



# Changes in Meteo-Manual

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# General Remaks

- Adjustment to the new structure
- Mostly new arrangements
- Only view significant changes



# Time Resolution

- **Mandatory:** daily (00:00 – 24:00)
- **Optional:** hourly (x:00 – x+1:00) additionally

→ new submission form **.MEH**



# Definition of Variabels

- all variables units and calculations are defined
- Soil Moisture
  - Harmonised with FutMon field protocol and ICP Forests Manual Part X Soil Sampling and Analysis
  - 3 replicates in 3 - 4 depth intervals
  - volumetric water content is recommended
  - Matric potential could be calculated using SWRC



# Plausibility Criteria

	Daily values		hourly values	
Variable	Plausibility limits, lower	Plausibility limits, upper	Plausibility limits, lower	Plausibility limits, upper
Precipitation	0 mm	150 mm	0 mm	50 mm
Air temperature	-50 °C	+50 °C	-50 °C	+50 °C
Air humidity	10 %	100 %	0 %	100 %
Global radiation	0 W/m <sup>2</sup>	500 W/m <sup>2</sup>	0 W/m <sup>2</sup>	In the daytime: 1100 W/m <sup>2</sup> at night: 15 W/m <sup>2</sup> or: 75 % of extraterrestrial radiation
Wind speed	0 m/s	40 m/s	0 m/s	40 m/s
Wind direction	0 °	360 °	0 °	360 °
Soil Moisture				
Matrix potential				
Water content	10 kPa	-150 kPa	10 kPa	-150 kPa
Water content	0 %	100 %	0 %	100 %
Soil temperature	-20 °C	+30°C	-20 °C	+30°C
Stand Precipitation	0 mm	150 mm	0 mm	50 mm



# Requirements on Completeness

Variable	minimum degree of completeness daily	minimum degree of completeness hourly
Precipitation	100 %	100 %
Air temperature	95 %	50 %
Air humidity	95 %	50 %
Global radiation	100 % of daily light	In the daytime 100 %
Wind speed	Max = 100 % Mean = 95	Max = 100 % Mean = 95 %
Wind direction	95 %	95 %
Soil Moisture		50 % 50 %
Matric potential	50 %	
Water content	50 %	
Soil temperature	95 %	50 %
Stand Precipitation	100 %	100 %



# Sensor height

Sensor for :	Sampling height (m)
wind speed	10 m
wind direction	10 m
air temperature	2 m
relative humidity	2 m
global radiation	2 m or as convenient
net radiation	2 m
photosynthetically active radiation	2 m
photoperiod	2 m
precipitation	0 m (near the ground)
soil temperature	in field: in 2 depth of -5, -10, -20, -50, -100, -150 cm stand plot: in depth intervals 0 – -20 cm, -20 – -40 cm, -40 – -80 cm
soil moisture	in depth intervals 0 – -20 cm, -20 – -40 cm, -40 – -80 cm

according to FutMon-Protocol  
and ICP Forests Manual Part X

complementary to WMO



# Measurements Above the Canopy

- Precise definitions for tower localisation
- Considering of fetch

→ Formula for calculation of fetch

→ Formula for calculation of tower height



# Conclusion

- **Basic intension not changed**
- **All changes with a sense of proportion**

**Please adopt new**

**Manual Part IX Meteorological Measurements**