

ภาคผนวก

ภาคผนวก ก

การวิเคราะห์อุณหภูมิและความชื้นสัมพัทธ์ของอากาศพระวิหารวัดประดู่ทรงธรรม

Descriptive Statistics: temperature(C)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	27.386	0.438	2.144	24.790	25.170
	2	24	0	27.228	0.267	1.308	25.560	25.950
	3	24	0	27.386	0.438	2.144	24.790	25.170
	4	24	0	27.148	0.530	2.596	24.010	24.400
	5	24	0	28.456	0.0882	0.432	27.520	28.310

Variable	location	Median	Q3	Maximum
temperature(C)	1	27.125	29.700	31.120
	2	27.320	28.310	29.500
	3	27.125	29.700	31.120
	4	27.125	29.800	31.930
	5	28.505	28.700	29.100

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	30.456	0.381	1.866	27.910	28.800
	2	24	0	30.288	0.383	1.878	27.910	28.700
	3	24	0	30.580	0.581	2.846	27.120	27.910
	4	24	0	30.286	0.523	2.561	27.120	28.010
	5	24	0	31.169	0.159	0.779	29.900	30.710

Variable	location	Median	Q3	Maximum
temperature(C)	1	30.105	32.340	33.590
	2	29.905	32.238	33.590
	3	30.105	33.800	34.850
	4	29.700	32.760	34.850
	5	31.120	31.930	32.340

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.666	0.348	1.706	26.730	27.520
	2	24	0	28.779	0.298	1.457	27.120	27.618
	3	24	0	30.007	0.863	4.229	26.340	27.120
	4	24	0	28.362	0.474	2.324	25.950	26.340
	5	24	0	29.887	0.123	0.602	29.100	29.500

Variable	location	Median	Q3	Maximum
temperature(C)	1	27.910	30.610	31.930
	2	28.310	30.008	31.520
	3	28.305	32.248	40.590
	4	27.715	30.918	32.760
	5	29.900	30.310	31.930

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.647	0.324	1.585	26.340	27.120
	2	24	0	28.445	0.260	1.275	26.340	27.220
	3	24	0	31.01	1.00	4.90	26.34	27.22
	4	24	0	28.156	0.384	1.879	25.560	26.340
	5	24	0	29.300	0.0899	0.440	28.310	29.100

Variable	location	Median	Q3	Maximum
temperature(C)	1	28.700	30.208	31.120
	2	28.505	29.500	30.310
	3	29.50	33.17	46.40
	4	27.910	30.108	31.120
	5	29.500	29.500	29.900

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	27.867	0.254	1.244	25.170	26.828
	2	24	0	27.932	0.247	1.212	25.170	27.120
	3	24	0	28.200	0.315	1.543	25.170	27.120
	4	24	0	27.293	0.256	1.253	24.790	26.340
	5	24	0	28.067	0.304	1.489	25.170	26.828

Variable	location	Median	Q3	Maximum
temperature(C)	1	27.910	29.000	29.900
	2	27.910	28.700	29.900
	3	28.110	29.500	30.710
	4	27.520	28.310	29.500
	5	28.110	29.400	30.310

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	25.460	0.425	2.082	22.090	23.630
	2	24	0	28.753	0.965	4.729	24.010	25.170
	3	24	0	27.97	1.14	5.59	22.48	23.73
	4	24	0	31.47	1.27	6.24	25.95	26.73
	5	24	0	29.638	0.158	0.773	28.310	29.100

Variable	location	Median	Q3	Maximum
temperature(C)	1	25.365	27.120	28.700
	2	26.925	33.400	37.880
	3	26.15	30.61	42.94
	4	29.50	34.43	48.49
	5	29.700	30.310	30.710

Descriptive Statistics: RH(%)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	76.31	2.09	10.25	60.20	66.40	76.80
	2	24	0	80.34	1.24	6.06	69.10	74.95	80.40
	3	24	0	76.31	2.09	10.25	60.20	66.40	76.80
	4	24	0	84.84	3.16	15.50	58.60	72.93	91.30
	5	24	0	66.713	0.362	1.773	64.200	65.800	66.300

Variable	location	Q3	Maximum
RH(%)	1	87.30	89.60
	2	87.30	87.30
	3	87.30	89.60
	4	100.00	100.00
	5	67.275	70.700

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	63.13	1.84	9.02	48.60	53.50	65.75
	2	24	0	63.59	1.73	8.49	49.70	54.90	65.75
	3	24	0	58.10	2.36	11.55	41.00	44.88	60.75
	4	24	0	61.73	2.48	12.15	43.00	48.00	64.85
	5	24	0	52.250	0.738	3.616	45.400	49.750	53.600

Variable	location	Q3	Maximum
RH(%)	1	70.50	76.70
	2	70.60	74.70
	3	67.95	75.70
	4	72.18	77.90
	5	55.050	57.200

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	83.565	0.623	3.052	80.470	81.220	82.215
	2	24	0	67.08	1.72	8.41	45.40	61.05	69.30
	3	24	0	85.97	1.56	7.64	79.72	80.73	82.97
	4	24	0	83.072	0.862	4.224	78.490	79.435	81.905
	5	24	0	65.029	0.879	4.307	50.800	62.800	65.300

