

WUFI® Tutorial

Meteonorm 7: Generate climate data for WUFI®

Meteonorm: Climate data for WUFI®

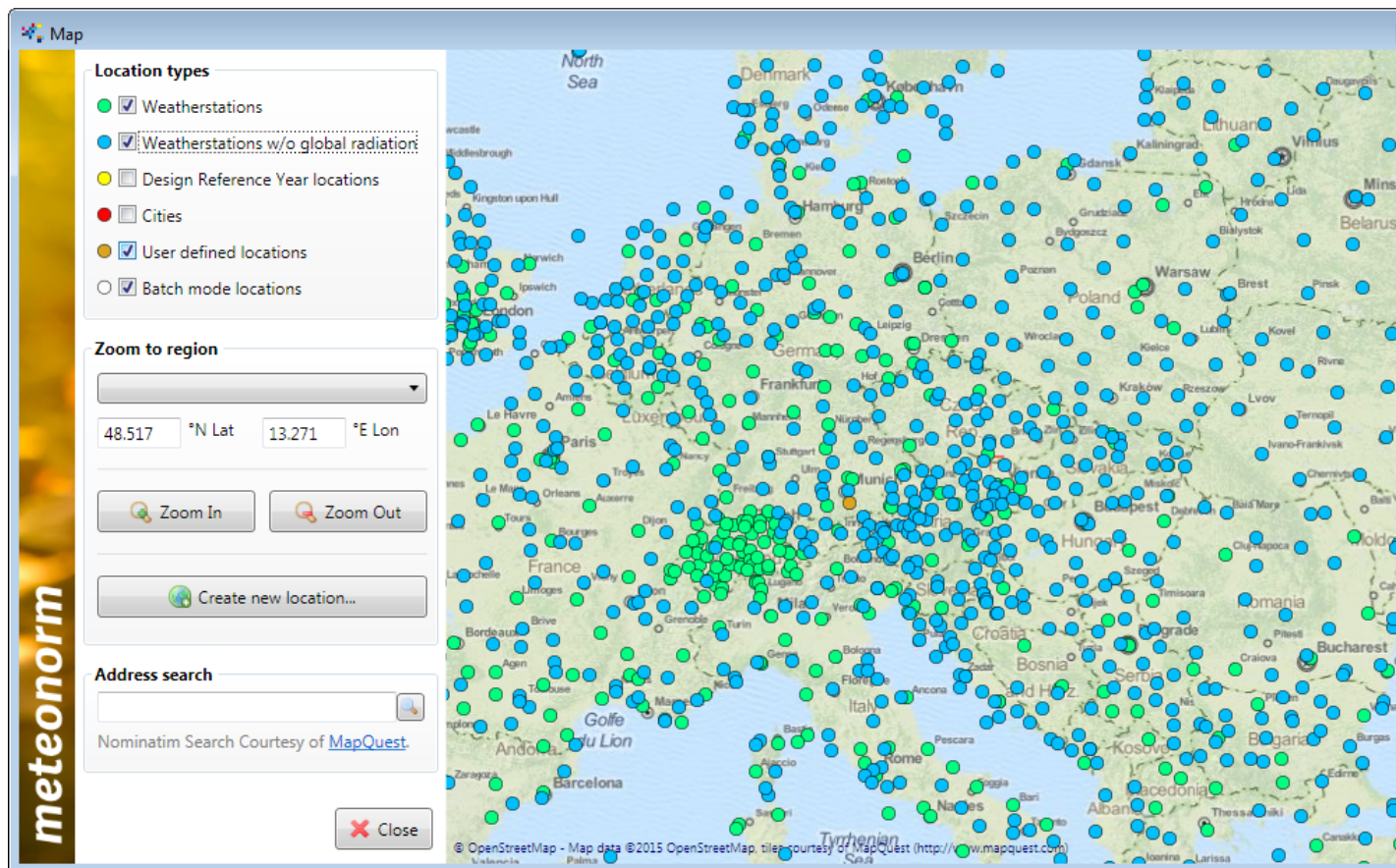
The software Meteonorm from the Swiss company Meteotest (www.meteonorm.com) offers the possibility to create climate data for any location worldwide. For this purpose the program includes long term monthly mean values for a large number of weather stations. Based on this, an interpolation could generate site-specific hourly values. In addition, Meteotest offers the possibility to purchase individual climate data sets, created for any specific location.

