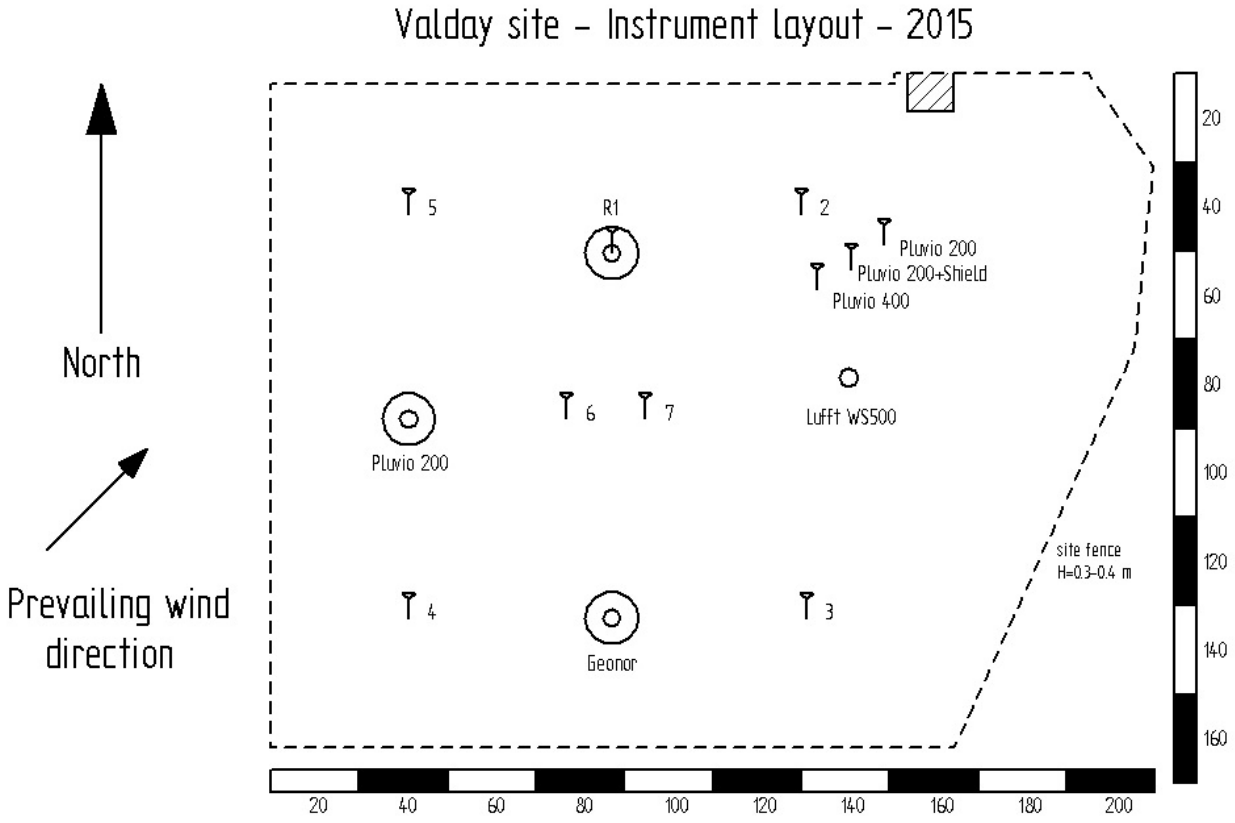
VALDAY SITE - PROOF OF PERFORMANCE

Station name	Valday precipitation polygon
Reference town	Valday
Station latitude	57º 59´
Station longitude	33º 15´
Station elevation in metres	194 m

Insert here a Site Layout indicating the location of SPICE references and all instruments, including distances and the direction of the prevailing winter winds.



