



## MRCC EXPERT WITNESS TESTIMONY POLICY

### **For legal disputes within Indiana:**

The MRCC is a cooperative program with Purdue University and National Centers for Environmental Information (NCEI). MRCC employees can only appear as friends of the court, typically to verify the authenticity of climate data records. This type of appearance is rarely necessary since the MRCC provides certification verifying the authenticity of MRCC records. Properly certified records from the MRCC can usually be entered into evidence without additional testimony. If a dispute arises over the authenticity of certified climate data records obtained from the MRCC, the parties are encouraged to request certified records from the National Centers for Environmental Information (NCEI). NCEI is the federal government resource for certified climate data and the de facto source for climate information used in litigation. The MRCC is not a meteorological consulting firm and does not provide expert witness testimony in Illinois. Parties requiring an expert witness are encouraged to contact a private consulting firm. The American Meteorological Society maintains a list of certified consulting meteorologists in the private sector.

### **For legal disputes outside Indiana:**

Certified climate data obtained from the MRCC can usually be entered into evidence without additional testimony. If a dispute arises regarding the authenticity of MRCC certified records, the parties are encouraged to obtain certified records from the National Centers for Environmental Information (NCEI). NCEI is the federal government resource for certified climate data and is considered the de facto standard for climate information used in litigation. The MRCC will not appear in court outside of Illinois to verify the authenticity of certified records. The MRCC is not a consulting firm and does not provide in expert witness testimony. Parties requiring an expert witness are encouraged to contact a private consulting firm. The American Meteorological Society maintains a list of certified consulting meteorologists in the private sector.

All summons, subpoenas and requests for testimony issued to the MRCC will be immediately directed to the Purdue University of University Counsel.

### **Resources**

MRCC Certification Policy

[http://mrcc.purdue.edu/data\\_serv/customcertification](http://mrcc.purdue.edu/data_serv/customcertification)

NCEI Certification

<https://www.ncei.noaa.gov/certification>

AMS Directory of Certified Consulting Meteorologists

<https://wcdirectory.ametsoc.org/certified-consulting-meteorologists>

Rev. 10-03-2022

# QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

## \*\*NOTICE OF CHANGE:

Effective January, 2005, flags will be available for most data elements.

If data are suspect:

S will appended to the value on the web form

S will be placed in a column following the suspect value in the ASCII form

If data are flagged as erroneous, it will not be printed.

Effective July 28, 2000, observations contained in the Preliminary Local Climatological Data Hourly Observations table are reported in whole degrees Fahrenheit. The dry bulb, dew point and wet bulb temperatures were originally reported to the nearest tenth of a degree Fahrenheit. The Automated Surface Observing System (ASOS) records temperatures and dew points in whole degrees Fahrenheit and converts these values to the nearest tenth of a degree Celsius for observation transmission. Until this date, these values online have incorrectly been converted back to the nearest tenth of a degree Fahrenheit, implying a level of precision that is not present at the instrument level. We apologize for any inconvenience this may cause.

The Automated Weather Observing System (AWOS) generally records temperatures and dew points in whole degrees Fahrenheit and converts these values to the nearest whole degree Celsius for observation transmission. Also, AWOS stations will often have less data (i.e., fewer weather elements) than ASOS stations.

NCDC forms contain:

whole degree Celsius temperature values for AWOS stations

tenths degrees Celsius temperature values for ASOS stations

## WATER EQUIVALENT IN INCHES

T = TRACE PRECIPITATION AMOUNT

M = MISSING DATA

\*\* THE SUM OF THE HOURLY TOTALS IS GIVEN WHEN IT DIFFERS FROM THE DAILY TOTAL. NWS DOES NOT EDIT ASOS HOURLY VALUES BUT MAY EDIT DAILY AND MONTHLY TOTALS. HOURLY, DAILY, AND MONTHLY TOTALS ARE PRINTED AS REPORTED BY THE ASOS SITE.

HOURLY PRECIPITATION DATA ARE NOT NORMALLY AVAILABLE FOR AWOS SITES.

\*\* NCDC DERIVES THE MONTHLY SHORT DURATION PRECIPITATION FROM 1 MINUTE ASOS DATA. THE MONTHLY SHORT DURATION PRECIPITATION DATA ARE NOT PRINTED WHEN INCONSISTENT WITH ASOS HOURLY TOTALS.

