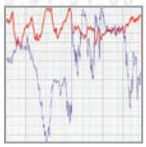
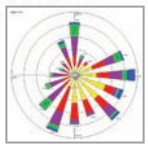
Complete Data Management Software

For Metrological- and Hydrological Data Services



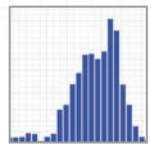
Database Driven

Automatically import from data files directly into a database. Supports many dataloggers. Easily manage large and small data logger networks.



Web Access to Data

Powerful web access for your data. View real time data as well as historical data. Control access to the data with user control. Multi-language web interface.



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WEATHER PRESENTER

Clear and dynamic methods of displaying weather data

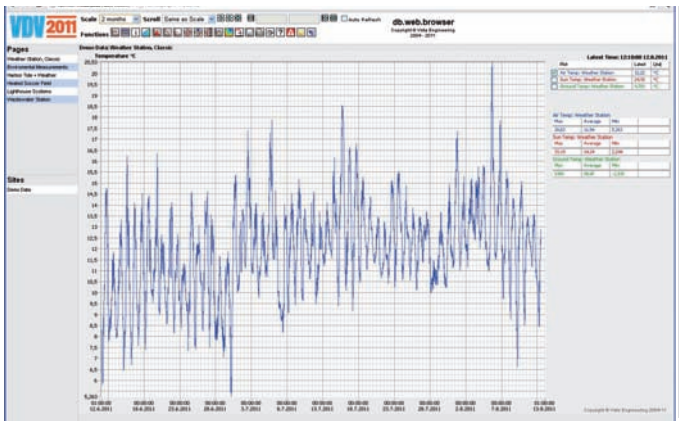

Figure 1: A typical temperature trend line through a time series for ambient air temperature data, showing two months of data every 10 minutes. The location is Reykjavik, Iceland

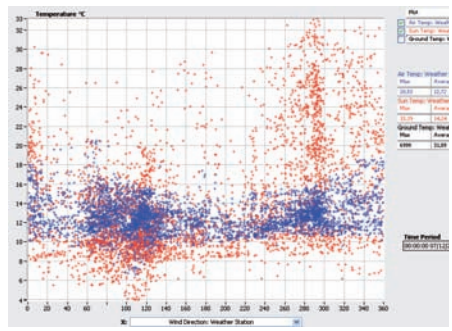

Figure 2: An XY graph of the air temperature. Clearly the highest temperature is measured when wind is from the west

There are several ways that present useful and beneficial temperature data. While temperature data has been chosen in this demonstration, any other meteorological data could also benefit from this method of display.

As a start, let's look at Figure 1, a typical temperature trend line through a time series for ambient air temperature data; here it shows two months of data every 10 minutes. The location is Reykjavik, Iceland. While certain trends may be visible to the trained eye, there are several options of displaying data in order to bring forward important aspects of the data. Now let's look at a few examples.

Figure 2 is an XY graph of air temperature for July 2011, plotted as function of wind direction. The temperature is plotted against the Y-scale while the 360° of wind direction are plotted against the X-scale. The blue dots indicate air temperature measured under a radiation shield and the red dots indicate temperature on the surface of the ground.

Figure 3 is an intensity plot of air temperature for July 2011. The 31 days are on the Y-scale and the 24 hours of each day are on the X-scale. It is easy to recognize the main trends, for example that it is coldest in early morning and warmest in the afternoon, as expected. Two periods of time are different from the rest, that is, the cold night of July 7 and the warm afternoon of July 15.

Clearly, ground temperature is highest when wind is blowing from the west, indicating clear sky, however the air mass higher up is not affected by sunshine.

Figure 4 is an overlay graph of air temperature for July 2011. The Y-scale is temperature in °C and the X-scale is hours of the day – starting at midnight, with noon in the middle and midnight again to the right. On display are trend lines of the first 28 days of July. Clearly, it was a cold morning on July 7 and until that afternoon (light-grey line at the bottom). And on the afternoon of July 15, it was warm (purple line at the top).

The data in Figure 5 is borrowed from a permafrost temperature profiling project. On display is one year of permafrost temperature data from the Arctic zone. The data is read from 10 temperature sensors located at different levels, the one closest to the surface is 10cm down and the deepest one is 30m down (the dots on the graph indicate the location of the sensors).

Using a temperature profile chart makes it easy to understand complex systems like this one. For the sake of simplicity, the data plotted is reduced to one reading per month. It is easy to see that ground temperature closest to the ground is affected by ambient temperature, with July and August reading as the warmest (6.9°C), but March reading as the coldest (-14°C). Below 25m there is a steady -6°C frost (permafrost) all year round. ▮

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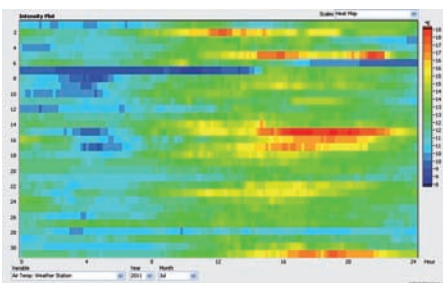

Figure 3: An intensity plot of air temperature for July 2011 in Reykjavik

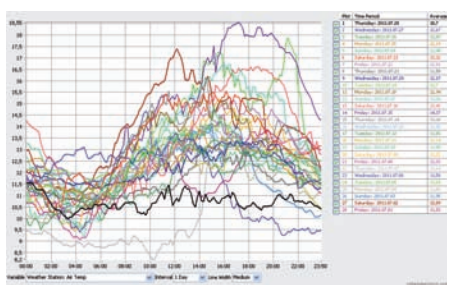

Figure 4: An overlay graph of the air temperature in July 2011

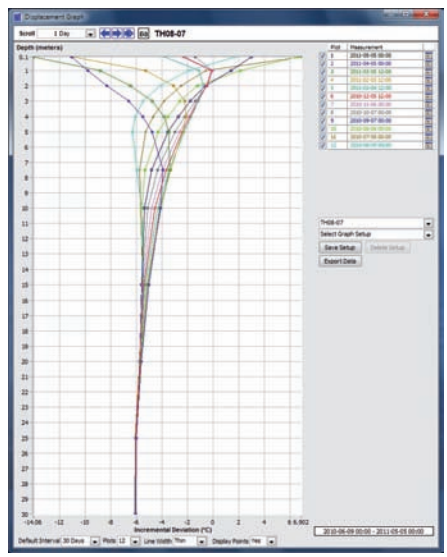

Figure 5: A year of permafrost temperature data from the Arctic zone, displayed as a temperature profile