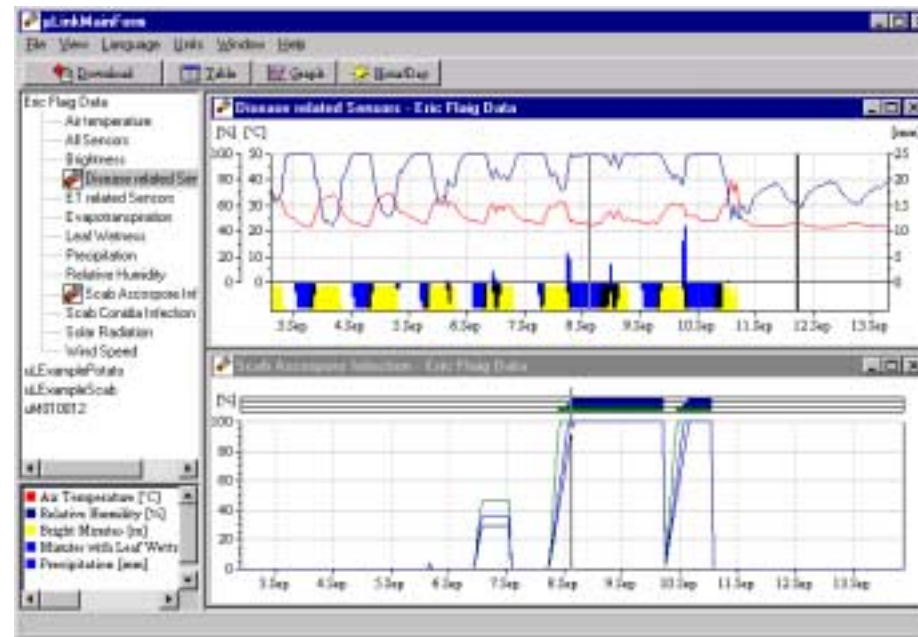
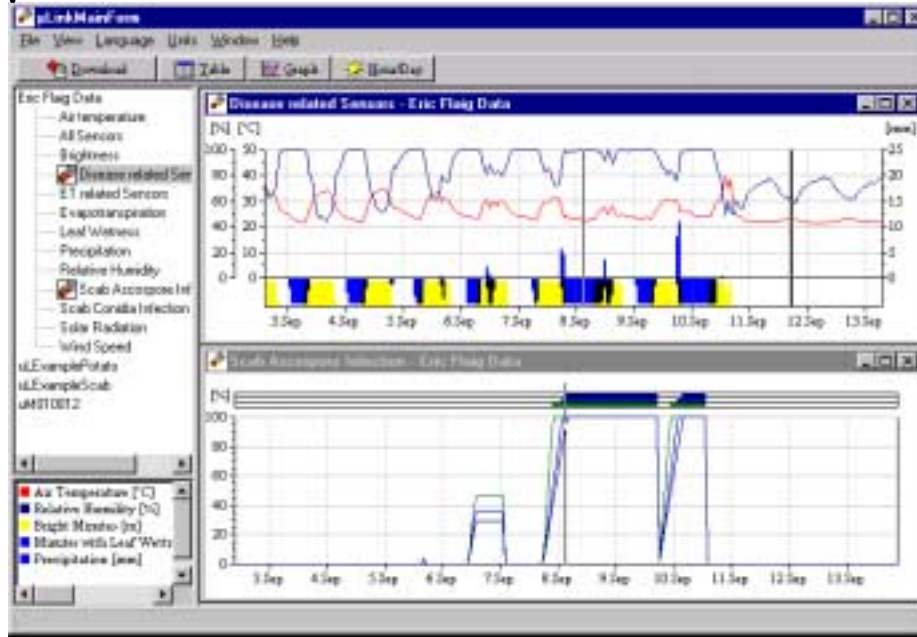


# $\mu$ Link The Software For Your $\mu$ METOS

A short presentation and training  
course



# μLink



... is presenting μMETOS climate data and disease simulation model results in graphs and tables.

