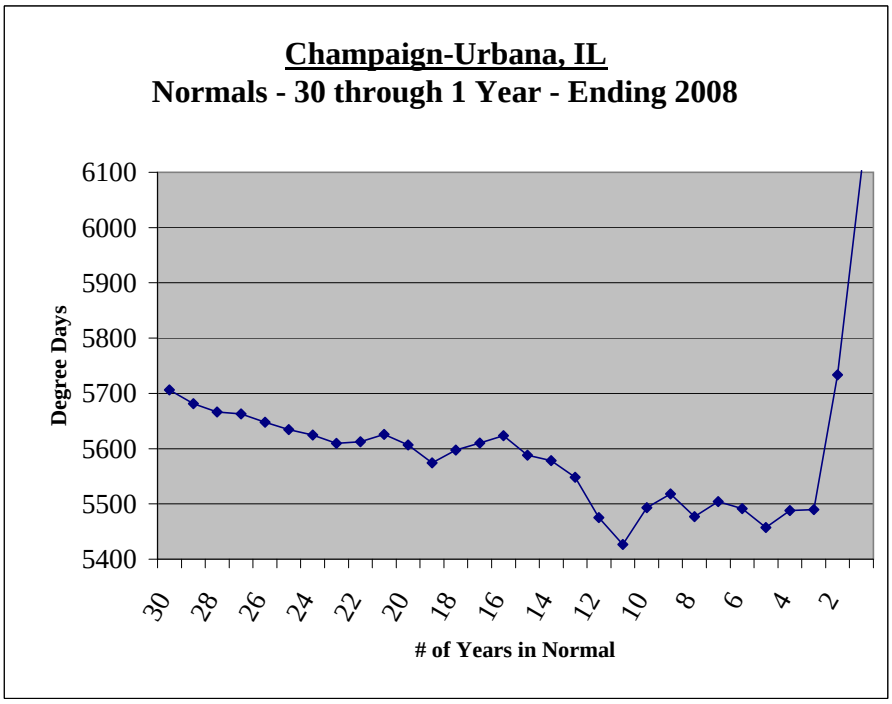
File: Ameren09DDAnalysis
Source: CUMoHDD
Date: Apr 30, 2009
Prep by: CDL

