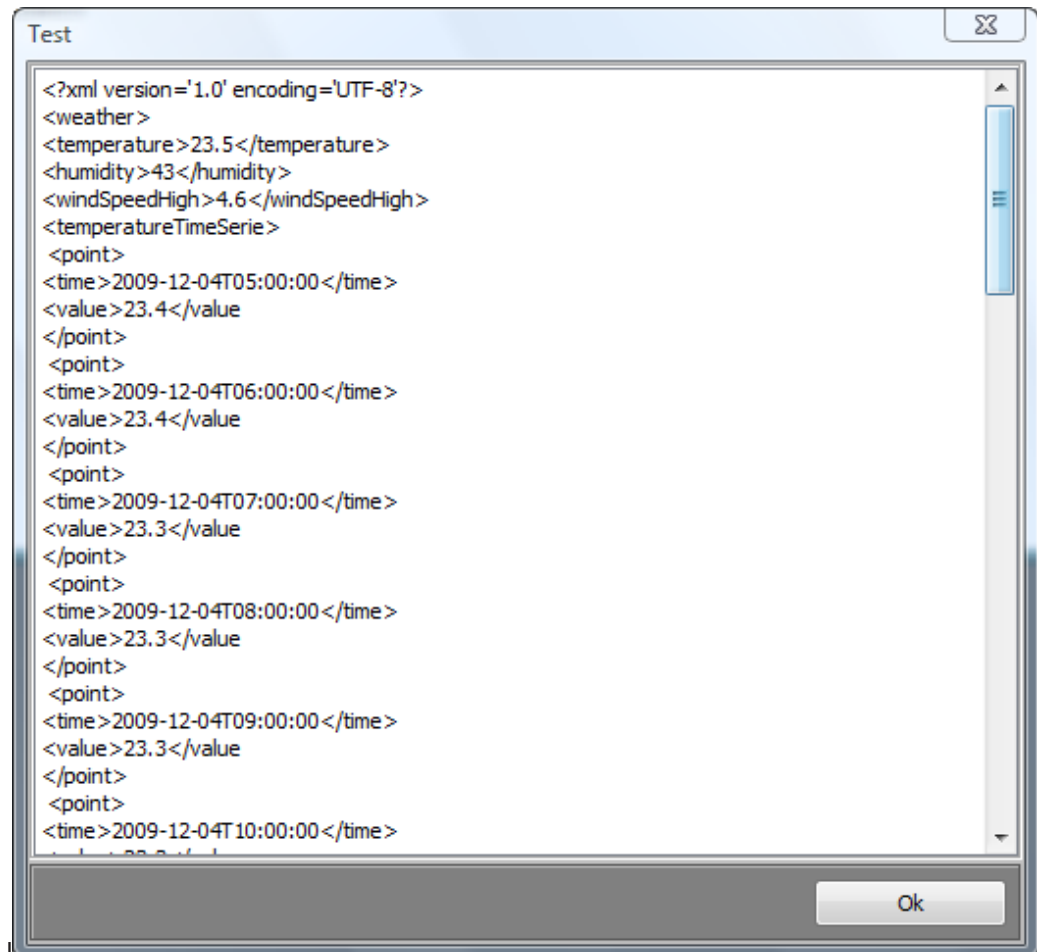
This is the final complete document:

```

<?xml version='1.0' encoding='UTF-8'?>
<weather>
  <temperature><<display(value(airTemperature,celcius,decimalFormat('0.0'),false))>></temperature>
  <humidity><<display(value(relativeHumidity,'',decimalFormat('0'),false))>></humidity>
  <windSpeedHigh><<display(value(derivative(mv_high,windSpeed,duration(1,hour)),mps,decimalFormat('0.0'),false))>></
windSpeedHigh>
  <temperatureTimeSerie>
    <report('OneDayHourlyReport')> <point>
      <time><<col0>></time>
      <value><<coll>></value>
    </point>
  </report>
</temperatureTimeSerie>
</weather>

```

If you run your document you can get this:



Elements provides also a way to create HTML presentations. In fact there are no major differences between text and HTML presentations. Both are text documents with the same tags as we saw in the previous chapter. The only difference is that Elements provides a few tools to work with HTML documents and the ability to run your document within a browser.

This chapter covers:

- Introduction
- Using the HTML editor
- Running your presentation
- A complete example

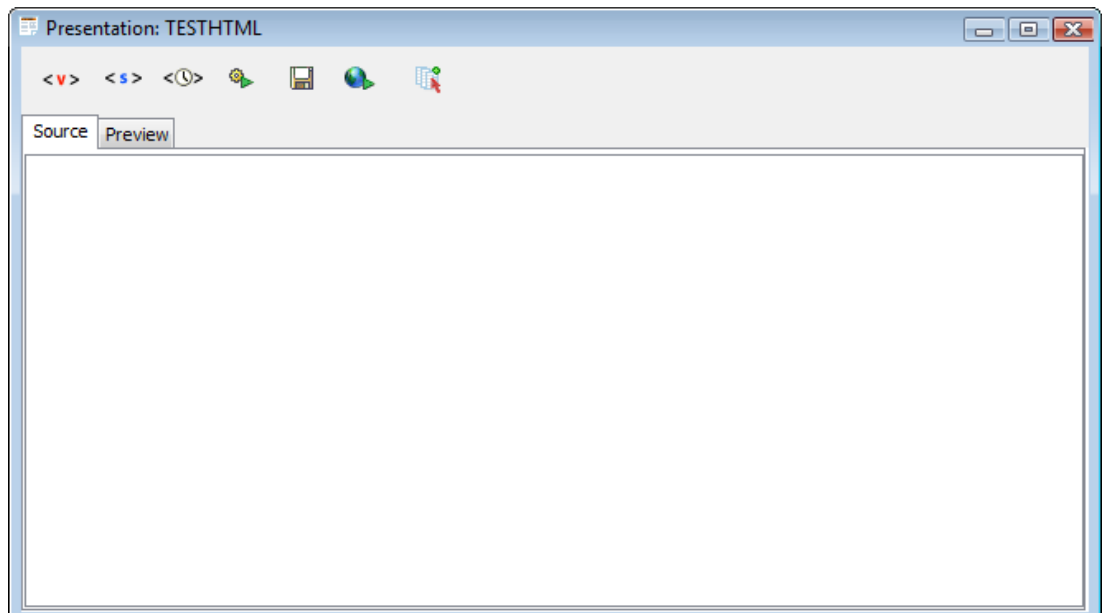
## Introduction

Like text presentations, HTML presentations can be template or multistation documents.

To create a new HTML presentation proceed like for creating a text presentation but instead of selection the text radio button just click the HTML radio button.

## Using the HTML editor

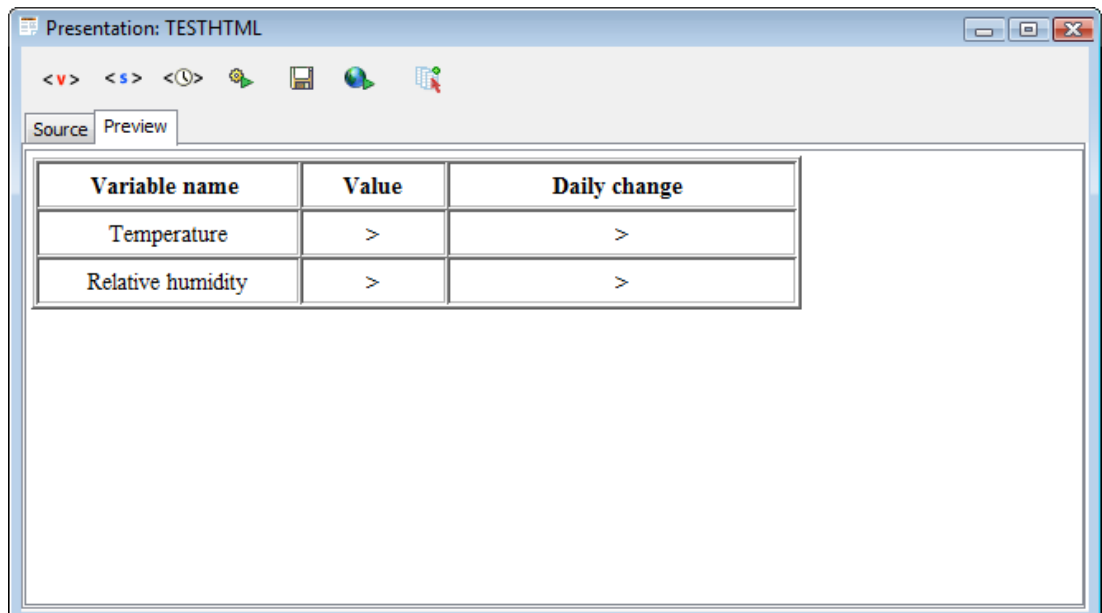
The HTML editor is made of two tabs. The first one is the source of your HTML presentation. The second one provides a preview of your HTML. The preview window is limited to an HTML 3.2 level. The source tab allows you to write any text but if your text is not HTML 3.2 compliant the preview window will remain blank.



For example if you type this text

```
<html>
<head>
<title>Noname</title>
</head>
<body>
<table width="463" border="1">
  <tr>
    <td width="153"><div align="center"><strong>Variable name
    </strong></div></td>
    <td width="82"><div align="center"><strong>Value</strong></div></td>
    <td width="206"><div align="center"><strong>Daily change
    </strong></div></td>
  </tr>
  <tr>
    <td><div align="center">Temperature</div></td>
    <td><div align="center"><<display (value (airTemperature, celcius, decimalFormat ('0.0', false)))>></div></td>
    <td><div align="center"><<display (value (derivative (mv_delta, airTemperature, duration (1, day)), celcius, decimalFormat ('0.0', false)))>></div></td>
  </tr>
  <tr>
    <td><div align="center">Relative humidity</div></td>
    <td><div align="center"><<display (value (relativeHumidity, '', decimalFormat ('0.0', false)))>></div></td>
    <td><div align="center"><<display (value (derivative (mv_delta, relativeHumidity, duration (1, day)), '', decimalFormat ('0.0', false)))>></div></td>
  </tr>
</table>
</body>
</html>
```

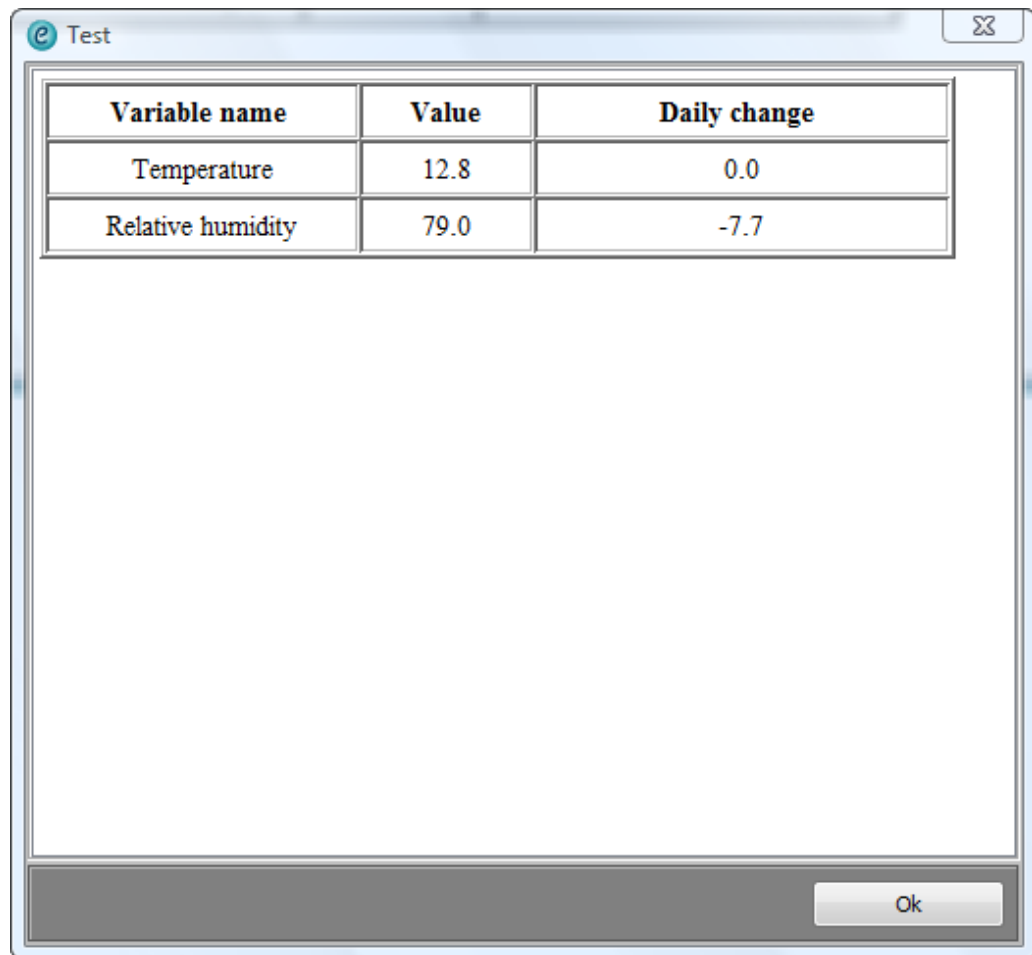
You can get a preview by clicking the 'Preview' tab.



## Running your presentation

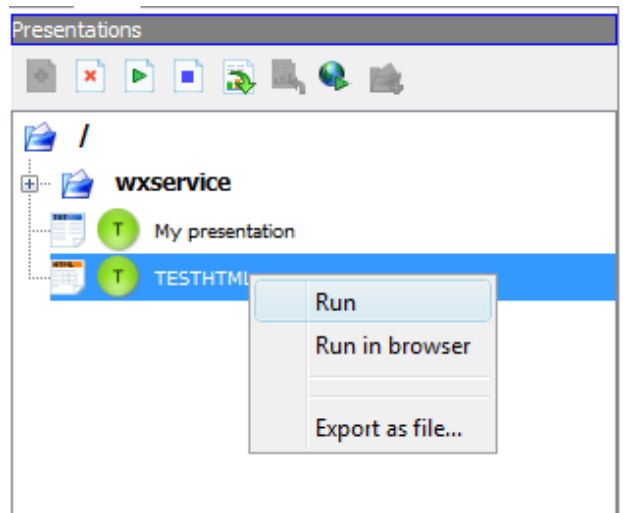
You can click the run in browser button to get your result in your default browser. This is essential if your document is not HTML 3.2 compliant.

Note that the document is generated as a file on your disk and then opened with the browser.

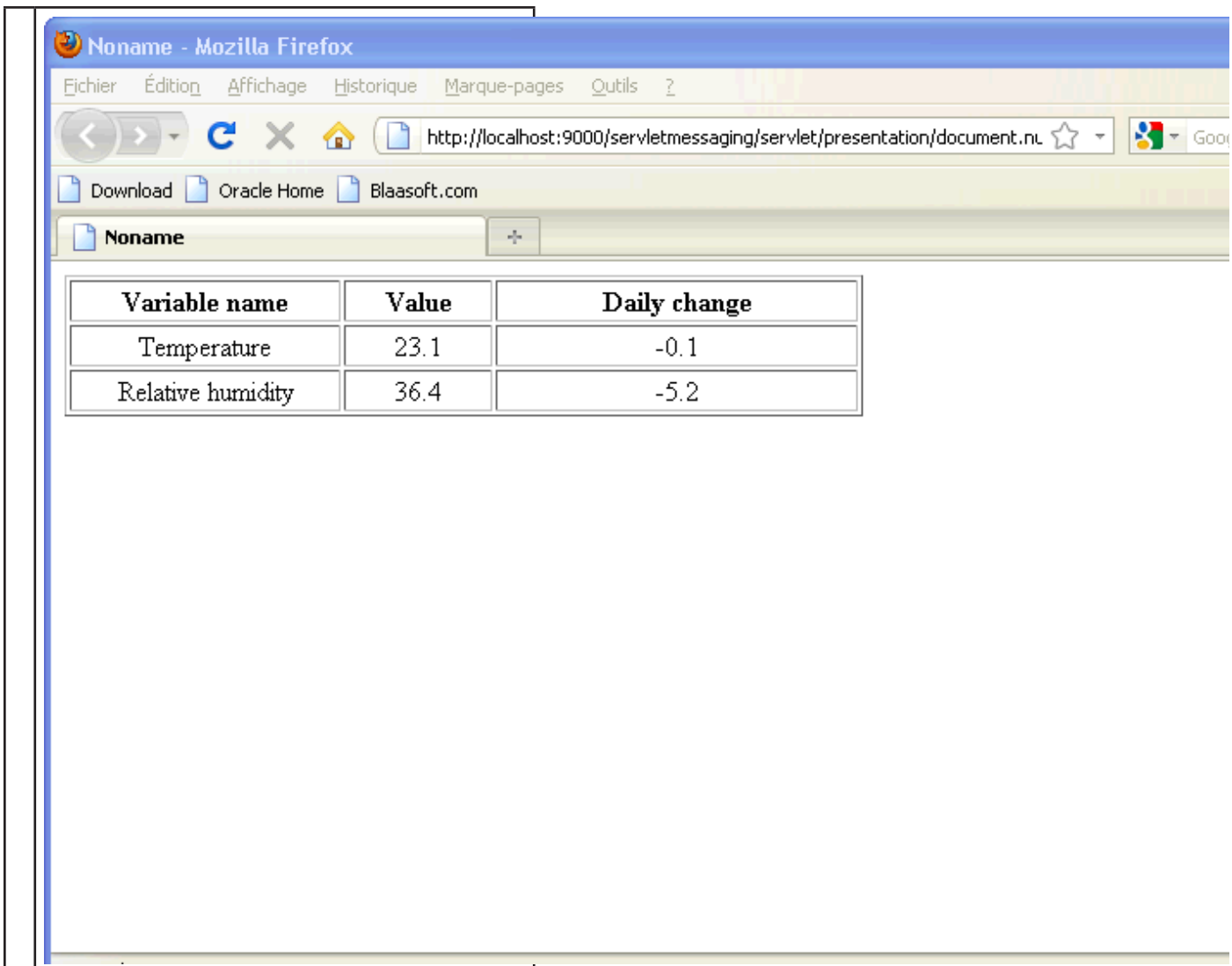


Once your document is saved you can execute it from the navigator.

Since this is an HTML presentation you can run it in the built-in HTML viewer, but the best way to execute an HTML presentation is to run it within a browser. You do this just select the "Run in browser" menu item.



Running your HTML presentation in the browser is totally different from running it with the test button.



If you check the URL you can see that the file is not a file but a server URL. The file is in fact generated by the server (you can quit Elements and it will continue to work). You can keep this URL in your favorite links. Every time you will need to get your HTML presentation it will be generated by the server.

