

APPENDIX A
Clearness Index Statistics

DAILY CLEARNESS INDEX AVERAGE

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.615	0.672	0.676	0.734	0.742	0.733	0.701	0.711	0.711	0.733	0.697	0.649
GEN	0.639	0.671	0.692	0.714	0.734	0.745	0.703	0.703	0.724	0.703	0.671	0.629
LT	0.637	0.666	0.685	0.713	0.728	0.739	0.702	0.703	0.716	0.704	0.671	0.633
AVE LT	0.637	0.667	0.685	0.713	0.729	0.739	0.703	0.703	0.716	0.703	0.670	0.633
ST DEV	0.043	0.037	0.045	0.024	0.000	0.039	0.027	0.035	0.038	0.058	0.044	0.045

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.442	0.493	0.540	0.471	0.494	0.515	0.541	0.560	0.536	0.475	0.400	0.365
GEN	0.452	0.502	0.502	0.482	0.512	0.541	0.541	0.551	0.521	0.501	0.400	0.379
LT	0.444	0.496	0.499	0.477	0.506	0.537	0.543	0.552	0.518	0.493	0.395	0.381
AVE LT	0.444	0.495	0.499	0.476	0.506	0.536	0.544	0.552	0.518	0.492	0.395	0.381
ST DEV	0.046	0.050	0.056	0.039	0.062	0.046	0.040	0.038	0.048	0.058	0.046	0.048

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.367	0.420	0.436	0.446	0.481	0.473	0.459	0.477	0.458	0.467	0.377	0.327
GEN	0.390	0.410	0.440	0.452	0.471	0.472	0.472	0.472	0.472	0.472	0.379	0.349
LT	0.388	0.414	0.437	0.449	0.474	0.473	0.474	0.474	0.472	0.467	0.384	0.349
AVE LT	0.389	0.414	0.437	0.449	0.474	0.473	0.474	0.474	0.473	0.467	0.384	0.349
ST DEV	0.039	0.040	0.049	0.042	0.059	0.051	0.051	0.033	0.051	0.038	0.045	0.054

DAILY CLEARNESS INDEX

STANDARD DEVIATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.173	0.175	0.158	0.099	0.109	0.095	0.104	0.087	0.129	0.143	0.114	0.144
GEN	0.151	0.133	0.119	0.104	0.092	0.082	0.111	0.111	0.096	0.112	0.133	0.156
LT	0.159	0.164	0.153	0.138	0.121	0.105	0.104	0.108	0.130	0.152	0.156	0.160
AVE LT	0.150	0.157	0.146	0.133	0.115	0.097	0.101	0.103	0.115	0.140	0.150	0.152
ST DEV	0.039	0.030	0.035	0.029	0.030	0.028	0.020	0.024	0.047	0.045	0.033	0.036

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.215	0.178	0.249	0.214	0.202	0.165	0.162	0.149	0.171	0.217	0.242	0.192
GEN	0.202	0.197	0.196	0.199	0.194	0.188	0.188	0.186	0.193	0.196	0.201	0.199
LT	0.192	0.199	0.224	0.226	0.202	0.170	0.156	0.158	0.196	0.212	0.212	0.199
AVE LT	0.189	0.197	0.219	0.225	0.194	0.164	0.152	0.154	0.191	0.207	0.210	0.194
ST DEV	0.016	0.017	0.025	0.021	0.029	0.030	0.026	0.027	0.034	0.027	0.018	0.022

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.219	0.220	0.234	0.221	0.206	0.178	0.180	0.142	0.213	0.208	0.196	0.209
GEN	0.200	0.202	0.202	0.202	0.200	0.200	0.200	0.200	0.200	0.200	0.199	0.194
LT	0.206	0.216	0.231	0.220	0.203	0.184	0.165	0.166	0.196	0.195	0.200	0.204
AVE LT	0.205	0.214	0.228	0.218	0.196	0.180	0.159	0.165	0.191	0.193	0.198	0.199
ST DEV	0.017	0.020	0.021	0.024	0.034	0.024	0.023	0.020	0.024	0.024	0.023	0.017

DAILY CLEARNESS INDEX

SKEWNESS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-1.34	-1.38	-1.47	-1.26	-1.41	-1.33	-0.88	-1.03	-1.69	-3.29	-1.78	-1.39
GEN	-1.28	-1.39	-1.46	-1.49	-1.65	-1.49	-1.48	-1.49	-1.50	-1.49	-1.40	-1.24
LT	-1.60	-1.48	-1.20	-1.72	-1.87	-1.72	-1.42	-1.60	-1.91	-1.68	-1.60	-1.42
AVE LT	-1.35	-1.38	-1.21	-1.31	-1.33	-1.64	-1.21	-1.31	-1.67	-1.92	-1.72	-1.46
ST DEV	0.44	0.51	0.44	0.34	0.46	0.54	0.59	0.54	0.51	0.89	0.85	0.72

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-0.59	-0.42	-0.38	-0.20	-0.60	-0.44	-0.90	-1.18	-1.15	-0.38	-0.02	-0.23
GEN	-0.30	-0.56	-0.56	-0.46	-0.61	-0.77	-0.77	-0.82	-0.67	-0.56	-0.04	0.06
LT	-0.40	-0.46	-0.46	-0.26	-0.63	-0.71	-0.62	-1.00	-0.67	-0.54	-0.05	-0.14
AVE LT	-0.45	-0.49	-0.43	-0.27	-0.59	-0.64	-0.83	-0.92	-0.64	-0.53	-0.03	-0.09
ST DEV	0.45	0.36	0.39	0.31	0.41	0.45	0.47	0.31	0.42	0.42	0.31	0.35

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-0.16	-0.42	-0.59	-0.41	-0.67	-0.77	-0.68	-0.77	-0.80	-0.51	-0.15	-0.17
GEN	0.01	-0.10	-0.23	-0.30	-0.41	-0.41	-0.41	-0.41	-0.41	-0.41	0.06	0.22
LT	-0.37	-0.34	-0.38	-0.48	-0.58	-0.59	-0.68	-0.72	-0.70	-0.65	-0.31	-0.23
AVE LT	-0.37	-0.33	-0.40	-0.50	-0.62	-0.64	-0.76	-0.74	-0.72	-0.71	-0.34	-0.22
ST DEV	0.28	0.34	0.33	0.28	0.41	0.41	0.38	0.26	0.36	0.36	0.31	0.37

DAILY CLEARNESS INDEX KURTOSIS

ALBUQUERQUE, NH

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.52	0.42	1.19	0.12	1.56	1.34	-0.09	-0.18	2.45	9.90	1.83	0.90
GEN	1.16	1.55	1.89	1.99	2.78	1.96	1.97	1.98	2.05	1.98	1.63	0.99
LT	2.58	1.76	0.17	4.22	4.62	2.64	3.09	7.59	2.52	0.19	1.00	1.21
AVE LT	0.92	1.37	0.73	1.02	1.36	2.48	1.39	1.46	2.30	3.67	2.71	1.72
ST DEV	1.45	2.03	1.43	1.21	2.03	2.12	2.35	2.44	2.10	4.60	4.83	3.16

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-1.01	-0.51	-1.22	-1.16	-0.85	-1.14	-0.52	0.19	0.25	-1.40	-1.56	-1.32
GEN	-1.08	-0.77	-0.76	-0.91	-0.68	-0.38	-0.37	-0.26	-0.59	-0.76	-1.20	-1.20
LT	-1.29	-1.09	-0.94	-1.39	-0.60	-0.65	-1.70	0.39	-1.06	-1.07	-1.37	-1.31
AVE LT	-0.91	-0.90	-1.00	-1.23	-0.66	-0.58	-0.06	-0.03	-0.72	-0.89	-1.31	-1.20
ST DEV	0.80	0.57	0.63	0.33	0.79	0.80	2.00	0.92	0.77	0.74	0.29	0.43

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-1.57	-1.10	-1.18	-1.20	-0.83	-0.63	-0.41	-0.22	-0.59	-0.79	-1.08	-1.39
GEN	-1.20	-1.19	-1.13	-1.08	-0.97	-0.97	-0.97	-0.97	-0.97	-0.97	-1.20	-1.14
LT	-1.21	-1.17	-1.23	-1.03	-1.14	-1.01	-0.52	-0.44	-0.71	-0.88	-1.19	-1.32
AVE LT	-1.17	-1.07	-1.15	-0.99	-0.56	-0.58	-0.10	-0.42	-0.62	-0.50	-1.05	-1.20
ST DEV	0.31	0.58	0.55	0.49	0.99	0.81	0.91	0.47	0.72	1.01	0.32	0.27

DAILY CLEARNESS INDEX MINIMUM

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.177	0.238	0.239	0.504	0.402	0.463	0.443	0.499	0.303	0.145	0.396	0.259
GEN	0.188	0.266	0.312	0.380	0.421	0.483	0.344	0.344	0.414	0.344	0.258	0.171
LT	0.096	0.130	0.149	0.138	0.163	0.232	0.168	0.136	0.115	0.106	0.071	0.028
AVE LT	0.244	0.246	0.297	0.341	0.398	0.444	0.408	0.405	0.375	0.277	0.236	0.218
ST DEV	0.114	0.103	0.108	0.128	0.124	0.112	0.116	0.114	0.164	0.142	0.103	0.108

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.054	0.076	0.105	0.079	0.101	0.195	0.171	0.185	0.122	0.076	0.037	0.042
GEN	0.068	0.082	0.078	0.074	0.081	0.094	0.092	0.097	0.086	0.079	0.062	0.060
LT	0.026	0.029	0.041	0.034	0.044	0.052	0.070	0.082	0.031	0.011	0.000	0.001
AVE LT	0.089	0.113	0.090	0.085	0.109	0.193	0.194	0.189	0.135	0.095	0.065	0.074
ST DEV	0.031	0.041	0.032	0.035	0.069	0.070	0.062	0.050	0.088	0.054	0.039	0.037

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.047	0.039	0.040	0.055	0.042	0.097	0.060	0.153	0.028	0.056	0.063	0.016
GEN	0.061	0.064	0.066	0.069	0.071	0.072	0.072	0.071	0.072	0.072	0.060	0.058
LT	0.004	0.003	0.007	0.013	0.024	0.040	0.023	0.033	0.018	0.017	0.000	0.000
AVE LT	0.034	0.046	0.051	0.051	0.082	0.104	0.112	0.100	0.078	0.061	0.034	0.029
ST DEV	0.023	0.031	0.032	0.029	0.053	0.041	0.052	0.052	0.056	0.037	0.028	0.021

DAILY CLEARNESS INDEX

MAXIMUM

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.764	0.807	0.824	0.816	0.859	0.821	0.824	0.808	0.872	0.813	0.784	0.777
GEN	0.800	0.808	0.814	0.819	0.825	0.828	0.817	0.816	0.822	0.816	0.808	0.797
LT	0.809	0.960	0.880	0.858	0.887	0.871	0.917	0.840	0.872	0.843	0.823	0.904
AVE LT	0.780	0.815	0.833	0.835	0.839	0.830	0.820	0.814	0.820	0.814	0.797	0.777
ST DEV	0.000	0.042	0.015	0.000	0.004	0.046	0.019	0.000	0.019	0.000	0.017	0.034

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.689	0.741	0.852	0.757	0.748	0.720	0.715	0.700	0.708	0.720	0.743	0.616
GEN	0.743	0.759	0.759	0.753	0.762	0.771	0.771	0.774	0.765	0.759	0.725	0.717
LT	0.744	0.794	0.851	0.826	0.796	0.803	0.796	0.828	0.780	0.819	0.750	0.744
AVE LT	0.683	0.740	0.771	0.764	0.748	0.737	0.727	0.732	0.740	0.741	0.700	0.672
ST DEV	0.016	0.040	0.027	0.000	0.027	0.028	0.040	0.042	0.036	0.037	0.040	0.037

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.657	0.707	0.720	0.722	0.722	0.696	0.704	0.680	0.704	0.711	0.699	0.618
GEN	0.721	0.728	0.740	0.743	0.750	0.750	0.750	0.750	0.750	0.750	0.716	0.702
LT	0.768	0.821	0.841	0.819	0.817	0.795	0.749	0.771	0.813	0.878	0.776	0.741
AVE LT	0.661	0.702	0.734	0.728	0.735	0.707	0.687	0.687	0.703	0.710	0.665	0.629
ST DEV	0.044	0.031	0.043	0.037	0.038	0.046	0.039	0.045	0.035	0.060	0.043	0.046

DAILY CLEARNESS INDEX LAG ONE AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.24	0.18	0.12	-0.03	0.35	0.18	0.09	0.27	-0.20	0.54	0.45	0.28
GEN	0.25	0.26	0.26	0.25	0.26	0.27	0.26	0.26	0.25	0.26	0.25	0.25
LT	0.21	0.25	0.18	0.25	0.21	0.25	0.23	0.28	0.29	0.35	0.27	0.27
AVE LT	0.17	0.22	0.17	0.22	0.20	0.24	0.21	0.26	0.22	0.32	0.23	0.27
ST DEV	0.21	0.17	0.17	0.17	0.16	0.20	0.15	0.14	0.20	0.18	0.22	0.15