SITE PICTURES

FROM NORTH

From East

FROM SOUTH

FROM WEST (ALMOST)

SECTION A2: SPICE Field Working Reference System configuration

FIELD REFERENCE TYPE R0

R0 type	MANUAL ☒ AUTOMATIC ☐
Measurement frequency, planned	Once per 24 hour (9:00 Moscow time)
Measurement methodology planned (volume, weight, etc)	Snow water equivalent measurements

Additional information required: Provide details of the planned measurement procedure.

Configuration of the bush

Description of surrounding obstacles (including distance/direction from, height, and type)	
Bush area	about 115 m^2
Average height of the bush	2m
Bush vegetation type	Plant species: N/A, but uniform Leaves fall off closer to the end of autumn
Maintenance details	Bushes are pruned once a year at the end of September when vegetation stops

Collector and shield specifications (manual configuration)

Model	Three of O-1 (Tretyakov gauge)
Inlet area	200 cm^2
Installation height (measured at the top of the collector)	2 m
Number of collectors available for the experiment	1
Shield type	Tretyakov shield + octagonal fence
Details	Two gauges have only Tretykov shield and installed. One gauge is installed inside octagonal fence with 4 m diameter

Picture. Field Reference Type R0

48h Observation Table

8/14/2013 9:00	
Gauge №	Precepitation, mm
0	7.1
8	7.3
21	0.8

8/15/2013 9:00	
Gauge №	Precepitation, mm
0	0.9
8	1.0
21	0.8

FIELD REFERENCE TYPE R1 (MANUAL)

Measurement frequency, planned	Once per 24 hour (9:00 Moscow time)
Measurement methodology planned (volume, weight, etc)	Snow water equivalent measurements

Additional information required: Provide details of the planned measurement procedure.

Configuration of the DFIR fence

Description of surrounding obstacles (including distance/direction from, height, and type)	No obstacles within 100 m
Diameter	12 m/4 m
Height of the outer fence (measured at the top)	3.5 m
Height of the inner fence (measured at the top)	3.0 m
Length of slats	1.5 m
Width of slats	5 cm
Slat material	Wood

Collector and shield specifications

Model	O-1 (Tretyakov gauge)
Inlet area	200 cm^2
Installation height (measured at the top of the collector)	3 m
Number of collectors available for the experiment	1
Shield type	Tretyakov shield

Picture. Field Reference Type R1 (Manual)

48h Observation Table for Reference Type R1 (Manual)

8/14/2013 9:00	
Gauge №	Precepitation, mm
1	7.0

8/15/2013 9:00	
Gauge №	Precepitation, mm
1	0.7

FIELD REFERENCE TYPE R2 (AUTOMATIC)

Configuration of the DFIR fence

Description of surrounding obstacles (including distance/direction from, height, and type)	No obstacles within 100 m
Diameter	12 m/4 m
Height of the outer fence (measured at the top)	3.5 m
Height of the inner fence (measured at the top)	3.0 m
Length of slats	1.5 m
Width of slats	5 cm
Slat material	wood

Single Alter shield

According to the SPICE instructions?	☒ Yes ☐ No
Attached to the post of the weighing gauge?	☐ Yes ☐ No
If different, provide details:	

Weighing gauge (WG)