Concerning the driving rain, it's important to note that the correlation between wind and precipitation events is not sufficient. This could lead to an incorrect modelling of the amount and direction of the driving rain. If the accurate amount of driving rain is essential for the evaluation of a construction the climate data from Meteonorm may not be sufficient.

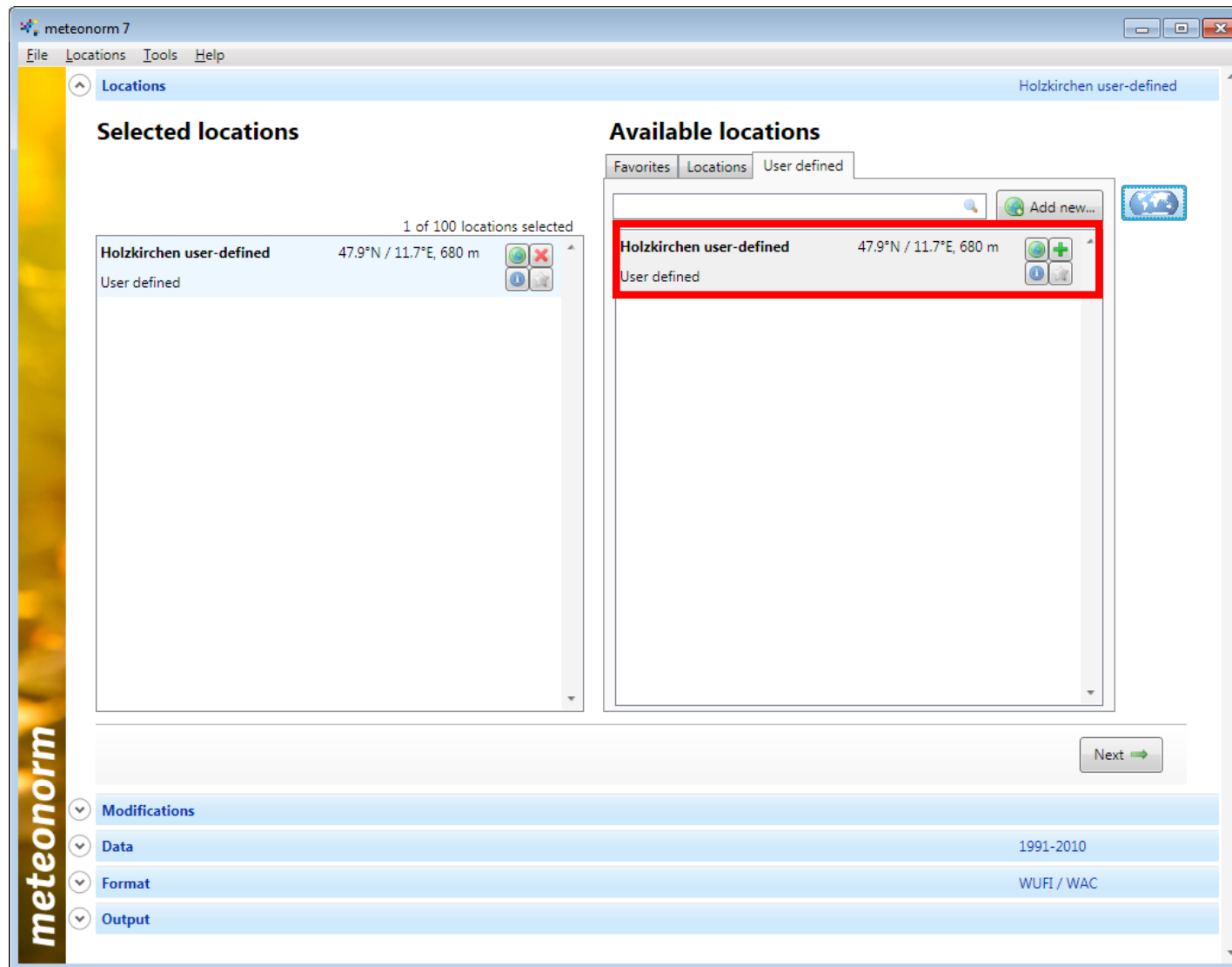
Meteonorm: Climate data for WUFI®

Preferred order of data sources:

1. Stations, if present at the desired location
2. Stations
(Gh interpolated by Near stations)
3. User defined interpolation based on the surrounding stations (orange)



Meteonorm: Climate data for WUFI®



It is possible to select locations from a list too

even user defined locations are listed there

Meteonorm: Climate data for WUFI®

During the next step the modification of the climate data is possible.

For the WUFI climate data this is not necessary.

The screenshot shows the 'meteonorm 7' software window. The 'Locations' tab is active, showing a list of locations with 'Holzkirchen user-defined' selected. The 'Modifications' section is open, displaying various settings for the selected location. The 'General' section includes options for 'Correction of global radiation measurements' (Use corrected or original data) and 'Location specific' settings (Plane orientation, Albedo, Horizon, and Atmospheric turbidity). The 'Data import' section allows selecting between 'Monthly values...' and 'Daily/hourly values...'. The 'Data' tab at the bottom shows the selected data range as '1991-2010' and the format as 'WUFI / WAC'.

meteonorm 7

File Locations Tools Help

Locations Holzkirchen user-defined

Modifications

Modifications

Holzkirchen user-defined 47.9°N / 11.7°E, 680 m

User defined

General

Correction of global radiation measurements

☒ Use corrected global radiation data (excluding horizon effects)
☐ Use original global radiation data (including horizon effects)
Only applicable for weather stations with high horizons.

Location specific

Plane orientation

Azimuth 0°
Inclination 0°

Albedo

☒ Automatic 0.15
☐ Custom

Horizon

☒ None
☐ Custom
Edit horizon...

Atmospheric turbidity

☒ Interpolated
☐ Nearest Aeronet station
☐ Custom
Edit turbidity...

Data import

☒ Monthly values...
☐ Daily/hourly values...