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.26	0.37	0.12	0.05	0.33	0.40	0.33	0.16	0.16	0.29	0.12	0.07
GEN	0.30	0.17	0.25	0.19	0.26	0.24	0.28	0.27	0.23	0.25	0.30	0.35
LT	0.18	0.14	0.22	0.18	0.26	0.21	0.12	0.16	0.22	0.36	0.20	0.20
AVE LT	0.16	0.14	0.22	0.17	0.23	0.16	0.11	0.14	0.17	0.35	0.19	0.18
ST DEV	0.18	0.18	0.16	0.17	0.16	0.22	0.12	0.17	0.22	0.16	0.21	0.17

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.34	0.24	0.06	0.20	0.04	0.17	-0.06	0.17	0.23	0.02	-0.03	-0.15
GEN	0.24	0.38	0.38	0.36	0.23	0.18	0.23	0.23	0.18	0.23	0.28	0.33
LT	0.04	0.05	0.14	0.12	0.12	0.23	0.13	0.18	0.22	0.20	0.12	0.07
AVE LT	0.03	0.05	0.15	0.12	0.12	0.21	0.12	0.16	0.22	0.19	0.12	0.07
ST DEV	0.19	0.22	0.15	0.17	0.20	0.15	0.19	0.23	0.16	0.16	0.20	0.20

DAILY CLEARNESS INDEX LAG TWO AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.04	-0.25	-0.13	-0.09	0.05	0.12	-0.01	0.04	0.07	0.01	-0.11	0.09
GEN	-0.05	0.05	-0.04	-0.05	-0.07	-0.05	-0.06	-0.06	-0.05	-0.06	-0.05	-0.04
LT	0.04	-0.02	-0.05	0.00	-0.01	0.02	0.03	-0.03	0.09	0.04	0.05	0.08
AVE LT	0.04	-0.04	-0.04	-0.01	0.01	0.01	0.02	-0.03	0.05	0.06	0.02	0.08
ST DEV	0.14	0.21	0.19	0.19	0.16	0.12	0.19	0.16	0.18	0.19	0.14	0.17

MARION, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.05	-0.25	-0.01	-0.06	-0.13	0.09	0.13	-0.35	-0.03	-0.17	-0.16	-0.05
GEN	-0.07	0.17	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	-0.02	0.05
LT	0.05	-0.06	0.03	-0.08	0.07	0.13	-0.13	-0.04	0.01	0.11	-0.02	0.03
AVE LT	0.04	-0.06	0.02	-0.08	0.04	0.09	-0.12	-0.04	-0.02	0.11	-0.04	0.01
ST DEV	0.17	0.19	0.23	0.15	0.19	0.23	0.15	0.20	0.17	0.23	0.21	0.15

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.06	-0.17	-0.13	-0.10	0.11	-0.15	-0.26	0.04	0.01	0.05	0.03	-0.30
GEN	-0.07	0.19	0.05	-0.02	0.05	0.04	0.05	0.05	0.04	0.05	-0.02	0.06
LT	-0.12	-0.10	-0.07	-0.07	-0.07	0.03	-0.04	-0.04	-0.04	0.01	0.01	-0.05
AVE LT	-0.12	-0.10	-0.07	-0.06	-0.05	0.02	-0.02	-0.03	-0.04	0.00	-0.01	-0.05
ST DEV	0.17	0.18	0.16	0.17	0.16	0.21	0.22	0.19	0.19	0.17	0.22	0.19

HOURLY CLEARNESS INDEX LAG ONE AUTOCORRELATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ALBUQUERQUE												
LT	0.448	0.479	0.503	0.522	0.549	0.547	0.544	0.525	0.465	0.433	0.391	0.447
GEN	0.194	0.394	0.404	0.441	0.372	0.477	0.338	0.082	0.376	0.376	0.292	0.239
THY	0.444	0.440	0.337	0.406	0.575	0.500	0.555	0.535	0.484	0.264	0.403	0.646
MADISON												
LT	0.478	0.525	0.614	0.639	0.594	0.587	0.586	0.560	0.576	0.535	0.490	0.472
GEN	0.125	0.391	0.419	0.305	0.356	0.454	0.374	0.465	0.257	0.361	0.377	0.400
THY	0.621	0.468	0.550	0.633	0.522	0.599	0.790	0.487	0.538	0.584	0.362	0.427
NEW YORK												
LT	0.469	0.488	0.568	0.616	0.610	0.584	0.558	0.527	0.580	0.541	0.496	0.416
GEN	0.115	0.434	0.300	0.250	0.426	0.325	0.372	0.272	0.282	0.400	0.289	0.296
THY	0.404	0.470	0.589	0.558	0.637	0.610	0.685	0.503	0.475	0.582	0.599	0.372

K_f, T DAILY CROSS-CORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.20	0.27	-0.03	-0.01	0.10	0.44	0.68	0.70	0.28	0.60	-0.16	-0.17
GEN	0.41	0.46	-0.10	0.37	-0.35	0.24	-0.28	-0.05	-0.39	-0.14	0.25	-0.11
AVE LT	-0.12	0.14	0.15	0.22	0.21	0.37	0.55	0.53	0.26	0.25	0.04	-0.05
LT SD	0.20	0.23	0.21	0.24	0.25	0.20	0.17	0.16	0.34	0.30	0.23	0.21
ST DEV	0.17	0.20	0.21	0.19	0.17	0.18	0.12	0.23	0.23	0.19	0.16	0.21

MARLSON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.71	-0.70	-0.40	-0.09	0.51	0.47	0.45	-0.03	-0.14	-0.24	-0.22	-0.45
GEN	0.34	0.21	-0.13	-0.02	0.19	0.23	0.15	-0.21	-0.23	-0.11	0.29	-0.31
AVE LT	-0.48	-0.46	-0.20	0.12	0.26	0.26	0.23	0.14	-0.02	0.00	-0.22	-0.45
LT SD	0.18	0.18	0.27	0.20	0.20	0.19	0.21	0.22	0.21	0.24	0.28	0.21

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.66	-0.60	-0.10	0.20	0.09	0.09	0.32	0.03	0.07	-0.39	-0.39	-0.11
GEN	0.33	0.26	-0.30	0.11	0.19	0.22	0.15	-0.40	-0.23	-0.11	0.28	-0.33
AVE LT	-0.36	-0.35	-0.06	0.24	0.29	0.32	0.37	0.18	0.02	-0.14	-0.31	-0.29
LT SD	0.20	0.20	0.23	0.16	0.23	0.19	0.16	0.27	0.24	0.23	0.19	0.18

K_t, RH **DAILY CROSS-CORRELATION**

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.62	-0.57	-0.54	-0.28	-0.58	-0.63	-0.60	-0.74	-0.52	-0.64	-0.53	-0.39
GEN	-0.47	-0.37	0.06	-0.26	0.04	-0.19	0.13	-0.02	-0.04	-0.11	-0.35	-0.10
AVE LT	-0.40	-0.51	-0.50	-0.53	-0.49	-0.55	-0.52	-0.57	-0.62	-0.57	-0.50	-0.42
LT SD	0.18	0.20	0.20	0.14	0.22	0.20	0.17	0.14	0.12	0.14	0.12	0.22

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.73	-0.55	-0.65	-0.66	-0.82	-0.83	-0.79	-0.73	-0.84	-0.86	-0.85	-0.69
GEN	-0.24	-0.11	-0.01	0.02	-0.09	-0.13	-0.17	0.12	0.05	0.01	-0.27	0.09
AVE LT	-0.64	-0.67	-0.74	-0.77	-0.76	-0.77	-0.72	-0.72	-0.74	-0.67	-0.63	-0.62
LT SD	0.11	0.12	0.07	0.06	0.10	0.11	0.11	0.14	0.14	0.14	0.11	0.16

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.83	-0.82	-0.94	-0.72	-0.68	-0.58	-0.72	-0.32	-0.76	-0.77	-0.83	-0.72
GEN	-0.29	-0.15	0.21	0.00	-0.09	-0.10	-0.21	0.37	0.09	0.02	-0.29	0.02
AVE LT	-0.70	-0.76	-0.77	-0.70	-0.64	-0.67	-0.64	-0.69	-0.65	-0.62	-0.72	-0.72
LT SD	0.10	0.10	0.11	0.07	0.13	0.11	0.08	0.13	0.14	0.16	0.09	0.10

K_t, WV DAILY CROSS-CORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.37	-0.15	-0.12	-0.29	-0.19	-0.52	-0.07	-0.08	0.03	-0.47	-0.03	0.06
GEN	-0.13	-0.03	-0.13	-0.10	-0.13	-0.07	-0.13	-0.15	0.02	-0.11	-0.16	-0.04
AVE LT	-0.20	-0.26	-0.23	-0.25	-0.22	-0.11	-0.12	-0.10	-0.24	-0.34	-0.25	-0.19
LT SD	0.21	0.17	0.19	0.19	0.20	0.25	0.21	0.17	0.19	0.19	0.20	0.21

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.00	-0.48	-0.18	-0.09	0.39	0.27	-0.20	-0.39	-0.04	0.12	0.06	-0.42
GEN	-0.27	0.01	-0.23	-0.15	-0.14	-0.14	-0.12	-0.22	-0.06	-0.09	-0.33	-0.31
AVE LT	-0.08	-0.11	-0.23	-0.29	-0.19	-0.15	-0.14	-0.16	-0.22	-0.18	-0.13	-0.09
LT SD	0.17	0.20	0.24	0.18	0.23	0.17	0.17	0.18	0.17	0.19	0.18	0.16

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.26	0.57	0.04	0.06	0.37	0.13	-0.19	-0.38	-0.06	-0.19	0.10	0.01
GEN	-0.29	-0.13	-0.35	-0.17	-0.15	-0.15	-0.13	-0.27	-0.07	-0.09	-0.33	-0.33
AVE LT	0.20	0.17	0.07	0.00	0.12	0.13	0.10	-0.01	-0.12	-0.11	0.03	0.19
LT SD	0.25	0.21	0.21	0.13	0.23	0.25	0.24	0.21	0.19	0.21	0.21	0.24

APPENDIX B
Ambient Temperature Statistics

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C AVERAGE**

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	1.41	3.37	6.77	12.60	18.62	22.91	25.53	24.01	19.53	14.06	6.46	2.07
GEN	1.31	3.88	7.98	13.06	18.42	23.77	25.24	23.89	20.38	13.98	6.64	1.59
LT	1.31	3.88	7.97	13.06	18.42	23.77	25.24	23.89	20.38	13.98	6.64	1.59
AVE LT	1.31	3.88	7.98	13.06	18.40	23.78	25.25	23.88	20.39	13.97	6.64	1.60
ST DEV	1.99	2.39	1.98	1.44	1.47	1.42	1.06	1.14	1.44	1.41	1.47	1.53

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-8.40	-5.99	-1.87	8.67	14.60	19.60	22.11	20.01	16.79	10.49	2.35	-3.72
GEN	-8.20	-5.72	-0.24	7.83	13.96	19.65	21.76	20.73	15.86	10.45	2.17	-4.75
LT	-8.20	-5.72	-0.24	7.83	13.96	19.65	21.76	20.73	15.86	10.45	2.17	-4.75
AVE LT	-8.20	-5.72	-0.24	7.83	13.96	19.66	21.75	20.73	15.86	10.43	2.17	-4.75
ST DEV	2.90	2.52	2.44	1.66	1.89	1.72	1.35	1.61	1.11	1.93	1.53	2.51

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.06	0.12	3.98	11.11	15.27	19.86	23.03	23.55	19.11	14.06	8.55	2.81
GEN	-0.20	0.54	4.20	9.69	15.02	20.41	23.67	23.24	19.70	14.07	8.21	2.38
LT	-0.20	0.54	4.20	9.69	15.02	20.41	23.67	23.24	19.70	14.07	8.21	2.38
AVE LT	-0.20	0.54	4.20	9.69	15.01	20.42	23.66	23.23	19.69	14.08	8.21	2.38
ST DEV	1.83	1.77	1.58	1.19	1.53	0.90	1.21	1.00	1.38	1.05	1.14	2.18

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C**

STANDARD DEVIATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	2.68	4.29	5.34	3.02	4.05	2.77	2.54	1.80	2.17	3.40	3.38	4.28
GEN	5.94	3.75	4.42	2.72	2.93	4.11	3.03	3.87	2.25	3.34	4.77	4.77
LT	4.59	4.39	4.64	3.92	3.67	3.26	2.63	2.10	3.21	3.83	3.64	3.75
AVE LT	3.92	3.68	4.16	3.65	3.46	2.83	2.24	1.88	2.71	3.59	3.31	3.39
ST DEV	1.61	0.89	0.98	0.55	0.88	0.69	0.51	0.41	1.04	0.74	0.79	0.84

