Soil Moisture Measurements

T I N_F

R

A_L A_S K_A

ground or slack water

Bayerische Landesanstalt
für Wald und Forstwirtschaft

Zentrum
Wald▲Forst▲Holz
Weihenstephan
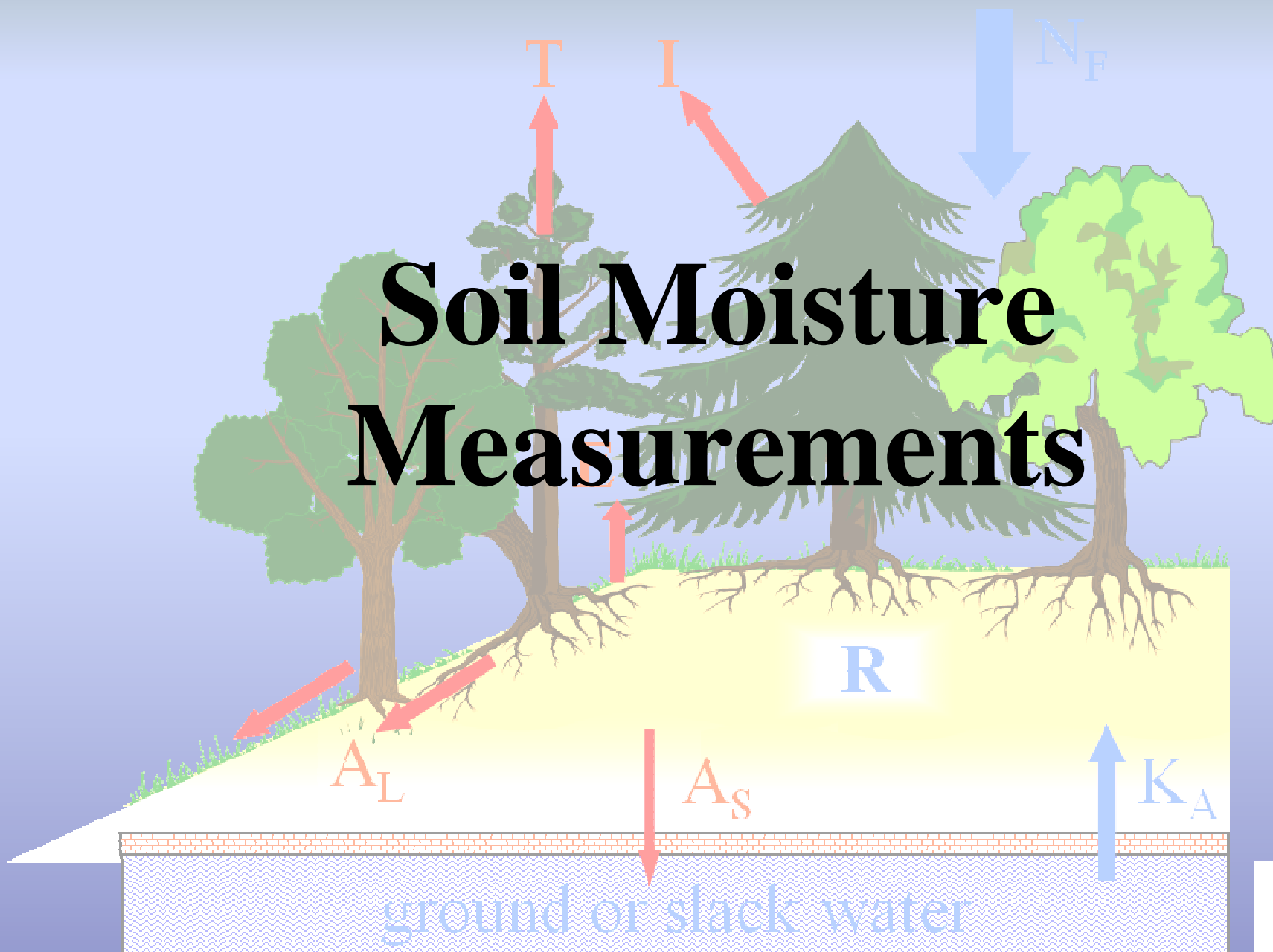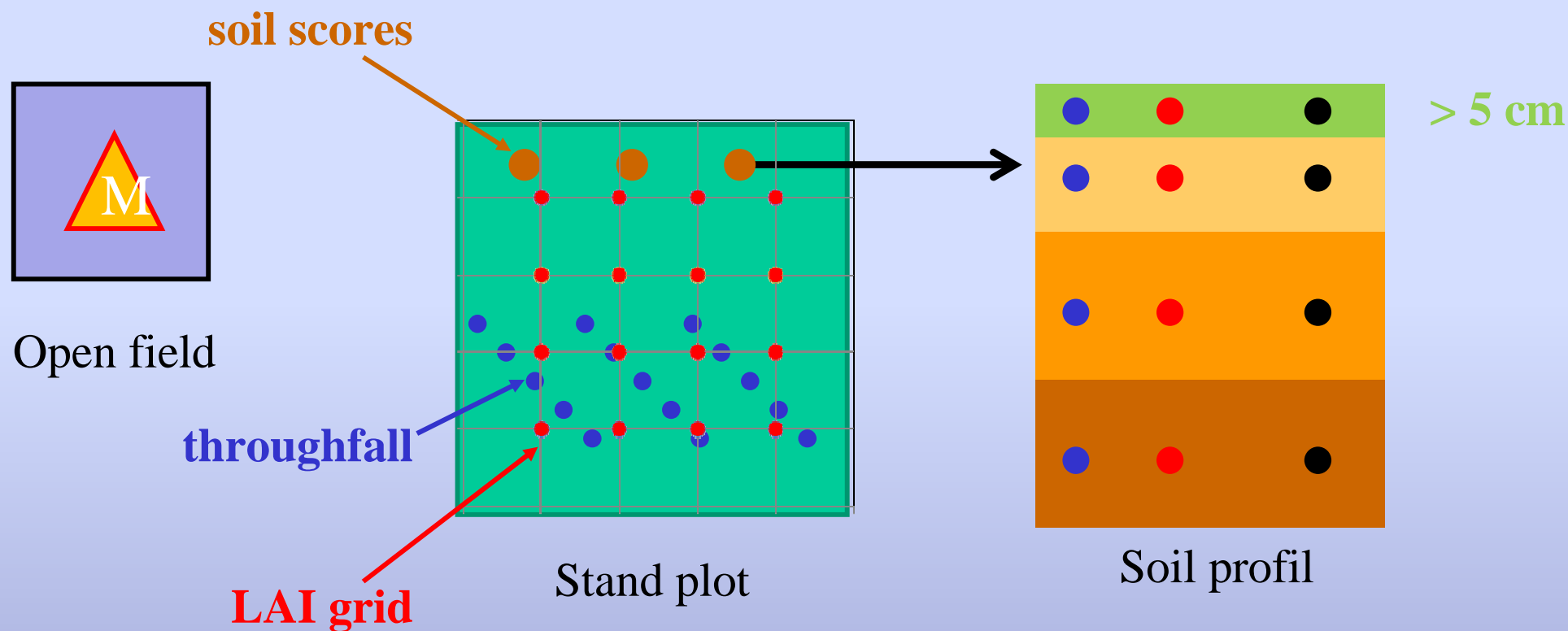
Minutes of the Meeting in Hamburg