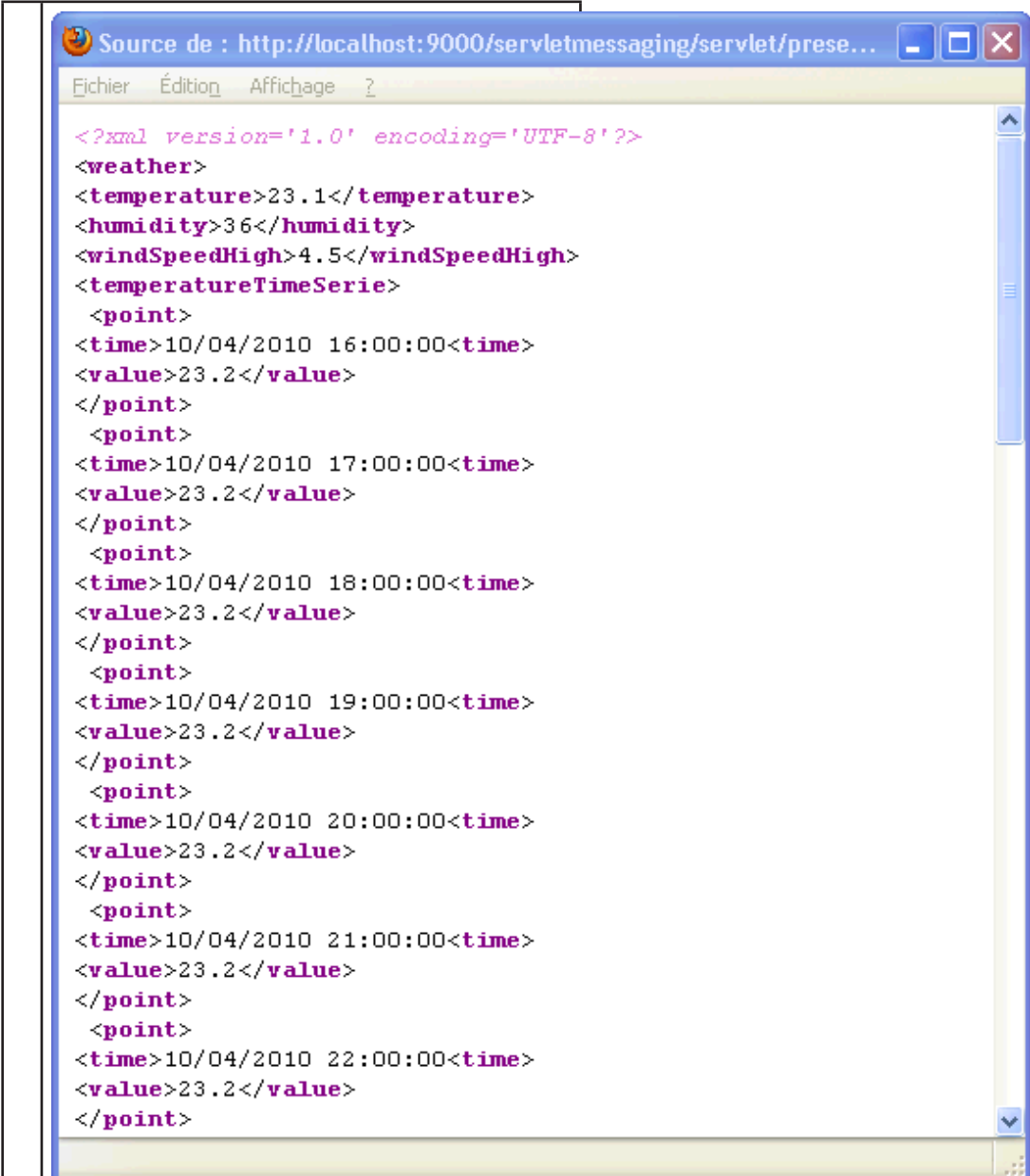
## A complete example

HTML presentations can also contain an XML document.

Create a new HTML template document and copy paste the text presentation we made in the previous chapter.

```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
<temperature><<display(value(airTemperature,celcius,decimalFormat('0.0',false)))>></temperature>
<humidity><<display(value(relativeHumidity,'',decimalFormat('0',false)))>></humidity>
<windSpeedHigh><<display(value(derivative(mv_high,windSpeed,duration(1,hour)),mps,decimalFormat('0.0',false)))>></windSpeedHigh>
<temperatureTimeSerie>
<report('OneDayHourlyReport')> <point>
<time><<col0>></time>
<value><<col1>></value>
</point>
</report>
</temperatureTimeSerie>
</weather>
```

Close and save your presentation. If you run your presentation in firefox you can see your XML document in view source.



```
<?xml version='1.0' encoding='UTF-8'?>
<weather>
<temperature>23.1</temperature>
<humidity>36</humidity>
<windSpeedHigh>4.5</windSpeedHigh>
<temperatureTimeSerie>
  <point>
    <time>10/04/2010 16:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 17:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 18:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 19:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 20:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 21:00:00</time>
    <value>23.2</value>
  </point>
  <point>
    <time>10/04/2010 22:00:00</time>
    <value>23.2</value>
  </point>
</temperatureTimeSerie>
</weather>
```

SVG presentations provide incredible features with a powerful 2D engine. The software includes predefined components (called beans) you can use in the SVG canvas.

This chapter covers:

- Introduction
- Creating an SVG presentation
- The SVG document
- The BPanel component
- The BLine component
- The BLabel component
- The BClock component
- The BStaticImageBean component
- The BDynamicImageBean component
- The BWeatherWeatherIndicator component
- The BWeatherWindGraphBean component

## Introduction

SVG stands for Scalable Vector Graphics and is an XML based language that describe 2 dimensions vectorial documents.. You can get more information at [www.w3.org/Graphics/SVG](http://www.w3.org/Graphics/SVG).

SVG specifications define some basic shapes like rectangles, lines or circle and also how to draw them using colors, gradients, filters...

However you don't really need to know this specification since the software includes ready to use objects like thermometers. Furthermore the software provides a powerful editor allowing you to move objects with the mouse.

Once you document is designed, you can launch you presentation in Elements, launch it in a web browser or publish it on the web.

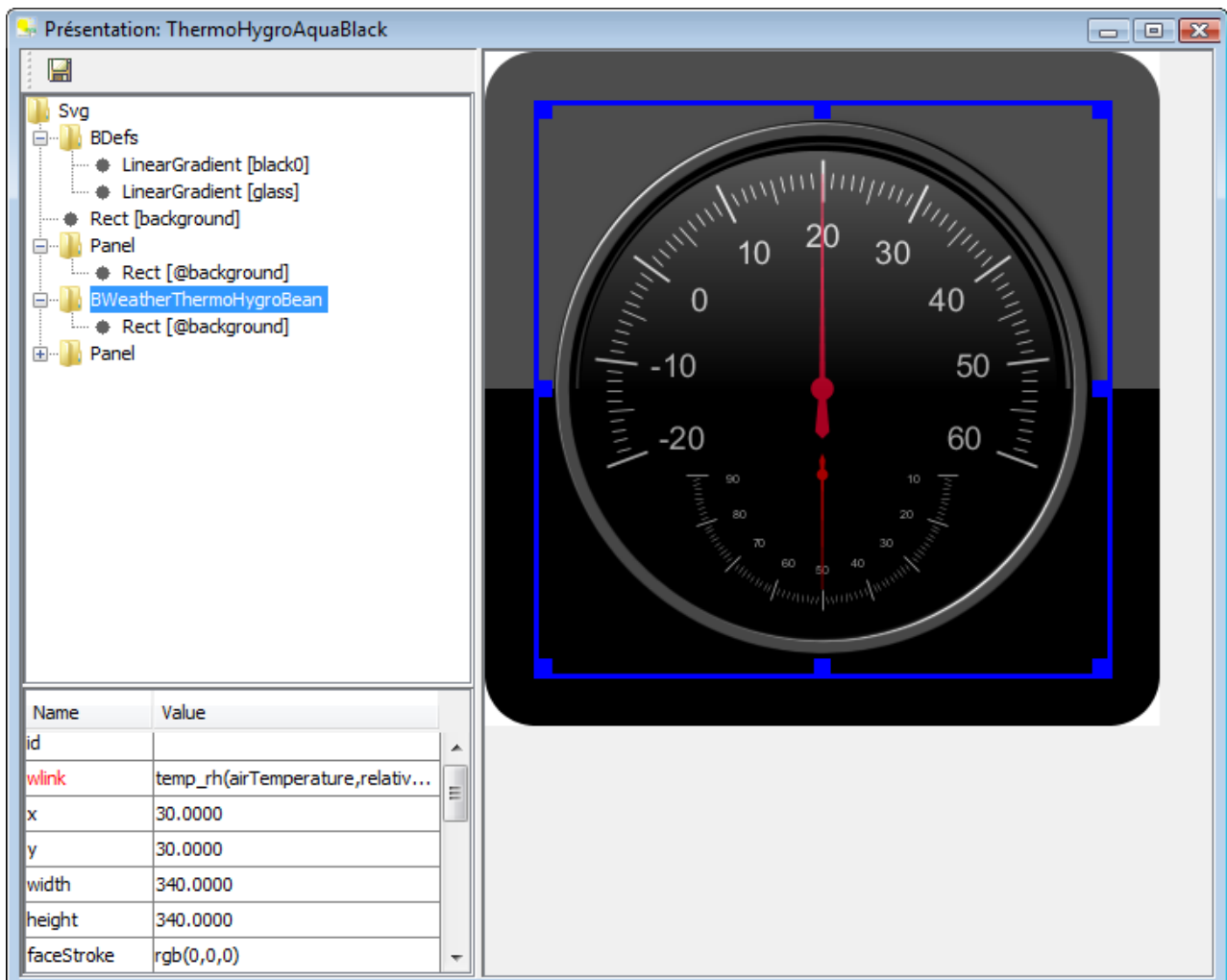
However there is a major difference between SVG presentations and text or html presentations: SVG presentations are dynamic. If you launch a presentation in Elements the document is automatically updated in real time.

## Creating an SVG presentation

To create a new SVG presentation, choose Presentation -> New in the main menu. Set the type of your presentation to SVG. Like text and HTML presentations there are template and multistation presentations. This opens the SVG editor.

## The SVG editor

The SVG editor contains three parts.

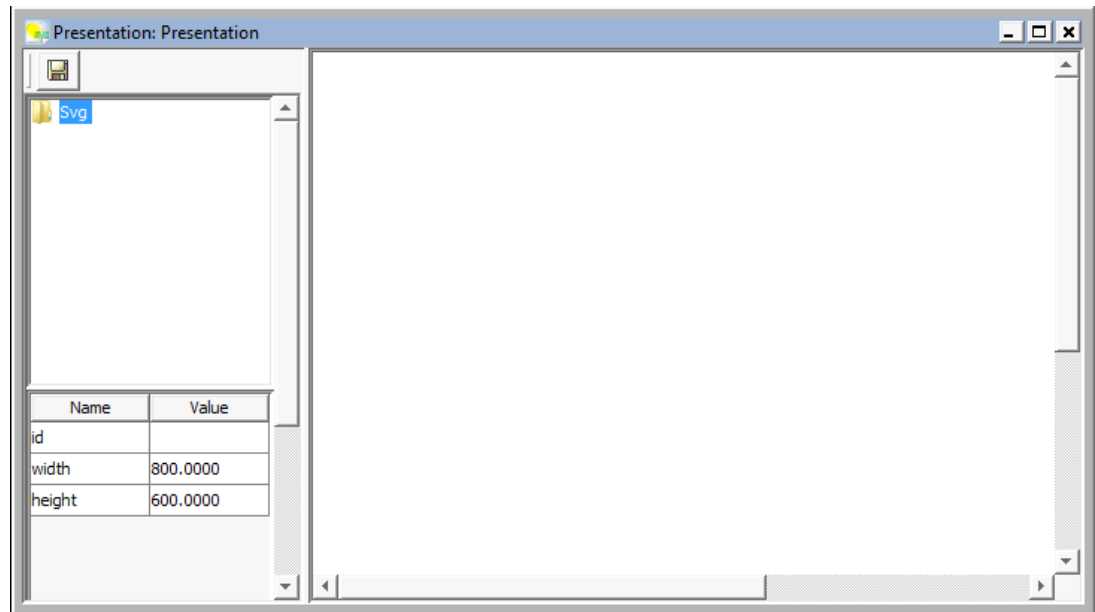


- The right part contains the presentation itself
- The upper left part contains a hierarchical view of the SVG document
- The lower left part contains the properties of the selected object in the tree.

When you create a new SVG presentation, the SVG document is identified by the "Svg" node. If you select it you can modify its properties. The root element "Svg" has two properties:

Property	Description
width	The width of the document
height	The height of the document

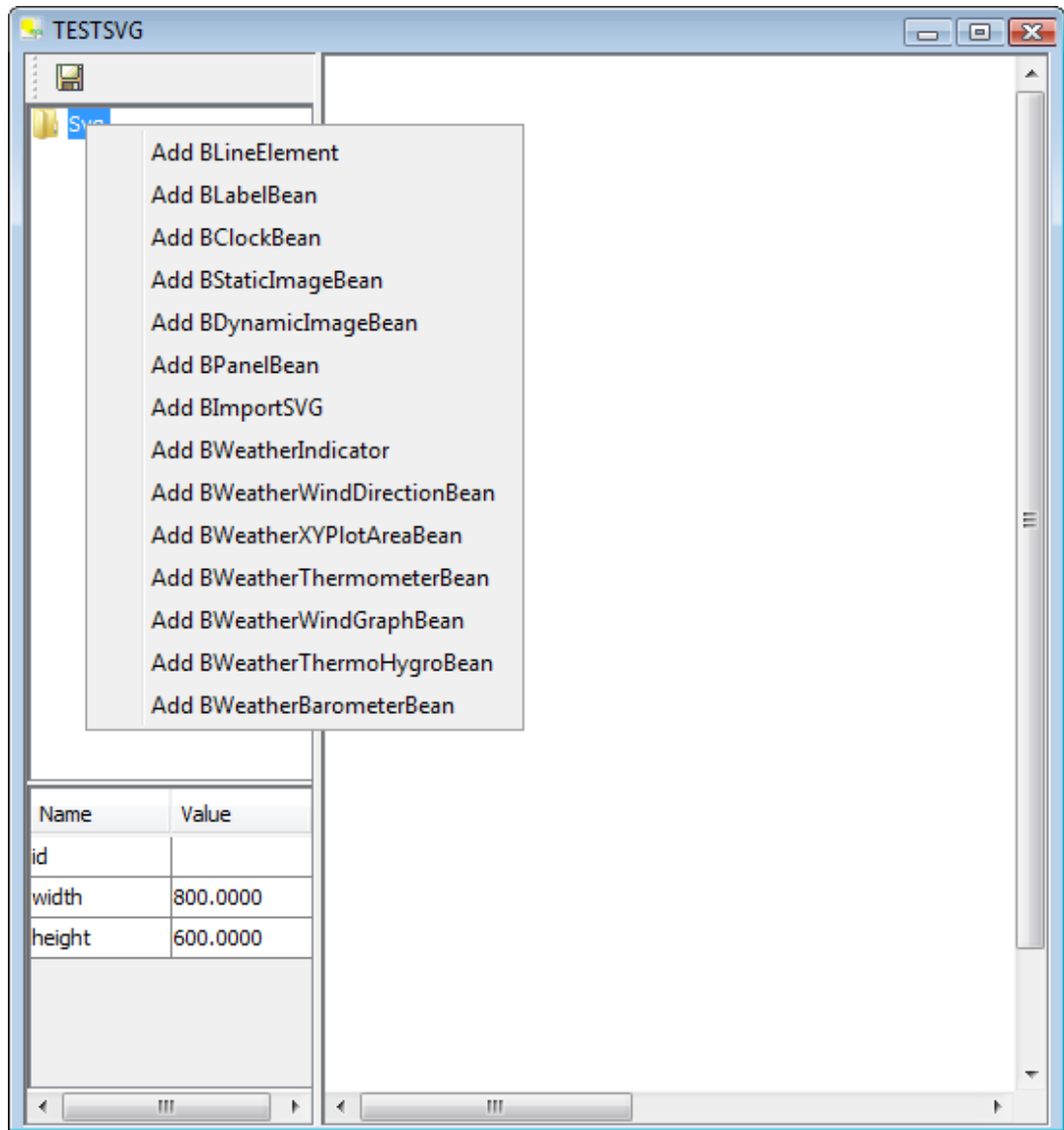
In the properties panel, you can change the default document size (800 \* 600).



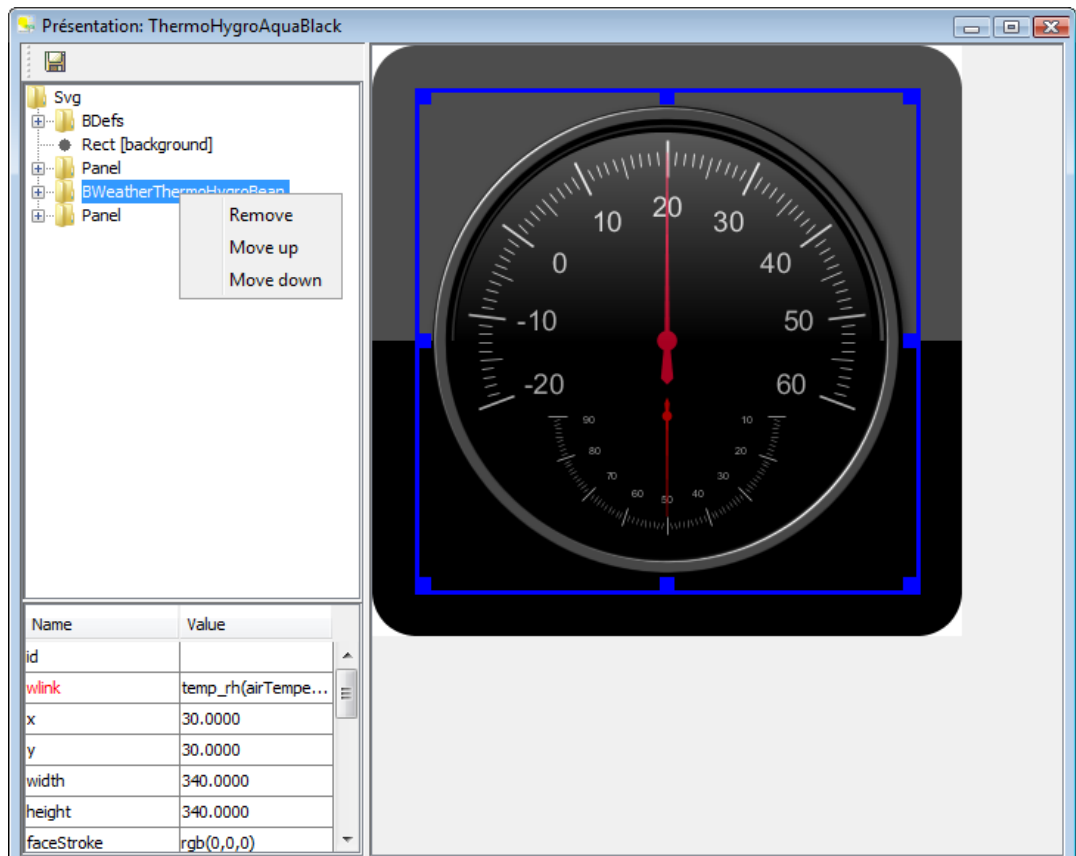
Most objects of the SVG tree contain a background node. The document itself has a background. You can modify background properties by selecting the Rect @background node and modify its properties.