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	7.89	3.87	5.17	5.17	5.15	3.84	2.79	3.19	3.76	4.67	5.16	2.96
GEN	7.14	4.54	5.31	3.17	3.44	4.86	3.57	4.49	2.65	3.81	5.44	5.51
LT	7.23	6.06	5.30	5.16	4.97	4.07	3.09	3.52	4.56	5.08	5.22	6.10
AVE LT	6.63	5.49	4.68	4.88	4.61	3.70	2.81	3.10	4.45	4.78	4.89	5.49
ST DEV	1.30	1.32	1.14	1.06	0.71	0.64	0.46	0.65	0.68	0.74	1.45	1.47

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	4.10	4.01	3.53	3.69	3.29	2.31	1.42	2.10	2.65	2.88	4.52	3.95
GEN	6.05	3.92	4.66	2.86	3.11	4.38	3.12	3.89	2.27	3.32	4.63	4.69
LT	4.63	4.36	3.72	3.54	3.52	3.14	2.37	2.34	3.47	3.79	4.10	4.61
AVE LT	4.26	3.98	3.35	3.33	3.22	2.92	2.24	2.19	3.25	3.62	3.93	4.11
ST DEV	0.81	0.85	0.81	0.61	0.61	0.63	0.48	0.42	0.60	0.76	0.78	0.63

DAILY AVERAGE AMBIENT TEMPERATURE, °C

SKEWNESS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-1.10	-0.20	-0.60	-1.19	-0.17	0.08	0.54	0.03	-0.11	-0.44	-0.66	0.07
GEN	-0.16	-0.54	0.09	0.28	1.00	0.38	-0.55	0.13	0.21	-0.48	-0.05	0.66
LT	-0.89	-0.33	-0.28	-0.34	-0.14	-0.73	-2.09	0.79	-0.81	-0.40	-0.42	-0.16
AVE LT	-0.37	-0.31	-0.35	-0.35	-0.42	-0.36	-0.19	-0.24	-0.41	-0.38	-0.43	-0.23
ST DEV	0.46	0.32	0.51	0.36	0.40	0.47	0.55	0.44	0.43	0.37	0.43	0.52

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.44	-0.05	-0.58	-0.09	0.20	0.04	0.13	-0.21	-0.19	-0.18	0.11	0.15
GEN	-0.16	-0.54	0.09	0.28	1.00	0.38	-0.55	0.14	0.21	-0.48	-0.05	0.66
LT	-0.34	-0.50	-0.14	0.28	-0.15	-0.28	-0.35	-0.63	0.20	0.05	-0.01	-0.50
AVE LT	-0.25	-0.35	-0.02	0.24	-0.08	-0.15	-0.18	-0.10	0.08	0.06	0.10	-0.21
ST DEV	0.39	0.43	0.65	0.51	0.39	0.49	0.36	0.34	0.36	0.34	0.58	0.37

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.29	-0.79	0.06	0.42	0.23	1.03	-0.14	-0.46	0.07	-0.42	0.90	-0.14
GEN	-0.16	-0.54	0.09	0.28	1.00	0.38	-0.55	0.14	0.21	-0.48	-0.05	0.66
LT	-0.26	-0.48	-0.27	0.29	0.20	-0.05	1.67	0.51	-0.03	-0.07	-0.11	-0.19
AVE LT	-0.14	-0.42	-0.18	0.27	0.14	0.30	0.22	-0.19	-0.17	-0.25	-0.12	-0.08
ST DEV	0.32	0.49	0.49	0.50	0.61	0.43	0.47	0.58	0.43	0.36	0.61	0.44

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C**

KURTOSIS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.88	-1.24	-0.02	0.68	-1.16	-0.59	0.05	0.00	-0.32	-0.45	-0.58	-0.21
GEN	-0.96	0.29	-0.14	-0.71	1.32	-0.60	-0.14	0.22	-0.55	-0.33	0.18	0.36
LT	1.94	-0.33	-0.27	-0.62	-3.58	5.61	4.80	1.16	0.72	-0.48	-0.41	0.08
AVE LT	-0.19	-0.50	-0.28	-0.60	-0.43	-0.35	-0.46	-0.37	-0.33	-0.58	-0.46	-0.18
ST DEV	0.74	0.65	0.57	0.53	0.57	0.78	1.01	0.73	0.78	0.54	0.65	0.92

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.64	-0.85	0.04	-0.69	-0.39	-0.38	-0.67	-1.36	-0.87	-0.90	-0.71	-0.91
GEN	-0.96	0.29	-0.13	-0.71	1.33	-0.60	-0.15	0.23	-0.55	-0.33	0.18	0.35
LT	-0.71	-0.18	0.90	-0.36	0.04	0.07	6.43	3.60	-0.08	-0.51	0.41	-0.05
AVE LT	-0.71	-0.44	0.17	-0.38	-0.62	-0.31	-0.38	-0.52	-0.62	-0.68	-0.09	-0.45
ST DEV	0.69	0.58	1.42	0.76	0.52	0.47	0.65	0.50	0.53	0.40	1.16	0.69

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.97	-0.28	-0.97	0.49	-0.06	1.04	-0.76	-1.19	-0.65	-0.97	0.89	-1.12
GEN	-0.96	0.29	-0.14	-0.71	1.32	-0.61	-0.15	0.22	-0.55	-0.34	0.18	0.35
LT	-0.18	0.12	0.25	0.01	1.16	2.57	-24.12	-7.31	-0.54	-0.72	-0.14	-0.31
AVE LT	-0.54	-0.18	-0.32	0.10	-0.07	-0.15	-0.27	-0.28	-0.61	-0.55	-0.20	-0.23
ST DEV	0.49	0.58	0.48	0.87	0.99	0.66	0.88	0.88	0.42	0.53	1.03	0.61

DAILY AVERAGE AMBIENT TEMPERATURE, °C MINIMUM

ALBUQUERQUE, NH

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-5.57	-4.06	-6.12	4.48	11.18	17.95	20.70	20.23	14.98	5.91	-1.28	-6.62
GEN	-8.93	-6.05	-2.68	7.52	13.80	17.21	17.55	16.12	16.75	5.88	-3.91	-5.53
LT	-19.10	-9.90	-6.20	0.50	5.50	12.90	16.60	16.50	4.00	1.30	-4.40	-11.40
AVE LT	-7.23	-3.69	-0.90	5.55	10.72	17.66	20.62	19.91	14.53	6.34	-0.34	-5.69
ST DEV	4.92	3.33	2.63	2.33	2.63	2.13	1.77	1.63	3.63	2.52	2.32	2.56

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-25.74	-13.29	-14.05	-0.71	4.52	12.11	17.04	14.44	9.34	1.72	-6.95	-8.72
GEN	-20.50	-17.74	-13.05	1.36	8.54	11.91	12.73	11.69	11.57	1.20	-8.84	-12.98
LT	-28.00	-23.30	-23.70	-6.40	0.50	7.90	12.00	10.00	3.50	-2.60	-14.20	-23.30
AVE LT	-21.09	-17.37	-9.83	-0.50	5.11	11.91	15.81	14.69	7.67	1.76	-7.50	-16.05
ST DEV	3.87	4.52	4.93	2.48	2.07	1.95	1.93	1.96	2.03	2.47	3.77	4.91

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-8.06	-9.43	-2.95	3.89	9.20	16.24	20.00	19.45	13.88	8.62	1.20	-4.34
GEN	-10.62	-9.85	-7.04	3.85	10.11	13.43	15.76	15.41	16.04	6.02	-2.03	-4.63
LT	-13.60	-13.40	-10.00	-0.80	5.70	12.70	15.60	15.10	10.70	2.80	-4.90	-11.90
AVE LT	-8.99	-8.52	-2.73	3.48	8.85	15.19	19.42	18.75	13.32	6.61	0.13	-6.11
ST DEV	2.85	3.06	2.88	1.71	1.42	1.42	1.41	1.68	1.69	2.42	2.48	2.98

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C MAXIMUM**

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	5.70	9.75	15.74	15.93	25.64	28.18	32.06	28.15	23.43	18.71	11.01	10.53
GEN	12.25	10.73	17.26	16.24	27.58	32.67	30.20	33.25	25.70	19.16	17.73	15.05
LT	12.40	13.30	21.10	21.50	24.20	31.50	32.10	28.90	26.80	22.20	15.00	12.90
AVE LT	8.10	10.10	15.21	19.03	23.93	28.44	29.10	27.38	24.66	19.58	11.81	7.87
ST DEV	2.84	2.50	2.25	1.53	1.19	1.61	1.45	1.29	1.50	1.54	1.48	2.28

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	5.51	1.10	7.48	18.01	26.52	27.86	28.04	24.47	23.40	17.83	12.68	1.56
GEN	4.95	2.58	10.93	13.87	24.70	30.16	27.58	31.61	22.13	16.37	14.80	10.80
LT	8.70	9.10	17.40	22.30	26.50	29.30	30.30	29.80	29.30	23.60	16.80	10.90
AVE LT	2.77	3.51	9.89	17.66	22.57	26.29	26.93	26.57	24.32	19.54	12.08	5.62
ST DEV	2.26	2.39	3.73	2.42	1.96	1.87	1.73	1.96	2.29	2.52	3.17	2.92

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	6.45	5.14	10.59	20.47	23.67	25.84	25.81	26.17	23.78	18.17	20.19	8.62
GEN	10.93	7.71	14.00	15.15	24.73	29.88	28.75	32.67	25.07	19.22	18.98	15.61
LT	12.70	10.30	13.50	20.70	27.90	30.70	31.70	31.00	28.50	24.00	20.20	14.60
AVE LT	7.86	7.13	10.47	17.29	21.73	26.79	28.44	27.44	25.30	20.41	15.62	10.40
ST DEV	2.31	2.32	2.15	1.87	2.49	2.01	1.67	1.82	1.87	1.75	1.98	1.83

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C**

LAG ONE AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.76	0.81	0.79	0.61	0.78	0.78	0.70	0.65	0.53	0.76	0.47	0.72
GEN	0.57	0.33	0.60	0.27	0.40	0.68	0.55	0.69	0.44	0.52	0.45	0.30
LT	0.76	0.73	0.70	0.63	0.70	0.75	0.70	0.65	0.73	0.76	0.71	0.70
AVE LT	0.70	0.70	0.67	0.61	0.66	0.71	0.67	0.62	0.67	0.75	0.67	0.67
ST DEV	0.12	0.11	0.12	0.11	0.14	0.14	0.11	0.13	0.16	0.07	0.15	0.12

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.76	0.64	0.62	0.59	0.64	0.57	0.38	0.67	0.50	0.56	0.50	0.57
GEN	0.57	0.33	0.60	0.27	0.40	0.68	0.55	0.69	0.44	0.52	0.45	0.30
LT	0.70	0.60	0.67	0.67	0.64	0.65	0.59	0.63	0.69	0.69	0.65	0.65
AVE LT	0.67	0.57	0.66	0.64	0.62	0.63	0.57	0.60	0.66	0.68	0.60	0.62
ST DEV	0.11	0.14	0.09	0.14	0.11	0.11	0.10	0.12	0.10	0.10	0.13	0.12

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.59	0.38	0.30	0.53	0.60	0.21	0.40	0.53	0.55	0.50	0.69	0.46
GEN	0.58	0.33	0.60	0.27	0.40	0.68	0.55	0.69	0.44	0.52	0.45	0.30
LT	0.60	0.54	0.59	0.57	0.57	0.60	0.58	0.57	0.70	0.67	0.59	0.59
AVE LT	0.58	0.52	0.57	0.55	0.54	0.57	0.55	0.54	0.68	0.63	0.56	0.57
ST DEV	0.15	0.15	0.15	0.16	0.17	0.15	0.12	0.17	0.12	0.10	0.15	0.15

**DAILY AVERAGE
AMBIENT TEMPERATURE, °C**

LAG TWO AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.34	0.53	0.48	0.09	0.57	0.55	0.47	0.33	0.20	0.49	0.00	0.48
GEN	0.07	-0.09	0.34	-0.14	-0.16	0.38	0.20	0.37	0.16	0.43	-0.13	0.06
LT	0.48	0.42	0.38	0.29	0.38	0.48	0.38	0.29	0.47	0.49	0.43	0.40
AVE LT	0.37	0.36	0.31	0.25	0.32	0.41	0.34	0.25	0.40	0.47	0.37	0.36
ST DEV	0.24	0.20	0.23	0.16	0.22	0.25	0.17	0.19	0.21	0.16	0.25	0.18

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.45	0.19	0.32	0.21	0.17	0.19	-0.03	0.30	0.10	0.08	0.15	0.14
GEN	0.07	-0.08	0.34	-0.14	-0.16	0.38	0.20	0.37	0.16	0.43	-0.13	0.06
LT	0.40	0.20	0.34	0.36	0.28	0.26	0.19	0.26	0.36	0.36	0.34	0.32
AVE LT	0.35	0.17	0.32	0.30	0.25	0.23	0.17	0.22	0.32	0.32	0.26	0.25
ST DEV	0.22	0.26	0.16	0.24	0.22	0.18	0.17	0.19	0.19	0.19	0.21	0.21

