

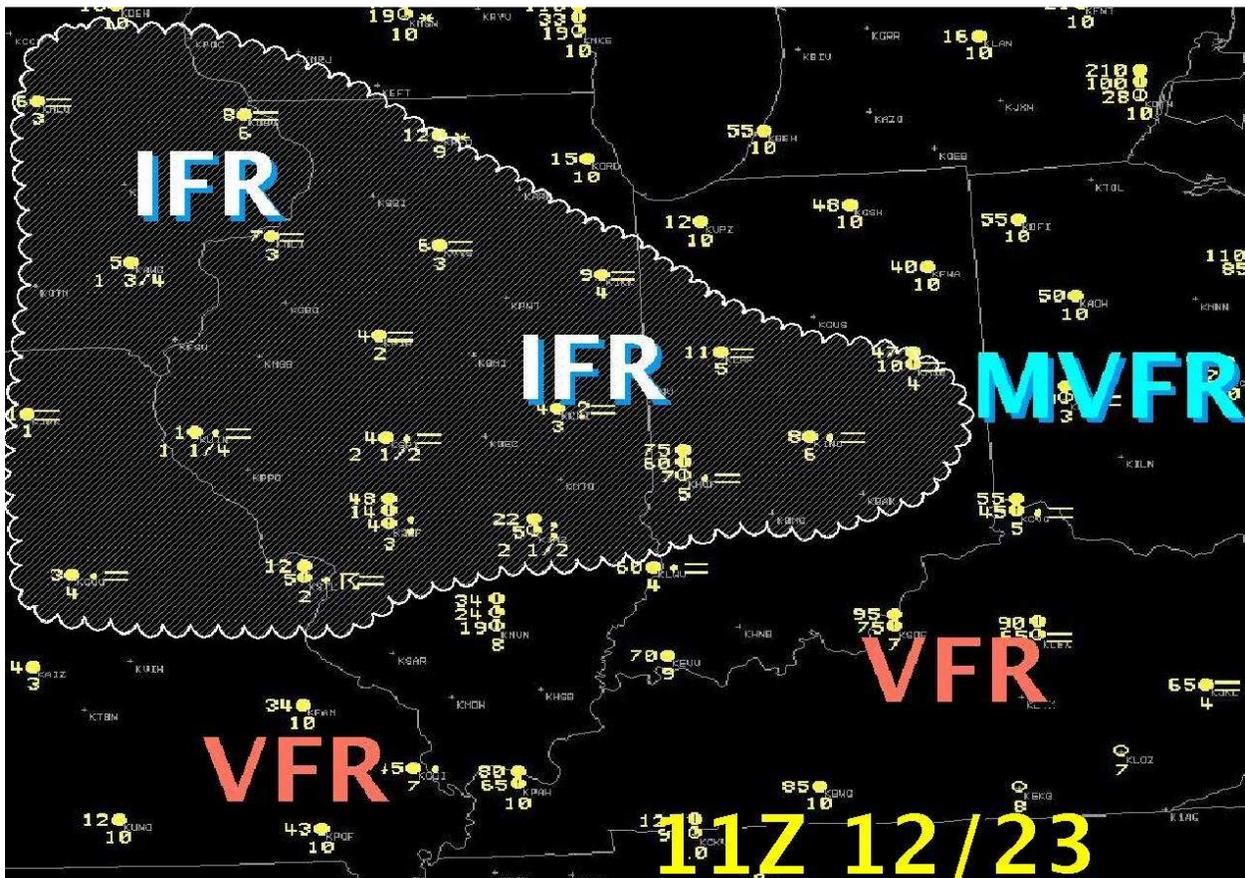
Ending of IFR conditions on December 23, 2009 At Indianapolis