... is accumulating degree days and degree hours, precipitation and evapotranspiration.

... is exporting data to dBase, ASCII and AusVit standard files.

... is supporting the clipboard to paste graphs or tables into spreadsheets or documents.

... is printing graphs.

... is downloading your climate data from the μMETOS.

This presentation will run through all the topics listed above.

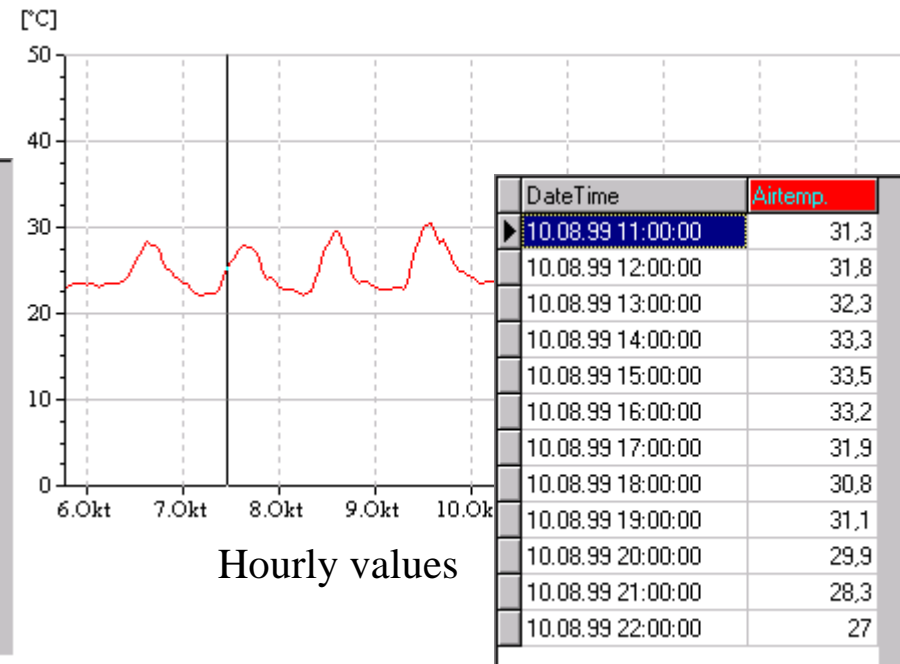
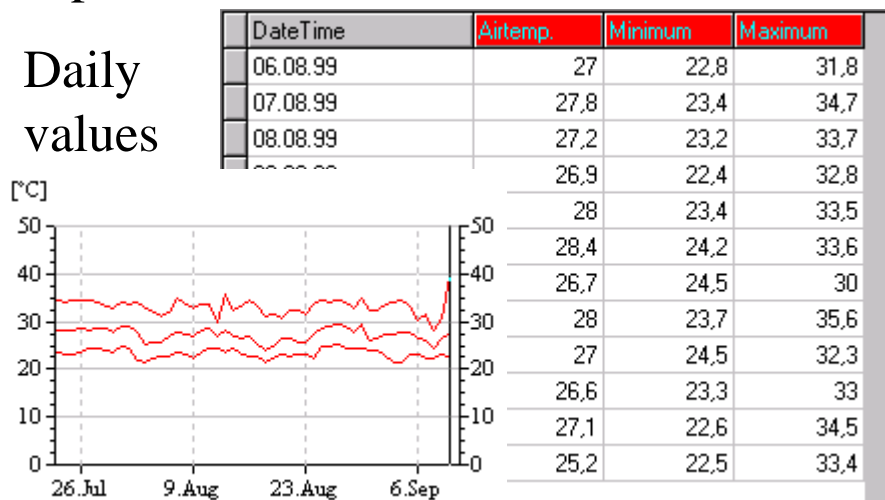
# μLink data presentation in graphs and tables

we will see:

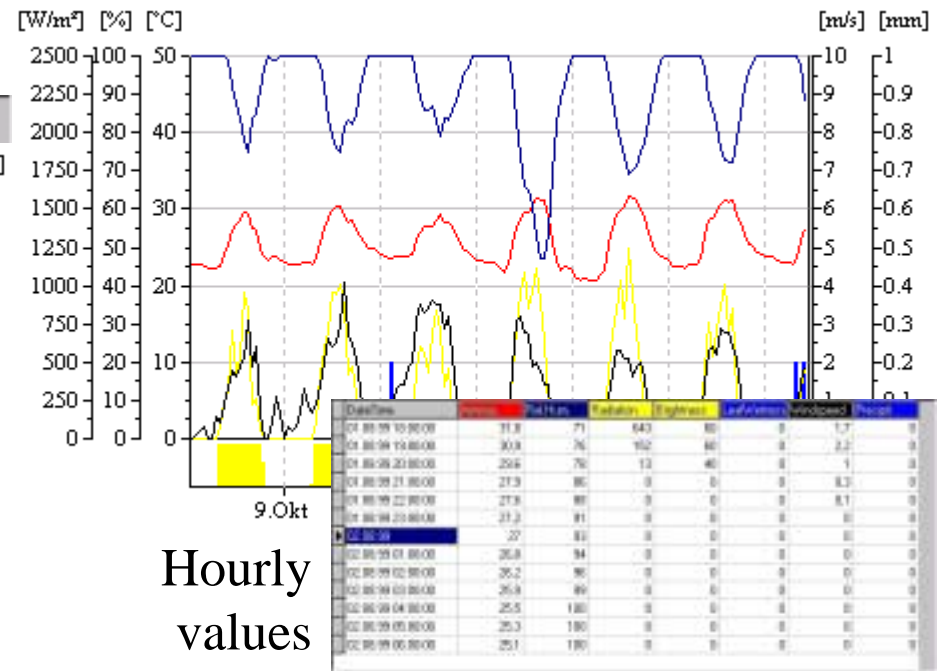
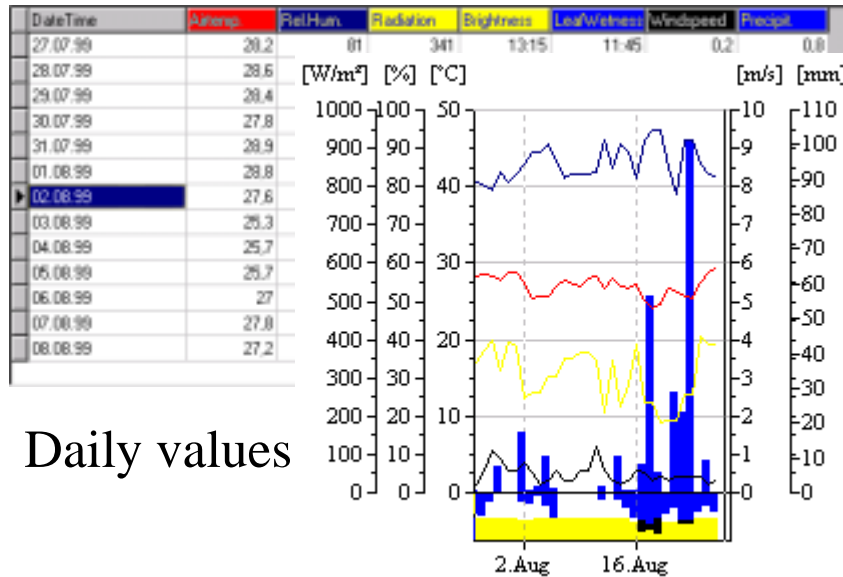
- how to use the μLink explorer
- how to graph data
- how to table data
- how to switch from hourly values to daily values
- how to connect graphs and tables

It graphs or tables a single sensor like temperature.