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.17	-0.07	-0.35	0.14	0.37	-0.26	0.05	0.00	0.14	0.00	0.34	0.03
GEN	0.07	-0.09	0.34	-0.14	-0.16	0.38	0.20	0.37	0.16	0.43	-0.13	0.06
LT	0.26	0.15	0.27	0.27	0.25	0.29	0.23	0.22	0.41	0.31	0.26	0.21
AVE LT	0.23	0.13	0.21	0.23	0.22	0.24	0.21	0.18	0.38	0.26	0.22	0.19
ST DEV	0.21	0.23	0.25	0.26	0.22	0.24	0.19	0.23	0.20	0.19	0.19	0.24

HOURLY AVERAGE		LAG ONE AUTOCORRELATION											
AMBIENT TEMPERATURE, °C		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ALBUQUERQUE		Year											
LT	0.938	0.938	0.985	0.978	0.982	0.985	0.985	0.934	0.933	0.987	0.989	0.983	0.971
GEN	0.978	0.995	0.992	0.994	0.983	0.988	0.988	0.983	0.996	0.988	0.995	0.992	0.994
TMY	0.974	0.977	0.980	0.976	0.969	0.954	0.954	0.939	0.930	0.956	0.974	0.975	0.971

MADISON		Year											
LT	0.996	0.983	0.993	0.982	0.978	0.974	0.988	0.988	0.895	0.984	0.992	0.993	0.981
GEN	0.976	0.992	0.994	0.993	0.995	0.996	0.994	0.994	0.994	0.996	0.997	0.997	0.994
TMY	0.992	0.988	0.985	0.984	0.982	0.974	0.964	0.964	0.968	0.982	0.985	0.985	0.982

NEW YORK		Year											
LT	0.985	0.983	0.969	0.991	0.994	0.964	0.965	0.993	0.993	0.982	0.983	0.992	0.987
GEN	0.992	0.996	0.995	0.994	0.995	0.995	0.994	0.994	0.994	0.996	0.997	0.997	0.996
TMY	0.989	0.985	0.979	0.974	0.972	0.969	0.959	0.959	0.960	0.980	0.983	0.985	0.990

HOURLY AVERAGE		LAG TWO AUTOCORRELATION											
AMBIENT TEMPERATURE, °C		Year											
ALBUQUERQUE		Year											
LT	0.899	0.879	0.956	0.942	0.965	0.956	0.903	0.894	0.959	0.965	0.970	0.945	0.936
GEN	0.968	0.985	0.977	0.982	0.951	0.963	0.955	0.988	0.966	0.982	0.977	0.981	0.973
TMY	0.945	0.948	0.952	0.945	0.933	0.907	0.868	0.852	0.906	0.943	0.942	0.938	0.923

MADISON		Year											
LT	0.987	0.965	0.975	0.958	0.953	0.946	0.961	0.866	0.963	0.978	0.978	0.960	0.957
GEN	0.948	0.981	0.982	0.980	0.982	0.985	0.980	0.979	0.987	0.990	0.990	0.982	0.981
TMY	0.979	0.969	0.959	0.956	0.953	0.936	0.917	0.923	0.952	0.960	0.961	0.971	0.953

NEW YORK		Year											
LT	0.970	0.964	0.935	0.973	0.979	0.929	0.931	0.977	0.961	0.962	0.978	0.970	0.961
GEN	0.977	0.988	0.986	0.980	0.984	0.985	0.981	0.980	0.996	0.990	0.989	0.988	0.984
TMY	0.972	0.965	0.949	0.937	0.933	0.927	0.907	0.907	0.951	0.959	0.963	0.974	0.945

**HOURLY AVERAGE
AMBIENT TEMPERATURE, °C**

LAG 24 AUTOCORRELATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
ALBUQUERQUE													
LT	0.307	0.328	0.520	0.426	0.664	0.560	0.509	0.451	0.406	0.649	0.577	0.496	0.491
GEN	0.587	0.455	0.599	0.381	0.338	0.363	0.195	0.660	0.564	0.612	0.441	0.457	0.471
TMY	0.568	0.550	0.522	0.453	0.515	0.526	0.401	0.375	0.498	0.607	0.522	0.541	0.507
MADISON													
LT	0.558	0.431	0.389	0.370	0.254	0.396	0.353	0.360	0.249	0.440	0.279	0.329	0.367
GEN	0.353	0.577	0.574	0.467	0.395	0.468	0.188	0.624	0.522	0.608	0.477	0.564	0.485
TMY	0.577	0.454	0.534	0.518	0.496	0.459	0.387	0.439	0.519	0.536	0.495	0.487	0.495
NEW YORK													
LT	0.415	0.122	-0.029	0.427	0.365	0.375	0.407	0.442	0.494	0.324	0.463	0.120	0.328
GEN	0.598	0.557	0.649	0.460	0.456	0.468	0.266	0.679	0.465	0.597	0.483	0.513	0.516
TMY	0.470	0.416	0.449	0.390	0.401	0.435	0.403	0.399	0.563	0.525	0.460	0.464	0.448

T, RH DAILY CROSS-CORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TRY	-0.23	-0.53	-0.17	-0.36	0.01	-0.78	-0.93	-0.72	-0.31	-0.89	0.23	-0.31
GEN	-0.68	-0.63	-0.53	-0.55	-0.20	-0.19	-0.66	-0.91	-0.35	-0.59	-0.74	-0.47
AVE LT	-0.13	-0.36	-0.49	-0.52	-0.45	-0.46	-0.85	-0.74	-0.34	-0.37	-0.24	-0.25
LT SD	0.31	0.29	0.27	0.19	0.24	0.34	0.09	0.18	0.38	0.42	0.40	0.29

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TRY	0.85	0.41	0.36	0.04	-0.45	-0.15	-0.46	-0.02	0.13	0.07	0.43	0.54
GEN	-0.45	-0.39	-0.30	-0.39	-0.37	-0.43	-0.54	-0.79	-0.44	-0.73	-0.63	-0.60
AVE LT	0.73	0.64	0.31	-0.08	-0.11	-0.14	-0.14	-0.13	0.05	0.13	0.37	0.51
LT SD	0.13	0.21	0.29	0.24	0.20	0.24	0.25	0.21	0.23	0.30	0.27	0.27

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TRY	0.74	0.77	0.21	-0.10	0.24	-0.06	-0.14	0.45	0.26	0.55	0.64	0.36
GEN	-0.69	-0.56	-0.47	-0.44	-0.41	-0.45	-0.65	-0.85	-0.47	-0.76	-0.67	-0.69
AVE LT	0.61	0.58	0.29	-0.04	-0.11	-0.25	-0.23	0.04	0.34	0.47	0.58	0.53
LT SD	0.16	0.17	0.27	0.20	0.31	0.22	0.15	0.30	0.29	0.22	0.18	0.19

T, WV DAILY CROSS-CORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.15	0.03	-0.55	0.09	-0.23	-0.27	0.04	0.12	0.24	-0.20	-0.01	0.07
GEN	-0.08	0.00	-0.08	-0.19	-0.23	-0.05	-0.10	0.35	0.09	-0.10	-0.08	-0.07
AVE LT	0.06	-0.06	-0.12	-0.13	-0.04	-0.14	-0.03	-0.04	-0.10	-0.12	-0.05	0.02
LT SD	0.25	0.15	0.22	0.16	0.17	0.20	0.20	0.17	0.26	0.21	0.19	0.20

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.10	0.44	-0.27	0.08	0.41	0.38	0.20	0.03	0.31	0.38	-0.05	0.46
GEN	-0.08	-0.16	-0.14	0.00	-0.31	-0.17	-0.31	0.38	0.15	-0.17	0.07	-0.19
AVE LT	0.03	0.05	0.00	-0.06	0.01	0.12	0.09	0.17	0.15	0.12	-0.12	0.15
LT SD	0.17	0.23	0.21	0.20	0.26	0.22	0.24	0.21	0.22	0.21	0.25	0.20

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.13	-0.47	-0.30	-0.26	-0.07	0.24	-0.30	-0.12	-0.20	-0.21	-0.27	0.09
GEN	-0.08	-0.16	-0.14	0.00	-0.31	-0.17	-0.31	0.38	0.15	-0.17	0.07	-0.19
AVE LT	-0.22	-0.28	-0.24	-0.24	-0.12	-0.02	0.05	0.00	-0.09	-0.19	-0.17	-0.18
LT SD	0.23	0.24	0.18	0.18	0.22	0.28	0.24	0.17	0.22	0.22	0.25	0.18

APPENDIX C

Relative Humidity Statistics

DAILY AVERAGE RELATIVE HUMIDITY

AVERAGE

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	62.0	51.0	43.0	34.0	34.0	35.0	55.0	55.0	57.0	48.0	51.0	55.0
GEN	63.0	54.0	40.0	32.0	29.0	26.0	44.0	48.0	41.0	44.0	51.0	62.0
LT	50.9	44.6	36.1	28.7	28.4	28.1	42.1	46.1	42.5	43.7	46.3	52.0
AVE LT	50.9	44.6	36.1	28.7	28.4	28.1	42.1	46.1	42.5	43.7	46.3	51.9
ST DEV	6.6	7.7	9.2	6.9	6.5	5.2	3.7	6.3	9.5	9.7	7.3	8.5

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	74.0	74.0	70.0	62.0	68.0	72.0	73.0	75.0	72.0	67.0	80.0	79.0
GEN	87.0	85.0	79.0	64.0	75.0	74.0	75.0	77.0	75.0	63.0	70.0	79.0
LT	70.8	69.6	69.2	65.3	65.8	68.7	70.9	73.2	74.2	71.4	74.6	75.7
AVE LT	70.9	69.7	69.2	65.3	65.8	68.7	70.8	73.2	74.3	71.4	74.6	75.7
ST DEV	2.0	4.6	6.2	4.6	5.0	3.3	5.2	5.0	5.5	5.0	3.8	5.5

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	63.0	61.0	60.0	66.0	67.0	74.0	69.0	69.0	70.0	72.0	64.0	63.0
GEN	73.0	68.0	72.0	69.0	70.0	70.0	74.0	75.0	75.0	70.0	72.0	65.0
LT	63.4	63.1	62.8	65.3	67.9	71.3	69.7	70.4	70.6	68.3	66.6	65.6
AVE LT	63.4	63.1	62.8	65.2	67.8	71.3	69.6	70.4	70.5	68.3	66.6	65.6
ST DEV	6.6	7.2	3.9	5.4	5.0	2.2	5.8	4.8	2.3	3.2	3.3	5.1

DAILY AVERAGE RELATIVE HUMIDITY STANDARD DEVIATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	12.0	17.0	15.0	14.0	18.0	15.0	17.0	13.0	14.0	21.0	19.0	18.0
GEN	22.0	21.0	17.0	13.0	9.0	9.0	7.0	14.0	11.0	16.0	20.0	19.0
LT	14.3	15.0	16.2	15.1	14.3	13.2	12.7	12.7	15.9	18.2	14.7	15.0
AVE LT	12.7	13.0	13.2	13.3	12.7	12.0	12.1	10.9	12.8	15.5	12.9	12.5
ST DEV	2.6	2.5	3.4	3.7	3.0	3.3	2.8	2.1	3.3	2.5	2.3	2.9

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	16.0	11.0	12.0	13.0	14.0	11.0	9.0	6.0	11.0	12.0	13.0	7.0
GEN	15.0	16.0	21.0	24.0	19.0	18.0	13.0	15.0	19.0	24.0	26.0	22.0
LT	11.7	12.4	12.6	14.2	13.3	9.8	8.6	8.4	10.4	12.2	11.9	11.6
AVE LT	11.0	11.1	11.0	13.6	12.3	9.2	7.7	7.2	8.4	11.3	11.5	10.2
ST DEV	1.9	2.7	1.6	1.8	2.2	1.5	1.3	1.5	1.4	1.5	1.8	1.6

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	18.0	19.0	19.0	15.0	15.0	12.0	13.0	11.0	13.0	13.0	15.0	13.0
GEN	21.0	21.0	21.0	21.0	19.0	17.0	12.0	14.0	16.0	20.0	23.0	24.0
LT	16.1	17.0	17.5	17.1	15.3	13.1	13.0	12.0	12.5	14.5	15.3	15.3
AVE LT	15.2	15.7	17.3	16.7	15.0	12.6	12.0	11.4	12.6	14.0	14.9	14.8
ST DEV	1.9	1.8	1.3	2.1	1.5	2.3	1.6	1.1	1.4	1.4	1.7	1.9

DAILY AVERAGE RELATIVE HUMIDITY SKEWNESS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.19	0.72	1.17	0.83	0.75	0.78	-0.41	-0.49	-0.34	0.79	1.06	0.67
GEN	0.00	0.20	0.68	0.84	0.89	0.99	0.29	0.27	-0.12	0.46	0.37	0.03
LT	0.34	0.56	0.92	1.31	0.81	1.02	0.33	-0.10	0.45	0.50	0.46	0.50
AVE LT	0.38	0.70	0.88	1.15	0.83	0.74	0.20	0.26	0.55	0.60	0.41	0.42
ST DEV	0.63	0.49	0.62	0.52	0.49	0.50	0.44	0.42	0.66	0.91	0.43	0.50