Variable	location	Q3	Maximum
RH(%)	1	87.002	89.340
	2	73.88	76.80
	3	89.98	105.47
	4	87.722	91.240
	5	68.500	69.800

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	67.49	1.30	6.34	55.50	60.90	69.40
	2	24	0	69.579	0.974	4.771	61.500	65.675	69.600
	3	24	0	58.89	3.09	15.14	24.10	47.78	65.80
	4	24	0	64.35	1.74	8.54	48.20	55.18	66.35
	5	24	0	60.904	0.639	3.129	56.100	59.200	60.150

Variable	location	Q3	Maximum
RH(%)	1	72.10	76.70
	2	71.500	77.800
	3	70.63	74.70
	4	70.03	77.90
	5	63.000	67.800

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	54.87	1.67	8.19	41.20	49.17	54.15
	2	24	0	28.52	1.36	6.66	16.50	23.85	27.95
	3	24	0	31.59	1.45	7.09	16.50	26.85	32.90
	4	24	0	54.62	1.07	5.26	43.30	51.63	55.20
	5	24	0	59.25	1.80	8.82	41.70	52.98	60.35

Variable	location	Q3	Maximum
RH(%)	1	61.65	71.00
	2	34.35	41.10
	3	37.60	39.60
	4	58.68	63.90
	5	67.75	70.50

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	62.71	2.16	10.59	46.90	51.08	65.25
	2	24	0	45.20	2.47	12.12	25.90	36.75	47.55
	3	24	0	60.25	3.82	18.72	24.50	42.95	63.05
	4	24	0	57.59	3.88	19.02	24.10	41.08	60.15
	5	24	0	63.75	1.23	6.03	54.80	58.33	63.25

Variable	location	Q3	Maximum
RH(%)	1	72.60	75.90
	2	50.73	68.50
	3	78.10	81.90
	4	75.55	81.90
	5	68.50	73.80

การวิเคราะห์ความผันแปรของอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอกทั้งสี่ด้าน
กับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในอาคารพระวิหารวัดประดู่ทรงธรรม

General Linear Model: temperature(versus Month, location, ordinal of t

Factor	Type	Levels	Values
Month	fixed	6	1, 2, 3, 4, 5, 6
location	fixed	5	1, 2, 3, 4, 5
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Analysis of Variance for temperature(C), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Month	5	697.71	697.71	139.54	34.96	0.000
location	4	159.48	159.48	39.87	9.99	0.000
ordinal of time	23	2568.37	2568.37	111.67	27.98	0.000
Error	687	2742.17	2742.17	3.99		
Total	719	6167.73				

S = 1.99788 R-Sq = 55.54% R-Sq(adj) = 53.47%

General Linear Model: RH(%) versus Month, location, ordinal of time

Factor	Type	Levels	Values
Month	fixed	6	1, 2, 3, 4, 5, 6
location	fixed	5	1, 2, 3, 4, 5
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Analysis of Variance for RH(%), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Month	5	86454.8	86454.8	17291.0	175.38	0.000
location	4	9396.1	9396.1	2349.0	23.83	0.000
ordinal of time	23	29959.4	29959.4	1302.6	13.21	0.000
Error	687	67733.2	67733.2	98.6		
Total	719	193543.6				

S = 9.92939 R-Sq = 65.00% R-Sq(adj) = 63.37%

การวิเคราะห์ความสัมพันธ์ระหว่างอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอกทั้งสี่
 ด้านกับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในอาคารพระวิหารวัดประดู่ทรง
 ธรรม

Stepwise Regression: temperature 05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is temperature 05 on 8 predictors, with N = 144

Step	1	2	3	4	5
Constant	20.32	17.86	22.38	21.27	22.38
temperature 02	0.319	0.366	0.297	0.164	0.098
T-Value	9.12	10.54	7.81	3.40	1.70
P-Value	0.000	0.000	0.000	0.001	0.091
RH(%)03		0.0178	0.0541	0.0623	0.0685
T-Value		4.32	5.15	6.15	6.56
P-Value		0.000	0.000	0.000	0.000
RH(%)01			-0.071	-0.084	-0.064
T-Value			-3.73	-4.60	-3.20
P-Value			0.000	0.000	0.002
temperature 01				0.189	0.221
T-Value				4.15	4.65
P-Value				0.000	0.000
RH(%)04					-0.027
T-Value					-2.10
P-Value					0.038
S	1.04	0.978	0.936	0.886	0.876
R-Sq	36.93	44.31	49.34	54.92	56.31
R-Sq(adj)	36.48	43.52	48.26	53.63	54.73
Mallows Cp	59.8	38.5	24.5	8.8	6.4

Regression Analysis: temperature 05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{temperature 05} = & 23.6 + 0.145 \text{ temperature 01} - 0.0804 \text{ RH(%)01} \\ & + 0.188 \text{ temperature 02} + 0.00413 \text{ RH(%)02} \\ & + 0.0484 \text{ temperature 03} + 0.0774 \text{ RH(%)03} \\ & - 0.0864 \text{ temperature 04} - 0.0317 \text{ RH(%)04} \end{aligned}$$

S = 0.874255 R-Sq = 57.4% R-Sq(adj) = 54.9%

Stepwise Regression: RH(%)05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is RH(%)05 on 8 predictors, with N = 144

