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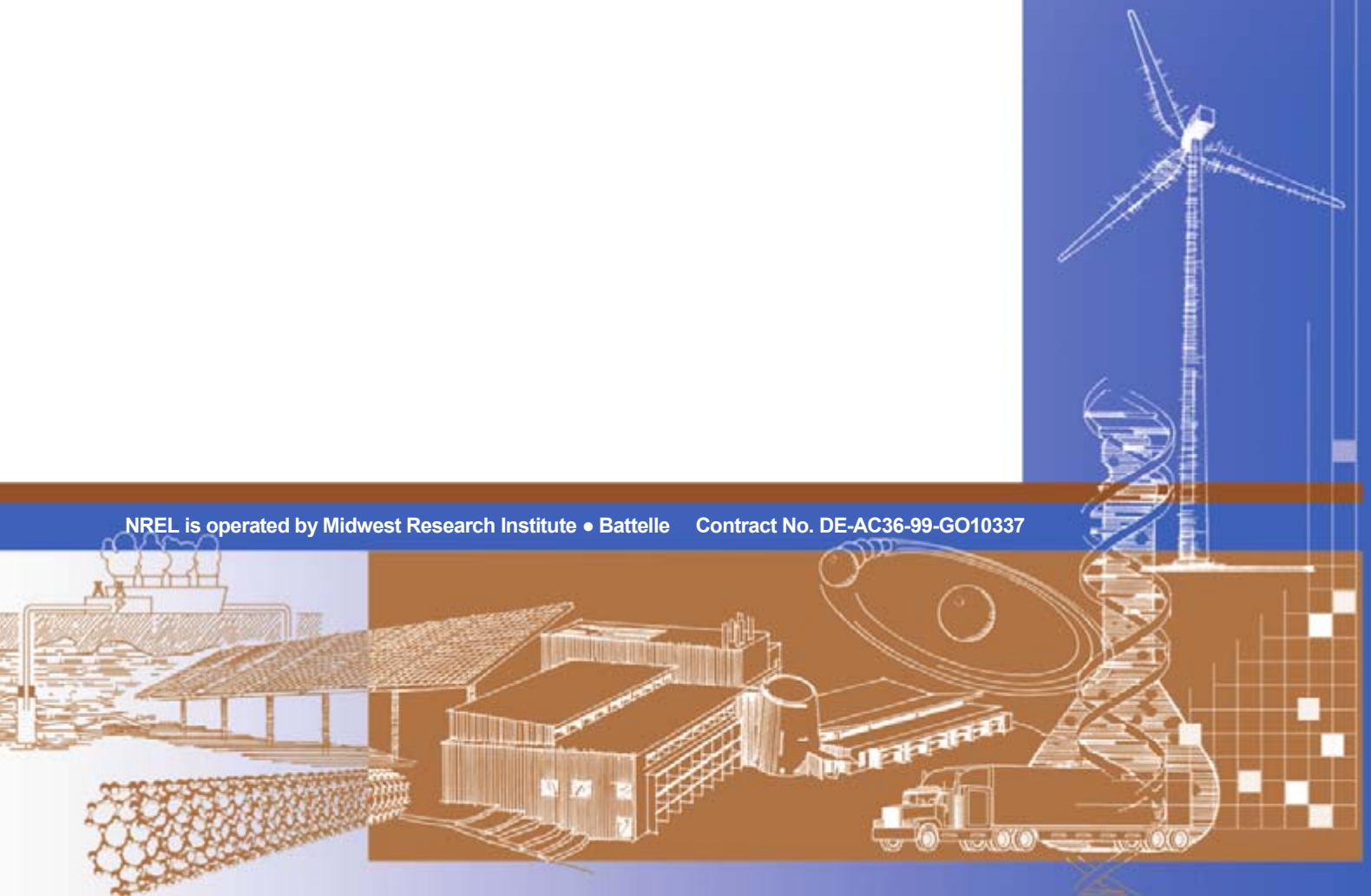
Users Manual for TMY3 Data Sets

S. Wilcox and W. Marion

Technical Report
NREL/TP-581-43156
Revised May 2008



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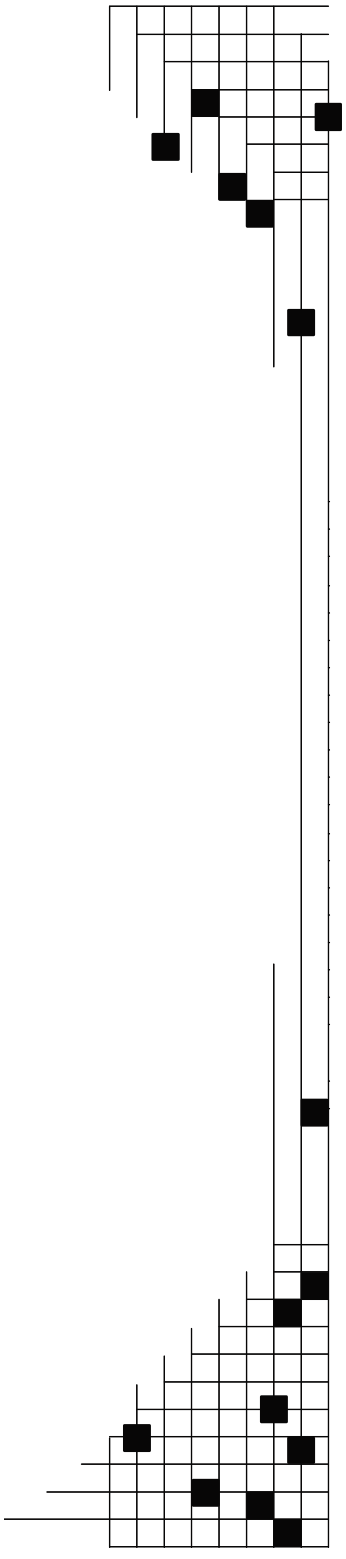

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The following corrections were made to this report:

Pages 4-5: Table 1-3, Lines 6, 9, 12, 15, 18, 21, 24 text changes

Page 8: Table 1-4 replaced

Preface

This user's manual describes typical meteorological year (TMY) data sets derived from the 1991-2005 National Solar Radiation Data Base (NSRDB) update. These data sets provide greater geographical coverage than previous TMY sets with 1020 locations in the United States and its territories.

To distinguish between the old and new data sets, the new TMY data sets are referred to as TMY3. The TMY, TMY2, and TMY3 data sets cannot be used interchangeably because of differences in time (solar versus local), formats, elements, and units. *Unless they are revised, computer programs designed for previous TMY data will not work with TMY3 data*. The National Renewable Energy Laboratory (NREL) provides a software utility that allows reformatting of the TMY3 data to the TMY2 format.

The TMY data sets hold hourly values of solar radiation and meteorological elements for a 1-year period. Their intended use is for computer simulations of solar energy conversion systems and building systems to facilitate performance comparisons of different system types, configurations, and locations in the United States and its territories. Because they represent typical rather than extreme conditions, they are not suited for designing systems to meet the worst-case conditions occurring at a location.

The TMY3 data sets and this manual were produced by NREL's Electric and Systems Center under the Solar Resource Characterization Project, which is funded and monitored by the U.S. Department of Energy's Energy Efficiency and Renewable Energy Office.

Acknowledgements

The meteorological data used in this data set are provided by the National Climatic Data Center (NCDC) from its Integrated Surface Database (ISD). NREL gratefully acknowledges the countless hours of time and expertise that went into the creation and maintenance of the ISD. More information on the ISD and NCDC is available at http://ncdc.noaa.gov.

We also acknowledge the valuable contributions of the Atmospheric Sciences Research Center (ASRC), State University of New York at Albany. The ASRC team provided much of the modeled solar radiation data in this data set using the SUNY satellite model.

Table of Contents

List of Figures

List of Tables

Acronyms

ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
TMY	typical meteorological year
NREL	National Renewable Energy Laboratory
NSRDB	National Solar Radiation Data Base
CSV	comma separated value
CDF	cumulative distribution functions
FS	Finkelstein- Schafer
WS	weighted sum

1 Description of the TMY3 Data Set

This manual describes how to obtain and interpret the data in the Typical Meteorological Year, version 3 (TMY3) data sets. These data sets are an update to, and expansion of, the TMY2 data released by the National Renewable Energy Laboratory (NREL) in 1994.

1.1 Introduction

A typical meteorological year (TMY) data set provides designers and other users with a reasonably sized annual data set that holds hourly meteorological values that typify conditions at a specific location over a longer period of time, such as 30 years. TMY data sets are widely used by building designers and others for modeling renewable energy conversion systems. Although not designed to provide meteorological extremes, TMY data have natural diurnal and seasonal variations and represent a year of typical climatic conditions for a location. *The TMY should not be used to predict weather for a particular period of time, nor is it an appropriate basis for evaluating real-time energy production or efficiencies for building design applications or solar conversion systems.*

Important note: Some of the meteorological data in this data set have been filled. The data-filling process was designed to provide serially complete records as input for modeling the solar radiation fields. Filled meteorological data fields (which are flagged in the data file) may also be useful for certain renewable energy applications. However, the filled data are not suitable for climatological studies.

The TMY data set is composed of 12 typical meteorological months (January through December) that are concatenated essentially without modification to form a single year with a serially complete data record for primary measurements. These monthly data sets contain actual time-series meteorological measurements and modeled solar values, although some hourly records may contain filled or interpolated data for periods when original observations are missing from the data archive.

1.2 Acquiring TMY3 Data

The TMY3 data are available for download via the World Wide Web. Data may be accessed at http://rredc.nrel.gov/solar/old_data/nsrdb/1991-2005/tmy3.

1.3 Source Data for the TMY3 Data Set

The first TMY data set for the United States was produced by Sandia National Laboratories in 1978 for 248 locations using long-term weather and solar data from the 1952–1975 SOLMET/ERSATZ database (Hall et al. 1978). NREL updated the TMY data in 1994 using data from the 30-year 1961–1990 National Solar Radiation Data Base (NSRDB) (Marion, et al. 1995). In 2007, NREL released a 15-year updated NSRDB for 1991–2005 (Wilcox et al. 2007a). The TMY3 data described here were produced using input data for 1976-2005 from the 1961-1990 NSRDB, Version 1.1 and the 1991-2005 NSRDB update.

Because the 1961-1990 NSRDB has 239 sites and the 1991-2005 NSRDB update has more than 1,400 sites, production of the TMY3 data was designed to maximize both the number of stations

and the number of years from which to characterize the typical conditions. At sites where data are available for 30 years, the base time period for the TMY algorithm spans 1976-2005. For the remaining sites, the base time period spans 1991-2005. These two categories of sites are documented in Appendix A.

In the creation of a TMY, selecting from a larger database generally affords smaller differences between selected data months and long-term monthly characteristics. Conversely, the smaller the pool of years from which to determine climate characteristics, the less likely the selection represents the climate (ASHRAE 2004). In the same context, the eruptions of El Chichón in 1982 and Mt. Pinatubo in 1991 had significant effects on solar radiation for the United States and further reduced the pool of data for determining the typical climate. Volcanic eruptions, while often significantly diminishing solar energy at the earth's surface, are rare, unpredictable, and variable in intensity. Designers may want to know the potential effects of volcanic eruptions to determine worst-case scenarios, but such perturbations do not contribute to long-term climate characterization.

Except for a few changes to the weighting criteria, which account for the relative importance of the solar radiation and meteorological elements, the TMY2 and TMY3 data sets were created using procedures similar to those developed by Sandia National Laboratories (Hall et al. 1978) to create the original TMYs from the 1952-1975 SOLMET/ERSATZ data (see Section 2.1). Minor changes to the algorithm were made between the TMY2 and TMY3 production runs (see Section 2.3). A small change to the persistence criteria better accommodates selecting a TMY month for periods or records with fewer years. Also, computer code was removed that prioritized the selection of months with measured solar data because no measured data were used in the 1991-2005 NSRDB update. The effects of these changes between the TMY2 and TMY3 algorithm were evaluated as part of the TMY3 production process (see Section 2.8). In the context of producing data sets with similar characteristics, these effects were small (Wilcox, et al. 2008).

The Sandia method is an empirical approach that selects individual months from different years occurring in the period of record. For example, in the case of the NSRDB that contains 30 years of data, all 30 Januarys are examined, and the one judged most typical by the TMY algorithm is selected to be included in the TMY. The other months of the year are treated in a like manner, and then the 12 selected typical months are concatenated to form a complete year.

The 12 selected typical months for each station were chosen using statistics determined by considering five elements: global horizontal radiation, direct normal radiation, dry bulb temperature, dew point temperature, and wind speed. These elements are considered the most important for simulating solar energy conversion systems and building systems.

Because the TMY algorithm assigns priority to the solar radiation elements, the selected months may or may not be typical for other elements. Cloud cover, which correlates well with solar radiation, is probably reasonably typical. Other elements are not related to the elements used for selection; consequently, their values may not be typical. Additionally, even though wind speed was used in the selection of the typical months, its relatively low weighting with respect to the other elements prevents it from being sufficiently typical for simulating wind energy conversion systems.

1.4 TMY3 Data Format

The format for the TMY3 data is radically different from the TMY and TMY2 data.. The older TMY data sets used columnar or positional formats, presumably as a method of optimizing data storage space. Such formats are difficult to read, and it is difficult to import specific fields into many software packages.

The comma separated value (CSV) format is ubiquitous, and many existing programs and applications provide built-in functions to read or parse it. For that reason, the TMY3 data set is distributed in the CSV format. For compatibility with existing software, NREL has produced an application to convert from TMY3 to TMY2 format.

Despite the format differences, the fields in the TMY3 are very similar to those in the TMY2 data set. Fundamental differences are measurement units, which are SI or equivalent in the TMY3, the addition of three new fields for surface albedo and liquid precipitation, and the removal of the fields for present weather, snow-depth, and days since last snowfall that were present in the TMY2. These fields were removed because of incompatible changes in the nature of the source data or because the source data were not available. The TMY3 data files are named according to the USAF site identifier as 999999TY.CSV, where 999999 represents the six digit USAF station identifier (see Appendix A). The TMY3 data format has two file header lines and 8,760 lines of data, each with 68 data fields. The format is documented in Tables 1-1 to 1-3.

Table 1-1. TMY3 data header (line 1)

Field	Element	Unit or Description
1	Site identifier code	USAF number
2	Station name	Quote delimited
3	Station state	Two-letter U.S. Postal abbreviation
4	Site time zone	Hours from Greenwich, negative west
5	Site latitude	Decimal degree
6	Site longitude	Decimal degree
7	Site elevation	Meter

Table 1-2. TMY3 data header (line 2)

Field	Element
1-68	Data field name and units (abbreviation or mnemonic)

Table 1-3. TMY3 data fields (lines 3-8762)

Field	Element	Unit or Range	Resolution	Description
1	Date	MM/DD/YYYY	--	Date of data record
2	Time	HH:MM	--	Time of data record (local standard time)
3	Hourly extraterrestrial radiation on a horizontal surface	Watt-hour per square meter	1 Wh/m^2	Amount of solar radiation received on a horizontal surface at the top of the atmosphere during the 60-minute period ending at the timestamp
4	Hourly extraterrestrial radiation normal to the sun	Watt-hour per square meter	1 Wh/m^2	Amount of solar radiation received on a surface normal to the sun at the top of the atmosphere during the 60-minute period ending at the timestamp
5	Global horizontal irradiance	Watt-hour per square meter	1 Wh/m^2	Total amount of direct and diffuse solar radiation received on a horizontal surface during the 60-minute period ending at the timestamp
6	Global horizontal irradiance source flag	1-2	--	See Table 1-4
7	Global horizontal irradiance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see NSRDB User's Manual (Wilcox, 2007b)
8	Direct normal irradiance	Watt-hour per square meter	1 Wh/m^2	Amount of solar radiation (modeled) received in a collimated beam on a surface normal to the sun during the 60-minute period ending at the timestamp
9	Direct normal irradiance source flag	1-2	--	See table 1-4
10	Direct normal irradiance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see NSRDB User's Manual (Wilcox, 2007b)
11	Diffuse horizontal irradiance	Watt-hour per square meter	1 Wh/m^2	Amount of solar radiation received from the sky (excluding the solar disk) on a horizontal surface during the 60-minute period ending at the timestamp
12	Diffuse horizontal irradiance source flag	1-2	--	See Table 1-4
13	Diffuse horizontal irradiance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see NSRDB User's Manual (Wilcox, 2007b)

14	Global horizontal illuminance	Lux	100 lx	Average total amount of direct and diffuse illuminance received on a horizontal surface during the 60-minute period ending at the timestamp
15	Global horizontal illuminance source flag	1-2	--	See Table 1-4
16	Global horizontal illuminance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see section 2.10)
17	Direct normal illuminance	Lux	100 lx	Average amount of direct normal illuminance received within a 5.7° field of view centered on the sun during 60-minute period ending at the timestamp
18	Direct normal illuminance source flag	1-2	--	See Table 1-4
19	Direct normal illuminance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see section 2.10)
20	Diffuse horizontal illuminance	Lux	100 lx	Average amount of illuminance received from the sky (excluding the solar disk) on a horizontal surface during the 60-minute period ending at the timestamp
21	Diffuse horizontal illuminance source flag	1-2	--	See Table 1-4
22	Diffuse horizontal illuminance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see section 2.10)
23	Zenith luminance	Candela per square meter	10 cd/m^2	Average amount of luminance at the sky's zenith during the 60-minute period ending at the timestamp
24	Zenith luminance source flag	1-2	--	See Table 1-4
25	Zenith luminance uncertainty	Percent	1%	Uncertainty based on random and bias error estimates – see section 2.10)
26	Total sky cover	Tenths of sky	1 tenth	Amount of sky dome covered by clouds or obscuring phenomena at the time indicated
27	Total sky cover flag (source)			See Table 1-5
28	Total sky cover flag (uncertainty)			See Table 1-6
29	Opaque sky cover	Tenths of sky	1 tenth	Amount of sky dome covered by clouds or obscuring phenomena that prevent observing the sky or higher cloud layers at the time indicated

30	Opaque sky cover flag (source)			See Table 1-5
31	Opaque sky cover flag (uncertainty)			See Table 1-6
32	Dry-bulb temperature	Degree C	0.1°	Dry-bulb temperature at the time indicated
33	Dry-bulb temperature flag (source)			See Table 1-5
34	Dry-bulb temperature flag (uncertainty)			See Table 1-6
35	Dew-point temperature	Degree C	0.1°	Dew-point temperature at the time indicated
36	Dew-point temperature flag (source)			See Table 1-5
37	Dew-point temperature flag (uncertainty)			See Table 1-6
38	Relative humidity	Percent	1%	Relative humidity at the time indicated
39	Relative humidity flag (source)			See Table 1-5
40	Relative humidity flag (uncertainty)			See Table 1-6
41	Station pressure	Millibar	1 mbar	Station pressure at the time indicated
42	Station pressure flag (source)			See Table 1-5
43	Station pressure flag (uncertainty)			See Table 1-6
44	Wind direction	Degrees from north (360° = north; 0° = undefined, calm)	10°	Wind direction at the time indicated
45	Wind direction flag (source)			See Table 1-5
46	Wind direction flag (uncertainty)			See Table 1-6
47	Wind speed	Meter/second	0.1 m/s	Wind speed at the time indicated
48	Wind speed flag (source)			See Table 1-5
49	Wind speed flag (uncertainty)			See Table 1-6
50	Horizontal visibility	Meter*	1 m	Distance to discernable remote objects at the time indicated (7777 = unlimited)
51	Horizontal visibility flag (source)			See Table 1-5
52	Horizontal visibility flag (uncertainty)			

53	Ceiling height	Meter*	1 m	Height of the cloud base above local terrain (77777 = unlimited)
54	Ceiling height flag (source)			See Table 1-5
55	Ceiling height flag (uncertainty)			See Table 1-6
56	Precipitable water	Centimeter	0.1 cm	The total precipitable water contained in a column of unit cross section extending from the earth's surface to the top of the atmosphere
57	Precipitable water flag (source)			See Table 1-5
58	Precipitable water flag (uncertainty)			See Table 1-6
59	Aerosol optical depth, broadband	[unitless]	0.001	The broadband aerosol optical depth per unit of air mass due to extinction by the aerosol component of the atmosphere
60	Aerosol optical depth, broadband flag (source)			See Table 1-5
61	Aerosol optical depth, broadband flag (uncertainty)			See Table 1-6
62	Albedo	[unitless]	0.01	The ratio of reflected solar irradiance to global horizontal irradiance
63	Albedo flag (source)			See Table 1-5
64	Albedo flag (uncertainty)			See Table 1-6
65	Liquid precipitation depth	Millimeter*	1 mm	The amount of liquid precipitation observed at the indicated time for the period indicated in the liquid precipitation quantity field
66	Liquid precipitation quantity	Hour*	1 hr	The period of accumulation for the liquid precipitation depth field
67	Liquid precipitation depth flag (source)			See Table 1-5
68	Liquid precipitation depth flag (uncertainty)			See Table 1-6

*Value of -9900 indicates the measurement is missing.