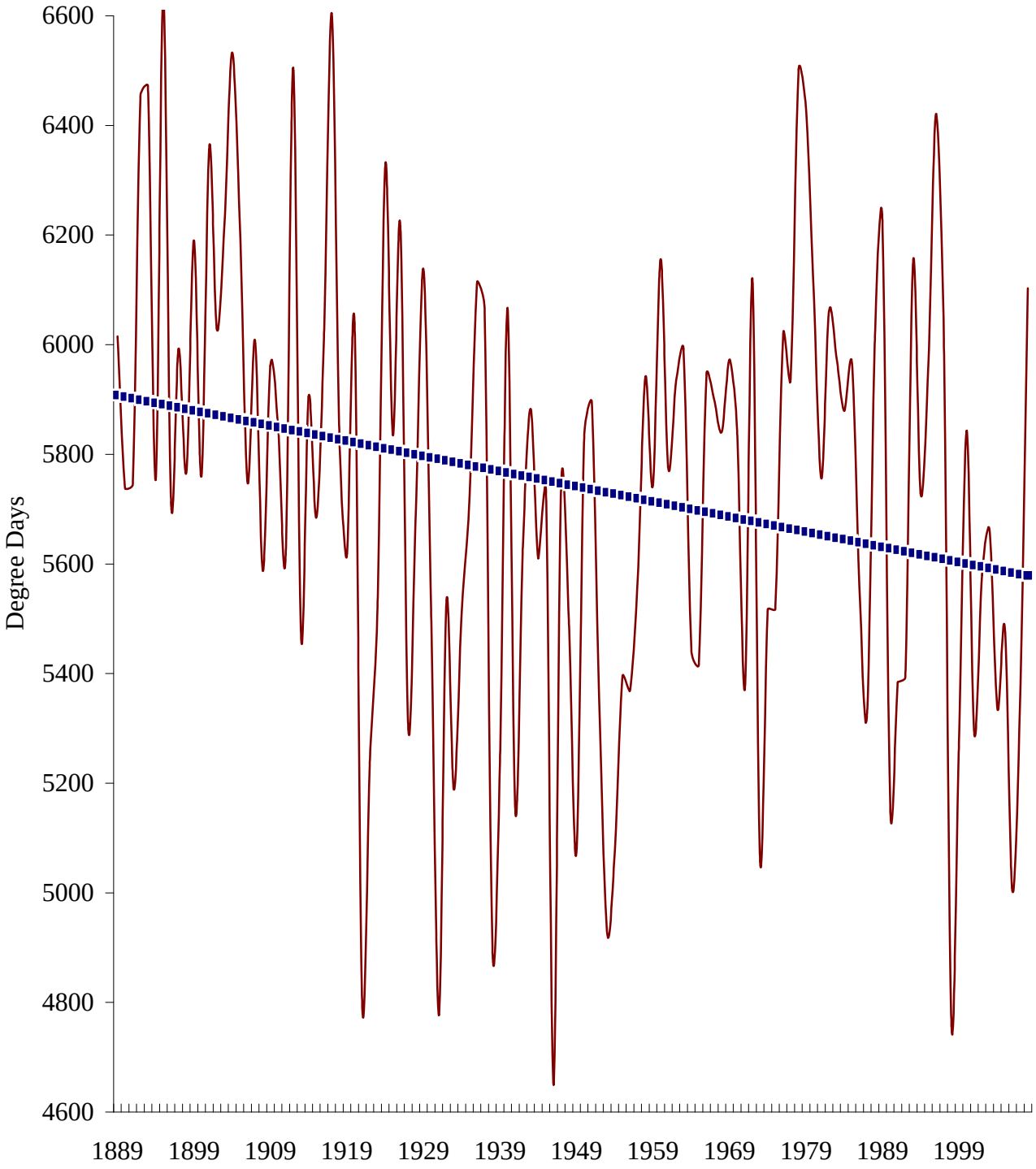
Ameren - Illinois - ChampaignUrbana
Historical Monthly Degree Day Data
Degree Days Analysis 1889-2006
Various Normals

#	Year	Normal
(A)	(B)	(C)
1	30	5,706
2	29	5,681
3	28	5,666
4	27	5,663
5	26	5,648
6	25	5,635
7	24	5,625
8	23	5,610
9	22	5,612
10	21	5,626
11	20	5,607
12	19	5,574
13	18	5,598
14	17	5,610
15	16	5,624
16	15	5,588
17	14	5,578
18	13	5,548
19	12	5,476
20	11	5,427
21	10	5,493
22	9	5,518
23	8	5,477
24	7	5,504
25	6	5,491
26	5	5,457
27	4	5,488
28	3	5,490
29	2	5,734
30	1	6,103

Minimum	5,427
Maximum	6,103
Average	5,595



Ameren Ill -Champaign-Urbana
Historical Annual Heating Degree Days with Regression



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Degree Days Analysis 1889-2008
Summary of Major Tests