Step	1	2	3	4	5
Constant	113.29	84.67	85.52	93.24	92.45
temperature 01	-1.85	-1.41	-1.86	-1.54	-1.19
T-Value	-9.42	-7.88	-7.65	-5.63	-3.97
P-Value	0.000	0.000	0.000	0.000	0.000
RH(%)01		0.240	0.252	0.224	0.243
T-Value		7.19	7.64	6.53	7.07
P-Value		0.000	0.000	0.000	0.000
temperature 03			0.37	0.41	0.26
T-Value			2.66	2.94	1.75
P-Value			0.009	0.004	0.082
temperature 02				-0.56	-1.43
T-Value				-2.44	-3.55
P-Value				0.016	0.001
temperature 04					0.66
T-Value					2.61
P-Value					0.010
S	5.47	4.69	4.60	4.52	4.43
R-Sq	38.46	54.98	57.15	58.91	60.84
R-Sq(adj)	38.03	54.34	56.24	57.73	59.42
Mallows Cp	75.3	19.5	13.9	9.7	5.0

Regression Analysis: RH(%)05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{RH(%)05} = & 84.4 - 1.19 \text{ temperature 01} + 0.334 \text{ RH(%)01} - 1.38 \text{ temperature 02} \\ & + 0.0124 \text{ RH(%)02} + 0.159 \text{ temperature 03} - 0.0907 \text{ RH(%)03} \\ & + 0.842 \text{ temperature 04} + 0.0452 \text{ RH(%)04} \end{aligned}$$

S = 4.44119 R-Sq = 61.4% R-Sq(adj) = 59.1%

Correlations: T_E, H_E, T_W, H_W, T_N, H_N, T_S, H_S, T_In, H_In

	T_E	H_E	T_W	H_W	T_N	H_N	T_S	H_S	T_In
H_E	-0.340 0.000								
T_W	0.701 0.000	-0.468 0.000							
H_W	-0.056 0.502	0.730 0.000	-0.324 0.000						
T_N	0.727 0.000	-0.334 0.000	0.578 0.000	-0.155 0.063					
H_N	-0.283 0.001	0.925 0.000	-0.317 0.000	0.730 0.000	-0.351 0.000				
T_S	0.522 0.000	-0.503 0.000	0.878 0.000	-0.358 0.000	0.573 0.000	-0.325 0.000			
H_S	-0.350 0.000	0.912 0.000	-0.588 0.000	0.697 0.000	-0.380 0.000	0.848 0.000	-0.635 0.000		
T_In	0.546 0.000	-0.136 0.104	0.608 0.000	0.051 0.545	0.376 0.000	0.065 0.438	0.522 0.000	-0.224 0.007	
H_In	-0.620 0.000	0.593 0.000	-0.612 0.000	0.364 0.000	-0.389 0.000	0.498 0.000	-0.454 0.000	0.572 0.000	-0.679 0.000

Cell Contents: Pearson correlation
P-Value

ภาคผนวก ข

การวิเคราะห์อุณหภูมิและความชื้นสัมพัทธ์ของอากาศศาลาการเปรียญวัดเชิงท่า

Descriptive Statistics: temperature(C)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.753	0.415	2.031	25.560	26.828
	2	24	0	28.671	0.422	2.069	25.170	26.535
	3	24	0	28.585	0.388	1.901	25.170	26.828
	4	24	0	28.699	0.358	1.755	25.950	26.927
	5	24	0	28.605	0.423	2.071	25.170	26.535

Variable	location	Median	Q3	Maximum
temperature(C)	1	29.100	30.610	32.340
	2	29.300	30.610	31.520
	3	29.100	30.208	31.520
	4	29.100	30.208	31.930
	5	29.300	30.610	31.120

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	32.015	0.627	3.072	27.910	29.200
	2	24	0	33.20	1.11	5.42	27.12	28.90
	3	24	0	30.256	0.400	1.957	27.520	28.800
	4	24	0	30.491	0.383	1.875	27.910	29.200
	5	24	0	31.449	0.305	1.493	28.700	30.410

Variable	location	Median	Q3	Maximum
temperature(C)	1	31.320	35.165	36.570
	2	30.91	37.45	44.89
	3	29.700	31.827	33.590
	4	30.105	32.035	34.010
	5	31.320	32.760	33.590

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.963	0.666	3.262	25.170	25.658
	2	24	0	29.79	1.05	5.13	25.17	25.56
	3	24	0	28.730	0.654	3.205	25.560	25.950
	4	24	0	32.95	1.62	7.93	25.56	26.44
	5	24	0	28.012	0.189	0.927	26.730	27.120

Variable	location	Median	Q3	Maximum
temperature(C)	1	27.715	32.340	33.170
	2	27.32	34.11	39.67
	3	27.120	32.760	34.010
	4	29.10	40.39	50.11
	5	27.910	28.700	29.500

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	30.042	0.593	2.904	26.730	27.520
	2	24	0	31.14	1.08	5.28	26.34	27.12
	3	24	0	29.273	0.596	2.917	26.340	26.730
	4	24	0	34.12	1.72	8.41	26.34	27.22
	5	24	0	29.658	0.227	1.110	28.310	28.700

Variable	location	Median	Q3	Maximum
temperature(C)	1	28.700	33.068	35.270
	2	28.71	34.43	43.91
	3	27.915	32.450	34.010
	4	29.10	42.71	51.22
	5	29.500	30.710	31.520

