National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 6407 (DSI-6407)

Surface METAR Monthly Airways Extract (MAE)

December 11, 2002

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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Table of Contents

Topic	Page Number
1. Abstract	3
2. Element Names and Definitions:	3
3. Start Date	9
4. Stop Date	9
5. Coverage	9
6. How to order data	9
7. Archiving Data Center.	9
8. Technical Contact	9
9. Known Uncorrected Problems	9
10. Quality Statement	9
11. Essential Companion Data Sets	9
12. References	9

1. Abstract: This data set contains METAR hourly surface weather observations that are measured primarily at major airports. Observations are made by automated equipment and may be augmented by a human observer. The stations are usually fully instrumented and therefore record a complete range of meteorological parameters. The parameters usually include a report of wind, runway visibility, present weather, sky condition, temperature and dew point. NCDC began collecting these data in 1996.

2. Element Names and Definitions:

All records begin with a standard 24-character segment as follows:

RHS Subsection	Form	Definition	Position	Length
STNID	WBAN	WBAN number	1:5	5
CLTR		Station Call Letters	6:9	4
RTYPE		Type of Record	10:11	2
	AA	Hourly ASOS METAR		
	SP	ASOS Special		
	DS	ASOS Daily Summary		
	DW	ASOS Weather Duration		
	MS	ASOS Monthly Summary		
	HR	MAPSO Hourly Raw		
	HE	MAPSO Hourly Edit		
	DR	MAPSO Daily Raw		
	DE	MAPSO Daily Edit		
	SR	MAPSO Special Raw		
	SE	MAPSO Special Edit		
	WR	MAPSO WX DUR Raw		
	WE	MAPSO WX DUR EDIT		
	YR	MAPSO SYN Raw		
	YE	MAPSO SYN EDIT		
	LM	MAPSO Local		
	RR	MAPSO Col 90 RMK RAW		
	RE	MAPSO COl 90 RMK EDIT		
	FH	Forms (Keyed) Hourly		
	FD	Forms (Keyed) Daily		
	FW	Forms (Keyed) Weather Duration		
	FY	Forms (Keyed) Synoptic		
COR	C	Indicates Correction	12:12	1

Original observation was received as a transmitted correction. In this instance, if the previously incorrect ob was also received, both observations will be present in the DAE/MAE file.

DTG	YYYYMMDD	Date Time Group (LST)	13:20	8
TIME	*Hhhh*	*Time of Ob (LST) Hours and Minutes*		
			21:24	4

****note*****
Daily Obs (DQ, DG,DK and DS) are encoded as 25dd so as to sort sequentially after the last hourly or special. dd will indicate the day of the month (i.e., 01-31). Synoptic Summaries (YK, YQ, & YG) are encoded as 26dd. dd will indicate the day of the month (i.e., 01-31). Weather Duration Records (DW), encoded as 27dd, will indicate the day of the month. Monthly Summaries (MS, MG, MQ) are encoded as 5555.

note The record sequence is governed by the following sort criteria:

Major sort:	STNID,CLTR
Minor sort:	YYMMDD,HHii
Secondary Minor Sort:	RTYPE,COR

METAR Hourly Record (maeh)

RHS Subsection	Form	Definition	Position	Length
STYPE	AO2A	Record Source Type (ASOS) see appendix B ASOS station types	25:28	4
	AWOS	AWOS		
Maint Flag	$	ASOS maintenance indicator	29:29	1

Indicates ASOS equipment is experiencing maintenance as a result of internal quality assurance checks. One or more elements may be missing or replaced by manual intervention.

Sky Condition	Airways encoded Sky (per FMH-1)	30:74	45
Runway Visual Range	per FMH-H1-1995	75:114	40
Visibility	per FMH-H1-1995	115:121	7
Wx and Obs to Vision	per FMH	122:141	20
Sea Level pressure	to tenths of MB	142:144	3
Temperature	Degrees C (whole degrees)	145:147	3
Dewpoint	Degrees C	148:150	3
Wind Direction	To tens of degrees	151:153	3
Wind Speed	To whole knots or MPH per FMH	154:158	5
Wind Character	G or Q (gust or Squall)	159:159	1
Value for Wind Character	To whole units	160:162	3
Variable Wind Direction	DDDVDDD	163:169	7
Altimeter	to hundredths of inch hg	170:174	5
Hourly precip amount	to hundredths of inch	175:178	4
RMKS/Augmentation	remarks/additive data per FMH	179:310	132

B SIDE ELEMENTS

ASOS Sky Cover	srss 0-8	311:311	1
ASOS Sky Cover	srss 0-8	312:312	1
GOES Sky Cover	srss 0-8	313:313	1
Goes Sky Cover	srss 0-8	314:314	1
DRY BULB	Degrees C to tenths	315:318	4
DEW POINT	Degrees C to Tenths	319:322	4
WET BULB	Degrees C to tenths	323:326	4
RELATIVE HUMIDITY	Percentage	327:329	3
STATION PRESSURE	INCHES	330:334	5
PRESSURE TENDENCY		335:335	1
NET PRESSURE CHANGE	INCHES	336:340	5
blank filled		341:372	32