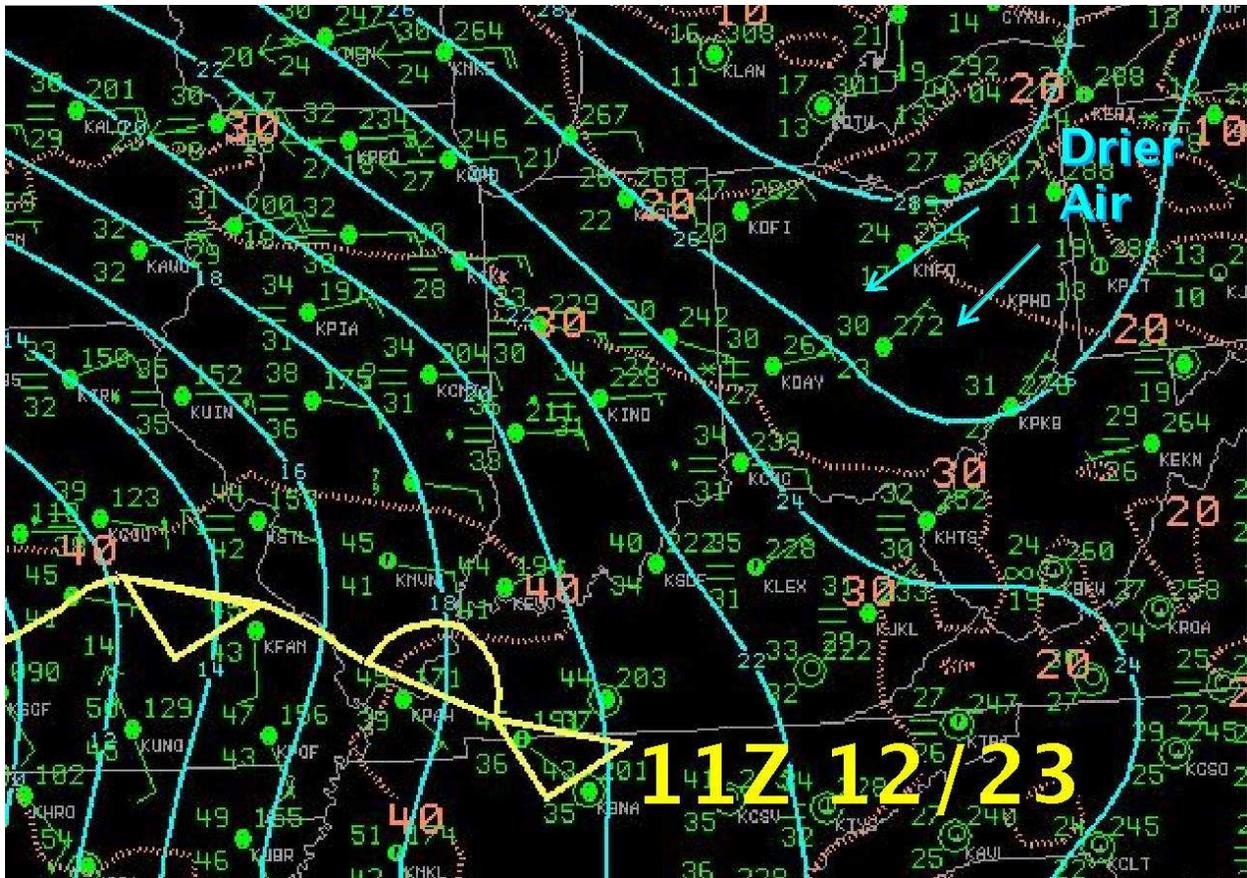
Overview

IFR conditions developed on the evening of December 22nd and continued well into the 23rd before ending that afternoon. By late afternoon and that following night all MTR sites in central Indiana were VFR. The TAFS did a very good job forecasting the occurrence and continuation of IFR conditions. But they did a poor job forecasting the ending of IFR conditions. On this study, I will focus on the 12Z TAF's and some clues that would forecast the improving conditions by the following night.

Synoptic Setup

On the morning of December 23rd, strong low pressure was over Texas and a warm front extended east across northern Arkansas into the Ohio valley. Most areas south of the warm front were VFR, while most areas north of the warm front from central Ohio and westward were IFR.





Note Drier air just east of Indiana. Orange numbers indicate dew points and you will notice that dew points were about 20 degrees from South Bend to Western Pennsylvania. This is about 10 degrees lower than what they were over central Indiana. This drier air will be a significant factor later on as this drier air moves closer to central Indiana.

What did the 11Z TAF's forecast

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FTUS80 KIND 231121 RRD
KIND 231120Z 2312/2418 09010KT 4SM -RA BR OVC008
    FM231600 09012KT 5SM BR VCSH OVC012
    FM240000 09015KT 5SM BR VCSH OVC012
    FM241500 09015KT 5SM -RA BR OVC015
  
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How does this forecast compare with MAV and MET guidance?

