

Oklahoma Mesonet/ARS Quality Assurance Report August 2022

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- Mesonet technicians completed scheduled rotations of 16 batteries (BATV/BVAS), 9 rain gauges (RAIN/TIP2), 3 dataloggers, 3 barometers (PRES), 9 relative humidity sensors (RELH/TSLO), 4 pyranometers (SRAD), 10 PRT thermometers (TAIR/TA9M), 2 thermistors, 1 wind directions (WDIR), 2 wind sentries (WS2M), 7 wind monitor nose cones (WSPD), 6 current excitations, and 3 CDMs.
- Following a suspected lightning ground strike at Guthrie (GUTH) on 08/28, our 10cm bare soil sensor stopped reporting data, and other soil moisture sensors began reporting errant data. The barometer was reporting a value of 0. These instruments were replaced on 2022-09-07 and are now reporting expected values.

Mesonet QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
TAIR				
RELH				
WSPD				
WDIR				
PRES	Resolved	GUTH	46418	Barometer reporting 0 values following suspected lightning ground strike. Please replace. Replaced sensor and replaced external tubing.

SRAD	Resolved	CHIC	46399	SRAD reports -99999. Reattached wire. Must have fallen out during soil moisture sensor install.
	Resolved	ELRE	46354	Following sensor rotation, data suggest sensor may be slightly unlevel to the southeast. Please check sensor levelness using torpedo level. Adjusted
	Resolved	TALA	46393	Solar radiation sometimes much less than expected for a few observations or extended periods. Please replace sensor. Replaced sensor, wire brushed mount and replaced set screw.
RAIN	Resolved	FREE	46364	Primary gauge reports significantly less than secondary and sometimes misses light events entirely. Please check gauge for clog or other issue. If no discernable problem, replace gauge. No tips on initial tip test. Tested cable and when wires shorted tips register. Replaced spade connectors on rain cable and gauge registers tips. Also releveled gauge. Post cleaning tips 34
	Current	BUTL	46408	Data behavior points to cover high bias in primary gauge. Gauge falls into serial number range that is known to have a cover high bias. Serial No: R12637. Replace rain gauge cover.
	Current	HOOK	45727	Primary rain gauge returned two consecutive post-cleaning -3 drip test results. Please replace primary gauge.
	Current	MARE	46419	Primary gauge lags behind secondary and continues to tip after conclusion of rain event on 09 01. Behavior suggests clog. Please clean gauge.
	Current	SALL	46361	Primary gauge misses rain tips at start of precipitation. Please replace RG cable.
	Current	SALL	46362	Replace TIP2 cable.
TA9M	Resolved	EVAX	45809	9m air temperature sometimes has low bias for extended period following high humidity

				precipitation. Found no apparent problems. Shelter was very clean, no nests or webs. Replaced sensor.
	Resolved	OKMU	46397	Temperature decreases several degrees for a few obs on sunny afternoons, then returns to normal. Please check sensor for wasp nest. Wasp nest removed, cleaned TA9M and shelter.
	Current	WIST	46400	Reports periods of lower than expected values during daylight hours. Suspect insect nest.
WS2M				
TB10	Resolved	PUTN	46391	Soil temperature has less diurnal variation than all neighbors and peaks after 10cm sod. Suspect sensor is a little too deep. Please confirm sensor depth and rebury. Sensor was at 13cm. Reburied at 10 cm.
	Current	COPA	46394	10cm bare soil temperature reports -7999 for starting, final, and average soil temperature.
TS05				
TS10	Current	LANE	46396	10cm sod temperature reports large negative values for starting, final, and average temperature.
TS25				
TS60				
TR05	Resolved	GUTH	46412	Failed heater following suspected lightning ground strike. Replace sensor. Replaced sensor and installed stainless steel cable protector.
	Current	HOLL	46355	Starting and final temperature report -7999. Both soil moisture and temperature affected. Please replace sensor.

TRB10	Resolved	CHIC	46377	Starting and final temperature frequently report -7999 or otherwise errant value. Both soil moisture and temperature affected. Replace sensor. Replaced sensor
	Resolved	GUTH	46415	Sensor reporting -7999 for moisture and temperature values following suspected lightning ground strike. Replace sensor. Replaced sensor and installed stainless steel cable protector.
	Resolved	RING	46366	10cm bare soil sensor reports -7999 for starting, final, and average soil temperature. Replaced sensor
	Current	ALV2	46422	10cm bare soil moisture sensor stopped heating. Average soil temperature measurements are now spikey.
	Current	HUGO	46410	Suspect thermal short. Starting and final temperature report -7999 once soil temp gets above about 27C, then returns to normal after sunset. Replace sensor.
	Current	MRSH	46376	Starting and final temperature the same, indicating a failed heater. Soil temp is unaffected. Replace sensor.
TRS10	Resolved	ERIC	46367	10cm sod sensor reports -7999 for starting, final, and average soil temperature. Red-blue pair does not ohm out correctly. 36 - 37 M ohms. Replaced sensor. Tested good.
	Resolved	GUTH	46413	Failed heater following suspected lightning ground strike. Replace sensor. Replaced sensor and installed stainless steel cable protector.
	Current	CHER	45831	Showing symptoms of a failing heater. Gap between starting and final temperature very erratic, resulting in errant soil moisture values. Sensor was replaced last July for an apparently different issue. Soil temperature fine. Please replace unless other problem found.

TR25	Resolved	GUTH	46414	Failed heater following suspected lightning ground strike. Replace sensor. Replaced sensor and installed stainless steel cable protector.
TR60	Current	FTCB	46404	Starting and final temperature the same, indicating a failed heater. Please replace sensor.

ARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
RAIN				
VW05				
VW25				
VW45				
V05T				
V25T				
V45T				

FCARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
RAIN				
VW05				
VW25				
VW45				
V05T				
V25T				
V45T				

'Current' tickets are the unresolved tickets as of the last day of the month OR those tickets added based on the Monthly QA analysis.

'Resolved' tickets are the sensor problems that were fixed during the entire month.

Variable	Description
TAIR	Air temperature at 1.5 meters
RELH	Relative humidity at 1.5 meters
WDIR	Wind direction at 10 meters
WSPD	Wind speed at 10 meters
PRES	Air pressure
SRAD	Incident solar radiation
RAIN	Rainfall
TA9M	Air temperature at 9 meters
WS2M	Wind speed at 2 meters
TB10	Soil temperature at 10 cm under bare soil
TS05	Soil temperature at 5 cm under native sod
TS10	Soil temperature at 10 cm under native sod
TS25	Soil temperature at 25 cm under native sod
TS60	Soil temperature at 60 cm under native sod
TR05	Soil moisture: Calibrated DeltaT at 5 cm under native sod
TRB10	Soil moisture: Calibrated DeltaT at 10 cm under bare soil
TRS10	Soil moisture: Calibrated DeltaT at 10 cm under native sod
TR25	Soil moisture: Calibrated DeltaT at 25 cm under native sod
TR60	Soil moisture: Calibrated DeltaT at 60 cm under native sod
VW05	Soil moisture: Volumetric water content at 5 cm under native sod
VW25	Soil moisture: Volumetric water content at 25 cm under native sod
VW45	Soil moisture: Volumetric water content at 45 cm under native sod
V05T	Soil temperature at 5 cm under native sod
V25T	Soil temperature at 25 cm under native sod
V45T	Soil temperature at 45 cm under native sod