## Adding, removing and moving objects in the document

To add an object to the document, right click the parent node of your new object. A drop down menu appears. You have a choice between the available object you want to insert.



If you right click an object of the document a popup menu allows you to remove it from the document, move it up or down.



## The Panel bean

The panel bean allows you to:

- Draw a rectangle around other beans
- A panel with the Svg node itself is the only bean that can contain other components.

Panel properties are:

Property	Description
id	For many objects you can set an id. If there are many objects in your presentation you can retrieve a component easier.
x	The x position of the upper left corner of the panel
y	The y position of the upper left corner of the panel
width	The width of the panel
height	The height of the panel

All beans contains a background rectangle. You can change the following properties.

Property	Description
visibility	visible: the background is drawn hidden: the background is not drawn inherit: inherit the visibility of its parent
stroke	

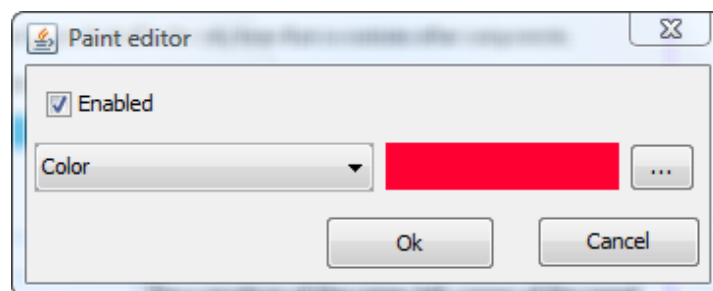
stroke-width	
stroke-linecap	
stroke-linejoin	
stroke-dasharray	
fill	
fill-opacity	
filter	
rx	
ry	

## Painting

Filling or stroking can be done using a color but the editor provides you three ways to paint something:

- Colors
- Linear gradients
- Textures

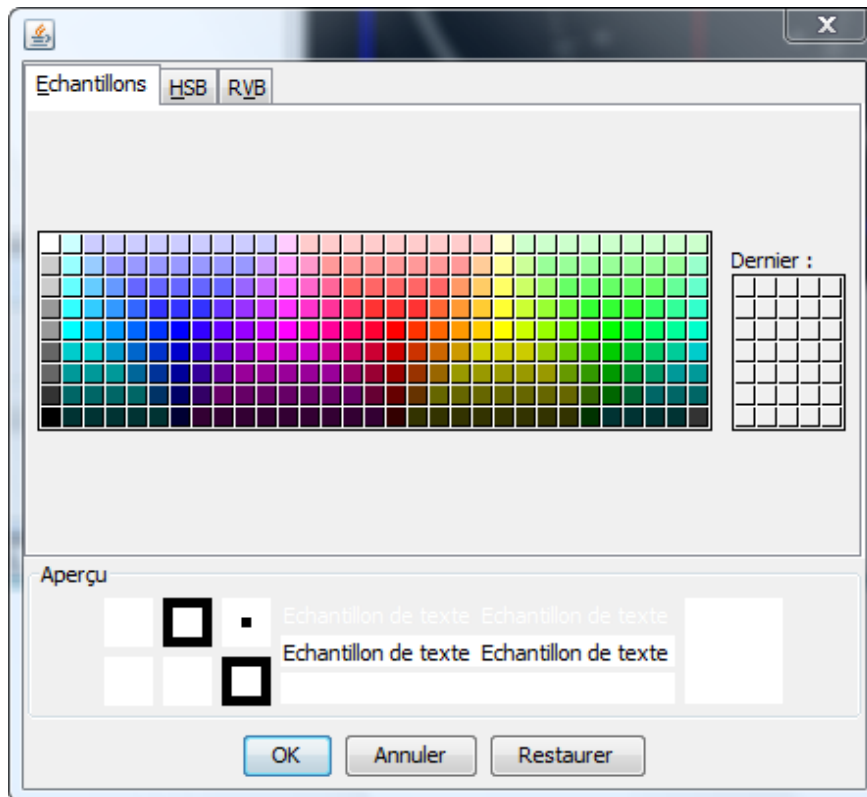
When you click a stroke or fill attribute the pain editor opens.



The drop down list allows you to choose one of the three options.

### Using a color

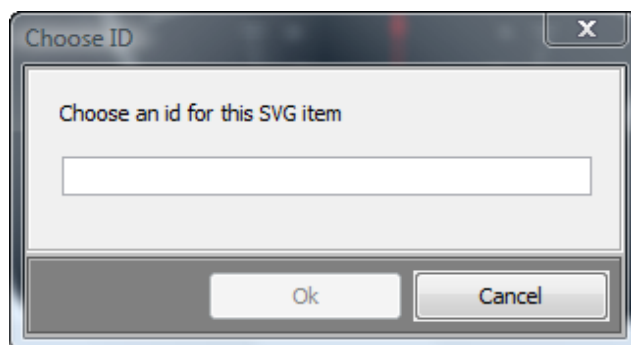
To change the color, click the selection button. This will open the standard color chooser.



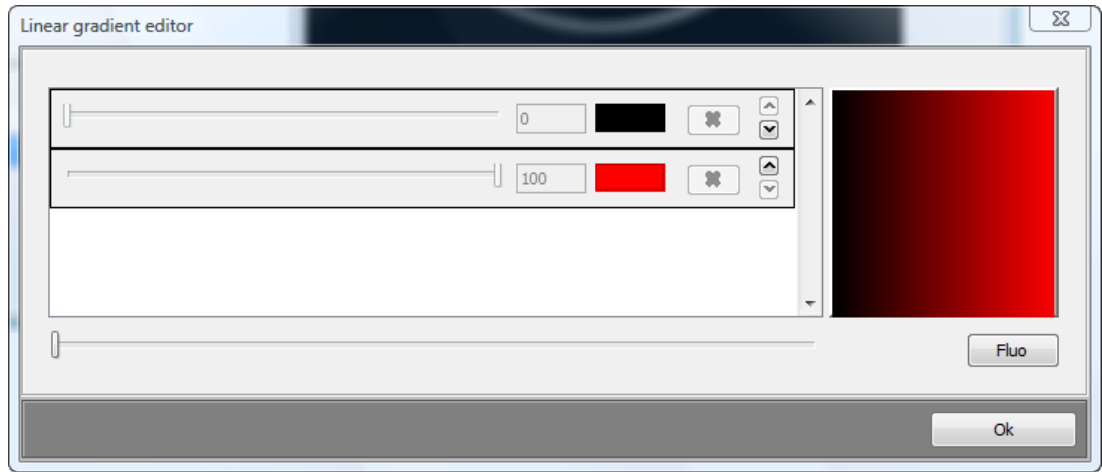
## Painting with a linear gradient

To use a linear gradient you should first define it. Select the BDefs node in the Svg document node. Right click the BDefs node. In the popup menu, select "New linear gradient".

The software lets you choose an identifier. No spaces allowed for the identifier.



Once you click the linear gradient is created as a child of the BDefs node. Select it and then click the wink property to open the linear gradient editor.



Once you have defined your linear gradient click ok.

Each time in the document you want to fill a shape you can now use the linear gradient you've defined.

### Painting with a texture

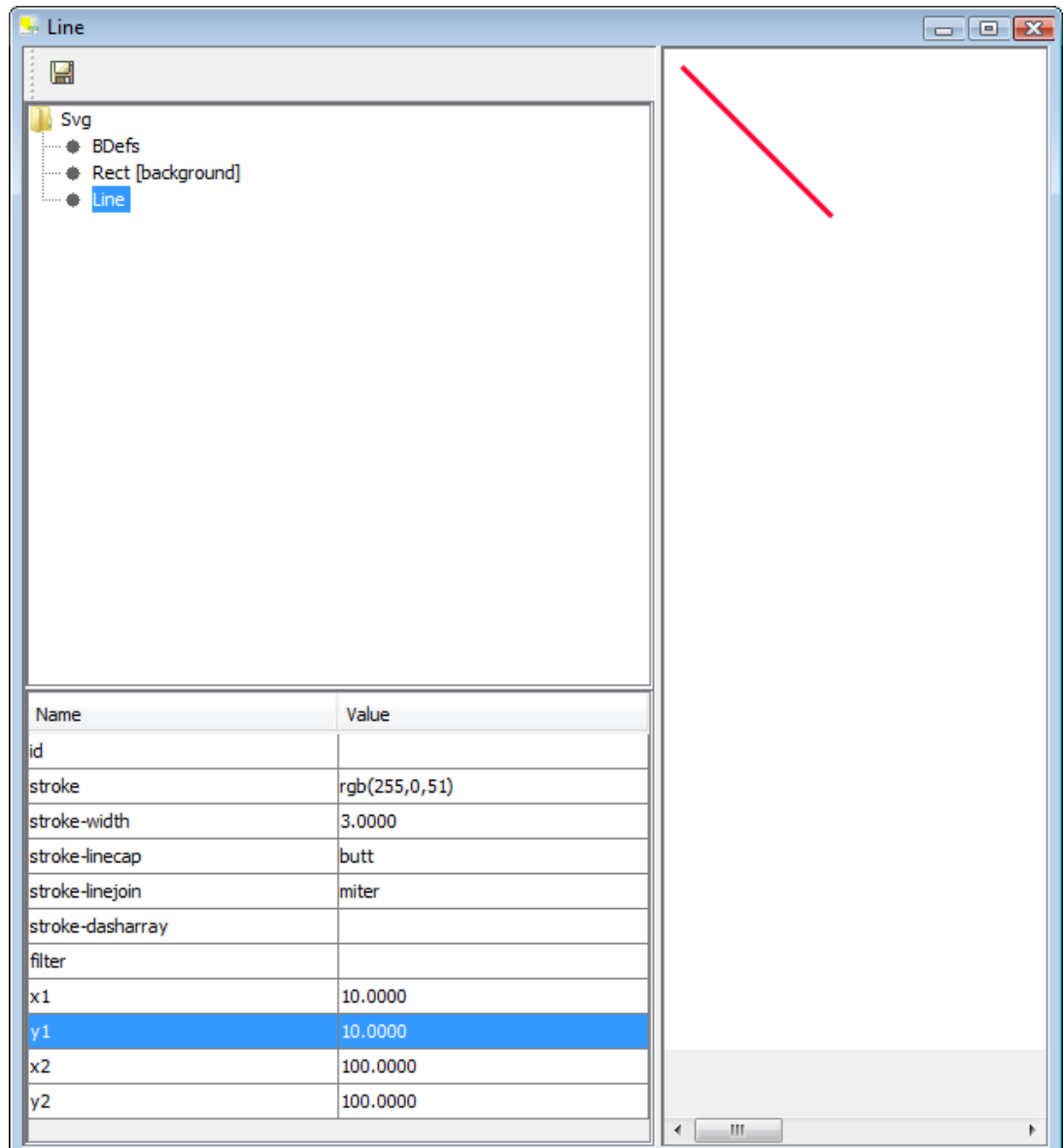
In the same way you can create a new texture. Select the BDefs node and with the popup menu choose "New pattern". This opens a dialog box that let you import a jpeg or png file that will be used as a pattern. Once you have selected your file click Ok. The software will ask you for an identifier for your pattern.

### The Line element

Line properties contains the usual properties: id, stroking properties, filter and the following specific properties.

Property	Description
x1	The x-axis coordinate of the start of the line.
y1	The y-axis coordinate of the start of the line.
x2	The x-axis coordinate of the end of the line.
y2	The y-axis coordinate of the end of the line.

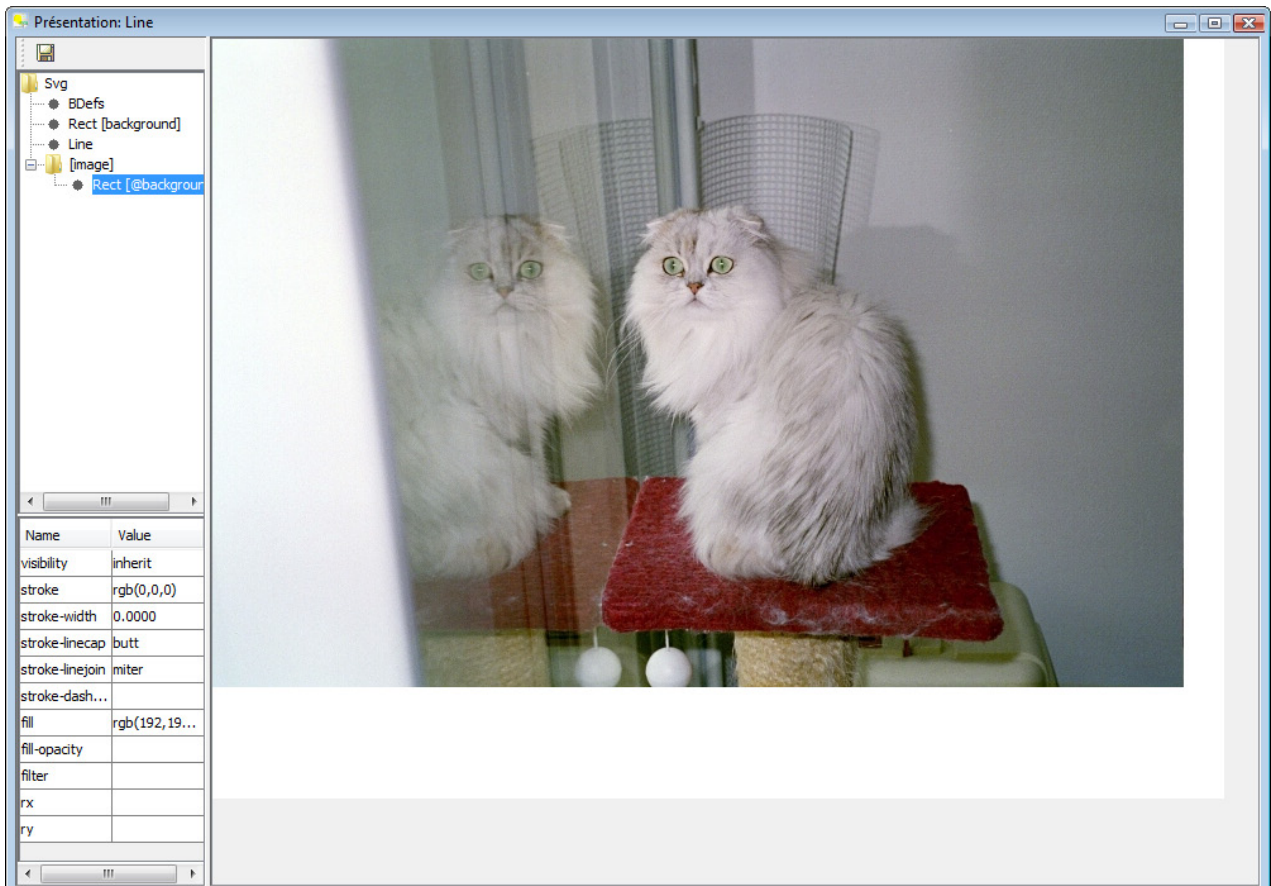
A single red line line, with stroke-width=3, x1=10, y1=10, x2=100 and y2=100.



## The BStaticImage bean

You can insert any JPEG or PNG image in your document.

In the popup menu choose Add BStaticImageBean. This will insert an [image] node in the document tree. Then click the image property of the bean. Select the image you want to import.

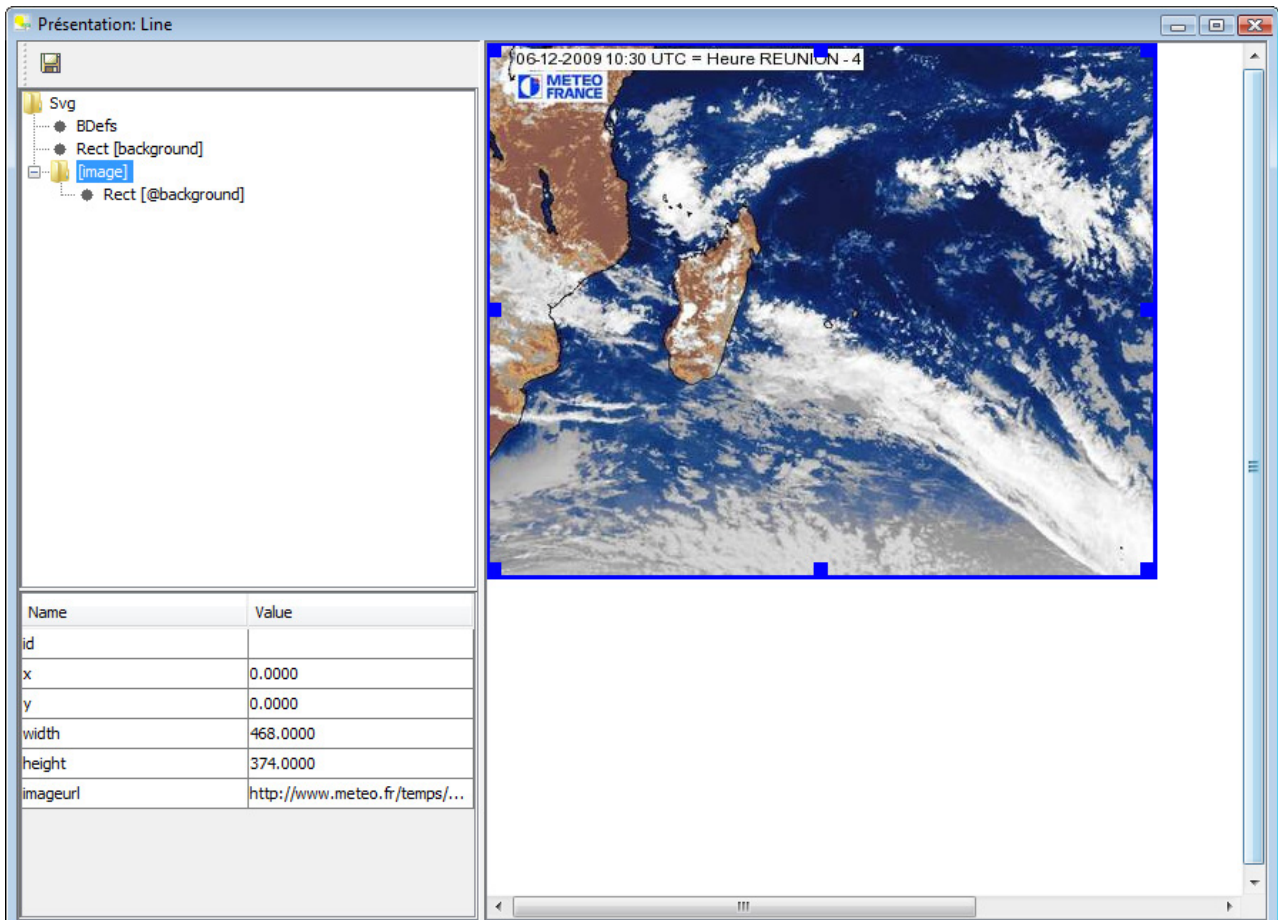


\*When you import the image into the document width and height property are set to the real image size. You can resize the image by modifying these values, generally to get a smaller image.