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.21	0.01	0.26	0.09	0.59	0.26	0.20	0.36	0.60	0.28	-0.14	0.27
GEN	-1.53	-1.30	-0.58	0.01	-0.45	-0.74	-0.30	-0.37	-0.57	-0.06	-0.56	-1.27
LT	-0.20	-0.49	0.12	0.03	0.21	0.09	0.16	1.23	-0.58	0.20	-0.32	-0.41
AVE LT	0.09	-0.02	0.23	0.21	0.26	0.25	0.39	0.32	0.28	0.02	-0.18	-0.16
ST DEV	0.31	0.36	0.35	0.31	0.44	0.40	0.29	0.38	0.36	0.44	0.40	0.42

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.29	0.23	0.32	0.26	-0.24	0.00	0.09	-0.45	0.03	-0.13	0.09	0.09
GEN	-0.44	-0.16	-0.15	-0.09	-0.07	-0.58	0.15	-0.16	-0.45	-0.20	-0.52	-0.23
LT	0.21	0.10	0.15	0.02	-0.23	-0.05	-0.24	0.28	0.26	-0.09	-0.12	0.37
AVE LT	0.24	0.20	0.11	0.02	-0.21	-0.25	-0.26	-0.10	-0.21	-0.04	0.08	0.21
ST DEV	0.37	0.48	0.37	0.28	0.30	0.40	0.43	0.37	0.32	0.32	0.30	0.36

DAILY AVERAGE RELATIVE HUMIDITY KURTOSIS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.99	-0.46	1.47	0.39	-0.75	-0.21	-0.51	-0.06	-0.27	-0.22	0.05	0.30
BEN	-1.18	-0.90	-0.59	0.03	0.63	0.60	-0.70	-0.70	-0.73	-0.88	-0.62	-1.29
LT	0.70	-0.12	0.38	1.72	0.27	0.71	-0.48	0.91	-0.48	-0.78	-0.67	-0.42
AVE LT	-0.20	0.09	0.71	1.11	0.23	0.21	-0.42	-0.44	0.10	0.47	-0.27	-0.10
ST DEV	1.04	1.28	1.87	2.14	1.62	0.93	0.60	0.48	1.58	1.72	0.60	0.67

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.89	-0.41	-0.90	-0.78	-0.66	-1.01	-0.57	-0.21	-0.21	-0.80	-1.31	-0.07
GEN	1.01	0.45	-1.30	-1.31	-1.23	-0.32	-0.63	-0.69	-1.00	-1.30	-1.05	0.59
LT	1.82	3.01	-1.91	0.99	-0.29	-1.82	-0.44	-19.55	5.16	-2.04	0.48	1.43
AVE LT	-0.61	-0.44	-0.56	-0.74	-0.57	-0.64	-0.33	-0.22	-0.32	-0.46	-0.44	-0.46
ST DEV	0.49	0.51	0.51	0.31	0.57	0.51	0.49	0.46	0.64	0.56	0.79	0.61

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-1.10	-1.09	-1.29	-0.45	-0.95	-1.17	-1.11	-0.23	-1.07	-0.50	-1.07	-0.91
GEN	-1.09	-1.28	-1.50	-1.26	-1.44	-0.49	-0.47	-0.54	-0.99	-1.29	-1.00	-1.26
LT	-0.61	-1.26	-1.76	-1.02	0.48	-3.21	-1.90	-4.57	-3.73	-1.32	0.48	-1.74
AVE LT	-0.80	-0.71	-0.94	-0.94	-0.72	-0.71	-0.66	-0.61	-0.75	-0.81	-0.93	-0.83
ST DEV	0.35	0.90	0.38	0.29	0.50	0.57	0.53	0.47	0.36	0.34	0.35	0.68

DAILY AVERAGE RELATIVE HUMIDITY MINIMUM

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	42.0	25.0	21.0	13.0	13.0	16.0	19.0	25.0	26.0	22.0	28.0	23.0
GEN	27.0	21.0	14.0	13.0	14.0	14.0	33.0	23.0	19.0	22.0	21.0	32.0
LT	16.8	10.9	9.0	8.1	5.6	8.5	12.3	17.6	14.2	14.3	15.9	19.3
AVE LT	29.4	25.3	17.5	12.5	12.1	11.1	21.3	27.0	21.9	20.3	25.2	30.6
ST DEV	8.2	6.6	6.0	3.7	4.4	1.8	4.9	7.6	6.2	4.6	6.4	8.0

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	45.0	51.0	50.0	37.0	50.0	55.0	59.0	64.0	53.0	44.0	58.0	66.0
GEN	47.0	42.0	40.0	25.0	40.0	31.0	45.0	48.0	35.0	24.0	18.0	17.0
LT	38.2	34.1	31.4	31.1	31.2	44.7	51.7	48.5	43.9	30.8	30.0	46.2
AVE LT	50.4	48.2	50.0	41.4	45.2	53.2	57.5	60.2	58.8	48.7	50.4	54.7
ST DEV	6.1	7.4	6.5	6.9	5.6	3.8	4.2	5.7	7.9	7.4	8.2	6.6

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	37.0	32.0	31.0	39.0	35.0	53.0	47.0	43.0	50.0	45.0	39.0	39.0
GEN	32.0	31.0	38.0	33.0	39.0	33.0	49.0	49.0	41.0	36.0	25.0	19.0
LT	30.8	24.9	24.2	25.2	21.1	29.2	35.5	37.5	38.1	33.1	30.6	28.8
AVE LT	38.5	36.9	33.6	36.2	37.6	45.9	45.2	47.3	45.7	41.8	41.1	40.0
ST DEV	5.2	6.0	5.5	6.6	6.0	7.6	6.0	6.7	4.6	5.6	5.6	5.3

MAXIMUM

DAILY AVERAGE RELATIVE HUMIDITY

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	84.0	90.0	90.0	72.0	75.0	70.0	86.0	77.0	83.0	98.0	93.0	99.0
GEN	97.0	94.0	78.0	64.0	55.0	48.0	61.0	74.0	63.0	79.0	91.0	96.0
LT	95.5	93.2	94.2	91.0	78.5	78.3	83.9	82.8	93.5	92.9	89.3	98.8
AVE LT	77.7	75.0	70.1	65.1	59.5	57.3	67.8	69.6	71.4	79.5	75.2	80.5
ST DEV	11.7	7.4	16.1	17.2	11.3	9.8	8.5	8.6	13.3	9.5	9.8	12.1

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	100.0	98.0	95.0	87.0	96.0	96.0	94.0	91.0	95.0	94.0	98.0	96.0
GEN	98.0	98.0	98.0	98.0	96.0	98.0	98.0	98.0	95.0	96.0	98.0	98.0
LT	99.0	98.2	100.0	98.4	96.3	95.4	97.9	96.8	97.8	99.7	99.3	100.0
AVE LT	92.3	91.5	91.5	91.9	90.4	87.0	88.4	89.1	91.9	92.8	94.6	94.6
ST DEV	0.0	3.9	6.6	4.1	3.5	6.0	3.9	4.9	2.8	1.8	5.1	3.6

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	93.0	98.0	92.0	95.0	89.0	96.0	94.0	87.0	93.0	95.0	90.0	87.0
GEN	98.0	98.0	98.0	98.0	96.0	94.0	98.0	97.0	96.0	97.0	98.0	96.0
LT	100.0	99.9	99.7	99.7	99.0	98.4	98.1	97.3	97.3	97.6	99.5	99.5
AVE LT	92.2	92.6	93.1	94.2	92.7	91.7	89.7	90.8	91.7	93.0	93.4	92.7
ST DEV	2.9	0.0	5.2	0.0	2.4	3.0	2.7	4.1	3.0	3.8	4.6	5.1

DAILY AVERAGE RELATIVE HUMIDITY LAG ONE AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.53	0.60	0.48	0.58	0.53	0.79	0.73	0.61	0.43	0.86	0.67	0.54
GEN	0.69	0.56	0.68	0.44	0.43	0.47	0.25	0.71	0.65	0.70	0.50	0.63
LT	0.67	0.59	0.57	0.61	0.63	0.65	0.70	0.63	0.62	0.72	0.65	0.60
AVE LT	0.65	0.56	0.54	0.56	0.61	0.64	0.68	0.61	0.58	0.70	0.64	0.56
ST DEV	0.11	0.13	0.13	0.14	0.13	0.10	0.09	0.12	0.15	0.10	0.09	0.14

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.64	0.57	0.17	0.52	0.57	0.41	0.37	0.06	0.26	0.52	0.32	0.29
GEN	0.60	0.63	0.63	0.55	0.49	0.53	0.29	0.68	0.59	0.69	0.56	0.61
LT	0.53	0.50	0.45	0.46	0.51	0.44	0.37	0.39	0.40	0.54	0.47	0.53
AVE LT	0.51	0.49	0.44	0.44	0.51	0.41	0.35	0.35	0.38	0.52	0.46	0.51
ST DEV	0.15	0.14	0.15	0.12	0.13	0.20	0.10	0.17	0.18	0.14	0.12	0.10

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.49	0.33	0.04	0.45	0.15	0.54	0.45	0.40	0.53	0.44	0.33	0.22
GEN	0.67	0.63	0.71	0.55	0.53	0.52	0.37	0.74	0.56	0.68	0.57	0.59
LT	0.34	0.32	0.36	0.38	0.42	0.47	0.45	0.41	0.48	0.48	0.37	0.35
AVE LT	0.32	0.31	0.36	0.37	0.41	0.45	0.45	0.41	0.49	0.47	0.36	0.34
ST DEV	0.15	0.17	0.16	0.13	0.22	0.15	0.13	0.15	0.12	0.12	0.15	0.13

DAILY AVERAGE RELATIVE HUMIDITY LAG TWO AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.13	0.04	0.09	0.28	0.03	0.50	0.50	0.12	-0.04	0.65	0.25	0.22
GEN	0.35	0.23	0.51	0.11	0.05	0.22	-0.17	0.30	0.31	0.58	0.10	0.66
LT	0.39	0.25	0.20	0.23	0.26	0.25	0.38	0.24	0.24	0.42	0.31	0.26
AVE LT	0.36	0.22	0.18	0.18	0.25	0.26	0.36	0.20	0.19	0.38	0.30	0.21
ST DEV	0.17	0.20	0.21	0.19	0.17	0.18	0.12	0.23	0.23	0.19	0.16	0.21

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.30	0.30	-0.01	0.22	0.22	0.07	0.00	-0.07	-0.01	-0.04	-0.26	-0.03
GEN	0.37	0.10	0.38	0.28	0.14	0.25	-0.15	0.41	0.30	0.51	0.18	0.12
LT	0.20	0.17	0.19	0.08	0.23	0.20	0.06	0.13	0.12	0.20	0.11	0.17
AVE LT	0.18	0.16	0.17	0.07	0.19	0.16	0.04	0.07	0.10	0.16	0.10	0.16
ST DEV	0.28	0.21	0.16	0.14	0.20	0.22	0.16	0.24	0.18	0.22	0.23	0.15

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	-0.06	-0.27	-0.16	-0.05	-0.05	0.30	0.03	0.09	0.09	0.16	0.00	-0.25
GEN	0.34	0.33	0.51	0.27	0.21	0.23	-0.14	0.47	0.34	0.48	0.17	0.26
LT	-0.02	-0.09	-0.01	0.00	0.06	0.06	0.08	-0.03	0.06	0.06	0.00	-0.05
AVE LT	-0.04	-0.10	-0.02	0.00	0.05	0.05	0.07	-0.03	0.07	0.05	0.02	-0.06
ST DEV	0.16	0.22	0.18	0.17	0.23	0.20	0.19	0.19	0.19	0.17	0.19	0.18

HOURLY AVERAGE RELATIVE HUMIDITY LAG ONE AUTOCORRELATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
ALBUQUERQUE													
LT	0.732	0.807	0.942	0.931	0.756	0.930	0.534	0.496	0.920	0.916	0.725	0.819	0.792
GEN	0.386	0.396	0.379	0.417	0.348	0.380	0.419	0.376	0.422	0.359	0.445	0.446	0.398
TMY	0.953	0.952	0.962	0.968	0.962	0.963	0.951	0.943	0.961	0.974	0.959	0.953	0.958
MADISON													
LT	0.951	0.885	0.966	0.859	0.845	0.793	0.923	0.789	0.844	0.942	0.969	0.887	0.888
GEN	0.386	0.389	0.389	0.402	0.401	0.416	0.405	0.338	0.395	0.373	0.426	0.365	0.390
TMY	0.952	0.955	0.948	0.964	0.956	0.939	0.931	0.924	0.941	0.955	0.955	0.946	0.947
NEW YORK													
LT	0.894	0.874	0.871	0.935	0.926	0.777	0.775	0.927	0.744	0.828	0.956	0.835	0.862
GEN	0.386	0.389	0.389	0.402	0.401	0.416	0.405	0.338	0.395	0.373	0.426	0.365	0.390
TMY	0.964	0.962	0.969	0.964	0.962	0.958	0.956	0.955	0.963	0.966	0.967	0.964	0.962

