

## AWWT Jobsheet Storm Summaries

This document contains storm summaries of all 6 events used in the AWOC Winter Weather Track jobsheets (IC 5.7 Lake Effect Jobsheet has a storm summary with its Answer Key). This document provides the facilitator with valuable “big picture” information, such as the timing, type, and amounts of precipitation. Several facilitators plan to use these summaries as part of their training to spur discussion after the trainee completes each jobsheet.

Each storm summary is broken up into 3 parts:

1. Winter weather products from the affected WFOs
2. Decoded METARs and precipitation totals from a few sites
3. Official *Storm Data* entries from several affected WFOs.

# 15 March 2004 Event Summary

Used in the jobsheets for IC 5.1, 5.2, 5.3, 7.1

## 1. DMX and FSD Winter Weather Watches, Warnings, and Advisories Time-line

2110 UTC 14 March 2004 Winter Storm Watch by DMX valid all day on the 15th (see Figure 1 for details).

2135 UTC 14 March 2004 Winter Weather Advisory valid 0900 UTC on the 15th through 2000 UTC on the 15th by FSD (see Figure 1 for details).

0336 UTC 15 March 2004 Winter Weather Advisory cancelled by FSD for the following counties in Figure 1 in Iowa and South Dakota: Lincoln, Lyon, O'Brien, Sioux, Turner.

0900 UTC 15 March 2004 Winter Storm Watch cancelled by DMX for the following counties in Figure 1 in Iowa: Boone, Calhoun, Pocahontas, Poweshiek, Sac, Story, Webster

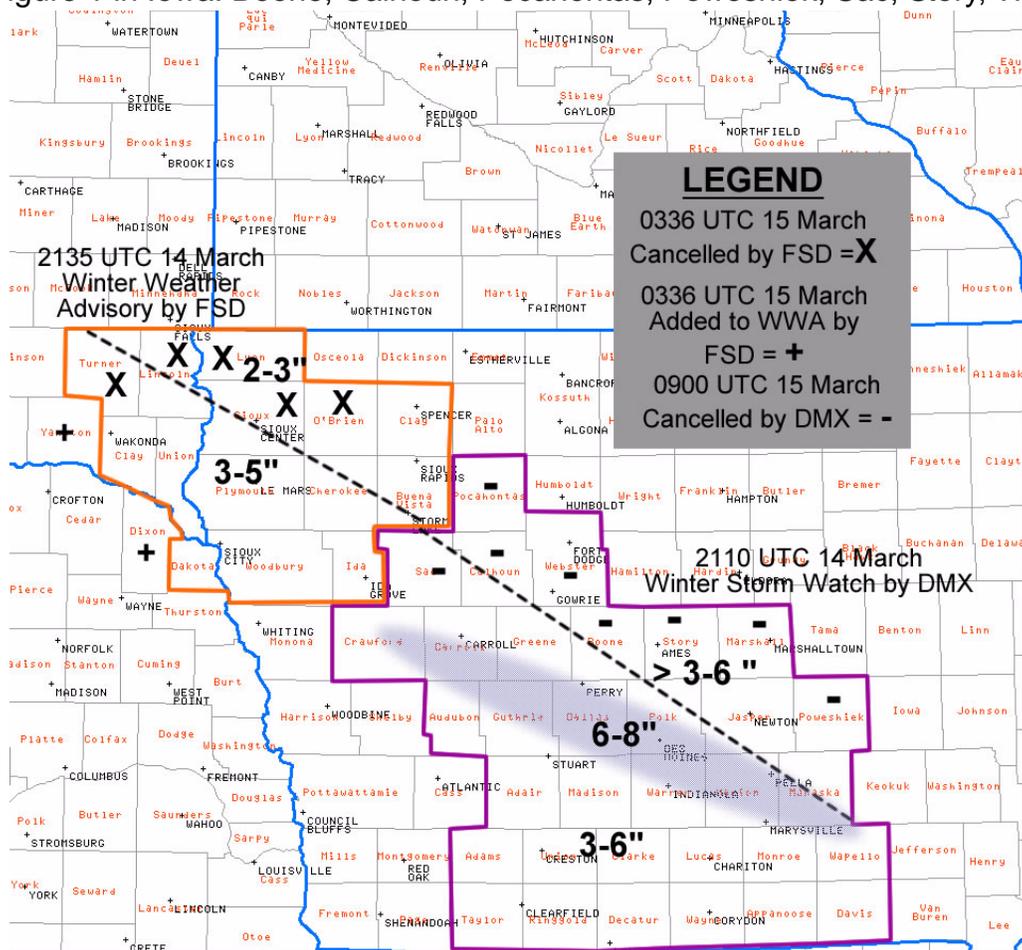


Figure 1: FSD and DMX WW Advisory and Watch, respectively. Magenta hatched is area of highest expected snowfall. Dotted lines separate snowfall totals contained within the original watch/advisory. Refer to legend to see which counties were added or dropped from a product.

## AWOC Winter Weather Track FY06

0900 UTC 15 March 2004 Winter Storm Warning by DMX valid 0900 UTC on the 15th through 0600 UTC on the 16th, also Winter Weather Advisory valid 0900 UTC on the 15th through 0600 UTC on the 16th (see Figure 2 for details).

0955 UTC 15 March 2004 Winter Weather Advisory by FSD valid 0955 UTC on the 15th through 1900 UTC on the 15th (same as updated WWA in Figure 1).

1238 UTC 15 March 2004 Winter Storm Warning by FSD valid 1238 UTC on the 15th through 1900 UTC on the 15th, which replaces the WWA from 0955 UTC for the following counties: SD: Bon Homme, Clay, Yankton; NE: Dakota, Dixon; IA: Union, Woodbury, (see Figure 2 for details).

1328 UTC 15 March 2004 Winter Storm Warning by DMX valid 1328 UTC on the 15th through 0600 UTC on the 16th for Carroll, Crawford, and Guthrie Counties in Iowa. Also updated the amounts and expected locations of heaviest snowfall for all products issued (see Figure 3 for details).

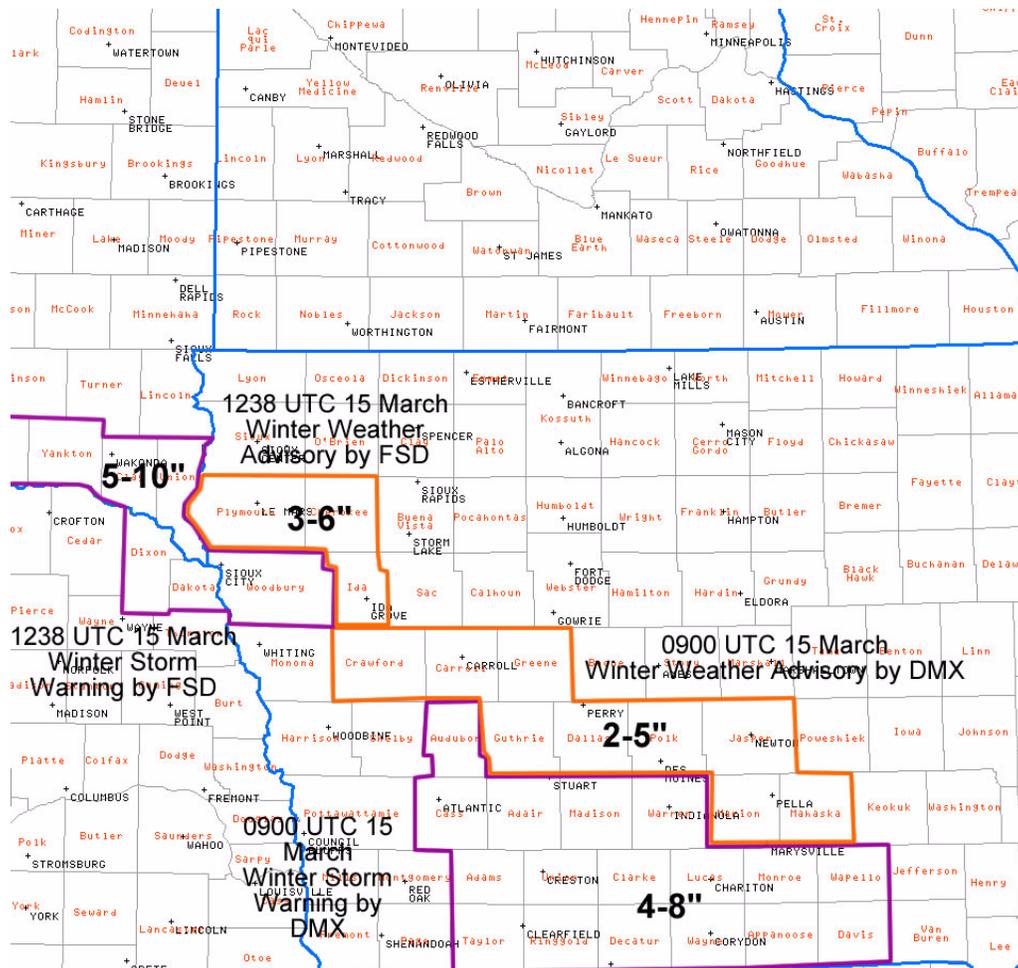


Figure 2: FSD and DMX WW Advisories and Warnings. Expected snowfall amounts are contained within the proper polygons.

## AWOC Winter Weather Track FY06

1453 UTC 15 March 2004 Winter Storm Warning by FSD valid 1453 UTC on 15th through 2200 UTC on the 15th, and another valid 1453 UTC on 15th through 1900 UTC on the 15th (see Figure 3 for details)

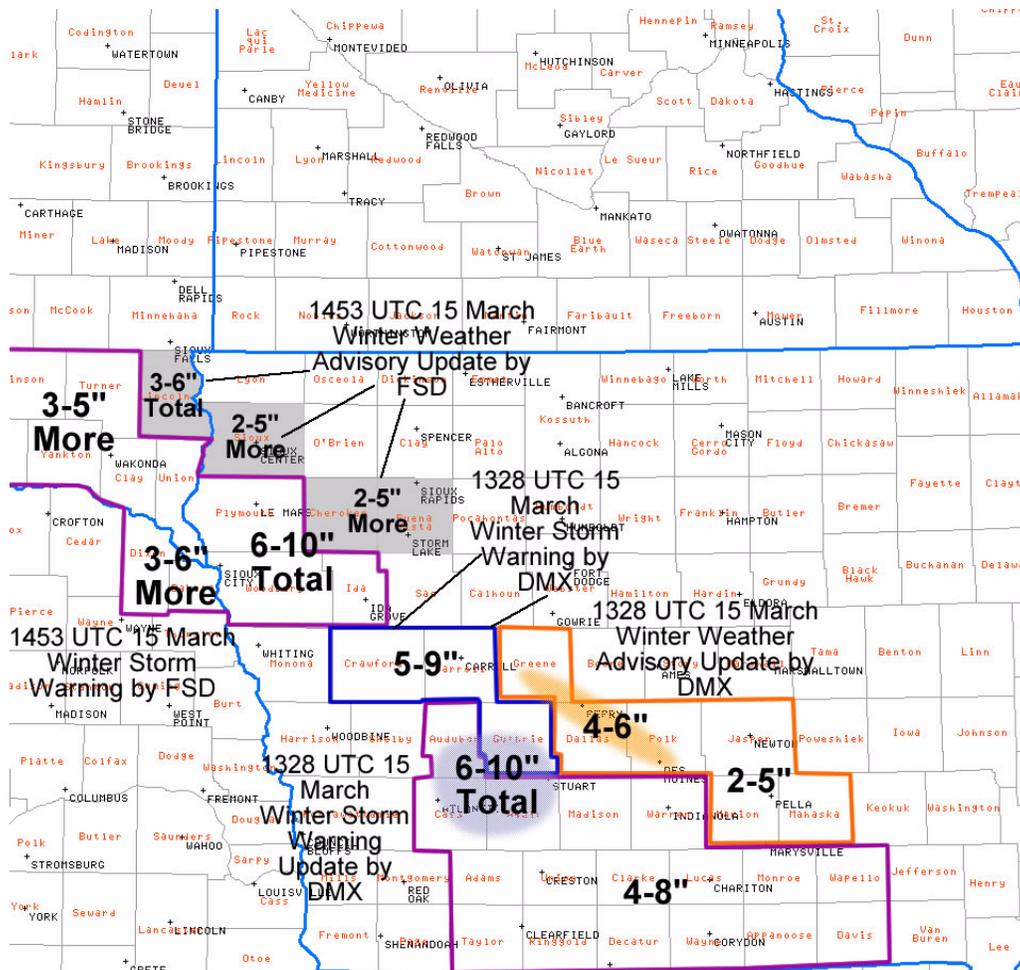


Figure 3: FSD and DMX WW Updated Advisories and Warnings. Expected snowfall amounts are contained within the proper polygons. Magenta (orange) hatched is highest expected totals in the DMX Warning (Advisory).

## 2. Decoded METARS and Precipitation Totals

A storm total snowfall accumulation map across the state of Iowa is provided in Figure 4.

# AWOC Winter Weather Track FY06

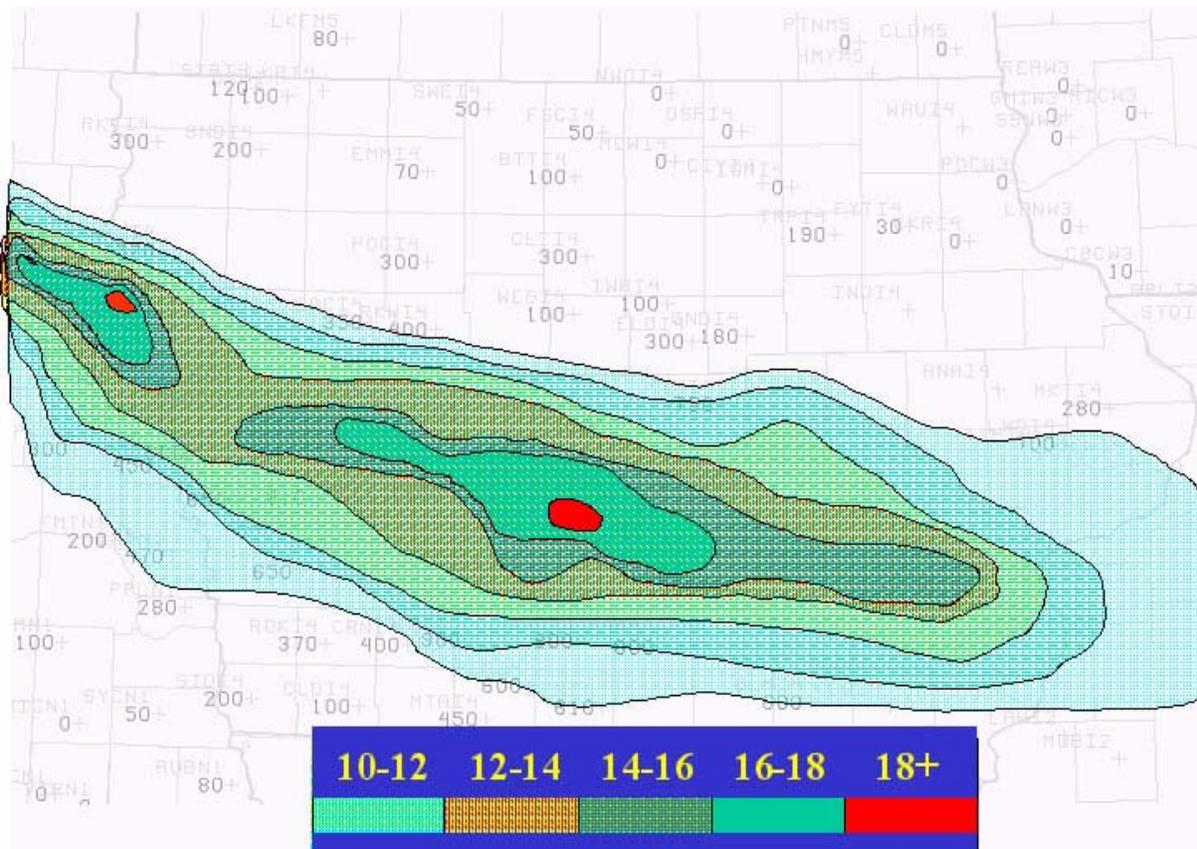


Figure 4: Snowfall totals (color contours) in inches across the state of Iowa. Image courtesy of the DMX WFO. Individual gray numbers are snow totals in 100 x inch.