Daily values



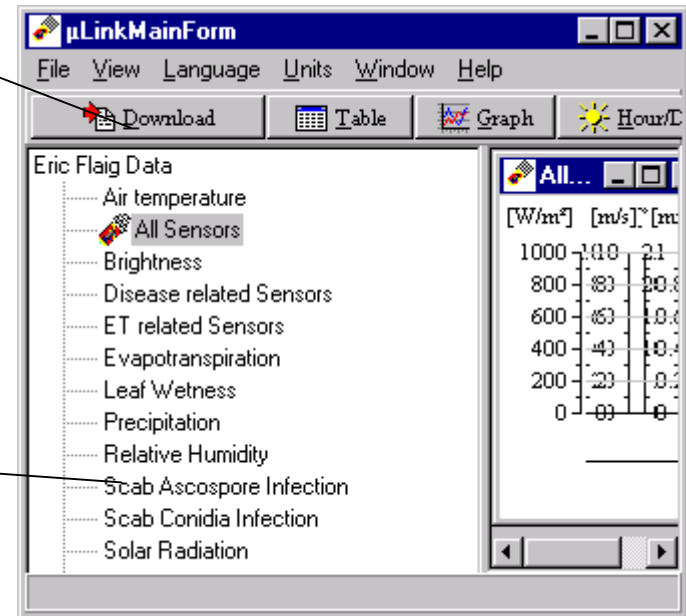
It graphs or tables a group of sensors like all sensors.



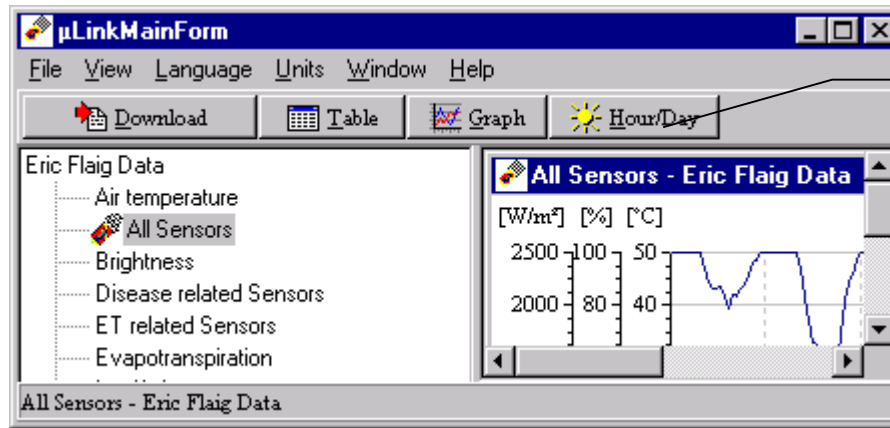
Control Panel

To open a graph or a table just click on the sensor or sensor group in the  $\mu$ Link explorer and use the graph or table button in the control panel.

$\mu$ Link explorer



To change between hourly and daily values just click on the „Hour/Day“ button.



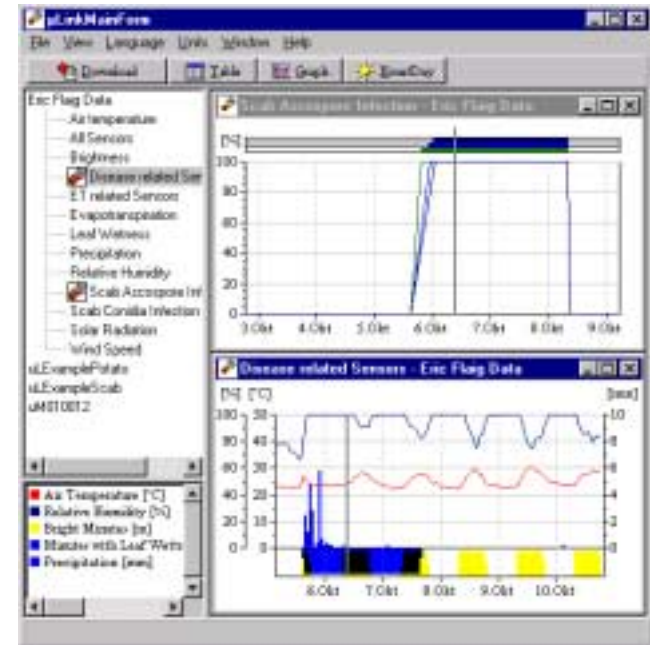
Hour/Day button

There is an easy way to compare graphs or tables by connecting them. You can move synchronised through the data of connected graphs and tables.