HOURLY AVERAGE RELATIVE HUMIDITY LAG TWO AUTOCORRELATION

ALBUQUERQUE													
LT	0.600	0.699	0.844	0.804	0.634	0.802	0.353	0.288	0.790	0.764	0.595	0.734	0.659
GEN	0.425	0.369	0.445	0.383	0.328	0.387	0.379	0.409	0.337	0.399	0.399	0.424	0.390
TMY	0.908	0.907	0.915	0.928	0.920	0.923	0.899	0.889	0.917	0.944	0.917	0.905	0.914
MADISON													
LT	0.873	0.840	0.914	0.795	0.765	0.701	0.821	0.689	0.756	0.855	0.922	0.823	0.813
GEN	0.425	0.363	0.423	0.381	0.373	0.413	0.361	0.381	0.319	0.428	0.382	0.359	0.384
TMY	0.910	0.911	0.890	0.913	0.898	0.861	0.848	0.832	0.860	0.899	0.903	0.896	0.885
NEW YORK													
LT	0.842	0.805	0.807	0.838	0.805	0.680	0.663	0.831	0.652	0.762	0.885	0.780	0.779
GEN	0.425	0.363	0.423	0.381	0.373	0.413	0.361	0.381	0.319	0.428	0.382	0.359	0.384
TMY	0.926	0.924	0.931	0.921	0.917	0.908	0.904	0.901	0.917	0.924	0.928	0.927	0.919

HOURLY AVERAGE RELATIVE HUMIDITY LAG 24 AUTOCORRELATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
ALBUQUERQUE													
LT	0.104	0.165	0.228	0.147	0.003	0.189	-0.055	0.058	0.004	0.159	0.015	-0.034	0.054
GEN	0.049	0.030	0.112	0.050	0.104	0.059	0.043	0.048	0.068	0.091	0.031	0.105	0.066
TMY	0.454	0.366	0.323	0.378	0.413	0.463	0.435	0.387	0.396	0.546	0.458	0.394	0.418
MADISON													
LT	0.068	0.274	0.040	0.189	0.140	0.169	0.111	0.072	-0.051	-0.042	0.109	-0.115	0.069
GEN	0.049	0.042	0.122	0.010	0.121	-0.004	0.018	0.056	0.021	0.113	0.000	0.121	0.056
TMY	0.339	0.319	0.279	0.276	0.324	0.253	0.189	0.193	0.231	0.349	0.293	0.331	0.281
NEW YORK													
LT	-0.029	0.181	-0.026	0.033	0.047	0.046	-0.093	0.040	-0.005	0.294	0.004	0.115	0.051
GEN	0.049	0.042	0.122	0.010	0.121	-0.004	0.018	0.056	0.021	0.113	0.000	0.121	0.056
TMY	0.172	0.150	0.222	0.203	0.224	0.271	0.269	0.249	0.337	0.330	0.216	0.196	0.237

RH, WV DAILY CROSS-CORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.29	0.04	0.36	-0.02	0.01	0.54	-0.14	0.12	-0.29	0.35	-0.13	-0.15
GEN	-0.02	-0.21	-0.11	-0.03	-0.05	-0.10	-0.05	-0.25	-0.14	-0.10	-0.03	-0.15
AVE LT	-0.09	0.03	0.07	0.11	0.10	0.11	-0.03	-0.01	0.05	0.17	0.04	-0.04
LT SD	0.24	0.18	0.19	0.22	0.22	0.25	0.20	0.21	0.29	0.19	0.25	0.22

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.11	0.07	-0.05	-0.20	-0.37	-0.35	-0.10	0.20	-0.18	-0.28	-0.32	0.32
GEN	-0.02	0.07	-0.13	-0.12	-0.04	-0.13	0.07	-0.45	-0.25	-0.12	-0.07	-0.08
AVE LT	-0.14	-0.10	0.09	0.12	0.06	0.08	-0.01	-0.02	-0.01	-0.18	-0.23	-0.14
LT SD	0.15	0.19	0.24	0.21	0.22	0.18	0.21	0.19	0.22	0.18	0.16	0.24

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	0.24	-0.65	-0.15	-0.18	-0.29	-0.44	0.18	-0.21	0.03	-0.17	-0.21	-0.14
GEN	-0.01	-0.05	-0.10	-0.11	-0.04	-0.15	0.12	-0.46	-0.25	-0.09	-0.04	0.04
AVE LT	-0.31	-0.33	-0.22	-0.24	-0.31	-0.20	-0.13	-0.02	-0.05	-0.24	-0.23	-0.26
LT SD	0.24	0.20	0.22	0.18	0.20	0.28	0.25	0.21	0.20	0.27	0.21	0.22

APPENDIX D

Windspeed Statistics

DAILY AVERAGE WINDSPEED, m/s

AVERAGE

ALBUQUERQUE, NH

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	3.0	4.0	4.0	5.0	4.0	5.0	3.0	3.0	4.0	3.0	3.0	3.0
GEN	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
LT	3.3	3.8	4.2	4.7	4.5	4.3	3.9	3.6	3.7	3.6	3.3	3.3
AVE LT	3.3	3.8	4.2	4.7	4.5	4.3	3.9	3.6	3.7	3.6	3.3	3.3
ST DEV	0.3	0.4	0.4	0.5	0.5	0.6	0.4	0.4	0.5	0.6	0.5	0.6

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	4.0	5.0	5.0	5.0	4.0	5.0	3.0	3.0	4.0	3.0	4.0	4.0
GEN	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
LT	4.5	4.6	4.7	5.0	4.6	4.0	3.5	3.4	3.8	4.2	4.6	4.4
AVE LT	4.5	4.6	4.7	5.0	4.6	4.0	3.5	3.4	3.8	4.2	4.6	4.4
ST DEV	0.5	0.5	0.5	0.4	0.4	0.3	0.4	0.3	0.5	0.5	0.5	0.5

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	5.0	6.0	7.0	6.0	5.0	5.0	4.0	4.0	4.0	5.0	5.0	5.0
GEN	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
LT	5.8	6.0	6.0	5.7	5.2	4.9	4.7	4.6	4.8	5.0	5.4	5.6
AVE LT	5.8	5.9	6.0	5.7	5.2	4.9	4.7	4.6	4.8	5.0	5.4	5.6
ST DEV	0.6	0.6	0.6	0.6	0.6	0.3	0.5	0.4	0.4	0.5	0.7	0.5

DAILY AVERAGE WINDSPEED, m/s STANDARD DEVIATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	2.0
BEN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	1.3	1.6	1.5	1.6	1.4	1.2	1.1	0.9	1.3	1.5	1.4	1.5
AVE LT	1.3	1.5	1.5	1.5	1.3	1.1	1.0	0.9	1.2	1.4	1.4	1.4
ST DEV	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0	1.0	2.0	2.0
BEN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	1.7	1.7	1.8	1.7	1.5	1.3	1.2	1.2	1.4	1.6	1.8	1.6
AVE LT	1.6	1.7	1.7	1.7	1.4	1.3	1.1	1.2	1.3	1.5	1.7	1.6
ST DEV	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	2.0	2.0	3.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0
BEN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	1.9	1.8	1.8	1.6	1.4	1.2	1.0	1.1	1.3	1.6	1.9	1.9
AVE LT	1.9	1.8	1.7	1.5	1.3	1.1	1.0	1.0	1.2	1.6	1.8	1.8
ST DEV	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.3

DAILY AVERAGE WINDSPEED, m/s

SKEWNESS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.54	0.62	0.81	0.62	0.42	0.11	1.55	0.05	0.94	0.90	1.13	1.76
GEN	-0.09	-0.13	0.05	-0.34	-0.02	0.06	-0.06	0.18	-0.16	0.21	-0.19	0.29
LT	1.15	1.03	0.72	0.62	0.62	0.99	0.88	1.27	1.37	1.25	1.00	1.23
AVE LT	1.07	0.93	0.70	0.45	0.62	0.75	1.09	0.82	1.19	1.31	1.03	1.08
ST DEV	0.51	0.58	0.37	0.27	0.42	0.44	0.43	0.53	0.61	0.54	0.41	0.41

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.00	0.94	0.62	0.95	0.65	0.29	0.67	0.77	0.16	0.17	1.20	0.73
GEN	-0.09	-0.04	-0.02	-0.44	0.18	0.24	0.00	-0.20	-0.12	0.27	-0.03	0.14
LT	0.37	0.31	0.42	0.25	0.18	0.40	0.43	0.28	0.13	0.30	0.56	0.25
AVE LT	0.31	0.33	0.35	0.14	0.16	0.37	0.42	0.25	0.26	0.32	0.40	0.19
ST DEV	0.27	0.41	0.25	0.30	0.31	0.37	0.39	0.35	0.30	0.31	0.33	0.38

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.92	0.70	0.61	0.41	0.84	0.02	0.35	0.93	0.31	0.38	0.85	0.17
GEN	-0.09	-0.04	-0.02	-0.44	0.18	0.24	0.00	-0.20	-0.12	0.27	-0.03	0.14
LT	0.23	0.14	0.52	0.44	0.41	0.63	0.92	0.59	0.82	0.53	0.29	0.23
AVE LT	0.27	0.16	0.29	0.37	0.48	0.55	0.51	0.69	0.68	0.52	0.38	0.22
ST DEV	0.31	0.41	0.34	0.41	0.35	0.46	0.30	0.38	0.66	0.32	0.32	0.27

DAILY AVERAGE WINDSPEED, m/s KURTOSIS

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.20	-0.06	1.08	-0.72	-0.66	-1.13	3.14	-0.69	0.17	0.04	0.73	2.28
GEN	0.07	-0.06	-0.20	-0.70	-0.91	-0.78	-0.39	0.17	-0.56	-0.10	-0.42	-0.21
LT	1.37	1.04	0.13	-0.62	0.56	0.32	3.50	3.26	1.66	1.46	1.00	2.08
AVE LT	1.01	0.65	-0.03	-0.70	0.05	0.49	1.22	0.79	1.41	1.89	0.61	0.68
ST DEV	2.32	1.69	1.17	0.57	1.04	1.31	1.50	1.63	2.53	1.95	1.12	1.16

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.89	1.01	-0.66	0.88	-0.21	-0.61	-0.28	0.05	-0.52	-0.79	1.00	-0.66
GEN	0.07	0.19	-0.39	-0.66	0.02	-0.25	-0.31	-0.44	-0.07	0.49	0.05	-0.27
LT	-0.53	0.04	-0.28	-0.97	-0.34	0.42	0.26	-0.26	0.29	0.17	-0.39	-0.41
AVE LT	-0.41	-0.27	-0.45	-0.72	-0.52	-0.12	-0.35	-0.31	-0.50	-0.37	-0.32	-0.35
ST DEV	0.45	0.75	0.48	0.31	0.35	0.78	0.63	0.61	0.55	0.67	0.54	0.64

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.53	-0.22	-1.01	-0.23	-0.03	-0.90	-0.41	0.01	0.14	0.10	0.38	-0.71
GEN	0.07	0.19	-0.39	-0.66	0.02	-0.25	-0.31	-0.44	-0.07	0.49	0.05	-0.27
LT	-0.65	-1.18	-2.19	-1.52	-0.48	1.38	-3.49	2.13	-0.44	-0.81	-0.53	-0.74
AVE LT	-0.81	-0.71	-0.63	-0.44	-0.22	-0.03	-0.19	0.32	0.44	-0.28	-0.69	-0.72
ST DEV	0.34	0.63	0.56	0.68	0.61	1.08	0.63	1.01	2.34	0.74	0.74	0.56

DAILY AVERAGE WINDSPEED, m/s

MINIMUM

ALBUQUERQUE, NH

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	1.0	1.0	1.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	1.0	2.0
GEN	1.0	1.0	1.0	1.0	2.0	2.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	0.8	0.8	1.2	1.3	1.8	1.7	1.9	1.6	1.3	0.9	0.4	0.4
AVE LT	1.6	1.8	2.1	2.5	2.5	2.5	2.6	2.2	2.1	1.9	1.6	1.6
ST DEV	0.4	0.4	0.4	0.5	0.4	0.5	0.4	0.3	0.4	0.4	0.5	0.6

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	1.0	1.0	2.0	1.0
GEN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	0.4	0.5	0.9	1.3	1.3	0.7	0.8	0.6	0.1	0.6	0.3	0.5
AVE LT	1.7	1.7	1.8	2.1	2.0	1.8	1.6	1.3	1.6	1.6	1.7	1.5
ST DEV	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.6	0.5	0.7	0.7

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	2.0	3.0	4.0	3.0	3.0	3.0	2.0	3.0	2.0	2.0	2.0	1.0
GEN	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LT	0.7	1.8	1.8	1.9	1.2	2.3	2.0	1.9	1.9	1.2	0.8	1.5
AVE LT	2.7	2.9	3.1	3.2	3.1	3.1	3.2	3.0	2.9	2.6	2.6	2.5
ST DEV	0.7	0.6	0.6	0.7	0.6	0.4	0.5	0.5	0.5	0.5	0.7	0.6