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	27.145	0.796	3.899	22.480	23.630
	2	24	0	28.44	1.31	6.40	21.71	23.34
	3	24	0	26.102	0.716	3.508	21.710	22.955
	4	24	0	34.63	2.94	14.40	20.57	22.19
	5	24	0	27.485	0.449	2.201	24.400	25.268

Variable	location	Median	Q3	Maximum
temperature(C)	1	26.340	31.017	33.170
	2	26.54	32.24	42.46
	3	25.365	29.600	31.930
	4	26.93	50.39	57.89
	5	27.515	29.700	30.710

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	27.544	0.702	3.438	23.240	24.498
	2	24	0	28.15	1.03	5.06	22.48	24.01
	3	24	0	25.654	0.634	3.106	21.710	22.575
	4	24	0	33.59	2.53	12.38	21.71	22.95
	5	24	0	27.972	0.363	1.778	25.170	26.340

Variable	location	Median	Q3	Maximum
temperature(C)	1	26.535	31.318	33.170
	2	26.54	31.73	39.22
	3	25.170	28.503	30.710
	4	27.32	47.43	54.74
	5	27.715	29.800	30.310

Descriptive Statistics: RH(%)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	50.72	1.44	7.05	38.10	43.80	52.40
	2	24	0	52.36	1.47	7.18	39.80	45.45	54.80
	3	24	0	51.00	1.35	6.61	39.30	44.63	52.90
	4	24	0	50.34	1.37	6.70	38.20	43.90	51.75
	5	24	0	47.13	1.43	7.00	36.00	40.88	47.70

Variable	location	Q3	Maximum
RH(%)	1	56.40	59.80
	2	58.98	61.30
	3	57.20	59.20
	4	55.90	58.90
	5	52.03	64.70

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	59.80	3.03	14.85	38.80	43.63	65.90
	2	24	0	59.56	3.97	19.44	25.80	41.00	64.90
	3	24	0	67.58	2.34	11.46	48.00	55.68	72.75
	4	24	0	65.16	2.26	11.08	45.80	54.13	70.35
	5	24	0	61.68	1.62	7.91	49.00	54.23	64.30

Variable	location	Q3	Maximum
RH(%)	1	74.70	75.70
	2	77.50	80.40
	3	77.80	80.40
	4	75.38	76.70
	5	68.97	72.10

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	73.01	3.40	16.64	48.50	55.28	79.30
	2	24	0	67.91	4.68	22.94	29.80	42.93	78.50
	3	24	0	75.56	2.92	14.29	52.30	58.60	82.70
	4	24	0	64.42	5.21	25.54	24.70	35.08	79.70
	5	24	0	72.17	1.20	5.90	60.60	66.05	74.30

Variable	location	Q3	Maximum
RH(%)	1	89.03	92.40
	2	89.03	89.60
	3	87.30	89.60
	4	87.30	89.70
	5	76.80	80.40

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	70.87	3.15	15.43	44.70	54.50	76.70
	2	24	0	69.13	4.30	21.08	25.20	51.95	76.75
	3	24	0	73.91	3.40	16.65	44.40	55.30	80.40
	4	24	0	65.87	5.83	28.58	24.20	30.73	79.75
	5	24	0	75.03	1.21	5.93	63.00	70.50	77.25

Variable	location	Q3	Maximum
RH(%)	1	84.85	87.40
	2	87.38	89.70
	3	89.10	92.50
	4	91.83	96.00
	5	80.08	81.90

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	56.39	3.57	17.48	29.90	36.47	61.25
	2	24	0	55.83	3.97	19.44	24.10	37.88	59.50
	3	24	0	64.30	3.77	18.45	34.10	48.22	70.35
	4	24	0	57.85	4.77	23.37	24.00	37.20	61.00
	5	24	0	61.69	2.22	10.87	41.20	51.57	65.40

Variable	location	Q3	Maximum
RH(%)	1	71.03	78.20
	2	71.90	79.40
	3	79.00	87.10
	4	81.65	89.30
	5	70.28	74.90

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	60.34	2.96	14.48	36.40	44.70	64.10
	2	24	0	55.88	3.93	19.23	24.40	38.10	58.35
	3	24	0	65.23	3.05	14.96	40.00	49.53	67.00
	4	24	0	57.66	5.40	26.47	24.20	28.27	65.60
	5	24	0	64.64	1.50	7.34	50.40	59.33	65.40

Variable	location	Q3	Maximum
RH(%)	1	75.00	78.10
	2	74.58	79.30
	3	80.28	83.50
	4	84.78	89.40
	5	71.53	76.30

การวิเคราะห์ความผันแปรของอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอกทั้งสี่ด้าน
กับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในศาลาการเปรียญวัดเชิงท่า

General Linear Model: temperature(versus Month, location, ordinal of t

Factor	Type	Levels	Values
Month	fixed	6	1, 2, 3, 4, 5, 6
location	fixed	5	1, 2, 3, 4, 5
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Analysis of Variance for temperature(C), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Month	5	924.02	924.02	184.80	12.96	0.000
location	4	1591.31	1591.31	397.83	27.89	0.000
ordinal of time	23	9354.51	9354.51	406.72	28.52	0.000
Error	687	9797.88	9797.88	14.26		
Total	719	21667.72				