Back Next

Data 1991-2010

Format WUFI / WAC

Output

Meteonorm: Climate data for WUFI®

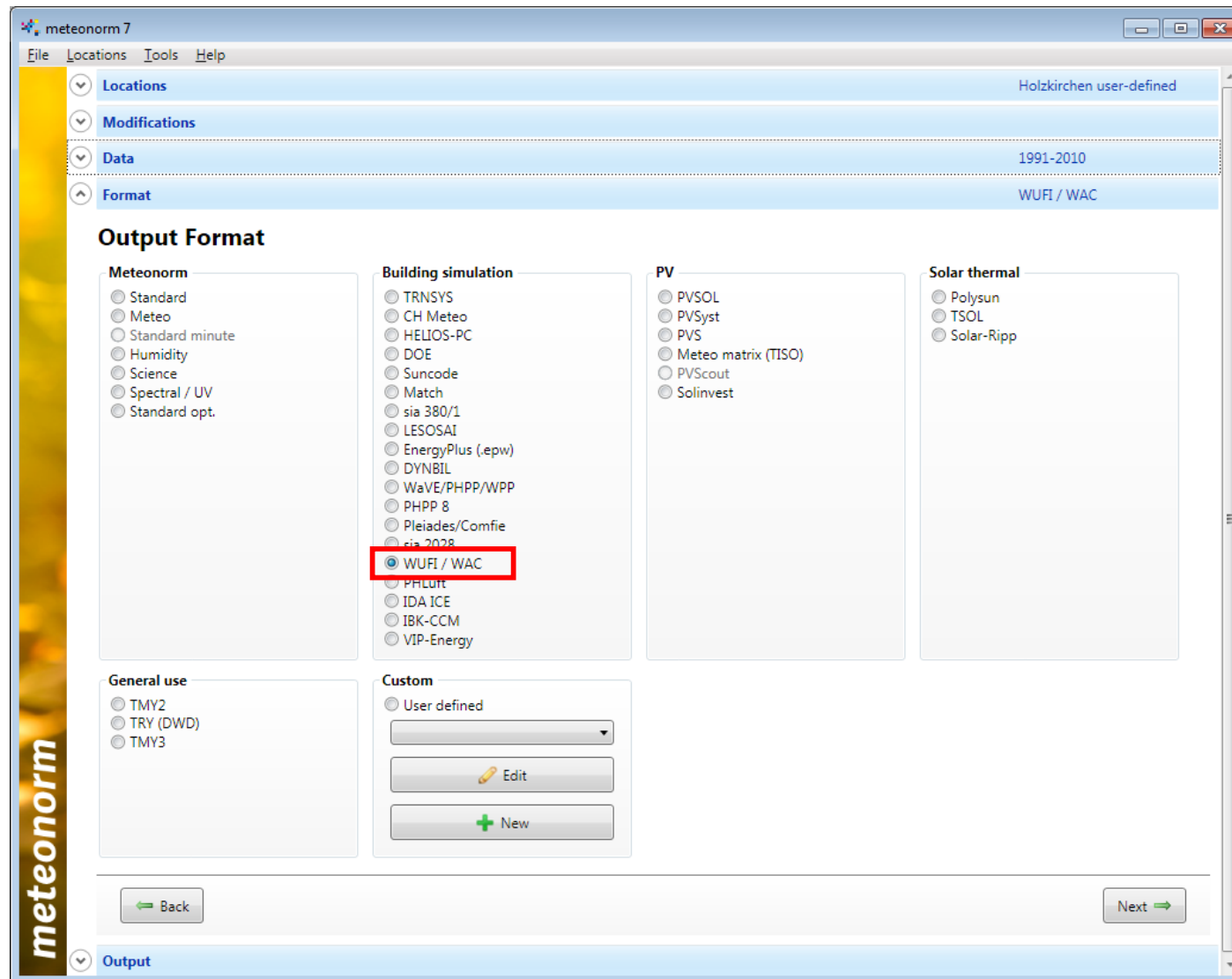
The screenshot shows the 'meteonorm 7' application window. The 'Data' tab is selected, showing options for 'Dataset', 'Period radiation', 'IPCC Scenario for future periods', and 'Period temperature'. The 'Dataset' section has two radio buttons: 'Use meteonorm 7 climate data' (selected) and 'Use imported data'. The 'Period radiation' section has three radio buttons: '1991-2010' (selected), '1981-1990', and 'Future'. The 'IPCC Scenario for future periods' section has three radio buttons: 'B1' (selected), 'A1B', and 'A2', with a dropdown menu set to '2020'. The 'Period temperature' section has three radio buttons: '2000-2009' (selected), '1961-1990', and 'Future'. At the bottom, there are 'Back', 'Advanced settings', 'Reset', and 'Next' buttons. The 'Format' tab is set to 'WUFI / WAC' and the 'Output' tab is empty. A vertical 'meteonorm' logo is on the left side of the window.

If the a measured station is chosen the different time period is shown:

Normally the actual timespan is chosen.

In addition there is a past measured period and a prediction for the future (based on IPCC climate scenario)

Meteonorm: Climate data for WUFI®



Concluding the export format have to be selected.