FOUS23 KIND 230000

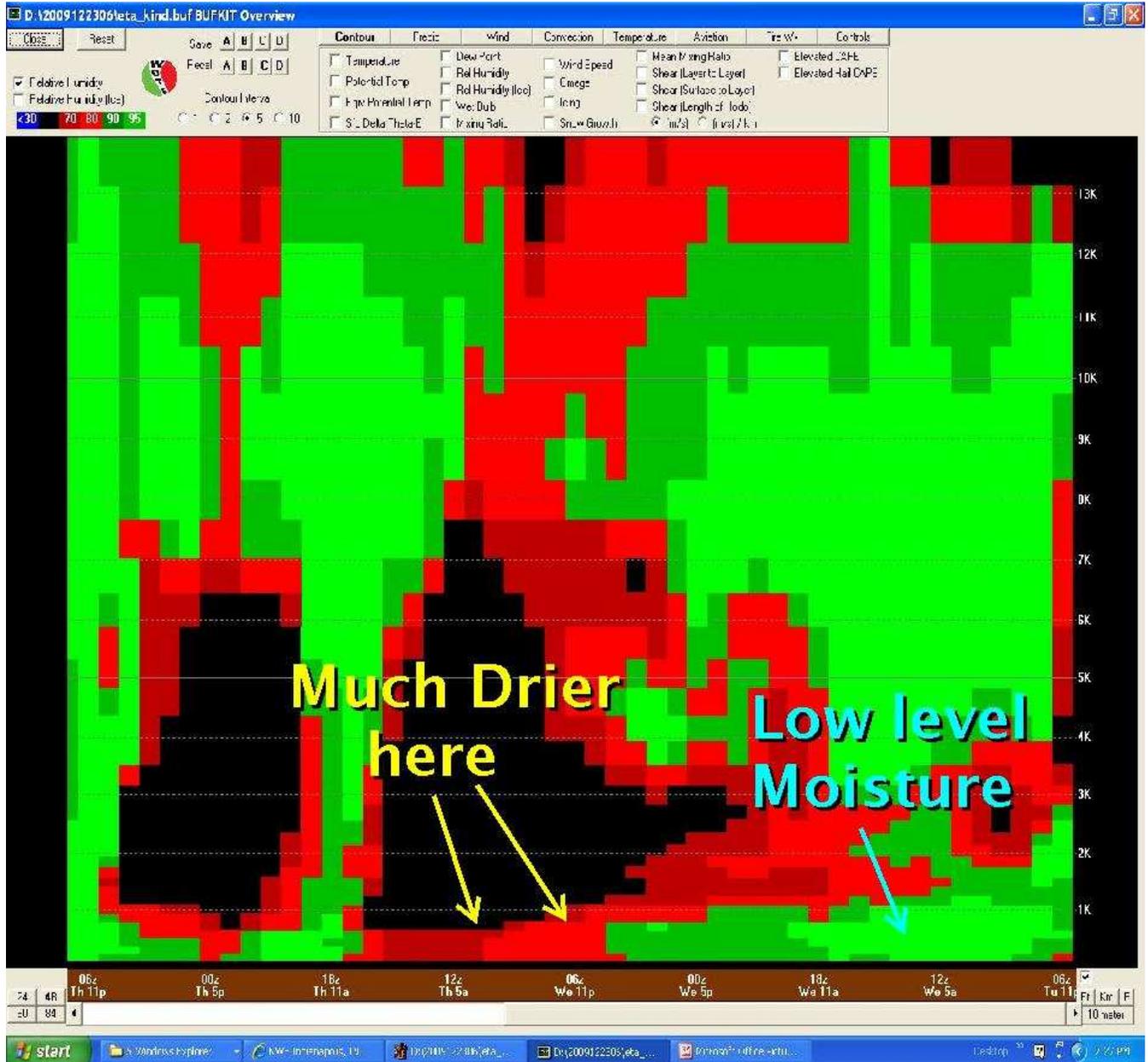
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DT /DEC	23					/DEC 24					/DEC 25					/					
HR	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	18	00
X/N							38				32				45				37		41
TMP	35	35	34	33	35	35	33	34	34	34	34	35	41	45	43	43	43	41	39	39	35
DPT	31	31	31	30	31	32	31	30	29	29	30	31	34	36	37	38	37	36	34	31	28
CLD	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV
WDR	09	08	08	09	10	09	10	09	09	09	09	10	09	10	11	11	13	15	19	18	
WSP	10	11	13	13	11	13	15	15	15	14	16	18	18	21	23	24	23	23	18	15	14
P06			34		41		48		31		38		52		56		66		80	34	11
P12							65				52				64				86		34
Q06			0		1		1		0		1		1		2		2		2	1	0
Q12							1				1				2				4		0
T06		1/	0	1/	0	1/	0	1/27	2/	0	2/	0	1/	0	2/30	2/	1	0/	0		
T12				1/	0			3/27			2/	0			2/30		3/	2			
POZ	18	15	24	33	30	29	29	29	24	26	27	31	26	20	13	6	4	1	2	4	6
POS	25	32	18	14	18	19	16	11	8	17	7	6	7	4	0	4	0	11	18	57	75
TYP	R	S	R	R	S	S	Z	Z	R	R	R	Z	R	R	R	R	R	R	R	S	S
SNW											0								0		
CIG	4	3	4	3	4	6	7	7	7	7	7	7	7	6	7	6	6	5	4	5	6
VIS	5	5	5	4	5	5	7	7	7	7	7	7	7	5	7	5	5	7	7	7	7
OBV	BR	BR	BR	BR	BR	BR	N	N	N	N	N	N	N	N	N	BR	BR	N	N	N	N

