



AERMOD Version 19191 Modeling System Update

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Version 19191 Updates

- AERMAP: no changes
- AERMET
 - 5 bug fixes
- AERMOD
 - 9 bug fixes
 - 4 enhancements
 - 1 BETA formulation update
 - 3 ALPHA formulation updates
- Bug reports since 19191 update and workarounds



AERMET updates

Modification	Stage	Affected data type
Corrected logic in MPPBL when no available soundings for a day and onsite mixing heights are available	3	ONSITE (Observed site-specific or MMIF data)
Corrected a format statement in AUDIT subroutine to allow for larger values of total soundings reported to REPORT file; does not affect output of AERMET stage 1.	1	UPPERAIR
Remove check for missing station pressure and boundary checks on station pressure for a sounding when it is the first sounding read in GETFSL. The boundary checks now occur for each sounding and used to determine the FSL version. Also lowered the lower limit on the pressure check to allow for high altitude upper air stations.	1	UPPERAIR (FSL format)
Modified RDISHD to not replace an hour's observed precipitation with a duplicate if the original precipitation is non-zero and the duplicate is zero.	1	NWS
Modified OSTEST to issue error and abort AERMET if no DELTA_T heights are defined and temperature differences (DT01) are read in stage 1	1	ONSITE (Observed site-specific or MMIF data)



AERMET bug reports since 19191 release

- AERMET
 - When processing sub-hourly ONSITE data with heights (HT variable), measurement heights are not correctly averaged.
 - **Workaround: Use OSHEIGHTS keyword with listed measurement heights and HT variable in ONSITE data ignored**
 - Format overflow when reporting missing variables for UPPERAIR data to message file in AERMET
 - Occurs when sounding has more than 99 levels below 5 km; not very often
 - Only affects messaging; does not affect UPPERAIR EXTRACT or QAOUT output files
 - **Workaround: Ignore**
 - Both will be corrected in next release



AERMOD updates (bug fixes)

Modification	Pollutant	Source types
Output background units in correct format when requesting model output in units other than $\mu\text{g}/\text{m}^3$.	All	All
Correction to remove background concentration to wet and dry deposition output	All	All
Modify scavenging ratio calculations for wet deposition when using Method 2 dry deposition	Particulates	All
Impose minimum release height of 2 m and reference wind speed of 1 m/s for buoyant line sources	All	BUOYLINE
Correct summary file listing for MODELOPT #6 – output file	All	All
Correct warning message with DFAULT and use of adjusted u^*	All	All
Correction of an error message	All	All
Error message for LOW_WIND ALPHA option	All	All
ELEVUNIT keyword now applied to LINE and BUOYLINE sources	All	LINE and BUOYLINE



AERMOD updates (enhancements)

Modification	Pollutant	Source types
ARM2 enabled with BETA RLINE and ALPHA RLINEXT	NO ₂	RLINE and RLINEXT
EVENT processing enabled with BETA RLINE and ALPHA RLINEXT	All	RLINE and RLINEXT
URBAN option processing enabled with BETA RLINE and ALPHA RLINEXT	All	RLINE and RLINEXT



AERMOD updates (ALPHA and BETA formulation)

Modification	Type	Pollutant	Source types
RLINE source type <ul style="list-style-type: none">Input parameters identical to LINE source	BETA	All	RLINE
RLINEXT source type <ul style="list-style-type: none">Extends RLINE source to include depressed roadway and barrier options	ALPHA	All	RLINEXT
Enhanced building downwash options (ORD_DWNW, AWMADWNW) <ul style="list-style-type: none">3 options developed by ORD (ORDUEFF, ORDTURB, ORDCAV)3 options developed by PRIME2 subcommittee of AWMA (AWMAUEFF, AWMAUTRUB, STREAMLINE)Related: Draft changes to BPIPPRM, released as 19191_DRFT, to facilitate evaluation of ORD and AWMA ALPHA options	ALPHA	All	POINT, POINTHOR, POINTCAP
Method 2 particle and gas deposition now ALPHA; previously non-DEFAULT	ALPHA	All	All
URBAN option processing enabled with BUOYLINE as ALPHA option	ALPHA	All	BUOYLINE



AERMOD bug reports since 19191 release

- AERMOD
 - BUOYLINE and source order
 - Concentrations differ for other source types when order of sources is changed and no urban sources are modeled
 - AERMOD resets mixing height to 0 for hour when modeling buoyant line source
 - Does not occur when at least one urban source modeled
 - Does not matter when BUOYLINE source is last because next hour of meteorology will be processed
 - **Workaround: BUOYLINE source should be listed as last source when no urban sources modeled.**
 - **Good practice to have BUOYLINE source last regardless of source mix (urban vs. rural)**
 - Will be corrected in next release