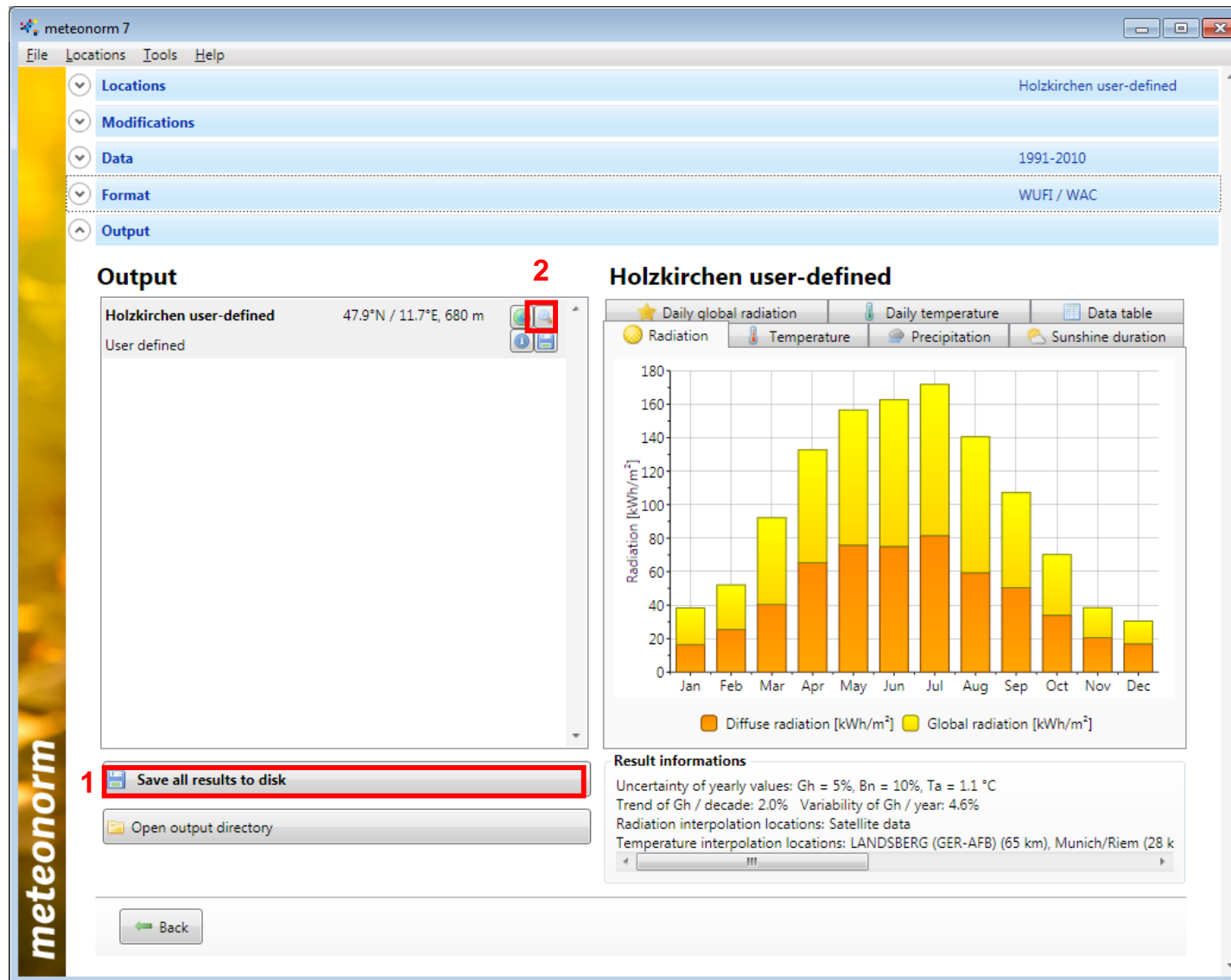
For WUFI the WAC format is necessary.

Meteonorm: Climate data for WUFI®

After the calculation the simulated climate dataset is shown.

With pressing (1) „Save“ the climate data can be saved.

Afterwards with (2) „View Results“ the overview of the climate data can be assessed.