**AWOC Winter Weather Track FY06**

**Table 1: Des Moines, IA Decoded METARS**

Date	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
15-Mar	954	35	25	66	90	6		24	244	10	95	OVC	
15-Mar	1054	35	25	66	90	6		24	247	10	70	OVC	
15-Mar	1154	34	24	67	90	8		23	244	10	35	OVC	
15-Mar	1254	32	27	82	90	11	16	23	244	1.5	17	OVC	S-
15-Mar	1354	30	30	100	80	11		22	242	0.5	4	OVC	S
15-Mar	1454	30	30	100	80	8		24	249	0.2	5	OVC	S
15-Mar	1554	30	30	100	90	7		24	249	0.5	5	OVC	S
15-Mar	1654	30	30	100	90	9		22	242	0.2	5	OVC	S+
15-Mar	1754	30	30	100	80	11		21	237	0.5	6	OVC	S
15-Mar	1854	30	30	100	90	11		19	232	0.5	6	OVC	S
15-Mar	1954	30	30	100	80	17	22	15	219	0.5	8	OVC	S
15-Mar	2054	30	30	100	70	14	23	13	211	0.5	8	OVC	S-
15-Mar	2154	30	30	100	70	16		12	210	0.5	7	OVC	S
15-Mar	2254	30	30	100	70	13		12	208	0.2	6	OVC	S
15-Mar	2354	30	30	100	70	12		13	211	0.5	5	OVC	S-
16-Mar	54	30	30	100	60	13		13	213	0.8	5	OVC	S-
16-Mar	154	29	29	100	50	13		12	211	0.5	4	OVC	S
16-Mar	254	29	29	100	50	12		12	211	1	9	OVC	S-
16-Mar	354	29	29	100	50	12		12	210	0.8	5	OVC	S-
16-Mar	454	29	28	96	40	13		11	208	2	9	OVC	S-
16-Mar	554	28	28	100	40	11		11	207	1.5	12	OVC	S-
16-Mar	654	28	28	100	30	10		10	204	1.2	10	OVC	S-
16-Mar	754	28	28	100	30	10		10	203	1.5	11	OVC	S-
16-Mar	854	28	27	96	30	11		8	198	3	9	OVC	S-
16-Mar	954	27	27	100	40	10		8	197	7	11	OVC	S-
16-Mar	1054	27	26	96	20	8		9	202	7	9	OVC	
16-Mar	1154	27	25	92	30	7		11	206	8	24	OVC	

Des Moines, IA received a storm total of 17.4 inches of snow with a liquid equivalent of 0.92 inches. Table 1 contains the decoded METARS:

AWOC Winter Weather Track FY06

Table 2: Omaha, NE Decoded METARS

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX	
15-Mar	652	41	20	42	130	10		22	238	10	50	OVC		
15-Mar	752	38	31	76	140	11		22	238	10	23	OVC	R-	
15-Mar	852	36	32	85	80	17		16	218	10	45	OVC		
15-Mar	952	36	32	85	80	15	20	14	211	10	37	OVC	R-	
15-Mar	1052	36	32	85	110	13		13	208	10	50	OVC		
15-Mar	1152	34	32	92	100	15		10	198	5	10	OVC	S-	42
15-Mar	1252	33	32	96	100	15	18	11	201	1	8	OVC	S-	
15-Mar	1352	33	32	96	100	15		10	199	0.8	6	OVC	S-	
15-Mar	1452	33	32	96	90	17	23	11	204	0.8	8	OVC	S-	
15-Mar	1552	32	31	96	90	18	25	9	198	0.2	3	OVC	S+	
15-Mar	1652	32	31	96	90	17	28	7	191	1	11	OVC	S-	
15-Mar	1752	32	30	92	90	19	26	7	191	0.8	11	OVC	S-	34
15-Mar	1852	32	30	92	80	15	20	7	191	0.8	11	OVC	S-	
15-Mar	1952	32	30	92	80	12		6	188	0.5	10	OVC	S	
15-Mar	2052	32	30	92	70	9		7	191	0.5	7	OVC	S	
15-Mar	2152	32	30	92	60	9		9	196	1	11	OVC	S-	
15-Mar	2252	31	29	92	50	11		10	202	1	13	OVC	S-	
15-Mar	2352	31	28	89	40	9		12	208	2.5	12	OVC	S-	32
16-Mar	52	30	28	92	20	12		14	216	1.5	12	OVC	S-	
16-Mar	152	30	28	92	360	10		16	222	2	12	OVC	S-	
16-Mar	252	30	28	92	10	10		18	228	3	26	OVC	S-	
16-Mar	352	29	28	96	10	10		18	230	4	36	OVC	S-	
16-Mar	452	30	28	92	10	8		18	230	8	14	OVC		

Omaha, NE received rain that changed over to snow early on the 15th. Total precip from the event was 0.55 inch liquid equivalent and they recorded 2.6 inches snowfall. Table 2 contains the decoded METARs.

**AWOC Winter Weather Track FY06**

**Table 3: Sioux Falls, SD Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
15-Mar	556	30	24	78	80	4		18	233	10		CLR	
15-Mar	656	31	25	78	80	9		18	234	10	90	OVC	
15-Mar	756	31	25	78	70	10		18	235	10	55	OVC	
15-Mar	856	31	25	78	80	9		18	233	10	48	OVC	
15-Mar	956	30	24	78	90	9		18	236	5	22	OVC	S-
15-Mar	1056	29	26	89	80	10		18	234	2.5	20	OVC	S-
15-Mar	1156	28	25	88	90	10		18	236	2	18	OVC	S-
15-Mar	1256	28	26	92	80	12		18	237	0.8	7	X	S-
15-Mar	1356	28	26	92	70	12		18	240	0.5	12	OVC	S-
15-Mar	1456	28	26	92	70	12		19	241	0.5	8	OVC	S
15-Mar	1556	29	26	89	70	12		20	245	0.5	6	OVC	S
15-Mar	1656	29	27	92	70	10		22	252	0.5	5	OVC	S
15-Mar	1756	29	27	92	70	12		21	250	0.5	5	X	S
15-Mar	1856	30	27	88	60	11		21	247	1.5	13	OVC	S-
15-Mar	1956	31	27	85	80	11		19	243	1.5	14	OVC	S-
15-Mar	2056	31	27	85	60	10		20	243	1.2	14	OVC	S-
15-Mar	2156	30	27	88	50	10		21	248	1.5	14	OVC	S-
15-Mar	2256	30	27	88	50	11		21	248	0.8	14	OVC	S-
15-Mar	2356	29	27	92	40	8		21	249	1	34	OVC	S-
16-Mar	56	26	24	92	20	6		21	252	6	50	OVC	H
16-Mar	156	28	25	88	70	6		20	247	8	50	OVC	
16-Mar	256	27	25	92	30	3		20	246	6	50	OVC	H
16-Mar	356	28	26	92	90	4		20	245	6	55	OVC	H
16-Mar	456	28	26	92	100	4		18	240	4	11	OVC	S-
16-Mar	556	27	25	92	110	7		16	232	7	11	OVC	

Sioux Falls, SD received all snow from the 15th through early on the 16th, a storm total of 5.1 inches and a liquid equivalent of 0.41 inch. Table 3 contains the decoded METARs.

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**Table 4: Sioux City, IA Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
15-Mar	552	35	23	61	130	5		23	244	10	90	OVC	
15-Mar	652	35	24	64	130	6		21	238	10	65	OVC	
15-Mar	752	36	24	62	100	8		20	235	10	34	OVC	
15-Mar	852	32	30	92	120	10		22	242	1	7	OVC	S-
15-Mar	952	31	31	100	90	10		19	231	1	2	OVC	S
15-Mar	1052	31	31	100	80	14		17	225	1	9	OVC	S
15-Mar	1152	31	30	96	80	15		16	224	1	9	OVC	S
15-Mar	1252	30	30	100	90	15		16	222	1	2	OVC	S-
15-Mar	1352	29	29	100	90	14		16	223	0	2	OVC	S+
15-Mar	1452	29	28	96	90	15		17	227	0	9	OVC	S+
15-Mar	1552	29	28	96	80	13		16	226	0	7	OVC	S+
15-Mar	1652	30	28	92	90	18		17	227	1	8	OVC	S
15-Mar	1752	30	28	92	80	13		16	224	1	9	OVC	S-
15-Mar	1852	30	28	92	80	14		18	231	1	7	OVC	S
15-Mar	1952	30	28	92	60	13		17	229	1	9	OVC	S-
15-Mar	2052	31	28	89	50	8		19	235	1	14	OVC	S-
15-Mar	2152	31	28	89	30	12		20	241	1	16	OVC	S
15-Mar	2252	31	29	92	30	6		21	243	1	5	X	S-
15-Mar	2352	31	29	92	30	8		22	246	1	13	OVC	S-
16-Mar	52	30	28	92	40	8		22	248	2	14	OVC	S-
16-Mar	152	30	28	92	40	7		23	251	3	60	OVC	S-
16-Mar	252	29	27	92	30	6		23	252	6	75	OVC	S-
16-Mar	352	29	27	92	40	6		23	252	5	75	OVC	S-
16-Mar	452	29	27	92	20	5		23	249	7	26	OVC	
16-Mar	552	29	26	89	60	7		21	244	10	26	OVC	

Sioux City, IA received 19.1 inches of total snowfall and a liquid equivalent of 1.72 inches. Table 4 contains the decoded METARs.

**Table 5: Waterloo, IA Decoded METARS**

ID	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
15-Mar	1754	32	23	69	100	14		27	259	8	110	BKN	
15-Mar	1854	31	25	78	100	12		25	253	7	13	OVC	
15-Mar	1954	30	27	88	80	10		24	252	1	9	OVC	S-
15-Mar	2054	30	27	88	80	10		24	252	0.5	7	OVC	S
15-Mar	2154	29	26	89	80	13		22	245	0.5	7	X	S-
15-Mar	2254	28	27	96	80	10		21	243	0.5	8	OVC	S
15-Mar	2354	28	27	96	80	10		21	243	0.5	18	OVC	S-
16-Mar	54	28	26	92	70	14		21	242	1	17	X	S-
16-Mar	154	28	27	96	60	12		21	240	1.5	36	OVC	S-
16-Mar	254	28	26	92	60	13		19	236	1.5	42	OVC	S-
16-Mar	354	28	25	88	60	12		18	231	1.8	24	OVC	S-
16-Mar	454	28	26	92	60	11		17	227	2.5	44	OVC	S-
16-Mar	554	28	26	92	40	8		15	221	2	42	OVC	S-
16-Mar	654	28	25	88	50	8		14	216	2	41	OVC	S-
16-Mar	754	27	24	89	60	9		13	214	7	60	OVC	
16-Mar	854	27	24	89	60	8		12	209	3	32	OVC	S-
16-Mar	954	25	23	92	30	5		10	205	3	36	OVC	S-
16-Mar	1054	25	22	88	40	7		9	202	9	36	OVC	
16-Mar	1254	26	22	84	30	5		11	209	10	30	OVC	

Waterloo, IA received all snow, 3 inches total and a water equivalent of 0.11 inch.

**3. Storm Data Entries:**

**DMX: March 15 13 UTC - March 16 08 UTC**

**Iowa Counties:** Crawford - Carroll - Greene - Boone - Story - Marshall - Tama - Audubon - Guthrie - Dallas - Polk - Jasper - Poweshiek - Cass - Adair - Madison - Warren - Marion - Mahaska - Adams - Union - Clarke - Lucas - Monroe - Wapello - Taylor - Ringgold - Decatur - Wayne - Appanoose - Davis

A late winter storm moved into Iowa, leaving behind it one of the heaviest snowfalls on record in some areas, and a record March snowfall in several locations. The storm system was not what one would typically expect in that the low took a southeast track from the Rockies, southeast into Kansas, then east into Missouri. The overall flow pattern over the central U.S. as northwest, however a closed low in the mid levels formed and passed over Iowa. The surface features were not all that impressive. Considerable dynamics were found in the mid level of the atmosphere. Analysis showed a large area of isentropic lift with upward vertical velocities in the 10 to 15 microbars/sec in the dendritic layer. Low and mid level winds of 55 kts drew copious moisture north into Iowa. Snow developed during the predawn hours of the 15th and became heavy before sunrise. Heavy snow criteria was reached by 0700 CST in west central Iowa. The heavy snow spread east and reached central parts of central Iowa by the morning rush hour, and the southeast sections of the Des Moines CWA by late afternoon. The heaviest snow fell in a band about 30 miles wide extending from just south of Denison, through Des Moines, to between Oskaloosa and Ottumwa. In this band snowfall was in the 12 to 18 inch range. Some of the heavier totals included 18.1 inches in Windsor Heights, 16.3 inches in Car-

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roll, 16.2 inches at the WFO in Johnston, and 16 inches at Knoxville in Marion County, and Perry in Dallas County. The official calendar day snowfall in Des Moines, measured at the WFO in Johnston, for the 15th was 15.6 inches. That total will stand as the record for the greatest calendar day snowfall for the month of March and the third highest calendar day snowfall on record for the city. The all-time record snowfall for Des Moines is 19.8 inches, set on 01 January, 1942, with 26 December 1898 coming in second with 17 inches. In spite of the heavy snowfall, travel problems were limited. Most of the cities were able to keep streets cleared of snow as soil temperatures were in the upper 30s to low 40s at the onset of the snow. Rural areas had some problems with drifting. Though it was not all that windy during the storm, east to northeast winds of 15 to 20 MPH did cause some drifting. Several event cancellations occurred on the evening of the 15th. A few schools in the harder hit area remained closed or started classes late on the morning of the 16th.

### **FSD: March 15 08 UTC - March 16 01 UTC**

**South Dakota Counties:** Gregory - Brule - Aurora - Charles Mix - Douglas - Hutchinson - Turner - Bon Homme - Yankton - Clay -

Union

Heavy snow produced accumulations of 6 to 17 inches. The 17 inch report was from Dakota Dunes in the extreme southeast corner of the state. Numerous other reports of 10 inches or more were received over the area along and just north of the Missouri River including Platte...Armour...Avon...Tyndall...Yankton... Vermillion...and other locations. numerous schools and several businesses were closed for the day. Travel was brought to a standstill for a while in some areas.

**South Dakota Counties:** Davison - Hanson - Mccook - Minnehaha - Lincoln

3 to 6 inches of snow fell, causing travel difficulties. A few vehicles slid into ditches in the Mitchell area.

**Iowa Counties:** Plymouth - Woodbury - Ida

Heavy snow produced accumulations of 6 to 18 inches...with the 18 inches reported throughout the Sioux City area. Schools and several businesses were closed for the day. Travel was brought to a standstill for a while...especially in the Sioux City area.

### **OAX: March 15 09 UTC - March 16 02 UTC**

**Nebraska Counties:** Knox - Cedar - Thurston - Wayne - Cuming - Burt - Dodge - Washington

A late winter storm dropped heavy snow over parts of northeast Nebraska and western Iowa. Due to relatively warm temperatures during the event, most of the snow was heavy and wet and the rain/snow line remained nearly stationary for much of that time. In addition...with temperatures a little above freezing on the southern end of the snow area, snow accumulations dropped off sharply. For instance, a small area in far north Omaha picked up 5 to 6 inches, while the southern part of the city received only an inch or two, and then only on grassy surfaces. Meanwhile 40 miles or so the southwest much of the

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snow melted as it fell leaving only a trace. Most of the heavier snow, 6 inches or more, fell along and northeast of a line from around Center in Knox county to just east and northeast of Council Bluffs in Pottawattamie county in west central Iowa. Heavier amounts in eastern Nebraska included 13.5 inches in Crofton, 10 inches in Walthill and Oakland, 9 inches at Lyons, 8 inches at Wausa and Creighton, 7 inches at Fort Calhoun, Tekamah, West Point, and Blair. Heavier totals in western Iowa included around 13 inches at Castana and near Little Sioux, 11 inches in Mapleton, 9 inches at Harlan and 8 inches in Logan and Kennebec.

### **Iowa Counties** - Harrison - Shelby - Pottawattamie

A late winter storm dropped heavy snow over parts of northeast Nebraska and western Iowa. Due to relatively warm temperatures during the event, most of the snow was heavy and wet and the rain/snow line remained nearly stationary for much of that time. In addition...with temperatures a little above freezing on the southern end of the snow area, snow accumulations dropped off sharply. For instance, a small area in far north Omaha picked up 5 to 6 inches, while the southern part of the city received only an inch or two, and then only on grassy surfaces. Meanwhile 40 miles or so the southwest much of the snow melted as it fell leaving only a trace. Most of the heavier snow, 6 inches or more, fell along and northeast of a line from around Center in Knox county to just east and northeast of Council Bluffs in Pottawattamie county in west central Iowa. Heavier amounts in eastern Nebraska included 13.5 inches in Crofton, 10 inches in Walthill and Oakland, 9 inches at Lyons, 8 inches at Wausa and Creighton, 7 inches at Fort Calhoun, Tekamah, West Point, and Blair. Heavier totals in western Iowa included around 13 inches at Castana and near Little Sioux, 11 inches in Mapleton, 9 inches at Harlan and 8 inches in Logan and Kennebec.

