

MCP - Session Overview

Calculation: MCP_EXAM_CALCULATION

The Session Overview shows the input for each session. The results for each of the tested models in a particular session are shown in the Session Detail report. Please note that for all results in the report, the models have been trained and tested using all concurrent data. Predicted wind speeds are always in local measurement height.

Session Overview

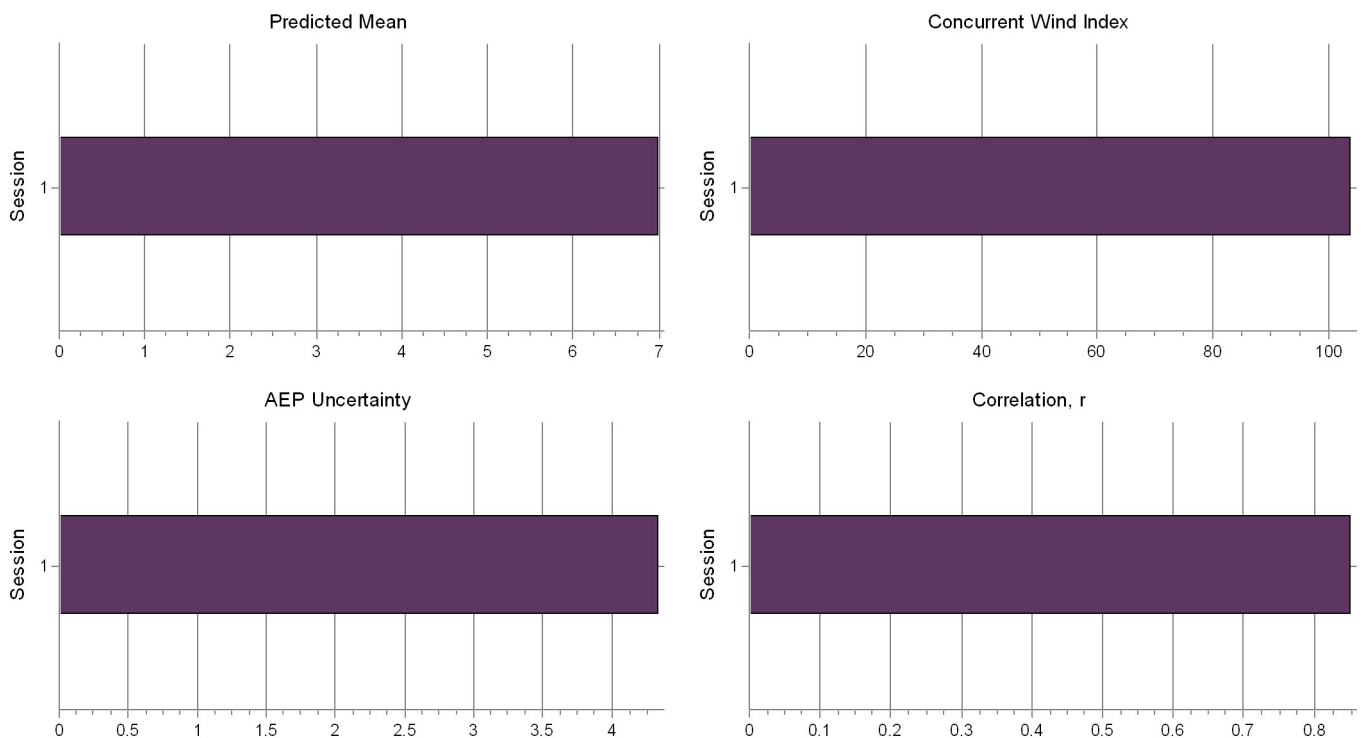
No	Concept	Session	Local	Reference	Local Mean	Local Mean [concurrent]	Reference Mean	Reference Mean [concurrent]	Predicted Mean	Concurrent Wind Index	Concurrent Months	Correlation, r	AEP Uncertainty
					[m/s]	[m/s]	[m/s]	[m/s]	[m/s]		[months]		[%]
1	A	MCP session (1)	Description: (1).125.00m - v4 ERA5(T) Rectangular Grid_N54.75_E009.75 (2)-2075167174.100.00m -		7.23	7.22	7.19	7.43	7.01	104.0	13.29	0.853	4.3

A) Concept: Long term data series, based on a transfer function applied to the reference data.

B) Concept: Scaled local data to be long term representable.

Correlations in table is the windspeed correlation in the same time resolution as a the reference data.

Different sessions may have different local data (and therefore will not be directly comparable regarding mean wind speed) and different long-term reference data sets (for the evaluation of the effect of the reference choice). Sessions may also have different filter settings, such as veering one of the series, limiting the data period, etc. Finally, sessions can use different MCP methods, which can have individual settings (linear, parabolic, etc.). With more sessions it becomes clear how much the selected choices can affect the predicted mean wind speed and provide users with a broad decision basis for making the right choice when selecting the session(s) that generates the output for the final calculation.