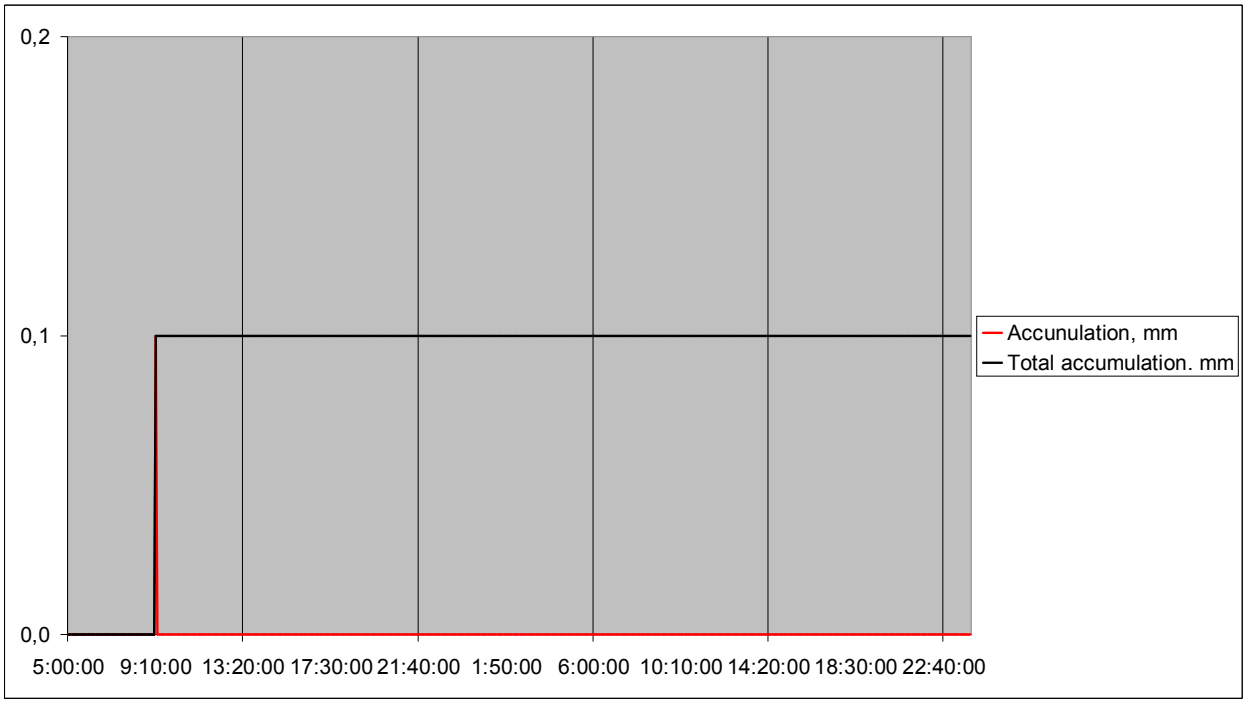
Make and model	Pluvio^2 200 RH
Serial number	321214
Firmware version (if applicable)	1.30.1
Number of transducers (if applicable)	---
Height of installation (measured from the top of the gauge)	3 m
Heater configuration and algorithm	not used
Output data message format	n/a
Frequency of data sampling	5 min

Precipitation detector – n/a

Picture. Field Reference Type R2 (Automatic) - n/a

Table. Field Calibration of Reference Type R2 (Automatic) – n/a

48h Plot. Field Reference Type R2 (Automatic)



Field Reference Type R3 (Automatic)

Presence of a WG with a single Alter shield?	☒ Yes ☐ No
Presence of a WG with no shield?	☒ Yes ☐ No
Description of surrounding obstacles (including distance/direction from, height, and type)	n/a
Distance between WGs (as close as possible, but exceeding minimum distance between gauges for a Class 1 siting configuration (as per WMO guidelines): Generally a flat area within 10m of instrument. This area surrounded by generally open space with a slope of less than 1:3 (19°) that is considered to be representative of the large scale area.	n/a

Weighing gauge (1 of 2)

Make and model	Pluvio^2 200
Serial number	339046
Firmware version (if applicable)	1.31.0
Number of transducers (if applicable)	n/a
Height of installation (measured from the top of the gauge)	2 m
Heater configuration and algorithm	not used
Output data message format	n/a
Frequency of data sampling	5 min

Weighing gauge (2 of 2)

Make and model	Pluvio^2 200
Serial number	285534
Firmware version (if applicable)	1.31.0
Number of transducers (if applicable)	n/a

Height of installation (measured from the top of the gauge)	2 m
Heater configuration and algorithm	not used
Output data message format	n/a
Frequency of data sampling	5 min