- **Requirements on soil moisture measurements**

  - soil water content (WC) should be measured

  - matrix potential will be calculated by measured WC and measured pF curves (see meeting 12 Combined meeting of the Expert Panels on Soil and Meteorology)

  - the field sampling scheme was already discussed in meeting 12 (see minutes of the "Combined Meeting of Expert Panels on Soil and Meteorology"). It was assigned that minimum number of spatial replicates (profiles) should be 3 and in each profile sensors should be located in 3-4 depth intervals (0-20; 20-40, 40-80 cm and if thickness of forest floor was > 5 cm also in the forest floor).

  - daily values required; it is recommended to measure at least every 6 hours (4 times a day)

  - frequency of measurements must be reported

  - calibration of sensors needed, but laborious → submission 2010 of not calibrated data (from 2009) + a specific mark; after calibration the corrected data will be resubmitted

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Experimental design

soil scores

Open field

throughfall

LAI grid

Stand plot

Soil profil

> 5 cm

- Volumetric water content
- Soil temperature
- Soil sample

Data Submission Forms

- ## XX2009.PLM

- ## XX2009.MEO

PLM

Column	Description	Format	Item #
1 – 4	Sequence number of plots (1 to 9999)	I 4	
6 – 7	Country Code (= 01, = 02, etc.)	I 2	(1)
9 – 15	Observation plot/instrument code (the code consists of the plotnumber and instrument sequence number) **divided by a dot ".". E.g.: 0156.03**	C 7	(60)
17	Location (S = stand, F = open field in forest area, W = weather station, O = other)	C 1	(61)
19 – 25	Latitude in +DDMMSS (e.g.+505852)	C 7	(4)
27 – 33	Longitude in (+ or -)DDMMSS (e.g. +035531)	C 7	(4)
35 – 36	Altitude (in 50 meter classes from 1 to 51)	I 2	(7)
38 – 39	Variable (AT= air temp, ST = soil temp, PR= precipitation, etc.)	C 2	(62)
41 – 46	Vertical position (in meters above(+) or below (-) the ground)	F 6	(63)
48 – 49	Instrument code (10 = manual reading, 20 = mechanical recording, 30 = paper recording, etc.)	I 2	(63)
51 – 53	Scanning interval in seconds (for automatic stations only)	F 3	(63)
55 – 58	Storing interval in minutes (for automatic stations only)	F 4	(63)
60 – 63	**Profile pit ID (maximum 4 characters). Only for soil moisture measurements; *as mentioned in X2009.SWC***	C 4	
65 – 70	First date of monitoring period	Date	(3)
72 – 77	Final date of monitoring period	Date	(3)
79 – 81	Number of (measuring) days	I 3	
83 – 94	Description of instrument	C 12	(63)
96 – 135	Other observations (text)	C 40	(84)

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PLM new

- **Rows: 60 – 63**

- **Profile pit ID (maximum 4 characters). Only for soil moisture measurements;** *as mentioned in X2009.SWC*

- **C 4**

MEO

Column	Description	Format	Ref_Tab	Item #	Column
1 – 6	Sequence number of samples (1 to 999999)	I 6			1 – 6
8 – 14	Observation Plot/ instrument code Corresponding plot/instrument number (max. 9999.99)	C 7		(60)	8 – 14
16 – 17	Variable code (, TF, SF, ST, MP, WC, or others)	C 2	X	(62)	16 – 17
19 – 24	Date (in DDMMYY)	Date		(3)	19 – 24
26 – 31	Daily mean (e.g. temperature) or sum (precipitation) values	F 6		(64)	26 – 31
33 – 38	Daily minimum value	F 6		(64)	33 – 38
40 – 45	Daily maximum value	F 6		(64)	40 – 45
47 – 49	Completeness of measurements over the day (in % of measurements that should have been recorded)	I 3		(65)	47 – 49
51	**Origin of data; if calculated, method must be specified in the DAR**	**I 1**	**X**	**(66)**	51
53	**Status of data**	**I 1**	**X**	**(67)**	53
55 – 94	Observations (text)	C 40		(84)	55 – 94

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News in MEO

- ## Row: 53

- ## Status of data

- ## I 1

- ## (67)

