

HARP AERMOD Meteorological Files

CATEGORIES

Topics Airborne Toxics

Programs Hot Spots Analysis & Reporting Program

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The HARP Air Dispersion Modeling and Risk Assessment Tool (ADMRT) uses the AERMOD air dispersion model to estimate pollutant concentrations at various receptors. AERMOD requires the input of meteorological data files, in the form of surface and profile files, to estimate the atmospheric boundary layer parameters used in the dispersion calculations. These data files, and the meteorological stations where they originate, should be selected to best represent the meteorological conditions and surface characteristics (e.g., wind speed, wind direction, temperature, cloud cover, and land use type) of the modeled source's area of impact.

CARB staff processed AERMOD-ready meteorological data files for use in HARP from 28 meteorological stations throughout the State. Table 1 lists the names, WBAN IDs, geographical information, air districts, and years processed for each of those stations. To see the locations of the meteorological stations and air districts, and to help determine which meteorological files you may need for your project, download the meteorological station and air districts' KMZ file and open it in Google Earth or other geographic browser. You can download a station's compressed meteorological file by clicking on the station's name in the Table1 below.

The following air districts process and provide their own AERMOD-ready meteorological data files and are excluded from the list in Table 1. Click on each air district's hyperlink below to direct you to their website.

- [Bay Area Air Quality Management District](#)
- [Sacramento Metropolitan Air Quality Management District](#)
- [San Diego Air Pollution Control District](#)
- [San Joaquin Valley Unified Air Pollution Control District](#)
- [Santa Barbara County Air Pollution Control District](#)

- South Coast Air Quality Management District.

If the representative meteorological data, necessary for your AERMOD run, is not available, you may want to create the screening meteorological data to perform a screening analysis using US EPA's AERSCREEN model. The data for AERSCREEN are made available for your convenience. Visit AERSCREEN meteorological data to download the files.

Methodology.

The surface and profile data files were developed using the AERMET versions 19191 and 21112. To create those files, the following data were required as inputs into AERMET: surface meteorological data, upper air meteorological data, and land use data.

Raw hourly surface meteorological data was obtained from NOAA's National Climatic Data Center (NCDC) for the years 2010-2021. For those years, the most recent and complete five years of meteorological data were processed. More information regarding this requirement can be found in Appendix W of the U.S. EPA's *Guideline on Air Quality Models* and the Office of Environmental Health Hazard's (OEHHA) *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Risk Assessments*. The raw meteorological data from each of the 28 stations listed in Table 1 were recorded from meteorological instruments at airports; 26 of which were Automated Surface Observation Station (ASOS) systems. Where data was available from ASOS systems, the meteorological preprocessor, known as AERMINUTE, was used to process ASOS 1-minute wind data. Staff used a minimum wind speed threshold of 0.5 m/s, which is consistent with US EPA guidance. Wind speeds below this threshold were treated as calm.

Raw upper air data was obtained from NOAA's Earth System Research Laboratory (ESRL) for the years 2010-2021. In AERMOD, the surface station's nearest upper air station was used, except for stations located in the Mojave Desert AQMD. For surface stations located in the Mojave Desert AQMD, the most representative upper air station was used in AERMOD.

The preprocessor, AERSURFACE version 20060, was used to determine land use characteristics and to determine albedo, bowen ratio, and surface roughness values. The 2016 USGS National Land Cover Database (NLCD) data was used as the land use data input into AERSURFACE. Albedo and surface roughness length values can be determined

directly from this land use data. Bowen ratio is an indicator of surface moisture and its value varies from year to year based on land use type combined with annual precipitation totals compared to the 30-year climatological average precipitation.

In December of 2012, AERMOD and AERMET Versions 12345 incorporated the ADJ U* BETA non-default option to address concerns regarding model performance under low wind speeds and stable conditions. Under low wind speeds and stable conditions AERMOD routinely overestimated concentrations due to an under-prediction of surface friction velocity (U^*). Since Version 12345, the ADJ U* option formula has been refined and the ADJ U* option is now a regulatory option when using National Weather Service data or on-site data that does not include turbulence measurements. The meteorological data files were processed both with and without the ADJ U* option.

Note:

Data users should consult with their local air district for approval of the provided AERMOD-ready meteorological data prior to use in their air district's regulatory applications.