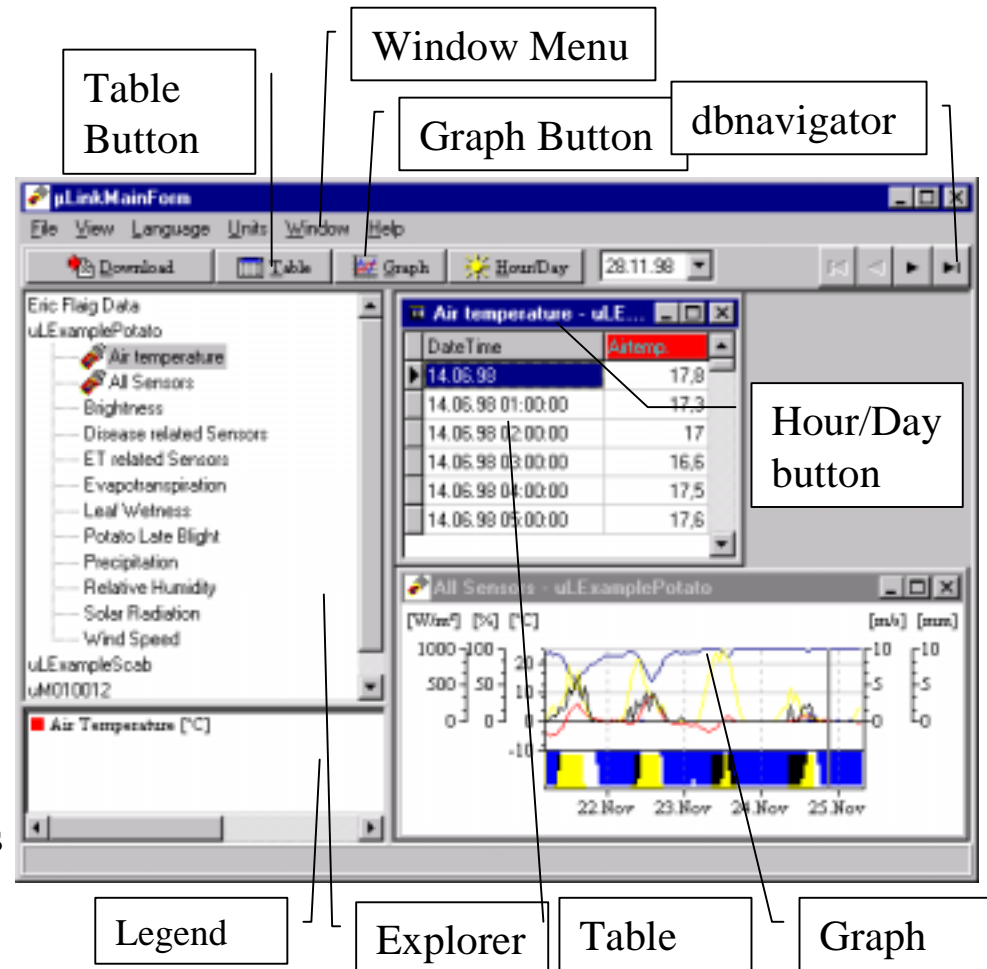
Connected sensors or sensor groups are marked with and square around the μMETOS symbol.

To connect sensors press the shift button and click on the sensor in the μMETOS explorer.