Uncertainty Calculation

No	Session	Wind Index (WI)	Pearson (R)	Concurrent years (Y)	Variability (V)	Density to AEP (CF)	A	B	C	D	E	AEP Uncertainty
		[%]			[%]							[%]
1	MCP session (1)	102.412	0.847	1.107	3.145	0.536	1.550	0.060	-1.300	0.200	-0.300	4.3

$$\sqrt{(A * ABS(1 - WI))^2 + (B * R^C)^2 + (D * V)^2 * Y^E * CF}$$

MCP - Session details

Calculation: MCP_EXAM_CALCULATION : MCP session (1)

Data and models tested within session:

Model Input Data:

		Height [m]	First filtered sample	Last filtered sample
1: Local measurements (site data)	Description: (1).125.00m - v4	125.00	8/10/2018	10/9/2019
2: Long-term reference	ERA5(T) Rectangular Grid_N54.75_E009.75 (2)-2075167174.100.00m -	100.00	1/1/1994	1/1/2025

Concurrent data: ~ 1 years, 2 months

Reference data: ~ 31 years, 0 months

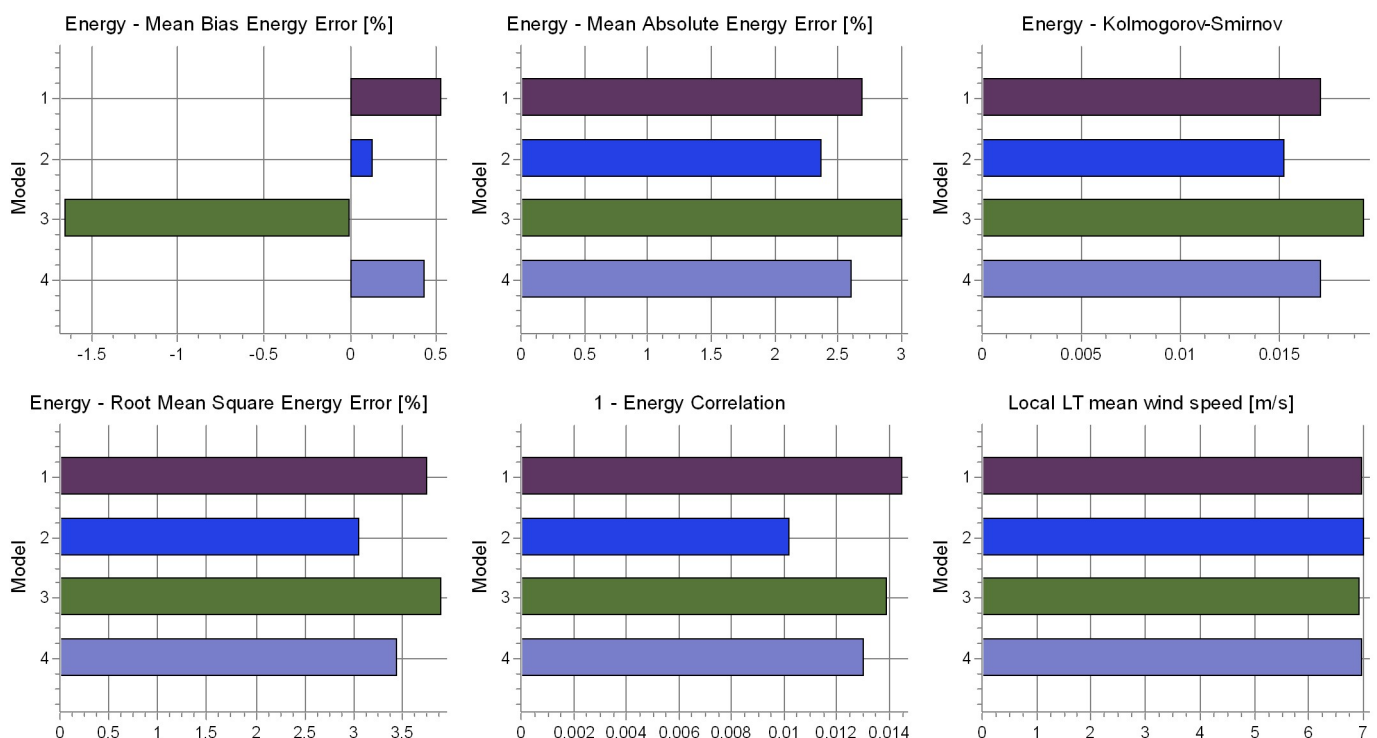
Filters

Filter	Value
Reference data: Time offset [minutes]	0
Reference data: Wind veer [degrees]	0.0
Reference data: Use disabled	No
Reference data: Period	All
Local data: Wind veer [degrees]	0.0
Local data: Use disabled	No
Local data: Averaging [minutes]	Disabled
Local data: Period	All

Session details MCP session (1)

No	Model	Method	Local Mean - concurrent [m/s]	Local LT Mean [m/s]	Mean Bias Error [%]	Mean Absolute Error [%]	Root Mean Square Error [%]	Correlation, r	KS Statistics [%]
1	Simple Speed Scaling		7.22	7.00	0.5	2.7	3.8	0.985	1.7
2	Regression		7.22	7.02	0.1	2.4	3.1	0.990	1.5
3	Matrix		7.22	6.95	-1.7	3.0	3.9	0.986	1.9
4	Neural Network		7.22	7.01	0.4	2.6	3.5	0.987	1.7

Errors and correlations are based on monthly energies. Values are without residuals, except for KS Statistics, which is including residuals. Predicted LT wind speeds are with residuals if used in model settings.



MCP - Session details

Calculation: MCP_EXAM_CALCULATION : MCP session (1)

The predicted data based on reference data and method are compared to measured. The comparison is made both as scatter plots with different time aggregations, and as comparison graphs binned by hour, month, wind speed and wind direction. For the wind speed and wind direction comparisons, additional graphs are shown with residuals, if this option is chosen in the method. Residuals add "noise" to the predicted time series, which results in the distributions getting closer to real measurements. Residuals are added in an intelligent way based on analyzing the data. For details on methods and residuals, see <https://help.emd.dk/WindPRO/content/ReferenceManual/MCP.pdf>. If not stated otherwise data is shown without residuals.

