

Oklahoma Mesonet/ARS Quality Assurance Report October 2022

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- Mesonet technicians completed scheduled rotations of 17 batteries (BATV/BVAS), 3 barometers (PRES), 6 relative humidity sensors (RELH/TSLO), 2 pyranometers (SRAD), 2 PRT thermometers (TAIR/TA9M), 3 rain gauges (RAIN/TIP2), 1 thermistor, 4 wind directions (WDIR), 3 wind sentries (WS2M), 3 current excitation modules.
- Following a nearby lightning ground strike to our Yukon (YUKO) site on 10/11, several pieces of equipment required replacement, including the datalogger, barometer, aspirator fan, and cell modem, with outstanding replacement tickets on 3 soil sensors. The site has since reported as expected and collected data appear reasonable.

Mesonet QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
TAIR				
RELH				
WSPD				
WDIR				
PRES				
SRAD				
RAIN	Current	HECT	46504	Primary rain gauge slowly records a few tips after the onset of rain and significantly under reports precip amount. Gauge appears to be

				clogged.
	Current	HOOK	45727	Primary rain gauge returned two consecutive post-cleaning -3 drip test results. Please replace primary gauge.
	Current	IDAB	46508	Primary rain gauge stopped reporting tips. Radar showed tornadic circulation near site and site measured 108 mph wind gust. Suspect top has been knocked off and damaged.
	Current	NEWK	46503	Secondary rain gauge completely missed multiple rain events.
TA9M	Current	EVAX	46469	Unexpected low bias during rainfall continues following sensor replacement. Please replace sensor cable and inspect logger CDM for potential water intrusion.
	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	Resolved	TIPT	46467	Sensor appears to have a starting threshold problem. Often reports 0m/s while WSPD approaches up to 5m/s, primarily at night during any sized inversion. No obvious problems noted. Changed sensor.
TB10				
TS05				
TS10	Resolved	LANE	46396	10cm sod temperature reports large negative values for starting, final, and average temperature. Replaced sensor. Installed stainless steel cable guard.

TS25	Resolved	MANG	46498	25cm soil sensor reports -7999. Looks like critters chewing cable. Replaced conduit and covered exposed wire from conduit to sensor head with braided steel cable.
TS60				
TR05	Resolved	HOLL	46355	Starting and final temperature report -7999. Both soil moisture and temperature affected. Please replace sensor. Replaced sensor
TRB10	Resolved	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. Replaced sensor. Installed stainless steel cable guard.
	Resolved	MRSB	46376	Starting and final temperature the same, indicating a failed heater. Soil temp is unaffected. Replace sensor. Replaced sensor
	Current	OILT	46438	10cm bare soil temperature reports errantly high values. Soil moisture reports errantly high values for starting temperature or -7999.
	Current	SHAW	46502	Most recent veggie pass pics show large depressions in the soil on the bare plot immediately around the sensor. Could be due to wildlife digging on the plot. Please fill in and level the bare plot. Data do not appear affected - will update ticket priority if this status changes.
	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.
	Current	YUKO	46497	Reports -7999 after lightning strike.
TRS10	Current	YUKO	46496	10cm sod does not properly heat after lightning strike. Average soil temperature looks fine.
TR25				
TR60	Resolved	FTCB	46404	Starting and final temperature the same, indicating a failed heater. Please replace sensor. Replaced and tested sensor
	Current	YUKO	46494	Reports -7999 after lightning strike. Unwired from equipment.

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	Resolved	F112	46447	Voltages 1-3 report values near zero, resulting in errant soil moisture data. Replace sensor. Replaced 5cm 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.

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