### **DVN: March 16 00 UTC - 13 UTC**

### **Iowa Counties** - Johnson - Muscatine - Keokuk - Washington - Louisa - Jefferson

A late season winter storm developed in the Northern Rockies and moved southeast into the Ohio Valley. Snow began in Eastern Iowa during the morning of 15 March and became heavy in the late afternoon and overnight hours. The snow tapered to flurries just before dawn on 16 March and ended by mid-morning. Mesoscale banding of snow produced a band of 10+ inches that was 1-2 counties wide. Final snowfall amounts included Brighton, Iowa 16 inches; Sigourney, Iowa 14.3 inches; Columbus Jct and Wapello 12 and 11.5 inches respectively; North English and Washington 12 and 10.2 inches respectively; and Mediapolis, Iowa 10 inches. Another very narrow mesoscale band of snow produced 6-7 inches of snow in just over 12 hours from Lowden, to Wheatland, to Park View, Iowa across parts of Cedar, Clinton, and Scott counties.

# 24-26 February 2003 Storm Summary

Used in the jobsheets for IC 6.1, 6.2, 6.4

## 1. FWD Winter Weather Watches, Warnings, and Advisories Timeline

No Watches issued.

0110 UTC 25 February 2003 Winter Storm Warning valid 0010 UTC on the 25th through the morning hours (see Figure 1 for details).

0420 UTC 25 February 2003 Ice Storm Warning valid 0420 UTC on the 25th through the morning hours, for the southern rows of counties in the CWA (see Figure 1 for details).

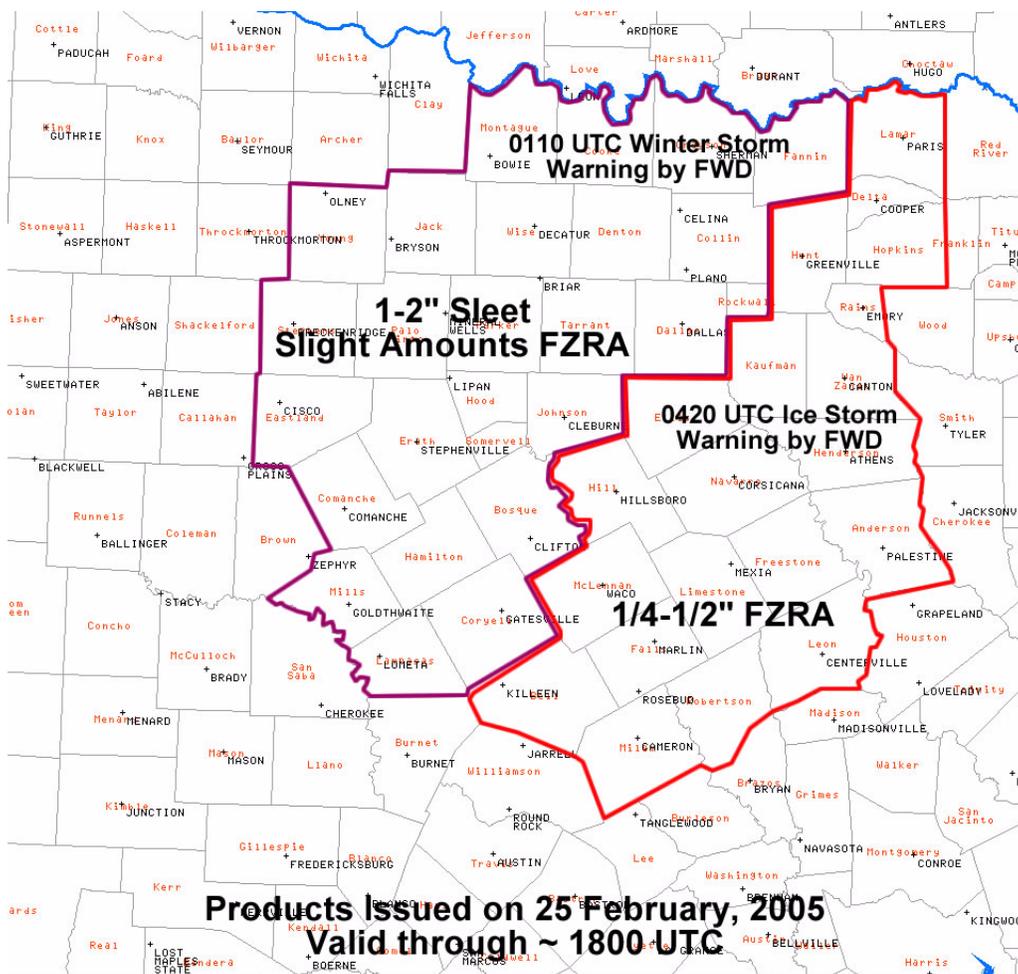


Figure 1: FWD Winter Storm and Ice Storm Warnings.

2115 UTC 25 February 2003 Winter Weather Advisory valid 2115 UTC through the morning of the 26th. This included just about the entire southeastern half of the CWA and called for freezing rain and sleet.

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**2. Decoded METARS and Precipitation Totals**

**Table 1: Abilene, TX Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Feb	1752	19	11	70	30	14	23	37	303	9	39	OVC	
24-Feb	1900												
24-Feb	1952	18	13	80	350	15	21	38	305	2.5	35	OVC	-TSSN
24-Feb	2052	18	14	84	10	13	19	36	299	2.5	24	OVC	TS BR
24-Feb	2152	18	15	88	10	15		33	289	1.5	22	OVC	TS BR
24-Feb	2252	18	16	92	10	14		35	297	0.5	16	OVC	-TSSN BR FZFG
24-Feb	2352	18	15	88	360	14		37	303	0.5	19	OVC	-TSSN BR
25-Feb	52	18	13	80	360	14		38	309	10	24	OVC	TSSN
25-Feb	152	18	13	80	360	11		38	309	5	20	OVC	TSSN
25-Feb	252	17	13	83	360	12		41	319	6	29	OVC	TSSN
25-Feb	352	17	11	76	10	13		41	319	10	25	OVC	
25-Feb	452	17	9	70	10	12		42	322	10	25	OVC	
25-Feb	552	17	9	70	10	14		40	317	10	23	OVC	

Abilene (KABI) had thundersleet, 1.1 inches total accumulation and a liquid equivalent of 0.16 inch. Table 1 has the decoded METARs, which incorrectly labeled sleet as snow.

**Table 2: Dallas/Ft. Worth Airport, TX Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Feb	1756	27	18	68	10	19		39	296	10	21	OVC	
24-Feb	1856	27	18	68	360	16		35	282	10	55	OVC	
24-Feb	1956	27	18	68	360	15		34	280	10	50	OVC	
24-Feb	2056	27	18	68	10	19	24	34	280	10	46	OVC	-PL
24-Feb	2156	26	18	71	10	17		34	280	10	48	OVC	-FZRA PL
24-Feb	2256	25	21	85	350	15		36	285	7	42	OVC	PL
24-Feb	2356	24	22	91	360	14		35	283	0.8	21	OVC	PL BR
25-Feb	56	23	20	88	360	13		39	296	2.5	16	OVC	PL BR
25-Feb	156	22	20	92	350	15		39	299	3	26	OVC	PL BR
25-Feb	256	21	20	95	350	15		40	301	2.5	26	OVC	+PL BR
25-Feb	356	21	19	92	350	14		41	303	1.8	24	OVC	+PL BR
25-Feb	456	21	18	88	350	12		41	305	4	22	OVC	PL BR
25-Feb	556	20	17	89	360	14		37	290	2	24	OVC	+PL BR
25-Feb	656	20	18	92	350	14		40	302	1.8	19	OVC	+PL BR
25-Feb	756	20	18	92	340	10		40	301	2	19	OVC	PL BR
25-Feb	856	20	17	89	340	13		39	297	7	16	OVC	-PL
25-Feb	956	20	17	89	350	11		39	295	10	14	OVC	
25-Feb	1056	20	17	89	340	13		38	293	10	12	OVC	
25-Feb	1156	20	16	85	350	11		38	295	10	14	OVC	

Dallas/Ft. Worth airport (KDFW) received almost all sleet throughout the event, 2.0 inches accumulation and a water equivalent of 0.42 inch. Dallas/Love airport (KDAL) (not shown) did report some light snow from time to time. There was thunder reported at

**AWOC Winter Weather Track FY06**

KDFW even though the METARs do not reflect it. Table 2 contains the decoded METARs.

**Table 3: Waco, TX Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Feb	2351	29	21	72	20	16	21	34	275	10	25	OVC	
25-Feb	51	28	23	81	360	12	19	34	279	10	20	OVC	UP
25-Feb	151	27	24	89	10	16		34	278	7	12	OVC	UP
25-Feb	251	27	24	89	360	16		36	285	10	12	OVC	UP
25-Feb	351	28	27	96	340	11		40	296	5	10	OVC	-FZRA BR
25-Feb	451	26	25	96	340	16		40	296	5	16	OVC	-FZRA BR
25-Feb	551	25	24	96	360	18		39	295	10	16	OVC	-FZRA
25-Feb	651	25	24	96	10	18		36	284	8	45	OVC	-FZRA
25-Feb	751	24	22	91	360	18		37	287	7	16	OVC	UP
25-Feb	851	24	21	88	350	14		37	289	10	13	OVC	
25-Feb	951	23	20	88	360	18		35	281	10	15	OVC	

Waco (KACT) received a mix of sleet and freezing rain, a total liquid equivalent of 0.21 inch and a sleet/freezing rain accumulation of 1/2 inch. Table 3 contains the decoded METARs.

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**Table 4: Austin, TX Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Feb	1553	36	30	79	20	21	26	27	255	8	17	OVC	
24-Feb	1653	37	32	82	10	17		27	257	6	17	OVC	-DZ
24-Feb	1753	37	30	76	20	19		28	260	9	17	OVC	
24-Feb	1853	36	30	80	10	19		26		6	20	OVC	-DZ
24-Feb	1953	35	29	78	360	20	25	23	246	7	18	OVC	-DZ
24-Feb	2053	32	31	96	350	16	22	22	240	2.5	14	OVC	-DZ BR
24-Feb	2153	33	31	92	360	14		23	246	4	14	OVC	
24-Feb	2253	31	30	96	10	21	26	24	249	1.5	12	OVC	-FZDZ BR
24-Feb	2353	31	29	92	360	17	23	24	250	6	13	OVC	BR
25-Feb	53	29	28	96	350	17		28	264	2.5	15	OVC	-SN BR
25-Feb	153	29	27	92	360	12		30	268	6	21	OVC	-FZDZ SN
25-Feb	253	29	28	96	350	14		32	276	5	12	OVC	TS -FZRA PL SN
25-Feb	353	28	27	96	350	16		33	282	1.5	20	OVC	-FZDZ PL SN
25-Feb	453	27	26	96	350	16		34	284	5	19	OVC	-FZDZ SN BR
25-Feb	553	28	27	96	360	12	17	34	282	5	10	OVC	-FZDZ BR
25-Feb	653	27	25	92	360	12	16	32	279	5	12	OVC	-FZDZ BR
25-Feb	753	29	27	92	360	13	19	29	269	8	29	OVC	VCTS -FZDZ
25-Feb	853	30	28	92	360	12	19	30	269	8	12	OVC	VCTS -FZRA
25-Feb	953	28	26	92	360	12	16	30	269	7	12	OVC	-FZDZ
25-Feb	1053	26	24	92	360	15		29	270	10	12	OVC	-FZDZ
25-Feb	1153	26	23	88	360	15		30	272	10	12	OVC	-FZDZ
25-Feb	1253	25	22	88	360	11	16	31	276	10	12	OVC	-FZDZ
25-Feb	1353	25	22	88	360	11	16	32	280	10	12	OVC	-FZDZ
25-Feb	1453	25	23	92	360	11	16	33	282	10	12	OVC	-FZDZ
25-Feb	1553	26	24	92	360	11		32	280	10	10	OVC	
25-Feb	1653	26	25	96	360	11		31	275	10	8	OVC	
25-Feb	1753	27	26	96	360	10		29	267	2.5	8	OVC	-FZDZ BR
25-Feb	1853	27	27	100	360	10		26	260	1	6	OVC	-FZDZ BR
25-Feb	1953	28	27	96	360	12		23	247	2	8	OVC	-FZDZ BR
25-Feb	2053	28	27	96	360	12		19	235	2	8	OVC	-FZDZ BR
25-Feb	2153	28	27	96	360	10		18	231	2.5	10	OVC	-FZDZ BR
25-Feb	2253	28	28	100	360	11		16	224	1.5	7	OVC	-FZDZ BR
25-Feb	2353	28	28	100	360	11		14	219	1.5	6	OVC	-FZDZ BR
26-Feb	53	28	27	96	360	9		12	213	3	6	OVC	-FZDZ BR
26-Feb	153	28	27	96	360	8		13	213	8	6	OVC	-FZDZ
26-Feb	253	28	28	100	360	7		14	219	4	7	OVC	-FZDZ BR
26-Feb	353	29	29	100	360	7		15	220	3	7	OVC	-FZDZ BR
26-Feb	453	29	28	96	350	10		12	209	5	7	OVC	-FZDZ BR
26-Feb	553	29	28	96	360	10		8	195	9	7	OVC	-FZDZ
26-Feb	653	30	29	96	360	8		8	197	9	9	OVC	-FZDZ
26-Feb	753	30	29	96	360	6		6	189	6	9	OVC	-FZDZ BR
26-Feb	853	30	29	96	360	6		4	183	8	7	OVC	-FZDZ BR
26-Feb	953	30	30	100	350	6		3	180	9	7	OVC	-FZDZ BR
26-Feb	1053	30	30	100	350	6		2	176	9	9	OVC	-FZDZ BR
26-Feb	1153	31	30	96	360	5		1	173	9	9	OVC	-FZDZ BR
26-Feb	1253	31	31	100	360	5		1	171	9	7	OVC	-FZDZ BR
26-Feb	1353	31	31	100	10	7		1	172	2	5	OVC	-FZDZ BR
26-Feb	1453	32	32	100	360	9		1	171	1	5	OVC	-FZDZ BR
26-Feb	1553	32	32	100	350	6		2	174	2.5	5	OVC	-FZDZ BR
26-Feb	1653	32	32	100	350	5		2	174	2.5	5	OVC	-FZDZ BR
26-Feb	1753	33	33	100	350	6		999	164	2	5	OVC	-DZ BR
26-Feb	1853	34	34	100	350	7		996	155	3	7	OVC	BR
26-Feb	1953	36	35	96	360	8		993	145	6	7	OVC	

Austin (KAUS) received almost exclusively freezing rain and drizzle almost continuously for 48 hours. Thunder was reported for several hours as well. Total liquid equivalent for

the entire event was 0.53 inches, with 0.36 on the 24th, 0.12 on the 25th, and 0.05 on the 26th.

### 3. Storm Data Entries

Winter Weather impacts from this event were significant for 3 CWAs across Texas, covering a wide range of precipitation types from north to south.

#### **SJT (San Angelo WFO): February 24 2000 UTC - February 25 0600 UTC**

**Counties:** Nolan - Haskell - Throckmorton - Jones - Shackelford - Taylor - Callahan - Coleman - Brown - Mcculloch - San Saba

An arctic cold front barreled through West Central Texas on the 23rd, dropping temperatures into the teens and 20s across all of the area. Strong overrunning began during the morning of the 24th, producing thunderstorms that dropped large amounts of sleet and even hail to one half inch in diameter. The Big Country saw 1 to 3 inches of sleet during the afternoon and early evening of the 24th, with the activity slipping to the southeast into the Heartland during the evening of the 24th. One-half to 1 inch of sleet was reported across the Heartland. With temperatures remaining below freezing until the morning of the 26th, the accumulated ice remained on area roadways, with numerous accidents reported. There were also some minor injuries reported in the Abilene area, due to people slipping and falling down on the ice.

#### **FWD (Ft. Worth WFO): February 24 1720 UTC - February 28 0000 UTC**

**Counties:** Montague - Cooke - Grayson - Fannin - Lamar - Young - Jack - Wise - Denton - Collin - Hunt - Delta - Hopkins - Stephens - Palo Pinto - Parker - Tarrant - Dallas - Rockwall - Kaufman - Van Zandt - Rains - Eastland - Erath - Hood - Somervell - Johnson - Ellis - Henderson - Comanche - Mills - Hamilton - Bosque - Hill - Navarro - Freestone - Anderson - Lampasas - Coryell - Bell - McLennan - Falls - Limestone - Leon - Milam - Robertson

Freezing rain and sleet began falling across western parts of North Texas late Monday morning the 24th and spread eastward during the afternoon and night, before ending the morning of the 25th. South of a Lampasas to Gatesville to Mexia to Athens line the precipitation was predominantly freezing rain, with ice accumulations of 1/4 to 1/2 inch. North of this line the precipitation was mostly sleet and snow, with most of the snow falling north of interstate 20. Sleet and snow accumulation were generally 1 to 3 inches, with 3 to 5 inches of snow north of a Breckenridge to Decatur to Dallas to Paris line. Schools and businesses closed early on the 24th, many not reopening until the afternoon of the 26th. Thousands of motorists, particularly truckers, were stranded for over 24 hours. Hundreds of flights at DFW International Airport and Love Field were cancelled, thousands delayed, and 2,500 people were stranded at the DFW Airport Monday night. There were hundreds of automobile accidents. The estimated 200 sand trucks across Dallas and Tarrant Counties worked 24 hours a day but could not keep up with the freezing rain, sleet, and snow accumulations Monday and Tuesday. Emergency rooms at area hospitals estimated 20-40 percent of their patient's injuries were snow or ice related from Monday through Wednesday. Conditions did not improve significantly until Thursday afternoon the 27th, when significant melting occurred. Most of the damage was lost revenue due to truckers stranded, airline flights cancelled, businesses and schools closed, and emergency expenditures due to the weather.