# Exercise 1


1. Open the  $\mu$ Link program on your PC
2. Open the Sensor list for "uLEExamplePotato" in the  $\mu$ Link explorer by double-click on „uLEExamplePotato“
3. Select „all sensors“ and open a graph for this sensor group with a click on the graph button
4. Select „Air temperature“ and open a table for this sensor with a click on the table button
5. Connect „Air Temperature“ and „All Sensors“ by pressing the „shift“ key on the keyboard and clicking on this two entries in the  $\mu$ Link explorer.
6. Select the graph on screen and move trough this data by pointing to the left or right side of the graph of „All Sensors“ and pressing the mouse button.
7. Select the table on screen and move trough the table by using the arrows on your PC keyboard or by the use of the dbnavigator in the control panel.
8. Arrange the two child windows (graph and table) by using the Menu point „Windows, tile“
9. Test the effect of the „Hour/Day“ button



10. Test the effect of the right mouse button when the mouse pointer is
  - inside a graph
  - inside a table with hourly values
  - inside a table with daily values
  - in the explorer selecting different sensors
 (Make notes on a white board about the different context menus)

# Degree day / Degree hour accumulation

- Select the “Air temperature” sensor in the  $\mu$ Link explorer and press the right mouse button. Click on “Degree Days/ Degree Hours” in the context menu. The “Degree Day/ Degree Hour” accumulator window will be shown.
- Input a start date and an end date for the accumulation.
- There are 5 default thresholds available. If they are Ok for you it is good. Otherwise change one of the two last thresholds.
- Press the calculator button to start calculations.

Calculation Intervall				
Start Date		End Date		
14.06.98		28.11.98		
Offset Value [°C*Hours]	Threshold [°C]	positive Degree Hours [°C*Hours]	negative Degree Hours [°C*Hours]	
0	0	0	0	
0	5	0	0	
0	10	0	0	
0	15	0	0	
0	25	0	0	

## Exercise 2


Use the “Degree Day/Degree Hour” accumulation window to calculate Degree Days and Degree Hours for different thresholds and different periods.

# ET and Rain accumulation

- Select the “Evapotranspiration” sensor in the  $\mu$ Link explorer and press the right mouse button. Click on “Et-crop and Rain” in the context menu. The “ET-crop and precipitation” accumulator window will be shown.
- Select the crop from the database
- Select the valid crop coefficient by moving the indicator rectangle on the crop stage graph. It can be moved either by clicking on the graph or by dragging the rectangle.
- Set the rain efficacy on a realistic value.
- Input a start date and end date for the accumulation.
- Calculations are showing accumulated ET-crop [mm], precipitation [mm], ET-crop minus precipitation and Et-crop minus precipitation corrected by the rain efficacy figure.
- Press the calculator button to start calculations.
- Press the report sheet button to copy the calculated results into the report sheet.

Printable report with the calculation results

Crop: small vegetable

Stage: 

Begin Season End Season

Crop Coefficient: 84 [%] Rain Efficacy: 85 [%]

Calculation Intervall

Start Date	End Date	ET-crop [mm]	Precipitation [mm]	ET-crop - Precipitation [mm]	ET-crop - effective Rain [mm]
14.06.98	28.07.98	104,30	198,00	-93,67	-63,97

