Model Change Bulletin (MCB) 3
AERSURFACE Version 20060 (February 29, 2020)

This version of AERSURFACE is an update to 19039_DRFT and replaces version 13016 and 19039_DRFT. It includes enhancements to support processing of 1992/2001/2006/2011/2016 Land Cover data, including percent impervious and percent tree canopy data (where available) to supplement concurrent land cover data.

This version includes both the ZORAD and ZOEFF options for determining roughness. ZORAD is equivalent to the method used in AERSURFACE version 13016 and is recommended for regulatory applications. The ZOEFF option was introduced in version 19039_DRFT as a research grade option and is the equivalent of an alpha option, meant only for review and is not intended for regulatory applications at this time.

This version of AERSURFACE includes the following modifications relative to the previous versions dated 13016 and 19039_DRFT:

Enhancements from v13016 to v19039_DRFT

Item	Enhancement
1	User interface updated to Path/Keyword interface similar to AERMOD, AERMET, and AERMAP rather than interactive. *NOTE: This version is not compatible with the redirected input from files generated with previous versions AERSURFACE.*
2	Option to output surface values with appropriate AERMET keywords for the PRIMARY or SECONDARY meteorological tower location. (Default is PRIMARY.)
3	Option to separately characterize individual wind sectors as either airport or non-airport for determining surface roughness length. Previous versions required all wind sectors to be characterized as either airport or non-airport.
4	Option (ZOEFF) to compute surface roughness length based on the Effective Roughness Model Coding Abstract (MCA) included in the User's Guide in which effective roughness is derived using an Internal Boundary Layer (IBL) method to estimate the appropriate fetch from the meteorological tower location based on the wind measurement height and local land cover characteristics. Default option (ZORAD) uses a fixed radial distance from the tower (e.g., 1 km) as in previous versions of AERSURFACE.

5	Option to process 2001, 2006, 2011, and 2016 NLCD land cover with option to supplement land cover data with percent impervious and percent canopy data to derive surface roughness length. Percent impervious and percent tree canopy data are supplied as part of the National Land Cover Dataset and are only applicable to post-1992 NLCD years.
6	Modified check on pixel resolution in GeoTIFF. Assumed to be 30 meters, but not always reported as exactly 30.0 meters.

Enhancements from v19039_DRFT to v20060

Item	Enhancement
1	Added keywords to process 2016 NLCD land cover supplemented with percent impervious and percent canopy data.
2	Modify check on GeoKey for Geographic Type in GeoTIFFs to treat NAD83 and WGS84 as identical to accommodate difference between land cover and impervious data and canopy data distributed by the MRLC.
3	When specifying *sfc_moisture* parameter with the CLIMATE keyword on the CO pathway, users can now enter AVERAGE or AVG on the CO pathway to indicate average moisture conditions. AVG and AVERAGE are equivalent, and AERSURFACE will accept either.

Miscellaneous Updates and Bug Fixes

Item	Update
1	With addition of ZOEFF option, a valid range on the allowable height of the anemometer representing surface wind measurements has been imposed. The valid range is 1.0 - 100.0 meters.
2	Versions after 13016 assume all NLCD data, including land cover, percent impervious, and percent canopy are provided in GeoTIFF format without the use of compression of the data within the GeoTIFF. *Note: AERSURFACE no longer supports the 1992 NLCD "state binary files" once provided by the USGS that AERSURFACE was originally developed to process.*
3	Remove comments, obsolete code, and make corrections to warning and informational messages.