Table 1-4. Solar radiation and illuminance source flags

Flag	Definition
1	Data modeled using METSTAT or from 1961-1990 NSRDB solar fields
2	Data modeled using SUNY Satellite model (time shifted)

Table 1-5. Meteorological source flags

Flag	Definition
A	Data as received from NCDC, converted to SI units
B	Linearly interpolated
C	Non-linearly interpolated to fill data gaps from 6 to 47 hours in length
D	Not used
E	Modeled or estimated, except: precipitable water, calculated from radiosonde data; dew point temperature calculated from dry bulb temperature and relative humidity; and relative humidity calculated from dry bulb temperature and dew point temperature
F	Precipitable water, calculated from surface vapor pressure; aerosol optical depth, estimated from geographic correlation
?	Source does not fit any of the above. Used mostly for missing data

Table 1-6. Meteorological uncertainty flags

Flag	Definition
1 – 6	Not used
7	Uncertainty consistent with NWS practices and the instrument or observation used to obtain the data
8	Greater uncertainty than 7 because values were interpolated or estimated
9	Greater uncertainty than 8 or unknown
0	Not definable

1.5 TMY3 Site Selection

While planning the TMY3 update project, we considered two possible scenarios for populating the data set:

- Create a TMY based on the 30 most recent years of data (1976–2005) for only the 239 sites common to both the old NSRDB and the NSRDB update
- Create a TMY based on the 15 most recent years of data (1991–2005) for approximately 950 sites from the NSRDB update.

To optimize both temporal and spatial considerations, the TMY3 combines these scenarios so that the 30-year data were used at sites where they were available and the 15-year data were used for the remaining sites. The TMY3 sites are listed in Appendix A. The sites in the 1991-2005 NSRDB were chosen based on data availability rather than geographic location (all sites meeting minimum data criteria were included). For this reason, in the both the NSRDB update and the TMY3, sites may occur in close proximity, for example in major metropolitan areas.

The period of record of the source data set has an effect on the ability of the TMY algorithm to select a typical year (ASHRAE 2004). Because of differences in the source period of record for sites, this information has been documented in Appendix A. See Section 2.8 for a discussion of the effect of available data on the TMY statistics. Note that for the 30-year period, the pool is reduced to 24 years at best because of the removal of candidate years due to volcanic eruptions (see Section 2.4). For the 15-year period, the pool is reduced to 12 years at best for the same reason. Although some studies have shown than as few as five years may suffice for capturing much of the statistical character of a climate (Vignola 1993), we implemented a more conservative constraint on the size of the source data pool: No stations with less than a ten-year data pool were included in the TMY3 data set.

The NSRDB update subdivided stations by class: Class I sites are those with the lowest uncertainty data, Class II sites have higher uncertainty data, and Class III sites have an incomplete period of record. When creating TMY data sets, we did not consider the class of the site or the uncertainty of the source data. Further, although Class III sites have gaps in the data, the TMY algorithm was able to produce a typical year for many Class III sites using months of data without gaps. To aid users in analyzing the quality of the data, we have included the station's quality classification from the NSRDB update in Appendix A . The NSRDB classification subdivided stations according to the following algorithm:

- If any data were missing from the key fields (solar, temperature, humidity, station pressure, wind speed, aerosols, and precipitable water), the station received a Class III designation. The algorithm distinguishes between Class I and Class II stations by examining the uncertainty for each hourly modeled value in the global field. If less than 25% of the data for the 15-year period of record exceeds an uncertainty of 11%, the station received a Class I designation. Otherwise, it received a Class II designation. Although the 11% threshold between high and low uncertainty may seem arbitrary, based on the uncertainty calculations in the NSRDB update, this value easily discriminates between the data modeled with good human-observed or satellite-derived cloud cover and the filled or statistically derived cloud cover.

Although the TMY data set likely does not have the same distribution of quality flags for a station as the entire period of record (it could be better or worse), the NSRDB classification scheme is valid for estimating the quality of a station's TMY. This follows because the NSRDB classification is relevant to the quality of the long-term statistics used to choose the data that ultimately represent the site's climate in the TMY. Although the Class III designation focused on data completeness rather than data quality, the data from most Class III stations were similar in quality to those of Class II stations and should be considered comparable when considering data quality in the TMY3 data set.

The geographical coordinates listed in Appendix A may not exactly correspond with the coordinates of the meteorological station. This is because if a site in the NSRDB update held measured data from a nearby solar measurement site, the NSRDB site took on the coordinates of the solar measurement station. See the NSRDB Users' Manual for additional information (Wilcox 2007b). (Measured solar data from the 1991-2005 NSRDB Update were not used in the TMY3 production in order to provide a more consistent data set.)

2 Procedures for Developing TMY3

The TMY2 andTMY3 data were created based on the procedures developed by Sandia National Laboratories (Hall et al. 1978) to create the original TMYs from the 1952-1975 SOLMET/ERSATZ data. Modifications to the Sandia method were made to better optimize the weighting of the indices, to provide preferential selection for months with measured solar radiation data (in the TMY2 data set), and to account for missing data. This section begins by summarizing the Sandia method, and then it discusses departures from the Sandia method that were used to create the TMY3 data.

2.1 Sandia Method

The Sandia method is an empirical approach that selects individual months from different years of the period of record. For example, in the case of the NSRDB that contains 30 years of data, all 30 Januarys are examined, and the one judged most typical is selected to be included in the TMY. The other months of the year are treated in a like manner, and then the 12 selected typical months are concatenated to form a complete year. Because adjacent months in the TMY may be selected from different years, discontinuities at the month interfaces are smoothed for 6 hours on each side.

The Sandia method selects a typical month based on nine daily indices consisting of the maximum, minimum, and mean dry bulb and dew point temperatures; the maximum and mean wind velocity; and the total global horizontal solar radiation. Final selection of a month includes consideration of the monthly mean and median and the persistence of weather patterns. The process may be considered a series of steps.

Step 1 - For each month of the calendar year, five candidate months with cumulative distribution functions (CDFs) for the daily indices that are closest to the long-term (30 years for the NSRDB) CDFs are selected. The CDF gives the proportion of values that are less than or equal to a specified value of an index.

Candidate monthly CDFs are compared to the long-term CDFs by using the following Finkelstein- Schafer (FS) statistics (Finkelstein and Schafer 1971) for each index.

$$FS = (1/n)\sum_{i=1}^{n} \delta_i$$

where

δ_i = absolute difference between the long-term CDF and the candidate month CDF at x_i
n = the number of daily readings in a month.

Four CDFs for global horizontal solar radiation for the month of June are shown in Figure 2-1. Using the FS statistic and comparing to the long-term, the CDF for June of 1981 compared the best and the CDF for June of 1989 compared the worst. Even though it was not the best month with respect to the long-term CDF, June of 1962 was selected for the TMY2. This was a consequence of additional selection steps described in the following paragraphs.

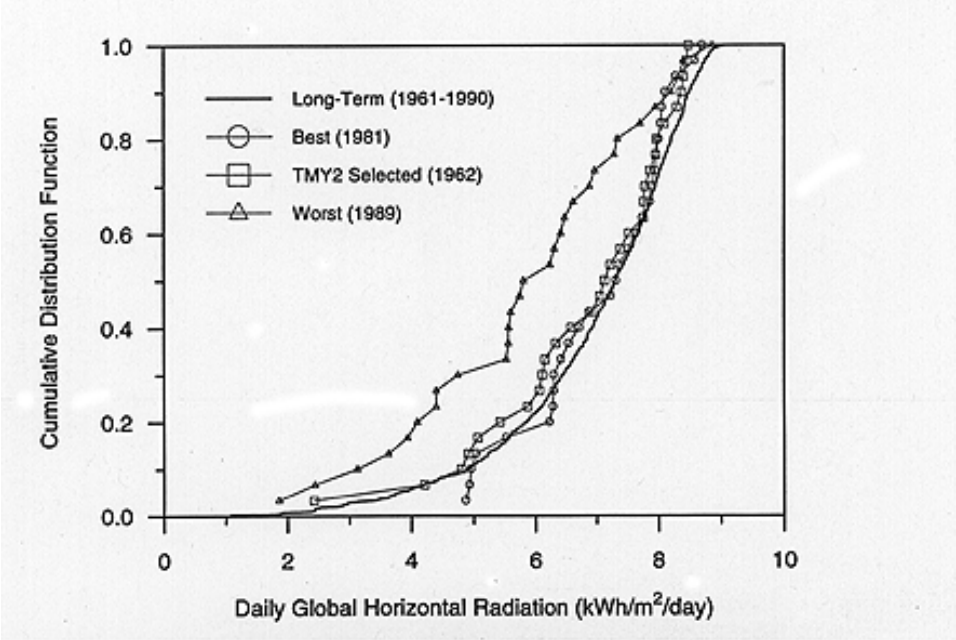

Figure 2-1. Cumulative distribution functions for June global horizontal solar radiation for Boulder, Colorado (example from TMY2 processing).

Because some of the indices are judged more important than others, a weighted sum (WS) of the FS statistics is used to select the five candidate months that have the lowest weighted sums.

$$WS = \Sigma w_i FS_i$$

where

w_i = weighting for index
FS_i = FS statistic for index.

Step 2 - The five candidate months are ranked with respect to closeness of the month to the long-term mean and median.

Step 3 - The persistence of mean dry bulb temperature and daily global horizontal radiation are evaluated by determining the frequency and length of runs of consecutive days with values above and below fixed long-term percentiles. For mean daily dry bulb temperature, runs above the 67th percentile (consecutive warm days) and below the 33rd percentile (consecutive cool days) were determined. For global horizontal radiation, the runs below the 33rd percentile (consecutive low radiation days) were determined.

The persistence criteria excludes the month with the longest run, the month with the most runs, and the month with zero runs. The persistence data are used to select from the five candidate months the month to be used in the TMY. The highest-ranked candidate month from Step 2 that meets the persistence criteria is used in the TMY.

Step 4 - The 12 selected months were concatenated to make a complete year and discontinuities at the month interfaces were smoothed for 6 hours each side using curve fitting techniques.

2.2 Weighting and Index Modifications for TMY2 and TMY3

The weighting for each index plays a role in the selection of the typical months. Ideally, one would select a month that had FS statistics for each index that were better than all the other months. In practice, this is unlikely because the months might be typical with respect to some of the indices, but not others. By weighting the FS statistics, the relative importance and sensitivity of the indices may be taken into account. The Sandia weighting values and the weighting values used for the NSRDB TMY2 and TMY3 data sets are compared in Table 2-1.

Table 2-1. Weighting values for FS statistics

Index	Sandia Method	NSRDB TMY
Max Dry Bulb Temp	1/24	1/20
Min Dry Bulb Temp	1/24	1/20
Mean Dry Bulb Temp	2/24	2/20
Max Dew Point Temp	1/24	1/20
Min Dew Point Temp	1/24	1/20
Mean Dew Point Temp	2/24	2/20
Max Wind Velocity	2/24	1/20
Mean Wind Velocity	2/24	1/20
Global Radiation	12/24	5/20
Direct Radiation	Not Used	5/20

For the TMY2 and TMY3 data, an index for direct normal radiation was added. This improves the agreement between annual direct normal radiation for the TMY and the 30-year annual average by about a factor of 2 (based on 20 geographically representative NSRDB stations). When only global horizontal radiation is used for the solar index, the TMY annual direct radiation values for the 20 stations were within 4% (95% confidence level) of the 30-year annual average. Using both global horizontal and direct radiation indices reduced the differences to 2%, with no adverse effect on global horizontal radiation comparisons.

We changed the weightings for dry bulb and dew point temperatures slightly to give more emphasis to dry bulb and dew point temperatures and less to wind velocity, which is of less importance for solar energy conversion systems and buildings. The TMY weightings are not appropriate for creating a typical wind data set for use with wind energy conversion systems, and these data sets are not intended for wind energy applications.

The relative weights between solar and the other elements were not found to be particularly sensitive. As an indicator, annual heating and cooling degree days (base 18.3°C) were compared for the TMY2 data and the 30-year period for the 20 stations. With the selected solar weighting

of 50% (global and direct), annual heating degree days for the TMY2 data were within 5% (95% confidence level) of the 30-year annual average. As an extreme, reducing the solar weighting to zero only reduced the differences to within 2.5%. Differences between the TMY2 annual averages and the 30-year averages for cooling degree days were within 9%, for both 0% and 50% solar weightings.

As a consequence of adding the index for direct normal radiation, the persistence check in Step 3 was modified to determine the frequency and run length below the 33rd percentile (consecutive low radiation days) for daily values of direct normal radiation. This information, along with that for the other persistence indices, was then used to select the month satisfying the persistence criteria.

2.3 Changes from TMY2 to TMY3

A few changes from the TMY2 procedures were required to accommodate the use of 1991-2005 NSRDB data in TMY3 data derived from only a 15-year period. For TMY2 data, months with measured solar radiation data were given preferential ranking for selection as a typical month. TMY3 procedures did not include this criterion because only modeled solar radiation data were included in the TMY3 data in order to provide more consistent solar radiation values.

For the TMY3 data, using only 15 years instead of 30 years to select a candidate month required that the persistence checks be relaxed to ensure that a candidate month would be selected. For the TMY2 data, a candidate month is excluded from further consideration if it is the month with the most runs. For TMY3, a candidate month is only excluded if it has more runs than every other candidate month. Consequently, if two candidate months tie for the most runs, neither is eliminated by the TMY3 procedure, whereas the TMY2 procedure would eliminate both candidate months. As an additional step, if the TMY3 persistence procedure eliminated all candidate months, persistence was ignored for TMY3 and a month was selected from the candidate months that was closest to the long term mean and median. This ensured the selection of a typical month for TMY3 using 15-year or shorter data sets. No TMY for a site was produced if the pool of data was less than 10 years.

2.4 El Chichón and Mount Pinatubo Years

The volcanic eruptions of El Chichón in Mexico in March 1982 and Mount Pinatubo in the Philippines in June 1991 injected large amounts of aerosols into the stratosphere. The aerosols spread northward and circulated around the earth. This phenomenon noticeably decreased the amount of solar radiation reaching the United States during May 1982 until December 1984 due to El Chichón and from June 1991 to December 1994 due to Pinatubo, after which the effects of the aerosols diminished (Stoffel, 1993). Consequently, these months were not used in any of the TMY procedures because they were considered atypical.

2.5 Leap Years

TMY2 and TMY3 files do not include data for February 29. Consequently, data for February 29 were not used in leap year Februarys to determine their candidate month CDFs. However, to maximize the use of available data, data for February 29 were included for determining the long-term CDFs.

2.6 Month Interface Smoothing

We used linear curve-fitting techniques to remove discontinuities created by concatenating months from different years to form the TMY2 and TMY3 data sets. These techniques were applied for 6 hours on each side of the month interfaces for dry bulb temperature, dew point temperature, wind speed, wind direction, atmospheric pressure, and precipitable water. Relative humidity for 6 hours on each side of the month interfaces was calculated using psychometric relationships (ASHRAE 1993) and curve-fitted values of dry bulb temperature and dew point temperature.

2.7 Allowance for Missing Data

The NSRDB has no missing solar radiation data for the sites used for TMY production, but meteorological data are missing for some stations and months for the 1961-1990 period. Consequently, when creating the TMY2 data, procedures were adopted to account for missing meteorological data. These procedures are documented in the TMY2 data manual (Marion, et al. 1995). Similar data procedures were developed for filling the 1991-2005 NSRDB data. For the TMY3 data, these procedures (Wilcox, 2007b) were used to fill missing data for the 1976-1990 period. Hence, in the TMY3 update, there was no need for additional data filling as part of the TMY3 algorithm.

2.8 TMY3 Process Development and Quality Control

To help guide our development and process validation for the TMY3, we re-created a 1961–1990 TMY with the updated software using data from the TD3282 NSRDB data set distributed by the National Climatic Data Center. Missing meteorological fields were filled according to methods used for the 1991-2005 NSRDB update. In addition, to evaluate the effects of drawing from differing periods of time for the input data set, we compared each of the following year-span subgroups using the original 1961–1990 TMY data set as a benchmark (Wilcox, et al., 2008).

- 1961–1990 (30 years for evaluating software algorithm changes)
- 1976–2005 (for evaluating an updated TMY from a 30-year data set)
- 1991–2005 (for evaluating an updated TMY from a 15-year data set)
- 1998–2005 (for evaluating an updated TMY from an 8-year data set).

The TMY software was run on each data set to create TMYs for the 233 sites common to all subgroups (several sites among the 239 in the TMY2 data set did not have sufficient data for this analysis) . We calculated a mean value for each parameter by site for each sub-group TMY. Although means are only a minor consideration in the TMY algorithm, they are one characteristic of climate and are a simple method of detecting large shifts or errors. The differences in means between the original 1961-1990 TMY and the subgroups for direct normal are shown in Figure 2-2. Separate plot curves are shown for each year-span subgroup.

