

Oklahoma Mesonet/ARS Quality Assurance Report September 2021

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- Mesonet technicians completed scheduled rotations of 11 batteries (BVAS/BATV), 5 barometers (PRES), 8 rain gauges (RAIN/TIP2), 9 relative humidity sensors (RELH/TSLO), 6 pyranometers (SRAD), 7 PRT thermometers (TAIR/TA9M), 2 wind directions (WDIR), 3 wind sentries (WS2M), 4 wind monitor nose cones (WSPD), and 6 current excitation modules.

Mesonet QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
TAIR	Resolved	DURA	45005	1.5m air temperature sometimes reports -7999 for extended periods of time in the afternoon. Only replace cable unless obvious damage discovered. Nothing obvious found. Replaced cable.
	Resolved	ELRE	44961	TAIR has low bias compared to neighbors. Bias increases a little bit each day. See problems with TB10 traced to similar time. Replace sensor if no obvious problems found. Ants discovered inside sensor. Ants removed and sensor replaced.
RELH				
WSPD				
WDIR				
PRES	Resolved	BOIS	44807	Values sometimes report much higher and more erratically than expected. Suspect problem lies with warped and/or shrunken

				barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Replaced tubing on the outside of the enclosure.
	Resolved	BUTL	44809	Values sometimes report much higher and more erratically than expected. Suspect problem lies with warped and/or shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Tube replaced.
	Resolved	GOOD	44800	Values sometimes report much higher and more erratically than expected. Suspect problem lies with warped and/or shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Replaced the tubing outside the enclosure.
	Resolved	PUTN	44806	Values sometimes report much higher and more erratically than expected. Suspect problem lies with warped and/or shrunken barometer tubing. Please replace barometer tubing with prepared sections of tube in FieldReady box. Bring old tube back to lab for examination. Tube replaced
SRAD	Resolved	OKEM	44972	Continuously reports significantly less than neighbors during daylight hours but still follows expected diurnal curve. Suspect dirty sensor. No significant rain chances in the next 10 days. Please clean and level sensor. Cleaned sensor, readings normal.
	Resolved	STIG	44964	SRAD significantly less than expected for 2 hours, then returned to normal. Replace sensor. Replaced.
	Resolved	STUA	45003	Reported SRAD ~88 percent less than expected. Still follows diurnal curve, other variables look fine. Suspect dirty sensor. No significant rain

				chances in the next 10 days. Please clean and level sensor. Cleaned and leveled.
RAIN	Resolved	ELRE	44849	Primary rain gauge misses tips at the beginning of rainfall during recent rain events. Please replace gauge cables. If gauge fails drip test after cable replacement, replace gauge. Cables and conduit replaced. Infested with ants.
	Resolved	ELRE	44850	Please replace rain gauge cables for consistency. Cables and conduit replaced. Infested with ants.
	Resolved	JAYX	44880	Primary gauge misses tips during rain events. Please replace rain gauge cables. If gauge fails drip test following cable replacement, replace gauge. Debris noted in gauge cover that could have been blocking and or causing delayed tips. New cables already installed. Sensor cleaned and drip test performed, results are satisfactory.
	Resolved	JAYX	44882	Replace secondary gauge cables for consistency with primary gauge. New cables already installed. Drip test satisfactory.
	Resolved	WATO	44876	Primary gauge misses tips at start of rain events and often misses light rain events entirely. Please replace rain gauge cables. If gauge fails drip test following cable replacement, replace gauge. Cables replaced. Drip test looks fine.
	Resolved	WATO	44878	Please replace rain gauge cables for consistency with primary gauge. Cables replaced. Drip test looks fine.
	Current	MEDF	45009	Secondary rain gauge slowly responds to rain and reports a lower total than primary gauge. Suspect gauge is clogged.
TA9M				

WS2M	Resolved	ACME	44966	2m wind speed zero or near zero when 10m wind speed exceeds 5m/s. Replace sensor if no obvious problem found. Replaced.
TB10	Resolved	ELRE	44962	10cm bare sensor reports -7999 or large negative values for starting, final, and average temperature. Sensor replaced.
	Current	HOBA	44870	Continuity 10cm bare sensor reporting -7999 or otherwise errant, negative values. Please replace sensor.
TS05				
TS10				
TS25				
TS60				
TR05	Resolved	ARNE	44852	Difference between starting and final temperature is negligible, resulting in errant soil moisture values. Soil temp fine. Original sensor. Please replace. Replaced sensor and conduit.
TRB10	Resolved	BYAR	44875	Starting temperature reporting extremely high, errant values. Final temperature reporting -7999 or otherwise errant values. Both soil moisture and temperature values affected. Replace sensor. Replaced.
	Resolved	CARL	44898	Sensor appears to be affected by recurring thermal short. Both temperature and moisture values begin reporting -7999 when sensor reports above ~34 degrees C and return to normal once sensor cools below ~34 degrees C in the afternoon. Please replace sensor. Sensor replaced

	Resolved	CENT	44836	Suspect failed sensor. Heater failed on 07/27, followed by errant soil temperature values on 07/31. Please replace sensor. Replaced.
	Current	ADAX	44885	10cm under bare soil starting, final, and average soil temperature report -7999.
TRS10	Current	BREC	44969	After prolonged period of noisy data, 10cm sod final temperature now same as starting temp or reports random bad value.
	Current	HOLL	44860	Sensor heating less than expected, causing bad soil moisture data. Problem does not trace to any current exciter replacement. Please replace sensor.
TR25	Resolved	BLAC	44847	Difference between starting and final temperatures much smaller than expected, resulting in errantly high soil moisture values. Soil temperature unaffected. Suspect failing heater. Please replace. Sensor replaced.
	Resolved	EUFA	44967	Soil moisture values errantly spike downward during high humidity. Please replace sensor. Replaced. Sensor damaged during retrieval. Unable to conduct post test.
TR60	Current	WASH	44868	Both soil temperature and moisture values reporting -7999. Please replace sensor.

ARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
RAIN				
VW05				
VW25	Current	A131	44871	Voltages 1-3 reporting values near zero, resulting in errant soil moisture values. Please replace.
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