**EWX (Austin/San Antonio WFO): February 25 0100 UTC - February 26 1800 UTC**

**Counties:** Llano - Burnet - Williamson - Edwards - Real - Kerr - Bandera - Gillespie - Kendall - Blanco - Hays - Travis - Bastrop - Lee - Medina - Bexar - Comal - Guadalupe - Caldwell - Fayette

Authorities reported that roads and bridges began to ice over Monday night, forcing the closing of many county roads. City and county offices, as well as most businesses and all area schools remained closed on Tuesday, and reopened near noon on Wednesday. No power outages were indicated.

**SYNOPSIS:** An arctic blast brought a combination of freezing rain, sleet and snow into the northern portion of South Central Texas beginning Monday afternoon, February 24. The wintery mixture began over the Hill Country and spread east and south to the Austin and San Antonio areas by Monday evening. From Monday night into early Tuesday morning, the wintery mixture was accompanied by thunder. The icy conditions continued through Tuesday, virtually bringing businesses and governmental offices to a halt. Most area schools were forced to remain closed on Tuesday, in spite of the fact that required statewide skills assessment tests were scheduled that day. Most schools were able to resume classes on a delayed basis on Wednesday, as the precipitation ended in the morning and temperatures were able to recover slowly above the freezing mark.

# 14 February 2004 Storm Summary

Used in the jobsheet for IC 7.4

## 1. OUN/FWD Winter Weather Watches, Warnings, and Advisories Timeline

1000 UTC 13 February 2004 Winter Storm Watch issued by FWD valid from the night of the 13th through the day on the 14th. (see Figure 1 for details).

1346 UTC 13 February 2004 Winter Weather Advisory in the southern part of the Watch to account for the potential for an inch of sleet and/or snow, valid from 1400 UTC on the 13th through 2200 UTC on the 13th (not in Figure 1, too far south).

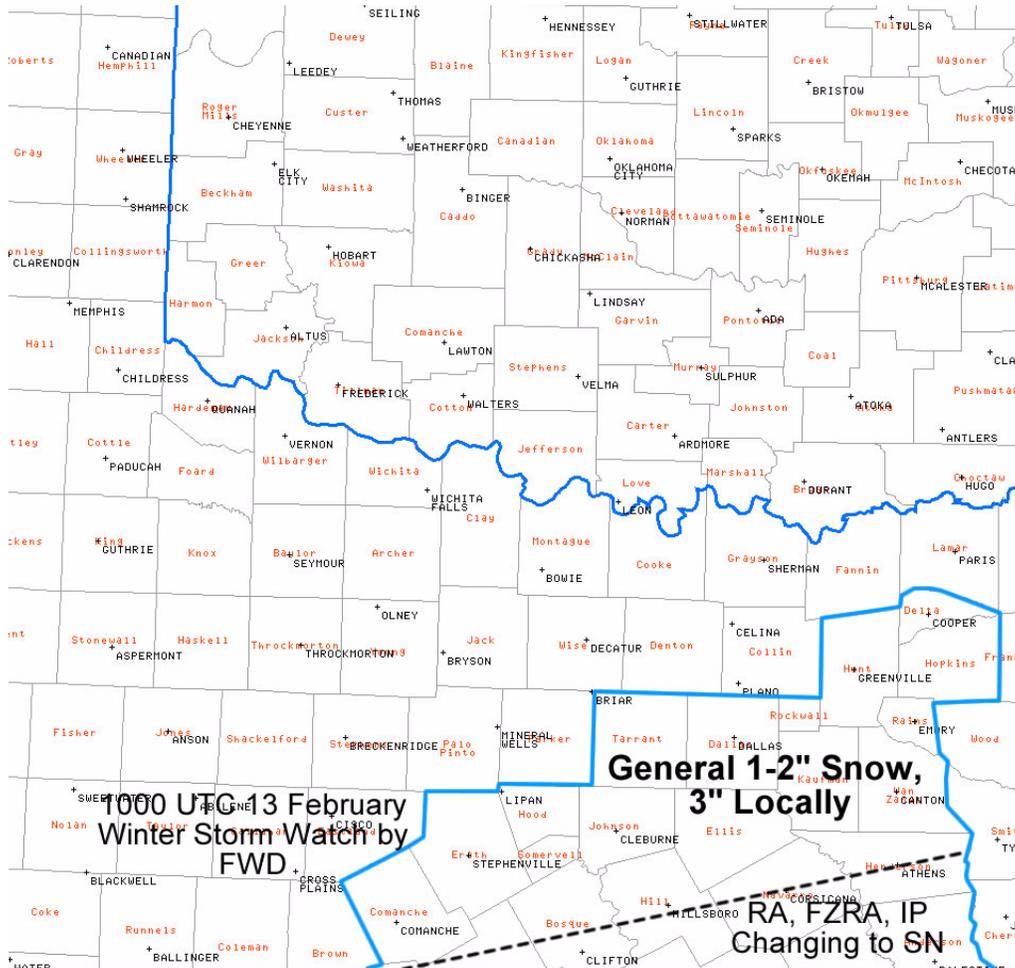


Figure 1: FWD Winter Storm Watch. Black dashed line is the anticipated P-type change boundary across the watch area, with the expected threats as shown in the figure.

1725 UTC 13 February 2004 Update the Winter Storm Watch by FWD, keeping same counties in the watch with the same threats as indicated in Figure 1.

## AWOC Winter Weather Track FY06

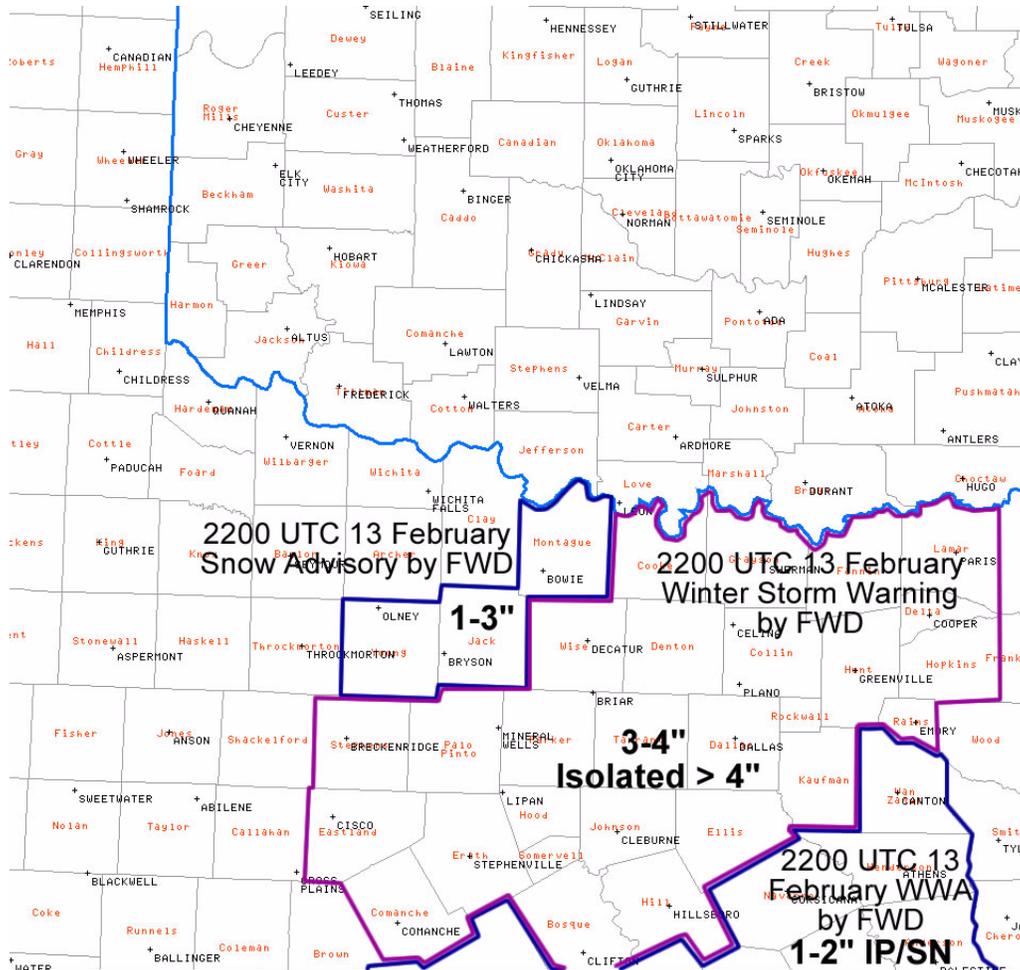


Figure 2: FWD Winter Storm Warning (magenta) and Winter Weather Advisories (dark blue). Expected threats are as shown in the figure.

2200 UTC 13 February 2004 Snow Advisory (1-3 inches) across the northern counties that border Oklahoma, upgrade watch counties to Winter Weather Advisories (south) and Warnings (north); issued by FWD. These products are valid 2200 UTC on the 13th through 2359 UTC on the 14th. See Figure 2 for details and locations of each.

0330 UTC 14 February 2004 Updated information on the FWD product issued at 2200 UTC but no changes to expected threats or counties in the respective products as shown in Figure 2.

0846 UTC 14 February 2004 Snow Advisory issued by OUN valid 0900 UTC through 1800 UTC on the 14th. See Figure 3 for details.

0900 UTC 14 February 2004 Snow Advisory for most of the NE 2/3 of the FWD CWA valid 0900 UTC through 2200 UTC. See Figure 3 for details.

1145 UTC 14 February 2004 FWD updated the Snow Advisory to include all counties in the northeast 3/4 of the CWA, valid until 2200 UTC on the 14th. Also updated amounts

## AWOC Winter Weather Track FY06

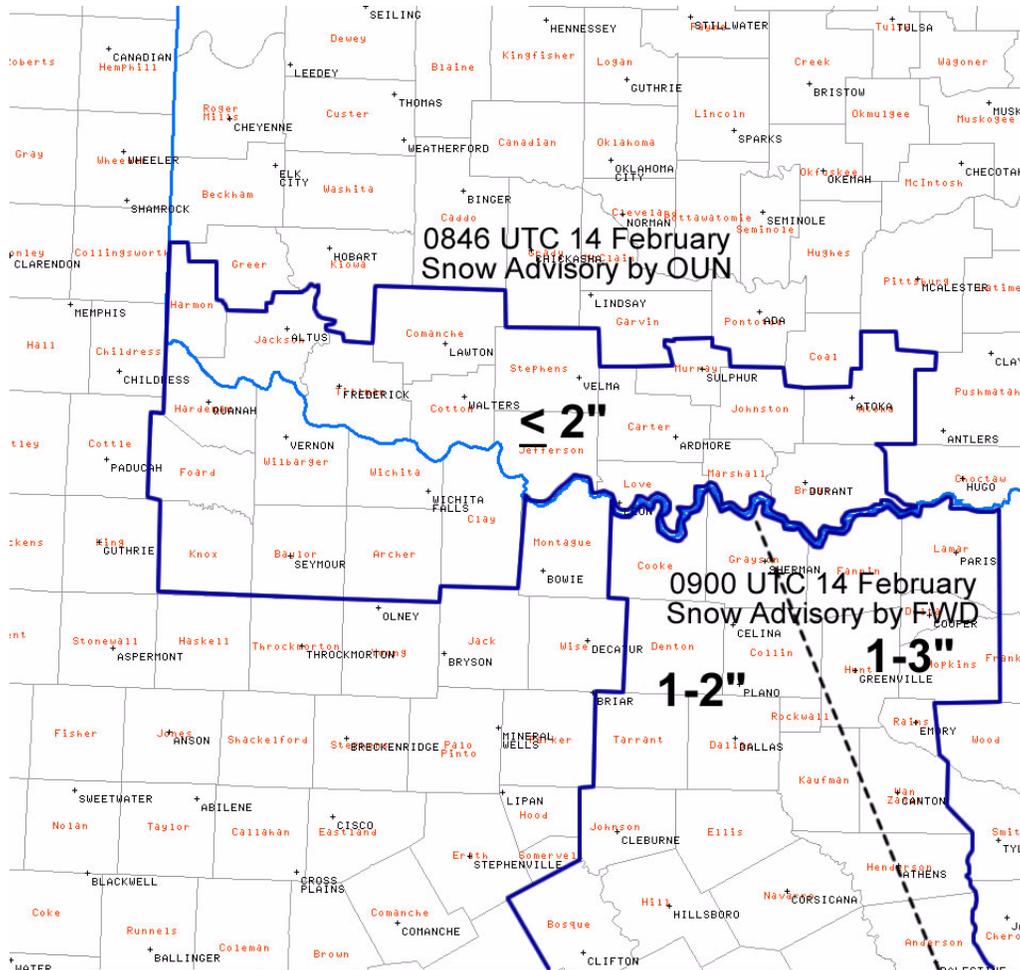


Figure 2: OUN and FWD Snow Advisories (dark blue). Expected threats are as shown in the figure. Texas counties in between the two snow advisories are still under the Winter Storm Warning or Winter Weather Advisories seen in Figure 2. Black dashed line indicated anticipated dividing line between greater amounts of snow.

to include 3” and greater northeast of a line from Grayson County to Dallas County to Henderson County (See Figure 4 for details).

1258 UTC 14 February 2004 OUN updated the Snow Advisory for amounts only, the counties in the Advisory are identical to those in Figure 3. Amounts are now 1-3 inches widespread with localized 4 inches.

1355 UTC 14 February 2004 OUN again updated the Snow Advisory to include 2-4 inch totals, and upgraded several counties with to a Heavy Snow Warning, valid until 1800 UTC on the 14th. See Figure 4 for details.

1416 UTC 14 February 2004 FWD kept the 1145 Snow Advisory in place and upgraded several counties to a Heavy Snow Warning, valid until 2200 UTC. See Figure 4 for details.

## AWOC Winter Weather Track FY06

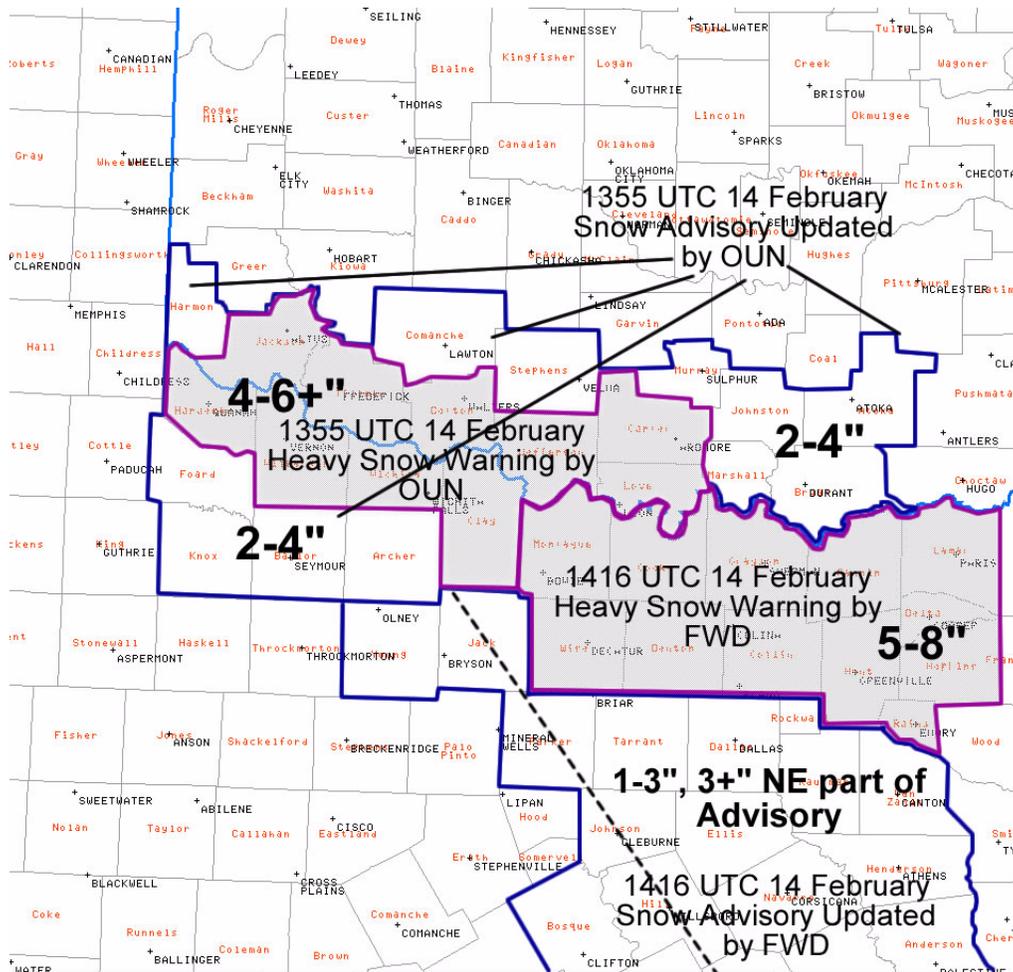


Figure 2: OUN and FWD Snow Advisories (dark blue) and Heavy snow Warning (magenta outline and shaded gray). Expected threats are as shown in the figure. Black dashed line indicated anticipated dividing line between greater amounts of snow in the FWD Snow Advisory.