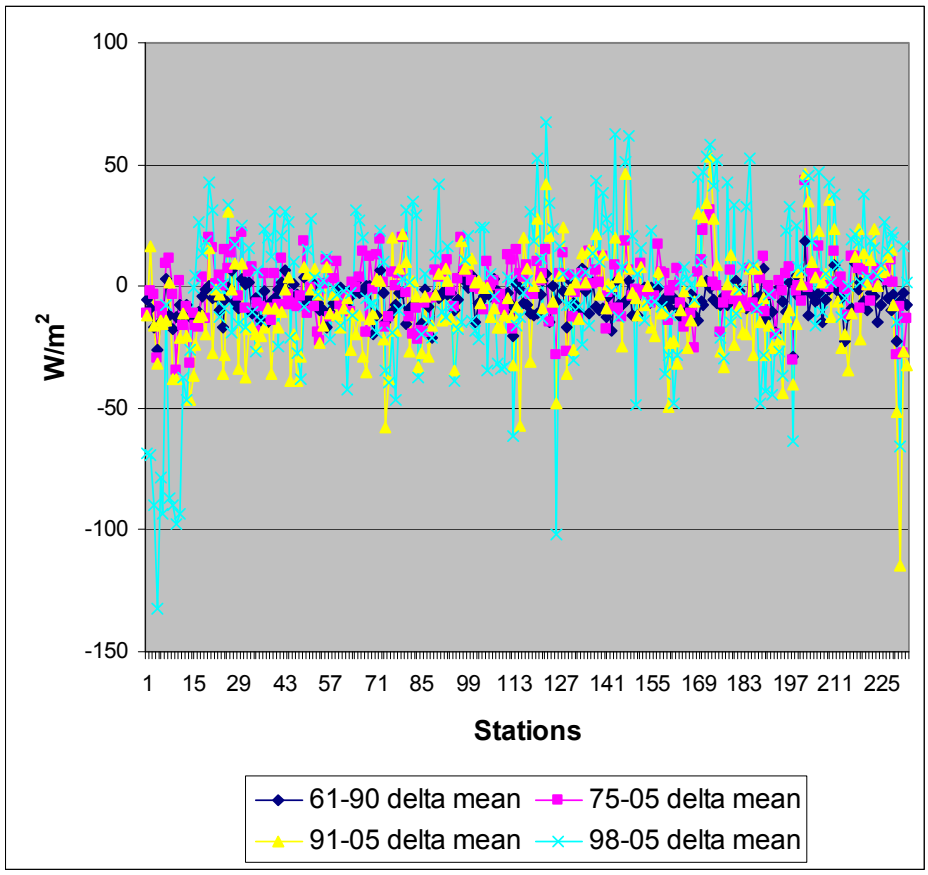

Figure 2-2. Direct normal delta mean (new minus original 1961–1990) for each evaluation station.

The data in this plot show the least scatter when comparing the original and the re-created 1961–1990 TMYs. For each of the remaining TMYs in order (1976–2005, 1991–2005, and 1998–2005), increasing scatter is evident compared with the original 1961–1990 TMY. These results are consistent with findings that smaller source data sets are less likely to accurately typify the climate. Also conspicuous are data to the far left in each figure, which correspond to stations in Alaska, where several sites show anomalous values for the 1998-2005 subgroup. At the far right are stations in Hawaii, where other anomalies occur. Further study is required to understand these larger departures.

Tables 2-1 and 2-2 hold summary data showing the means and standard deviations for these comparison data sets. The statistics are found by determining the mean of sunup data for the solar parameters and the mean of all data for meteorological parameters. Biases are determined as the test TMY data set minus the original 61-90 TMY. This information may give the user some indication of the increased uncertainty in the data with the smaller source data sets.

Table 2-2. Bias (test data minus original 61-90 TMY)

Parameter	'61–'90	'76–'05	'91–'05	'98–'05
Direct W/m^2	-5.9	-1.1	-7.9	-1.7
Global W/m^2	-4.0	-5.7	-15.2	-11.7
Dry Bulb °C	0.07	0.39	0.77	0.94
Dew Point °C	0.08	0.33	0.81	1.08
Wind Speed m/s	0.02	-0.1	-0.3	-0.4

Table 2-3. Standard deviations

Parameter	'61–'90	'76–'05	'91–'05	'98–'05
Direct W/m^2	6.7	11.9	21.0	32.5
Global W/m^2	2.8	5.3	10.0	15.1
Dry Bulb °C	0.22	0.37	0.49	0.77
Dew Point °C	0.28	0.43	0.57	0.82
Wind Speed m/s	0.12	0.20	0.30	0.34

To further compare and validate the process, we looked at the frequency of each year's selection for the year-span subgroups. Figure 2-3 shows the comparison between the year selection frequencies of the original 1961–1990 TMY and the re-created 1961–1990 TMY.

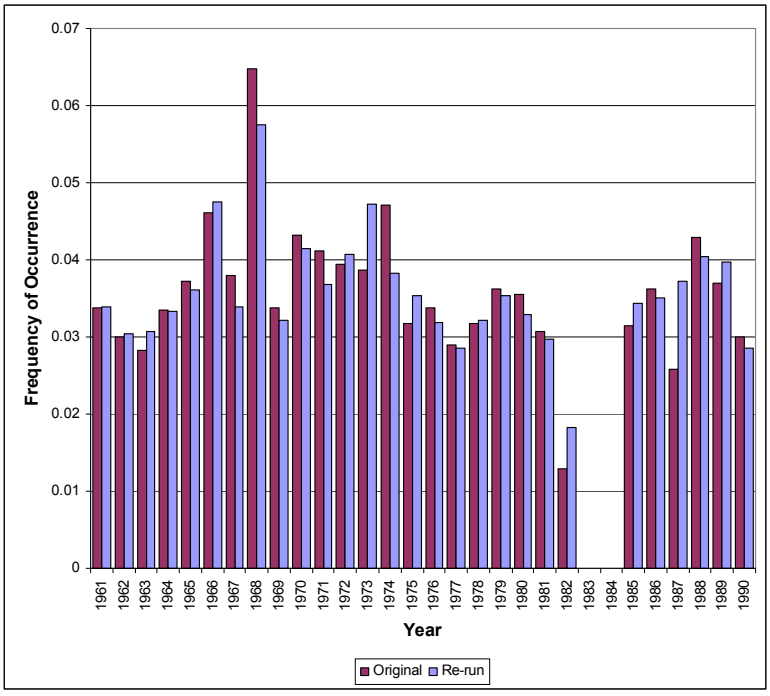

Figure 2-3. Year selection frequency comparison between original 1961–1990 and re-created 1961–1990 TMYs.

Although some differences are apparent, the overall mix of the year selection closely correlates, which we feel validates the current TMY production software. Note that years corresponding to the eruptions of volcanoes El Chichón and Mount Pinatubo (1982–1984 and 1992–1994, respectively) are not represented among the selected years. These years are explicitly excluded by the TMY algorithm because the effects of increased aerosols on solar radiation for those years are considered atypical.

Figure 2-4 shows the year selection frequency for the 1976–2005 TMY. Note that the updated years 1991–2005 are under-represented in this data set (at about half the rate of 1976–1990). Given that both groups (1976–1990 and 1991–2005) have an equal 15-year span, further study is required to determine why the algorithm prefers data from the earlier years.

Figures 2-5 shows the year selection frequency for the TMYs derived from the 1991–2005 data sets. Note that, although the years 1999–2005 are proportioned similarly between these two data sets, 1998 is the least frequent year selected from years 1998–2005 in the former and the most frequent in the latter.

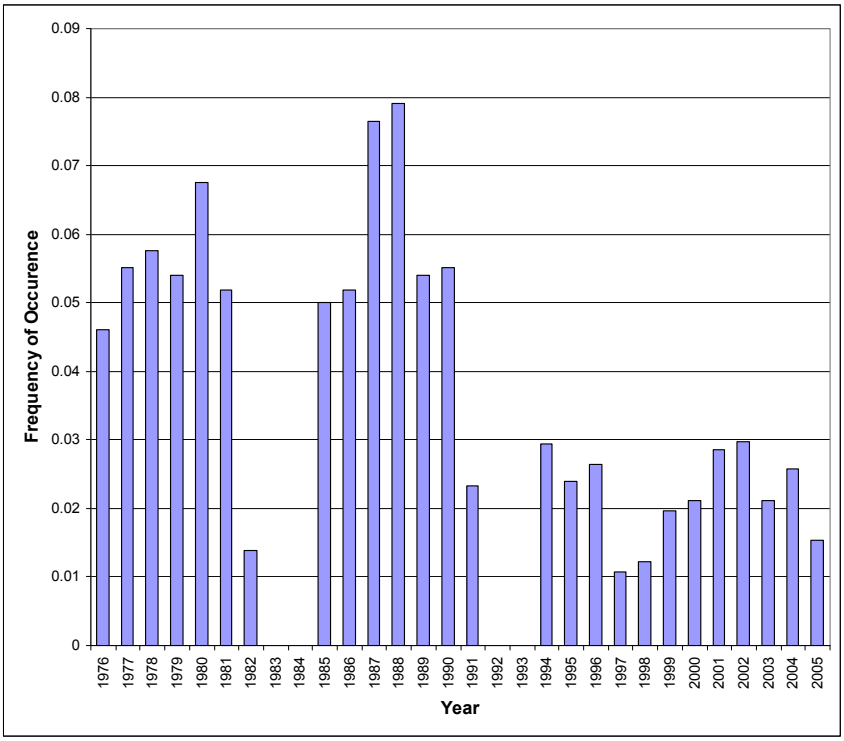

Figure 2-4. Year selection frequency for 30-year 1976–2005 TMY.

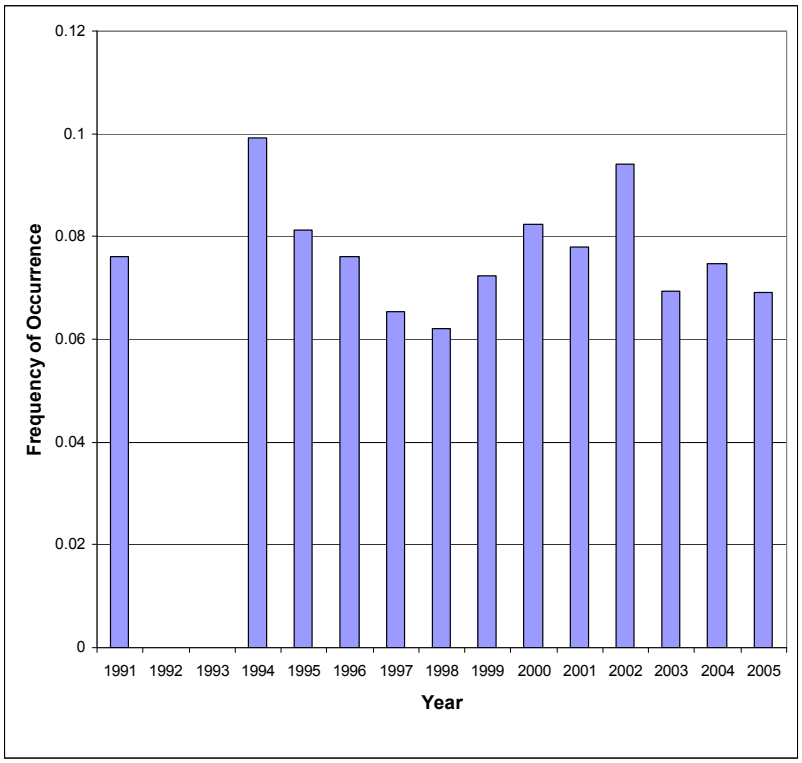

Figure 2-5. Year selection frequency for 15-year 1991–2005 TMY.

2.9 Calculation of Illuminance Data

To facilitate lighting and energy analysis of buildings, hourly values for global horizontal illuminance, direct normal illuminance, and diffuse horizontal illuminance in units of lux, and zenith luminance in units of cd/m^2 were added to the TMY3 data. These elements were calculated using luminous efficacy models developed by Perez et al. (1990). Inputs to the models are direct normal radiation, diffuse horizontal radiation, solar zenith angle, and dew point temperature.

2.10 Assignment of Source and Uncertainty Flags

With the exception of extraterrestrial horizontal and extraterrestrial direct radiation, each data value was assigned a source and uncertainty flags. The source flag indicates whether the data were measured, modeled, or missing, and the uncertainty flag provides an estimate of the uncertainty of the data. Source and uncertainty flags for extraterrestrial horizontal and extraterrestrial direct radiation are not provided because these elements were calculated using equations considered to give values without significant error for this application.

Usually, the source and uncertainty flags are the same as the ones in the NSRDB, from which the TMY files were derived. In the case of the TMY3 data files, the uncertainties are expressed as plus-minus percent rather than the coded uncertainty used in the TMY2 files. Uncertainty values apply to the data with respect to actual values at the time stamp, and not to how "typical" a particular hour is for a future month and day. The uncertainty values represent the plus or minus interval about the data value that contains the true value 95% of the time.

The uncertainty assigned to modeled solar radiation data includes primarily the bias error in the model and, to a lesser extent, the random error component, which could be several times larger for partly cloudy skies (Wilcox, 2007b). For partly cloudy skies, an hour can be composed of large or small amounts of sunshine, depending on whether the sun is mostly free of the clouds or occluded by the clouds. Consequently, modeled hourly values may depart significantly from true values for partly cloudy skies. The uncertainty assigned to modeled solar radiation data represents the average uncertainty for a large number of model estimates (such as for a month). When averaging large data sets, random errors tend to cancel, leaving only the bias error.

Uncertainties for values of illuminance and luminance were determined by taking the root-sum-square of the two main sources of error: (1) uncertainty of the solar radiation element (global horizontal, direct normal, or diffuse horizontal radiation) from which the illuminance or luminance element is derived, and (2) uncertainty of the model estimate. The uncertainty of the model estimates are based on the evaluation presented by Perez et al. (1990) for six test stations. To be conservative, the following model mean bias errors for the stations with the largest errors were used:

- 1.2% for global horizontal illuminance
- 1.6% for direct normal illuminance
- 2.3% for diffuse horizontal illuminance
- 1.2% for zenith luminance.

The uncertainty of the illuminance data value was then determined as the root-sum-square of the model uncertainty and solar radiation element uncertainty (for zenith luminance, the model value was root-sum-squared with the global radiation uncertainty).

The use of the bias error, instead of bias and random error, is consistent with the approach in the above paragraph concerning the assignment of uncertainty values to modeled solar radiation elements. Consequently, it also has the same implications: The assigned uncertainty is representative of the average uncertainty for a large number of model estimates (such as for a month)..

For meteorological elements, relative uncertainties from the NSRDB were used. These uncertainties do not portray a quantitative evaluation of the uncertainty of the meteorological elements, but rather give relative uncertainties based on the data and the manner in which they were derived (NSRDB-Vol. 1 1992).

The source and uncertainty flags for the solar radiation, illuminance, and meteorological elements are presented in Tables 1-4 through 1-6.

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Appendix A – TMY3 Stations

Table A-1 lists all stations in the TMY3 data set, ordered by state and then site name. The table columns are described below:

- USAF – The United States Air Force code used by the National Climatic Data Center for station identification (identical to the station identification numbers in the 1991-2005 NSRDB Update)
- Station Name – The measurement station name. These names are identical to those used in the 1991-2005 NSRDB update. In some cases, the name of a solar measurement site is included in the station name in square brackets. This naming convention is retained for conformity with the NSRDB update. (No measured solar data from the NSRDB update are used in the TMY3 data set.)
- State – The two-character U.S. Postal Service state/possession code including Puerto Rico (PR) and Guam (GU)
- Latitude – Site latitude (decimal degrees)
- Longitude – Site longitude (decimal degrees)
- Time Zone – Number of hours from Greenwich time (negative west)
- Elevation – Elevation of the station (meters)
- NSRDB Class – The station classification used by the 1991-2005 NSRDB Update (see Section 1.5).
- Pool Years – The minimum number of years from which TMY candidate months were pulled (see Section 1.5).

