

Oklahoma Mesonet / ARS Quality Assurance Report

July 2020

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- Mesonet technicians completed scheduled rotations of 1 rain gauge (RAIN, TIP2), 1 relative humidity sensor (RELH/TSLO), and 1 current excitation module.
- Wiring problem at F111 that prevented soil parameters from being measured properly has been resolved. Sensors rewired on July 7.
- Suspected power problem at the Centrahoma site (CENT) resulted in several missing observations.
- Following lightning strike at Broken Bow (BROK) in June, the aspirator battery was no longer charging. Voltage regulator replaced on July 7. Battery now charges as expected.
- Lightning affected the Oilton site (OILT) on July 12, resulting in a failed aspirator battery, aspirator fans, and multiple soil variables.
- Power problems at the Fittstown site (FITT) resulted in missing observations. Power cables were adjusted on August 4.

Mesonet QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
TAIR	Resolved	BRIS	42995	Temperature sensor at 1.5 meters sometimes reports errantly high values. Sensor rewired.
	Current	MANG	43056	Temperature sensor at 1.5 meters reporting higher than expected. Please inspect aspirated shelter for issue.
RELH				
WSPD				
WDIR				
PRES				
SRAD	Resolved	MAYR	42977	Sometimes reports -99999. Values during day

				sometimes lower than expected or negative. Replaced.
	Resolved	WOOD	42300	Solar radiation sometimes reports values less than expected during sunny conditions. Sensor replaced.
	Current	GRA2	43062	Solar radiation sometimes reports values less than expected during sunny conditions. Please replace sensor.
	Current	SALL	43089	SRAD sensor sometimes reports missing or negative values during overnight and early morning hours. Please replace sensor.
RAIN	Resolved	BUTL	42987	Primary gauge fails to record precipitation during multiple rain events. Gauge replaced.
	Resolved	GRA2	42241	Primary gauge fails to record rain. Reseated gauge cables.
	Resolved	OILT	42998	Following lightning strike, primary gauge stopped recording during ongoing rain. Issue was with on-site datalogger. Rain gauges fine.
	Current	CENT	43082	Gauges record occasional errant rain tips. Please replace rain gauge cables only.
	Current	CENT	43084	Gauges record occasional errant rain tips. Please replace rain gauge cables only.
TA9M				
WS2M	Resolved	EUFA	42991	2m wind speed sometimes reports zero when 10m winds above 3m/s. Reseated sensor cables to appropriate depth.
	Current	EUFA	43070	2m wind speed continues to sometimes report zero when 10m wind is above 3m/s. Please replace sensor.
TB10				
TS05				
TS10	Current	OILT	43002	Continuity soil temperature at 10cm under sod suddenly reports values greater than 100°C. Lightning

				in vicinity at time of problem.
TS25				
TS60				
TR05	Current	LAHO	43092	Sensor is slow to saturate following heavy rainfall events. Please replace sensor.
TRB10	Current	OILT	43010	Standard soil temperature at 10cm under bare soil reporting -7999. Lightning in the vicinity of site when problem arose.
TRS10	Current	LAHO	43095	Starting and final temperature report -7999. Both soil moisture and temperature errant. Please replace sensor.
	Current	OILT	43008	Standard soil temperature at 10cm under sod reporting -7999. Lightning in the vicinity of site when problem arose.
TR25	Resolved	FAIR	42248	Final temperature reports -7999, starting temperature reports errant values. Both TS25 and TR25 are bad. Sensor replaced.
	Current	YUKO	42304	Sensor no longer heating, resulting in errant soil moisture values. Soil temperature is fine.
TR60	Resolved	CENT	42160	60-cm soil moisture is increasingly noisy. Original sensor. Replaced.
	Current	GRA2	43066	Heater no longer heating. Soil temperature fine. Check all wiring and values before replacing.
	Current	MIAM	43044	60cm soil moisture starting temperature reports around 500°C. Final temperature reports -7999.
	Current	NEWK	42247	60-cm sensor doesn't heat as expected, resulting in bad soil moisture data. Soil temperature is fine.
	Current	OILT	43004	Soil temperature at 60cm reporting -7999. Lightning in the vicinity of site when problem arose.

ARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
RAIN				
VW05	Resolved	A148	42196	Erroneously reports constant values near zero. Similar issue in October 2019 appeared to resolve itself. Sensor replaced.
	Current	A249	43039	5cm sensor regularly reports values near 0 for voltages 1-3, resulting in bad soil moisture data. Soil temperature measurements are fine.
VW25				
VW45				
V05T				
V25T				
V45T				

FCARS QA Report for Standard Variables

Variable	Status	Site	Ticket	Remarks
RAIN				
VW05				
VW25	Current	F105	43047	Sensor returning errant soil moisture value of zero. Rewire and check values before replacing. Soil temperature fine.
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