Line	Item (A)		30 Yr (B)		10 Yr (C)	
	Normal thru 2008		5,706		5,493	
	Primary Tests					
1	Mean Absolute % Error - MAPE		6.7		6.3	!
2	Prediction Error (Absolute) - PE	(1)	33,225		31,045	
3	Mean Prediction Error (2)		369.2		344.9	
4						
5	Total Squared Error		1.81E+07		1.67E+07	!
6	Mean Ssuared Error (3)	(1)	200,631		185,038	
7	Root Mean Squared Error (4)		447.9		430.2	
8						
9	Closest Predictor		36		54	!
10	Mean - % Error (5)		5.0	!	5.8	
11						
12	Standard Deviation of MAPE	(1)	5.13		5.03	!
13	Standard Deviation of PE		253.7		257.0	
14	Standard Deviation of Sq Error		274,315		248,265	!
15						
16	**Secondary Tests**					
17						
18	Net Total Bias	(1)	5,957		2,584	!
19	Average Bias		66.2		28.7	
20	Maximim Bias		1,214		1,132	!
21	Minimum Bias		(853)		(780)	!
22	Range		2,066		1,912	!
23	Positive Bias	(1)	19,591		18,634	!
24	Average Positive Bias		416.8		405.1	!
25	Negative Bias	(1)	(13,634)		(13,421)	!
26	Average Negative Bias		(317.1)		(305.0)	!
27	Over # of Positives		47		46	!
28	Under # of Negatives		43	!	44	
29	Turning Point Test (6)		0.9149		0.9565	!
30						
31	Mean Percent Error		1.74		1.04	!
32	Maximum Percent Error		25.3		23.6	!
33	Minimum Percent Error		(13.1)		(12.2)	!
34						
35	Count - Primary		1		5	
36	Count - Secondary		1		13	
37	Count - Total		2		18	
38						
39						
40	! Indicates better of two normals compared					
41						
42	(1) Groupings - winner of any test in group will win other tests in group					
43	(2) Mean Prediction Error or Mean Error					
44	or Mean Absolute Deviation or Average Absolute Deviation					
45	(3) Mean Squared Error or Extrapolation Variance					
46	(4) Root Mean Squared Error or Standard Error of Extrapolation					
47	(5) Average percent anomoly from actual for years this normal is best.					
48	(6) Ratio of number of negatives to number of positives					

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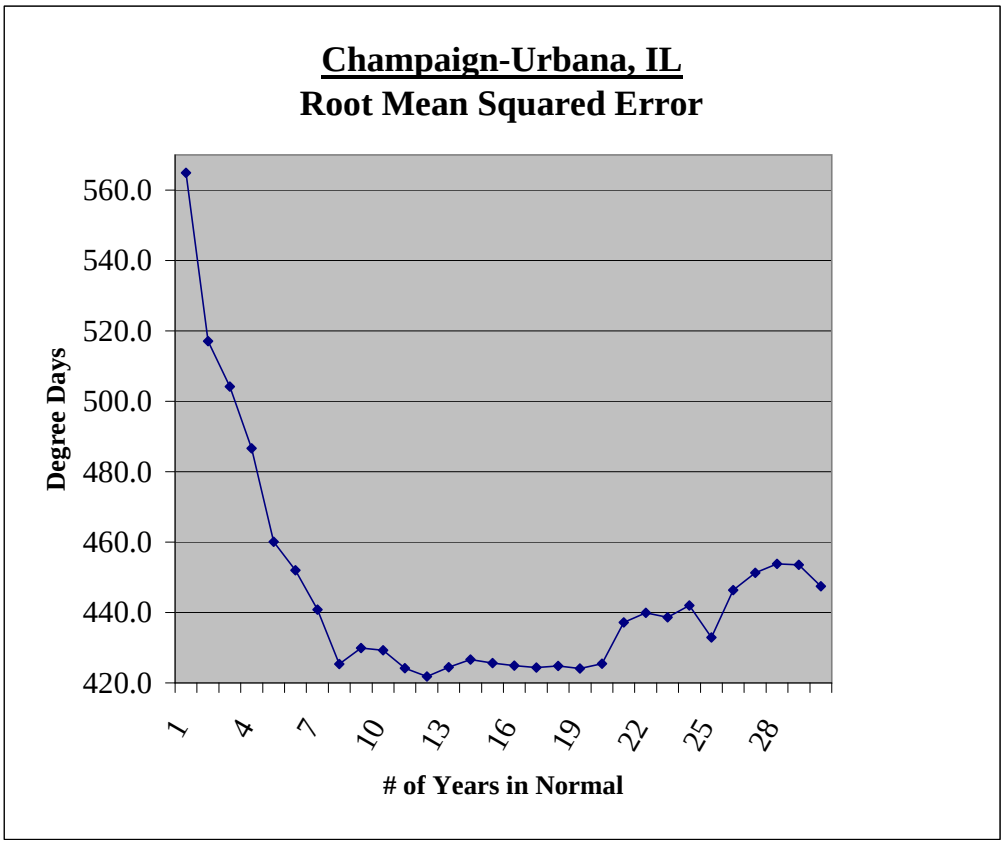
Historical Monthly Degree Day Data
Degree Days Analysis 1889-2008