Table A-1. TMY3 station information

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
704540	ADAK NAS	AK	51.883	-176.650	-10	5	III	10
701718	AMBLER	AK	67.100	-157.850	-9	88	II	12
701625	ANAKTUVUK PASS	AK	68.133	-151.733	-9	657	III	11
702730	ANCHORAGE INTL AP	AK	61.183	-150.000	-9	35	II	24
702735	ANCHORAGE MERRILL FIELD	AK	61.217	-149.850	-9	42	II	12
702720	ANCHORAGE/ELMENDORF	AK	61.250	-149.800	-9	59	II	12
702320	ANIAK AIRPORT	AK	61.583	-159.533	-9	26	III	11
703980	ANNETTE ISLAND AP	AK	55.050	-131.567	-9	33	II	24
702075	ANVIK	AK	62.650	-160.183	-9	99	III	10
700260	BARROW W POST-W ROGERS ARPT [NSA - ARM]	AK	71.320	-156.620	-9	10	II	24
702190	BETHEL AIRPORT	AK	60.783	-161.833	-9	38	II	24
701740	BETTLES FIELD	AK	66.917	-151.517	-9	196	II	24
702670	BIG DELTA ALLEN AAF	AK	64.000	-145.717	-9	386	II	24
702986	BIG RIVER LAKE	AK	60.817	-152.300	-9	12	II	12
702746	BIRCHWOOD	AK	61.417	-149.517	-9	30	III	11
702606	CHULITNA	AK	62.883	-149.833	-9	381	II	12
703160	COLD BAY ARPT	AK	55.200	-162.717	-9	29	II	24
702960	CORDOVA	AK	60.500	-145.500	-9	12	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
700637	DEADHORSE	AK	70.200	-148.483	-9	23	II	12
703210	DILLINGHAM (AMOS)	AK	59.050	-158.517	-9	29	II	12
704890	DUTCH HARBOR	AK	53.900	-166.550	-9	4	II	12
702084	EMMONAK	AK	62.783	-164.500	-9	4	II	12
702610	FAIRBANKS INTL ARPT	AK	64.817	-147.850	-9	133	II	24
702650	FAIRBANKS/EIELSON A	AK	64.650	-147.100	-9	167	II	12
701940	FORT YUKON	AK	66.567	-145.267	-9	136	III	10
702040	GAMBELL	AK	63.783	-171.750	-9	8	III	10
702710	GULKANA INTERMEDIATE FIELD	AK	62.150	-145.450	-9	478	II	24
703670	GUSTAVUS	AK	58.417	-135.700	-9	12	II	12
702495	HAYES RIVER	AK	61.983	-152.083	-9	305	II	12
702647	HEALY RIVER AIRPORT	AK	63.883	-149.017	-9	396	II	12
703410	HOMER ARPT	AK	59.650	-151.483	-9	27	II	12
702607	HOONAH	AK	58.083	-135.450	-9	6	II	12
702186	HOOPER BAY	AK	61.517	-166.150	-9	6	II	12
702225	HUSLIA	AK	65.700	-156.383	-9	55	III	10
703884	HYDABURG SEAPLANE	AK	55.200	-132.833	-9	0	III	11
703400	ILIAMNA ARPT	AK	59.750	-154.917	-9	57	II	12
703810	JUNEAU INT'L ARPT	AK	58.350	-134.583	-9	4	II	12
703855	KAKE SEAPLANE BASE	AK	56.967	-133.950	-9	0	II	12
702590	KENAI MUNICIPAL AP	AK	60.583	-151.233	-9	26	II	12
703950	KETCHIKAN INTL AP	AK	55.367	-131.717	-9	23	II	12
703260	KING SALMON ARPT	AK	58.683	-156.650	-9	15	II	24
703500	KODIAK AIRPORT	AK	57.750	-152.500	-9	5	II	24
701330	KOTZEBUE RALPH WEIN MEMORIAL	AK	66.883	-162.600	-9	3	II	24
702725	LAKE HOOD SEAPLANE	AK	61.183	-149.967	-9	22	III	12
702310	MCGRATH ARPT	AK	62.950	-155.600	-9	105	II	24
702185	MEKORYUK	AK	60.367	-166.267	-9	15	II	12
703430	MIDDLETON ISLAND AUT	AK	59.467	-146.317	-9	14	II	12
702460	MINCHUMINA	AK	63.883	-152.283	-9	213	II	12
702600	NENANA MUNICIPAL AP	AK	64.550	-149.100	-9	109	II	12
702000	NOME MUNICIPAL ARPT	AK	64.517	-165.450	-9	4	II	24
702910	NORTHWAY AIRPORT	AK	62.967	-141.933	-9	522	II	12
702740	PALMER MUNICIPAL	AK	61.600	-149.083	-9	71	II	12
703860	PETERSBURG	AK	56.800	-132.950	-9	33	II	12
701043	POINT HOPE (AWOS)	AK	68.350	-166.800	-9	4	II	12
703330	PORT HEIDEN	AK	56.950	-158.617	-9	29	II	12
702005	SAINT MARY`S (AWOS)	AK	62.067	-163.300	-9	95	II	12
703165	SAND POINT	AK	55.317	-160.517	-9	7	II	12
702035	SAVOONGA	AK	63.683	-170.500	-9	17	III	12
700197	SELAWIK	AK	66.600	-160.000	-9	8	III	11
702770	SEWARD	AK	60.117	-149.450	-9	18	II	12
704140	SHEMYA AFB	AK	52.717	174.117	-10	31	II	12
701195	SHISHMAREF (AWOS)	AK	66.267	-166.050	-9	2	II	12
703710	SITKA JAPONSKI AP	AK	57.050	-135.367	-9	4	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
703620	SKAGWAY AIRPORT	AK	59.467	-135.300	-9	9	II	12
703407	SLEETMUTE	AK	61.717	-157.150	-9	54	III	11
702595	SOLDOTNA	AK	60.467	-151.033	-9	34	III	12
703080	ST PAUL ISLAND ARPT	AK	57.167	-170.217	-9	7	II	24
702510	TALKEETNA STATE ARPT	AK	62.317	-150.100	-9	105	II	24
701780	TANANA RALPH M CALHOUN MEM AP	AK	65.167	-152.100	-9	71	II	12
703606	TOGIAC VILLAGE AWOS	AK	59.050	-160.400	-9	6	II	12
702070	UNALAKLEET FIELD	AK	63.883	-160.800	-9	5	III	11
702756	VALDEZ PIONEER FIEL	AK	61.133	-146.267	-9	38	II	12
702750	VALDEZ WSO	AK	61.133	-146.350	-9	7	II	12
702757	WHITTIER	AK	60.767	-148.683	-9	9	II	12
703870	WRANGELL	AK	56.483	-132.367	-9	13	II	12
703610	YAKUTAT STATE ARPT	AK	59.517	-139.633	-9	8	II	24
722287	ANNISTON METROPOLITAN AP	AL	33.583	-85.850	-6	186	II	12
722284	AUBURN-OPELIKA APT	AL	32.616	-85.433	-6	236	III	12
722280	BIRMINGHAM MUNICIPAL AP	AL	33.567	-86.750	-6	189	I	24
722269	CAIRNS FIELD FORT RUCKER	AL	31.267	-85.717	-6	91	II	12
722268	DOTHAN MUNICIPAL AP	AL	31.233	-85.433	-6	98	II	12
722285	GADSEN MUNI (AWOS)	AL	33.967	-86.083	-6	173	III	12
723230	HUNTSVILLE INTL/JONES FIELD	AL	34.650	-86.783	-6	190	I	24
722265	MAXWELL AFB	AL	32.383	-86.350	-6	53	II	12
722235	MOBILE DOWNTOWN AP	AL	30.633	-88.067	-6	8	II	12
722230	MOBILE REGIONAL AP	AL	30.683	-88.250	-6	66	I	24
722260	MONTGOMERY DANNELLY FIELD	AL	32.300	-86.400	-6	62	I	24
723235	MUSCLE SHOALS REGIONAL AP	AL	34.750	-87.600	-6	165	II	12
722267	TROY AF	AL	31.867	-86.017	-6	120	II	12
722286	TUSCALOOSA MUNICIPAL AP	AL	33.217	-87.617	-6	51	II	12
723448	BATESVILLE (AWOS)	AR	35.733	-91.650	-6	141	III	12
723444	BENTONVILLE (AWOS)	AR	36.350	-94.217	-6	395	III	12
723419	EL DORADO GOODWIN FIELD	AR	33.217	-92.817	-6	77	II	12
723445	FAYETTEVILLE DRAKE FIELD	AR	36.000	-94.167	-6	381	II	12
723447	FLIPPIN (AWOS)	AR	36.300	-92.467	-6	350	III	12
723440	FORT SMITH REGIONAL AP	AR	35.333	-94.367	-6	137	II	24
723446	HARRISON FAA AP	AR	36.267	-93.150	-6	419	II	12
723407	JONESBORO MUNI	AR	35.833	-90.650	-6	82	II	12
723403	LITTLE ROCK ADAMS FIELD	AR	34.750	-92.233	-6	78	I	24
723405	LITTLE ROCK AFB	AR	34.917	-92.150	-6	103	II	12
723415	MEMORIAL FLD	AR	34.467	-93.100	-6	169	II	12
723417	PINE BLUFF FAA AP	AR	34.167	-91.933	-6	63	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
723449	ROGERS (AWOS)	AR	36.367	-94.100	-6	415	III	12
723443	SILOAM SPRING(AWOS)	AR	36.183	-94.483	-6	364	III	12
723434	SPRINGDALE MUNI	AR	36.183	-94.117	-6	412	III	10
723416	STUTTGART (AWOS)	AR	34.600	-91.567	-6	68	II	12
723418	TEXARKANA WEBB FIELD	AR	33.450	-94.000	-6	110	II	12
723406	WALNUT RIDGE (AWOS)	AR	36.133	-90.917	-6	83	II	12
722748	CASA GRANDA (AWOS)	AZ	32.950	-111.767	-7	446	III	12
722745	DAVIS MONTHAN AFB	AZ	32.167	-110.883	-7	809	II	12
722784	DEER VALLEY/PHOENIX	AZ	33.683	-112.083	-7	450	II	12
722735	DOUGLAS BISBEE-DOUGLAS INTL A	AZ	31.467	-109.600	-7	1249	II	12
723755	FLAGSTAFF PULLIAM ARPT	AZ	35.133	-111.667	-7	2132	III	22
723783	GRAND CANYON NATL P	AZ	35.950	-112.150	-7	2065	II	12
723700	KINGMAN (AMOS)	AZ	35.267	-113.950	-7	1033	II	12
722785	LUKE AFB	AZ	33.550	-112.367	-7	331	II	12
723710	PAGE MUNI (AMOS)	AZ	36.933	-111.450	-7	1304	III	10
722780	PHOENIX SKY HARBOR INTL AP	AZ	33.450	-111.983	-7	337	I	24
723723	PRESCOTT LOVE FIELD	AZ	34.650	-112.417	-7	1537	I	24
722747	SAFFORD (AMOS)	AZ	32.817	-109.683	-7	950	III	10
722789	SCOTTSDALE MUNI	AZ	33.617	-111.917	-7	460	II	12
723747	SHOW LOW MUNICIPAL	AZ	34.267	-110.000	-7	1954	II	12
722740	TUCSON INTERNATIONAL AP	AZ	32.133	-110.950	-7	777	I	24
723740	WINSLOW MUNICIPAL AP	AZ	35.033	-110.717	-7	1490	II	12
722800	YUMA INTL ARPT	AZ	32.667	-114.600	-7	63	II	12
699604	YUMA MCAS	AZ	32.650	-114.617	-7	65	II	12
725958	ALTURAS	CA	41.500	-120.533	-8	1341	II	12
725945	ARCATA AIRPORT	CA	40.983	-124.100	-8	62	I	24
723840	BAKERSFIELD MEADOWS FIELD	CA	35.433	-119.050	-8	149	I	24
724837	BEALE AFB	CA	39.133	-121.433	-8	38	II	12
724800	BISHOP AIRPORT	CA	37.367	-118.350	-8	1250	II	12
725845	BLUE CANYON AP	CA	39.300	-120.717	-8	1609	II	12
747188	BLYTHE RIVERSIDE CO ARPT	CA	33.617	-114.717	-8	119	II	12
722880	BURBANK-GLENDALE-PASSADENA AP	CA	34.200	-118.350	-8	226	II	12
723926	CAMARILLO (AWOS)	CA	34.217	-119.083	-8	23	III	12
722926	CAMP PENDLETON MCAS	CA	33.300	-117.350	-8	23	II	12
722927	CARLSBAD/PALOMAR	CA	33.133	-117.283	-8	100	II	12
746120	CHINA LAKE NAF	CA	35.683	-117.683	-8	677	II	12
722899	CHINO AIRPORT	CA	33.967	-117.633	-8	198	III	11
722904	CHULA VISTA BROWN FIELD NAAS	CA	32.583	-116.983	-8	159	II	12
724936	CONCORD CONCORD-BUCHANAN FIEL	CA	38.000	-122.050	-8	7	II	12
725946	CRESCENT CITY FAA AI	CA	41.783	-124.233	-8	17	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
723815	DAGGETT BARSTOW-DAGGETT AP	CA	34.850	-116.800	-8	586	I	24
723810	EDWARDS AFB	CA	34.900	-117.867	-8	706	II	12
723890	FRESNO YOSEMITE INTL AP	CA	36.783	-119.717	-8	102	I	24
722976	FULLERTON MUNICIPAL	CA	33.867	-117.983	-8	29	II	12
724935	HAYWARD AIR TERM	CA	37.667	-122.117	-8	14	II	12
747185	IMPERIAL	CA	32.833	-115.583	-8	-17	II	12
722956	JACK NORTHROP FLD H	CA	33.917	-118.333	-8	21	II	12
723816	LANCASTER GEN WM FOX FIELD	CA	34.733	-118.217	-8	713	II	12
747020	LEMOORE REEVES NAS	CA	36.333	-119.950	-8	73	II	12
724927	LIVERMORE MUNICIPAL	CA	37.700	-121.817	-8	121	II	12
722895	LOMPOC (AWOS)	CA	34.667	-120.467	-8	27	III	12
722970	LONG BEACH DAUGHERTY FLD	CA	33.833	-118.167	-8	8	I	24
722950	LOS ANGELES INTL ARPT	CA	33.933	-118.400	-8	30	I	24
722860	MARCH AFB	CA	33.900	-117.250	-8	462	II	12
724815	MERCED/MACREADY FLD	CA	37.283	-120.517	-8	47	II	12
724926	MODESTO CITY-COUNTY AP	CA	37.633	-120.950	-8	30	II	12
725955	MONTAGUE SISKIYOU COUNTY AP	CA	41.783	-122.467	-8	803	II	12
724915	MONTEREY NAF	CA	36.600	-121.867	-8	50	II	12
745090	MOUNTAIN VIEW MOFFETT FLD NAS	CA	37.400	-122.050	-8	12	III	10
724955	NAPA CO. AIRPORT	CA	38.217	-122.283	-8	10	II	12
723805	NEEDLES AIRPORT	CA	34.767	-114.617	-8	279	II	12
724930	OAKLAND METROPOLITAN ARPT	CA	37.717	-122.217	-8	2	II	12
723927	OXNARD AIRPORT	CA	34.200	-119.200	-8	11	II	12
722868	PALM SPRINGS INTL	CA	33.833	-116.500	-8	145	II	12
747187	PALM SPRINGS THERMAL AP	CA	33.633	-116.167	-8	-34	II	12
723820	PALMDALE AIRPORT	CA	34.633	-118.083	-8	769	II	12
723965	PASO ROBLES MUNICIPAL ARPT	CA	35.667	-120.633	-8	244	II	12
723910	POINT MUGU NF	CA	34.117	-119.117	-8	3	II	12
723895	PORTERVILLE (AWOS)	CA	36.033	-119.067	-8	135	III	12
725910	RED BLUFF MUNICIPAL ARPT	CA	40.150	-122.250	-8	106	II	12
725920	REDDING MUNICIPAL ARPT	CA	40.517	-122.317	-8	153	I	12
722869	RIVERSIDE MUNI	CA	33.950	-117.450	-8	256	II	12
724830	SACRAMENTO EXECUTIVE ARPT	CA	38.500	-121.500	-8	5	I	24
724839	SACRAMENTO METROPOLITAN AP	CA	38.700	-121.583	-8	7	II	12
724917	SALINAS MUNICIPAL AP	CA	36.667	-121.600	-8	21	II	12
722900	SAN DIEGO LINDBERGH FIELD	CA	32.733	-117.167	-8	4	I	24
722930	SAN DIEGO MIRAMAR NAS	CA	32.867	-117.133	-8	140	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
722906	SAN DIEGO NORTH ISLAND NAS	CA	32.700	-117.200	-8	15	II	12
722903	SAN DIEGO/MONTGOMER	CA	32.817	-117.133	-8	129	II	12
724940	SAN FRANCISCO INTL AP	CA	37.617	-122.400	-8	2	I	24
724945	SAN JOSE INTL AP	CA	37.367	-121.933	-8	16	II	12
722897	SAN LUIS CO RGNL	CA	35.233	-120.633	-8	66	II	12
723830	SANDBERG	CA	34.750	-118.717	-8	1377	III	10
722977	SANTA ANA JOHN WAYNE AP	CA	33.683	-117.867	-8	16	II	12
723925	SANTA BARBARA MUNICIPAL AP	CA	34.433	-119.850	-8	3	I	12
723940	SANTA MARIA PUBLIC ARPT	CA	34.917	-120.467	-8	77	I	24
722885	SANTA MONICA MUNI	CA	34.017	-118.450	-8	53	II	12
724957	SANTA ROSA (AWOS)	CA	38.517	-122.817	-8	38	II	12
725847	SOUTH LAKE TAHOE	CA	38.900	-120.000	-8	1909	II	12
724920	STOCKTON METROPOLITAN ARPT	CA	37.900	-121.233	-8	7	II	12
745160	TRAVIS FIELD AFB	CA	38.267	-121.933	-8	18	II	12
725846	TRUCKEE-TAHOE	CA	39.317	-120.133	-8	1798	II	12
690150	TWENTYNINE PALMS	CA	34.300	-116.167	-8	626	II	12
725905	UKIAH MUNICIPAL AP	CA	39.133	-123.200	-8	189	II	12
722886	VAN NUYS AIRPORT	CA	34.217	-118.483	-8	235	II	12
723896	VISALIA MUNI (AWOS)	CA	36.317	-119.400	-8	89	II	12
724838	YUBA CO	CA	39.100	-121.567	-8	19	II	12
724698	AKRON WASHINGTON CO AP	CO	40.167	-103.233	-7	1421	II	12
724620	ALAMOSA SAN LUIS VALLEY RGNL	CO	37.433	-105.867	-7	2296	II	24
724676	ASPEN PITKIN CO SAR	CO	39.217	-106.867	-7	2444	II	12
724695	AURORA BUCKLEY FIELD ANGB	CO	39.717	-104.750	-7	1726	II	12
724699	BROOMFIELD/JEFFCO [BOULDER - SURFRAD]	CO	40.130	-105.240	-7	1689	III	12
724660	COLORADO SPRINGS MUNI AP	CO	38.817	-104.717	-7	1872	II	24
724767	CORTEZ/MONTEZUMA CO	CO	37.300	-108.633	-7	1803	II	12
725700	CRAIG-MOFFAT	CO	40.500	-107.533	-7	1915	II	12
725650	DENVER INTL AP	CO	39.833	-104.650	-7	1650	I	12
724666	DENVER/CENTENNIAL [GOLDEN - NREL]	CO	39.742	-105.179	-7	1829	II	12
724625	DURANGO/LA PLATA CO	CO	37.150	-107.750	-7	2038	II	12
724675	EAGLE COUNTY AP	CO	39.650	-106.917	-7	1980	II	21
724769	FORT COLLINS (AWOS)	CO	40.450	-105.017	-7	1529	II	12
724760	GRAND JUNCTION WALKER FIELD	CO	39.133	-108.533	-7	1475	I	24
724768	GREELEY/WELD (AWOS)	CO	40.433	-104.633	-7	1420	II	12
724677	GUNNISON CO. (AWOS)	CO	38.533	-106.933	-7	2339	II	12
725715	HAYDEN/YAMPA (AWOS)	CO	40.483	-107.217	-7	2012	II	12
724635	LA JUNTA MUNICIPAL AP	CO	38.050	-103.533	-7	1281	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724636	LAMAR MUNICIPAL	CO	38.067	-102.683	-7	1129	III	10
724673	LEADVILLE/LAKE CO.	CO	39.217	-106.317	-7	3026	II	12
724665	LIMON	CO	39.183	-103.717	-7	1695	I	12
724765	MONTROSE CO. ARPT	CO	38.500	-107.900	-7	1755	II	12
724640	PUEBLO MEMORIAL AP	CO	38.283	-104.500	-7	1428	II	24
725717	RIFLE/GARFIELD RGNL	CO	39.533	-107.717	-7	1691	III	12
724645	TRINIDAD LAS ANIMAS COUNTY AP	CO	37.267	-104.333	-7	1751	II	12
725040	BRIDGEPORT SIKORSKY MEMORIAL	CT	41.183	-73.150	-5	3	I	24
725086	DANBURY MUNICIPAL	CT	41.367	-73.483	-5	139	II	12
725046	GROTON NEW LONDON AP	CT	41.333	-72.050	-5	3	II	12
725080	HARTFORD BRADLEY INTL AP	CT	41.933	-72.683	-5	49	I	24
725087	HARTFORD BRAINARD FD	CT	41.733	-72.650	-5	6	II	12
725045	NEW HAVEN TWEED AIRPORT	CT	41.267	-72.883	-5	2	II	12
725029	OXFORD (AWOS)	CT	41.483	-73.133	-5	222	III	12
724088	DOVER AFB	DE	39.133	-75.467	-5	7	II	12
724089	WILMINGTON NEW CASTLE CNTY AP	DE	39.667	-75.600	-5	23	I	24
722215	CRESTVIEW BOB SIKES AP	FL	30.783	-86.517	-6	58	II	12
722056	DAYTONA BEACH INTL AP	FL	29.183	-81.067	-5	9	I	24
722039	FORT LAUDERDALE	FL	26.200	-80.167	-5	4	II	12
722025	FORT LAUDERDALE HOLLYWOOD INT	FL	26.067	-80.150	-5	3	II	12
722106	FORT MYERS PAGE FIELD	FL	26.583	-81.867	-5	5	I	12
722146	GAINESVILLE REGIONAL AP	FL	29.700	-82.283	-5	41	I	12
722026	HOMESTEAD AFB	FL	25.483	-80.383	-5	5	II	12
722060	JACKSONVILLE INTL ARPT	FL	30.500	-81.700	-5	8	I	24
722065	JACKSONVILLE NAS	FL	30.233	-81.667	-5	9	II	12
722068	JACKSONVILLE/CRAIG	FL	30.333	-81.517	-5	12	II	12
722010	KEY WEST INTL ARPT	FL	24.550	-81.750	-5	1	I	24
722015	KEY WEST NAS	FL	24.583	-81.683	-5	7	II	12
722119	LAKELAND LINDER RGN	FL	27.983	-82.017	-5	43	II	12
747880	MACDILL AFB	FL	27.850	-82.517	-5	8	II	12
722016	MARATHON AIRPORT	FL	24.733	-81.050	-5	2	II	12
722066	MAYPORT NS	FL	30.400	-81.417	-5	5	II	12
722040	MELBOURNE REGIONAL AP	FL	28.117	-80.650	-5	11	II	12
722020	MIAMI INTL AP	FL	25.817	-80.300	-5	11	I	24
722029	MIAMI/KENDALL-TAMIA	FL	25.650	-80.433	-5	3	II	12
722024	MIAMI/OPA LOCKA	FL	25.900	-80.283	-5	3	II	12
722038	NAPLES MUNICIPAL	FL	26.150	-81.767	-5	3	III	10
747946	NASA SHUTTLE FCLTY	FL	28.617	-80.717	-5	3	III	12
722055	OCALA MUNI (AWOS)	FL	29.167	-82.217	-5	27	II	12
722053	ORLANDO EXECUTIVE AP	FL	28.550	-81.333	-5	33	II	12
722050	ORLANDO INTL ARPT	FL	28.433	-81.333	-5	29	I	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
722057	ORLANDO SANFORD AIRPORT	FL	28.783	-81.250	-5	17	II	12
722245	PANAMA CITY BAY CO	FL	30.200	-85.683	-6	6	II	12
722225	PENSACOLA FOREST SHERMAN NAS	FL	30.350	-87.317	-6	10	II	12
722223	PENSACOLA REGIONAL AP	FL	30.483	-87.183	-6	34	I	12
722115	SARASOTA BRADENTON	FL	27.383	-82.550	-5	10	II	12
722108	SOUTHWEST FLORIDA I	FL	26.533	-81.750	-5	9	II	12
722103	ST LUCIE CO INTL	FL	27.483	-80.367	-5	7	II	12
722104	ST PETERSBURG ALBERT WHITTED	FL	27.767	-82.633	-5	2	II	12
722116	ST PETERSBURG CLEAR	FL	27.900	-82.683	-5	3	II	12
722140	TALLAHASSEE REGIONAL AP [ISIS]	FL	30.380	-84.370	-5	21	I	24
722110	TAMPA INTERNATIONAL AP	FL	27.967	-82.533	-5	6	I	24
747750	TYNDALL AFB	FL	30.067	-85.583	-6	7	II	12
722210	VALPARAISO ELGIN AFB	FL	30.483	-86.517	-6	20	II	12
747770	VALPARAISO HURLBURT	FL	30.417	-86.683	-6	12	II	12
722045	VERO BEACH MUNICIPAL ARPT	FL	27.650	-80.417	-5	7	I	12
722030	WEST PALM BEACH INTL ARPT	FL	26.683	-80.100	-5	6	II	24
722226	WHITING FIELD NAAS	FL	30.717	-87.017	-6	54	II	12
722160	ALBANY DOUGHERTY COUNTY AP	GA	31.533	-84.183	-5	58	II	12
722135	ALMA BACON COUNTY AP	GA	31.533	-82.500	-5	63	II	12
723110	ATHENS BEN EPPS AP	GA	33.950	-83.333	-5	244	I	24
722190	ATLANTA HARTSFIELD INTL AP	GA	33.633	-84.433	-5	308	I	24
722180	AUGUSTA BUSH FIELD	GA	33.367	-81.967	-5	40	I	24
722136	BRUNSWICK GOLDEN IS	GA	31.250	-81.467	-5	8	II	12
722137	BRUNSWICK MALCOLM MCKINNON AP	GA	31.150	-81.383	-5	4	II	12
722255	COLUMBUS METROPOLITAN ARPT	GA	32.517	-84.950	-6	120	I	24
722196	DEKALB PEACHTREE	GA	33.867	-84.300	-5	313	II	12
722250	FORT BENNING LAWSON	GA	32.350	-85.000	-6	88	II	12
722195	FULTON CO ARPT BROW	GA	33.767	-84.517	-5	263	II	12
747804	HUNTER AAF	GA	32.000	-81.150	-5	13	II	12
722170	MACON MIDDLE GA REGIONAL AP	GA	32.683	-83.650	-5	108	I	24
722270	MARIETTA DOBBINS AFB	GA	33.917	-84.517	-5	330	II	12
747810	MOODY AFB/VALDOSTA	GA	30.967	-83.200	-5	71	II	12
723200	ROME R B RUSSELL AP	GA	34.350	-85.167	-5	195	III	12
722070	SAVANNAH INTL AP	GA	32.117	-81.200	-5	14	I	24
722166	VALDOSTA WB AIRPORT	GA	30.783	-83.283	-5	61	II	12
722175	WARNER ROBINS AFB	GA	32.633	-83.600	-5	92	II	12
912180	ANDERSEN AFB	GU	13.567	144.917	10	162	II	12
912120	GUAM WFO	GU	13.483	144.800	10	77	II	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
911780	BARBERS POINT NAS	HI	21.317	-158.067	-10	15	II	12
912850	HILO INTERNATIONAL AP	HI	19.717	-155.050	-10	9	I	24
911820	HONOLULU INTL ARPT	HI	21.317	-157.933	-10	2	I	24
911900	KAHULUI AIRPORT	HI	20.900	-156.433	-10	16	I	24
911760	KANEOHE BAY MCAS	HI	21.450	-157.783	-10	3	II	12
911904	KAPALUA	HI	20.950	-156.633	-10	80	II	12
911975	KONA INTL AT KEAHOL	HI	19.733	-156.050	-10	15	III	10
911905	LANAI	HI	20.783	-156.950	-10	409	II	12
911650	LIHUE AIRPORT	HI	21.983	-159.333	-10	31	I	24
911860	MOLOKAI (AMOS)	HI	21.150	-157.100	-10	137	II	12
725457	ALGONA	IA	43.083	-94.267	-6	372	III	10
725453	ATLANTIC	IA	41.400	-95.050	-6	360	III	10
725486	BOONE MUNI	IA	42.050	-93.850	-6	354	III	10
725455	BURLINGTON MUNICIPAL AP	IA	40.783	-91.117	-6	211	II	12
725468	CARROLL	IA	42.050	-94.783	-6	375	III	10
725450	CEDAR RAPIDS MUNICIPAL AP	IA	41.883	-91.717	-6	256	II	12
725469	CHARITON	IA	41.033	-93.367	-6	320	III	10
725463	CHARLES CITY	IA	43.067	-92.617	-6	343	III	10
725479	CLARINDA	IA	40.717	-95.033	-6	303	III	10
725473	CLINTON MUNI (AWOS)	IA	41.833	-90.333	-6	216	II	12
725497	COUNCIL BLUFFS	IA	41.267	-95.767	-6	382	III	10
725474	CRESTON	IA	41.017	-94.367	-6	394	III	10
725476	DECORAH	IA	43.283	-91.733	-6	353	III	10
725477	DENISON	IA	41.983	-95.383	-6	388	III	10
725460	DES MOINES INTL AP	IA	41.533	-93.667	-6	292	I	24
725470	DUBUQUE REGIONAL AP	IA	42.400	-90.700	-6	322	I	12
726499	ESTHERVILLE MUNI	IA	43.400	-94.750	-6	401	II	12
726498	FAIR FIELD	IA	41.050	-91.983	-6	244	III	10
725490	FORT DODGE (AWOS)	IA	42.550	-94.183	-6	355	II	12
725483	FORT MADISON	IA	40.667	-91.333	-6	221	III	10
725456	KEOKUK MUNI	IA	40.467	-91.433	-6	205	III	10
725493	KNOXVILLE	IA	41.300	-93.117	-6	283	III	10
725484	LE MARS	IA	42.783	-96.200	-6	365	III	10
725485	MASON CITY MUNICIPAL ARPT	IA	43.150	-93.333	-6	364	I	24
725475	MONTICELLO MUNI	IA	42.233	-91.167	-6	259	III	10
725487	MUSCATINE	IA	41.367	-91.150	-6	167	III	10
725464	NEWTON MUNI	IA	41.683	-93.017	-6	290	III	10
725488	OELWEN	IA	42.683	-91.967	-6	328	III	10
725489	ORANGE CITY	IA	42.983	-96.067	-6	431	III	10
725465	OTTUMWA INDUSTRIAL AP	IA	41.100	-92.450	-6	257	II	12
725494	RED OAK	IA	41.017	-95.267	-6	318	III	10
725495	SHELDON	IA	43.217	-95.833	-6	432	III	10
725467	SHENANDOAH MUNI	IA	40.750	-95.417	-6	296	III	10
725570	SIOUX CITY SIOUX GATEWAY AP	IA	42.383	-96.383	-6	333	I	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
726500	SPENCER	IA	43.167	-95.150	-6	408	II	12
725496	STORM LAKE	IA	42.600	-95.233	-6	454	III	10
725454	WASHINGTON	IA	41.283	-91.667	-6	230	III	10
725480	WATERLOO MUNICIPAL AP	IA	42.550	-92.400	-6	264	I	24
725478	WEBSTER CITY	IA	42.433	-93.867	-6	342	III	10
726810	BOISE AIR TERMINAL [UO]	ID	43.620	-116.210	-7	701	I	24
725867	BURLEY MUNICIPAL ARPT	ID	42.533	-113.767	-7	1267	II	12
726813	CALDWELL (AWOS)	ID	43.633	-116.633	-7	740	III	12
727834	COEUR D`ALENE(AWOS)	ID	47.767	-116.817	-8	707	II	12
725865	HAILEY/FRIEDMAN MEM	ID	43.500	-114.300	-7	1620	II	12
725785	IDAHO FALLS FANNING FIELD	ID	43.517	-112.067	-7	1441	II	12
725866	JOSLIN FLD MAGIC VA [TWIN FALLS - UO]	ID	42.550	-114.350	-7	1200	II	12
727830	LEWISTON NEZ PERCE CNTY AP	ID	46.367	-117.017	-8	438	I	12
725786	MALAD CITY	ID	42.150	-112.283	-7	1362	II	12
726815	MOUNTAIN HOME AFB	ID	43.050	-115.867	-7	912	II	12
725780	POCATELLO REGIONAL AP	ID	42.917	-112.567	-7	1353	I	24
726865	SALMON/LEMHI (AWOS)	ID	45.117	-113.883	-7	1233	III	12
725868	SODA SPRINGS/TIGERT	ID	42.650	-111.583	-7	1780	II	12
744655	AURORA MUNICIPAL	IL	41.767	-88.467	-6	215	II	12
724338	BELLEVILLE SCOTT AFB	IL	38.550	-89.850	-6	135	II	12
725314	CAHOKIA/ST. LOUIS	IL	38.567	-90.150	-6	126	II	12
724397	CENTRAL ILLINOIS RG	IL	40.467	-88.917	-6	272	II	12
725340	CHICAGO MIDWAY AP	IL	41.783	-87.750	-6	186	II	12
725300	CHICAGO OHARE INTL AP	IL	41.983	-87.917	-6	201	I	24
725347	CHICAGO/WAUKEGAN	IL	42.417	-87.867	-6	222	II	12
725316	DECATUR	IL	39.833	-88.867	-6	213	II	12
724339	MARION REGIONAL	IL	37.750	-89.017	-6	144	II	12
725440	MOLINE QUAD CITY INTL AP	IL	41.467	-90.517	-6	180	I	24
724335	MOUNT VERNON (AWOS)	IL	38.317	-88.867	-6	146	II	12
725320	PEORIA GREATER PEORIA AP	IL	40.667	-89.683	-6	199	I	24
724396	QUINCY MUNI BALDWIN FLD	IL	39.933	-91.200	-6	233	II	12
725430	ROCKFORD GREATER ROCKFORD AP	IL	42.200	-89.100	-6	223	I	24
724336	SOUTHERN ILLINOIS	IL	37.767	-89.250	-6	128	II	12
724390	SPRINGFIELD CAPITAL AP	IL	39.850	-89.683	-6	179	I	24
725326	STERLING ROCKFALLS	IL	41.750	-89.667	-6	197	II	12
725315	UNIV OF ILLINOIS WI [BONDVILLE - SURFRAD]	IL	40.060	-88.370	-6	213	II	12
725305	W. CHICAGO/DU PAGE	IL	41.917	-88.250	-6	231	II	12
725336	DELAWARE CO JOHNSON	IN	40.233	-85.400	-5	293	II	12
724320	EVANSVILLE REGIONAL AP	IN	38.050	-87.533	-6	116	I	24
725330	FORT WAYNE INTL AP	IN	41.000	-85.200	-5	241	I	24
725335	GRISSOM ARB	IN	40.650	-86.150	-5	253	II	12
724365	HUNTINGBURG	IN	38.250	-86.950	-5	161	III	11