## NUMERICAL CODES LISTING FOR HOURLY OBSERVATIONS

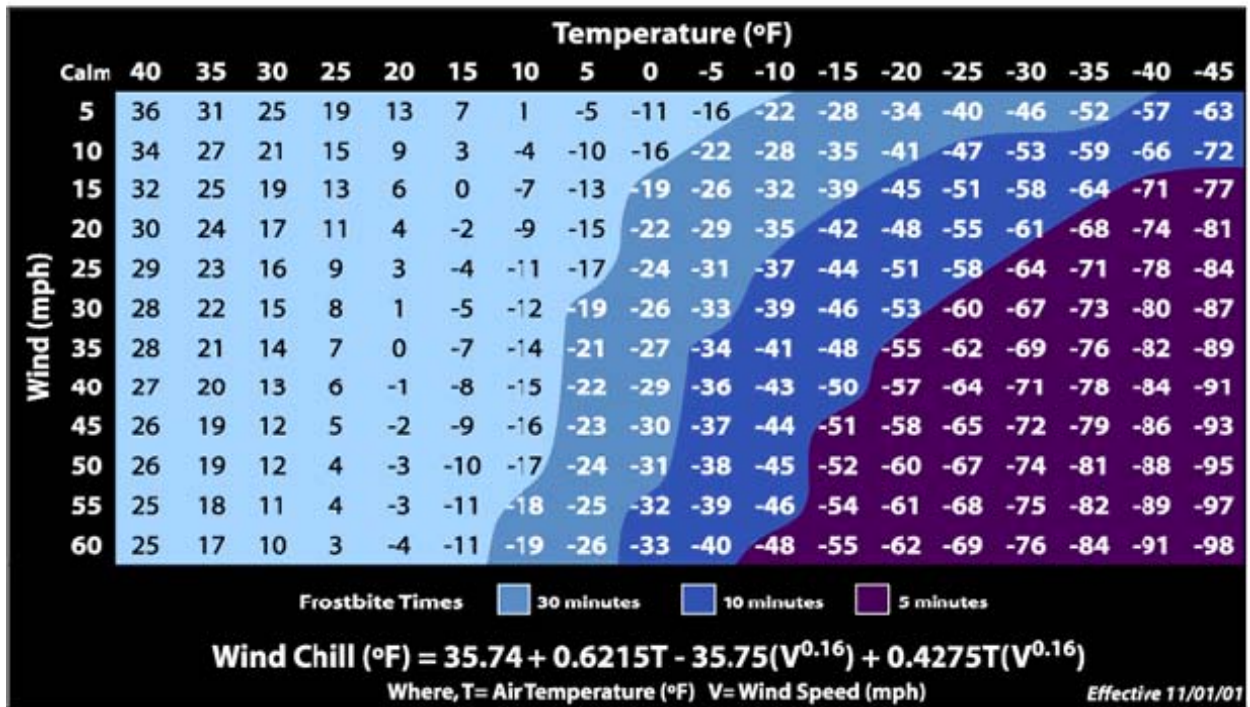
COLUMN	TERMINOLOGY
1	DATE
2	TIME: TIME IN LST (LOCAL STANDARD TIME)

COLUMN	TERMINOLOGY	
3	STATION TYPE 0 AMOS now AWOS, also USAF stations 1 NWS (obsolete) 4 MAPSO 5 Navy METAR 6 Navy Airways(obsolete) 8 SOD- Keyed from 10C 9 SOD/HPD- Keyed B16, F-6, Navy Forms 11 ASOS (NWS) 12 ASOS (FAA) 15 Climate Reference Network (CRN)	
4	Sky Conditions SKY CONDITIONS BELOW 12,000 FEET AGL (ABOVE GROUND LEVEL) SKY CONDITIONS CONTRACTIONS ARE FOR EACH LAYER IN ASCENDING ORDER. NUMBERS FOLLOWING CONTRACTIONS ARE BASE HEIGHT IN HUNDREDS OF FEET ABOVE GROUND LEVEL (AGL). CLR: CLEAR BELOW 12,000 FT FEW: > 0/8 - 2/8 SKY COVER SCT SCATTERED: 3/8 - 4/8 SKY COVER BKN BROKEN: 5/8 - 7/8 SKY COVER OVC OVERCAST: 8/8 SKY COVER  VVXXX INDICATES INDEFINITE CEILING WITH THE VERTICAL VISIBILITY (XXX) LISTED IN HUNDREDS OF FEET.  WHEN CLOUDS ARE COMPOSED OF TOWERING CUMULUS OR CUMULONIMBUS, TCU OR CB (RESPECTIVELY) FOLLOW CLOUD HEIGHT.  SOME STATIONS REPORT CLOUDS ABOVE 12,000 FEET.	
5	VISIBILITY IN STATUTE MILES (SM)	
6	<b>Weather Type</b> +FC TORNADO/WATERSPOUT FC FUNNEL CLOUD TS THUNDERSTORM GR HAIL RA RAIN DZ DRIZZLE SN SNOW SG SNOW GRAINS GS SMALL HAIL &/OR SNOW PELLETS PL ICE PELLETS IC CRYSTALS FG+ HEAVY FOG (FG & LE.25 MILES VISIBILITY) FG FOG BR MIST UP UNKNOWN PRECIPITATION HZ HAZE FU SMOKE VA VOLCANIC ASH	DU WIDESPREAD DUST DS DUSTSTORM PO SAND/DUST WHIRLS SA SAND SS SANDSTORM PY SPRAY SQ SQUALL DR LOW DRIFTING SH SHOWER FZ FREEZING MI SHALLOW PR PARTIAL BC PATCHES BL BLOWING VC VICINITY - LIGHT + HEAVY "NO SIGN" MODERATE
7	DRY BULB TEMPERATURE (DEGREES F) WHOLE DEGREES	
8	DRY BULB TEMPERATURE (DEGREES C) ASOS IN TENTHS; AWOS IN WHOLE DEGREES	
9	WET BULB TEMPERATURE (DEGREES F) WHOLE DEGREES	