Meteonorm: Climate data for WUFI®

Output data (WUFI / WAC)

Output directory
D:\Output_Meteonorm

Select an output data time format

LOCATIONNAME-mon.txt	Month
LOCATIONNAME-day.wac	Day
LOCATIONNAME-hour.wac	Hour
LOCATIONNAME-10min.wac	10 Minutes
LOCATIONNAME-min.wac	Minutes

Close

During the saving process the hourly resolution must be selected.

Meteonorm: Climate data for WUFI®

Holzkirchen user-defined

Location name

47.88

Latitude [°N]

11.73

Longitude [°E]

680

Altitude [m a.s.l.]

III, 3

Climate region

Standard

Radiation model

Standard

Temperature model

Perez

Tilt radiation model

2000–2009

Temperature period

1991–2010

Radiation period

Custom

Horizon

Additional information

Uncertainty of yearly values: Gh = 5%, Bn = 10%, Ta = 1.1 °C

Trend of Gh / decade: 2.0%

Variability of Gh / year: 4.6%

Radiation interpolation locations: Satellite data

Temperature interpolation locations: LANDSBERG (GER-AFB) (65 km), Munich/Riem (28 km), KUFSTEIN (46 km), LECHFELD (GER-AFB) (73 km), Innsbruck Univ. (72 km), KEMPTEN/DURACH (106 km)

Month	H_Gh	H_Dh	N	Ta	RH	FF
	[W/m2]	[W/m2]	[Octas]	[°C]	[%]	[m/s]
January	51	22	5.4	-1.2	80	3.2
February	77	38	5.0	0.6	77	3.4
March	124	54	5.1	4.1	71	3.7
April	184	91	5.3	8.9	64	3.1
May	210	102	5.3	13.8	65	3.0
June	226	104	5.4	17.2	66	2.6
July	231	110	4.8	18.1	67	2.9
August	189	80	5.0	17.8	69	2.6
September	149	70	5.3	13.4	73	2.6
October	94	46	5.2	9.3	79	2.9
November	53	28	6.1	3.8	82	3.0
December	41	23	5.5	-0.2	84	3.1
Year	136	64	5.3	8.8	73	3.0

In addition to the climate data a statistical overview of the different parameters is shown.

It can be saved as a PDF, this allows the comprehension of the result.

Meteonorm: Climate data for WUFI®

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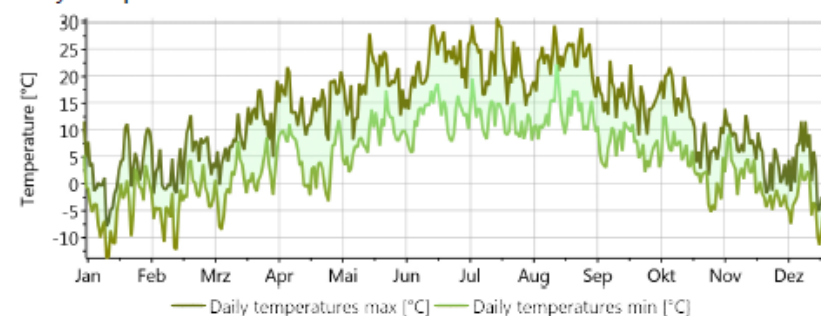
Variability of Gh / year: 4.6%

Radiation interpolation locations: Satellite data

Temperature interpolation locations: LANDSBERG (GER-AFB) (65 km), Munich/Riem (28 km), KUFSTEIN (46 km), LECHFELD (GER-AFB) (73 km), Innsbruck Univ. (72 km), KEMPTEN/DURACH (106 km)

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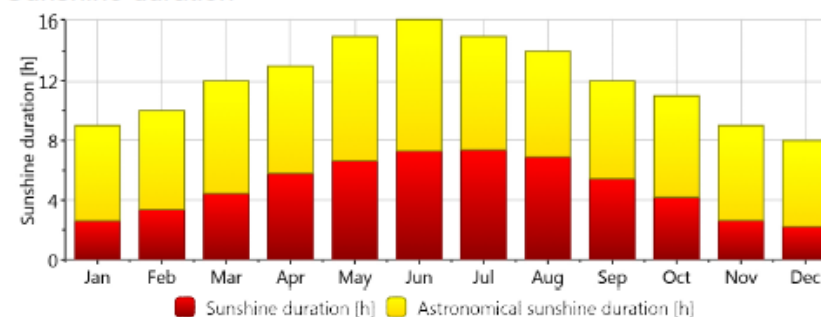
Daily temperature