## 2. Decoded METARs and Precipitation Totals

**AWOC Winter Weather Track FY06**

**Table 1: Wichita Falls, TX Decoded METARs**

TIME	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
14-Feb	652	29	24	82	0	0		15	215	10	60	OVC	
14-Feb	752	30	24	78	270	4		16	217	10	27	OVC	
14-Feb	852	28	26	92	260	8		14	212	1.2	6	OVC	-SN
14-Feb	952	27	25	92	320	7		10	201	8	43	OVC	-SN
14-Feb	1052	27	26	96	330	3		9	198	1.8	5	OVC	-SN
14-Feb	1152	27	26	96	0	0		9	199	3	19	OVC	-SN
14-Feb	1252	27	26	96	0	0		9	197	4	11	BKN	-SN
14-Feb	1352	28	27	96	0	0		10	200	1.2	5	OVC	-SN
14-Feb	1452	28	27	96	220	3		12	206	0.5	4	X	SN
14-Feb	1552	29	27	92	230	3		12	206	0.8	6	X	-SN
14-Feb	1652	30	28	92	260	3		12	206	0.5	4	X	SN
14-Feb	1752	30	29	96	280	5		11	202	1	7	X	-SN
14-Feb	1852	32	30	92	290	4		9	197	0.8	5	OVC	-SN
14-Feb	1952	32	31	96	270	5		6	187	2	5	OVC	-SN
14-Feb	2052	33	31	92	280	5		5	184	9	5	BKN	-SN
14-Feb	2152	34	31	88	300	7		7	188	10	8	OVC	
14-Feb	2252	34	31	88	280	7		6	187	10	10	OVC	

Wichita Falls, TX (KSPS) received all snow, with a storm total amount of 5.5 inches, and a liquid equivalent of 0.26 inch.

**Table 2: Frederick, OK Decoded METARs**

TIME	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
14-Feb	653	29	25	85	290	3		12	208	10	50	OVC	
14-Feb	753	29	26	89	270	7		12	209	10	46	OVC	
14-Feb	853	28	28	100	240	4		11	204	1	8	OVC	-SN
14-Feb	953	29	28	96	0	0		7	190	2.5	46	OVC	-SN
14-Feb	1053	29	28	96	0	0		5	183	1.5	11	OVC	-SN
14-Feb	1153	28	28	100	220	3		6	188	1.5	11	OVC	-SN
14-Feb	1253	28	28	100	230	3		6	187	1.8	16	OVC	-SN
14-Feb	1353	29	28	96	0	0		7	190	0.8	5	X	-SN
14-Feb	1453	29	29	100	0	0		8	194	0.8	4	X	-SN
14-Feb	1553	30	29	96	270	3		8	194	0.8	4	X	-SN
14-Feb	1653	31	30	96	280	3		9	196	1	6	OVC	-SN
14-Feb	1753	31	31	100	290	3		8	194	1.2	6	OVC	-SN
14-Feb	1853	32	31	96	0	0		6	187	3	3	SCT	-SN
14-Feb	1953	34	31	88	270	7		4	178	5	5	OVC	HZ
14-Feb	2053	36	33	89	280	8		3	175	5	7	OVC	HZ
14-Feb	2153	38	34	86	240	4		2	172	7		CLR	
14-Feb	2253	39	35	86	230	6		2	171	9		CLR	

Frederick, OK (KFDR, Tillman County) received all snow, with a liquid equivalent of 0.22 inch and an unofficial snowfall amount between 4-5 inches. Table 2 has the decoded METARs.

**AWOC Winter Weather Track FY06**

**Table 3: Gainesville, TX Decoded METARs**

TIME	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
14-Feb	646	36	27	69	350	3		16		10	44	OVC	
14-Feb	745	36	27	69	240	4		19		10	30	OVC	
14-Feb	845	34	27	75	10	3		12		10	85	OVC	
14-Feb	945	34	27	75	0	0		11		3	24	OVC	-SN
14-Feb	1045	30	28	93	310	4		10		0.8	5	OVC	SN
14-Feb	1145	30	30	100	290	11		12		1.2	5	OVC	-SN
14-Feb	1245	30	28	93	300	8		12		1.8	9	OVC	-SN
14-Feb	1345	30	28	93	320	6		12		1.5	15	OVC	-SN
14-Feb	1447	30	28	93	340	8		13		0.8	11	OVC	-SN
14-Feb	1546	30	30	100	360	9		13		1.2	5	OVC	-SN
14-Feb	1647	34	30	86	350	8		13		4	7	OVC	-SN
14-Feb	1746	34	30	86	350	9		11		3	17	OVC	-SN
14-Feb	1848	34	30	86	340	11		8		3	16	OVC	-SN
14-Feb	1945	34	32	93	340	9		7		4	11	OVC	-SN
14-Feb	2045	34	32	93	340	8		7		0.8	10	OVC	-SN
14-Feb	2146	36	32	87	340	8		6		2	11	OVC	-SN
14-Feb	2245	36	34	93	320	6		7		3	13	OVC	-SN
14-Feb	2345	36	34	93	320	6		8		10	10	OVC	

Gainesville, TX (KGLE, just south of the Red River in Cooke County) received a liquid equivalent amount of 0.07 inch and an unofficial snowfall total of 4 inches. Something was probably wrong with this AWOS site's precipitation total.

**Table 4: Denton, TX Decoded METARs**

TIME	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
14-Feb	653	34	31	88	0	0		15	211	9	27	OVC	
14-Feb	753	33	29	84	250	4		16	217	1.8	13	OVC	-SN
14-Feb	853	32	28	85	340	3		13	205	5	41	OVC	-SN
14-Feb	953	30	29	96	310	4		10	195	1	5	OVC	-SN
14-Feb	1053	30	30	100	290	7		9	192	0.8	4	OVC	-SN
14-Feb	1153	30	29	96	290	8		11	199	1.2	7	OVC	-SN
14-Feb	1253	30	28	92	320	5		10	197	3	70	OVC	-SN
14-Feb	1353	30	28	92	320	8		10	197	2.5	27	OVC	-SN
14-Feb	1453	30	28	92	340	5		12	201	1.2	11	OVC	-SN
14-Feb	1553	31	29	92	320	5		12	203	0.5	5	OVC	SN
14-Feb	1653	31	29	92	330	9		12	202	1	10	OVC	-SN
14-Feb	1753	33	29	84	330	8		10	194	3	14	OVC	-SN
14-Feb	1853	33	29	84	330	7		8	188	7	14	OVC	
14-Feb	1953	34	29	81	340	11		6	183	9	14	OVC	
14-Feb	2053	34	30	85	320	8		6	180	3	16	OVC	-SN
14-Feb	2153	36	31	82	330	9		5	177	10	24	OVC	
14-Feb	2253	35	31	84	320	8		6	181	10	17	OVC	

Denton, TX (KDTO) received a liquid equivalent of 0.43 inch and an unofficial snowfall total of 5 inches.

**Table 5: Durant, OK Decoded METARs**

TIME	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
14-Feb	651	34	30	86	120	3		14		10	75	OVC	
14-Feb	751	34	30	86	0	0		12		10	25	OVC	
14-Feb	851	34	32	93	240	4		12		2.5	13	OVC	-SN
14-Feb	951	34	34	100	340	3		7		3	75	BKN	BR
14-Feb	1051	34	34	100	20	3		5		5	13	OVC	BR
14-Feb	1151	34	34	100	300	3		8		0.8	4	OVC	SN
14-Feb	1252	32	32	100	0	0		7		0.8	2	OVC	SN
14-Feb	1354	32	32	100	300	4		10		0.8	4	OVC	-SN
14-Feb	1451	32	30	93	310	5		12		0.5	2	OVC	SN
14-Feb	1552	32	30	93	320	8		10		7	70	BKN	
14-Feb	1652	30	30	100	350	5		10		1.5	9	OVC	-SN
14-Feb	1800												
14-Feb	1900												
14-Feb	2000												
14-Feb	2053	32	30	93	340	9		2		1	6	OVC	-SN
14-Feb	2155	32	30	93	340	7		2		1.2	6	OVC	-SN
14-Feb	2252	32	32	100	330	5		3		0.5	4	OVC	SN
15-Feb	0												
15-Feb	100												
15-Feb	151	32	32	100	0	0		7		5	12	OVC	-SN
15-Feb	251	32	32	100	290	4		7		7	90	OVC	

Durant, OK (KDUA, in Bryan County) received 8 inches of snow and an unknown amount of liquid equivalent.

### 3. Storm Data Entries

#### **OUN (Norman WFO): February 14 0900 UTC - February 15 0300 UTC**

**Oklahoma Counties:** Harmon - Greer - Kiowa - Comanche - Stephens - Murray

Snow fell across portions of southern Oklahoma causing many traffic accidents across the area due to slick roads. A few injuries were reported with these accidents. In many locations this was the first measurable snowfall of the season. Snowfall amounts ranged from 1 to 3 inches in this area. The snow began to melt across southwestern Oklahoma after a few hours as temperatures rose above freezing and some locations received sunshine.

**Oklahoma Counties:** Jackson - Tillman - Coal - Cotton - Jefferson - Carter - Johnston - Atoka - Love - Marshall - Bryan

The first snow of the season fell across the Red River Valley of southern Oklahoma and north Texas. Widespread snowfall amounts of 4 to 6 inches were reported across the area. The greatest snowfall reported in Oklahoma was 8 inches which fell in Durant in Bryan county. Many traffic accidents were reported due to the slick roads, with only a few injuries. The snow only stayed on the ground for a short time before beginning to melt,

especially across southwest Oklahoma, as temperatures rose above freezing and skies cleared providing sunshine to the area.

**Texas Counties:** Hardeman - Foard - Wilbarger - Wichita - Clay

The first snow of the season fell over the Red River Valley of southern Oklahoma and north Texas. Widespread snowfall amounts of 4 to 6 inches were reported across portions of Texas. The greatest amount reported in western north Texas was 7.5 inches that fell two miles southwest of Quanah in Hardeman county. The official observing site at Sheppard Air Force Base in Wichita Falls reported a record daily snowfall amount of 5.5 inches for February 14th. Many traffic accidents were reported as the snow made roads slick. A few injuries were reported with these accidents. The snow began to melt from west to east across the area during the afternoon as temperatures rose above freezing and skies cleared.

**Texas Counties:** Knox - Baylor - Archer

The first snow of the season fell across north Texas and southern Oklahoma. Snowfall amounts ranged from 2 to 4 inches across the area. Several accidents were reported due to the slick roads. The snow began to melt from west to east across the area during the afternoon as temperatures rose above freezing and skies cleared.

**FWD (Fort Worth WFO): February 14 0700 UTC - February 15 0000 UTC**

**Counties:** Montague - Cooke - Grayson - Fannin - Lamar - Wise - Denton - Collin - Hunt - Delta - Tarrant - Dallas

An upper level storm system moved across North Central Texas late Friday night February 13th, and during the day Saturday February 14th, producing measurable snow across all but extreme southeast parts of North Texas. Snow began falling Friday night across the southwest parts of North Texas, then spread northeast across the rest of the region late Friday night and early Saturday morning. The snow ended over southwest parts of the region Saturday morning, and across the northeast early Saturday evening. Heavy snow of 4 to 5.5 inches fell on the 14th, from Montague and Wise counties eastward as far as Lamar and Delta counties, and south into northern Tarrant, northern Dallas, and northern Hunt counties. 1 to 3 inches of snow fell across the rest of North Texas, except for a small strip southeast of a Palestine to Hearne line, where only a trace was reported.

## 4 November 2003 Storm Summary

Used in the jobsheet for IC 5.3 (2nd part)

### 1. FSD/DMX Winter Weather Watches, Warnings, and Advisories Timeline

This event had only minor impacts in terms of frozen precipitation, it was chosen for its frontogenesis fields and EPVg that contrasted well with the March 15, 2004 event from the first part of the IC 5.3 jobsheet. Across Iowa and southern Wisconsin, this event was notable for being part of a flood event due to days of heavy rain north of a quasi-stationary frontal boundary. November 3, 2003 was particularly wet for Des Moines, IA which recorded over 3.5 inches of rain. Northern South Dakota received up to 8 inches of snow on the 3rd. However, there were parts of the Northern Plains that remained cold enough to receive frozen precipitation on November 4th and this storm summary will focus on just the frozen precipitation.

2121 UTC 3 November 2003 DMX issued a Winter Weather Advisory for the 4 counties in the northwest part of the CWA, expiring at 0300 UTC on the 4th. The Advisory was for freezing drizzle and a chance of freezing rain.

2200 UTC 3 November 2003 FSD allowed a Winter Weather Advisory to expire for the western portion of the CWA, and continued a Winter Weather Advisory for the eastern half of the CWA mentioning light snowfall and freezing drizzle. This Advisory is valid through 2300 UTC on the 4th for all but the far northeast counties, which have an expiration time of 0400 UTC on the 4th.

0313 UTC 4 November 2003 FSD updated the Winter Weather Advisory, making it valid until 1000 UTC on the 4th for all counties included. A chance for freezing rain was added across northwest Iowa, and for the remainder of the eastern half of the CWA the main threats were still anticipating light snow or freezing drizzle (see Figure 1 for details).

0320 UTC 4 November 2003 DMX extended the Winter Weather Advisory (same counties, same threats) through 1200 UTC on the 4th (see Figure 1 for details).

0945 UTC 4 November 2003 FSD cancelled the 0313 UTC Winter Weather Advisory across 1) the extreme southeast CWA because surface temps were above freezing, and 2) the northeast and southeast because precipitation was expected diminish over the next few hours.

# AWOC Winter Weather Track FY06

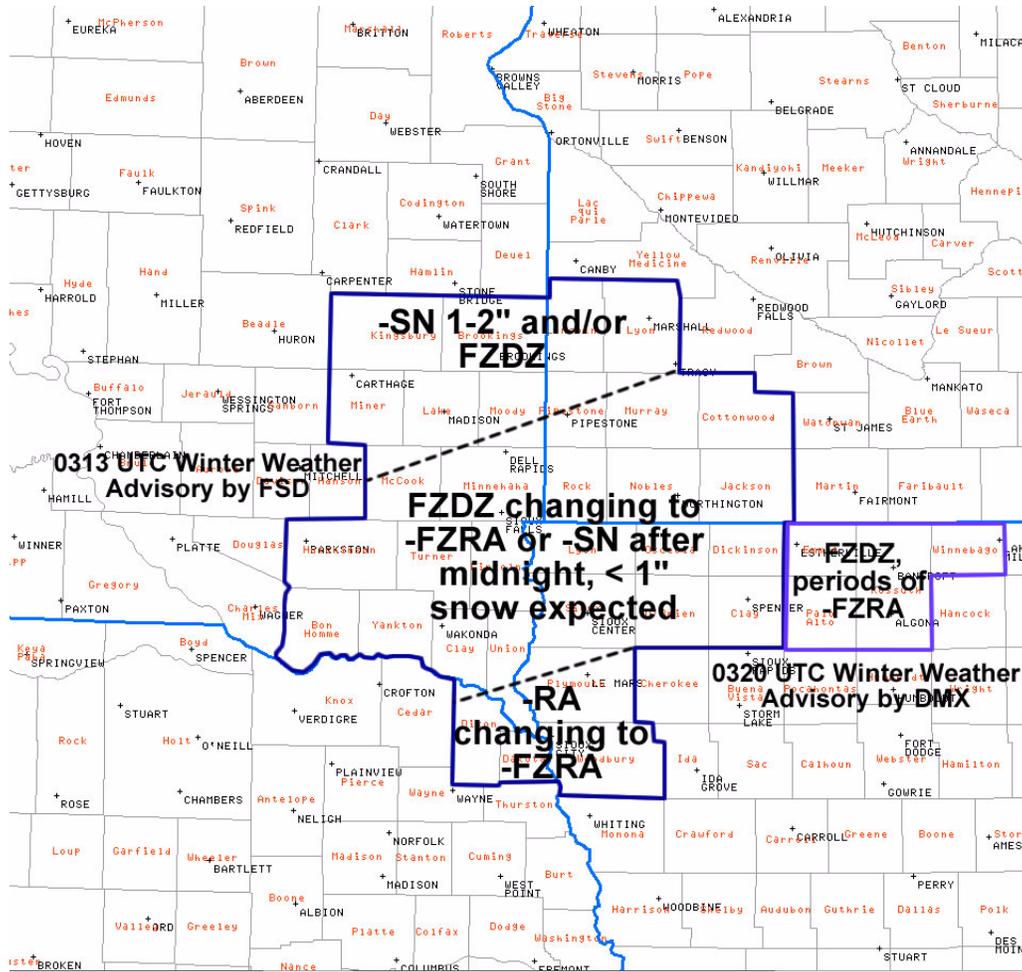


Figure 1: FSD (dark blue) and DMX (lighter blue) Winter Weather Advisories with expected threats as indicated in the figure. Black dashed line separated expected threats across the FSD CWA.