<b>COLUMN</b>	<b>TERMINOLOGY</b>
10	WET BULB TEMPERATURE (DEGREES C) ASOS IN TENTHS; AWOS IN WHOLE DEGREES
11	DEW POINT TEMPERATURE (DEGREES F) WHOLE DEGREES
12	DEW POINT TEMPERATURE (DEGREES C) WHOLE DEGREES
13	RELATIVE HUMIDITY (PERCENT)
14	WIND SPEED (MPH)
15	WIND DIRECTION (TENS OF DEGREES FROM TRUE NORTH) VRB = VARIABLE WITH SPEED EQUAL TO OR LESS THAN 6 KNOTS
16	WIND CHARACTERISTIC GUSTS (MPH)
17	STATION PRESSURE (INCHES IN HUNDREDTHS)
18	PRESSURE TENDENCY
19	NET 3 HOUR CHANGE (MILLIBARS)
20	SEA LEVEL PRESSURE (INCHES IN HUNDREDTHS)
21	REPORT TYPE: AA - METAR (AVIATION ROUTINE WEATHER REPORT) – HOURLY SP - METAR SPECIAL REPORT
22	PRECIPITATION TOTALS (INCHES AND HUNDREDTHS) HOURLY TOTALS IF COLUMN 20IS "AA" (HOURLY METAR REPORT).
23	ALTIMETER (INCHES IN HUNDREDTHS)



# Wind Chill Chart



Source: <http://www.nws.noaa.gov/om/windchill/index.shtml>

TEMPERATURE - HUMIDITY INDEX (STEADMAN, 1979)

	RELATIVE HUMIDITY (PERCENT)										
	0	10	20	30	40	50	60	70	80	90	100
T > 120	107	116	130	148							
E > 115	103	111	120	135	151						
M > 110	99	105	112	123	137	150					
P > 105	95	100	105	113	123	135	149				
E > 100	91	95	99	104	110	120	132	144			
R > 95	87	90	93	96	101	107	114	124	136		
A > 90	83	85	87	90	93	96	100	106	113	122	
T > 85	78	80	82	84	86	88	90	93	97	102	108
U > 80	73	75	77	78	79	81	82	85	86	88	91
R > 75	69	70	72	73	74	75	76	77	78	79	80
E > 70	64	65	66	67	68	69	70	70	71	71	72

U N E D I T E D L O C A L C L I M A T O L O G I C A L D A T A

\*\*NOTICE OF CHANGE:

Effective July 28, 2000, observations contained in the Unedited Local Climatological Data Hourly Observations table are reported in whole degrees Fahrenheit. The dry bulb, dewpoint and wet bulb temperature columns were originally reported to the nearest tenth of a degree Fahrenheit. The Automated Surface Observing System (ASOS) records temperatures and dewpoints in whole degrees Fahrenheit, then converts these values to the nearest tenth of a degree Celcius for observation transmission. Until this date, these values online have incorrectly been converted back to the nearest tenth of a degree Fahrenheit, implying a level of precision that is not present at the instrument level. We apologize for any inconvenience this may cause.

The Automated Weather Observing System (AWOS) generally records temperatures and dewpoints in whole degrees Fahrenheit, then converts these values to the nearest whole degree Celsius for observation transmission. Also, AWOS stations will often have less data (ie, fewer weather elements) than ASOS stations.