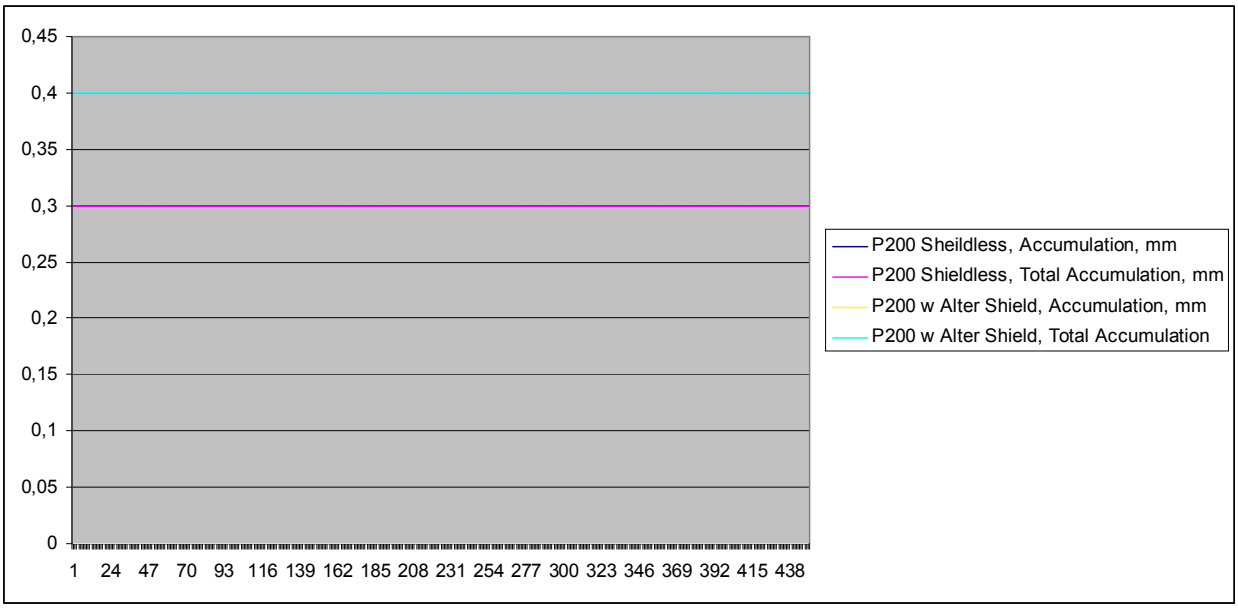
Single Alter shield

According to the SPICE instructions?	☒ Yes ☐ No
Attached to the post of the weighing gauge?	☐ Yes ☒ No
If different, provide details:	Shield is held by three rods installed around the post

Pictures. Field Reference Type R3 (Automatic) – n/a

Table. Field Calibration of Reference Type R3 (Automatic) Weighing Gauges 1 and 2 – n/a

48h Plots. Field Reference Type R3 (Automatic). Weighing Gauges 1 and 2



SECTION A3: Instrument Metadata Report

Instrument Name: Precipitation gauge
Instrument number 1 of 9

Field number, according to polygon scheme - 2

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
2	6.9

8/15/2013 9:00	
Gauge №	Precepitation, mm
2	0.7

Instrument Name: Precipitation gauge

Instrument number 2 of 9

Field number, according to polygon scheme - 3

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
3	7.0

8/15/2013 9:00	
Gauge №	Precepitation, mm
3	0.5

Instrument Name: Precipitation gauge

Instrument number 3 of 9

Field number, according to polygon scheme - 4

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
4	6.8

8/15/2013 9:00	
Gauge №	Precepitation, mm
4	0.6

Instrument Name: Precipitation gauge

Instrument number 4 of 9

Field number, according to polygon scheme - 5

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
5	7.2

8/15/2013 9:00	
Gauge №	Precepitation, mm
5	0.6

Instrument Name: Precipitation gauge

Instrument number 5 of 9

Field number, according to polygon scheme - 6

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
6	7.0

8/15/2013 9:00	
Gauge №	Precepitation, mm
6	0.7

Instrument Name: Precipitation gauge

Instrument number 6 of 9

Field number, according to polygon scheme - 7

Manufacturer	USSR Завод «Гидрометприбор», Tbilisi
Model	Tretaykov gauge
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	Tretyakov shield
Heating (if applicable)	---