Precipitation

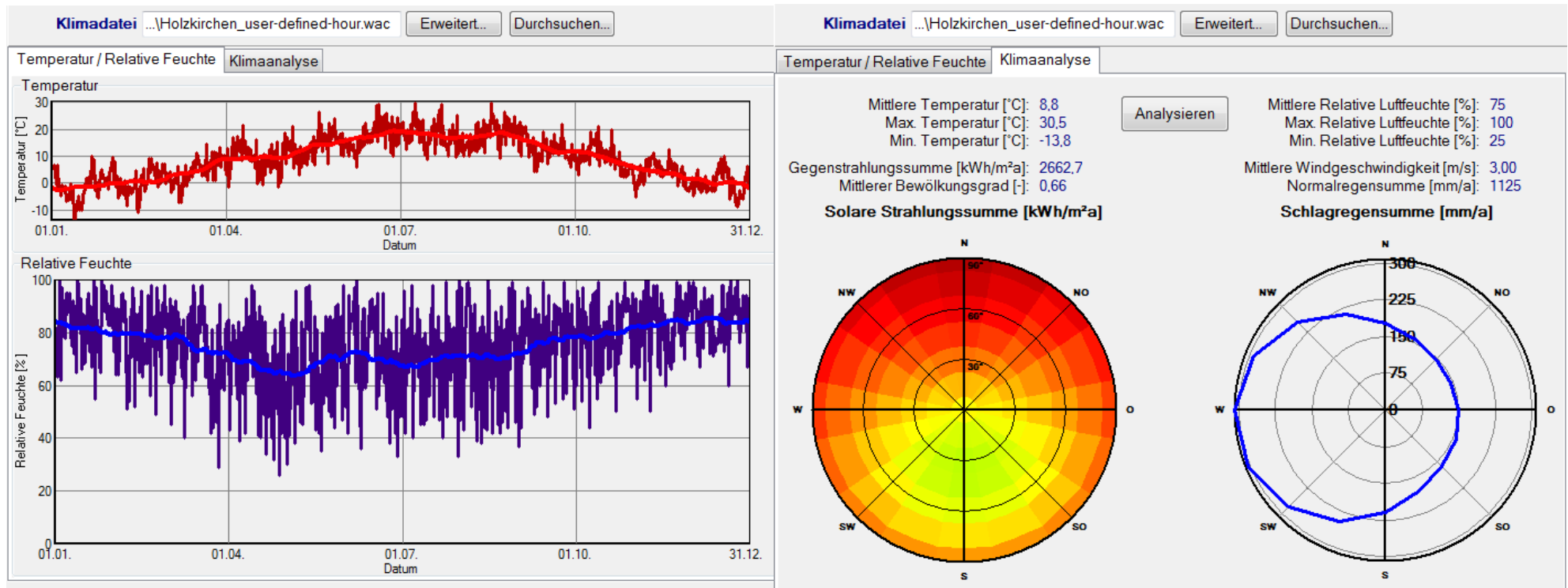


Sunshine duration



Meteonorm: Climate data for WUFI®

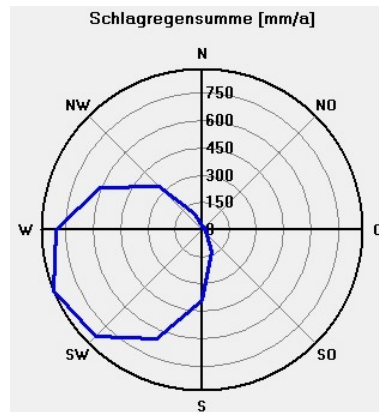
The generated climate data can be directly imported into WUFI.