## 2. Decoded METARs and Precipitation Totals

**AWOC Winter Weather Track FY06**

**Table 1: Huron, SD Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
3-Nov	2355	25	22	88	20	13		6	196	1.2	11	OVC	-SN
4-Nov	55	24	23	95	20	11		4	191	1	8	X	-SN
4-Nov	155	25	24	96	30	10		3	189	0.8	7	X	-SN
4-Nov	255	25	24	96	10	6		3	187	0.5	5	OVC	SN
4-Nov	355	26	24	92	10	7		999	173	1	5	OVC	-SN
4-Nov	455	26	25	96	320	5		1	181	0.8	24	OVC	-SN
4-Nov	555	26	25	96	340	8		998	169	0.5	1	X	SN
4-Nov	655	25	24	96	330	7		997	168	1.2	24	OVC	-SN
4-Nov	755	25	22	88	350	10		995	160	1.5	15	OVC	-SN
4-Nov	855	25	24	96	340	9		994	155	1.8	55	OVC	-SN
4-Nov	955	26	25	96	360	7		991	148	4	55	OVC	HZ
4-Nov	1055	26	25	96	330	9		993	154	1	23	OVC	-SN
4-Nov	1155	25	24	96	340	9		993	154	2.5	55	OVC	HZ

Huron, SD (KHON) was far enough north for deep cold air and thus had periods of snow throughout the night and early morning hours of the 4th. Snowfall totaled 6 inches on the 3-4th with a liquid equivalent of 0.50 inch. Table 1 contains the decoded METARS.

**Table 2: Sioux City, IA Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
3-Nov	2352	35	32	88	20	9		995	151	3	5	OVC	HZ
4-Nov	52	35	32	88	10	9		994	148	5	5	OVC	HZ
4-Nov	152	35	32	88	10	9		994	147	7	5	OVC	
4-Nov	252	35	32	88	20	8		992	141	5	5	OVC	HZ
4-Nov	352	35	32	88	30	9		989	131	9	5	OVC	
4-Nov	452	35	32	88	60	7		991	139	10	5	OVC	
4-Nov	552	35	33	92	0	4		987	123	10	7	OVC	-RA
4-Nov	652	35	34	96	10	8		985	116	4	9	OVC	-RA
4-Nov	752	35	34	96	320	7		985	118	10	8	OVC	
4-Nov	852	36	34	93	310	11		986		10	6	OVC	
4-Nov	952	34	34	100	320	10		985	117	4	4	OVC	HZ
4-Nov	1052	34	34	100	320	12		985	119	4	4	OVC	-RA
4-Nov	1152	34	33	96	320	12		986	121	6	4	OVC	HZ
4-Nov	1252	34	33	96	320	13		987	126	7	4	OVC	
4-Nov	1352	33	32	96	310	15		990	135	10	6	OVC	
4-Nov	1452	34	32	92	320	16		992	142	10	8	OVC	

Sioux City, IA (KSUX) never actually fell below freezing on the 4th. Rainfall amounts were 0.87 inch on the 3rd and 0.12 on the 4th. See Table 2 for the decoded METARS.

**Table 3: Des Moines, IA Decoded METARS**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX	
3-Nov	2354	44	44	100	360	11		986	118	3	3	OVC	+RA	
4-Nov	54	45	45	100	300	25	29	988	124	9	13	OVC	-RA	
4-Nov	154	47	47	100	80	14		979	93	1.5	8	OVC	TS +RA	
4-Nov	254	48	48	100	100	9		981	98	4	20	OVC	RA	
4-Nov	354	48	48	100	0	0		982	102	1.8	4	OVC	+RA	
4-Nov	454	48	48	100	0	0		981	97	4	8	OVC	RA	
4-Nov	554	48	48	100	120	6		978	89	10	6	OVC	-RA	
4-Nov	654	45	45	100	310	13		980	96	4	2	OVC	-RA	
4-Nov	754	43	43	100	310	14		982	102	0.5	1	OVC	-RA	
4-Nov	854	45	45	100	100	9		971	63	7	43	OVC	-RA	
4-Nov	954	45	45	100	220	6		978	88	7	24	OVC	-RA	
4-Nov	1054	46	46	100	160	8		974	74	10	100	OVC	-RA	
4-Nov	1154	45	45	100	300	8		974	75	6	2	OVC	-RA	
4-Nov	1254	43	43	100	280	10		977	85	10	2	OVC		
4-Nov	1354	42	42	100	290	11		979	92	9	8	OVC		

Des Moines, IA (KDSM) as mentioned earlier had all rainfall throughout the 3rd and 4th. Rainfall totalled 3.55 inches on the 3rd and 0.50 inch on the 4th.

**3. Storm Data Entries**

**FSD (Sioux Falls, SD WFO): November 3 0900 UTC - November 4 0500 UTC**

**South Dakota Counties:** Beadle - Kingsbury - Brookings - Jerauld - Sanborn - Miner - Lake - Moody - Brule - Aurora - Davison - Hanson - McCook - Minnehaha - Turner - Lincoln

Snowfall of 2 to 6 inches was accompanied by periods of freezing rain and freezing drizzle. The precipitation began before daybreak and continued into the late evening. Several schools were closed or delayed, especially in the Chamberlain to Huron area where the greatest snowfall was reported. Travel was greatly affected by slippery roads, with numerous accidents reported.

**Minnesota Counties:** Lincoln - Lyon - Murray - Cottonwood - Nobles - Jackson - Pipestone - Rock

Snowfall of 2 to 4 inches was accompanied by freezing rain and freezing drizzle. The precipitation began before daybreak and continued into the late evening. Several schools were closed or delayed. Travel was greatly affected by slippery roads, with numerous accidents being reported.

**Iowa Counties:** Lyon - Osceola - Dickinson - Sioux - O'Brien - Clay

Freezing rain and freezing drizzle greatly impacted travel by causing slippery roads. Several schools were closed, or delayed the following morning. Ice accumulation on power lines caused a power outage affecting about three thousand people in the Spirit Lake area. The precipitation occurred from before daybreak to late evening, and was mixed with light snow at times.

# 24 November 2004 Storm Summary

Used in the jobsheet for IC 5.4

## 1. ILX (Lincoln, IL) Winter Weather Watches, Warnings, and Advisories Timeline

2108 UTC 23 November 2004 Snow Advisory valid for the 24th 1200 UTC - 0000 UTC. See Figure 1 for details and expected amounts.

0422 UTC 24 November 2004 issued an update to original Snow Advisory, no changes from Figure 1.

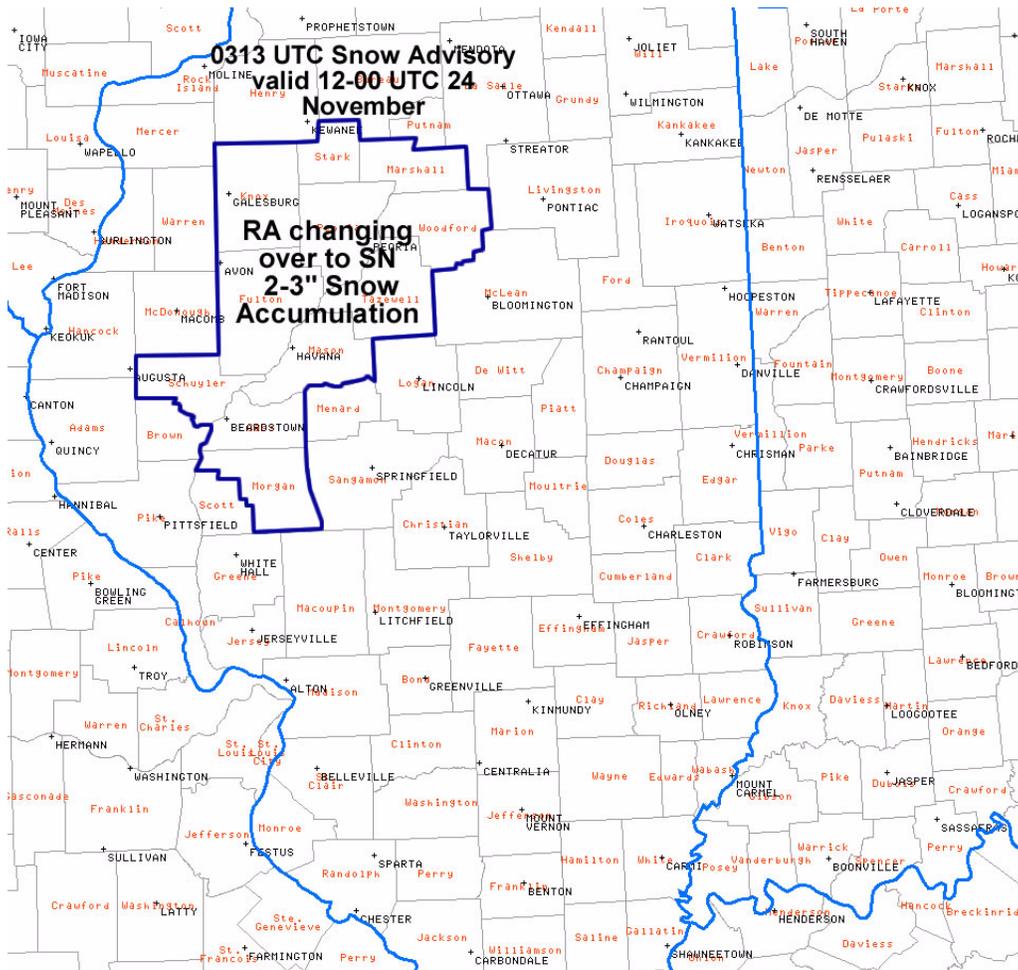


Figure 1: ILX Snow Advisory, with the expected threats as shown in the figure.

1004 UTC 24 November 2004 added 5 counties to the snow advisory and updated the expected amounts. Snow Advisory begins at time of issuance and still expires at 0000 UTC on the 25th. See Figure 2 for details of the updated advisory.

## AWOC Winter Weather Track FY06

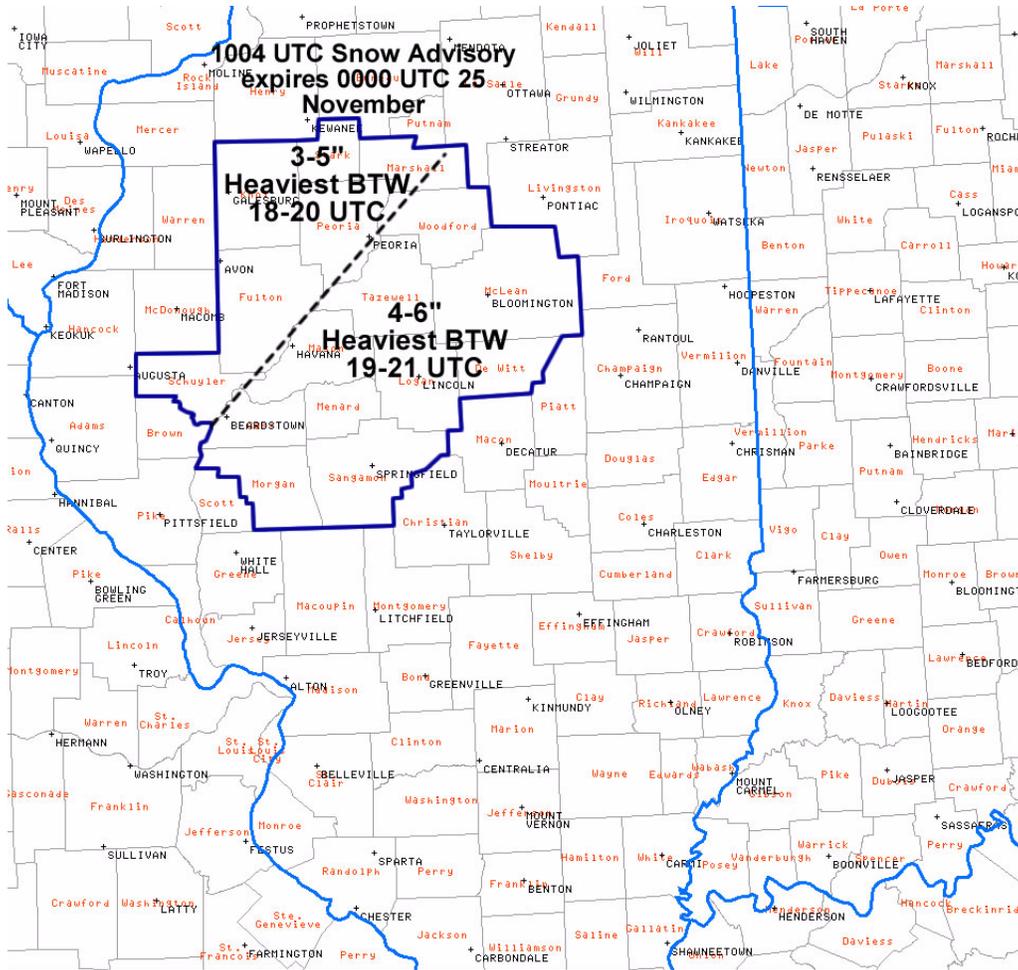


Figure 2: ILX Snow Advisory, with the expected threats as shown in the figure. Black dashed line indicates general region separating heavier snowfall.

1700 UTC 24 November 2004 upgraded 10 counties to a Heavy Snow Warning effective at the time of issuance through 0000 UTC on the 25th. The remainder of the counties from the 1004 UTC Snow Advisory (Fig. 2) have no change in the expected snow and timing of that snow. See Figure 3 for details on the Warning and Advisory.

2148 UTC 24 November 2004 updated the Warning and Advisory, with no changes to counties, amounts, or expiration time. Final product issued for this event.

## AWOC Winter Weather Track FY06

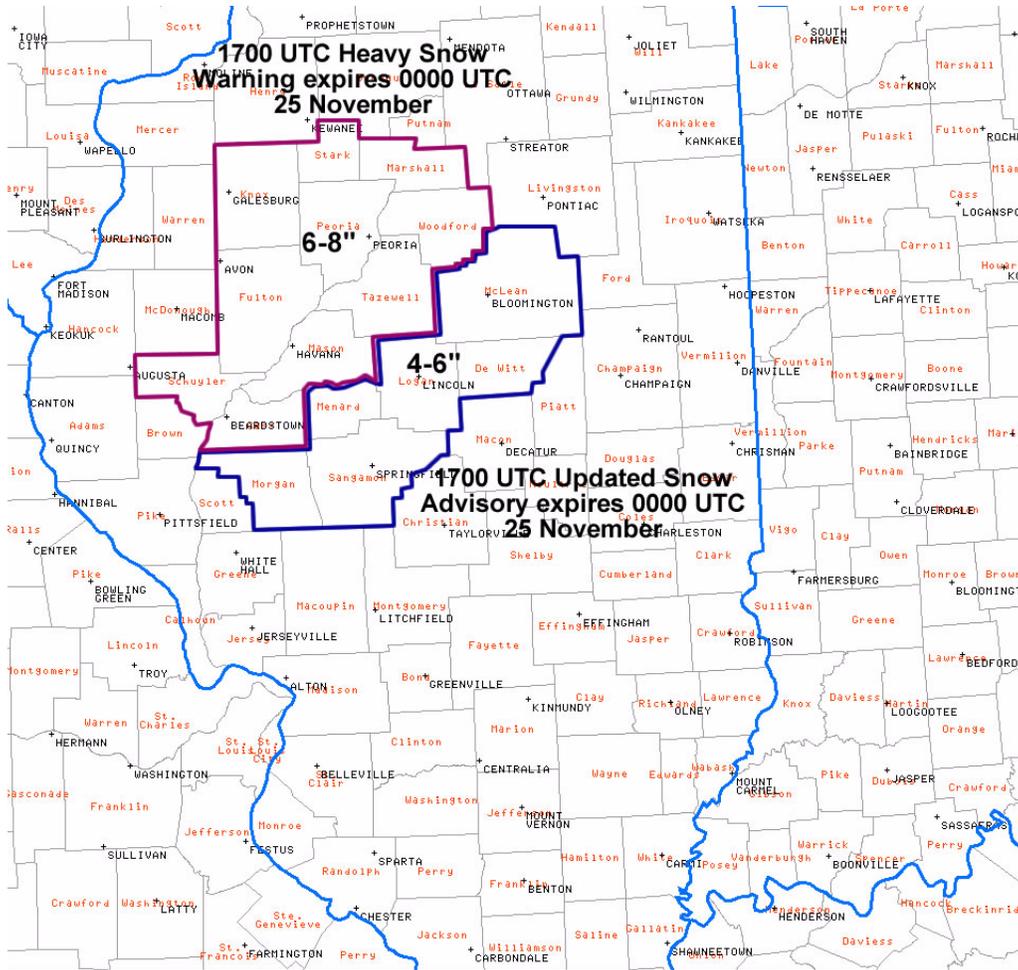


Figure 3: ILX Heavy Snow Warning and Snow Advisory, with the expected threats as shown in the figure.

