

WegenerNet Feldbach Region (FBR) Data Fact Sheet

(v20/28May2024)

Table 1: WegenerNet FBR stations and measured parameters

Station Group	Station Type	Meas. Parameter	Station Number(s)	Count
Base stations (140 stations)	Base stations (B)	Air temperature Air rel. humidity Precipitation	All, except station numbers BS, P, R, AHYD, and 156	128
		+Air pressure, no precipitation	156	1
	Special base stations (BS)*	+Soil parameters (details see Table 2)	6, 15, 19, 27, 34, 50, 54, 78, 84, 85, 99	11
Main stations (14 stations)	Primary stations (P)*	+Wind parameters (see Table 2)	32, 44, 72, 74, 82, 132, 135, 154, 155	9
		+Wind parameters and air pressure	11, 37, 101, 139	4
	Reference station (R)*	+Solid precipitation	All P except station 154	1
External stations (2 stations)	AHYD**	+Solid precipitation +Wind parameters +Soil parameters +Air pressure +Net radiation	77	1
		Precipitation Precipitation +solid precipitation +Air temperature	152 153	2
Total number of stations: 156				

* Measurement parameters: In addition to B

** Stations operated by the Austrian Hydrographic Service (AHYD)

Table 2: Overview of measured parameter groups

Parameter group	Measured parameters
Soil parameters	All BS: Soil temperature, soil moisture (either derived from pF-Value ¹ or measured by TDR-sensor) Some BS: pF-value, soil electric conductivity See Table 5 for mount dates of pF and TDR sensors
Wind parameters	Wind speed, Wind direction, Wind gust, Wind gust direction

Measurement interval for all parameters is **5-minutes** except for pF-value soil sensors and according soil temperature (30-minutes). Since December 2017 the measurement interval at all main stations changed to 1-minute. Data from these stations are aggregated to 5-minutes in the WegenerNet data processing.

Table 3: Derived parameters

Parameter	Derived from	Literature
Soil moisture	pF-Value	WegNet Tech Note No.1/2013 ¹
Heat Index	Temperature and rel. Humidity	Schön, 2005 ²

WegenerNet publication list

<https://wegcenter.uni-graz.at/en/our-research/arsclisys/wegenernet/publications/>

WegenerNet homepage

<https://wegcenter.uni-graz.at/wegenernet>

WegenerNet data portal

<https://wegenernet.org> (or <https://wegenernet.uni-graz.at>)

Table 4: Technical equipment – sensor types

A detailed list of all WegenerNet sensors and their specification can be downloaded at the data portal at <https://wegenernet.org> under **STATION DATA** → **Download** → **Sensor list CSV file** and **Sensor specs CSV file**. Here a short summary:

Description	Stations	Type	Detailed Info - Manufacturer
Combined sensor for air temperature and relative humidity EE08	B*, BS*, P*, R*	EE08-05	https://www.epluse.com
Combined sensor for air temperature and relative humidity GeoPrecision	B*, BS*, P*, R*	Temperature: PT1000 (1/3DIN B) Humidity: Sensirion SHT75	http://www.geo-precision.com http://www.sensirion.com
Combined sensor for air temperature and relative humidity Rotronic	154*	Rotronic HC2A-S3	https://www.rotronic.com
Air temperature Ott	153	Ott Compact pt100	http://www.ott.com
Precipitation Meteoservis	B*, BS*, 154	Meteoservis MR3 (unheated)	http://www.meteoservis.cz/en
Precipitation Meteoservis heated	P*, R	Meteoservis MR3H Heating improved by Kroneis	http://www.meteoservis.cz/en http://www.kroneis.at
Precipitation Friedrichs	B*, BS*, R	Friedrichs 7041.0000 with Reed contact	http://www.th-friedrichs.de
Precipitation Young	P*, R	Young Model 52202 H 220V	http://www.youngusa.com
Precipitation Ott	R 152 153	Ott Pluvio2 400 cm ² unheated Ott Pluvio2 200 cm ² heated	http://www.ott.com
pF-Meter: Combined sensor for soil temperature & matrix potential	BS*	pF-value: pF-meter soil temp.: THT-PT100 or SMD-PT1000	http://www.geo-precision.com
Combined sensor for soil moisture (TDR), soil temperature and soil electric conductivity	BS*	Stevens HydraProbe II	http://www.stevenswater.com
Wind sensor Gill WindSonic	P, R	Gill WindSonic	http://www.gill.co.uk

¹ Fuchsberger, J. and G. Kirchengast (2013): Deriving Soil Moisture from Matric Potential in the WegenerNet Climate Station Network. WegNet Tech Note No.1/2013. http://www.wegenernet.org/misc/WegenerNet_TechNote-SoilMoisture.pdf

² Schoen, C. (2005). A new empirical model of the temperature-humidity index. Journal of applied meteorology, 44(9), 1413-1420.