FOUS46 KIND 230000

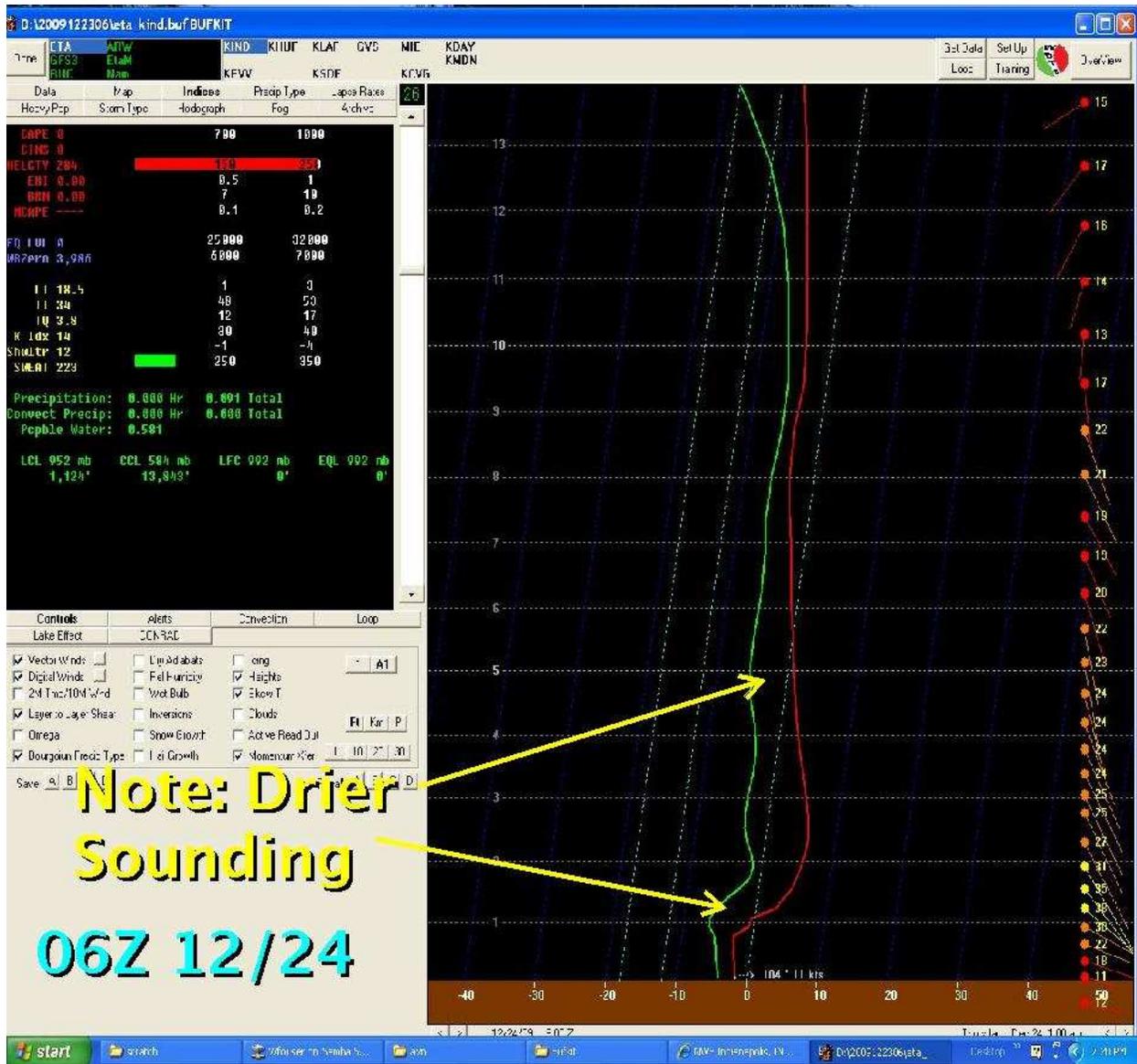
KIND	NAM MOS GUIDANCE										12/23/2009 0000 UTC										
DT /DEC	23					/DEC 24					/DEC 25					/					
HR	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09	12	18	00
X/N							38				29				46				39		45
TMP	34	34	33	33	35	36	34	33	32	32	31	34	42	46	45	42	42	42	42	43	36
DPT	30	30	29	29	30	31	30	29	28	28	27	29	33	37	37	36	37	38	39	34	29
CLD	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV	OV
WDR	09	09	10	10	09	09	09	09	10	10	09	10	11	09	10	10	11	12	14	19	21
WSP	11	11	11	10	12	12	13	12	11	12	13	14	13	17	17	16	20	15	15	17	14
P06			1		33		56		21		21		77		46		73		71	42	20
P12							56				23				79				77		49
Q06			0		0		1		0		0		2		1		3		3	1	0
Q12							1				0				2				4		1
T06		0/	0	1/	1	0/	0	0/	0	0/	1	3/	3	2/	3	4/	4	2/	5	1/12	
T12				1/	1			1/	0			3/	3		4/	4		9/	8		
SNW											0								0		
CIG	4	6	6	4	5	4	5	6	6	6	6	3	6	7	5	3	3	3	3	4	5
VIS	5	5	5	5	7	5	5	6	7	7	7	4	5	5	5	5	5	5	5	4	7
OBV	HZ	N	N	BR	N	HZ	HZ	N	N	N	N	BR	HZ	HZ	BR	BR	BR	BR	N	BR	N

Obviously, the MAV and MET had under forecasted the low ceilings currently occurring across the area. The MAV and MET guidance showed VFR conditions after 21Z on December 23rd. The KIND TAF kept ceilings at 800 feet through 16Z and no better than 1500 feet through 18Z on December 24th.