Data output

Data communication protocol	Manual measuments
Output data message format (include description of fields)	---
Data sampling frequency	Once per 24 hour

8/14/2013 9:00	
Gauge №	Precepitation, mm
7	7.0

8/15/2013 9:00	
Gauge №	Precepitation, mm
7	0.8

Instrument Name: Precipitation gauge

Instrument number 7 of 9

Manufacturer	Geonor, Inc., USA
Model	T200B
Serial number	N/A
Firmware version (if applicable)	no firmware

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	3 m
Shield (if applicable)	Double fence wind shield only
Heating (if applicable)	not used

Data output

Data communication protocol	N/A
Output data message format (include description of fields)	---
Data sampling frequency	Once per 1 minute

Instrument Name: Precipitation gauge

Instrument number 8 of 9

Manufacturer	OTT Hydromet GmbH
Model	Pluvio^2 400
Serial number	N/A
Firmware version (if applicable)	N/A

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2 m
Shield (if applicable)	N/A
Heating (if applicable)	---

Data output

Data communication protocol	N/A
Output data message format (include description of fields)	---
Data sampling frequency	Once per 1 minute

Instrument Name: Weather station

Instrument number 9of 9

Manufacturer	G. Lufft Mess- und Regeltechnik GmbH
Model	WS 500
Serial number	109.0913.0813.035
Firmware version (if applicable)	

Field configuration

Location on site	Precipitation polygon
Orientation	---
Height (measured at top)	2.0 m
Shield (if applicable)	---
Heating (if applicable)	---

Data output

Data communication protocol	N/A
Output data message format (include description of fields)	---
Data sampling frequency	5 min

Section A4: Confirmation of Experiment Configuration

Test 1 – wasn't applied yet.

Test 2 – tables added form manual instruments

Test 3 – data, including new instruments, was sent by the end of September 2014. Didn't get an answer from NCAR though.

Instrument Data Validation

Instrument	Readiness	Data transfer to NCAR	Comments
R0	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
R1	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
R2	☑ Date: 21 DEC 2013	☑ Date: SEP 2014	
R3	☑ Date: 20 FEB 2014	☑ Date: SEP 2014	
O-1 №2	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
O-1 №3	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
O-1 №4	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
O-1 №5	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
O-1 №6	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
O-1 №7	☑ Date: 15 NOV 2012	☑ Date: 16 APR 2013	
T200B	☑ Date: 09 NOV 2013	☑ Date: SEP 2014	
Pluvio2 400	☑ Date: 15 NOV 2012	☑ Date: APR 2013	
WS 500	☑ Date: MAR 2014	☑ Date: SEP 2014	Wind direction data is not reliable

Section A5: Site Documentation Checklist

Site information and layout (Section A1)	☑
Complete set of pictures documenting the overall site installation – views from N, E,S,W (Section A1)	☒
Details of manual measurement procedure (Section A2)	☑
Instrument Metadata Reports for all instruments under test and all instruments used to provide ancillary measurements (Section A3)	☑
Calibration results and check sheets for all instruments (Sections A2,A3)	☒
Instrument data validation: 48h time series plots (Section A2,A3)	☑
Instrument data validation table (Section A4)	☑
Discrepancy report	☒
Pictures of installations of all reference instruments, instruments under test, and instruments used to provide ancillary measurements (Section A2,A3)	☒
End-to-end data validation: discrepancy reports (Section A4)	☑
SPICE archive end-to-end data validation: discrepancy reports (Section A4)	☒
Details for ant workarounds	☒