Net radiometer	R	Kipp&Zonen NR Lite	http://www.kippzonen.com
Air pressure	R	Kroneis Type 315 K	http://www.kroneis.at
Air pressure	R, 156	Microstep-MIS MSB 780	https://www.microstep-mis.com
Air pressure	11, 37, 101, 139	Microstep-MIS MSB 181	https://www.microstep-mis.com

* Sensors have been changed, details see Table 5

Table 5: Sensor exchange and mount dates - overview

Overview of replacement dates for sensors that have been replaced by another type or mount dates for sensors that have been added to stations in addition to existing sensors..

Sensor	(Replacement) Sensor	Stations	Period of replacement
Combined sensor for air temperature and relative humidity GeoPrecision and Rotronic	Combined sensor for air temperature and relative humidity EE08	All Stations	2017-12-01 – 2018-08-22
Precipitation Young	Precipitation Meteoservis heated	P	2013-10-07 – 2013-10-16
Precipitation Friedrichs	Precipitation Meteoservis unheated	B except 151, BS	2016-07-04 – 2016-08-29
-	Precipitation Meteoservis unheated	151	2016-07-04
pF-meter	TDR sensor Stevens HydraProbe II	34, 50, 84, 85, 99 19 78 15	2013-10-23 2014-06-11 2016-11-16 2017-09-14
-	TDR sensor Stevens HydraProbe II	27 77 54	2013-10-23 2013-11-29 2017-03-10
-	Microstep-MIS MSB 780	R, 156	2020-10-21
-	Microstep-MIS MSB 181	11, 37, 101, 139	2020-10-21
-	Ott Pluvio2 400 cm ²	R	2024-04-04

Table 6: Exchange dates of precipitation sensors at Primary Stations

Station No.	Date of change Young > Meteoservis MR3H
11	2013-10-07
32	2013-10-07
37	2013-10-08
44	2013-10-08
72	2013-10-15
74	2013-10-15
82	2013-10-08
101	2013-10-16
132	2013-10-15
135	2013-10-16
139	2013-10-16

Table 7: Exchange dates of precipitation sensors at Base Stations and Special Base Stations

Station No.	Date of change Friedrichs > Meteoservis MR3
1, 14, 18, 27, 151	2016-07-04
2, 3, 9, 10, 24, 25, 39, 40, 48, 54, 63, 64	2016-07-05
4, 5, 12, 13, 26, 41, 42, 43, 55, 56, 57	2016-07-06
6, 7, 8, 15, 16	2016-07-08
17, 19, 28, 29, 30, 31, 33, 34	2016-07-09
20, 35, 122, 129	2016-08-08
21, 22, 23, 36, 38, 51, 52, 53, 67, 68, 69, 84	2016-08-09
83, 99	2016-08-10

58, 59, 70, 71, 73, 85, 87, 88	2016-08-22
86, 98, 100, 113, 114, 115, 116, 126, 127, 128	2016-08-23
75, 89, 102, 103, 104, 110, 125, 138, 140, 148, 149, 150	2016-08-24
117, 121, 130, 131, 133, 134, 141, 142, 143	2016-08-25
111, 112, 124, 136, 137, 144, 145, 146, 147	2016-08-26
45, 60, 62, 65, 78, 80, 96, 97	2016-08-27
61, 76, 79, 90, 91, 92, 105, 106, 107, 118, 119, 120	2016-08-28
46, 47, 49, 50, 66, 81, 93, 94, 95, 108, 109, 123	2016-08-29

Table 8: Periods of data availability

Station Type	Data Availability
B (128 stations)	since 1 Jan 2007 (5-min-interval)
18	until 8 May 2015
157	since 8 May 2015 (replaces station 18, at another location with different climate)
156	since Nov. 2020
BS (11 stations)	since 1 Jan 2007 (5-min-interval, soil measurements 30-min-interval, since November 2013 5-min-interval at stations 27, 34, 50, 77, 84, 85 and 99) Soil measurement stations 50, 84, 99 since 10 Jul 2007
P (11 stations)	since 1 Jan 2007 (5-min-interval)
154	since April 2017
155	since May 2018
R (1 station)	since Sept. 2007 (5-min-interval) soil measurements 30-min-interval, since November 2013 5-min-interval

Table 9: Status of the measurement network

Meas. Parameter	Status
Air Temperature	ok
Air Rel. Humidity	ok; defunct sensors have been replaced
Precipitation	ok
Wind parameters	ok
Soil parameters	ok; Defunct pF-Meters have been replaced by Stevens Hydraprobe
Air Pressure	Known temperature dependence for Kroneis sensor at station 77 is corrected in L2 data; new Microstep-MIS sensors mounted
Net Radiation	ok