Now let's take a look at the 06Z 12/23 NAM Bufkit overview for Indianapolis. The NAM shows quite a bit of low level moisture through 18z 12/23 and much drier conditions after 00Z 12/24 as shown in the picture below.

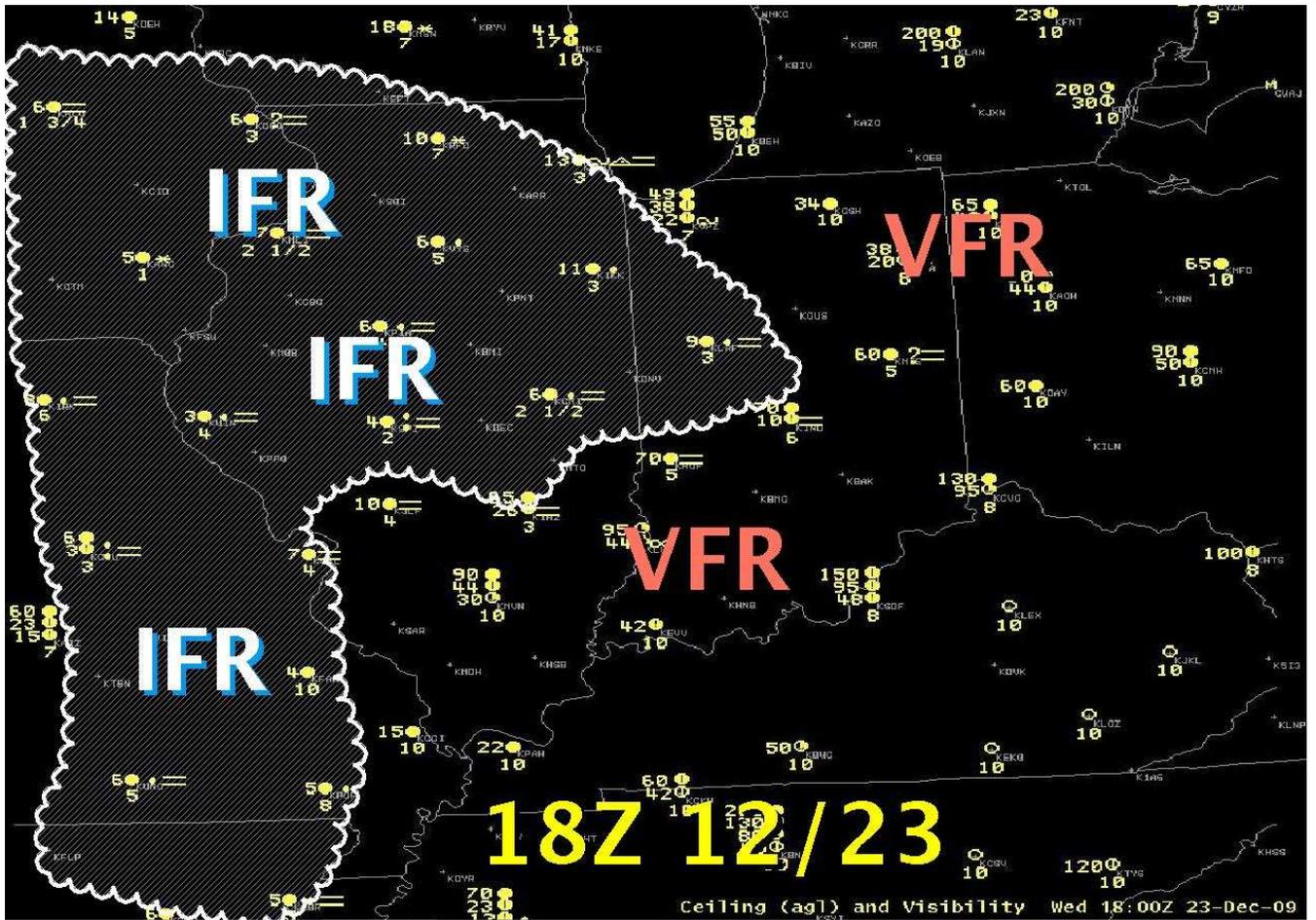


The low level drying is even more obvious when looking at the BUFKIT sounding at 06Z on December 24th.