NUMERICAL CODES LISTING FOR HOURLY OBSERVATIONS

NUMERICAL COLUMN	TERMINOLOGY
1	DATE
2	TIME IN LST (LOCAL STANDARD TIME)
3	STATION TYPE: A02 = UNATTENDED A02A = ATTENDED (OBSERVER PRESENT)
4	ASOS MAINTENANCE INDICATOR  (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.)
5	SKY CONDITIONS:  SKY CONDITIONS BELOW 12,000 FEET AGL (ABOVE GROUND LEVEL) SKY CONDITIONS CONTRACTIONS ARE FOR EACH LAYER IN ASCENDING ORDER. NUMBERS FOLLOWING CONTRACTIONS ARE BASE HEIGHT IN HUNDREDS OF FEET ABOVE GROUND LEVEL (AGL). CLR: CLEAR BELOW 12,000 FT FEW: > 0/8 - 2/8 SKY COVER SCT SCATTERED: 3/8 - 4/8 SKY COVER BKN BROKEN: 5/8 - 7/8 SKY COVER OVC OVERCAST: 8/8 SKY COVER  VVXXX INDICATES INDEFINITE CEILING WITH THE VERTICAL VISIBILITY (XXX) LISTED IN HUNDREDS OF FEET.  WHEN CLOUDS ARE COMPOSED OF TOWERING CUMULUS OR CUMULONIMBUS, TCU OR CB (RESPECTIVELY) FOLLOW CLOUD HEIGHT.
6	VISIBILITY:  REPORTED IN STATUTE MILES AND FRACTIONS FROM < 1/4 THROUGH 10+

NUMERICAL CODES LISTING FOR HOURLY OBSERVATIONS

NUMERICAL COLUMN	TERMINOLOGY
7	<p>WEATHER PHENOMENA</p> <hr/> <p>+FC TORNADO/WATERSPOUT            FC FUNNEL CLOUD            TS THUNDERSTORM            GR HAIL            RA RAIN            DZ DRIZZLE            SN SNOW            SG SNOW GRAINS            GS SMALL HAIL &amp;/OR SNOW PELLETS            PL ICE PELLETS            IC CRYSTALS            FG+ HEAVY FOG (FG &amp; LE.25 MILES)            FG FOG            BR MIST            UP UNKNOWN PRECIPITATION            HZ HAZE            FU SMOKE            VA VOLCANIC ASH            DU WIDESPREAD DUST            DS DUSTSTORM            PO SAND/DUST WHIRLS            SA SAND            SS SANDSTORM            PY SPRAY            SQ SQUALL</p>
7	<p>DESCRIPTORS AND QUALIFIERS</p> <hr/> <p>DR LOW DRIFTING            SH SHOWER            FZ FREEZING            MI SHALLOW            PR PARTIAL            BC PATCHES            BL BLOWING            VC VICINITY            - LIGHT            + HEAVY            "NO SIGN" MODERATE</p>
8	<p>DRY BULB TEMPERATURE (DEGREES F) WHOLE DEGREES</p>
9	<p>DRY BULB TEMPERATURE (DEGREES C) ASOS IN TENTHS; AWOS IN WHOLE DEGREES</p>
10	<p>WET BULB TEMPERATURE (DEGREES F) WHOLE DEGREES</p>
11	<p>WET BULB TEMPERATURE (DEGREES C) ASOS IN TENTHS; AWOS IN WHOLE DEGREES</p>
12	<p>DEW POINT TEMPERATURE (DEGREES F) WHOLE DEGREES</p>
13	<p>DEW POINT TEMPERATURE (DEGREES C) ASOS IN TENTHS; AWOS IN WHOLE DEGREES</p>
14	<p>RELATIVE HUMIDITY (PERCENT)</p>
15	<p>WIND SPEED (KNOTS)</p>
16	<p>WIND DIRECTION (TENS OF DEGREES FROM TRUE NORTH)</p> <p>VRB = VARIABLE WITH SPEED EQUAL TO OR LESS THAN 6 KNOTS</p>
17	<p>WIND CHARACTERISTIC GUSTS (KTS)</p>
18	<p>VALUE FOR WIND CHARACTER (WHOLE UNITS)</p>

NUMERICAL CODES LISTING FOR HOURLY OBSERVATIONS

19	STATION PRESSURE (INCHES IN HUNDREDTHS)
20	PRESSURE TENDENCY
21	SEA LEVEL PRESSURE  TENTHS OF HECTOPASCALS (MILLIBARS). SHOWN AS LAST 3 DIGITS ONLY WITHOUT DECIMAL POINT (eg.,013 = 1001.3 MB)
22	REPORT TYPE:  AA - METAR (AVIATION ROUTINE WEATHER REPORT) - HOURLY SP - METAR SPECIAL REPORT
23	PRECIPITATION TOTALS (INCHES AND HUNDREDTHS)  1) HOURLY TOTALS IF COLUMN 19 IS "AA" (HOURLY METAR REPORT).  2) CUMULATIVE AMOUNT SINCE THE LAST HOURLY METAR REPORT IF COLUMN 19 IS "SP" (METAR SPECIAL REPORT).