S = 3.77648 R-Sq = 54.78% R-Sq(adj) = 52.67%

General Linear Model: RH(%) versus ordinal of time, Month

Factor	Type	Levels	Values
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24
Month	fixed	6	1, 2, 3, 4, 5, 6

Analysis of Variance for RH(%), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
ordinal of time	23	101856.5	101856.5	4428.5	34.91	0.000
Month	5	35990.3	35990.3	7198.1	56.74	0.000
Error	691	87653.9	87653.9	126.9		
Total	719	225500.8				

S = 11.2628 R-Sq = 61.13% R-Sq(adj) = 59.55%

การวิเคราะห์ความสัมพันธ์ระหว่างอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอกทั้งสี่
ด้านกับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในอาคารศาลาการเปรียญวัดเชิงท่า

Stepwise Regression: temperature 05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is temperature 05 on 8 predictors, with N = 144

Step	1	2	3	4	5	6
Constant	14.977	6.602	9.005	8.702	8.795	8.823
temperature 03	0.494	0.691	0.642	0.500	0.424	0.430
T-Value	14.00	19.37	20.05	8.07	6.34	8.04
P-Value	0.000	0.000	0.000	0.000	0.000	0.000
RH(%)04		0.0472	0.0876	0.0786	0.0781	0.0788
T-Value		9.01	11.50	9.59	9.74	11.39
P-Value		0.000	0.000	0.000	0.000	0.000
RH(%)02			-0.0579	-0.0383	0.0032	
T-Value			-6.64	-3.39	0.17	
P-Value			0.000	0.001	0.867	
temperature 02				0.123	0.198	0.191
T-Value				2.66	3.75	5.48
P-Value				0.009	0.000	0.000
RH(%)01					-0.0427	-0.0405
T-Value					-2.72	-4.42
P-Value					0.007	0.000
S	1.38	1.10	0.964	0.943	0.922	0.919
R-Sq	58.00	73.35	79.73	80.71	81.70	81.70
R-Sq(adj)	57.70	72.97	79.30	80.16	81.04	81.17
Mallows Cp	204.7	80.7	30.3	24.3	18.2	16.2

Step	7	8	9	10
Constant	9.833	9.448	9.723	9.676
temperature 03	0.437	0.292	0.164	0.227
T-Value	8.36	3.35	1.40	2.97
P-Value	0.000	0.001	0.164	0.004
RH(%)04	0.0653	0.0563	0.0578	0.0590
T-Value	7.89	6.06	6.23	6.49
P-Value	0.000	0.000	0.000	0.000
RH(%)02				
T-Value				
P-Value				
temperature 02	0.210	0.206	0.200	0.201
T-Value	6.05	6.01	5.82	5.87
P-Value	0.000	0.000	0.000	0.000
RH(%)01	-0.0348	-0.0232	0.0208	
T-Value	-3.79	-2.18	0.71	

P-Value	0.000	0.031	0.481	
temperature 04	-0.041	-0.053	-0.055	-0.053
T-Value	-2.80	-3.40	-3.57	-3.51
P-Value	0.006	0.001	0.000	0.001
temperature 01		0.165	0.299	0.234
T-Value		2.07	2.60	3.44
P-Value		0.040	0.010	0.001
RH(%)03			-0.047	-0.028
T-Value			-1.61	-2.63
P-Value			0.111	0.009
S	0.897	0.887	0.882	0.880
R-Sq	82.68	83.21	83.52	83.46
R-Sq(adj)	82.05	82.47	82.67	82.73
Mallows Cp	10.1	7.8	7.2	5.7

Regression Analysis: temperature 05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{temperature 05} = & 9.75 + 0.291 \text{ temperature 01} + 0.0164 \text{ RH(%)01} \\ & + 0.223 \text{ temperature 02} + 0.0107 \text{ RH(%)02} + 0.149 \text{ temperature} \\ & 03 \\ & - 0.0513 \text{ RH(%)03} - 0.0564 \text{ temperature 04} + 0.0561 \text{ RH(%)04} \end{aligned}$$

S = 0.884097 R-Sq = 83.5% R-Sq(adj) = 82.6%

Stepwise Regression: RH(%)05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is RH(%)05 on 8 predictors, with N = 144

Step	1	2	3	4	5	6
Constant	22.783	-16.197	-9.318	-16.958	-14.740	-13.622
RH(%)03	0.616	0.868	1.063	1.090	1.094	0.667
T-Value	18.26	30.16	24.66	24.71	24.94	5.64
P-Value	0.000	0.000	0.000	0.000	0.000	0.000
temperature 04		0.685	0.482	0.417	0.407	0.349
T-Value		13.72	8.36	6.59	6.44	5.62
P-Value		0.000	0.000	0.000	0.000	0.000
RH(%)04			-0.220	-0.231	-0.240	-0.268
T-Value			-5.67	-5.99	-6.22	-7.14
P-Value			0.000	0.000	0.000	0.000
temperature 01				0.29	0.74	2.19
T-Value				2.29	2.58	4.72
P-Value				0.024	0.011	0.000
temperature 03					-0.52	-1.93
T-Value					-1.74	-4.17