## 2. Decoded METARs and Precipitation Totals

**AWOC Winter Weather Track FY06**

**Table 1: St. Louis, MO Decoded METARS**

DATE	TIME	T	TD	RHZ	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX	
23-Nov	2151	54	51	90	40	6		986	113	7	9	OVC		
23-Nov	2251	53	51	93	50	8		986	111	4	9	OVC	-RA	
23-Nov	2351	52	52	100	40	9		984	104	2.5	5	OVC	-RA	
24-Nov	51	52	51	97	60	9		983	101	3	5	OVC	-DZ	
24-Nov	151	51	51	100	60	11		982	99	2	3	OVC	-DZ	
24-Nov	251	51	50	96	50	9		983	101	3	3	OVC	-DZ	
24-Nov	351	50	50	100	50	10		978	85	3	3	OVC	-DZ	
24-Nov	451	51	50	96	60	8		977	80	4	8	OVC	-RA	
24-Nov	551	51	50	96	50	7		975	74	4	10	OVC	-RA	
24-Nov	651	51	50	96	60	8		972	62	5	10	OVC	HZ	
24-Nov	751	50	49	96	50	10		969	52	2	8	OVC	-RA	
24-Nov	851	49	48	97	50	13		964	37	2.5	8	OVC	-RA	
24-Nov	951	48	47	96	30	10		961	26	1.2	6	OVC	-RA	
24-Nov	1051	47	46	97	30	14		959	21	1.2	6	OVC	-RA	
24-Nov	1151	45	44	97	20	17	21	957	14	2.5	8	OVC	-RA	
24-Nov	1251	44	42	93	30	19	29	954	6	2.5	8	OVC	-RA	
24-Nov	1351	42	40	92	30	18	29	951	994	2.5	12	OVC	-RA	
24-Nov	1451	40	39	97	20	17	23	949	990	2.5	10	OVC	-RA	
24-Nov	1551	39	37	92	20	19	28	946	979	2.5	13	OVC	RA	
24-Nov	1651	38	36	93	10	12	25	949	988	2.5	10	OVC	IP	
24-Nov	1751	33	32	96	320	11		952	999	0.5	13	OVC	SN	
24-Nov	1851	33	32	96	320	13	19	951	998	0.2	4	OVC	+SN	
24-Nov	1951	34	33	96	340	16	23	957	16	1.8	8	OVC	-SN	
24-Nov	2051	35	34	96	330	16	22	961	29	10	13	OVC	-SN	
24-Nov	2151	34	33	96	310	14	18	968	54	1.5	5	OVC	-SN	
24-Nov	2251	34	33	96	320	14	21	972	70	1.8	15	OVC	-RA	
24-Nov	2351	34	32	92	330	15	26	977	87	1.8	12	OVC	-SN	
25-Nov	51	33	32	96	310	15		981	101	1.5	5	OVC	-SN	
25-Nov	151	32	31	96	320	12		984	111	9	14	OVC		

St. Louis, MO (KSTL) received nearly 18 hours of steady light rain or drizzle before the changeover to snow near 1700 UTC on the 24th. Temperatures remained above freezing throughout the snowfall event, no doubt limiting the snow amounts. Liquid equivalent amounts from 24 November (including the rainfall) were 1.39 inches, and they did record 1.4 inches of snow.

**AWOC Winter Weather Track FY06**

**Table 2: Peoria, IL Decoded METARS**

DATE	TIME	T	TD	RHZ	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Nov	454	44	35	70	50	10		987	117	10	95	BKN	
24-Nov	554	43	34	70	50	7		990	128	10	29	OVC	
24-Nov	654	42	33	70	30	13		988	121	10	20	OVC	-RA
24-Nov	754	42	33	70	40	12	18	985	112	10	80	OVC	
24-Nov	854	40	32	73	30	10	18	985	110	10	70	OVC	-RA
24-Nov	954	39	32	76	20	11	19	982	100	10	38	OVC	
24-Nov	1054	35	32	88	10	10	18	979	92	5	33	OVC	-SN
24-Nov	1154	36	30	79	40	17	24	976	80	9	55	OVC	-SN
24-Nov	1254	37	31	78	20	13	18	973	72	10	65	OVC	
24-Nov	1354	37	32	82	10	13	19	974	74	8	28	OVC	-RA
24-Nov	1454	36	32	85	30	17	22	970	61	2.5	14	OVC	-SN
24-Nov	1554	35	33	92	20	14	22	967	50	6	23	OVC	-SN
24-Nov	1654	37	33	86	30	18	24	962	34	8	22	OVC	-SN
24-Nov	1754	35	34	96	20	14	30	958	20	2.5	12	OVC	-SN
24-Nov	1854	34	32	92	20	17	34	955	9	1	9	OVC	-SN
24-Nov	1954	33	32	96	360	8		963	38	0.2	5	OVC	+SN
24-Nov	2054	33	32	96	10	10	16	963	39	0.2	3	OVC	+SN
24-Nov	2154	33	32	96	10	8	17	967	53	0.2	3	OVC	+SN
24-Nov	2254	32	31	96	350	8	15	972	69	0.5	5	OVC	-SN
24-Nov	2354	31	30	96	350	9	15	976	82	1.2	9	OVC	-SN
25-Nov	54	31	27	85	340	7		977	87	10	25	OVC	

Peoria, IL (KPIA) only had a couple hours of rain before it changed over to snow, ending right around 0000 UTC. Storm total snowfall was 5.8 inches with a liquid equivalent (which included 2 hrs of light rain) was 0.74 inch. KPIA also saw significant wind gusts during the event.

**AWOC Winter Weather Track FY06**

**Table 3: Springfield, IL Decoded METARS**

DATE	TIME	T	TD	RHZ	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Nov	254	48	42	80	40	8		988	119	6	21	OVC	HZ
24-Nov	354	47	41	80	40	12		985	110	5	21	OVC	HZ
24-Nov	454	46	41	83	50	12		984	106	5	25	OVC	HZ
24-Nov	554	45	42	89	40	10		983	102	4	25	OVC	-RA
24-Nov	654	44	42	93	30	12		980	94	2.5	27	OVC	RA
24-Nov	754	44	42	93	40	15		979	88	2	9	OVC	RA
24-Nov	854	44	41	89	40	18		974	71	2.5	7	OVC	RA
24-Nov	954	43	41	93	30	17	27	973	69	2.5	10	OVC	RA
24-Nov	1054	41	38	89	30	23	30	969	57	4	14	OVC	-RA
24-Nov	1154	39	36	89	20	21	28	968	52	3	10	OVC	RA
24-Nov	1254	38	36	93	10	18	24	969	55	2.5	11	OVC	+RA
24-Nov	1354	37	35	93	20	17	24	966	46	2.5	7	OVC	RA
24-Nov	1454	35	33	92	20	23	28	962	31	2	5	OVC	-SN
24-Nov	1554	37	34	89	30	27	34	957	16	2	12	OVC	RA
24-Nov	1654	35	32	88	20	28	35	950	992	2.5	13	OVC	-SN
24-Nov	1754	34	31	88	20	21	29	949	990	0.8	6	OVC	-SN
24-Nov	1854	33	31	92	10	16	21	952	0	0.2	4	OVC	TS SN
24-Nov	1954	33	31	92	350	20	31	955	8	0.2	4	OVC	SN
24-Nov	2054	33	31	92	360	14		959	23	0.5	4	OVC	SN
24-Nov	2154	33	31	92	350	13		963	36	0.2	4	OVC	SN
24-Nov	2254	33	31	92	340	18	21	968	55	1	6	OVC	-SN
24-Nov	2354	33	31	92	330	12	19	973	73	1.2	6	OVC	-SN
25-Nov	54	32	30	92	330	12	20	978	88	1.2	8	OVC	-SN
25-Nov	154	32	28	85	0	0		980	95	4	19	OVC	HZ
25-Nov	254	31	25	78	0	0		983	105	10	38	OVC	

Springfield, IL (KSPI) which is only 65 miles due south of Peoria, had 8 hrs of significant rainfall before the changeover to snow. They had thundersnow, indicating the presence of significant instability across central and southern Illinois. Storm total liquid equivalent precipitation (including all the rainfall) was 1.21 inches, and they received 5.7 inches of snow. Strong winds were also prevalent throughout the precipitation.

**Table 4: Champaign, IL Decoded METARS**

DATE	TIME	T	TD	RHZ	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
24-Nov	353	48	42	80	30	11		986	114	7	27	OVC	
24-Nov	453	47	42	83	50	10		985	109	6	25	OVC	HZ
24-Nov	553	46	43	89	60	12		983	103	6	100	OVC	HZ
24-Nov	653	46	42	86	50	14	20	980	93	7	80	OVC	-RA
24-Nov	753	45	42	89	50	15		979	88	5	65	OVC	-RA
24-Nov	853	44	41	89	30	16	22	975	77	4	29	OVC	-RA
24-Nov	953	43	41	93	40	20	26	971	61	4	13	OVC	-RA
24-Nov	1053	41	39	93	30	23	28	970	60	3	7	OVC	-RA
24-Nov	1153	40	38	92	20	25	33	965	44	3	7	OVC	HZ
24-Nov	1253	39	37	92	40	23	31	964	38	2.5	7	OVC	-RA
24-Nov	1353	38	37	97	30	24	34	962	31	1.2	9	OVC	-SN
24-Nov	1453	38	37	97	30	25	36	957	17	1.5	9	OVC	-SN
24-Nov	1553	39	37	92	40	29	37	950	992	1.5	7	OVC	RA
24-Nov	1653	39	37	92	30	32	39	946	978	2	11	OVC	RA
24-Nov	1753	37	35	93	30	34	48	938	953	1.8	11	OVC	-SN
24-Nov	1853	36	34	92	30	32	43	935	942	1.5	15	OVC	+RA
24-Nov	1953	34	32	92	30	36	44	936	945	1.8	13	OVC	-SN
24-Nov	2053	34	32	92	20	34	44	935	944	3	10	OVC	-SN
24-Nov	2153	33	32	96	360	28	38	948	988	1.5	12	OVC	-SN
24-Nov	2253	33	32	96	360	23	31	954	8	0.2	3	OVC	-SN FG
24-Nov	2353	33	32	96	10	28	37	956	14	2	9	OVC	-SN
25-Nov	53	33	32	96	340	17	23	963	37	1.5	8	OVC	-SN
25-Nov	153	33	31	92	340	16		966	51	2	10	OVC	-SN
25-Nov	253	33	31	92	330	18		970	64	2	13	OVC	-SN
25-Nov	353	32	30	92	320	17		974	77	2	8	OVC	
25-Nov	453	32	28	85	320	19		976	85	10	33	OVC	

Champaign, IL (KCM1) also received significant amounts of rain before the change-over. Storm total precipitation was 1.59 inches, mostly in the form of rain. Snow totals were missing from this site. KCM1 had the strongest winds, up to 44 mph gusts and sustained winds over 35 mph were common during the snowfall.

**3. Storm Data Entries**

**ILX (Lincoln, IL WFO): November 24 2100 UTC - 0000 UTC**

**Counties:** Knox - Stark - Peoria - Marshall - Woodford - Fulton - Tazewell - Mclean - Schuyler - Mason - Logan - Cass - Scott - Morgan - Sangamon

A strong area of low pressure tracked into the Ohio River Valley from the southern Plains on the 24th. This storm brought a combination of heavy snow, high winds and heavy rain to central Illinois. The precipitation began as rain in the morning, but quickly changed to wet snow across much of the region. The snow became heavy at times by midday as isolated bands of thunder snow developed. 4 to 6 inch snow totals were common across much of west central Illinois by the time the snow ended in the evening, with localized 7 to 8 inch accumulations noted across portions of Tazewell, Woodford, and McLean counties. Sustained winds of 20 to 30 mph with gusts to 40 to 50 mph caused considerable

blowing and drifting of the snow in west central Illinois. In addition, the high winds and the weight of the wet snow downed numerous trees and power lines. One fatality (indirect) each was reported in McLean, Peoria and Tazewell counties as a result of traffic accidents. Numerous injuries (indirect) were reported as a result of traffic accidents. Four injuries (direct) occurred at the Howlett Building in downtown Springfield (Sangamon County) when a portion of the roof collapsed under the weight of the wet snow.

**Counties** for Significant Wind 2100 UTC on 24th - 0300 UTC on 25th: Piatt - Champaign - Vermilion - Christian - Macon - Moultrie - Douglas - Coles - Shelby

A strong area of low pressure tracked into the Ohio River Valley from the southern Plains on the 24th. This storm brought strong winds to east central Illinois. Sustained winds of 30 mph with gusts to 60 mph caused widespread tree and power line damage as well as minor structural damage. There were no reports of fatalities or serious injuries.

**LSX (St. Louis, MO WFO): November 24 1200 UTC - 0000 UTC**

**Illinois Counties:** Adams - Brown - Pike

A Thanksgiving eve storm brought 4 - 6 inches of snow to West Central Illinois. Transportation in some areas was temporarily brought to a halt. Most area roads were passable by Thanksgiving Day.

**DVN (Davenport, IA WFO): November 24 1945 UTC - 2330 UTC**

**Illinois Counties:** Henry - Hancock - McDonough

The first winter storm of the season struck the day before Thanksgiving causing significant travel problems. The precipitation began as rain in the pre-dawn hours across Northeast Missouri, Southeast Iowa, and West Central Illinois due to above freezing temperatures. A combination of evaporative/dynamic cooling from the rapidly deepening low allowed a change over to all snow between sunrise and 0900 CST with a brief (generally an hour or less) period of sleet. Mesoscale bands of heavy snow then developed through the morning and afternoon hours with some observing sites reporting thunder or distant lightning. Snowfall rates in the bands were 1-2 inches per hour which allowed accumulation in spite of ground temperatures in the upper 30s to middle 40s. This resulted in numerous traffic accidents. Based on a combination of spotter and co-op reports, McDonough County received 6-7 inches of snow county-wide with the southeast half of Hancock County receiving around 6 inches. Due to an extremely sharp cutoff and mesoscale banding, only the southern parts of Henry County received 6-7 inches of snow. It is highly likely that mesoscale banding produced a 6 inch snowfall within 12 hours across extreme southern or southeast Warren county. However, no collaborative proof in the form of reports from spotters or co-operative observers were received.

# 1 March 2004 Event Summary

Used in the jobsheet for IC 5.5

## 1. ABR, FSD, and LBF Winter Weather Watches, Warnings, and Advisories Time-line

0017 1 March 2004 Blizzard Warning by LBF valid 0017 UTC - 1100 UTC on the 1st for Deuel, Garden, and Sheridan Counties (not in Figure 1).

0017 1 March 2004 Winter Storm Warning by LBF valid 0017 UTC - 1800 UTC on the 1st (see Figure 1 for details).

0017 1 March 2004 Winter Weather Advisory by LBF valid 0017 UTC - 1800 UTC on the 1st (see Figure 1 for details).