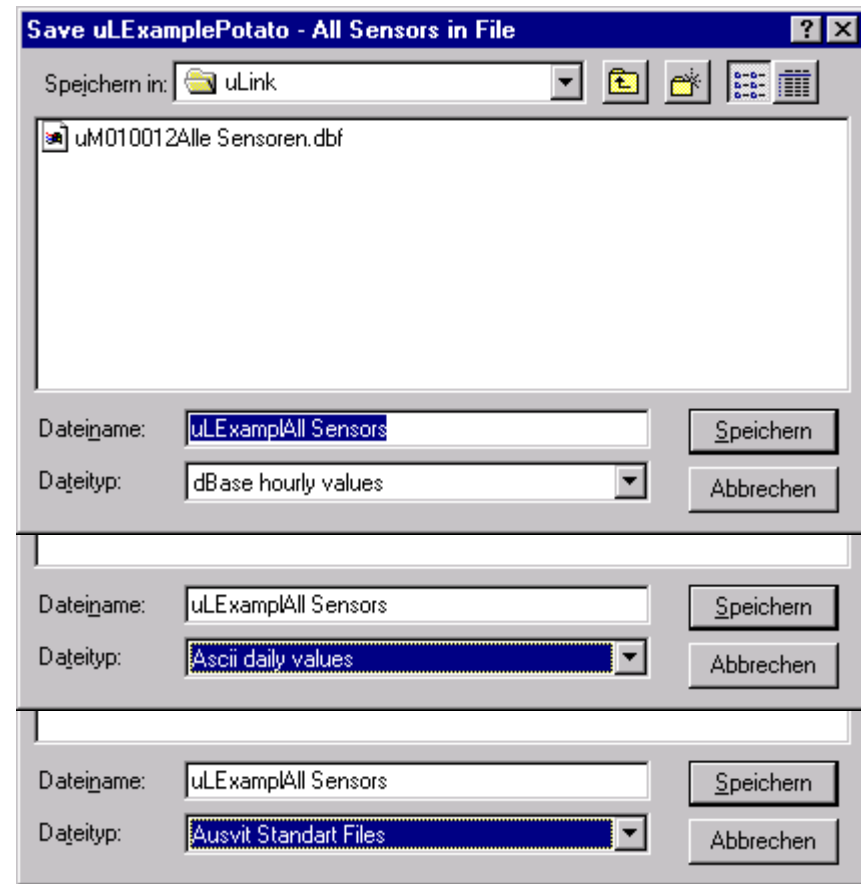
## Exercise 3

Use the “Et-crop and Precipitation” accumulation window to calculate Degree Days and Degree Hours for different thresholds and different periods.

# Data Export

There are various possibilities to make the  $\mu$ Link climate data useable by other programs.

1. Save as ASCII hourly values
2. Save as ASCII daily values
3. Save as dBase hourly values
4. Save as dBase daily values
5. Save as AusVit standard files
6. Copy the hourly values of the actual day into clipboard
7. Copy the daily values of the actual month into clipboard



## Exercise 4

Test the Menu point "File, Save as" with different sensors and sensor groups marked in the  $\mu$ Link explorer.

Use the 2 different copy to clipboard functions offered in the context menu of a table.

# Copy to Clipboard and Print

µLink is supporting the copy to clipboard function of windows in graphs and tables.

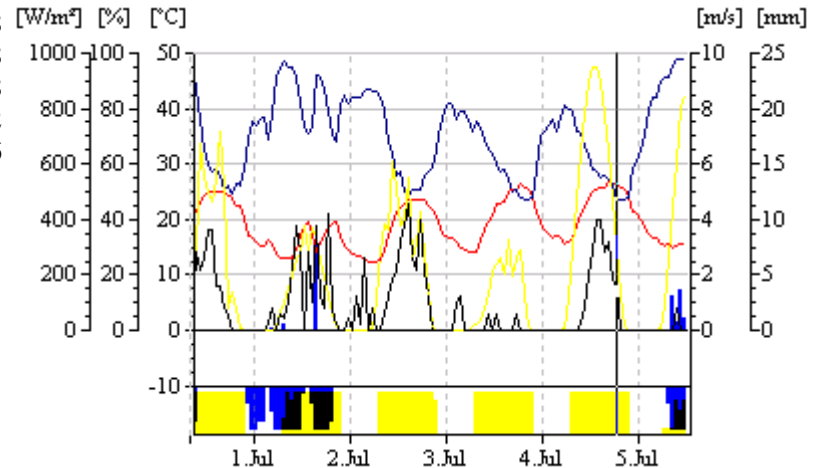
- If the mouse pointer is inside an table right mouse button offers you a context menu to copy the actual day or the actual month into clipboard.
- If your mouse pointer is inside an graph right mouse button gives you a context menu with various functions. One of this function is copying the actual graph into clipboard. Another one is the print function.

## Exercise 5

Copy graphs and tables from µLink into a word document.

If a printer is available, test the print function of a graph.