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724380	INDIANAPOLIS INTL AP	IN	39.717	-86.267	-5	241	I	24
724386	LAFAYETTE PURDUE UNIV AP	IN	40.417	-86.933	-5	183	II	12
724375	MONROE CO	IN	39.133	-86.617	-5	264	II	12
725350	SOUTH BEND MICHIANA RGNL AP	IN	41.700	-86.333	-5	236	I	24
724373	TERRE HAUTE HULMAN REGIONAL A	IN	39.450	-87.300	-5	175	II	12
724507	CHANUTE MARTIN JOHNSON AP	KS	37.667	-95.483	-6	298	II	12
724580	CONCORDIA BLOSSER MUNI AP	KS	39.550	-97.650	-6	448	II	12
724510	DODGE CITY REGIONAL AP	KS	37.767	-99.967	-6	785	II	24
724556	EMPORIA MUNICIPAL AP	KS	38.333	-96.183	-6	368	II	12
724550	FORT RILEY MARSHALL AAF	KS	39.050	-96.767	-6	324	III	10
724515	GARDEN CITY MUNICIPAL AP	KS	37.933	-100.717	-6	878	II	12
724650	GOODLAND RENNER FIELD	KS	39.367	-101.700	-7	1111	II	24
724517	GREAT BEND (AWOS)	KS	38.350	-98.867	-6	575	II	12
724518	HAYS MUNI (AWOS)	KS	38.850	-99.267	-6	609	II	12
724655	HILL CITY MUNICIPAL AP	KS	39.383	-99.833	-6	667	II	12
724506	HUTCHINSON MUNICIPAL AP	KS	38.067	-97.867	-6	463	II	12
724516	LIBERAL MUNI	KS	37.033	-100.967	-6	901	II	12
724555	MANHATTAN RGNL	KS	39.133	-96.667	-6	330	II	12
724505	MCCONNELL AFB	KS	37.617	-97.267	-6	414	II	12
724509	NEWTON (AWOS)	KS	38.050	-97.283	-6	467	III	12
724475	OLATHE JOHNSON CO INDUSTRIAL	KS	38.833	-94.883	-6	331	II	12
724468	OLATHE/JOHNSON CO.	KS	38.850	-94.733	-6	334	II	12
724585	RUSSELL MUNICIPAL AP	KS	38.883	-98.817	-6	566	I	12
724586	SALINA MUNICIPAL AP	KS	38.817	-97.667	-6	385	II	12
724565	TOPEKA FORBES FIELD	KS	38.950	-95.667	-6	325	II	12
724560	TOPEKA MUNICIPAL AP	KS	39.067	-95.633	-6	269	II	24
724500	WICHITA MID-CONTINENT AP	KS	37.650	-97.433	-6	402	II	24
724504	WICHITA/COL. JABARA	KS	37.750	-97.217	-6	433	III	10
746716	BOWLING GREEN WARREN CO AP	KY	36.983	-86.433	-6	161	II	12
724210	CINCINNATI NORTHERN KY AP	KY	39.050	-84.667	-5	265	I	24
746710	FORT CAMPBELL AAF	KY	36.667	-87.483	-6	173	II	12
724240	FORT KNOX GODMAN AAF	KY	37.900	-85.967	-5	239	II	12
724238	HENDERSON CITY	KY	37.817	-87.683	-6	117	III	12
724236	JACKSON JULIAN CARROLL AP	KY	37.583	-83.317	-5	416	I	12
724220	LEXINGTON BLUEGRASS AP	KY	38.033	-84.600	-5	294	I	24
724243	LONDON-CORBIN AP	KY	37.083	-84.083	-5	362	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724235	LOUISVILLE BOWMAN FIELD	KY	38.233	-85.667	-5	165	II	12
724230	LOUISVILLE STANDIFORD FIELD	KY	38.183	-85.733	-5	147	I	24
724350	PADUCAH BARKLEY REGIONAL AP	KY	37.050	-88.767	-6	124	I	12
724354	SOMERSET(AWOS)	KY	38.000	-84.600	-5	283	III	12
722487	ALEXANDRIA ESLER REGIONAL AP	LA	31.400	-92.300	-6	34	II	12
722485	BARKSDALE AFB	LA	32.500	-93.667	-6	54	II	12
722317	BATON ROUGE RYAN ARPT	LA	30.533	-91.150	-6	20	II	24
747540	ENGLAND AFB	LA	31.317	-92.550	-6	27	III	11
722390	FORT POLK AAF	LA	31.050	-93.183	-6	102	II	12
722406	HOUMA-TERREBONNE	LA	29.567	-90.667	-6	3	II	12
722405	LAFAYETTE REGIONAL AP	LA	30.200	-91.983	-6	12	II	12
722400	LAKE CHARLES REGIONAL ARPT	LA	30.117	-93.233	-6	5	I	24
722404	LAKE CHARLES WB AIRP	LA	30.217	-93.167	-6	5	III	10
722486	MONROE REGIONAL AP	LA	32.517	-92.033	-6	40	II	12
722314	NEW IBERIA NAAS	LA	30.033	-91.883	-6	8	II	12
722316	NEW ORLEANS ALVIN CALLENDER F	LA	29.817	-90.017	-6	2	II	12
722310	NEW ORLEANS INTL ARPT	LA	30.000	-90.250	-6	1	I	24
722315	NEW ORLEANS LAKEFRONT AP	LA	30.050	-90.033	-6	3	II	12
722329	PATTERSON MEMORIAL	LA	29.717	-91.333	-6	3	II	12
722484	SHREVEPORT DOWNTOWN	LA	32.533	-93.750	-6	55	III	10
722480	SHREVEPORT REGIONAL ARPT	LA	32.450	-93.817	-6	77	I	24
725067	BARNSTABLE MUNI BOA	MA	41.667	-70.283	-5	17	II	12
725088	BEVERLY MUNI	MA	42.583	-70.917	-5	34	II	12
725090	BOSTON LOGAN INT'L ARPT	MA	42.367	-71.017	-5	6	I	24
744910	CHICOPEE FALLS WESTO	MA	42.200	-72.533	-5	75	II	12
744904	LAWRENCE MUNI	MA	42.717	-71.117	-5	46	II	12
725066	MARTHAS VINEYARD	MA	41.400	-70.617	-5	21	II	12
725063	NANTUCKET MEMORIAL AP	MA	41.250	-70.067	-5	14	II	12
725065	NEW BEDFORD RGNL	MA	41.667	-70.950	-5	25	II	12
725075	NORTH ADAMS	MA	42.700	-73.167	-5	201	III	10
725098	NORWOOD MEMORIAL	MA	42.183	-71.183	-5	15	II	12
725060	OTIS ANGB	MA	41.650	-70.517	-5	40	II	12
725064	PLYMOUTH MUNICIPAL	MA	41.917	-70.733	-5	45	III	11
725073	PROVINCETOWN (AWOS)	MA	42.067	-70.217	-5	2	II	12
744915	WESTFIELD BARNES MUNI AP	MA	42.150	-72.717	-5	83	II	12
725095	WORCHESTER REGIONAL ARPT	MA	42.267	-71.883	-5	300	I	24
745940	ANDREWS AFB	MD	38.817	-76.867	-5	86	II	12
724060	BALTIMORE BLT-WASHNGTN INT'L	MD	39.167	-76.683	-5	45	I	24
724066	HAGERSTOWN RGNL RIC	MD	39.700	-77.733	-5	220	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724040	PATUXENT RIVER NAS	MD	38.300	-76.417	-5	14	II	12
724045	SALISBURY WICOMICO CO AP	MD	38.333	-75.517	-5	15	II	12
726184	AUBURN-LEWISTON	ME	44.050	-70.283	-5	88	II	12
726185	AUGUSTA AIRPORT	ME	44.317	-69.800	-5	107	II	12
726088	BANGOR INTERNATIONAL AP	ME	44.800	-68.817	-5	56	I	12
726077	BAR HARBOR (AWOS)	ME	44.450	-68.367	-5	26	II	12
727120	CARIBOU MUNICIPAL ARPT	ME	46.867	-68.033	-5	190	I	24
727033	HOULTON INTL ARPT	ME	46.117	-67.800	-5	150	II	12
726196	MILLINOCKET MUNICIPAL AP	ME	45.650	-68.683	-5	124	III	12
743920	NAVAL AIR STATION	ME	43.900	-69.933	-5	21	II	12
726083	NORTHERN AROOSTOOK	ME	47.283	-68.317	-5	309	III	10
726060	PORTLAND INTL JETPORT	ME	43.650	-70.300	-5	14	I	24
727130	PRESQUE ISLE MUNICIP	ME	46.683	-68.050	-5	163	II	12
726079	ROCKLAND/KNOX(AWOS)	ME	44.067	-69.100	-5	17	II	12
726064	SANFORD MUNI (AWOS)	ME	43.400	-70.717	-5	74	II	12
726073	WATERVILLE (AWOS)	ME	44.533	-69.683	-5	101	II	12
727135	WISCASSET	ME	43.967	-69.717	-5	21	III	10
726390	ALPENA COUNTY REGIONAL AP	MI	45.067	-83.583	-5	210	I	24
725374	ANN ARBOR MUNICIPAL	MI	42.217	-83.750	-5	256	II	12
725396	BATTLE CREEK KELLOGG AP	MI	42.300	-85.250	-5	283	II	12
726355	BENTON HARBOR/ROSS	MI	42.133	-86.433	-5	196	II	12
726384	CADILLAC WEXFORD CO AP	MI	44.283	-85.417	-5	396	III	12
727344	CHIPPEWA CO INTL	MI	46.250	-84.467	-5	250	II	12
725375	DETROIT CITY AIRPORT	MI	42.400	-83.000	-5	190	I	12
725370	DETROIT METROPOLITAN ARPT	MI	42.217	-83.350	-5	194	I	24
725376	DETROIT WILLOW RUN AP	MI	42.233	-83.533	-5	218	II	12
726480	ESCANABA (AWOS)	MI	45.750	-87.033	-5	187	II	12
726370	FLINT BISHOP INTL ARPT	MI	42.967	-83.750	-5	234	I	24
726350	GRAND RAPIDS KENT COUNTY INT'	MI	42.883	-85.517	-5	242	I	24
727440	HANCOCK HOUGHTON CO AP	MI	47.167	-88.500	-5	327	II	12
726380	HOUGHTON LAKE ROSCOMMON CO AR	MI	44.367	-84.683	-5	351	I	24
725378	HOWELL	MI	42.633	-83.983	-5	293	III	11
727437	IRON MOUNTAIN/FORD	MI	45.817	-88.117	-6	360	II	12
727445	IRONWOOD (AWOS)	MI	46.533	-90.133	-6	375	II	12
725395	JACKSON REYNOLDS FIELD	MI	42.267	-84.467	-5	304	II	12
726357	KALAMAZOO BATTLE CR	MI	42.233	-85.550	-5	273	II	12
725390	LANSING CAPITAL CITY ARPT	MI	42.783	-84.583	-5	256	I	24
726385	MANISTEE (AWOS)	MI	44.267	-86.250	-5	189	II	12
726487	MENOMINEE (AWOS)	MI	45.133	-87.633	-6	191	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
725377	MOUNT CLEMENS SELFRIDGE FLD	MI	42.617	-82.833	-5	177	II	12
726360	MUSKEGON COUNTY ARPT	MI	43.167	-86.233	-5	190	I	24
726375	OAKLAND CO INTL	MI	42.667	-83.417	-5	306	II	12
726395	OSCODA WURTSMITH AFB	MI	44.450	-83.400	-5	188	III	10
727347	PELLSTON EMMET COUNTY AP	MI	45.567	-84.783	-5	218	II	12
726379	SAGINAW TRI CITY INTL AP	MI	43.533	-84.083	-5	201	II	12
727340	SAULT STE MARIE SANDERSON FIE	MI	46.467	-84.350	-5	219	I	24
725384	ST.CLAIR COUNTY INT	MI	42.917	-82.533	-5	198	III	11
726387	TRAVERSE CITY CHERRY CAPITAL	MI	44.733	-85.583	-5	188	I	24
727504	AITKIN NDB(AWOS)	MN	46.550	-93.683	-6	367	III	12
726589	ALBERT LEA (AWOS)	MN	43.683	-93.367	-6	383	II	12
726557	ALEXANDRIA MUNICIPAL AP	MN	45.883	-95.400	-6	433	II	12
727566	AUSTIN MUNI	MN	43.667	-92.933	-6	375	III	12
727476	BAUDETTE INTERNATIONAL AP	MN	48.717	-94.600	-6	330	III	10
727550	BEMIDJI MUNICIPAL	MN	47.500	-94.933	-6	420	II	12
727507	BENSON MUNI	MN	45.317	-95.650	-6	317	III	11
726555	BRAINERD/WIELAND	MN	46.400	-94.133	-6	374	II	12
727503	CAMBRIDGE MUNI	MN	45.567	-93.267	-6	287	III	12
726558	CLOQUET (AWOS)	MN	46.700	-92.500	-6	390	III	12
727473	CRANE LAKE (AWOS)	MN	46.267	-92.567	-6	350	II	12
727452	CROOKSTON MUNI FLD	MN	47.850	-96.617	-6	273	III	12
727457	DETROIT LAKES(AWOS)	MN	46.833	-95.883	-6	426	II	12
727450	DULUTH INTERNATIONAL ARPT	MN	46.833	-92.217	-6	433	I	24
727459	ELY MUNI	MN	47.817	-91.833	-6	455	II	12
727474	EVELETH MUNI (AWOS)	MN	47.400	-92.500	-6	421	III	12
726586	FAIRMONT MUNI(AWOS)	MN	43.650	-94.417	-6	354	II	12
726563	FARIBAULT MUNI AWOS	MN	44.333	-93.317	-6	322	II	12
726560	FERGUS FALLS(AWOS)	MN	46.283	-96.150	-6	361	II	12
726579	FLYING CLOUD	MN	44.817	-93.450	-6	283	II	12
727505	FOSSTON(AWOS)	MN	47.583	-95.767	-6	388	III	12
726547	GLENWOOD (ASOS)	MN	45.650	-95.317	-6	425	III	10
727458	GRAND RAPIDS(AWOS)	MN	47.217	-93.517	-6	413	II	12
727478	HALLOCK	MN	48.783	-96.950	-6	250	III	12
727455	HIBBING CHISHOLM-HIBBING AP	MN	47.383	-92.850	-6	411	II	12
726569	HUTCHINSON (AWOS)	MN	44.867	-94.383	-6	323	III	12
727470	INTERNATIONAL FALLS INTL AP	MN	48.567	-93.400	-6	359	I	24
726583	LITCHFIELD MUNI	MN	45.100	-94.500	-6	347	II	12
726578	LITTLE FALLS (AWOS)	MN	45.950	-94.350	-6	342	III	12
726585	MANKATO(AWOS)	MN	44.217	-93.917	-6	311	II	12
726559	MARSHALL/RYAN(AWOS)	MN	44.450	-95.817	-6	359	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
726575	MINNEAPOLIS/CRYSTAL	MN	45.067	-93.350	-6	265	II	12
726580	MINNEAPOLIS-ST PAUL INT'L ARP	MN	44.883	-93.233	-6	254	I	24
727475	MORA MUNI (AWOS)	MN	45.883	-93.267	-6	309	II	12
726565	MORRIS MUNI (AWOS)	MN	45.567	-95.967	-6	344	II	12
726567	NEW ULM MUNI (AWOS)	MN	44.317	-94.500	-6	308	II	12
726544	ORR	MN	48.017	-92.867	-6	397	III	12
726568	OWATONNA (AWOS)	MN	44.117	-93.250	-6	350	III	12
727453	PARK RAPIDS MUNICIPAL AP	MN	46.900	-95.067	-6	437	II	12
726566	PIPESTONE (AWOS)	MN	43.983	-96.317	-6	529	II	12
726564	RED WING	MN	44.583	-92.483	-6	239	II	12
726556	REDWOOD FALLS MUNI	MN	44.550	-95.083	-6	312	II	12
726440	ROCHESTER INTERNATIONAL ARPT	MN	43.900	-92.500	-6	398	I	24
727477	ROSEAU MUNI (AWOS)	MN	48.850	-95.700	-6	323	II	12
727556	SILVER BAY	MN	47.200	-91.400	-6	331	III	12
726603	SOUTH ST PAUL MUNI	MN	44.850	-93.150	-6	250	III	10
726550	ST CLOUD REGIONAL ARPT	MN	45.550	-94.050	-6	311	I	24
726584	ST PAUL DOWNTOWN AP	MN	44.933	-93.050	-6	220	II	12
727555	THIEF RIVER(AWOS)	MN	48.067	-96.183	-6	340	II	12
727444	TWO HARBORS	MN	47.050	-91.750	-6	328	III	12
727533	WHEATON NDB (AWOS)	MN	45.700	-96.500	-6	313	III	12
726576	WILLMAR	MN	45.117	-95.083	-6	345	II	12
726588	WINONA MUNI (AWOS)	MN	44.083	-91.700	-6	200	II	12
726587	WORTHINGTON (AWOS)	MN	43.650	-95.583	-6	480	II	12
723489	CAPE GIRARDEAU MUNICIPAL AP	MO	37.233	-89.567	-6	103	II	12
724450	COLUMBIA REGIONAL AIRPORT	MO	38.817	-92.217	-6	272	I	24
724454	FARMINGTON	MO	37.767	-90.400	-6	274	III	10
724457	FT LNRD WD AAF	MO	37.750	-92.150	-6	351	II	12
724458	JEFFERSON CITY MEM	MO	38.583	-92.150	-6	167	II	12
723495	JOPLIN MUNICIPAL AP	MO	37.150	-94.500	-6	297	II	12
724459	KAISER MEM (AWOS)	MO	38.100	-92.550	-6	265	II	12
724463	KANSAS CITY DOWNTOWN AP	MO	39.117	-94.600	-6	226	II	12
724460	KANSAS CITY INT'L ARPT	MO	39.300	-94.717	-6	298	I	24
724455	KIRKSVILLE REGIONAL AP	MO	40.100	-92.550	-6	294	II	12
723300	POPLAR BLUFF(AMOS)	MO	36.767	-90.467	-6	146	III	10
724400	SPRINGFIELD REGIONAL ARPT	MO	37.233	-93.383	-6	384	I	24
724490	ST JOSEPH ROSECRANS MEMORIAL	MO	39.767	-94.900	-6	247	II	12
724340	ST LOUIS LAMBERT INT'L ARPT	MO	38.750	-90.367	-6	173	I	24
724345	ST LOUIS SPIRIT OF ST LOUIS A	MO	38.650	-90.650	-6	141	I	12
724456	VICHY ROLLA NATL ARPT	MO	38.133	-91.767	-6	336	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724467	WHITEMAN AFB	MO	38.717	-93.550	-6	255	II	12
723306	COLUMBUS AFB	MS	33.650	-88.450	-6	68	II	12
723307	GOLDEN TRI(AWOS)	MS	33.450	-88.583	-6	80	II	12
722356	GREENVILLE MUNICIPAL	MS	33.483	-90.983	-6	42	II	12
722359	GREENWOOD LEFLORE ARPT	MS	33.500	-90.083	-6	47	II	12
747685	GULFPORT BILOXI INT	MS	30.400	-89.067	-6	9	II	12
722348	HATTIESBURG LAUREL	MS	31.467	-89.333	-6	93	II	12
722350	JACKSON INTERNATIONAL AP	MS	32.317	-90.083	-6	94	I	24
747686	KEESLER AFB	MS	30.417	-88.917	-6	8	II	12
722358	MCCOMB PIKE COUNTY AP	MS	31.233	-90.467	-6	126	II	12
722340	MERIDIAN KEY FIELD	MS	32.333	-88.750	-6	90	I	24
722345	MERIDIAN NAAS	MS	32.550	-88.567	-6	83	II	12
722357	NATCHEZ/HARDY(AWOS)	MS	31.617	-91.300	-6	83	II	12
723320	TUPELO C D LEMONS ARPT	MS	34.267	-88.767	-6	110	II	12
726770	BILLINGS LOGAN INT'L ARPT	MT	45.800	-108.550	-7	1087	I	24
726797	BOZEMAN GALLATIN FIELD	MT	45.800	-111.150	-7	1349	II	12
726785	BUTTE BERT MOONEY ARPT	MT	45.950	-112.500	-7	1689	II	12
727796	CUT BANK MUNI AP	MT	48.600	-112.367	-7	1170	II	21
727680	GLASGOW INTL ARPT	MT	48.217	-106.617	-7	699	I	24
726676	GLENDIVE(AWOS)	MT	47.133	-104.800	-7	749	II	12
727750	GREAT FALLS INTL ARPT	MT	47.467	-111.383	-7	1117	I	24
727770	HAVRE CITY-COUNTY AP	MT	48.550	-109.767	-7	788	II	12
727720	HELENA REGIONAL AIRPORT	MT	46.600	-111.967	-7	1167	I	24
727790	KALISPELL GLACIER PK INT'L AR	MT	48.317	-114.250	-7	906	I	24
726776	LEWISTOWN MUNICIPAL ARPT	MT	47.050	-109.450	-7	1263	II	24
726798	LIVINGSTON MISSION FIELD	MT	45.700	-110.450	-7	1418	II	12
742300	MILES CITY MUNICIPAL ARPT	MT	46.433	-105.883	-7	801	II	22
727730	MISSOULA INTERNATIONAL AP	MT	46.917	-114.100	-7	973	I	24
727687	SIDNEY-RICHLAND	MT	47.700	-104.200	-7	605	II	12
727686	WOLF POINT INTL [FORT PECK - SURFRAD]	MT	48.310	-105.100	-7	634	II	12
723150	ASHEVILLE REGIONAL ARPT	NC	35.433	-82.533	-5	652	I	24
723040	CAPE HATTERAS NWS BLDG	NC	35.267	-75.550	-5	3	I	24
723140	CHARLOTTE DOUGLAS INTL ARPT	NC	35.217	-80.950	-5	222	I	24
723090	CHERRY POINT MCAS	NC	34.900	-76.883	-5	11	II	12
723046	DARE CO RGNL	NC	35.917	-75.700	-5	4	II	12
746943	ELIZABETH CITY COAST GUARD AI [NREL]	NC	36.300	-76.250	-5	4	III	10