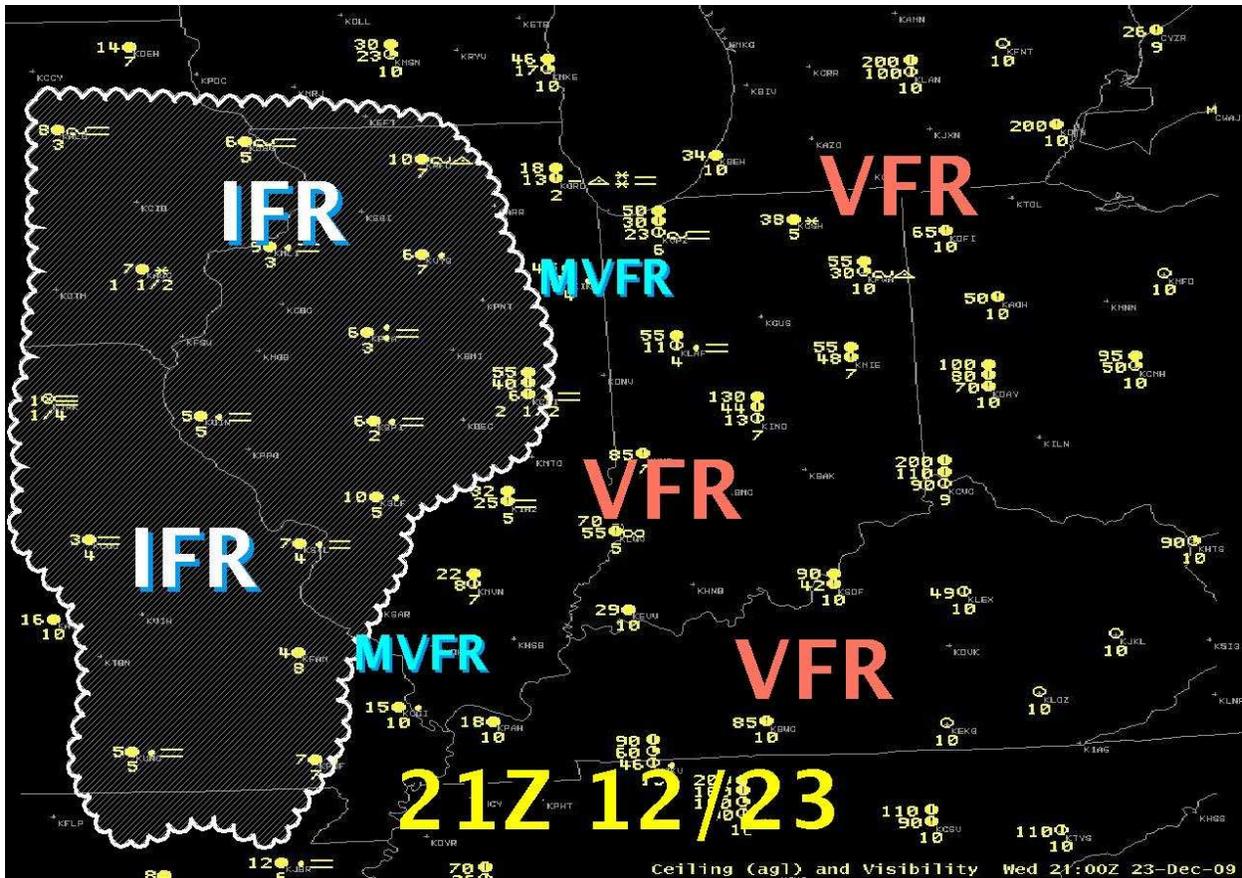


What Happened

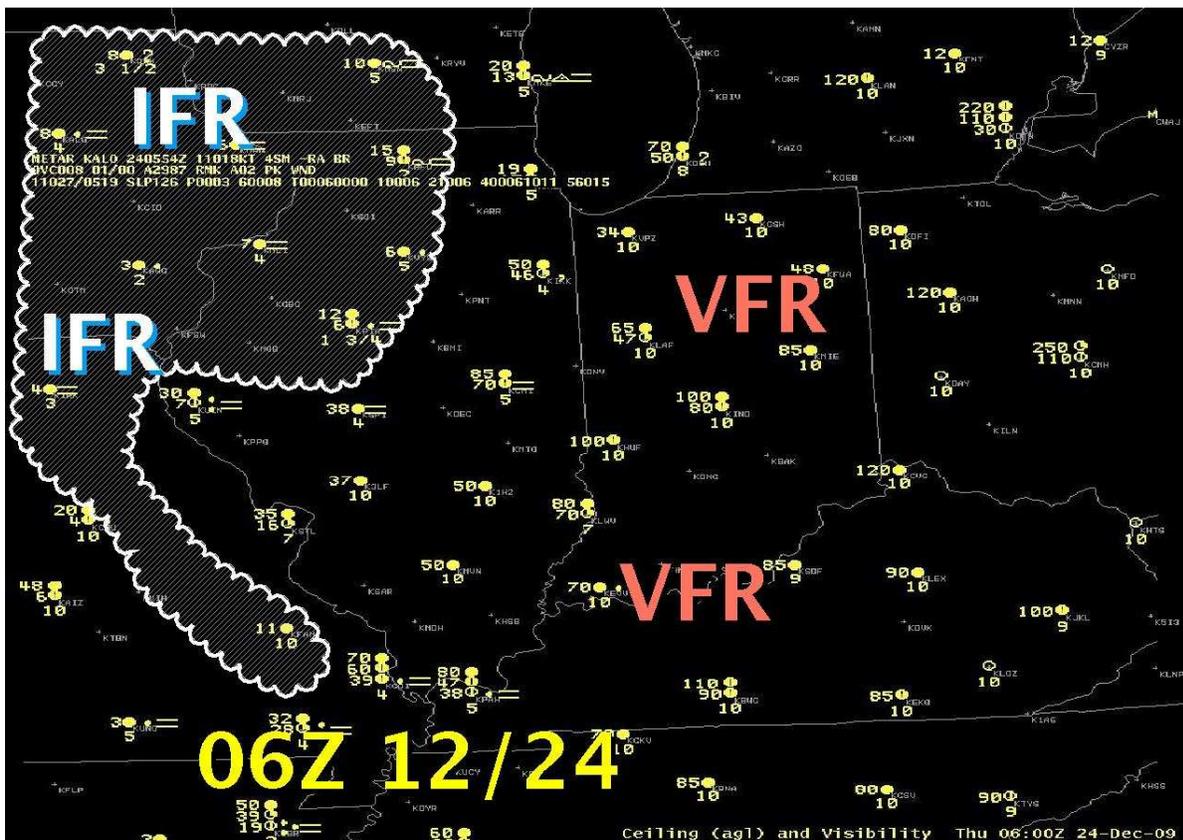
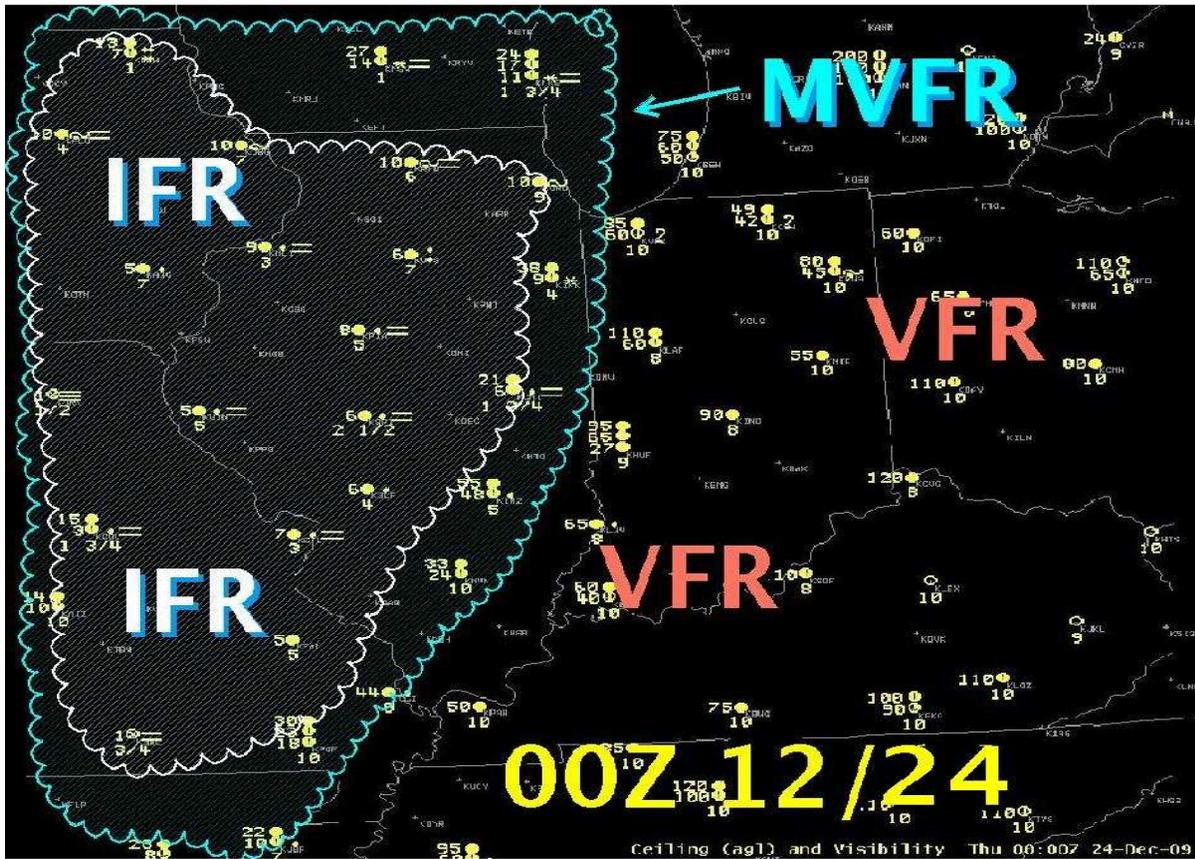
IFR ceilings were the rule until to about 18Z. They actually improved a little sooner south of interstate 70 and a little later northwest of Terre Haute and Indianapolis.