DAILY AVERAGE WINDSPEED, m/s

MAXIMUM

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	6.0	9.0	8.0	8.0	7.0	8.0	6.0	5.0	7.0	6.0	6.0	9.0
GEN	7.0	7.0	7.0	6.0	6.0	6.0	7.0	7.0	6.0	7.0	6.0	7.0
LT	9.8	9.9	9.7	9.7	9.9	9.7	9.2	8.6	9.1	9.7	9.4	9.9
AVE LT	6.9	7.7	7.9	7.9	7.7	7.2	6.7	5.9	7.0	8.0	6.9	7.2
ST DEV	1.1	1.2	0.8	0.9	1.0	1.2	1.0	1.2	1.2	1.3	1.0	1.4

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	7.0	11.0	10.0	11.0	9.0	8.0	6.0	6.0	7.0	6.0	11.0	7.0
GEN	7.0	7.0	7.0	6.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0
LT	9.4	9.9	9.9	9.8	9.3	8.3	7.7	7.6	8.9	9.6	9.9	9.2
AVE LT	8.1	8.2	8.6	8.4	7.6	6.8	6.1	6.2	6.6	7.5	8.3	7.8
ST DEV	0.8	1.0	0.8	0.8	0.8	0.8	0.8	0.7	0.9	1.0	1.0	0.8

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
THY	10.0	12.0	12.0	8.0	8.0	7.0	7.0	7.0	7.0	9.0	11.0	9.0
GEN	7.0	7.0	7.0	6.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0
LT	9.9	9.9	9.9	9.8	9.6	9.5	8.3	9.9	9.6	9.6	9.8	9.9
AVE LT	9.3	9.3	9.4	8.9	8.2	7.5	6.9	7.3	7.9	8.6	9.1	9.2
ST DEV	0.5	0.4	0.5	0.6	0.9	1.0	0.6	1.1	0.9	0.6	0.6	0.5

DAILY AVERAGE WINDSPEED, m/s LAG ONE AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.16	-0.07	0.51	0.16	0.20	0.37	-0.05	0.11	0.14	0.45	0.20	0.03
GEN	0.15	0.16	0.34	0.16	0.26	0.19	0.12	0.18	0.08	0.24	0.15	0.13
LT	0.21	0.12	0.15	0.14	0.18	0.21	0.06	0.27	0.15	0.20	0.21	0.28
AVE LT	0.18	0.12	0.16	0.16	0.15	0.18	0.04	0.24	0.14	0.19	0.19	0.24
ST DEV	0.18	0.17	0.17	0.14	0.16	0.20	0.16	0.12	0.13	0.19	0.15	0.21

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.01	0.39	0.21	0.38	0.45	0.30	0.25	0.11	0.00	0.13	0.30	-0.06
GEN	0.15	0.27	0.24	0.02	0.15	0.03	0.11	0.13	0.11	0.27	0.03	0.21
LT	0.19	0.24	0.26	0.28	0.32	0.23	0.25	0.25	0.19	0.29	0.27	0.20
AVE LT	0.17	0.22	0.24	0.25	0.31	0.21	0.24	0.24	0.18	0.28	0.27	0.19
ST DEV	0.18	0.19	0.18	0.17	0.20	0.18	0.15	0.15	0.14	0.18	0.16	0.17

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.07	0.28	0.04	0.25	0.30	0.14	0.06	0.25	-0.09	0.52	0.11	0.27
GEN	0.15	0.27	0.24	0.02	0.15	0.03	0.11	0.13	0.11	0.27	0.03	0.21
LT	0.25	0.28	0.26	0.28	0.32	0.29	0.26	0.27	0.31	0.41	0.30	0.26
AVE LT	0.23	0.28	0.25	0.28	0.30	0.24	0.25	0.25	0.27	0.38	0.29	0.25
ST DEV	0.18	0.17	0.15	0.12	0.16	0.20	0.17	0.16	0.20	0.17	0.16	0.16

DAILY AVERAGE WINDSPEED, m/s

LAG TWO AUTOCORRELATION

ALBUQUERQUE, NM

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.26	0.17	0.08	-0.24	-0.16	0.02	0.11	-0.03	-0.25	0.21	-0.04	-0.09
GEN	0.15	-0.05	0.23	-0.02	0.13	0.05	-0.05	-0.04	-0.02	0.05	-0.03	-0.05
LT	-0.01	-0.10	-0.08	-0.08	-0.11	-0.02	-0.08	-0.04	-0.08	-0.07	-0.01	0.06
AVE LT	-0.02	-0.10	-0.08	-0.07	-0.12	-0.02	-0.08	-0.05	-0.09	-0.06	-0.01	0.04
ST DEV	0.14	0.15	0.16	0.17	0.18	0.16	0.11	0.20	0.14	0.16	0.23	0.22

MADISON, WI

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	0.40	-0.02	-0.11	-0.14	0.08	0.16	-0.26	-0.34	-0.08	0.01	-0.22	-0.06
GEN	0.15	-0.06	-0.08	-0.17	-0.11	-0.17	-0.20	-0.24	-0.01	0.17	-0.23	0.11
LT	0.01	-0.05	-0.07	-0.03	0.06	-0.04	-0.07	-0.10	-0.01	0.03	0.00	-0.03
AVE LT	0.03	-0.05	-0.06	-0.04	0.05	-0.04	-0.08	-0.10	-0.02	0.00	0.02	-0.03
ST DEV	0.18	0.19	0.17	0.14	0.21	0.18	0.20	0.20	0.20	0.22	0.20	0.16

NEW YORK, NY

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TMY	-0.08	-0.06	-0.29	-0.13	0.14	0.08	-0.26	0.03	-0.02	0.28	0.00	-0.30
GEN	0.15	-0.06	-0.08	-0.17	-0.11	-0.17	-0.20	-0.24	-0.01	0.17	-0.23	0.11
LT	-0.03	-0.06	-0.04	0.00	0.00	0.05	0.01	-0.04	0.03	0.08	-0.01	-0.09
AVE LT	-0.03	-0.04	-0.03	0.00	0.00	0.04	0.01	-0.03	0.01	0.08	-0.02	-0.09
ST DEV	0.14	0.24	0.19	0.15	0.18	0.20	0.19	0.16	0.14	0.22	0.21	0.15

HOURLY AVERAGE WINDSPEED, m/s LAG ONE AUTOCORRELATION

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
ALBUQUERQUE													
LT	0.949	0.974	0.990	0.978	0.963	0.966	0.920	0.879	0.962	0.982	0.967	0.978	0.959
GEN	0.980	0.962	0.975	0.957	0.963	0.978	0.968	0.977	0.943	0.965	0.977	0.968	0.968
TMY	0.835	0.852	0.842	0.835	0.796	0.771	0.718	0.705	0.793	0.843	0.849	0.842	0.807
MADISON													
LT	0.993	0.975	0.991	0.980	0.979	0.972	0.973	0.962	0.970	0.984	0.989	0.965	0.978
GEN	0.981	0.966	0.975	0.959	0.964	0.980	0.969	0.978	0.947	0.967	0.977	0.967	0.969
TMY	0.909	0.912	0.915	0.892	0.861	0.828	0.811	0.832	0.864	0.887	0.913	0.903	0.877
NEW YORK													
LT	0.985	0.981	0.971	0.984	0.985	0.929	0.898	0.965	0.965	0.969	0.984	0.978	0.966
GEN	0.980	0.963	0.975	0.957	0.965	0.979	0.967	0.977	0.945	0.966	0.976	0.966	0.968
TMY	0.895	0.876	0.877	0.857	0.825	0.808	0.795	0.821	0.848	0.881	0.892	0.896	0.856

HOURLY AVERAGE WINDSPEED, m/s LAG TWO AUTOCORRELATION

ALBUQUERQUE													
LT	0.907	0.950	0.975	0.943	0.930	0.912	0.850	0.789	0.910	0.953	0.944	0.958	0.918
GEN	0.956	0.919	0.943	0.905	0.920	0.955	0.937	0.953	0.887	0.924	0.948	0.931	0.931
TMY	0.718	0.742	0.725	0.715	0.657	0.598	0.528	0.519	0.648	0.726	0.734	0.726	0.670
MADISON													
LT	0.983	0.941	0.976	0.951	0.953	0.939	0.929	0.919	0.937	0.956	0.970	0.926	0.948
GEN	0.958	0.923	0.942	0.908	0.923	0.956	0.938	0.954	0.887	0.926	0.951	0.930	0.933
TMY	0.837	0.846	0.847	0.808	0.765	0.720	0.705	0.735	0.769	0.807	0.845	0.831	0.793
NEW YORK													
LT	0.967	0.959	0.941	0.961	0.963	0.854	0.817	0.919	0.925	0.939	0.967	0.956	0.931
GEN	0.955	0.920	0.944	0.908	0.922	0.956	0.936	0.952	0.886	0.925	0.947	0.927	0.932
TMY	0.834	0.810	0.805	0.764	0.716	0.691	0.669	0.708	0.750	0.804	0.833	0.830	0.768

HOURLY AVERAGE WINDSPEED, m/s LAG 24 AUTOCORRELATION

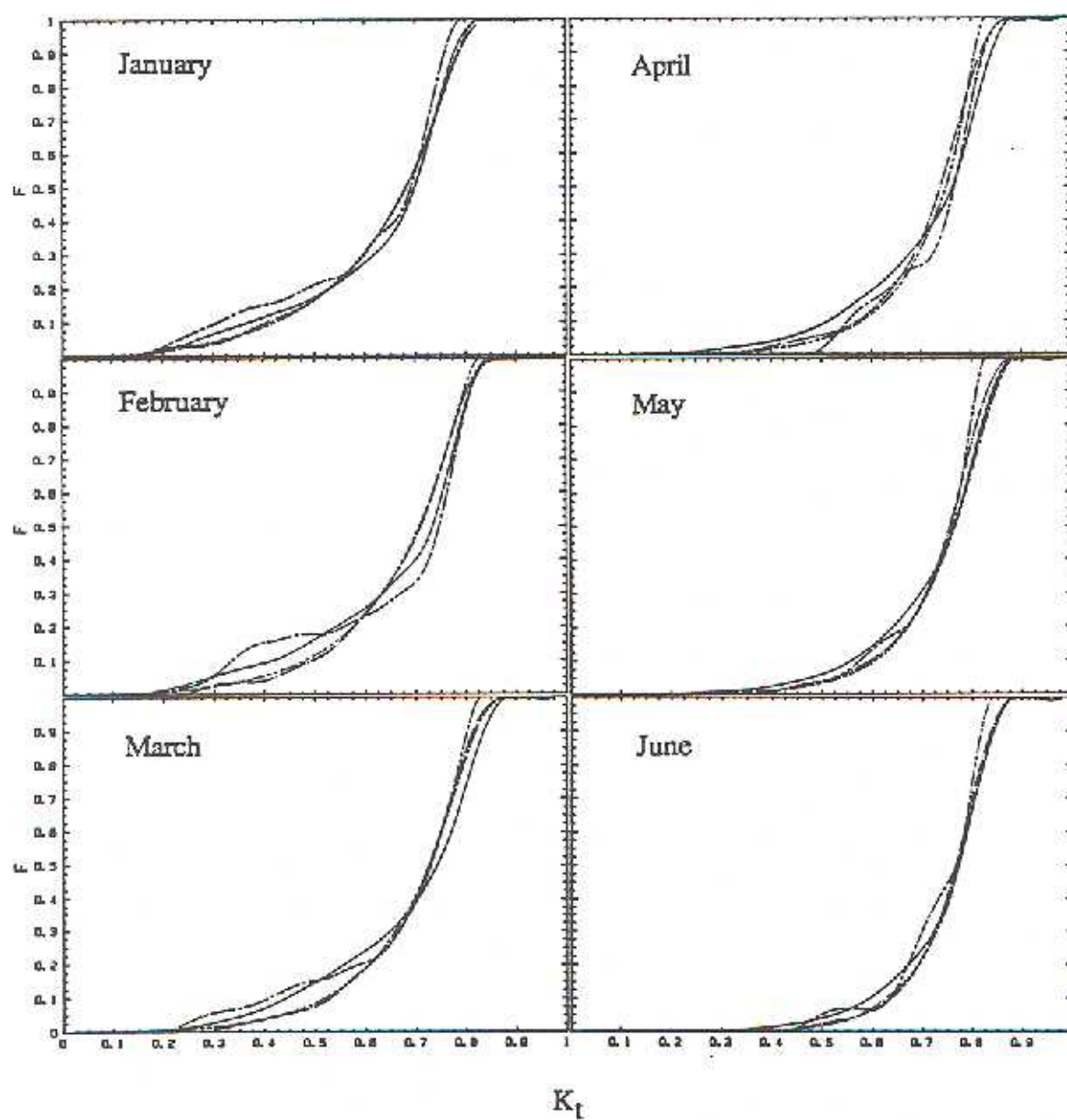
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Year
ALBUQUERQUE													
LT	0.594	0.676	0.705	0.397	0.605	0.545	0.357	0.380	0.337	0.629	0.358	0.606	0.516
GEN	0.457	0.225	0.353	0.065	0.236	0.535	0.420	0.516	0.237	0.336	0.350	0.205	0.328
TMY	0.080	0.027	0.036	0.044	0.056	0.064	0.001	0.057	0.017	0.065	0.031	0.086	0.047
MADISON													
LT	0.650	0.538	0.417	0.489	0.552	0.486	0.299	0.515	0.303	0.422	0.414	0.291	0.448
GEN	0.463	0.241	0.359	0.058	0.236	0.530	0.418	0.514	0.234	0.342	0.344	0.209	0.329
TMY	0.026	0.051	0.065	0.093	0.102	0.066	0.059	0.080	0.040	0.064	0.086	0.008	0.062
NEW YORK													
LT	0.501	0.224	0.249	0.372	0.468	0.122	0.169	0.405	0.380	0.376	0.523	0.344	0.344
GEN	0.455	0.236	0.350	0.063	0.236	0.529	0.419	0.513	0.228	0.334	0.352	0.202	0.326
TMY	0.083	0.098	0.090	0.104	0.090	0.072	0.072	0.086	0.109	0.197	0.109	0.106	0.101

