Model Change Bulletin

MCB#1 5/12/06

AERMET Beta version 2.0 (dated 06131)

This Model Change Bulletin documents changes made to the AERMET meteorologoical preprocessor. AERMET is the meteorological preprocessor for the AERMOD model. The beta version of AERMET constitutes a significant upgrade to AERMET (dated 04300). It is being made available at this time for beta testing of the code and for review and comment prior to its official release.

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NOTE: EPA will be taking comments related to this AERMET Beta version 2.0 (dated 06131) until June 14, 2006. Please email your comments to Dennis Atkinson at atkinson.dennis@epa.gov and Desmond Bailey at bailey.desmond@epa.gov .

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AERMET Beta Version 2.0 (dated 06131)
Significant additions/changes include the following:

1. Several changes have been made to the coding for the extraction and processing of TD-3505 (a.k.a. ISH) surface data which are available from NCDC. These data are available in two formats: the original format (all data records include fields for the station coordinates) and a so-called' condensed format in which the fields for the station coordinates have been removed. Both formats are variable record length' formats. AERMET, as currently coded, will process data in either of these formats; however it does not support processing of ISH data that has been reprocessed through the NCDC conversion utility.
2. Unlike most surface meteorological data sets, ISH data sets allow multiple observations per hour. AERMET is coded such that it always saves the most recent observation when extracting ISH records; in a worse case scenario this could potentially result in overwriting good data with missing value flags. As a safeguard, code has been added to AERMET to capture these records and write them to the message file. By reviewing the message file, one should be able to determine if good data have been discarded and to reinsert the discarded records as necessary.
3. Coding has been completed to include station elevation as a required input along with station latitude and longitude on the LOCATION' input image. This change supports an AERMET algorithm for estimating station pressure from sea-level pressure and station elevation.
4. The format of the input command file has been changed to parallel the format used in AERMOD; i.e., a 2-character pathway identifier is followed a keyword indicating the action to take.
5. The user interface has been upgraded to allows one to extract, audit, merge, and process data using a single set of input instructions. The old stage1n2' and stage3' executables have been replaced with a single AERMET executable.
6. Coding changes have been made such that AERMET now prompts the user for the name of the input command file; this change was made, in part, to facilitate file management by creating filenames internally. The filenames are created using the name of the command input file as a base and adding an appropriate default extension.
7. Coding changes have been made such that the three data pathways, the upper-air (UA), surface (SF), and on-site (OS), can now be used interchangeable to process surface data. With this option, each pathway operates on an identical set of surface variables using the same keyword operators; this option is enabled when a free' or user' format is specified. In stage 3, the user selects one of the data pathways as the primary pathway for processing of surface data.
8. A new data pathway has been added as a placeholder for grid-point data extracted from a prognostic model such as RUC. This pathway can also be used interchangeably for processing surface

data.

9. Substitution/replacement options have been added to Stage-3. With the replacement option, missing values for the primary pathway are replaced with data from a secondary pathway or with a user specified fixed value if both primary and secondary values are missing. The Stage-3 report has been revised to provide a summary of replacement processing. The replacement option is made available for review purposes only.

The beta version is still under development and some of the options available with the current regulatory version have not been incorporated at this time. These to be included' options are:

Processing (extraction and QA) of TD-6201 upper-air data.

Processing (extraction and QA) of TD-3280 surface data.

Stage 3 processing of convective mixing heights using the modified Carson method.

Stage 3 processing of the Bulk Richardson option