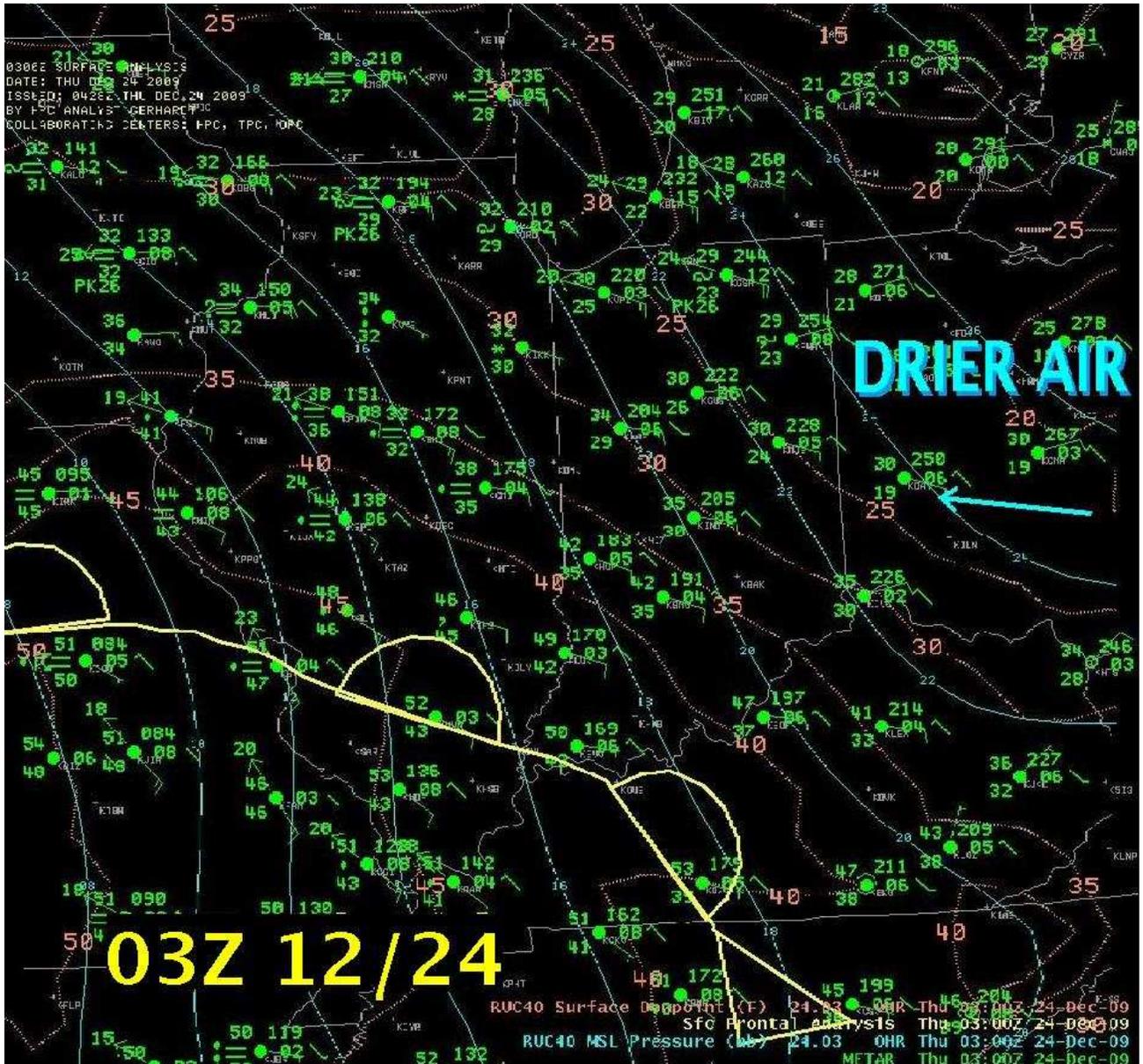
By 21Z VFR conditions were the rule from Indianapolis and southeastward while MVR visibilities were still present at KLAJ and KHUF.



From 00Z and on all of the central Indiana TAF sites in central Indiana were VFR.



Finally here is a surface chart showing the synoptic conditions that evening. Even though the TAF sites were still north of the Warm front, drier air was spreading in from the east. The dewpoints had dropped into the upper teens across Ohio and the lower 20s across eastern Indiana. This continued to push west across central Indiana during the evening and overnight hours on 12/24.



Conclusion

Here was a case where IFR conditions had been well forecasted previously. But a poor job was done in forecasting the ending of IFR condition.

During the first 6 hours, the KIND TAF was almost on the money as IFR ceilings were the rule. The TAF did a much better job than the MAV and MET guidance in those first 6 hours in continuing the IFR ceilings.

However, after 18z the MAV/MET numbers were better as conditions became VFR. Some things that supported this improvement were the much lower dew points upstream and the model soundings which forecasted significant drying in the lower levels after 18Z.

The two points I would take out of this is to monitor changes in dew points or other weather conditions upstream from your TAF site and also note changes in the model soundings. IFR conditions often occur north of a warm front in the winter. But subtle changes noted above were enough to overcome what you would normally expect.