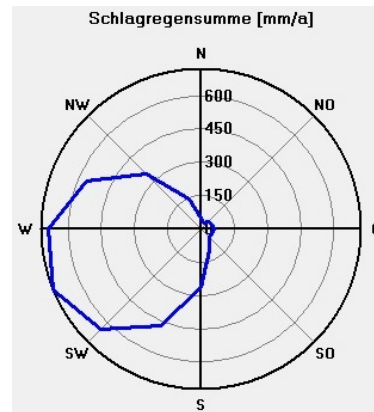
Meteonorm: Distribution of driving rain

Driving rain measurement for Holzkirchen

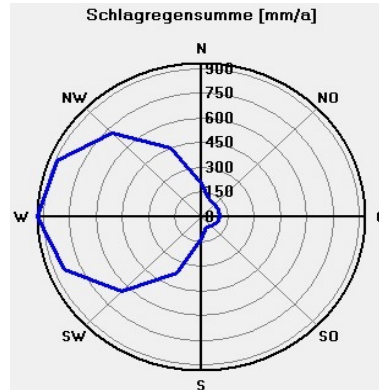
1991



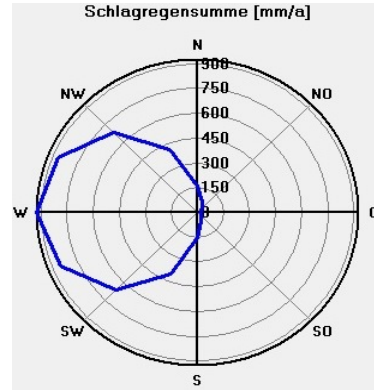
1992



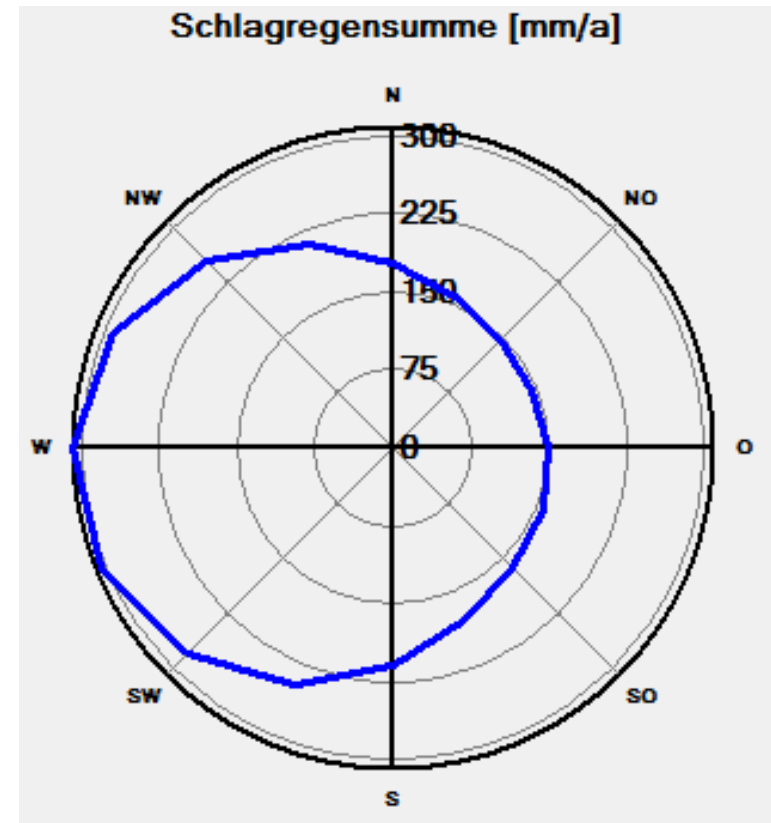
1993



1994



Driving rain from Meteonorm 7 for Holzkirchen



Note: The distribution of the driving rain from Meteonorm is more uniform than the measured data. Furthermore the yearly sum is less than the measurement.