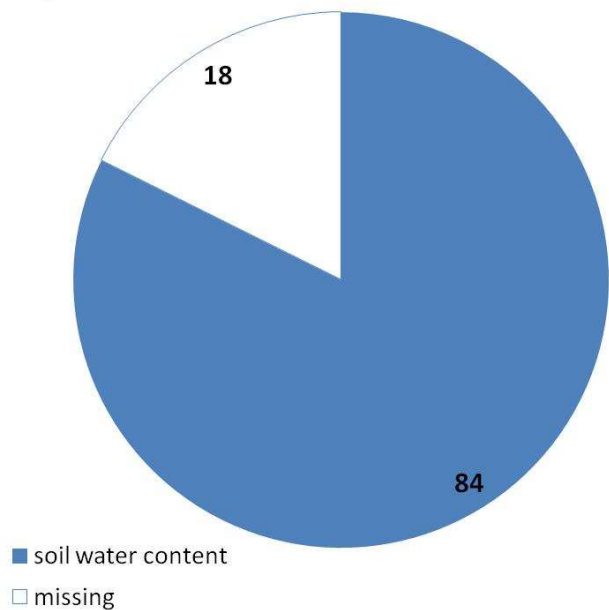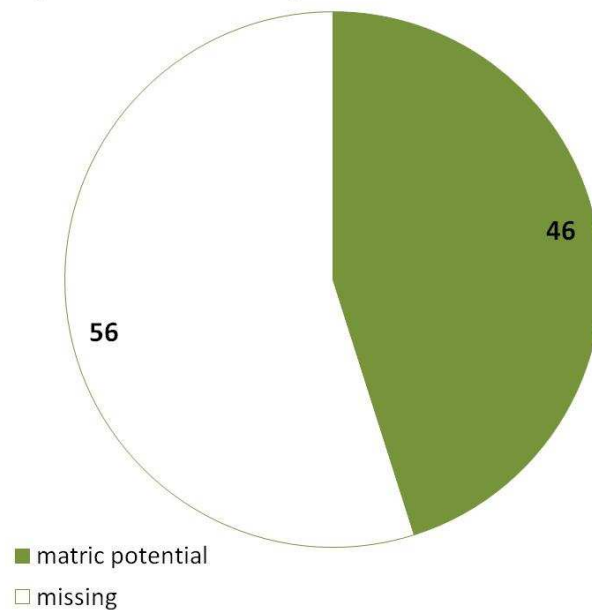| Code	Status
1	Raw data / not calibrated
2	Validated data, not calibrated
3	Validated data, calibrated
9	Missing value (data field must be blank)