# of Years (A)	RMSE (B)
1	564.9
2	517.1
3	504.2
4	486.7
5	460.1
6	452.0
7	440.8
8	425.3
9	429.9
10	429.2
11	424.2
12	421.8
13	424.5
14	426.6
15	425.6
16	425.0
17	424.3
18	424.8
19	424.0
20	425.4
21	437.2
22	439.9
23	438.6
24	442.0
25	432.9
26	446.4
27	451.3
28	453.8
29	453.5
30	447.5
Min	421.8
Max	564.9
Mean	446.7

Root Mean Squared Error - Data Ending 2008



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Degree Days Analysis 1889-2008
Summary of Major Tests

Test Years 1919-2008

Line	Item (A)		12 Yr (B)		11 Yr (C)		10 Yr (D)		9 Yr (E)		8 Yr (F)	
	Normal thru 2008		5,476		5,427		5,493		5,518		5,477	
							Primary Tests					
1	Mean Abs % Error		6.20		6.14	*	6.25		6.28		6.21	
2	Pred Error (Abs)	(1)	30,751		30,456		31,045		31,215		30,941	
3	MPE (2)		342		338		345		347		344	
4												
5	Tot Sq Error		1.607E+07	*	1.626E+07		1.665E+07		1.670E+07		1.634E+07	
6	MSE (3)	(1)	178,553		180,623		185,038		185,536		181,587	
7	RMSE (4)		423		425		430		431		426	
8												
9	Closest Predict		19		20		12		11		28	*
10	Mean - % Error (5)		5.8		3.1	*	4.6		3.4		8.3	
11												
12	STD of MAPE	(1)	4.92		5.04		5.03		4.99		4.89	*
13	STD of PE		248.6		257.1		257.0		255.4		251.8	
14	STD of Sq Error		240,615		244,644		248,265		250,422		240,288	*
15												
16							Secondary Tests					
17												
18	Net Total Bias	(1)	3,043		2,834		2,584		2,370		2,189	*
19	Ave Bias		33.81		31.49		28.71		26.34		24.32	
20	Max Bias		1,128		1,125		1,132		1,167		1,099	*
21	Min Bias		(746)	*	(764)		(780)		(793)		(827)	
22	Range		1,874	*	1,888		1,912		1,960		1,926	
23	Positive Bias		16,896		16,645		16,815		16,793		16,565	*
24	Ave Pos Bias		384		362		400		391		376	
25	Negative Bias		(13,854)		(13,811)	*	(14,230)		(14,422)		(14,376)	
26	Ave Neg Bias		(301)		(314)		(296)		(307)		(313)	
27	Over # of Pos		44		46		42	*	43		44	
28	Under # of Neg		46		44	*	48		47		46	
29	Turning Point Test		1.045		0.957	*	1.143		1.093		1.045	
30												
31	Mean Percent Error		1.13		1.09		1.04		1.00		0.95	*
32	Max Percent Error		23.5		23.5		23.6		24.3		22.9	*
33	Min Percent Error		(11.5)	*	(11.7)		(12.2)		(12.2)		(12.7)	
34												
35	Count - Primary			1		2		0		0		3
36	Count - Secondary			3		3		1		0		5
37	Count - Total			4		5		1		0		8

38
39
40 * Indicates best of all normals ! Indicates better of two normals compared
41
42 (1) Groupings - winner of any test in group will win other tests in group
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