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
723030	FAYETTEVILLE POPE AFB	NC	35.167	-79.017	-5	66	II	12
723035	FAYETTEVILLE RGNL G	NC	34.983	-78.883	-5	59	II	12
746930	FORT BRAGG SIMMONS AAF	NC	35.133	-78.933	-5	93	II	12
723066	GOLDSBORO SEYMOUR JOHNSON AFB	NC	35.350	-77.967	-5	33	II	12
723170	GREENSBORO PIEDMONT TRIAD INT	NC	36.100	-79.950	-5	273	I	24
723145	HICKORY REGIONAL AP	NC	35.733	-81.383	-5	348	II	12
723069	JACKSONVILLE (AWOS)	NC	34.833	-77.617	-5	29	II	12
723067	KINSTON STALLINGS AFB	NC	35.317	-77.633	-5	29	II	12
723095	NEW BERN CRAVEN CO REGL AP	NC	35.067	-77.050	-5	5	II	12
723096	NEW RIVER MCAF	NC	34.700	-77.383	-5	5	II	12
723065	PITT GREENVILLE ARP	NC	35.633	-77.400	-5	8	III	11
723060	RALEIGH DURHAM INTERNATIONAL	NC	35.867	-78.783	-5	127	I	24
723068	ROCKY MOUNT WILSON	NC	35.850	-77.900	-5	50	II	12
723143	SOUTHERN PINES AWOS	NC	35.233	-79.400	-5	141	III	12
723013	WILMINGTON INTERNATIONAL ARPT	NC	34.267	-77.900	-5	9	I	24
723193	WINSTON-SALEM REYNOLDS AP	NC	36.133	-80.217	-5	296	II	12
727640	BISMARCK MUNICIPAL ARPT [ISIS]	ND	46.770	-100.770	-7	502	I	24
727573	DEVILS LAKE(AWOS)	ND	48.117	-98.917	-6	443	II	12
727645	DICKINSON MUNICIPAL AP	ND	46.800	-102.800	-7	788	II	12
727530	FARGO HECTOR INTERNATIONAL AP	ND	46.933	-96.817	-6	274	I	24
727575	GRAND FORKS AF	ND	47.967	-97.400	-6	276	II	12
727576	GRAND FORKS INTERNATIONAL AP	ND	47.950	-97.183	-6	256	II	12
727535	JAMESTOWN MUNICIPAL ARPT	ND	46.917	-98.683	-6	455	II	12
727675	MINOT AFB	ND	48.417	-101.350	-6	497	II	12
727676	MINOT FAA AP	ND	48.267	-101.283	-6	523	I	21
727670	WILLISTON SLOULIN INTL AP	ND	48.200	-103.650	-6	580	I	12
725556	AINSWORTH MUNICIPAL	NE	42.583	-100.000	-6	789	II	12
725635	ALLIANCE MUNICIPAL	NE	42.050	-102.800	-7	1198	II	12
725515	BEATRICE MUNICIPAL	NE	40.300	-96.750	-6	403	III	11
725540	BELLEVUE OFFUTT AFB	NE	41.117	-95.917	-6	319	II	12
725628	BREWSTER FIELD ARPT	NE	40.450	-99.333	-6	704	III	10
725555	BROKEN BOW MUNI	NE	41.433	-99.650	-6	776	II	12
725636	CHADRON MUNICIPAL AP	NE	42.833	-103.083	-7	1011	II	12
725565	COLUMBUS MUNI	NE	41.450	-97.333	-6	451	II	12
725533	FALLS CITY/BRENNER	NE	40.083	-95.600	-6	300	II	12
725564	FREMONT MUNI ARPT	NE	41.450	-96.517	-6	379	III	10
725520	GRAND ISLAND CENTRAL NE REGIO	NE	40.967	-98.317	-6	561	II	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
725525	HASTINGS MUNICIPAL	NE	40.600	-98.433	-6	596	II	12
725626	IMPERIAL FAA AP	NE	40.517	-101.617	-7	998	II	12
725526	KEARNEY MUNI (AWOS)	NE	40.733	-99.000	-6	649	II	12
725510	LINCOLN MUNICIPAL ARPT	NE	40.833	-96.767	-6	357	II	12
725625	MCCOOK MUNICIPAL	NE	40.200	-100.583	-6	786	II	12
725560	NORFOLK KARL STEFAN MEM ARPT	NE	41.983	-97.433	-6	472	I	24
725620	NORTH PLATTE REGIONAL AP	NE	41.117	-100.667	-6	847	I	24
725566	O`NEILL/BAKER FIELD	NE	42.467	-98.683	-6	619	III	12
725500	OMAHA EPPLEY AIRFIELD	NE	41.317	-95.900	-6	299	I	12
725530	OMAHA WSFO	NE	41.367	-96.017	-6	399	III	13
725524	ORD/SHARP FIELD	NE	41.617	-98.950	-6	631	II	12
725660	SCOTTSBLUFF W B HEILIG FIELD	NE	41.867	-103.600	-7	1202	I	24
725610	SIDNEY MUNICIPAL AP	NE	41.100	-102.983	-7	1313	II	12
725527	TEKAMAH (ASOS)	NE	41.767	-96.167	-6	312	III	10
725670	VALENTINE MILLER FIELD	NE	42.867	-100.550	-6	789	I	12
726160	BERLIN MUNICIPAL	NH	44.583	-71.183	-5	353	III	10
726050	CONCORD MUNICIPAL ARPT	NH	43.200	-71.500	-5	106	I	24
726165	DILLANT HOPKINS	NH	42.900	-72.267	-5	153	II	12
726155	LACONIA MUNI (AWOS)	NH	43.567	-71.417	-5	166	II	12
726116	LEBANON MUNICIPAL	NH	43.633	-72.300	-5	182	II	12
743945	MANCHESTER AIRPORT	NH	42.933	-71.433	-5	69	II	12
726130	MOUNT WASHINGTON	NH	44.267	-71.300	-5	1910	II	12
726055	PEASE INTL TRADEPOR	NH	43.083	-70.817	-5	31	II	12
724070	ATLANTIC CITY INTL AP	NJ	39.450	-74.567	-5	18	I	24
724084	BELMAR ASC	NJ	40.183	-74.067	-5	26	III	12
724094	CALDWELL/ESSEX CO.	NJ	40.883	-74.283	-5	53	II	12
745966	CAPE MAY CO	NJ	39.000	-74.917	-5	7	III	12
724096	MCGUIRE AFB	NJ	40.017	-74.600	-5	45	II	12
724075	MILLVILLE MUNICIPAL AP	NJ	39.367	-75.083	-5	21	II	12
725020	NEWARK INTERNATIONAL ARPT	NJ	40.717	-74.183	-5	3	I	24
725025	TETERBORO AIRPORT	NJ	40.850	-74.067	-5	3	II	12
724095	TRENTON MERCER COUNTY AP	NJ	40.283	-74.817	-5	65	II	12
723650	ALBUQUERQUE INTL ARPT [ISIS]	NM	35.040	-106.620	-7	1619	I	24
722687	CARLSBAD CAVERN CITY AIR TERM	NM	32.333	-104.267	-7	985	II	12
723600	CLAYTON MUNICIPAL AIRPARK	NM	36.450	-103.150	-7	1512	II	12
722686	CLOVIS CANNON AFB	NM	34.383	-103.317	-7	1309	II	12
722689	CLOVIS MUNI (AWOS)	NM	34.433	-103.083	-7	1284	III	12
722725	DEMING MUNI	NM	32.250	-107.717	-7	1348	II	12
723658	FARMINGTON FOUR CORNERS REGL	NM	36.750	-108.233	-7	1675	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
723627	GALLUP SEN CLARKE FLD	NM	35.517	-108.783	-7	1971	I	12
747320	HOLLOMAN AFB	NM	32.850	-106.100	-7	1248	II	12
722695	LAS CRUCES INTL	NM	32.283	-106.917	-7	1393	II	12
723677	LAS VEGAS MUNICIPAL ARPT	NM	35.650	-105.150	-7	2093	II	12
722680	ROSWELL INDUSTRIAL AIR PARK	NM	33.300	-104.533	-7	1112	I	12
723656	SANTA FE COUNTY MUNICIPAL AP	NM	35.617	-106.083	-7	1934	II	12
722683	SIERRA BLANCA RGNL	NM	33.467	-105.533	-7	2078	III	10
723663	TAOS MUNI APT(AWOS)	NM	36.450	-105.667	-7	2161	III	12
722710	TRUTH OR CONSEQUENCES MUNI AP	NM	33.233	-107.267	-7	1478	II	12
723676	TUCUMCARI FAA AP	NM	35.183	-103.600	-7	1235	II	21
725825	ELKO MUNICIPAL ARPT	NV	40.833	-115.800	-8	1548	II	24
724860	ELY YELLAND FIELD	NV	39.300	-114.850	-8	1909	I	24
724885	FALLON NAAS	NV	39.417	-118.717	-8	1199	II	12
723860	LAS VEGAS MCCARRAN INTL AP	NV	36.083	-115.150	-8	648	I	24
725805	LOVELOCK DERBY FIELD	NV	40.067	-118.550	-8	1189	I	12
723870	MERCURY DESERT ROCK AP [SURFRAD]	NV	36.630	-116.020	-8	935	I	12
723865	NELLIS AFB	NV	36.250	-115.033	-8	573	II	12
724880	RENO TAHOE INTERNATIONAL AP	NV	39.483	-119.767	-8	1342	I	24
724855	TONOPAH AIRPORT	NV	38.067	-117.083	-8	1655	I	24
725830	WINNEMUCCA MUNICIPAL ARPT	NV	40.900	-117.800	-8	1310	I	24
726228	ADIRONDACK RGNL	NY	44.383	-74.200	-5	520	II	12
725180	ALBANY COUNTY AP	NY	42.750	-73.800	-5	84	I	24
725150	BINGHAMTON EDWIN A LINK FIELD	NY	42.200	-75.983	-5	488	I	24
725280	BUFFALO NIAGARA INTL AP	NY	42.933	-78.733	-5	215	I	24
725156	ELMIRA CORNING REGIONAL AP	NY	42.167	-76.900	-5	291	II	12
743700	FORT DRUM/WHEELER-S	NY	44.050	-75.717	-5	211	II	12
725185	GLENS FALLS AP	NY	43.350	-73.617	-5	98	II	12
725035	ISLIP LONG ISL MACARTHUR AP	NY	40.783	-73.100	-5	26	I	12
725235	JAMESTOWN (AWOS)	NY	42.150	-79.267	-5	525	II	12
726223	MASSENA AP	NY	44.933	-74.850	-5	65	I	24
725145	MONTICELLO(AWOS)	NY	41.700	-74.800	-5	428	II	12
725033	NEW YORK CENTRAL PRK OBS BELV	NY	40.783	-73.967	-5	40	III	17
744860	NEW YORK J F KENNEDY INT'L AR	NY	40.650	-73.800	-5	5	I	12
725030	NEW YORK LAGUARDIA ARPT	NY	40.783	-73.883	-5	3	I	12
725287	NIAGARA FALLS AF	NY	43.100	-78.950	-5	180	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
725036	POUGHKEEPSIE DUTCHESS CO AP	NY	41.633	-73.883	-5	47	II	12
744864	REPUBLIC	NY	40.717	-73.417	-5	26	II	12
725290	ROCHESTER GREATER ROCHESTER I	NY	43.117	-77.683	-5	183	I	24
725038	STEWART FIELD	NY	41.500	-74.100	-5	177	II	12
725190	SYRACUSE HANCOCK INT'L ARPT	NY	43.117	-76.100	-5	125	I	24
725197	UTICA ONEIDA COUNTY AP	NY	43.150	-75.383	-5	217	II	12
726227	WATERTOWN AP	NY	44.000	-76.017	-5	97	II	12
744865	WESTHAMPTON GABRESKI AP	NY	40.850	-72.633	-5	20	II	12
725037	WHITE PLAINS WESTCHESTER CO A	NY	41.067	-73.717	-5	122	II	12
725210	AKRON AKRON-CANTON REG AP	OH	40.917	-81.433	-5	368	I	24
725245	BURKE LAKEFRONT	OH	41.517	-81.683	-5	182	II	12
724297	CINCINNATI MUNICIPAL AP LUNKI	OH	39.100	-84.417	-5	149	II	12
725240	CLEVELAND HOPKINS INTL AP	OH	41.400	-81.850	-5	235	I	24
724280	COLUMBUS PORT COLUMBUS INTL A	OH	39.983	-82.883	-5	247	I	24
724290	DAYTON INTERNATIONAL AIRPORT	OH	39.900	-84.217	-5	305	I	24
745700	DAYTON WRIGHT PATTERSON AFB	OH	39.833	-84.050	-5	250	II	12
725366	FINDLAY AIRPORT	OH	41.017	-83.667	-5	244	II	12
725246	MANSFIELD LAHM MUNICIPAL ARPT	OH	40.817	-82.517	-5	395	I	24
724288	OHIO STATE UNIVERSI	OH	40.067	-83.067	-5	283	II	12
725360	TOLEDO EXPRESS AIRPORT	OH	41.583	-83.800	-5	204	I	24
725250	YOUNGSTOWN REGIONAL AIRPORT	OH	41.250	-80.667	-5	360	I	24
724286	ZANESVILLE MUNICIPAL AP	OH	39.950	-81.900	-5	268	II	12
723520	ALTUS AFB	OK	34.650	-99.267	-6	414	II	12
723565	BARTLESVILLE/PHILLI	OK	36.767	-96.017	-6	218	II	12
723526	CLINTON-SHERMAN	OK	35.333	-99.200	-6	586	III	10
723550	FORT SILL POST FIELD AF	OK	34.650	-98.400	-6	369	II	12
723527	GAGE AIRPORT	OK	36.300	-99.767	-6	668	II	12
723525	HOBART MUNICIPAL AP	OK	35.000	-99.050	-6	478	II	12
723575	LAWTON MUNICIPAL	OK	34.567	-98.417	-6	338	II	12
723566	MCALESTER MUNICIPAL AP	OK	34.900	-95.783	-6	232	II	12
723540	OKLAHOMA CITY TINKER AFB	OK	35.417	-97.383	-6	384	II	12
723530	OKLAHOMA CITY WILL ROGERS WOR	OK	35.383	-97.600	-6	398	II	24
723544	OKLAHOMA CITY/WILEY	OK	35.533	-97.650	-6	396	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
723546	PONCA CITY MUNICIPAL AP [SGP - ARM]	OK	36.610	-97.490	-6	318	II	12
723545	STILLWATER RGNL	OK	36.150	-97.083	-6	308	II	12
723560	TULSA INTERNATIONAL AIRPORT	OK	36.200	-95.883	-6	198	II	24
723535	VANCE AFB	OK	36.333	-97.917	-6	408	II	12
727910	ASTORIA REGIONAL AIRPORT	OR	46.150	-123.883	-8	3	II	24
726959	AURORA STATE	OR	45.250	-122.767	-8	60	III	11
726886	BAKER MUNICIPAL AP	OR	44.833	-117.817	-8	1027	II	12
726830	BURNS MUNICIPAL ARPT [UO]	OR	43.520	-119.020	-8	1271	II	21
726945	CORVALLIS MUNI	OR	44.483	-123.283	-8	77	II	12
726930	EUGENE MAHLON SWEET ARPT [UO]	OR	44.050	-123.070	-8	109	I	24
725895	KLAMATH FALLS INTL AP [UO]	OR	42.220	-121.740	-8	1220	II	12
726884	LA GRANDE MUNI AP	OR	45.283	-118.000	-8	827	II	12
725976	LAKEVIEW (AWOS)	OR	42.167	-120.400	-8	1441	II	12
725970	MEDFORD ROGUE VALLEY INTL AP [ASHLAND - UO]	OR	42.190	-122.700	-8	595	I	24
726917	NORTH BEND MUNI AIRPORT	OR	43.417	-124.250	-8	2	II	24
726880	PENDLETON E OR REGIONAL AP	OR	45.700	-118.833	-8	452	I	24
726980	PORTLAND INTERNATIONAL AP	OR	45.600	-122.617	-8	6	I	24
726986	PORTLAND/HILLSBORO	OR	45.533	-122.950	-8	62	II	12
726985	PORTLAND/TROUTDALE	OR	45.550	-122.400	-8	11	II	12
726835	REDMOND ROBERTS FIELD	OR	44.250	-121.167	-8	933	II	24
726904	ROSEBURG REGIONAL AP	OR	43.233	-123.350	-8	160	II	12
726940	SALEM MCNARY FIELD	OR	44.900	-123.000	-8	60	I	24
725975	SEXTON SUMMIT	OR	42.600	-123.367	-8	1168	II	12
725170	ALLENTOWN LEHIGH VALLEY INTL	PA	40.650	-75.450	-5	119	I	24
725126	ALTOONA BLAIR CO ARPT	PA	40.300	-78.317	-5	451	II	12
725266	BRADFORD REGIONAL AP	PA	41.800	-78.633	-5	645	I	24
725124	BUTLER CO. (AWOS)	PA	40.783	-79.950	-5	380	III	12
725125	DUBOIS FAA AP	PA	41.183	-78.900	-5	553	II	12
725260	ERIE INTERNATIONAL AP	PA	42.083	-80.183	-5	222	I	24
725267	FRANKLIN	PA	41.383	-79.867	-5	470	II	12
725118	HARRISBURG CAPITAL CITY ARPT	PA	40.217	-76.850	-5	104	II	24
725127	JOHNSTOWN CAMBRIA COUNTY AP	PA	40.317	-78.833	-5	695	II	12
725116	LANCASTER	PA	40.117	-76.300	-5	126	II	12
725115	MIDDLETOWN HARRISBURG INTL AP	PA	40.200	-76.767	-5	92	I	12
724080	PHILADELPHIA INTERNATIONAL AP	PA	39.867	-75.233	-5	2	I	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724085	PHILADELPHIA NE PHILADELPHIA	PA	40.083	-75.017	-5	30	II	12
725205	PITTSBURGH ALLEGHENY CO AP	PA	40.350	-79.917	-5	380	II	12
725200	PITTSBURGH INTERNATIONAL AP	PA	40.500	-80.233	-5	350	I	24
725103	READING SPAATZ FIELD	PA	40.367	-75.967	-5	104	II	12
725128	STATE COLLEGE [PENN STATE - SURFRAD]	PA	40.720	-77.930	-5	376	II	12
725117	WASHINGTON (AWOS)	PA	40.133	-80.283	-5	361	II	12
725130	WILKES-BARRE SCRANTON INTL AP	PA	41.333	-75.733	-5	284	I	24
725140	WILLIAMSPORT REGIONAL AP	PA	41.250	-76.917	-5	158	I	24
724086	WILLOW GROVE NAS	PA	40.200	-75.150	-5	102	II	12
785140	AQUADILLA/BORINQUEN	PR	18.500	-67.133	-4	72	II	12
785145	EUGENIO MARIA DE HO	PR	18.250	-67.150	-4	9	II	12
785203	MERCEDITA	PR	18.000	-66.550	-4	8	II	12
785350	ROOSEVELT ROADS	PR	18.250	-65.633	-4	12	III	10
785260	SAN JUAN INTL ARPT	PR	18.417	-66.000	-4	19	II	24
785263	SAN JUAN L M MARIN INTL AP	PR	18.433	-66.000	-4	3	III	10
725058	BLOCK ISLAND STATE ARPT	RI	41.167	-71.583	-5	34	II	12
725054	PAWTUCKET (AWOS)	RI	41.917	-71.500	-5	134	II	12
725070	PROVIDENCE T F GREEN STATE AR	RI	41.717	-71.433	-5	16	I	24
723125	ANDERSON COUNTY AP	SC	34.500	-82.717	-5	232	II	12
722085	BEAUFORT MCAS	SC	32.483	-80.717	-5	10	II	12
722080	CHARLESTON INTL ARPT	SC	32.900	-80.033	-5	12	I	24
723100	COLUMBIA METRO ARPT	SC	33.950	-81.117	-5	65	I	24
723106	FLORENCE REGIONAL AP	SC	34.183	-79.733	-5	44	II	12
723119	GREENVILLE DOWNTOWN AP	SC	34.850	-82.350	-5	319	II	12
723120	GREER GREENV'L-SPARTANBRG AP	SC	34.900	-82.217	-5	292	I	24
747910	MYRTLE BEACH AFB	SC	33.683	-78.933	-5	8	II	12
747915	NORTH MYRTLE BEACH GRAND STRA	SC	33.817	-78.717	-5	10	II	12
747900	SUMTER SHAW AFB	SC	33.967	-80.467	-5	74	II	12
726590	ABERDEEN REGIONAL ARPT	SD	45.450	-98.417	-6	398	I	12
726515	BROOKINGS (AWOS)	SD	44.300	-96.817	-6	502	II	12
726525	CHAN GURNEY MUNI	SD	42.917	-97.383	-6	408	II	12
726625	ELLSWORTH AFB	SD	44.150	-103.100	-7	980	II	12
726540	HURON REGIONAL ARPT	SD	44.400	-98.217	-6	390	I	24
726545	MITCHELL (AWOS)	SD	43.767	-98.033	-6	397	II	12
726685	MOBRIDGE	SD	45.533	-100.433	-7	508	II	12
726686	PIERRE MUNICIPAL AP	SD	44.383	-100.283	-7	528	I	24
726620	RAPID CITY REGIONAL ARPT	SD	44.050	-103.050	-7	963	I	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
726510	SIOUX FALLS FOSS FIELD	SD	43.583	-96.750	-6	433	I	24
726546	WATERTOWN MUNICIPAL AP	SD	44.933	-97.150	-6	532	II	12
723183	BRISTOL TRI CITY AIRPORT	TN	36.467	-82.400	-5	457	I	24
723240	CHATTANOOGA LOVELL FIELD AP	TN	35.033	-85.200	-5	204	I	24
723265	CROSSVILLE MEMORIAL AP	TN	35.950	-85.083	-6	569	II	12
723347	DYERSBURG MUNICIPAL AP	TN	36.017	-89.400	-6	103	II	12
723346	JACKSON MCKELLAR-SIPES REGL A	TN	35.600	-88.917	-6	132	II	12
723260	KNOXVILLE MCGHEE TYSON AP	TN	35.817	-83.983	-5	293	I	24
723340	MEMPHIS INTERNATIONAL AP	TN	35.067	-89.983	-6	81	I	24
723270	NASHVILLE INTERNATIONAL AP	TN	36.117	-86.683	-6	177	I	24
690190	ABILENE DYESS AFB	TX	32.433	-99.850	-6	545	II	12
722660	ABILENE REGIONAL AP [UT]	TX	32.470	-99.710	-6	530	I	24
722517	ALICE INTL AP	TX	27.733	-98.033	-6	53	II	12
723630	AMARILLO INTERNATIONAL AP [CANYON - UT]	TX	34.990	-101.900	-6	1068	II	24
722540	AUSTIN MUELLER MUNICIPAL AP [UT]	TX	30.290	-97.740	-6	213	I	12
722500	BROWNSVILLE S PADRE ISL INTL	TX	25.900	-97.433	-6	6	I	24
722544	CAMP MABRY	TX	30.317	-97.767	-6	198	III	16
723604	CHILDRESS MUNICIPAL AP	TX	34.433	-100.283	-6	595	II	12
722445	COLLEGE STATION EASTERWOOD FL	TX	30.583	-96.367	-6	96	II	12
722510	CORPUS CHRISTI INTL ARPT [UT]	TX	27.880	-97.630	-6	6	I	24
722515	CORPUS CHRISTI NAS	TX	27.683	-97.283	-6	6	II	12
722526	COTULLA FAA AP	TX	28.450	-99.217	-6	141	II	12
722587	COX FLD	TX	33.633	-95.450	-6	171	III	12
722636	DALHART MUNICIPAL AP	TX	36.017	-102.550	-6	1216	II	12
722583	DALLAS LOVE FIELD	TX	32.850	-96.850	-6	134	II	12
722598	DALLAS/ADDISON ARPT	TX	32.967	-96.833	-6	196	II	12
722599	DALLAS/REDBIRD ARPT	TX	32.683	-96.867	-6	201	II	12
722590	DALLAS-FORT WORTH INTL AP	TX	32.900	-97.017	-6	171	I	24
722610	DEL RIO [UT]	TX	29.380	-100.910	-6	308	II	12
722615	DEL RIO LAUGHLIN AFB	TX	29.367	-100.783	-6	327	II	12
722577	DRAUGHON MILLER CEN	TX	31.150	-97.400	-6	213	II	12
722700	EL PASO INTERNATIONAL AP [UT]	TX	31.770	-106.500	-7	1186	I	24
722570	FORT HOOD	TX	31.133	-97.717	-6	280	II	12
722594	FORT WORTH ALLIANCE	TX	32.983	-97.317	-6	226	II	12
722596	FORT WORTH MEACHAM	TX	32.817	-97.367	-6	209	II	12
722595	FORT WORTH NAS	TX	32.767	-97.450	-6	185	II	12
722420	GALVESTON/SCHOLES	TX	29.300	-94.800	-6	16	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
722547	GEORGETOWN (AWOS)	TX	30.683	-97.683	-6	240	III	12
722588	GREENVILLE/MAJORS	TX	33.067	-96.067	-6	163	II	12
722505	HARLINGEN RIO GRANDE VALLEY I	TX	26.233	-97.650	-6	10	II	12
722533	HONDO MUNICIPAL AP	TX	29.367	-99.167	-6	280	III	10
722430	HOUSTON BUSH INTERCONTINENTAL	TX	30.000	-95.367	-6	29	I	24
722436	HOUSTON ELLINGTON AFB [CLEAR LAKE - UT]	TX	29.570	-95.090	-6	6	II	12
722435	HOUSTON WILLIAM P HOBBY AP	TX	29.650	-95.283	-6	13	II	12
722429	HOUSTON/D.W. HOOKS	TX	30.067	-95.550	-6	46	II	12
722575	KILLEEN MUNI (AWOS)	TX	31.083	-97.683	-6	258	II	12
722516	KINGSVILLE	TX	27.500	-97.817	-6	17	II	12
722520	LAREDO INTL AP [UT]	TX	27.570	-99.490	-6	142	II	12
722470	LONGVIEW GREGG COUNTY AP [OVERTON - UT]	TX	32.290	-94.980	-6	146	II	12
722670	LUBBOCK INTERNATIONAL AP	TX	33.667	-101.817	-6	992	I	24
722446	LUFKIN ANGELINA CO	TX	31.233	-94.750	-6	86	I	24
722640	MARFA AP	TX	30.367	-104.017	-6	1473	III	10
722563	MC GREGOR (AWOS)	TX	31.483	-97.317	-6	180	III	12
722506	MCALLEN MILLER INTL AP [EDINBURG - UT]	TX	26.310	-98.170	-6	30	II	12
722650	MIDLAND INTERNATIONAL AP	TX	31.950	-102.183	-6	872	I	24
722597	MINERAL WELLS MUNICIPAL AP	TX	32.783	-98.067	-6	284	II	12
722499	NACOGDOCHES (AWOS)	TX	31.583	-94.717	-6	108	III	12
722555	PALACIOS MUNICIPAL AP	TX	28.717	-96.250	-6	5	II	12
722410	PORT ARTHUR JEFFERSON COUNTY	TX	29.950	-94.017	-6	5	I	24
722536	RANDOLPH AFB	TX	29.533	-98.283	-6	232	II	12
722576	ROBERT GRAY AAF	TX	31.067	-97.833	-6	312	II	12
722524	ROCKPORT/ARANSAS CO	TX	28.083	-97.050	-6	8	II	12
722630	SAN ANGELO MATHIS FIELD	TX	31.350	-100.500	-6	584	I	24
722530	SAN ANTONIO INTL AP	TX	29.533	-98.467	-6	247	I	24
722535	SAN ANTONIO KELLY FIELD AFB	TX	29.383	-98.583	-6	208	II	12
722523	SAN ANTONIO/STINSON	TX	29.333	-98.467	-6	176	III	10
722448	TYLER/POUNDS FLD	TX	32.350	-95.400	-6	166	II	12
722550	VICTORIA REGIONAL AP	TX	28.867	-96.933	-6	35	I	24
722560	WACO REGIONAL AP	TX	31.617	-97.233	-6	152	I	24
723510	WICHITA FALLS MUNICIPAL ARPT	TX	33.983	-98.500	-6	314	II	24
722656	WINK WINKLER COUNTY AP	TX	31.783	-103.200	-6	856	II	12
724723	BLANDING	UT	37.617	-109.483	-7	1841	II	12
724756	BRYCE CNYN FAA AP	UT	37.700	-112.150	-7	2312	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724755	CEDAR CITY MUNICIPAL AP	UT	37.700	-113.100	-7	1703	I	24
724795	DELTA	UT	39.333	-112.583	-7	1414	II	12
724735	HANKSVILLE	UT	38.367	-110.717	-7	1313	II	12
724776	MOAB/CANYONLANDS [UO]	UT	38.580	-109.540	-7	1000	III	10
725755	OGDEN HILL AFB	UT	41.117	-111.967	-7	1459	II	12
725750	OGDEN HINKLEY AIRPORT	UT	41.200	-112.017	-7	1362	II	12
725724	PROVO MUNI (AWOS)	UT	40.217	-111.717	-7	1369	II	12
724754	SAINT GEORGE (AWOS)	UT	37.083	-113.600	-7	896	II	12
725720	SALT LAKE CITY INT'L ARPT [ISIS]	UT	40.770	-111.970	-7	1288	I	24
725705	VERNAL	UT	40.433	-109.517	-7	1608	II	12
725810	WENDOVER USAF AUXILIARY FIELD	UT	40.717	-114.033	-8	1291	II	12
724058	ABINGDON	VA	36.683	-82.033	-5	631	III	10
724016	CHARLOTTESVILLE FAA	VA	38.133	-78.450	-5	190	II	12
724106	DANVILLE FAA AP	VA	36.567	-79.333	-5	176	II	12
724037	DAVISON AAF	VA	38.717	-77.183	-5	27	II	12
724014	DINWIDDIE CO	VA	37.183	-77.517	-5	60	III	12
724017	FARMVILLE	VA	37.350	-78.433	-5	125	III	11
723083	FRANKLIN NAAS	VA	36.700	-76.900	-5	12	III	11
724107	HILLSVILLE	VA	36.767	-80.817	-5	834	III	11
724115	HOT SPRINGS/INGALLS	VA	37.950	-79.833	-5	1156	III	12
745980	LANGLEY AFB	VA	37.083	-76.350	-5	3	II	12
724055	LEESBURG/GODFREY	VA	39.083	-77.567	-5	119	III	11
724100	LYNCHBURG REGIONAL ARPT	VA	37.333	-79.200	-5	286	I	24
724036	MANASSAS MUNI(AWOS)	VA	38.717	-77.517	-5	59	III	12
724056	MARION / WYTHEVILLE	VA	36.900	-81.350	-5	780	III	10
745985	MARTINSVILLE	VA	36.633	-80.017	-5	287	III	10
724026	MELFA/ACCOMACK ARPT	VA	37.650	-75.767	-5	15	III	11
723086	NEWPORT NEWS	VA	37.133	-76.500	-5	13	II	12
723080	NORFOLK INTERNATIONAL AP	VA	36.900	-76.200	-5	7	I	24
723085	NORFOLK NAS	VA	36.950	-76.283	-5	10	II	12
723075	OCEANA NAS	VA	36.817	-76.033	-5	8	II	12
724116	PULASKI	VA	37.133	-80.683	-5	642	III	11
724035	QUANTICO MCAS	VA	38.500	-77.300	-5	4	II	12
724010	RICHMOND INTERNATIONAL AP	VA	37.517	-77.317	-5	50	I	24
724110	ROANOKE REGIONAL AP	VA	37.317	-79.967	-5	350	I	24
724033	SHANNON ARPT	VA	38.267	-77.450	-5	26	III	11
724105	STAUNTON/SHENANDOAH	VA	38.267	-78.900	-5	366	II	12
724113	VIRGINIA TECH ARPT	VA	37.217	-80.417	-5	650	III	11
724030	WASHINGTON DC DULLES INT'L AR [STERLING - ISIS]	VA	38.980	-77.470	-5	82	I	24
724050	WASHINGTON DC REAGAN AP	VA	38.867	-77.033	-5	3	I	12
724053	WINCHESTER RGNL	VA	39.150	-78.150	-5	222	III	11

