

Model Change Bulletin (MCB) 14

AERMET version 24142 (May 21, 2024), listed by change type

AERMET 24142 represents an update of the AERMET code from version 23132. The changes listed in this document reflect changes made to AERMET since the 23132 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	Modify subroutine READ_CD144 in mod_surface.f90 to convert negative temperatures from Fahrenheit to Celcius when reading NWS data in CD-144 format.	1	SURFACE
2	Correct implementation of the AERMET default mixing height calculations option (MIX_DFAULT) for COARE processing in COARE and MECH_HT subroutines.	2	ONSITE/PROG
3	Correct bugs related to surface roughness calculations in COARE using wave data (period and height)	2	ONSITE/PROG
4	Correct bug in up_modify to only set a particular day's value in the lsound array not the entire array.	1	UPPERAIR
5	Modify AERMET to write out un-successful completion of AERMET when non-numeric characters encountered in the OUTPUT and PROFILE files. AERMET issues an ERROR in the message file but did not report an unsuccessful AERMET run.	2	All
6	Update PBL_PROC to only invoke COARE when key variables such as winds, temperature, sea surface temperature, and relative humidity are not missing or when winds are not calm.		ONSITE/PROG

Enhancements

Item	Modification	Stage	Data Type
1	Modify AERMET to use the following hierarchy to substitute missing surface level heights in a sounding: 1) the most recent non-missing surface level read from the data file, 2) use the user-supplied station elevation from the LOCATION keyword when no recent surface level is available, or 3) use the surface level's pressure and the standard atmosphere to calculate a surface level height.	1	UPPERAIR
2	Modify AERMET so that the user MUST supply a station elevation on the LOCATION keyword for the UPPERAIR station. The elevation is used to substitute for missing surface level heights for soundings.	1	UPPERAIR

Miscellaneous

Item	Modification	Stage	Data Type
1	Add information and warning messages about certain input variables such as u^* , Monin-Obukhov length, etc. will not be used when invoking COARE but will be calculated by COARE.	2	ONSITE/PROG
2	Modify AERMET such that user has to select a surface roughness option for COARE; no longer default to z_0 based on u^* if no option selected. Alert user in REPORT file if COARE was selected to be run but not used due to data issues	2	ONSITE/PROG
3	Modify AERMET to use the following hierarchy to substitute missing surface level heights in a sounding: 1) the most recent non-missing surface level read from the data file, 2) use the user-supplied station elevation from the LOCATION keyword when no recent surface level is available, or 3) use the surface level's pressure and the standard atmosphere to calculate a surface level height.	1	UPPERAIR

4	Modify AERMET so that the user MUST supply a station elevation on the LOCATION keyword for the UPPERAIR station. The elevation is used to substitute for missing surface level heights for soundings.	1	UPPERAIR
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