## The BDynamicImage bean

In a BDynamicImage bean you just insert the URL of an image on the internet. Each time you execute your presentation the image will be downloaded and inserted in the document.

In the popup menu choose "Add BDynamicImageBean". This will insert an [image] node in the document tree. Then set the imageurl property to an http link.



For example this is an image of a satellite image renewed twice a day([http://www.meteo.fr/temps/domtom/La\\_Reunion/Cmr/imagessatellite/reunion\\_sat.jpg](http://www.meteo.fr/temps/domtom/La_Reunion/Cmr/imagessatellite/reunion_sat.jpg)).

Each time the presentation is executed you will get the latest image available at this URL.

## The BLabel bean

A BLabel contains a text node and a rectangle background.

The Label itself contains four properties: x, y, width and height that specify the position of the background.

The text node contains standard stroking and filling properties.

It contains also the following specific properties.

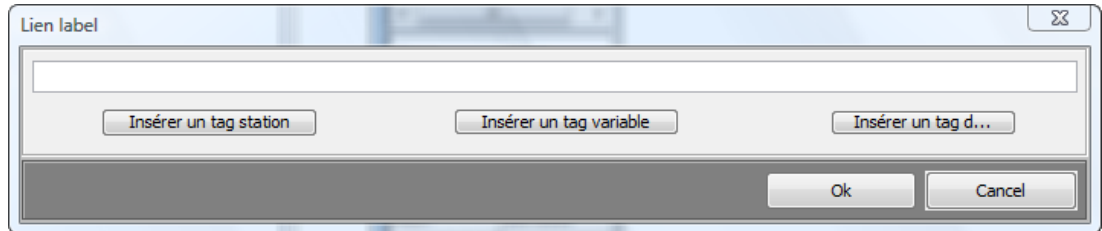
Property	Description
font	The x-axis coordinate of the start of the line.
font-weight	
x	The X coordinate of the text position relative to the label position.
y	The Y coordinate of the text position relative to the label position.
text-anchor	start: x and y is the start of the text middle: x and y is the middle of text end: x and y is the end of text

text

The text itself to draw

## The BWeatherIndicator

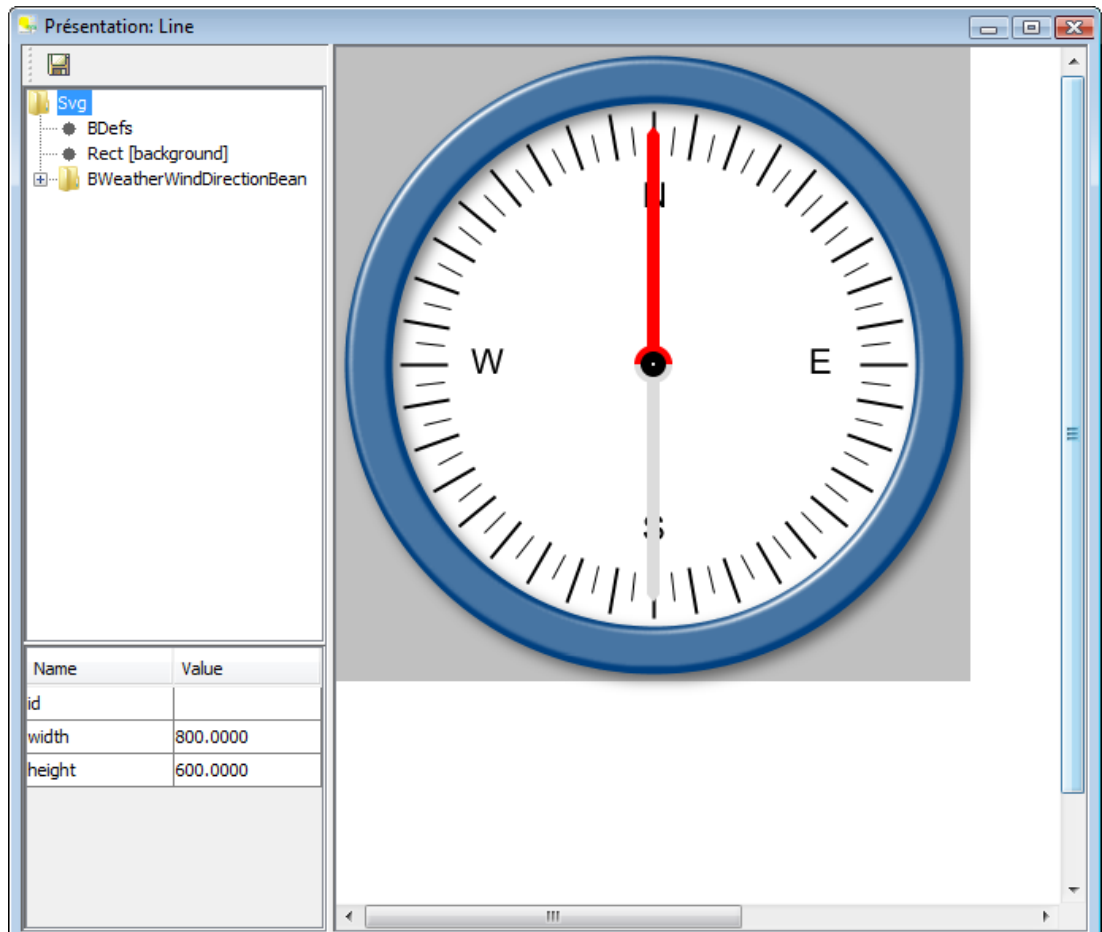
A BWeatherIndicator is very similar to a BLabel bean but the text can contains tags like in text presentations.



You can type a single line text that includes one ore more tags. If you insert a variable tag, like spot temperature once you launch the SVG presentation the BWeatherIndicator is automatically updated.

## The BWeatherWindDirection bean

The BWeatherWindDirection bean indicated wind direction.

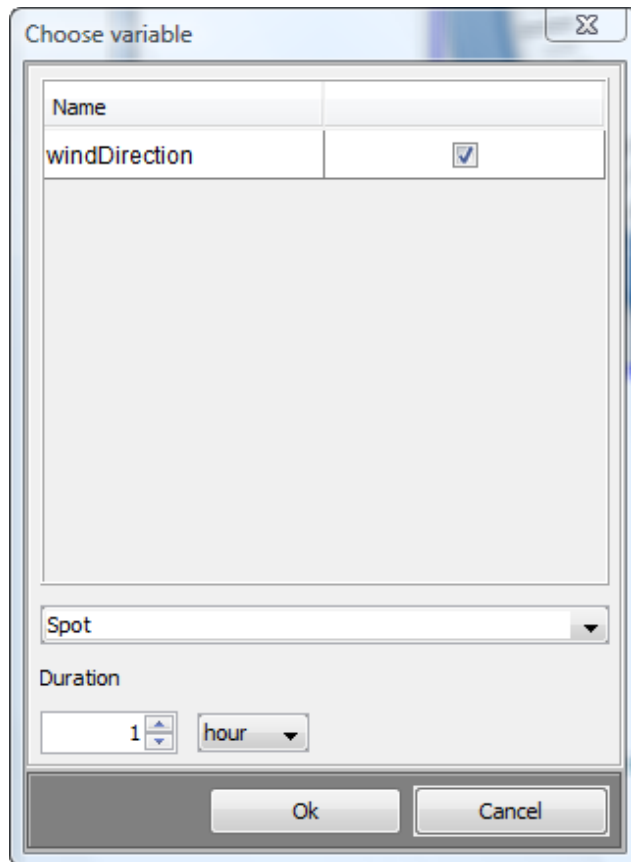


This bean contains the following properties:

Property	Description
faceStroke	Color of the outline of the face
faceStrokeWidth	Outline width
faceFill	Face fill
graduationsStroke	Graduations colors
font	Font used to draw the N-E-S-W letters.
value	The value in degrees

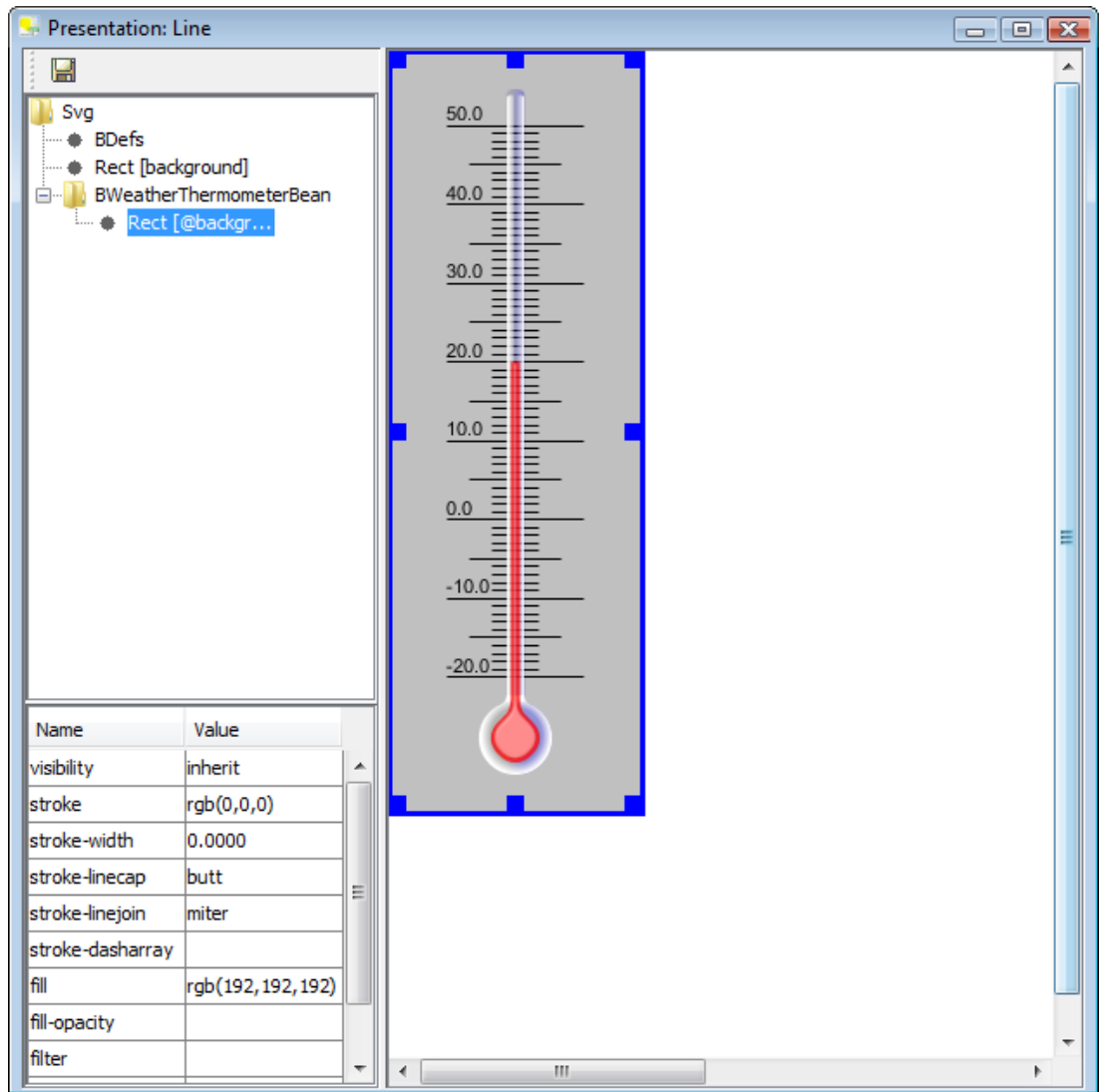
The value is linked to a real variable value by clicking the wink property. The variable chooser panel opens.

You can choose a spot variable or a derivative variable. If you choose a derivative variable be sure that it is already declared in the system.



## The BWeatherThermometer bean

The Thermometer bean is a classic thermometer.



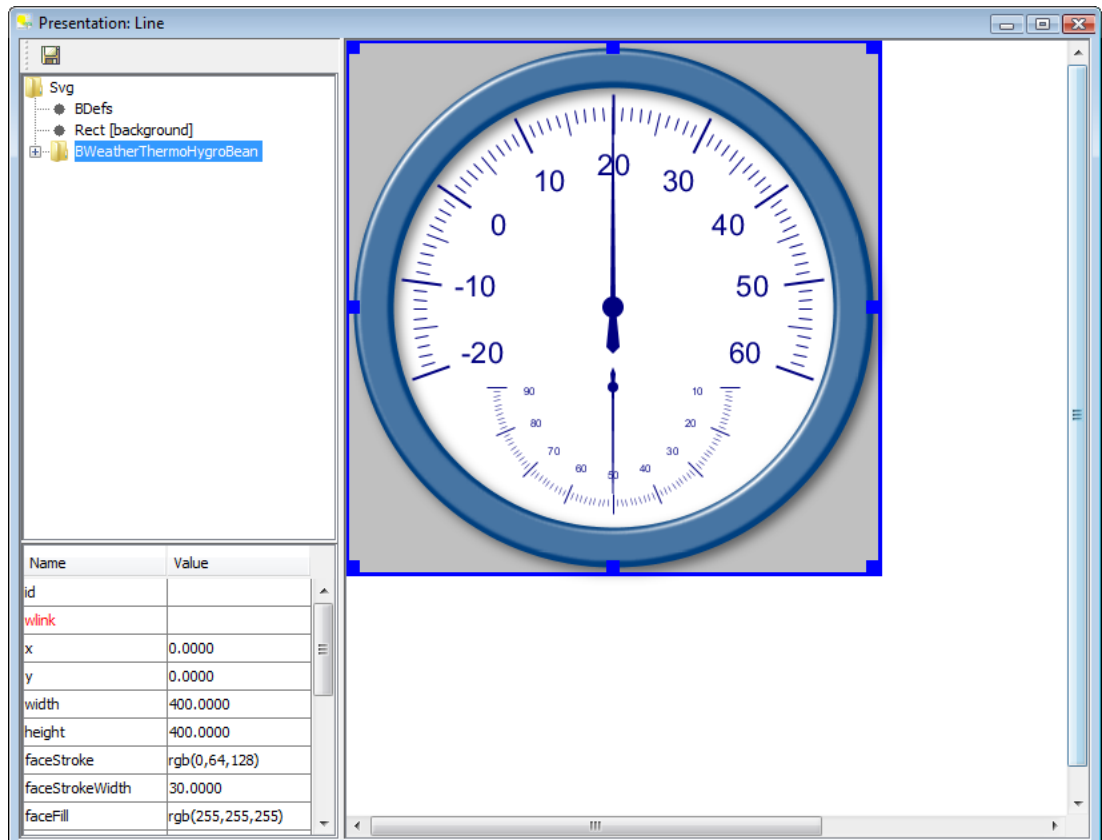
This bean contains the following properties:

Property	Description
from	The value of the lowest graduation
to	The value of the highest graduation
value	The value itself
unit	The unit used by the thermometer (Celsius or Fahrenheit)
inkColor	Ink color
graduationsStroke	Graduations color
graduationsStrokeWidth	Graduations stroke width

You need to click the `wink` property to associate the value displayed by the thermometer.

## The ThermoHygro bean

This bean displays both temperature and relative humidity.

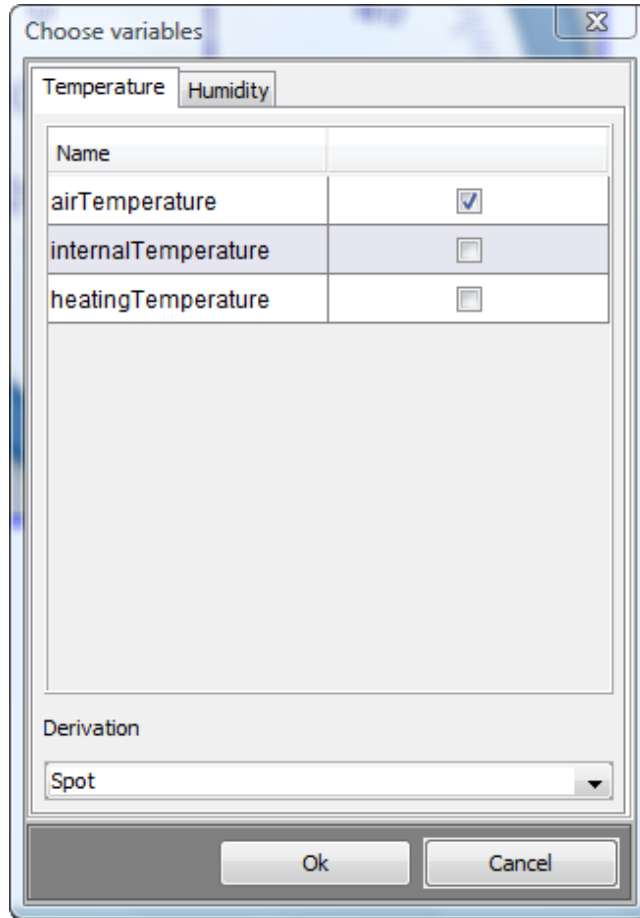


This bean contains the following properties:

Property	Description
faceStroke	Color of the outline of the face
faceStrokeWidth	Outline width
faceFill	Face fill
temperatureFrom	The value of the lowest temperature graduation
temperatureTo	The value of the highest temperature graduation
temperatureUnit	Temperature unit
temperatureGraduationsStroke	Color of temperature graduations
rhGraduationsStroke	Color of relative humidity graduations
temperatureArrowFill	Color of temperature arrow
rhArrowFill	Color of relative humidity fill
temperatureFont	Font used for temperature values
rhFont	Font used for relative humidity font
temperatureValue	Temperature displayed
rhValue	Relative humidity displayed

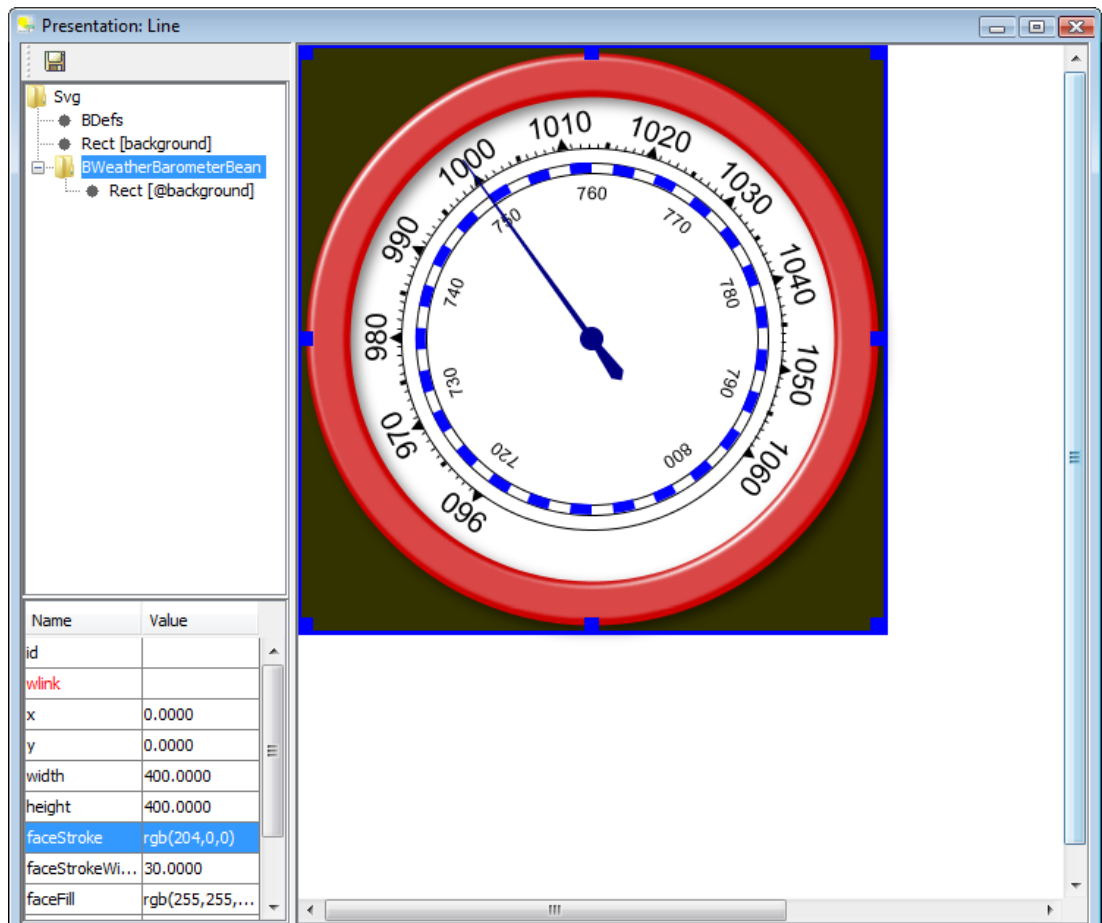
To associate displayed values to the stations variables click the wlink property.