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
724117	WISE/LONESOME PINE	VA	36.983	-82.533	-5	817	III	11
785430	CHARLOTTE AMALIE HARRY S TRUM	VI	18.350	-64.967	-4	6	II	12
726170	BURLINGTON INTERNATIONAL AP	VT	44.467	-73.150	-5	101	I	24
726145	MONTPELIER AP	VT	44.200	-72.567	-5	343	II	12
725165	RUTLAND STATE	VT	43.517	-72.950	-5	246	II	12
726115	SPRINGFIELD/HARTNES	VT	43.350	-72.517	-5	176	III	10
727976	BELLINGHAM INTL AP	WA	48.800	-122.533	-8	45	II	12
727928	BREMERTON NATIONAL	WA	47.483	-122.750	-8	137	II	12
727826	EPHRATA AP FCWOS	WA	47.300	-119.517	-8	384	II	12
727855	FAIRCHILD AFB	WA	47.633	-117.650	-8	743	II	12
727856	FELTS FLD	WA	47.683	-117.317	-8	610	II	12
742070	GRAY AAF	WA	47.083	-122.583	-8	90	II	12
727840	HANFORD	WA	46.567	-119.600	-8	223	II	12
727923	HOQUIAM AP	WA	46.983	-123.933	-8	4	II	12
727924	KELSO WB AP	WA	46.133	-122.900	-8	5	II	12
727827	MOSES LAKE GRANT COUNTY AP	WA	47.200	-119.317	-8	364	II	12
727920	OLYMPIA AIRPORT	WA	46.967	-122.900	-8	63	I	24
727845	PASCO	WA	46.267	-119.117	-8	136	II	12
727857	PULLMAN/MOSCOW RGNL	WA	46.750	-117.117	-8	778	II	12
727970	QUILLAYUTE STATE AIRPORT	WA	47.933	-124.567	-8	55	I	24
727934	RENTON MUNI	WA	47.483	-122.217	-8	10	II	12
727935	SEATTLE BOEING FIELD [ISIS]	WA	47.680	-122.250	-8	20	II	12
727930	SEATTLE SEATTLE-TACOMA INTL A	WA	47.467	-122.317	-8	122	I	24
727937	SNOHOMISH CO	WA	47.900	-122.283	-8	189	II	12
727850	SPOKANE INTERNATIONAL AP [CHENEY - UO]	WA	47.490	-117.589	-8	777	I	24
727815	STAMPEDE PASS	WA	47.283	-121.333	-8	1206	II	12
742060	TACOMA MCCHORD AFB	WA	47.150	-122.483	-8	88	II	12
727938	TACOMA NARROWS	WA	47.267	-122.583	-8	91	II	12
726988	THE DALLES MUNICIPAL ARPT	WA	45.617	-121.150	-8	73	II	12
727926	TOLEDO-WINLOCK MEM	WA	46.483	-122.800	-8	113	II	12
727846	WALLA WALLA CITY COUNTY AP	WA	46.100	-118.283	-8	355	II	12
727825	WENATCHEE/PANGBORN	WA	47.400	-120.200	-8	379	II	12
690230	WHIDBEY ISLAND NAS	WA	48.350	-122.667	-8	10	II	12
727885	WILLIAM R FAIRCHILD	WA	48.117	-123.500	-8	91	III	12
727810	YAKIMA AIR TERMINAL	WA	46.567	-120.550	-8	324	I	24
726626	ANTIGO\LANG(AWOS)	WI	45.150	-87.150	-5	464	III	10
726457	APPLETON/OUTAGAMIE	WI	44.250	-88.517	-6	280	II	12
726435	EAU CLAIRE COUNTY AP	WI	44.867	-91.483	-6	271	I	24
726450	GREEN BAY AUSTIN STRAUBEL INT	WI	44.483	-88.133	-6	209	I	24