Table 1. Meteorological Station Information and

Years Processed

Station Name	ICAO	Air District	Latitude	Longitude	Elevation- (m)	Years Proces
PDLE PRODN FLT/TST AF PLT	KPMD	Antelope Valley AQMD	34.629	-118.083	769.2	2016- 2020
GENERAL WILLIAM J. FOX AIRFIELD AIRPORT	KWJF	Antelope Valley AQMD	34.741	-118.213	712.6	2017- 2021
OROVILLE MUNICIPAL AIRPORT	KOVE	Butte County AQMD	39.494	-121.622	57.9	2016, 2017, 2019, 2020, 2021
EDWARDS AIR FORCE BASE	KEDW	Eastern Kern APCD	34.9	-117.867	704.4	2012, 2016, 2017, 2019, 2020
LAKE TAHOE AIRPORT	KTVL	El Dorado County AQMD	38.898	-119.996	1924.5	2017- 2021

YUBA COUNTY AIRPORT	KMYV	Feather River AQMD	39.102	-121.569	18.9	2015, 2016, 2018, 2019, 2020
BISHOP AIRPORT	KBIH	Great Basin Unified APCD	37.371	-118.359	1250.3	2017- 2021
MAMMOTH YOSEMITE AIRPORT	KMMH	Great Basin Unified APCD	37.625	-118.838	2172.6	2015- 2019
IMPERIAL COUNTY AIRPORT	KIPL	Imperial County APCD	32.835	-115.57	-17.7	2015, 2016, 2017, 2018, 2021
UKIAH MUNICIPAL AIRPORT	KUKI	Mendocino County AQMD	39.128	-123.2	183.2	2016, 2017, 2018, 2020, 2021
ALTURAS MUNICIPAL AIRPORT	KAAT	Modoc County APCD	41.484	-120.561	1333.5	2016, 2017, 2019, 2020, 2021

BLYTHE AIRPORT	KBLH	Mojave Desert AQMD	33.618	-114.709	120.4	2015, 2016, 2017, 2019, 2020
BARSTOW- DAGGETT AIRPORT	KDAG	Mojave Desert AQMD	34.854	-116.787	584.3	2015, 2016, 2018, 2019, 2020
NEEDLES AIRPORT	KEED	Mojave Desert AQMD	34.768	-114.618	271.3	2015, 2017, 2018, 2019, 2020
MONTEREY PENINSULA AIRPORT	KMRY	Monterey Bay Air Resources District	36.59	-121.849	50.3	2015, 2016, 2018, 2019, 2021
SALINAS MUNICIPAL AIRPORT	KSNS	Monterey Bay Air Resources District	36.664	-121.609	22.6	2016- 2020
WATSONVILLE MUNICIPAL ARPT	KWVI	Monterey Bay Air Resources District	36.939	-121.79	48.8	2015- 2019

ARCATA AIRPORT	KACV	North Coast Unified AQMD	40.978	-124.105	61	2017- 2021
JACK MCNAMARA FIELD ARPT	KCEC	North Coast Unified AQMD	41.784	-124.238	17.4	2017- 2021
BLUE CANYON - NYACK ARPT	KBLU	Placer County APCD	39.276	-120.709	1608.1	2014, 2015, 2016, 2018, 2019
PASO ROBLES MUNICIPAL ARPT	KPRB	San Luis Obispo County APCD	35.669	-120.629	246.9	2017- 2021
SAN LUIS CO REGIONAL ARPT	KSBP	San Luis Obispo County APCD	35.238	-120.644	61	2017- 2021
REDDING MUNICIPAL AIRPORT	KRDD	Shasta County AQMD	40.515	-122.298	151.5	2017- 2021
SISKIYOU COUNTY AIRPORT	KSIY	Siskiyou County APCD	41.774	-122.468	808	2016, 2018, 2019, 2020, 2021

RED BLUFF MUNICIPAL ARPT	KRBL	Tahama County APCD	40.152	-122.255	107.6	2016, 2017, 2018, 2020, 2021
CAMARILLO AIRPORT	KCMA	Ventura County APCD	34.211	-119.087	23.5	2017-2021
OXNARD AIRPORT	KOXR	Ventura County APCD	34.2	-119.204	11	2017-2021
NUT TREE AIRPORT	KVCB	Yolo/Solano AQMD	38.377	-121.964	33.2	2017-2021

RELATED RESOURCES

SNAPS IOF Communities Air Quality and Odor Reporting Tool

SNAPS Inglewood Oil Field Communities Air Monitoring Kickoff Meetings - June 2023

Consumer FAQ

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