Coded Cities Forecast Product Specifications Document (Product Category CCF)

1. General Specifications

1.1 Content. The CCF will contain the following elements as shown in Table 1. Specific details on each element are described in the sections following the table.

Element	Definition
LLL	Location Identifier
F_i,where i= 1, 2, etc.	One-Word Daytime Forecast
T_{max}	Maximum Temperature
T_{min}	Minimum Temperature
NN	Forecaster Number
P_i,where i= 1, 2, etc.	Probability of Precipitation

Table 1: CCF Elements and Definition

1.2 Location Identifier. LLL is a 3-character identifier for U.S. cities, airports, etc., and will be specifically listed in either the NWS or DOT/FAA Location Identifiers Handbooks.

1.3 One-Word Daytime Forecasts. F_1, F_2, F_3, etc., are single letters which represent one-word daytime forecasts for the predominant weather expected during daylight hours. The list below gives the corresponding letters and weather elements.

U	SUNNY	L	DRZL (drizzle)
V	CLEAR	R	RAIN
A	FAIR	O	RNSNOW (mixed precipitation)
B	PTCLDY (partly cloudy)	S	SNOW
E	MOCLDY (mostly cloudy)	J	SNOSHWR (snow showers)
C	CLOUDY	M	FLRRYS (snow flurries)
G	VRYHOT (very hot or hot/humid)	P	BLZZRD (blizzard)
I	VRYCLD (very cold/wind chill)	Q	BLGSNO (blowing snow)
F	FOGGY	W	SHWRS (showers)
H	HAZE	T	TSTRMS (thunderstorms)
K	SMOKE	X	SLEET
D	DUST	Y	FZRAIN (freezing rain)
N	WINDY	Z	FZDRZL (freezing drizzle)

The break-out of the one-word forecasts depends on the issuance time:

Issuance Time (UTC)	Sequence	Represents Forecast For
07-10	$F_1F_2F_{3,\ etc}$	Today, Day 2, Day 3, etc.
19-22	$F_1F_2F_{3,\ etc}$	Tomorrow, Day 2, Day 3, etc.

Table 2: CCF phrasing and Issuance Time.

1.3.1 Priority ranking for forecast code. The single word forecast code is then determined by the first occurrence in the priority table given in Figure 1.

Forecast	**Code**
Blizzard	P
Thunderstorms	T
Rain/Snow	O
Snow	S
Freezing Rain	Y
Sleet	X
Very Hot	G
Very Cold	I
Rain	R
Snow Showers	J
Showers	W
Freezing Drizzle	Z
Blowing Snow	Q
Windy	N
Drizzle	L
Flurries	M
Foggy	F
Dust	D
Haze	H
Smoke	K
Sky Code	C, E, B, U

Figure 1: CCF One-Word Forecast Code Priority

1.4 Temperature Forecasts. Maximum and minimum temperatures in degrees Fahrenheit are included for each forecast period. The maximum and minimum forecast periods are defined as 7:00 a.m. to 7:00 p.m. and 7:00 p.m. to 8:00 a.m. local standard time respectively. The temperatures are encoded with three digits. For example, 52 degrees is encoded 052, 112 degrees is encoded 112, 7 degrees is encoded 007, and zero degrees is encoded 000. Temperatures below zero are preceded by the digit "9." For example, -15 degrees is encoded 915, -5 degrees is encoded 905. In the Alaska Region, daytime is defined as 0500-2000

Local Standard Time, and overnight is defined as 1700-1100 Local Standard Time. This accounts for extended/decreased hours of daylight in the region.

1.5 Forecaster Number. Two digits, represented by NN, in digits 01 through 99.

1.6 Probability of Precipitation (POP). A single code represents each 12-hour period of the CCF.

Issuance Time (UTC)	Sequence	Forecast Periods (UTC)
07-10	$P_1P_2P_3P_{4,\ etc}$	Today (12-00), Tonight (00-12), Day 2 (12-00), Day 2 night (00-12), etc.
19-22	$P_1P_2P_3P_{4,\ etc}$	Tonight (00-12), Tomorrow (12-00), Tomorrow night (00-12), Day 2 (12-00), etc.