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
726415	JANESVILLE/ROCK CO.	WI	42.617	-89.033	-6	246	III	10
726430	LA CROSSE MUNICIPAL ARPT	WI	43.867	-91.250	-6	198	I	24
726416	LONE ROCK FAA AP	WI	43.200	-90.183	-6	219	II	12
726410	MADISON DANE CO REGIONAL ARPT [ISIS]	WI	43.130	-89.330	-6	262	I	24
726455	MANITOWAC MUNI AWOS	WI	44.133	-87.683	-6	198	II	12
726574	MARSHFIELD MUNI	WI	44.633	-90.183	-6	389	III	12
726400	MILWAUKEE MITCHELL INTL AP	WI	42.950	-87.900	-6	205	I	24
726404	MINOCQUA/WOODRUFF	WI	45.933	-89.733	-6	496	II	12
726465	MOSINEE/CENTRAL WI	WI	44.783	-89.667	-6	389	II	12
726468	PHILLIPS/PRICE CO.	WI	45.700	-90.400	-6	449	II	12
727415	RHINELANDER ONEIDA	WI	45.633	-89.467	-6	507	II	12
726467	RICE LAKE MUNICIPAL	WI	45.483	-91.717	-6	347	III	10
726458	STURGEON BAY	WI	44.850	-87.417	-5	221	II	12
726464	WATERTOWN	WI	43.167	-88.717	-6	254	III	10
726463	WAUSAU MUNICIPAL ARPT	WI	44.917	-89.633	-6	366	II	12
726456	WITTMAN RGNL	WI	43.983	-88.550	-6	253	II	12
724120	BECKLEY RALEIGH CO MEM AP	WV	37.800	-81.117	-5	763	I	12
724125	BLUEFIELD/MERCER CO [NREL]	WV	37.270	-81.240	-5	803	II	12
724140	CHARLESTON YEAGER ARPT	WV	38.383	-81.583	-5	310	I	24
724170	ELKINS ELKINS-RANDOLPH CO ARP	WV	38.883	-79.850	-5	594	I	24
724175	HARRISON MARION RGN	WV	39.283	-80.233	-5	380	II	12
724250	HUNTINGTON TRI-STATE ARPT	WV	38.383	-82.550	-5	253	I	24
724127	LEWISBURG/GREENBRIE	WV	37.867	-80.400	-5	702	II	12
724177	MARTINSBURG EASTERN WV REG AP	WV	39.400	-77.983	-5	162	II	12
724176	MORGANTOWN HART FIELD	WV	39.650	-79.917	-5	378	II	12
724273	PARKERSBURG WOOD COUNTY AP	WV	39.350	-81.433	-5	253	II	12
724275	WHEELING OHIO COUNTY AP	WV	40.183	-80.650	-5	359	II	12
725690	CASPER NATRONA CO INTL AP	WY	42.900	-106.467	-7	1627	I	24
725640	CHEYENNE MUNICIPAL ARPT	WY	41.150	-104.800	-7	1867	I	24
726700	CODY MUNI (AWOS)	WY	44.517	-109.017	-7	1553	II	12
725775	EVANSTON/BURNS FLD	WY	41.283	-111.033	-7	2183	II	12
726650	GILLETTE/GILLETTE-C	WY	44.350	-105.533	-7	1230	II	12
725776	JACKSON HOLE	WY	43.600	-110.733	-7	2016	II	12
725760	LANDER HUNT FIELD	WY	42.817	-108.733	-7	1694	I	24
725645	LARAMIE GENERAL BREES FIELD	WY	41.317	-105.683	-7	2215	II	12
725745	RAWLINS MUNICIPAL AP	WY	41.800	-107.200	-7	2053	II	12

USAF	Station Name	State	Lati-tude	Longi-tude	Time Zone	Eleva-tion	NSRDB Class	Pool Years
725765	RIVERTON MUNICIPL AP	WY	43.050	-108.450	-7	1663	II	12
725744	ROCK SPRINGS ARPT [GREEN RIVER - UO]	WY	41.460	-109.440	-7	1000	I	24
726660	SHERIDAN COUNTY ARPT	WY	44.767	-106.967	-7	1208	I	24
726665	WORLAND MUNICIPAL	WY	43.967	-107.950	-7	1294	II	12

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14. ABSTRACT *(Maximum 200 Words)*
This users manual describes how to obtain and interpret the data in the Typical Meteorological Year version 3 (TMY3) data sets. These data sets are an update to the TMY2 data released by NREL in 1994.

15. SUBJECT TERMS
TMY; typical meteorological year; NSRDB; National Solar Radiation Data Base; TMY3

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