The panel lets you choose both temperature and humidity variables.



## The BWeatherBarometerBean

This bean displays atmospheric pressure.

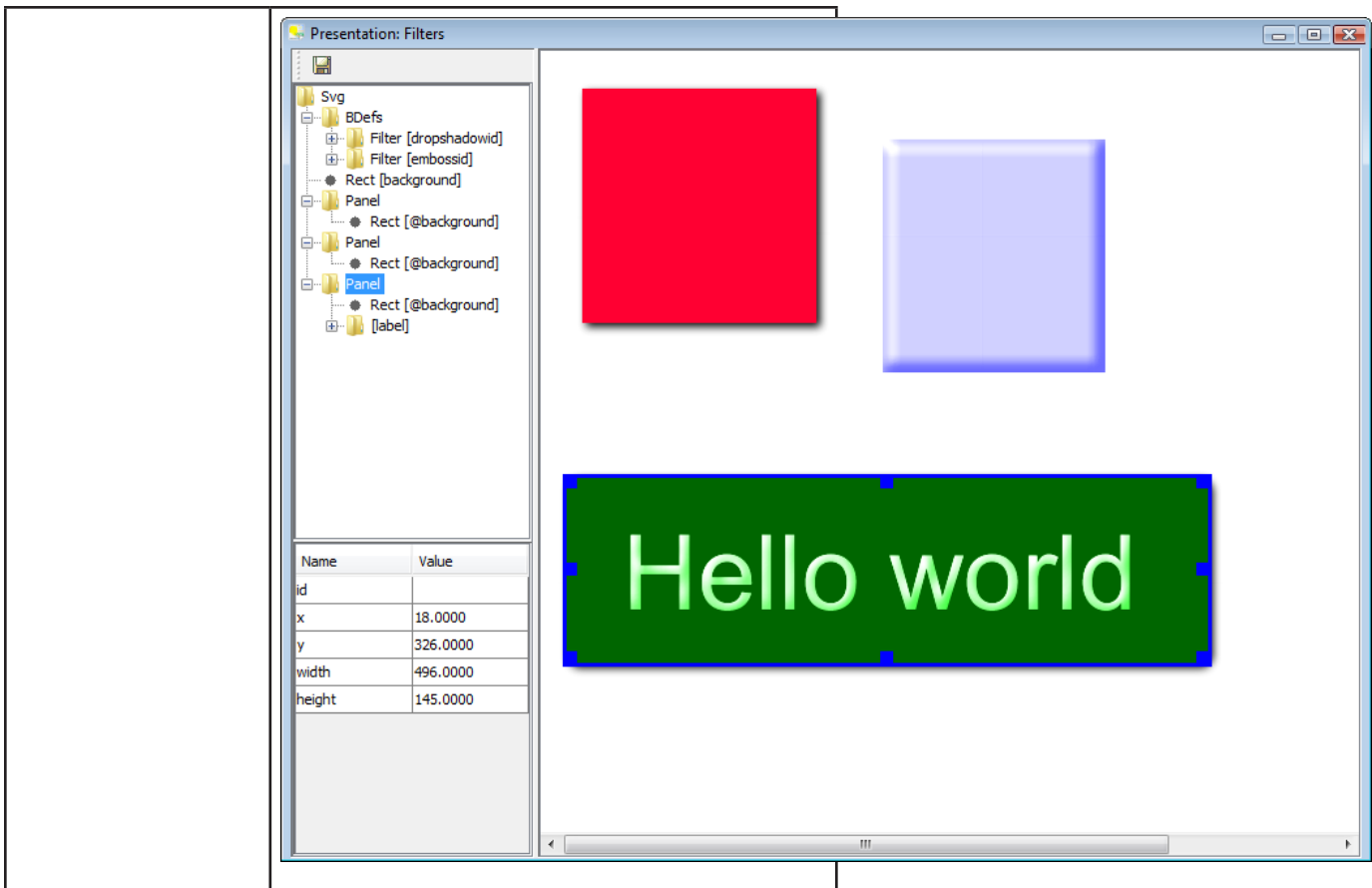


A barometer bean has the same properties as the wind direction bean, but the wlink property should be associated to an atmospheric pressure.

## Filters

Many objects have a filter property. The editor provides three types of filters:

- Drop shadow (the red rectangle)
- Emboss filter (the blue rectangle)
- Recessed filter (the text "Hello world" has the recessed filter)



To create a new filter, right click the BDefs node, and choose “New Filter” and the type of filter you want to create. Then set an id to you new filter.

You can modify some attributes of the filter. This is generally a difficult task and you need to refer to the official SVG documentation.



You can create SVG charts directly in the SVG editor much more freely than you can do with the chart wizard.

This chapter covers:

- Présentation générale
- Le composant BWeatherXYPlotArea
- Le composant BWeatherLayout
- Le composant BLinePlot
- Le composant BBarPlot
- Le composant BHighLowPlot

## Introduction

A chart is a collection of objects.

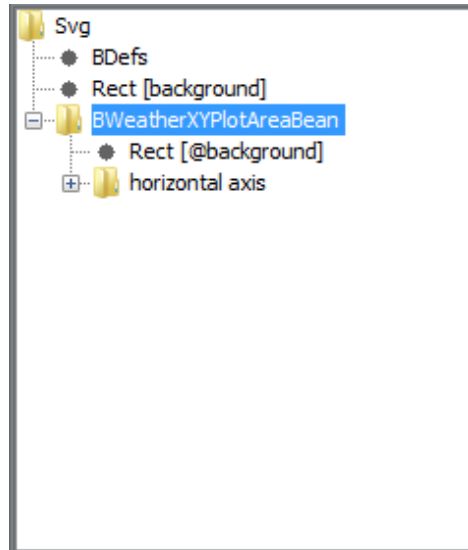
- The top level node is a BWeatherXYPlotArea that defines the area of the chart
- The second level is made of one or more BWeatherLayout. A BWeatherLayout defines an Y scale and axis. For example if you want to draw on your chart both temperature and pressure you need two BWeatherLayout.
- The third level is the plot itself. It can be a line, bars or high/low items.

## The BWeatherXYPlotArea bean

This component defines this area where you can draw your charts.

To add this component to your SVG composition, right click the mouse button on the container and in the contextual menu select 'Add BWeatherXYPlotArea bean'.

The XYPlotArea bean contains:  
 the background area  
 the time based horizontal axis  
 You can change size and position of the plot area by changing x, y, width and height attributes.  
 To setup the time range of your chart click the wlink to open the "time range" window.



Name	Value
id	
wlink	
x	0.0000
y	0.0000
width	400.0000
height	400.0000
from	calendar(2000,0,1,0...
to	calendar(2000,1,1,0...
useLocalTimeZone	<input checked="" type="checkbox"/>

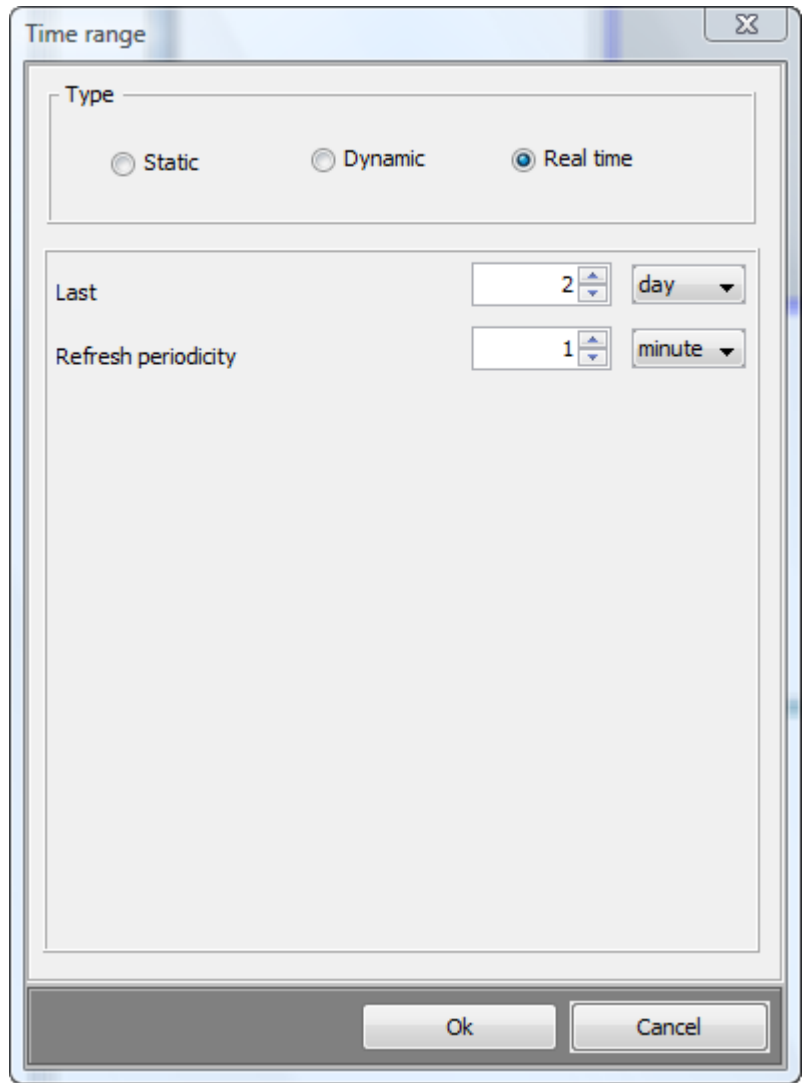


By selecting the 'Dynamic' button you select a time range that ends now.  
With this example each time you run your chart the time range will be the last two days.

The image shows a 'Time range' dialog box with the following elements:

- Title:** Time range
- Type:** Three radio buttons:  Static,  Dynamic,  Real time.
- Last:** A numeric input field containing '2' and a dropdown menu showing 'day'.
- Buttons:** 'Ok' and 'Cancel' buttons at the bottom.

The 'Realtime' option is like the 'Dynamic' option your chart will be automatically updated if you run it inside the client software. The refresh periodicity indicates the duration between a redraw of your chart.



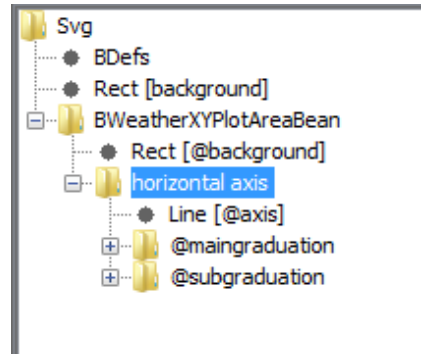
### Configuring horizontal axis

The horizontal axis contain three elements

the axis line

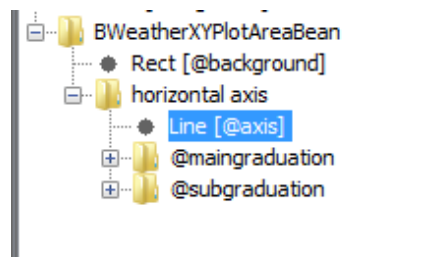
- the main graduation, identifies by @maingraduation
- the secondary graduations identifies by @subgraduation

Property	Description
mainSubGraduations	One of YEAR/MONTH, MONTH/DAY, DAY/HOUR and HOUR/MINUTE to indicate the main and sub graduation units. For example if you choose MONTH/DAY main graduation represents month and sub graduation represents days.
showMain	Visibility of main graduations
showSub	Visibility of sub graduations



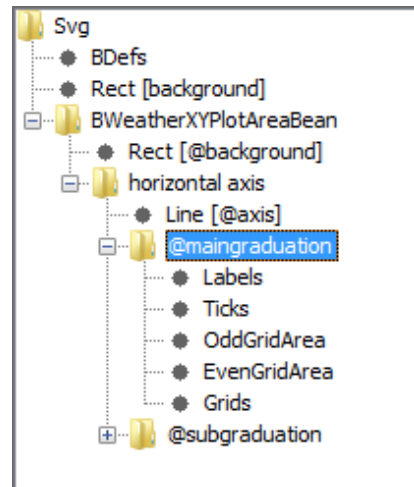
Name	Value
id	@hzaxis
visibility	inherit
mainSubGraduations	YEAR/MONTH
showMain	<input checked="" type="checkbox"/>
showSub	<input checked="" type="checkbox"/>
timezone	Europe/Paris

You can setup the axis line attributes by selecting the line element.



Name	Value
id	@axis
stroke	rgb(0,0,0)
stroke-width	1.0000
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
filter	

The main graduation has no properties but contains five sub nodes:



### The label graduations node

Labels are the date/time drawn along the horizontal axis. This node contains the following properties:

Property	Description
fill	The paint used to draw labels.
fill-opacity	The opacity used to draw labels.
font	The font used to draw labels.
visibility	Visible or hidden.
modulo	If this value is 1 (the default) the date/time is drawn every tick. If this value is n the date/time is drawn every n ticks.
dateFormat	The date or time format used to draw labels.
xTextPosition	"Tick" or "Period": if tick the text position is exactly under the tick. If "Period" the text position is centered between two ticks.
textPosition	The distance between the axis and the text: default is 20.
textAnchor	The text anchor of the text.

### The tick graduations node

Ticks are drawn every year, month, day, hour...  
 According to the type of axis you choose.  
 Visibility, stroke and stroke-width are the usual  
 attributes for the line of the axis.  
 Modulo allows skipping some tick. For example if  
 you choose a modulo equals to 2 only 1 tick out of  
 two are drawn.

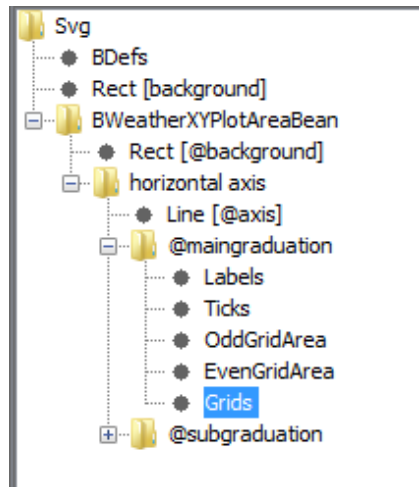
Name	Value
id	@ticks
visibility	inherit
stroke	rgb(0,0,0)
stroke-width	1.0000
modulo	1

The odd and event grid areas are the areas of the  
 plot area between two ticks. You can fill these areas  
 with two different colors and opacities.

Name	Value
id	@oddgridarea
fill	rgb(255,255,255)
fill-opacity	1.0000
visibility	hidden

### The Odd and even grid area

You can draw grids for each tick of your plot area.  
 Attributes are the usual line attributes.  
 By default, visibility is hidden.



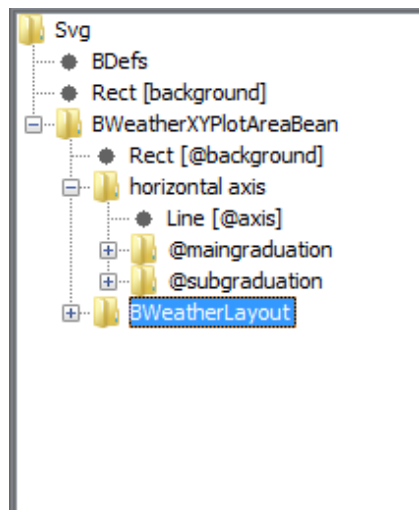
Name	Value
id	@grids
visibility	hidden
stroke	rgb(0,0,0)
stroke-width	1.0000
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	

## The BWeatherLayout bean

The BWeatherLayout bean defines the vertical axis and the Y scale.

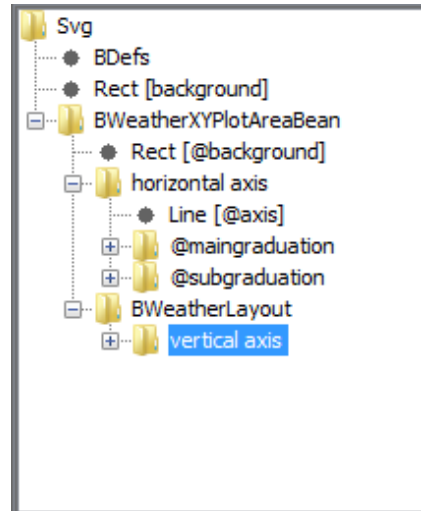
You can add more than one BWeatherLayout to the plot area. For example, if you want to display on the same area both temperature and pressure you need to BWeatherLayouts because units are not the same.

The BWeatherLayout bean contains three attributes allowing to set the scale of your data:  
 From is the number corresponding to the bottom of the plot area  
 To is the number corresponding to the top of the plot area  
 Fromtoauto allows an automatic scaling on the vertical axis.