Table 3: Probability of Precipitation Issuance and Forecast Periods.

The POP Codes and their values are as follows:			
Code	**POP Value (%)**	**Code**	**POP Value (%)**
0	Near Zero	6	60
-	5	7	70
1	10	8	80
2	20	9	90
3	30	+	Near 100
4	40	/	Missing
5	50		

Table 4: POP Codes and Associated Values.

For formatter purposes, if the probability forecast is 50 percent or greater, the corresponding one-word forecast should normally be for a precipitation event. However, if there is a high POP that applies very early in the day, then a non-precipitation forecast would likely be the dominant forecast.

1.7 Snowfall Amount (optional). An optional entry indicating forecast snow amounts may be included.

Issuance Time (UTC)	Snowfall Range (in inches)	Forecast Periods (UTC)

07-10	*aaaa/bbbb/cccc*	Today (12-00), Tonight (00-12), Day 2 (12-00)
19-22	*aaaa/bbbb/cccc*	Tonight (00-12), Tomorrow (12-00), Tomorrow Night (00-12)

Table 5: Snowfall Issuance Times and Forecast Periods.

2. Forecast Database Sampling

Data used to construct the CCF are sampled using a variety of statistical techniques on several gridded elements.

2.1 Maximum and Minimum Temperatures. Maximum and minimum temperature values are determined by sampling the MaxT and MinT grids for each of the 14 day/night periods.

- MaxT and MinT are sampled using the average technique
  - Normally, single point edit areas will be used and the average technique will simply report the sole value for the edit area.

2.2 Probability of Precipitation. PoP values are determined by sampling the floating PoP grids over 12-hour periods beginning at 12 UTC for daytime periods and 00 UTC for nighttime periods.

- Floating PoP grids are sampled using the maximum method
  - The highest PoP value in the corresponding 12-hour period will be reported.

2.3 Daytime Forecast Code. The single character forecast code for each daytime period is determined by sampling the following five elements from 6 am to 6 pm each day:

- Maximum Temperature (MaxT) using the average technique
  - Used to determine if “Very Hot” (code G) or “Very Cold” (code I) should be returned in the absence of higher priority sensible weather
- Weather (Wx) using the dominant weather method
  - Used to determine which weather types are present through the sampling period
- Probability of Precipitation (PoP) using the standard deviation maximum average technique (which will be the same as the maximum for a single grid point.)
  - PoP greater than or equal to 50% permits a measurable precipitation type weather code to be returned
- Sky Cover (Sky) using the average technique
  - Used to determine which cloud type code should be reported in the absence of higher priority sensible weather
- Wind using the vector average technique
  - Used to determine if “Windy” (code N) should be returned in the absence of higher priority sensible weather

2.4 Snow Amount. An optional snow amount range group may be included for each of the first three periods.

- Floating SnowAmt grids are sampled using the minimum, maximum, sum technique- where sum reports a time-weighted average across the 12-hour period.
    - If minimum and maximum values are not equal, (i.e., an edit area larger than one point is being sampled) then the range is constructed from the min and max values. For example, if the min is 1 inch and the max is 2 inches, the reporting group for the period will be "0102".
    - If one point is being used for sampling (as is normally the case), a range will be constructed from the average value using the table in Figure 2.
- When the snow option is exercised, the first three periods must be reported using four-digit groups, e.g. "0102/0204/0000".

Sampled Average	**Reported Range**
< 0.2 inches	0000
0.2 to 0.9	0001
1.0 to 1.9	0102
2.0 to 2.9	0103
3.0 to 3.9	0204
4.0 to 4.9	0305
5.0 to 5.9	0406
6.0 to 6.9	0408
7.0 to 9.9	0610
10+ inches	Nearest 5 inch range

Figure 2: CCF Snow Ranges