P-Value				0.085		0.000
RH(%)01						0.46
T-Value						3.87
P-Value						0.000
S	6.44	4.23	3.83	3.77	3.75	3.57
R-Sq	70.13	87.21	89.60	89.98	90.19	91.16
R-Sq(adj)	69.92	87.03	89.38	89.69	89.84	90.77
Mallows Cp	317.7	58.0	23.4	19.6	18.3	5.5

Regression Analysis: RH(%)05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{RH(%)05} = & -13.4 + 2.17 \text{ temperature 01} + 0.468 \text{ RH(%)01} + 0.028 \text{ temperature 02} \\ & - 0.0265 \text{ RH(%)02} - 1.96 \text{ temperature 03} + 0.685 \text{ RH(%)03} \\ & + 0.345 \text{ temperature 04} - 0.265 \text{ RH(%)04} \end{aligned}$$

S = 3.58936 R-Sq = 91.2% R-Sq(adj) = 90.7%

Correlations: T_E, H_E, T_W, H_W, T_N, H_N, T_S, H_S, T_In, H_In

	T_E	H_E	T_W	H_W	T_N	H_N	T_S	H_S	T_In
H_E	-0.633 0.000								
T_W	0.879 0.000	-0.634 0.000							
H_W	-0.642 0.000	0.933 0.000	-0.768 0.000						
T_N	0.945 0.000	-0.567 0.000	0.898 0.000	-0.628 0.000					
H_N	-0.592 0.000	0.963 0.000	-0.645 0.000	0.939 0.000	-0.596 0.000				
T_S	0.671 0.000	-0.627 0.000	0.676 0.000	-0.672 0.000	0.648 0.000	-0.628 0.000			
H_S	-0.604 0.000	0.851 0.000	-0.648 0.000	0.876 0.000	-0.617 0.000	0.876 0.000	-0.789 0.000		
T_In	0.754 0.000	-0.287 0.000	0.735 0.000	-0.348 0.000	0.757 0.000	-0.284 0.001	0.239 0.004	-0.156 0.061	
H_In	-0.313 0.000	0.806 0.000	-0.388 0.000	0.742 0.000	-0.335 0.000	0.845 0.000	-0.217 0.009	0.558 0.000	-0.257 0.002

Cell Contents: Pearson correlation
P-Value

ภาคผนวก ค

การวิเคราะห์อุณหภูมิและความชื้นสัมพัทธ์ของอากาศตําหนักสมเด็จพระพุทธ
โฆษาจารย์วัดพุทธโสธรวรย

Descriptive Statistics: temperature(C)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	29.451	0.771	3.778	25.560	26.145
	2	24	0	29.299	0.545	2.671	25.950	26.438
	3	24	0	28.637	0.407	1.995	25.950	26.340
	4	24	0	29.139	0.451	2.210	26.340	26.828
	5	24	0	30.244	0.238	1.167	27.910	29.200

Variable	location	Median	Q3	Maximum
temperature(C)	1	28.900	31.520	41.520
	2	29.300	31.120	34.010
	3	28.700	30.310	32.340
	4	29.100	30.710	34.850
	5	30.310	31.520	31.520

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	31.924	0.588	2.879	27.910	29.200
	2	24	0	31.111	0.638	3.125	26.730	28.108
	3	24	0	30.475	0.396	1.940	27.520	28.800
	4	24	0	32.72	1.11	5.42	27.52	28.80
	5	24	0	30.802	0.265	1.300	28.700	29.500

Variable	location	Median	Q3	Maximum
temperature(C)	1	31.725	34.325	37.000
	2	30.510	34.430	35.270
	3	30.310	32.238	33.590
	4	30.91	34.11	44.89
	5	31.120	31.827	32.760

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.929	0.317	1.554	27.120	27.520
	2	24	0	28.916	0.365	1.790	26.730	27.120
	3	24	0	28.945	0.300	1.470	26.730	27.520
	4	24	0	28.012	0.189	0.927	26.730	27.120
	5	24	0	28.771	0.0974	0.477	28.310	28.310

Variable	location	Median	Q3	Maximum
temperature(C)	1	28.700	30.310	31.520
	2	28.700	30.310	32.760
	3	28.700	30.310	31.520
	4	27.910	28.700	29.500
	5	28.700	29.100	29.500

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	30.272	0.548	2.684	27.120	27.618
	2	24	0	30.513	0.589	2.885	27.120	27.520
	3	24	0	28.880	0.320	1.569	26.730	27.220
	4	24	0	31.071	0.686	3.359	27.120	27.910
	5	24	0	29.594	0.297	1.454	27.910	28.310

Variable	location	Median	Q3	Maximum
temperature(C)	1	29.500	32.340	34.850
	2	30.105	33.485	35.270
	3	28.900	30.310	31.520
	4	30.510	33.383	37.440
	5	29.700	31.017	31.930

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	27.113	0.669	3.276	22.860	24.010
	2	24	0	28.253	0.804	3.938	23.240	24.400
	3	24	0	27.795	0.835	4.093	22.860	24.108
	4	24	0	26.374	0.489	2.397	22.860	23.725
	5	24	0	26.735	0.500	2.451	23.630	24.498

Variable	location	Median	Q3	Maximum
temperature(C)	1	26.730	30.108	32.340
	2	28.110	31.420	35.270
	3	26.925	31.420	36.130
	4	26.535	28.602	29.900
	5	26.340	29.000	30.710