Total Record Length 372

Daily Record (maed)

MAX	Max 24 hr temp	25:29	5
	Pos 5 Reserved for Extreme temp indicator (*)		
Time	HHMMTime Max Temp	30:33	4

:

MIN	Min 24 hr temp	34:38	5
	Pos 5 Reserved for Extreme temp indicator (*)		
Time HHMM	Time Min Temp	39:42	4
AVG	Daily Avg	43:47	5
Departure	From Normal	48:51	4
PPPP	24hr precip total	52:56	5
P1PPP-P24PPP	Recap of hourly Precip		
	24 sets of 4 each	57:152	96
AVG2	Average daily 2 min wind speed	153:156	4
DD	Direction of fstst 2 min wind	157:159	3
FFF	Speed of fstst 2 min wind	160:162	3
TTTT	Time of fstst 2 min wind	163:166	4
dd	Direction of Peak Gust	167:169	3
fff	Speed of Peak Gust	170:172	3
tttt	Time of Peak Gust	173:176	4
WX CODES	Summary Of Weather Codes	177:296	120
SSSS	Minutes Of sunshine	296:300	4
PPP	Sunshine percentage	301:303	3
SNOW	24hr snowfall to tenths of inch	304:307	4
DEPS	12Z snow depth	308:310	3
ASOS SKY	SR-SS	311:311	1
ASOS SKY	MN-MN	312:312	1
Goes SKY	SR-SS	313:313	1
GOES SKY	MN-MN	314:314	1
Water Equiv.	Water Equiv snow on the gnd	315:317	3
HHMMHHMM	SUNRISE/SET	318:325	8
DEWP	Average Dew Point	326:328	3
WETB	Wet Bulb	329:331	3
HDD	Heating Degree Days	332:334	3
CDD	Cooling Degree Days	335:337	3
RWD	Resultant Wind Direction	338:340	3
RWS	Resultant Wind Speed	341:345	5
SP	Station Pressure	346:350	5
SLP	Sea Level Pressure	351:355	5
CH_SR	Character Sunrise	356:363	8
CH_SS	Character Sunset	364:371	8
blank filled		372:372	1

Total Record Length 372

Daily Remarks Segment (maer)

Daily Remark	Column 90 Remark	25:324	300
blank filled		325:372	48

Multiple records can be used to store remarks longer than 300 characters.

Total Record Length 372

Daily Synoptic Summary Record (maes)

This record will be generated from the vax system for mode 3 AWOS and possibly from augmented ASOS

			Position	Length
mid. to group	*time*	*(XXXX)*	*25:28*	*4*

:
:

	precip	29:33	5
	snowfall	34:37	4
	snowdepth	38:40	3
	max temp	41:44	4
	min temp	45:48	4
	Low Cloud Type	49:53	5
	Med Cloud Type	54:58	5
	High Cloud Type	59:63	5
	Station Pressure	64:68	5
	Barograph	*69:73*	*5*
	Barograph Corr.	74:78	5
1st Synoptic	time (XXXX)	79:82	4
	precip	83:87	5
	snowfall	88:91	4
	snowdepth	92:94	3
	max temp	95:98	4
	min temp	99:102	4
	Low Cloud Type	103:107	5
	Med Cloud Type	108:112	5
	High Cloud Type	113:117	5
	Station Pressure	118:122	5
	Barograph	123:127	5
	Barograph Corr.	128:132	5
2nd Synoptic	time (XXXX)	133:136	4
	precip	137:141	5
	snowfall	142:145	4
	snowdepth	146:148	3
	max temp	149:152	4
	min temp	153:156	4
	Low Cloud Type	157:161	5
	Med Cloud Type	162:166	5
	High Cloud Type	167:171	5
	Station Pressure	172:176	5
	Barograph	177:181	5
	Barograph Corr.	182:186	5
3rd Synoptic	time (XXXX)	187:190	4
	precip	191:195	5
	snowfall	196:199	4
	snowdepth	200:202	3
	max temp	203:206	4
	min temp	207:210	4
	Low Cloud Type	210:215	5
	Med Cloud Type	216:220	5
	High Cloud Type	221:225	5
	Station Pressure	226:230	5
	Barograph	231:235	5
	Barograph Corr.	236:240	5
4th Synoptic	time (XXXX)	241:244	4
	precip	245:249	5
	snowfall	250:253	4
	snowdepth	254:256	3
	max temp	257:260	4
	min temp	261:264	4

Low Cloud Type	265:269	5
Med Cloud Type	270:274	5
High Cloud Type	275:279	5
Station Pressure	280:284	5
Barograph	285:289	5
Barograph Corr.	290:294	5
To Mid Synoptic time (XXXX)	295:298	4
precip	299:303	5
snowfall	304:307	4
snowdepth	308:310	3
max temp	311:314	4
min temp	315:318	4
Low Cloud Type	319:323	5
Med Cloud Type	324:328	5
High Cloud Type	329:333	5
Station Pressure	334:338	5
Barograph	339:343	5
Barograph Corr.	344:348	5
Blank filled	349:372	24