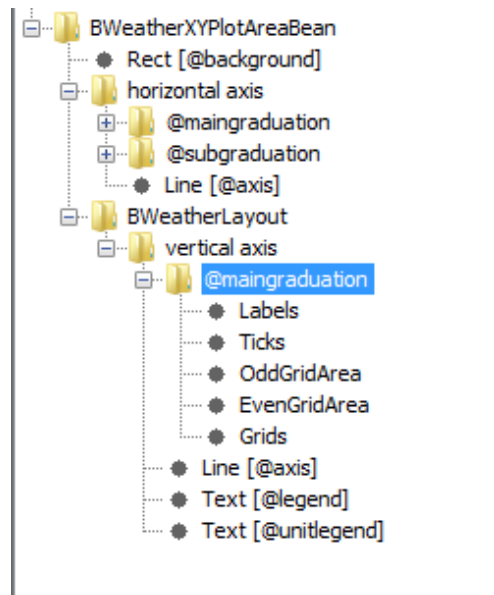


Name	Value
id	
from	0.0000
to	20.0000
fromtoauto	<input type="checkbox"/>

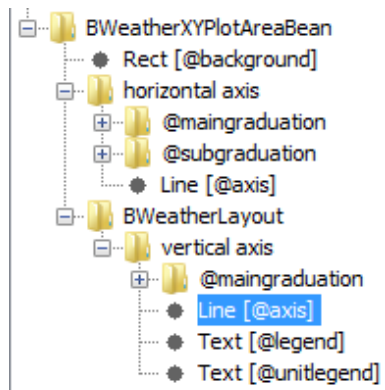
Vertical axis contains three attributes:  
 Visibility, inherit by default  
 Position: Left (the default) if you want your axis to be on the left of plot area or right if you want it to be on the right.  
 Offset allows to setting distance to move it outside the plot area.



Like the horizontal axis, the vertical axis has a main graduation but no sub graduation. The main graduation has the same sub elements than horizontal axis.

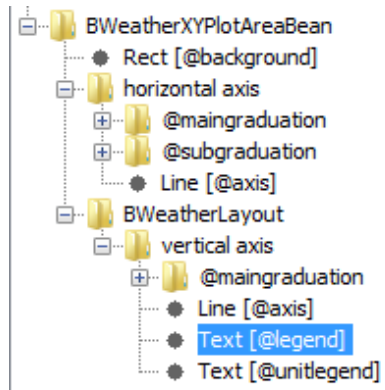


You can configure the vertical axis line with the usual attributes.



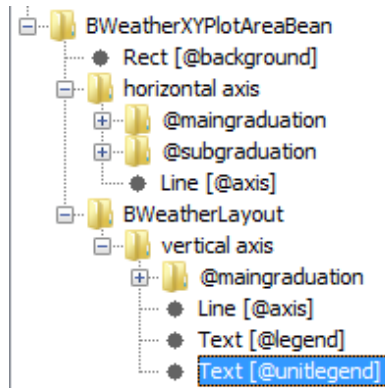
Name	Value
id	@axis
stroke	rgb(0,0,0)
stroke-width	1.0000
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
filter	

Vertical axis contains a legend text node. This text is positioned vertically along the axis. You can change the position with the x and y attributes. It contains all the usual text attributes.



Name	Value
id	@legend
stroke	
stroke-width	
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
fill	rgb(0,0,0)
fill-opacity	
filter	

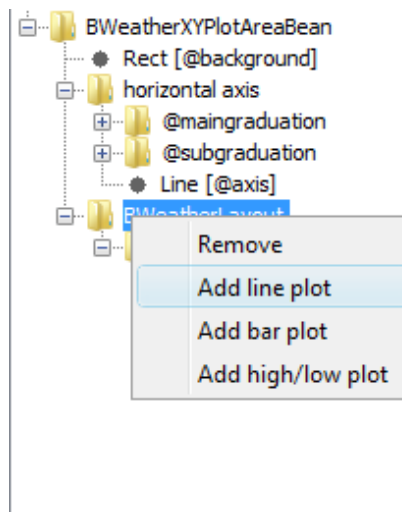
The unit legend is a text positioned at the upper left of the axis, generally to display the unit of the axis. It contains all the usual text attributes.



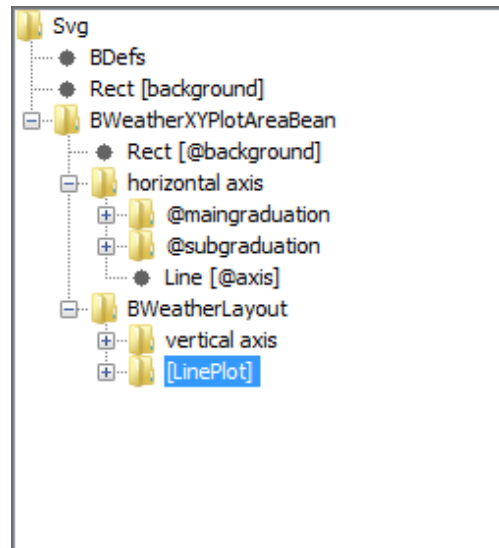
Name	Value
id	@unitlegend
stroke	
stroke-width	
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
fill	rgb(0,0,0)
fill-opacity	
filter	

## Adding a line plot to the layout

Once you have a layout you can add a line plot by right clicking on the BWeatherLayout node.

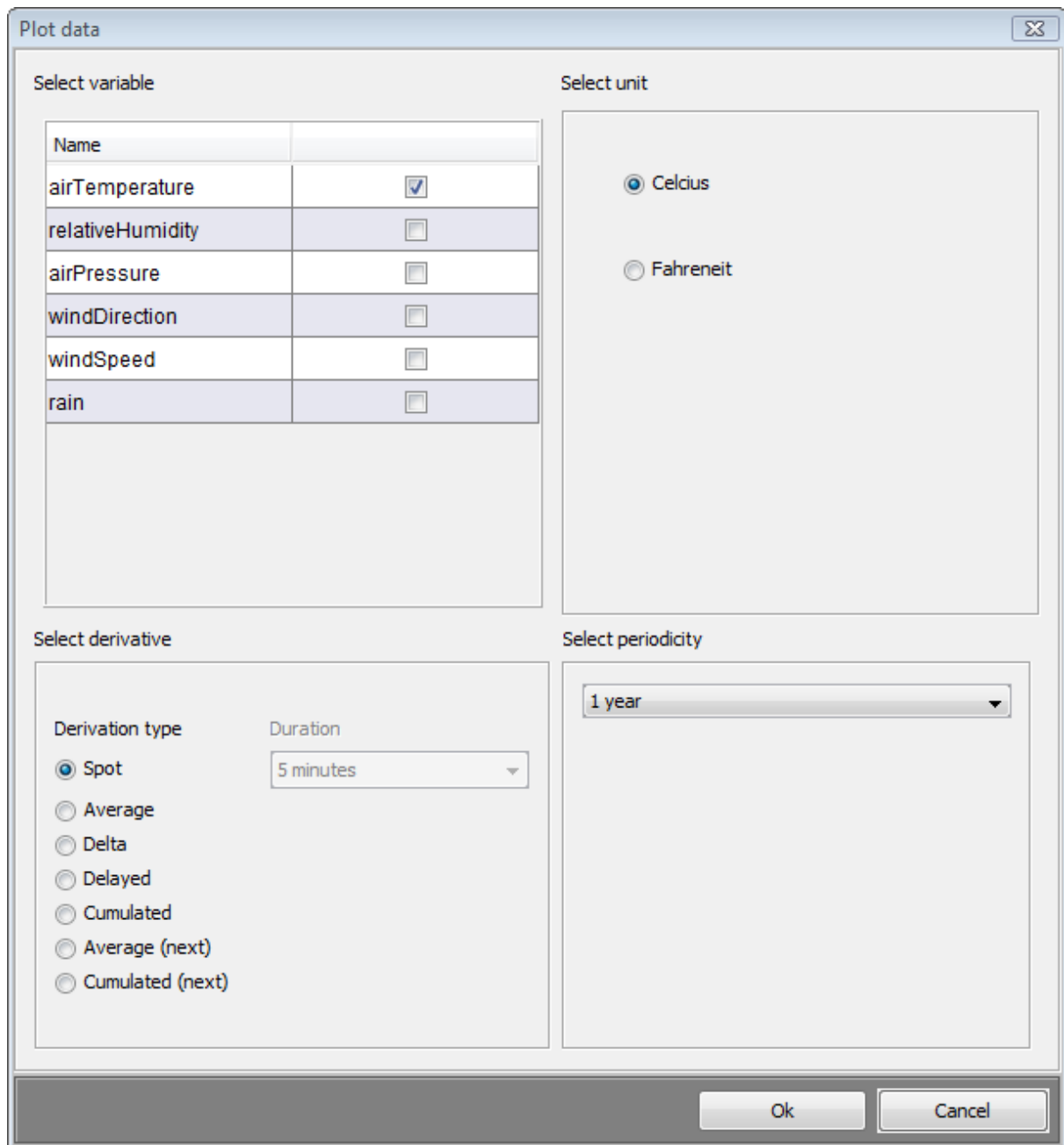


Once you have a LinePlot in your composition the most important thing is to set what data you want to draw.  
By clicking the wlink value zone you open the plot data window.



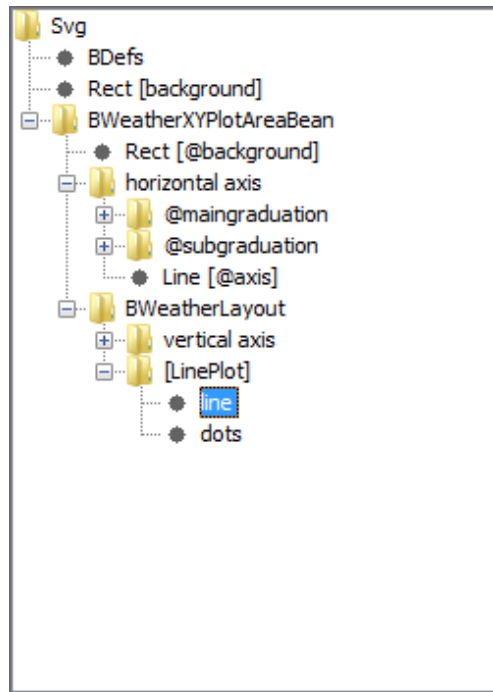
The plot data panel allows you to select:

- The variable you want to draw
- The unit of the chart
- The periodicity, ie the period of time between two points.
- You can also draw a derivative variable

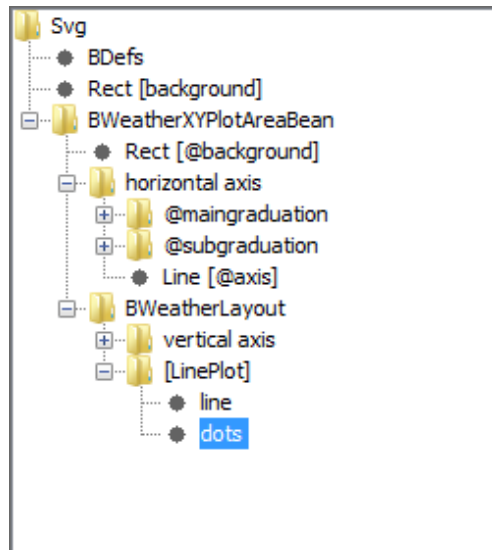


The LinePlot contains two sub items:

- The line itself: you can set color, width...
- The dots node allows you to draw a dot for each point of the chart.

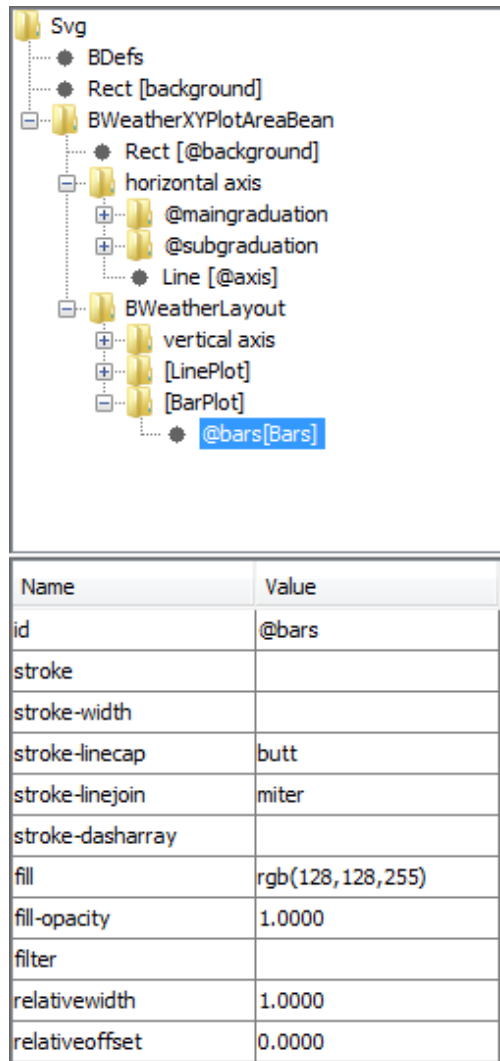
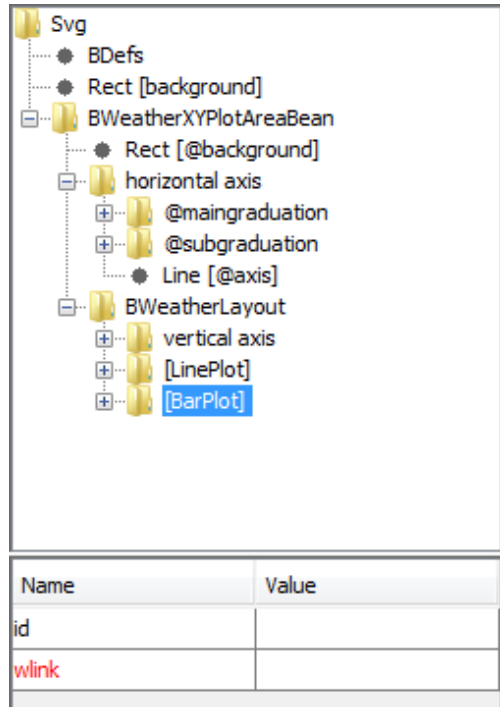


Name	Value
id	@line
stroke	rgb(0,0,0)
stroke-width	1.0000
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
visibility	inherit
filter	



Name	Value
id	@dots
visibility	inherit
filter	
dotstype	circle
size	4.0000
stroke	rgb(255,255,255)
stroke-width	2.0000
stroke-linecap	butt
stroke-linejoin	miter
stroke-dasharray	
fill	rgb(255,0,0)
fill-opacity	

## Adding a bar plot to the layout



# System managers

The system contains several managers that need to be configured if you want to make the most of your software. If you don't want to use some features just ignore them.

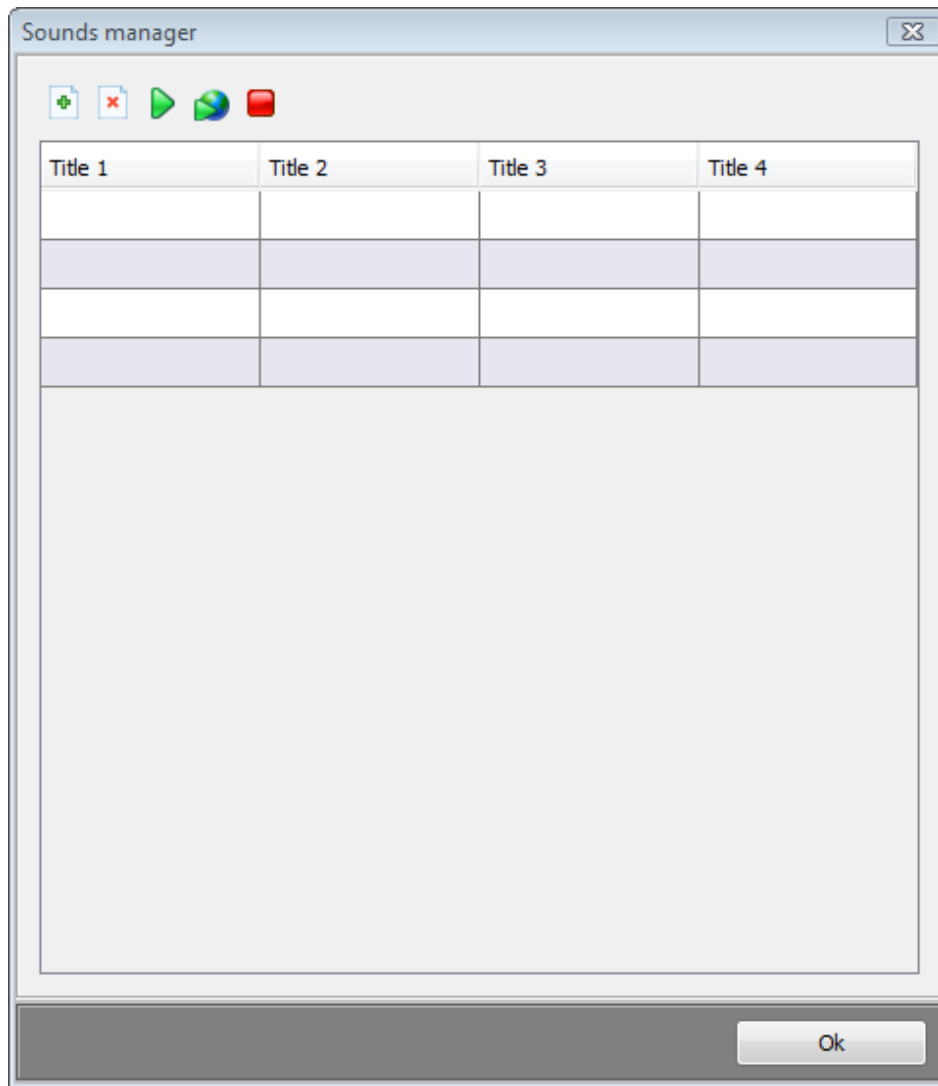
This chapter covers:

- The sound manager
- The SMTP (mail) manager
- The FTP manager
- The SMS manager
- The license manager
- The system log

## The sound manager

Sounds are mainly used by alarms even if you can use them in another context. Sounds are managed by the server and not by the client software 'Elements'.

To open the sound manager select Managers -> Sound manager in the main menu.