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1
temperature(C)	1	24	0	28.148	0.653	3.201	24.010	25.170
	2	24	0	28.914	0.778	3.812	24.010	25.560
	3	24	0	27.752	0.765	3.749	23.240	24.790
	4	24	0	27.131	0.525	2.571	23.630	24.885
	5	24	0	27.810	0.408	1.999	25.170	25.950

Variable	location	Median	Q3	Maximum
temperature(C)	1	27.910	30.710	33.590
	2	28.110	32.450	35.700
	3	26.925	30.508	35.270
	4	27.320	29.500	31.120
	5	27.515	29.800	31.120

Descriptive Statistics: RH(%)

Results for Month = 1

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	73.46	3.43	16.82	34.90	57.73	75.20
	2	24	0	74.18	3.01	14.73	49.00	61.05	77.85
	3	24	0	73.48	2.08	10.21	52.70	65.05	73.70
	4	24	0	72.14	2.17	10.62	50.50	63.80	74.15
	5	24	0	63.22	1.42	6.97	47.50	58.20	64.30

Variable	location	Q3	Maximum
RH(%)	1	90.63	95.80
	2	89.10	92.50
	3	83.50	85.30
	4	81.90	83.50
	5	67.88	75.50

Results for Month = 2

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	56.25	2.76	13.51	35.60	42.90	58.70
	2	24	0	88.05	1.14	5.56	80.38	82.63	86.96
	3	24	0	86.921	0.705	3.454	81.620	83.897	86.390
	4	24	0	90.85	2.00	9.79	81.26	83.77	87.48
	5	24	0	62.84	1.54	7.54	48.80	55.67	66.45

Variable	location	Q3	Maximum
RH(%)	1	69.20	72.80
	2	94.13	95.30
	3	90.230	92.550
	4	93.48	113.19
	5	68.47	71.80

Results for Month = 3

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	70.40	1.74	8.54	55.50	60.93	74.20
	2	24	0	69.30	1.98	9.72	48.80	60.08	73.80
	3	24	0	70.76	1.71	8.37	54.10	61.95	74.65
	4	24	0	72.17	1.20	5.90	60.60	66.05	74.30
	5	24	0	77.346	0.429	2.104	72.000	76.700	77.800

Variable	location	Q3	Maximum
RH(%)	1	77.63	81.90
	2	77.60	81.90
	3	77.60	81.90
	4	76.80	80.40
	5	79.100	80.400

Results for Month = 4

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	71.25	3.09	15.12	44.80	60.00	71.75
	2	24	0	71.78	3.05	14.96	49.40	56.08	73.35
	3	24	0	75.38	2.23	10.95	56.30	68.03	75.60
	4	24	0	66.79	3.33	16.31	36.20	57.13	67.55
	5	24	0	72.90	1.76	8.64	57.30	65.18	74.65

Variable	location	Q3	Maximum
RH(%)	1	86.90	89.80
	2	86.88	89.80
	3	86.80	89.80
	4	83.10	87.40
	5	80.40	83.50

Results for Month = 5

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	55.31	3.06	15.01	30.80	43.43	58.70
	2	24	0	54.06	3.26	15.99	31.40	36.73	55.20
	3	24	0	49.66	3.29	16.13	24.10	35.18	51.80
	4	24	0	58.83	2.53	12.39	38.90	48.55	59.85
	5	24	0	55.63	2.40	11.77	34.60	45.72	59.10

Variable	location	Q3	Maximum
RH(%)	1	69.05	73.50
	2	69.80	76.00
	3	64.57	70.60
	4	71.18	75.10
	5	65.33	70.50

Results for Month = 6

Variable	location	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median
RH(%)	1	24	0	60.72	3.11	15.25	36.60	47.75	61.15
	2	24	0	57.23	3.34	16.34	32.40	38.55	58.90
	3	24	0	62.37	3.50	17.14	34.00	49.00	64.10
	4	24	0	65.32	2.97	14.57	41.30	52.30	65.60
	5	24	0	38.96	1.97	9.66	19.90	31.45	42.10

Variable	location	Q3	Maximum
RH(%)	1	76.80	79.20
	2	72.75	78.00
	3	79.13	83.50
	4	80.15	83.50
	5	48.40	52.40

**การวิเคราะห์ความผันแปรของอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอก ทั้งสี่
ด้านกับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในอาคาร
ตำหนักสมเด็จพระพุทธโฆษาจารย์วัดพุทธโสธรวรย์**

General Linear Model: temperature(versus Month, location, ordinal of t

Factor	Type	Levels	Values
Month	fixed	6	1, 2, 3, 4, 5, 6
location	fixed	5	1, 2, 3, 4, 5
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Analysis of Variance for temperature(C), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Month	5	1342.95	1342.95	268.59	112.88	0.000
location	4	48.53	48.53	12.13	5.10	0.000
ordinal of time	23	3876.70	3876.70	168.55	70.84	0.000
Error	687	1634.68	1634.68	2.38		
Total	719	6902.87				

S = 1.54254 R-Sq = 76.32% R-Sq(adj) = 75.22%

General Linear Model: RH(%) versus Month, location, ordinal of time

Factor	Type	Levels	Values
Month	fixed	6	1, 2, 3, 4, 5, 6
location	fixed	5	1, 2, 3, 4, 5
ordinal of time	fixed	24	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Analysis of Variance for RH(%), using Adjusted SS for Tests

