Model Change Bulletin (MCB) 12
AERMET version 22112 (April 22, 2022), listed by change type

AERMET 22112 represents an update of the AERMET code from version 21DRF. The changes listed in this document reflect changes made to AERMET since the 21DRF version. Listed with each change are the affected AERMET stages and data types (Upper air, National Weather Service (NWS), ONSITE (site-specific observed), or PROG (prognostic data).

Bug Fixes

Item	Modification	Stage	Data Type
1	Correct mechanical mixing heights for convective hours for ONSITE or PROG applications involving input mixing height. Mechanical mixing height is now calculated for convective hours and the input mixing height is assigned to the convective mixing heights. This change makes AERMET consistent the AERMOD formulation (See AERMOD Model Formulation document, Appendix A, Section A.11)	2	ONSITE or PROG
2	Correct a bug to initialize the variable SAVEWAN in the READ_ISHD subroutine	1	SURFACE
3	Correct a bug in subroutine AUDIT_SUMM that references the UP_AUDIT_INDEX array when it has not been allocated and no soundings have been read. Only reference the array if there are valid soundings	1	UPPERAIR
4	Correct a bug related to the MODIFY keyword in the UPPERAIR pathway	1	UPPERAIR
5	Correct a bug for the RANGE keyword with SURFACE data	1	SURFACE
6	Correct a bug in READ_EXT in the surface module that allowed AERMET to see non-ASOS observations as ASOS observations and apply the ASOS truncation correction; Non-ASOS observations now seen as non-ASOS	2	SURFACE

Enhancements

Item	Modification	Stage	Data Type
1	Modified AERMET to ignore the input surface friction velocity (u*) and cloud cover if input data is prognostic and overland. This change makes AERMET 22112 consistent with past versions of AERMET when reading prognostic data	All	PROG
2	Modified PBL_PROC to recalculate u* and Monin-Obukhov length (L) for overwater applications when the reference wind speed is reset to $\sqrt{2}\sigma_v$ (minimum wind speed in AERMET) because the wind speed is less than $\sqrt{2}\sigma_v$. Recalculated u* and L are based on the ratio of AERMET calculated u* based on the reset wind speed and original wind speed (See Section 5.6.2 of AERMET user's guide for details)	2	PROG

Miscellaneous

Item	Modification	Stage	Data Type
1	Added code E81 to alert user that UPPERAIR data not read in and no input site-specific or prognostic mixing heights	1	UPPERAIR, ONSITE/PROG
2	Use code W75 to alert user of zero value for mixing height	2	All
3	New code I28, no sounding for the day	1	UPPERAIR
4	New code I29, no morning sounding for the day	1	UPPERAIR
5	Reset codes I80-I84 to I81-I85	2	ONSITE/PROG
6	code I80 to alert user that prognostic data is overland and certain variables not used	2	PROG
7	New code I86, to alert user that u* and L are being calculated because wind speed has been reset to square root $\sqrt{2}\sigma_v$ when an overwater application	2	PROG (overwater)
8	New code I87 to alert user that mixing height is calculated for missing hour when ONSITE or PROG mixing height is input	2	ONSITE/PROG
9	Summary of calms, ASOS calms, variable winds, number of day with no soundings, number of days with no morning soundings, number of days with no convective conditions, number of observations per day for UPPERAIR, SURFACE, ONSITE/PROG, and ASOS 1-minute observations to REPORT file	All	All
10	AERMET run status (successful or unsuccessful) written to top of REPORT file	All	All