Once you have opened the sound manager window you can click the buttons to:

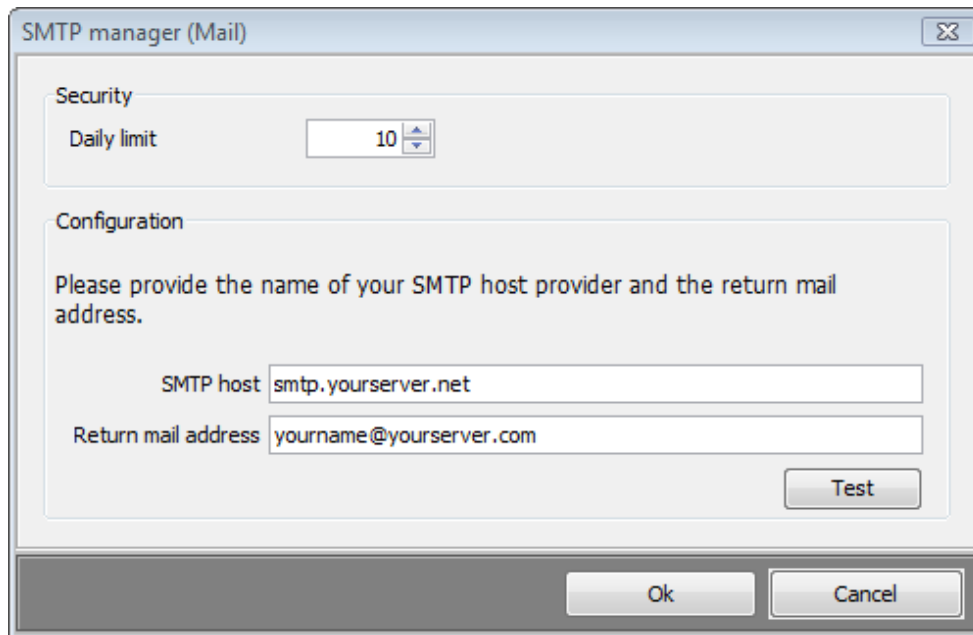
- Add a sound to the system: you can use any WAV or MP3 files.
- Remove a sound: the sound file is deleted from the system
- Play the sound locally
- Play the sound remotely
- Stop the player if a sound is playing

There is an important difference between playing the sound locally or remotely. If you play it locally the client software downloads the file and plays it. If you play it remotely the server plays it (even if you exit from the client software).

## The SMTP manager (mail)

The SMTP manager should be configured if you want the system to send mail for alarms or tasks.

To open the SMTP manager window select Managers -> SMTP manager in the main menu.



You should setup you SMTP host name (or IP address). This one is generally like 'smtp.yourprovider.net'.

The return address is the mail address that the receiver will get in the sender column of its mail software.

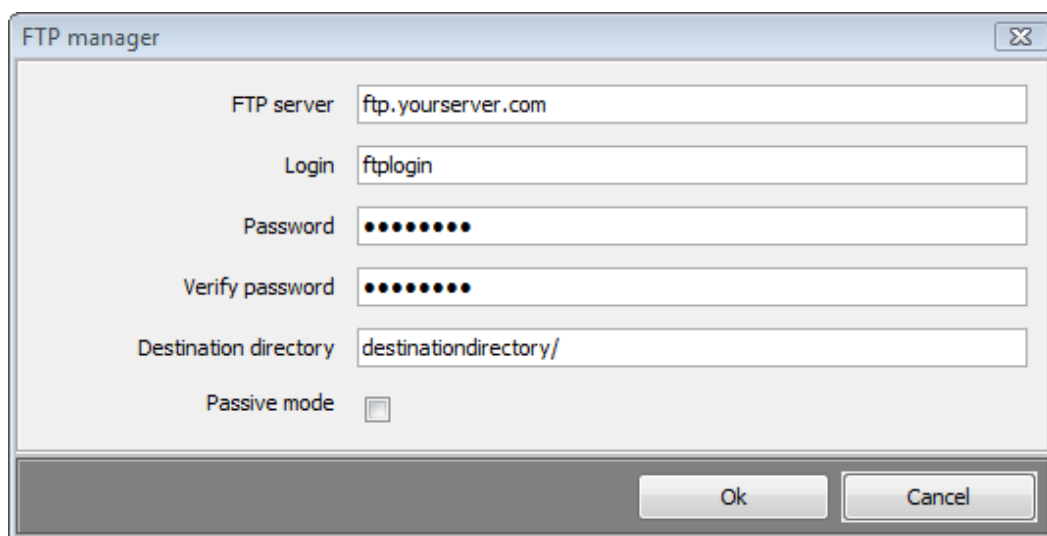
Once everything is configured, you can test the connection by clicking the 'Test' button to send you an e-mail.

The daily limit is the maximum number of mails the system can send in a day.

## The FTP manager

The FTP manager should be configured if you want the system to publish documents on the internet.

Top open the FTP manager select Managers -> FTP manager.



You need to set up four parameters.

Parameter	Comment
FTP server	The host name or IP address of your FTP server
Identifier	Your identifier to login

Password	Your password
Destination directory	The destination directory is where your documents are published. For example if the destination directory is set to myweatherdirectory/ if you export a file mychart.png the file is exported to /myweatherdirectory/mychart.png. You can leave this field empty if you want to publish in your root directory.

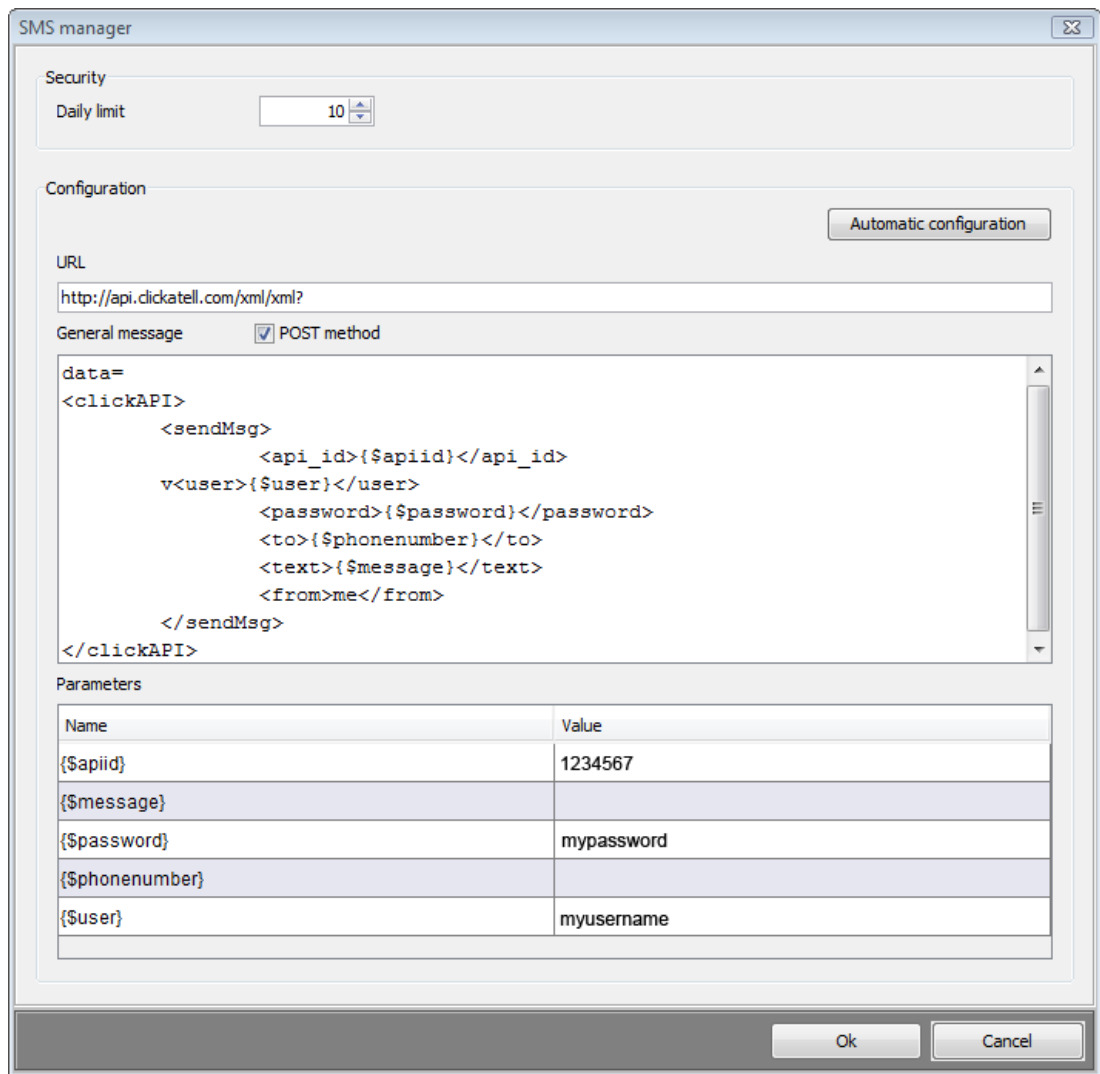
## The SMS manager

You need to configure the SMS manager if you want to send SMS with the system (task or alarms).

There are many SMS providers and different APIs. The system offers a generic HTTP API that can be adapted to most providers APIs.

You need to setup the following fields:

- The URL of the service
- The message itself is the text appended to the URL when the system sends an SMS. Each tag of
- The form {\$XXX} is replaced by the value in the parameters table below. There are two special tags
- That are mandatory in the test message: {\$message} will be replaced by the message you send and {\$onenumber} will be replaced by the phone number.
- If you check the 'POST method' check box the HTTP request method will use a POST method. If you don't check this box the request method will use a GET method (in most cases APIs uses a POST method).



The software provides you a pre-configured message if you want to use clickatell (<http://www.clickatell.com>) as your SMS provider.

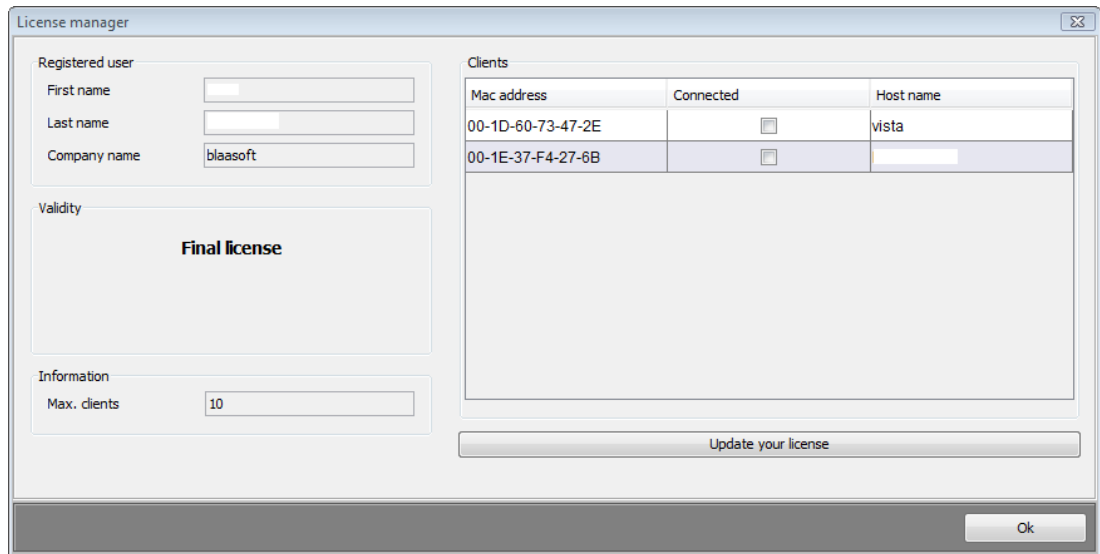
In this case just click automatic configuration and select clickatell. Then you need to set up you apiid, password and username.

When an SMS is sent (for example you can send one by right clicking a small text presentation)you can check the server response in the log file (see system log section).

## The license manager

The license manager is mainly provided for information purpose. You can also upgrade your license by providing a new one with the "Update your license" button.

Top open the license manager, select Managers -> License manager in the main menu.



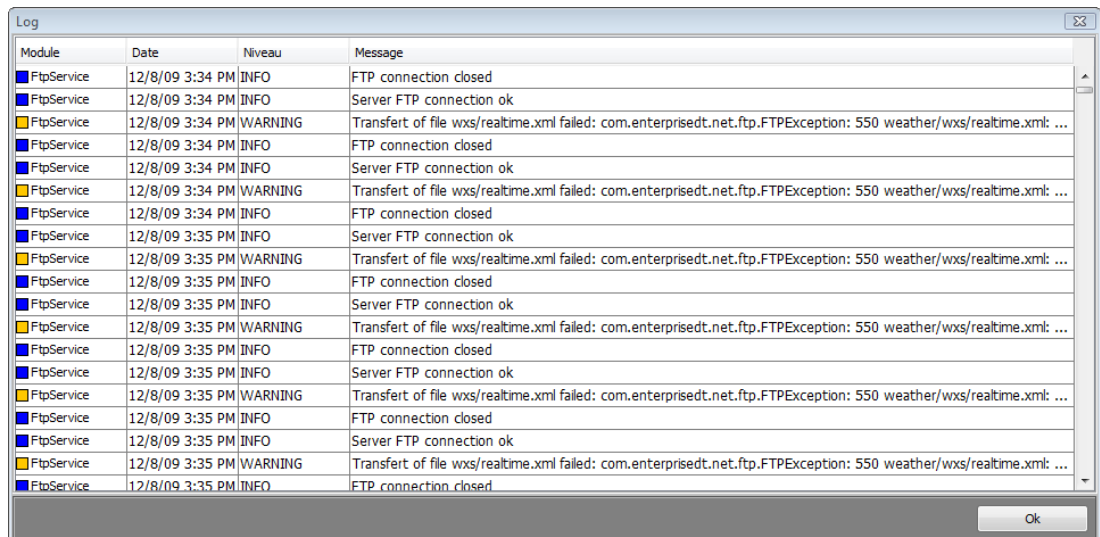
The license manager provides a list of all registered clients with their host names, mac address and if they are connected or not.

## The system log

The system log provides important information on the system. You can check for example the time a query or a presentation generation takes.

To open the logging window, select Managers -> Show system log in the main menu.

To get the complete message double click the line. A popup window will open with all the details.



Tasks are actions that are executed at a fixed time or periodically. With the task manager you can for example send a mail or an SMS every hour to be kept informed of you stations data. The task manager is also used to publish HTML or SVG presentations on the web by FTP.

This chapter covers:

- Introduction
- Creating a new task
- Selecting the time set
- Setting the actions
- Playing a sound
- Sending a mail
- Sending an SMS
- Publishing with FTP
- Managing tasks

## Introduction

A task is made of two things:

- A rule defining when the task is executed. A task can be executed once at the time you decide or periodically.
- A list of actions to be executed. There are four types of actions: playing a sound, sending a presentation on a ftp server, sending a mail or sending an SMS.

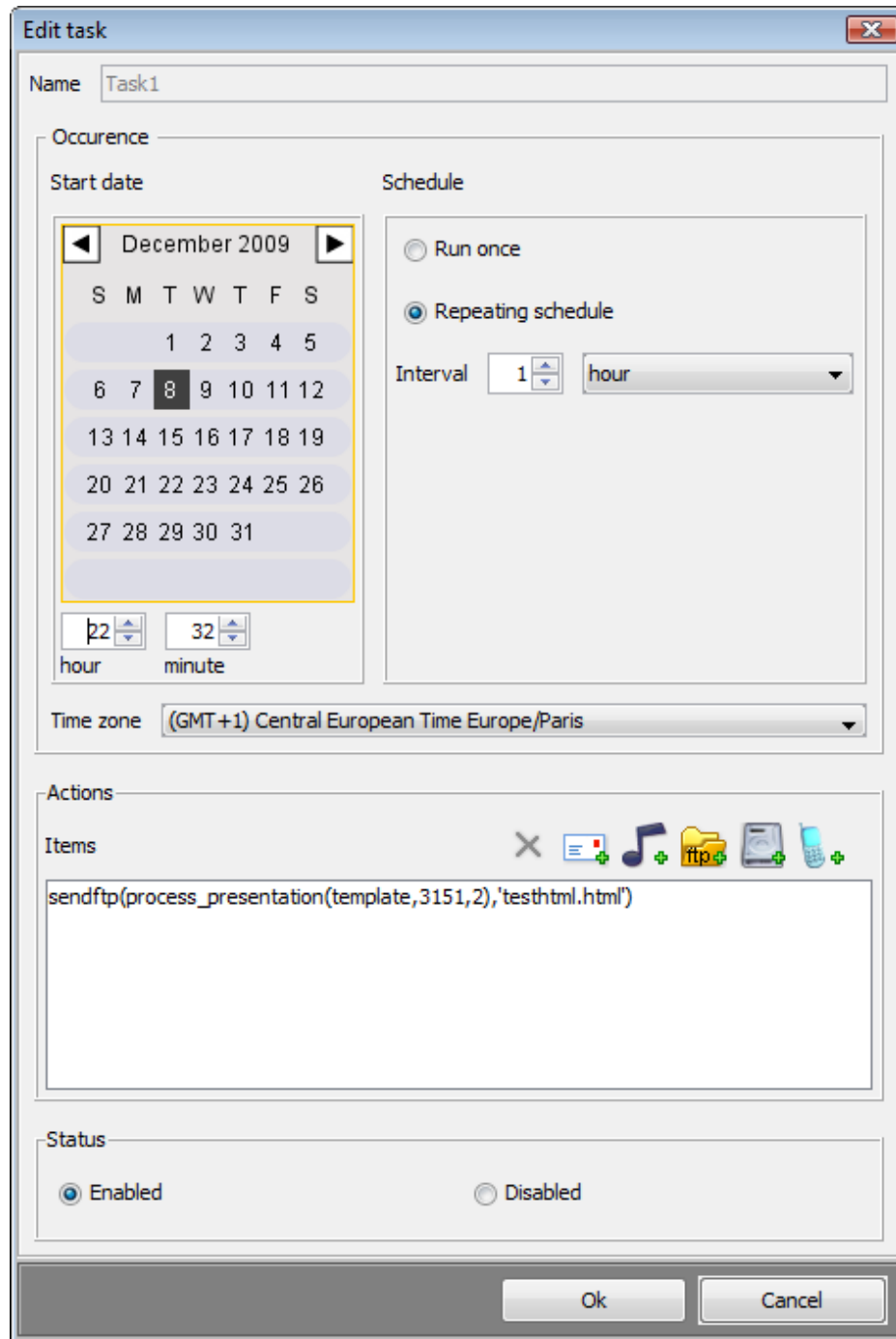
There are four types of actions:

- Playing a sound
- Sending an e-mail
- Sending an SMS
- Publishing presentations by FTP transfer

## Creating a new task

To create a new task select Tasks -> New in the main menu, or click the new task icon in the tool bar. This will open the task editor window.

The task editor allows you to define your task. In the time set panel you define when the task will be executed. The action panel contains the list of the actions to be executed. You can also enable or disable the task you define. If the task is disabled no actions are executed.



## Selecting the time set

The first thing to do is to define the time set.

You can choose to execute your task just once. To do this select the time and the 'Run once' check box. You can also modify the time zone but in most cases just let it to its default value.

The screenshot shows the 'Occurrence' dialog box. On the left, under 'Start date', there is a calendar for December 2009 with the 8th selected. Below the calendar are spinners for 'hour' (set to 22) and 'minute' (set to 32). On the right, under 'Schedule', the 'Run once' radio button is selected, and the 'Repeating schedule' radio button is unselected. The 'Interval' is set to 1 and the unit is 'hour'. At the bottom, the 'Time zone' is set to '(GMT+1) Central European Time Europe/Paris'.

