

# Oklahoma Mesonet/ARS Quality Assurance Report September 2022

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- Mesonet technicians completed scheduled rotations of 10 batteries (BATV/BVAS), 1 datalogger, 3 barometers (PRES), 6 relative humidity sensors (RELH/TSLO), 6 pyranometers (SRAD), 6 PRT thermometers (TAIR/TA9M), 6 rain gauges (RAIN/TIP2), 4 wind sentries (WS2M), 4 wind monitor nose cones (WSPD), 6 current excitation modules, 1 CDM.
- An ongoing problem with the CDM at our Cloudy site (CLOU) is causing several variables (TAIR, TA9M, SRAD, BVAS) to report lower than expected or generally errant values. A ticket has been issued for this problem. The exact cause is unknown as of this writing.

## 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	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	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. Replaced rain cover. Old cover tips pre cleaning 35. New cover tips post cleaning 34. Also leveled gauge slightly.
	Resolved	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. Removed clog in funnel, cleaned sensor. No pre cleaning tips due to clog.
	Resolved	MARE	46434	Gauge reports much less than expected compared to reflectivity and final total of primary gauge. Lags behind in tip onset. Unexpected tips also occurred during light winds on the following days with no evidence of rain or expected dew. Removed clog in funnel, cleaned sensor. No pre cleaning tips due to clog.
	Resolved	SALL	46361	Primary gauge misses rain tips at start of precipitation. Please replace RG cable. Replaced cable
	Resolved	SALL	46362	Replace TIP2 cable. Replaced cable
	Current	HOOK	45727	Primary rain gauge returned two consecutive post-cleaning -3 drip test results. Please replace primary gauge.
TA9M	Resolved	ALV2	46433	Upgrade 9m shelter to new style 10-plate shield. Replaced old style TA9M shelter with new style shelter.
	Resolved	CHER	46441	TA9M much warmer than expected during the day, then returns normal at night. Suspect PRT exposed to sunlight. Reinstalled TA9M sensor that was left out after pass.

	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.
	Resolved	WIST	46400	Reports periods of lower than expected values during daylight hours. Suspect insect nest. Removed insect nest, cleaned sensor and shelter.
	Current	OILT	46450	Sensor began displaying low bias overnight on 09/20. No notable weather behavior at that time. Since this time, low bias has grown to be up to 2 degrees less than expected. Occurs during day and night and all wind conditions. Problem may be slightly exacerbated during higher wind speeds.
WS2M				
TB10	Resolved	COPA	46394	10cm bare soil temperature reports -7999 for starting, final, and average soil temperature. Replaced sensor, installed stainless steel cable protector.
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.
	Resolved	HOLL	46355	Starting and final temperature report -7999. Both soil moisture and temperature affected. Please replace sensor. Replaced sensor
TRB10	Resolved	ALV2	46422	10cm bare soil moisture sensor stopped heating. Average soil temperature measurements are now spikey. Wiring frayed. 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.
	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	MRSB	46376	Starting and final temperature the same, indicating a failed heater. Soil temp is unaffected. Replace sensor.
	Current	OILT	46438	10cm bare soil temperature reports errantly high values. Soil moisture reports errantly high values for starting temperature or -7999.
	Current	SALL	46446	Tech reports bare plot 25 percent covered with vegetation. Some effects may be visible in soil data. Please remove vegetation from the bare plot.
	Current	WEB3	46443	Recent site photos show extremely tall vegetation on the east side of the site area around the bare plot and aux box solar panel. Fully remove vegetation from the bare plot, as well as all tall vegetation within the site fence.
	Current	WILB	46444	Tech reports bare plot 50 percent covered with vegetation. Effects visible in soil moisture data.

				Diurnal temperature variation markedly less than neighbors. Please remove vegetation from the bare plot.
TRS10	Resolved	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. No apparent problems found. Replaced sensor.
	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.
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	Current	F112	46447	Voltages 1-3 report values near zero, resulting in errant soil moisture data. Replace sensor.
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.

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