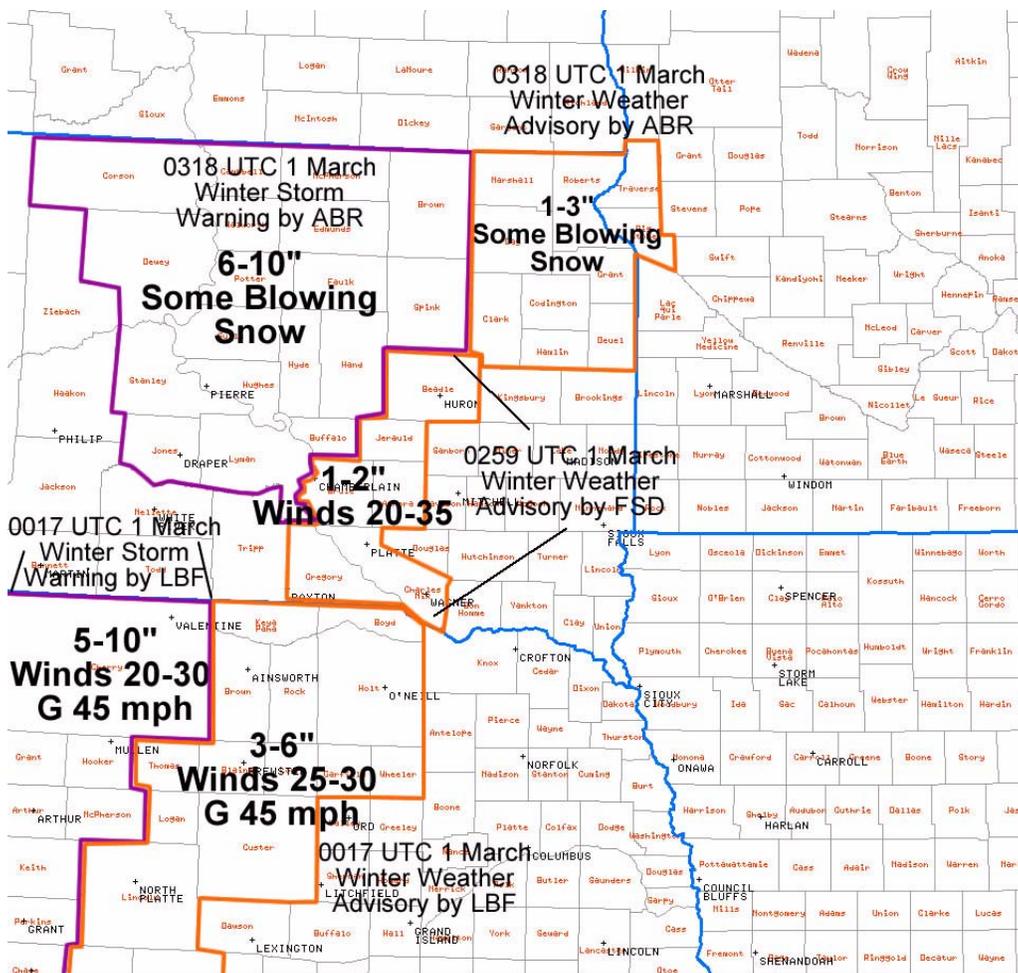


Figure 1: ABR, FSD and LBF WW Advisories and Warnings.

## AWOC Winter Weather Track FY06

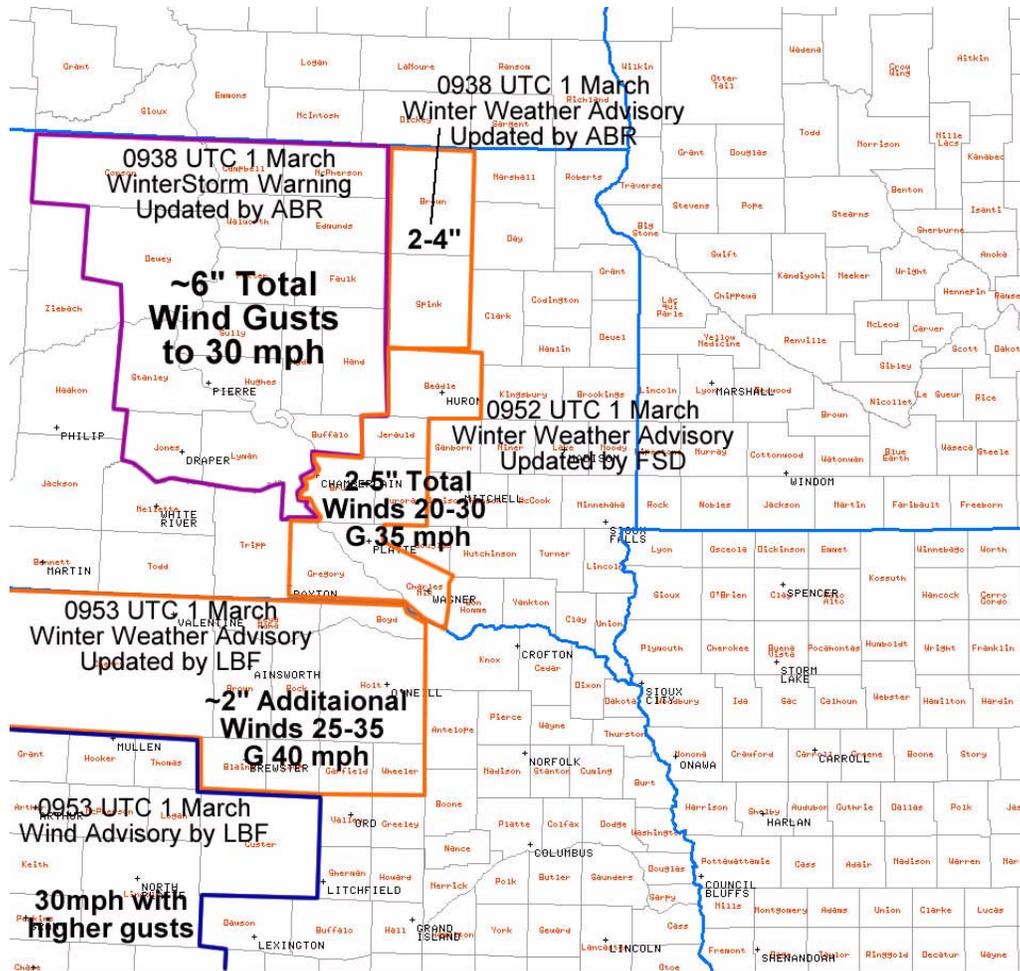


Figure 2: ABR, FSD and LBF WW Advisories and Warnings.

0259 UTC 1 March 2004 Winter Weather Advisory Updated by FSD Updated, valid 0259 UTC - 0000 UTC on the 2nd (see Figure 1 for details).

0318 UTC 1 March 2004 Winter Storm Warning Updated by ABR, valid 0318 UTC - 0600 UTC on the 2nd (see Figure 1 for details).

0318 UTC 1 March 2004 Winter Weather Advisory Updated by ABR, valid 0318 UTC - 0600 UTC on the 2nd (see Figure 1 for details).

0938 UTC 1 March 2004 by ABR: Cancel WWA for several counties, downgrade Warning to Advisory for Brown and Spink Counties valid until 0000 UTC on the 2nd. Continue Warning for several counties in SD through 0000 UTC on the 2nd (see Figure 2 for details).

0952 UTC 1 March 2004 by FSD: Updated Advisory to last until 0000 UTC on the 2nd (see Figure 2 for details).

**AWOC Winter Weather Track FY06**

**Table 1: North Platte, NE Decoded METARs**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
29-Feb	1453	43	42	97	100	13		965	45	3	3	OVC	H
29-Feb	1553	42	42	100	100	14		961	31	2.5	3	OVC	H
29-Feb	1653	42	41	96	110	17		959	25	2.5	3	OVC	R
29-Feb	1753	41	39	93	100	15		956	14	4	10	OVC	R
29-Feb	1853	38	35	90	110	18		952	2	4	13	OVC	R
29-Feb	1953	33	32	96	80	10		947	986	1.8	6	OVC	S-
29-Feb	2053	35	34	96	60	9		944	974	6	9	OVC	R
29-Feb	2153	34	33	96	70	9		940	964	3	7	OVC	S-
29-Feb	2253	33	32	96	30	9		938	958	3	18	OVC	S-
29-Feb	2353	33	32	96	20	12		936	949	6	27	OVC	R-
1-Mar	53	33	32	96	10	14		934	943	3	21	OVC	S-
1-Mar	153	34	32	92	360	16		932	935	8	34	OVC	S-
1-Mar	253	33	32	96	350	15	21	931	936	5	20	OVC	S-
1-Mar	353	34	32	92	340	14		932	938	8	18	OVC	S-
1-Mar	453	33	32	96	330	16	22	932	939	4	12	OVC	S-
1-Mar	553	33	31	92	330	17	28	932	940	2.5	40	OVC	S-
1-Mar	653	32	30	92	340	22	31	933	946	3	55	OVC	S-
1-Mar	853	30	25	81	330	29	37	938	964	8	65	OVC	S-
1-Mar	953	29	25	85	330	27	35	941	977	6	50	OVC	S-
1-Mar	1053	28	24	85	320	23	36	946	994	10	27	OVC	
1-Mar	1153	28	24	85	320	29	35	952	15	7	49	OVC	S-
1-Mar	1253	27	23	85	320	23	32	956	31	8	50	OVC	S-
1-Mar	1353	27	23	85	320	25	33	959	41	10	55	OVC	
1-Mar	1453	28	23	81	310	26	36	964	57	10	20	OVC	

0953 UTC 1 March 2004 by LBF: Downgraded Blizzard Warning to WWA, valid until 2200 UTC on the 1st. Added a Wind Advisory valid until 2200 UTC (see Figure 2 for details).

**2. Decoded METARS and Precipitation Totals**

North Platte, NE (KLBF) received a trace amount of snow on March 1st, but 0.6 inch of snow on the 29th of February and a total liquid equivalent (including rainfall) of 0.55 inch. Table 1 contains the decoded METARs.

**AWOC Winter Weather Track FY06**

**Table 2: Valentine, NE Decoded METARs**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
29-Feb	1852	43	42	97	80	8		962	38	2.5	4	OVC	H
29-Feb	1952	43	43	100	70	8		958	24	2	2	OVC	H
29-Feb	2052	44	42	93	40	15		953	10	3	6	OVC	R
29-Feb	2152	43	42	97	50	13		952	6	3	6	OVC	R
29-Feb	2252	42	41	96	50	17	22	949	994	4	8	OVC	R-
29-Feb	2352	42	40	92	60	15		948	992	2.5	7	OVC	R
1-Mar	52	41	39	93	50	18	23	948	994	4	13	OVC	R
1-Mar	152	39	37	92	60	15	20	948	994	7	16	OVC	R-
1-Mar	252	38	36	93	30	14		946	987	6	12	OVC	R-
1-Mar	352	36	34	92	20	17	24	945	985	6	7	OVC	R
1-Mar	452	33	31	92	360	13	21	944	982	1.5	5	OVC	S-
1-Mar	552	32	31	96	350	16	25	943	977	0.8	7	OVC	S-
1-Mar	652	32	30	92	350	21	31	943	978	0.8	16	OVC	S-
1-Mar	752	31	30	96	340	22	30	944	983	0.8	5	OVC	S-
1-Mar	852	29	28	96	340	22	29	945	989	0.8	26	OVC	S-
1-Mar	952	28	26	92	330	24	32	947	995	0.8	6	OVC	S-
1-Mar	1052	27	26	96	330	27	33	949	4	1.2	28	OVC	S-
1-Mar	1152	27	25	92	330	23	34	953	18	1.2	30	OVC	S-
1-Mar	1252	26	24	92	330	23	30	957	32	1.2			S-
1-Mar	1352	26	24	92	320	26	33	960	45	0.5	28	OVC	S-
1-Mar	1452	26	24	92	320	23	33	965	62	0.8	32	OVC	S-
1-Mar	1552	27	25	92	320	26	34	969	76	1	26	OVC	S-
1-Mar	1652	27	24	89	330	25	32	972	89	1.5	36	OVC	S-
1-Mar	1752	28	25	88	330	23	35	975	98	3	42	OVC	
1-Mar	1852	30	25	81	330	25	32	977	105	4	47	OVC	

Valentine, NE (KVTN) received a trace of snow on March 1st, but on February 29th 2.0 inches of snow were recorded, and a total precipitation (including rainfall) of 0.65 inch. Table 2 has the decoded METARs.

**AWOC Winter Weather Track FY06**

**Table 3: Pierre, SD Decoded METARs**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
29-Feb	2353	35	35	100	20	23	29	964	48	3	4	OVC	H
1-Mar	53	34	34	100	20	20	25	965	52	2	4	OVC	R
1-Mar	153	34	33	96	20	21	28	963	46	4	6	OVC	R
1-Mar	253	33	32	96	20	22	27	963	46	4	8	OVC	R
1-Mar	353	33	31	92	20	22	26	963	44	1	6	OVC	S-
1-Mar	453	33	32	96	20	21	27	960	35	1.5	6	OVC	S-
1-Mar	553	33	32	96	10	23	27	958	30	1	16	OVC	S-
1-Mar	653	33	32	96	360	19		957	25	1	5	OVC	S-
1-Mar	753	32	32	100	360	22		956	21	4	10	OVC	S-
1-Mar	853	31	31	100	360	23	28	955	19	0.8	6	OVC	S-
1-Mar	953	31	30	96	360	21		956	22	0.8	5	X	S-
1-Mar	1053	30	29	96	350	21		959	33	1.2	18	OVC	S-
1-Mar	1153	29	28	96	350	20		962	48	1	19	OVC	S-
1-Mar	1253	29	27	92	350	21		965	57	1.5	19	OVC	S-
1-Mar	1353	28	27	96	340	24	29	966	61	1.5	17	OVC	
1-Mar	1453	28	27	96	340	24	30	969	70	1.2	15	OVC	
1-Mar	1553	28	27	96	340	21	27	972	82	0.8	19	OVC	S-
1-Mar	1653	28	26	92	340	21	28	976	95	0.5	13	OVC	S
1-Mar	1753	28	26	92	340	24	28	979	105	0.2	6	OVC	S+
1-Mar	1853	29	27	92	330	23	28	981	111	0.5	5	OVC	S
1-Mar	1953	29	27	92	330	22		982	114	0.5	7	OVC	S
1-Mar	2053	29	26	89	330	21		984	121	1.2	22	OVC	S-
1-Mar	2153	30	26	85	330	19	25	988	135	2.5	20	OVC	S-
1-Mar	2253	30	26	85	330	17		991	146	8	18	OVC	

Pierre, SD (KPIR) received 1.7 inches of snow and a liquid equivalent (including rainfall) of 0.47 inch.

**Table 4: Aberdeen, SD Decoded METARs**

DATE	TIME	T	TD	RH	DIR	SPD	GST	ALT	SLP	VIS	CIL	COV	WX
29-Feb	2353	34	34	100	30	14	21	975		0.2	1	X	F
1-Mar	53	33	33	100	30	17		975		0.8	1	OVC	
1-Mar	153	33	32	96	30	16		973		2.5	1	OVC	R
1-Mar	253	33	32	96	30	16		972		3	3	OVC	R
1-Mar	353	33	32	96	30	15		972		3	3	OVC	R
1-Mar	453	33	32	96	40	16		970		3	5	OVC	R
1-Mar	553	33	32	96	30	15		967		4	5	OVC	R-
1-Mar	653	33	32	96	30	15		964		5	3	OVC	R-
1-Mar	753	34	33	96	30	14		964	46	4	3	OVC	R-
1-Mar	853	33	32	96	30	13		962	43	1.8	3	OVC	S-
1-Mar	953	33	32	96	30	11		961	39	1.8	3	OVC	S-
1-Mar	1053	33	32	96	10	13		961	39	2.5	3	OVC	S-
1-Mar	1153	33	32	96	30	14		962	42	4	3	OVC	H
1-Mar	1253	33	32	96	30	12		964	51	4	3	OVC	H
1-Mar	1353	33	32	96	20	13		965	53	1.5	3	OVC	H
1-Mar	1453	33	32	96	10	17		966	56	1.8	3	OVC	H
1-Mar	1553	33	32	96	20	16		967	60	2.5	3	OVC	H
1-Mar	1653	32	31	96	10	18		968	63	2	3	OVC	H
1-Mar	1753	32	31	96	360	17		969	68	4	3	OVC	H

Aberdeen, SD (KABR) received 1.5 inches of snow with a liquid equivalent (including rainfall) of 0.26 inch.

**3. Storm Data Entries**

Winter weather impacts on the region were minimal, and as a result only Aberdeen had anything to write-up in Storm Data. Maximum snow amounts occurred in north central South Dakota.

**ABR: March 1 06 UTC - 17 UTC**

**South Dakota Counties:** Corson - Walworth - Dewey - Potter - Sully - Hand - Jones - Lyman

Heavy snow, beginning on February 29th, continued into March 1st and ended late in the morning. Some snowfall amounts included, 6 inches at Isabel and Ree Heights, 7 inches at Gettysburg and Eagle Butte, 8 inches at Murdo, and 9 inches northeast of Isabel in southern Corson County.