You can choose to execute the task periodically. Select the 'Repeating schedule' check box and choose the first time the task will be executed.

The screenshot shows the 'Occurrence' dialog box. On the left, under 'Start date', there is a calendar for December 2009 with the 8th selected. Below the calendar are spinners for 'hour' (set to 22) and 'minute' (set to 32). On the right, under 'Schedule', the 'Repeating schedule' radio button is selected, and the 'Run once' radio button is unselected. The 'Interval' is set to 1 and the unit is 'day'. At the bottom, the 'Time zone' is set to '(GMT+1) Central European Time Europe/Paris'.

### Setting the actions

By clicking one of the action icon you can add one or more action to the task.

The following section explains the four types of actions available.

- Playing a sound
- Sending an e-mail
- Sending an SMS
- Publishing with FTP

## Playing a sound

Playing a sound is not very relevant action. This action is much more useful for alarms. However nothing prevents you from playing a sound for example every hour.

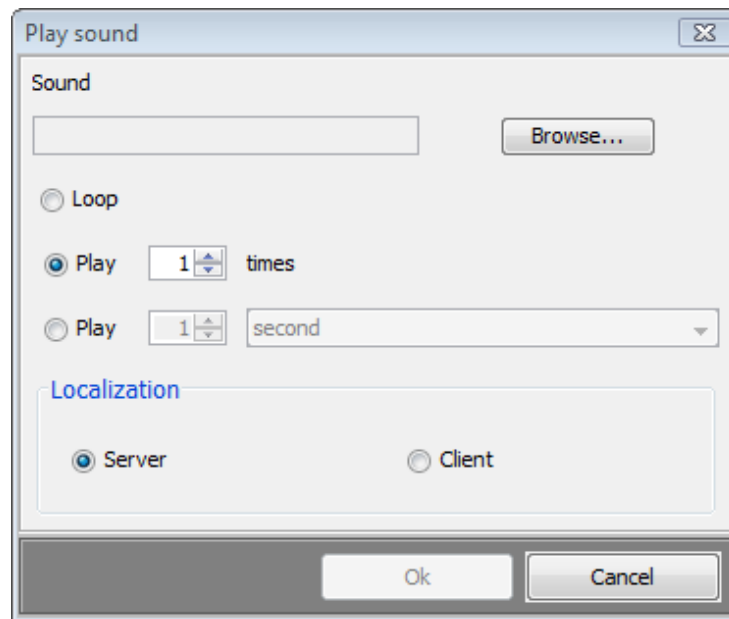
A sound can be played by the client software or by the server.

- If the sound is played by the server you can close the graphical interface (Elements) and the sound will be played.
- If the sound is played locally, this means that the client software will play the sound. If you close Elements the sound will not be played.

In the software Preferences you can control the sound level. This will affect the client software but not the server.

The Play sound panel allows you to tell how the sound is played.

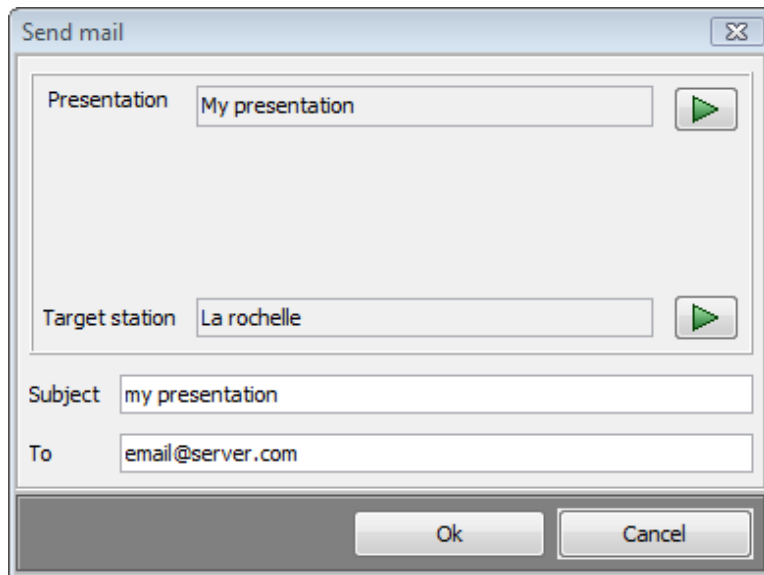
- You can specify that the sound is played n times. This is the default option with one time.
- You can specify a duration, for example one minute.
- The third option is to play the sound indefinitely.



## Sending a mail

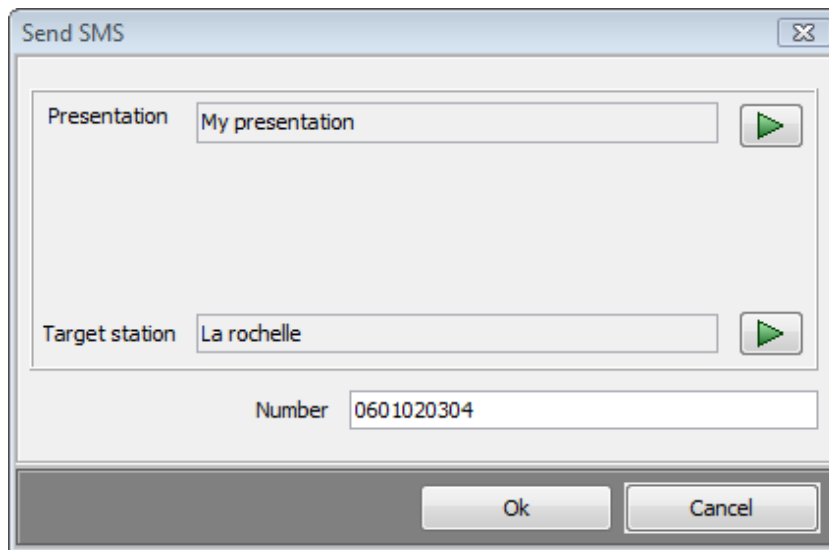
Sending an e-mail is certainly much more useful since you can be notified of the different variables values of the station.

To send a mail, you have to create the text presentation that will be sent. You can of course include any information in your presentation.



## Sending an SMS

Sending an SMS is very similar to sending a mail.

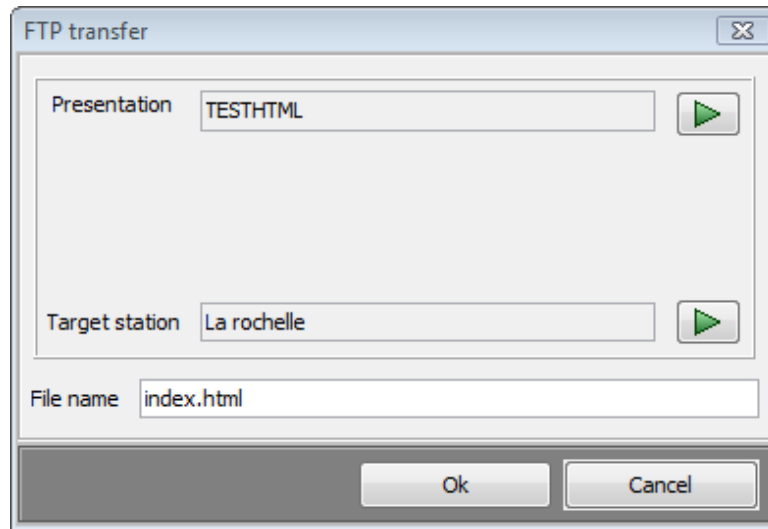


## Publishing with FTP

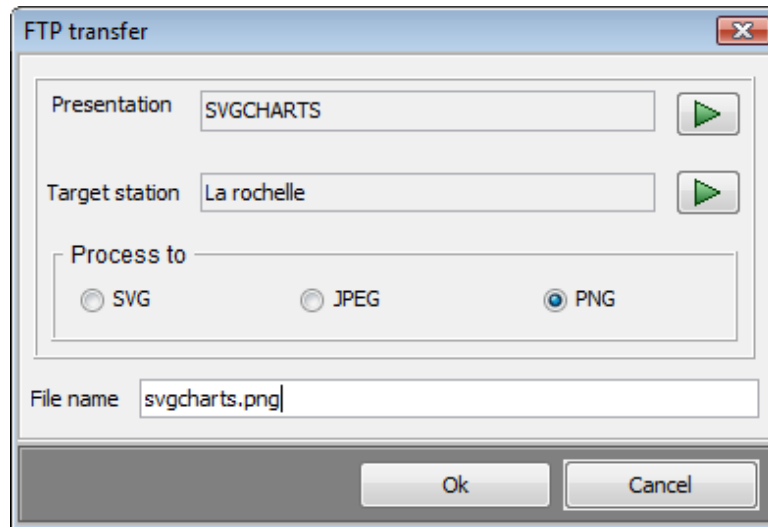
This is probably the most useful feature of the task manager since it allows you to:

- Publish text presentations
- Publish HTML presentations
- Publish SVG presentations: in that case you can choose to export the files in SVG but also to transcode the document in JPEG or PNG.

The presentation is published on the FTP server with filename index.html.



Since the presentation ALPHA is an SVG template presentation you need to specify the target station. You can choose to export the file in three different format: SVG, JPEG or PNG.

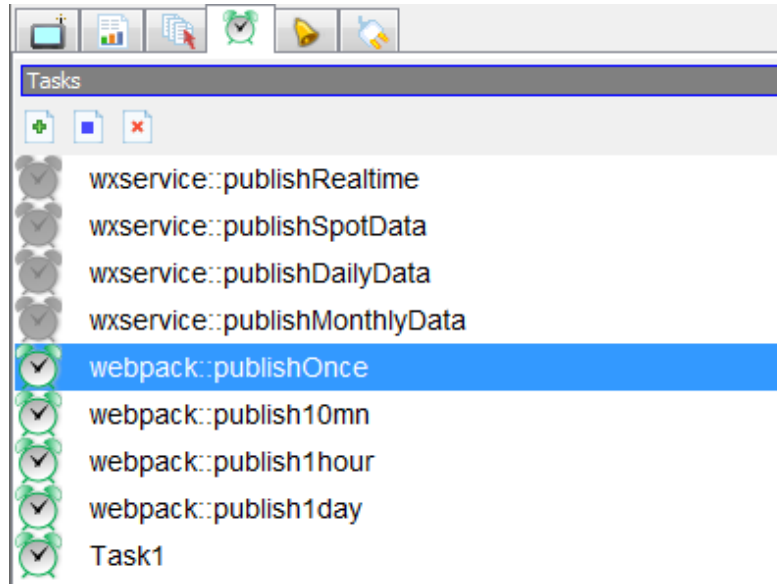


Actually there are no browsers on the market with a good SVG support.. Microsoft Internet explorer simply ignores this format. Firefox and safari implement partially SVG but the result is generally insufficient to get something fine on the screen.

## Managing tasks

The navigator allows you to manage your tasks.

The task icon indicates whether the task is activated or not. In this example Task 1 is activated but Task2 is not.



You can with the task buttons you can easily add, open or remove a task. If you open a task you can modify it.

By right clicking a task with the mouse, you can modify the task status and deactivate it or reactivate it.

Alarms are very similar to tasks. An alarm is the combination of a condition and a set of actions that are triggered when the condition becomes true.

This chapter covers:

- Introduction
- Creating a new alarm
- Alarm condition
- Setting the actions
- Alarm life cycle
- Managing alarms

## Introduction

An alarm is made of two things:

- A condition is a mathematical expression that can be true or false.
- A set of actions to be executed. When the condition becomes true, actions are executed.

## Creating a new alarm

To create a new alarm select Alarms-> New in the main menu., or click the "New alarm" icon in the tool bar. This will open the alarm editor window.

## Alarm condition

The condition associated to an alarm is just a formula including variables of your station. When the conditions becomes true the alarm is activated.

The condition editor allows a lot of possibilities.

- You can use basic variables but also derivative variables.
- You can use only one expression but also more complex expression using boolean AND and OR operators.

An elementary expression compares two values:

- A variable with a value
- A variable with another variable

The following arithmetic operators are available:

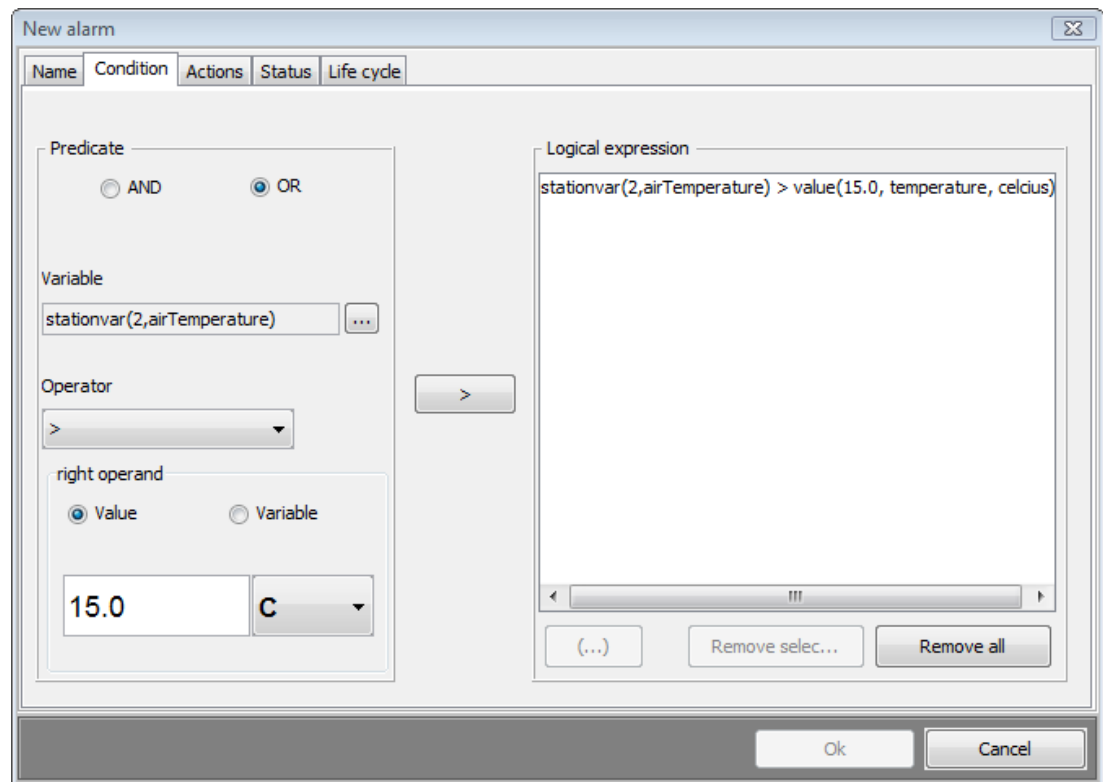
Operator	Comment
<	less than

>	greater than
=<	less than or equal
>=	greater than or equal
==	equal

Once you have selected your variable with the variable button, the operator and the value to make the comparison click the ">" button to add the new expression.

To remove an expression, select it in the "Logical expression" list and click the "Remove button".

You can add parenthesis around an expression by selecting the three lines in the list and click the "(...)" button.



## Setting the actions

Setting the actions of an alarm is exactly the same thing than setting actions in a task. Please refer to the previous chapter.

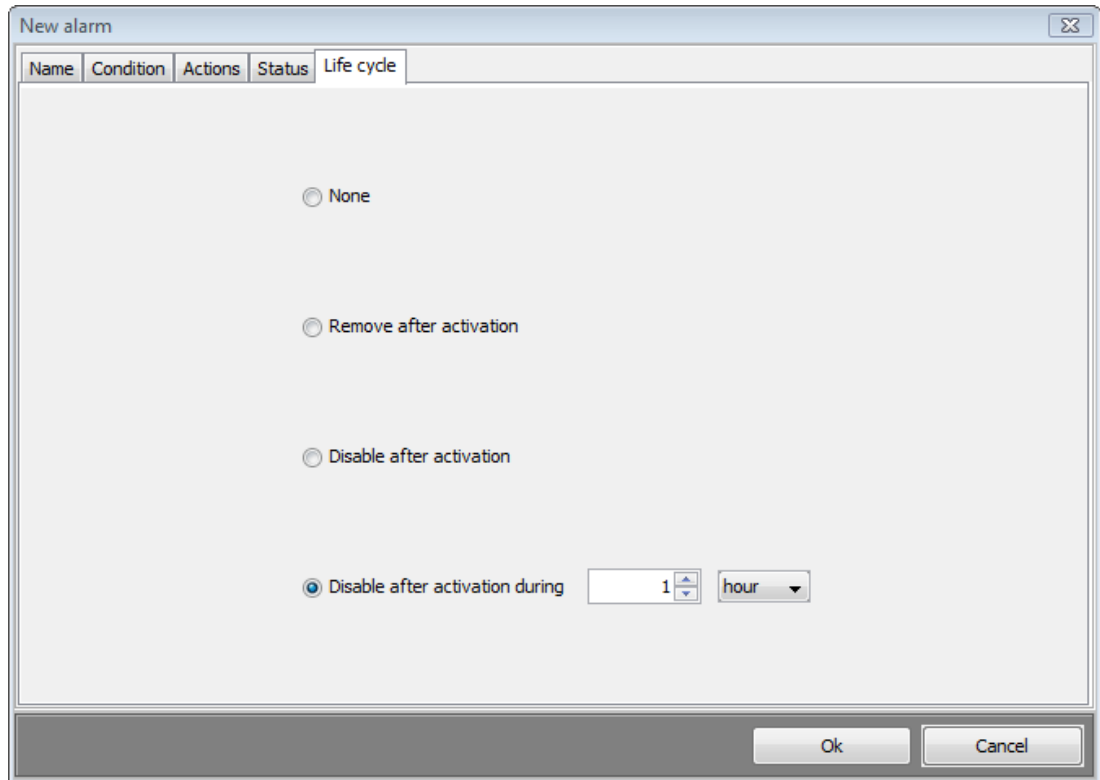
## Alarms life cycle

You can control the life cycle of your alarm. It's necessary to do it in most cases.

For example if you want to be notified by SMS that wind speed is over 100 km/h. You create an alarm with the condition `windSpeed > 100 km/h`. When the wind speed will reach 100 km/h you will receive your first SMS. But in most cases the condition will become alternately false, true, false, true... in a few minutes. If you don't set the life cycle of your alarm you can easily receive 10 or more SMS in a few minutes.

To control the alarm life cycle there are four options:

Option	Description
None	The alarm status remains enables after the activation.
Remove after activation	The alarm is removed after the activation.
Disable after activation	The alarm is disabled after the activation. You have to enable it manually.
Disable after activation during...	The alarm is disabled after the activation during a period of time you can choose.



## Managing alarms

You can manage your alarms from the Alarm tab of the navigator.

The three buttons over the alarm list allow to:  
 create a new alarm  
 open the selected alarm: you can just see or modify an alarm  
 remove the selected alarm  
 If an alarm is disabled the icon is also in a disabled mode.