Source	DF	Seq SS	Adj SS	Adj MS	F	P
Month	5	50039.7	50039.7	10007.9	98.28	0.000
location	4	8741.6	8741.6	2185.4	21.46	0.000
ordinal of time	23	64527.7	64527.7	2805.6	27.55	0.000
Error	687	69958.7	69958.7	101.8		
Total	719	193267.7				

S = 10.0912 R-Sq = 63.80% R-Sq(adj) = 62.12%

**การวิเคราะห์ความสัมพันธ์ระหว่างอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายนอกทั้งสี่
ด้านกับอุณหภูมิและความชื้นสัมพัทธ์ของอากาศภายในตึก
สมเด็จพระพุทธโฆษาจารย์**

Stepwise Regression: temperature05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is temperature05 on 8 predictors, with N = 144

Step	1	2	3	4	5
Constant	16.4063	12.5375	0.7753	2.2410	1.5437
temperature04	0.433	0.261	0.267	0.308	0.201
T-Value	14.80	6.38	7.91	8.57	4.42
P-Value	0.000	0.000	0.000	0.000	0.000
temperature03		0.309	0.569	0.679	0.586
T-Value		5.56	10.18	10.14	8.49
P-Value		0.000	0.000	0.000	0.000
RH(%)01			0.0635	0.0557	0.0605
T-Value			8.16	6.89	7.70
P-Value			0.000	0.000	0.000
temperature02				-0.179	-0.259
T-Value				-2.83	-4.01
P-Value				0.005	0.000
temperature 01					0.290
T-Value					3.62
P-Value					0.000
S	1.33	1.21	0.997	0.973	0.933
R-Sq	60.66	67.73	78.13	79.33	81.12
R-Sq(adj)	60.39	67.27	77.67	78.73	80.43
Mallows Cp	169.3	115.7	35.9	28.5	16.5

Regression Analysis: temperature05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{temperature05} = & 4.85 + 0.112 \text{ temperature 01} + 0.0306 \text{ RH(%)01} \\ & - 0.236 \text{ temperature02} + 0.0340 \text{ RH(%)02} + 0.733 \text{ temperature03} \\ & + 0.0524 \text{ RH(%)03} + 0.146 \text{ temperature04} - 0.0773 \text{ RH(%)04} \end{aligned}$$

S = 0.899440 R-Sq = 82.8% R-Sq(adj) = 81.8%

Stepwise Regression: RH(%)05 versus temperature 01, RH(%)01, ...

Alpha-to-Enter: 0.15 Alpha-to-Remove: 0.15

Response is RH(%)05 on 8 predictors, with N = 144

Step	1	2	3
Constant	24.73	-67.01	-60.12
RH(%)01	0.574	0.928	0.823
T-Value	9.19	11.48	7.67
P-Value	0.000	0.000	0.000
temperature 01		2.35	2.11
T-Value		6.05	5.01
P-Value		0.000	0.000
RH(%)02			0.103
T-Value			1.49
P-Value			0.139
S	11.9	10.6	10.6
R-Sq	37.32	50.25	51.03
R-Sq(adj)	36.88	49.55	49.98
Mallows Cp	39.8	4.7	4.4

Regression Analysis: RH(%)05 versus temperature 01, RH(%)01, ...

The regression equation is

$$\begin{aligned} \text{RH(%)05} = & - 63.9 + 2.73 \text{ temperature 01} + 0.810 \text{ RH(%)01} + 1.22 \text{ temperature02} \\ & + 0.500 \text{ RH(%)02} - 0.74 \text{ temperature03} - 0.201 \text{ RH(%)03} \\ & - 1.04 \text{ temperature04} - 0.161 \text{ RH(%)04} \end{aligned}$$

S = 10.5384 R-Sq = 52.9% R-Sq(adj) = 50.1%

Correlations: T_E, H_E, T_W, H_W, T_N, H_N, T_S, H_S, T_In, H_In

	T_E	H_E	T_W	H_W	T_N	H_N	T_S	H_S	T_In
H_E	-0.723 0.000								
T_W	0.902 0.000	-0.756 0.000							
H_W	-0.221 0.008	0.605 0.000	-0.401 0.000						
T_N	0.888 0.000	-0.738 0.000	0.889 0.000	-0.368 0.000					
H_N	-0.163 0.051	0.614 0.000	-0.338 0.000	0.955 0.000	-0.378 0.000				
T_S	0.885 0.000	-0.571 0.000	0.789 0.000	0.021 0.802	0.759 0.000	0.065 0.441			
H_S	-0.234 0.005	0.519 0.000	-0.370 0.000	0.937 0.000	-0.346 0.000	0.917 0.000	-0.017 0.844		
T_In	0.775 0.000	-0.351 0.000	0.643 0.000	0.054 0.518	0.764 0.000	0.062 0.464	0.779 0.000	-0.036 0.673	
H_In	-0.193 0.020	0.611 0.000	-0.274 0.001	0.547 0.000	-0.279 0.001	0.563 0.000	-0.118 0.157	0.442 0.000	-0.111 0.185

Cell Contents: Pearson correlation
P-Value