Total Record Length 372

Monthly Record (maem)

Field Description	Decimal	Position	Length
Average MAX temp	1	25:29	5
Dep MAX TEMP	1	30:34	5
Average Min Temp	1	35:39	5
Dep Min Temp	1	40:44	5
Average Temp	1	45:49	5
Dep From Normal	1	50:54	5
Avg Dew Point	1	55:59	5
Avg Wet Bulb	1	60:64	5
Heating Degree Days	0	65:68	4
Cooling Degree Days	0	69:72	4
HDD Monthly DEP	0	73:76	4
CDD Monthly DEP	0	77:80	4
HDD STD	0	81:85	5
CDD STD	0	86:90	5
HDD STD DEP	0	90:94	4
CDD STD DEP	0	95:98	4
Mean station pressure	2	99:103	5
Mean Sea Level pressure	2	104:108	5
Max Sea level pressure	2	109:113	5
Date Max Sea Level pressure	0	114:116	3
+DD indicates previous dates also			
Time Max SLP	0	117:120	4
Min Sea Level pressure	2	121:125	5
Date Min Sea Level pressure	0	126:128	3
+DD indicates previous dates also			
Time Min SLP	0	129:132	4
Total monthly precip	2	133:137	5
DFN Precip.	2	138:142	5
Greatest 24hr precip	2	143:147	5
Date of G24hr	0	148:150	3
+nn indicates previuos occurrence			

:

-nn indicates includes prev day			
12 sets of 10 character short duration elements, each SHDUR is of the form:		151:270	120
ddttttpppp where			
dd = date	0		
tttt = time	0		
pppp = amount	2		
Minutes of Sunshine	0	271:275	5
Total Min. of sunshine	0	276:280	5
% possible sunshine	0	281:283	3
Total snowfall	1	284:287	4
Greatest 24hr snowfall	1	288:291	4
Date of S24hr (same fmt as D24hr)	0	292:294	3
-nn indicates span from previous day			
Greatest daily 12z snow depth	0	295:298	4
Date of GDEP	0	299:301	3
+nn indicates previous occurrence(s)			
Number of days with CLEAR skies		302:303	2
Number of days with partly cldy		304:305	2
Number of days with cloudy skies		306:307	2
Number of days with Max TMP >= 90		308:309	2
Number of days with MAX TMP <= 32		310:311	2
Number of days with Min TMP <= 32		312:313	2
Number of days with Min TMP <= 0		314:315	2
Number of days with PCN >=.01		316:317	2
Number of days with PCN >=.1		318:319	2
Number of days with Snowfall >= 1		320:321	2
Number of days with Thunderstorms		322:323	2
Number of days with Heavy Fog		324:325	2
Max 2 Min Wind Speed	0	326:328	3
Max 2 Min Wind Dir	0	329:331	3
Date 2 min Wind	0	332:334	3
Max Peak Wind Speed	0	335:337	3
Max Peak Wind Dir	0	338:340	3
Date Peak Wind	0	341:343	3
Water Equivlent	1	344:347	4
Resultant Wind Speed	1	348:352	5
Resultant Wind Dir	0	353:355	3
Average Wind Speed	1	356:360	5
Average HDD	0	361:365	5
Average CDD	0	366:370	5
blank filled		371:372	2

Total Record Length 372

Weather Duration Record (maewx)

NOELM	Number of weather entries	25:26	2
WXTYPE	Weather Type	27:35	9
BEGTIME	Beginning time of the weather	36:39	4
ENDTIME	Ending time of the weather	40:43	4
blank filled		282:372	91

Total Record Length 372**

** Weather type, beginning and ending time fields can be repeated as many as 15 times per record. The number of weather instances is indicated by the Number of Elements field. Additional records may also be generated as needed. Maximum Record length = 372 = 15 wx elements * 17 characters + 24 characters for record header + 91 blanks to fill record.

3. **Start Date**: 19960701

4. **Stop Date**: Ongoing.

5. **Coverage**: Global.

   a. Southernmost Latitude: 90S
   b. Northernmost Latitude: 90N
   c. Westernmost Longitude: 180W
   d. Easternmost Longitude: 180E

6. **How to Order Data**:

   Ask NCDC's Climate Services about the cost of obtaining this data set.
   Phone: 828-271-4800
   FAX: 828-271-4876
   E-mail: **NCDC.Orders@noaa.gov**

7. **Archiving Data Center**:

   National Climatic Data Center
   Federal Building
   151 Patton Avenue
   Asheville, NC 28801-5001
   Phone: (828) 271-4800.

8. **Technical Contact**:

   National Climatic Data Center
   Federal Building
   151 Patton Avenue
   Asheville, NC 28801-5001
   Phone: (828) 271-4800.

9. **Known Uncorrected Problems**: No information provided with original documentation.

10. **Quality Statement**: No information provided with original documentation.

11. **Essential Companion Datasets**: None.

12. **References**: No information provided with original documentation. Additional information can be obtained from the Federal Meteorological Handbook No. 1