Number of Plots with Measurements

= 82 %	**= 45 %**	**= 69 %**

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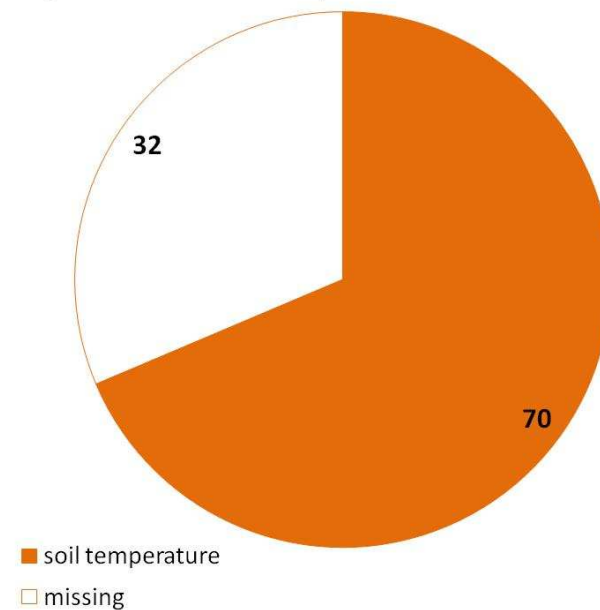
Plots with Soil Moisture Measurements
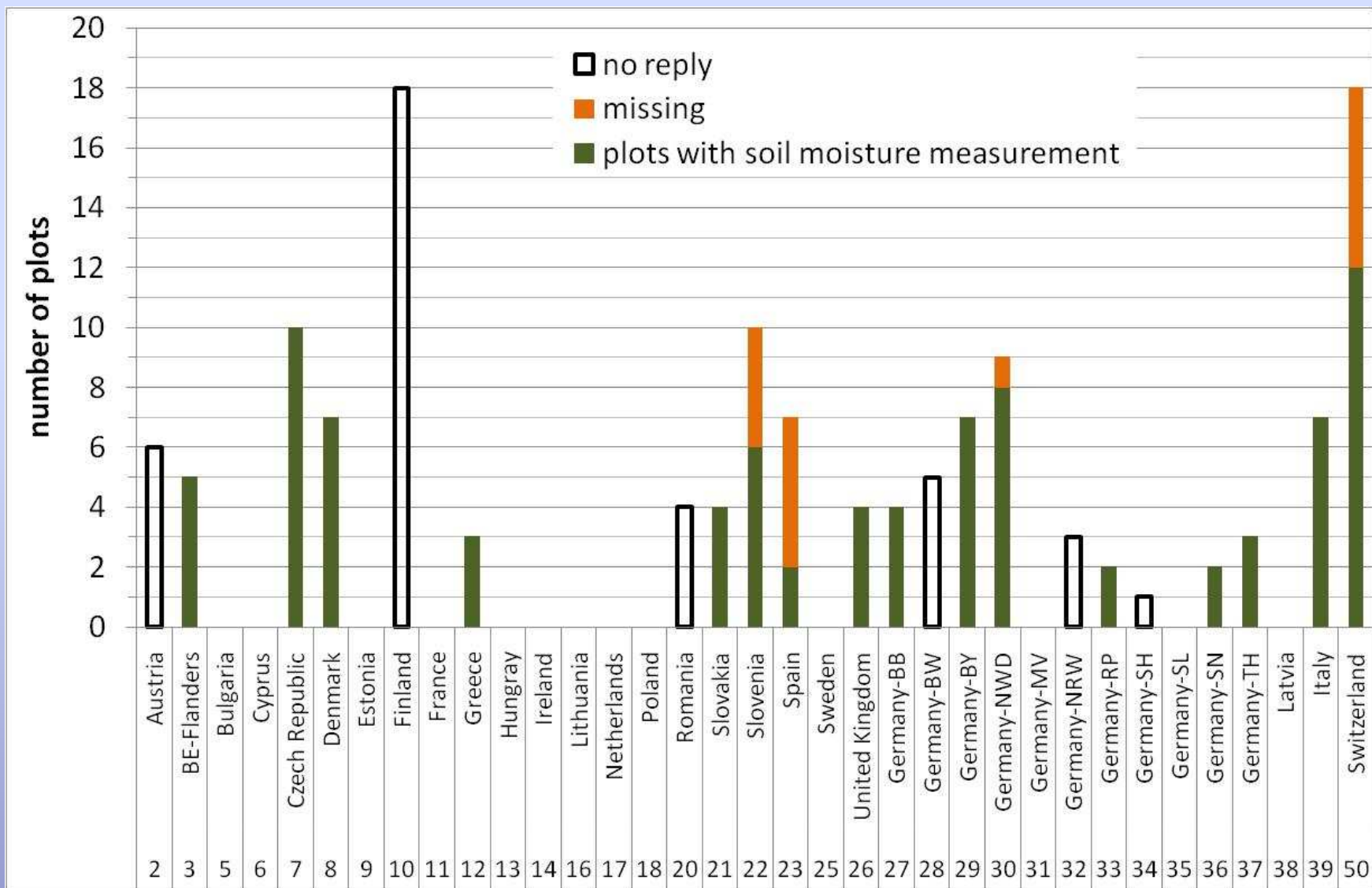
Reports from Participants

- **Status of soil moisture measurements in your country?**

- **Problems?**

- **Data submisson?**