DateTime	Airtemp.	Rel.Hum.	Radiation	Brightness	LeafWetness	Windspeed	Precipit.
01.07.98	15,8	82	128	852	876	1,1	8,6
02.07.98	18,4	68	209	888	0	1,4	0
03.07.98	20,1	63	101	900	0	0,1	0
04.07.98	21,6	63	347	900	0	0,9	0
05.07.98	16,2	91	339	732	924	0,3	17,6
06.07.98	14,1	79	150	792	456	0,3	2,8
07.07.98	14,9	57	250	804	0	0,3	0
08.07.98	17,5	60	205	876	0	0,9	0
09.07.98	20,3	54	132	888	0	0	0
10.07.98	18,2	71	302	732	348	0,7	5,8
11.07.98	15,9	91	342	840	984	1,5	11,6
12.07.98	17,3	85	131	840	1056	0,5	6,2
13.07.98	18	77	112	888	480	0,2	1
14.07.98	17,7	84	133	888	876	0	3,2
15.07.98	16,4	89	116	816	1164	0,1	9,4
16.07.98	18,2	76	143	864	528	0	0,4
17.07.98	18,6	82	137	744	420	0	10
18.07.98	16	94	338	792	1440	0,5	19,6
19.07.98	15,7	78	186	792	408	1,6	0,2
20.07.98	17,8	58	243	864	0	1,1	0
21.07.98	16,9	59	344	828	36	0	0
22.07.98	19,8	66	93	864	192	0,4	0
23.07.98	20	76	161	804	1164	0,7	1,8
24.07.98	19,4	82	72	780	1116	0,9	3,8
25.07.98	18,7	83	214	864	1440	0,8	0,4
26.07.98	18	59	178	864	216	1,1	0
27.07.98	19,8	59	178	864	216	1,1	0



# Data transfer $\mu$ METOS - PC

$\mu$ METOS and  $\mu$ Link are supporting IRDA (Infrared Data Association) standard infrared data transmission. To use this we need on PC or notebook side

- an infrared port (build in or serial)
- the infrared monitor program
- all drivers needed for the specific infrared port

installed and working. It is best to use cellular phones with infrared port to test the installation of the infrared interfaces.

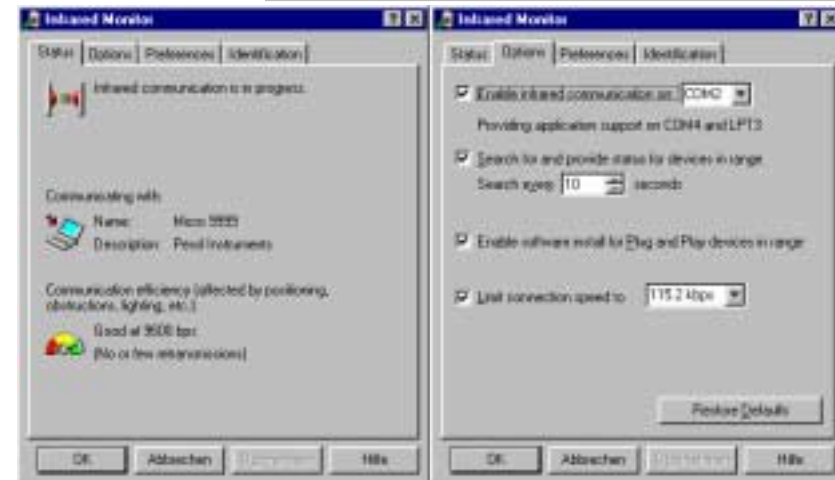
## Steps for Data Download:

1. Open the infrared monitor for searching
2. Start the Data transfer mode on your  $\mu$ METOS (red label)
3. Start the download program with the download button in the  $\mu$ Link program

Infrared Monitor will show you the  $\mu$ METOS connected with your PC.

MicroMetos Communication (MicCom) will show you:

- Model type, serial number and data logged of the connected  $\mu$ METOS
- Station name, data logged, file name, and virtual infrared port on your PC



$\mu$ METOS shows you the name of your PC and it will count from a to g in the right side of the display.

## Exercise 6: Try This