APPENDIX E
Distribution Comparisons

ALBUQUERQUE, NM

DAILY
 K_t DISTRIBUTION

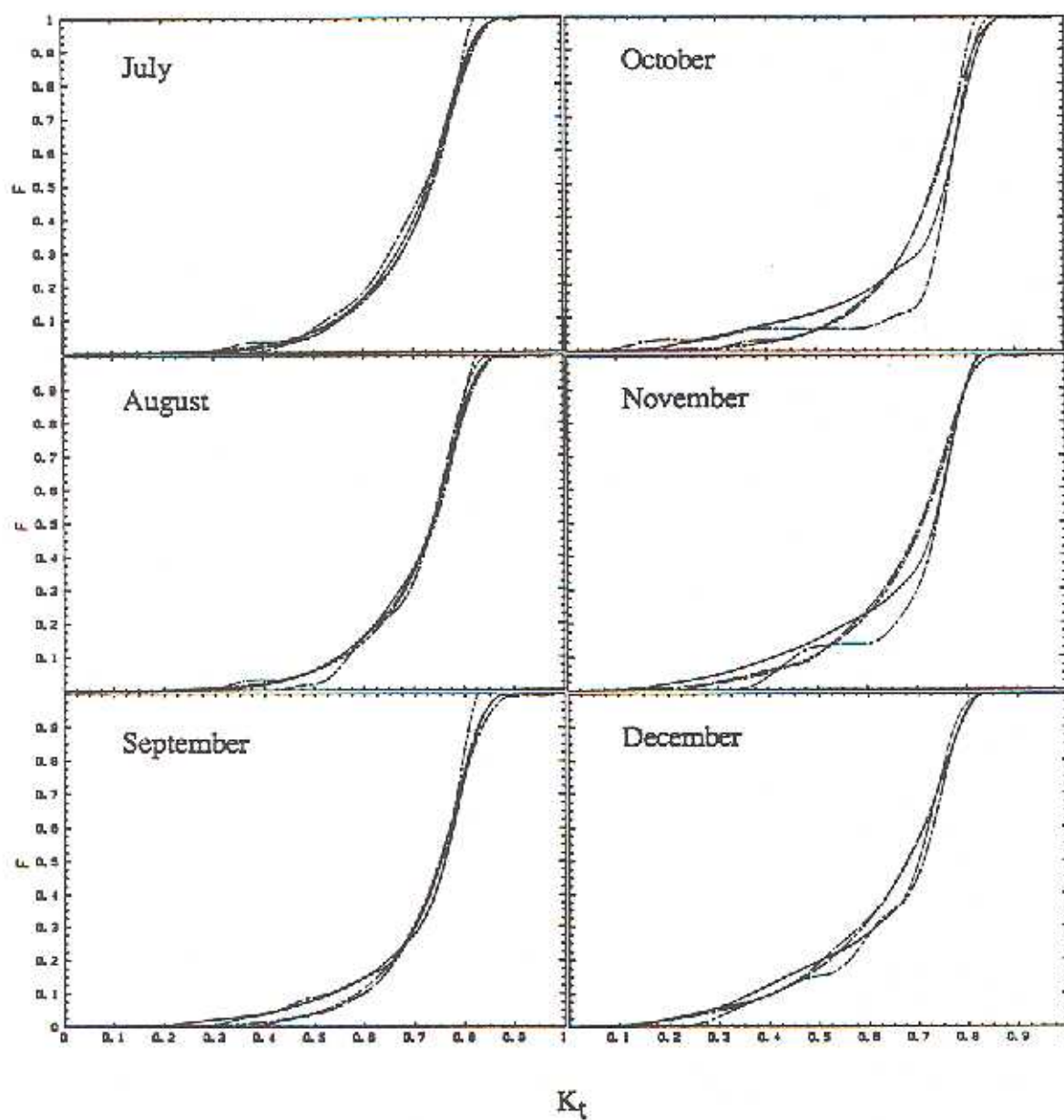
————— LONG TERM
 — · — · — · — GENERATED
 — — — — — TMY
 — · — · — · — BENDT CORRELATION



ALBUQUERQUE, NM

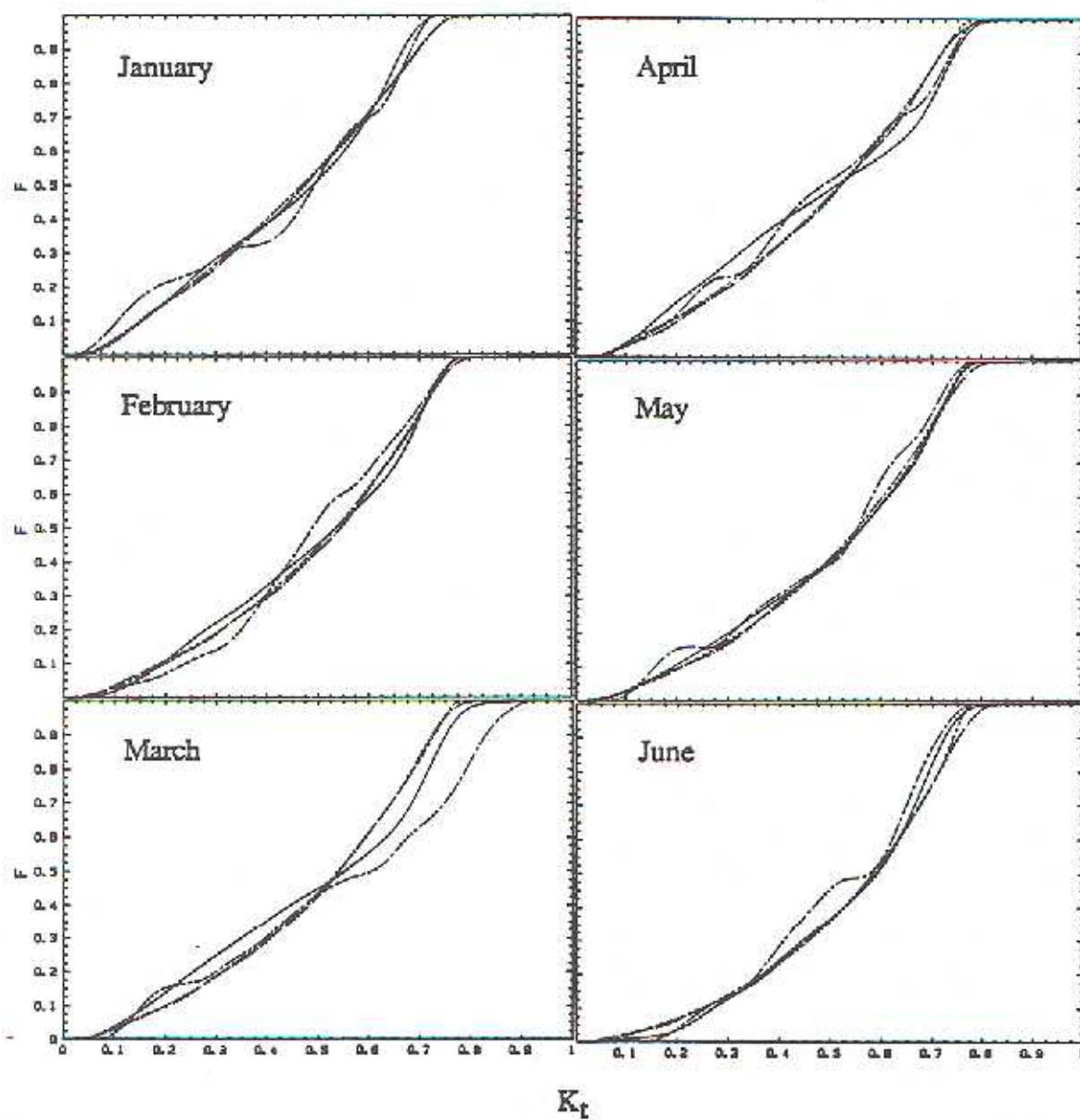
DAILY
 K_t DISTRIBUTION

— LONG TERM
 - - - GENERATED
 - - - TMY
 - - - BENDT CORRELATION



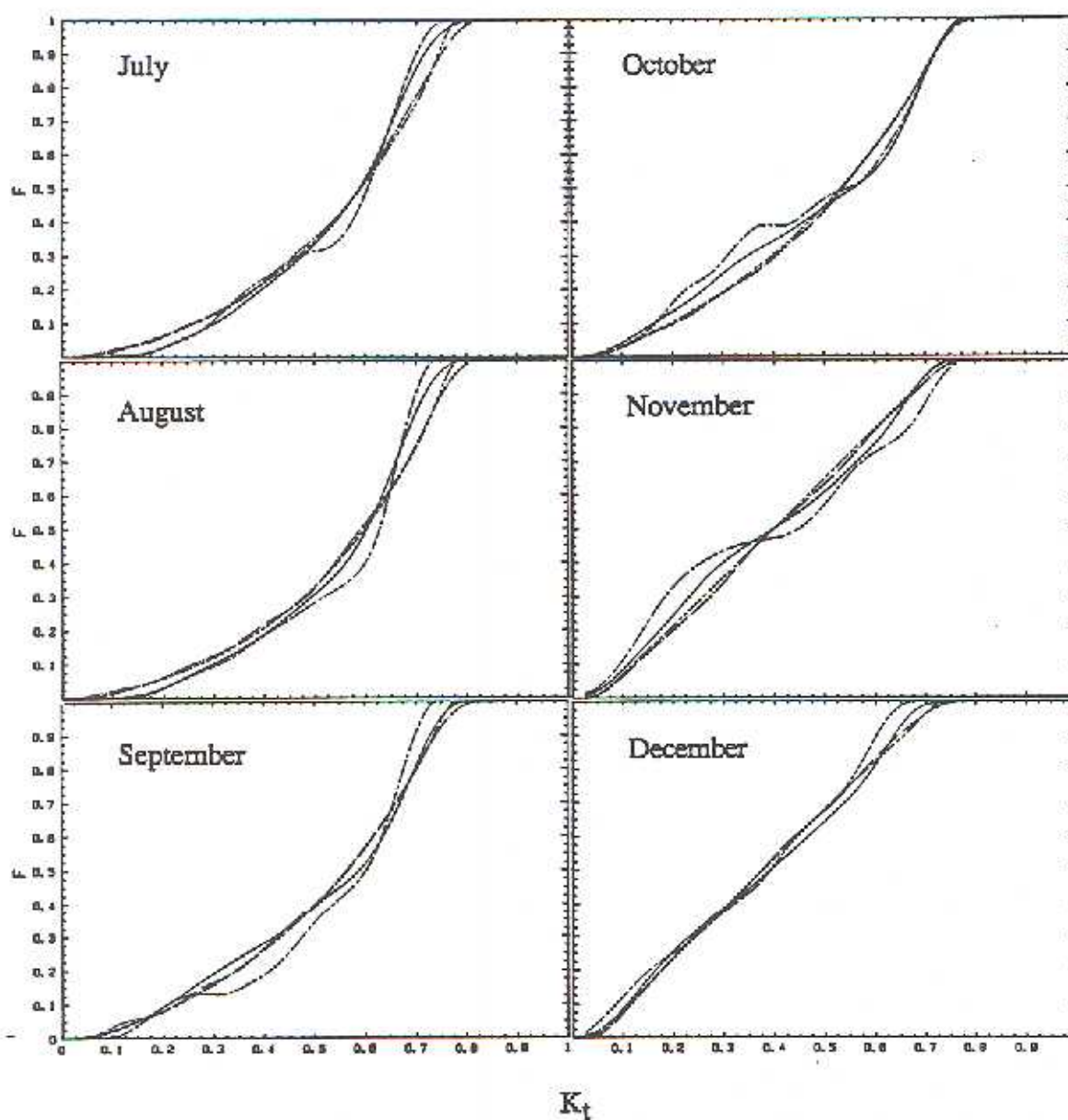
MADISON, WI
DAILY
 K_t DISTRIBUTION

— LONG TERM
— · — GENERATED
- - - TMY
- - - BENDT CORRELATION



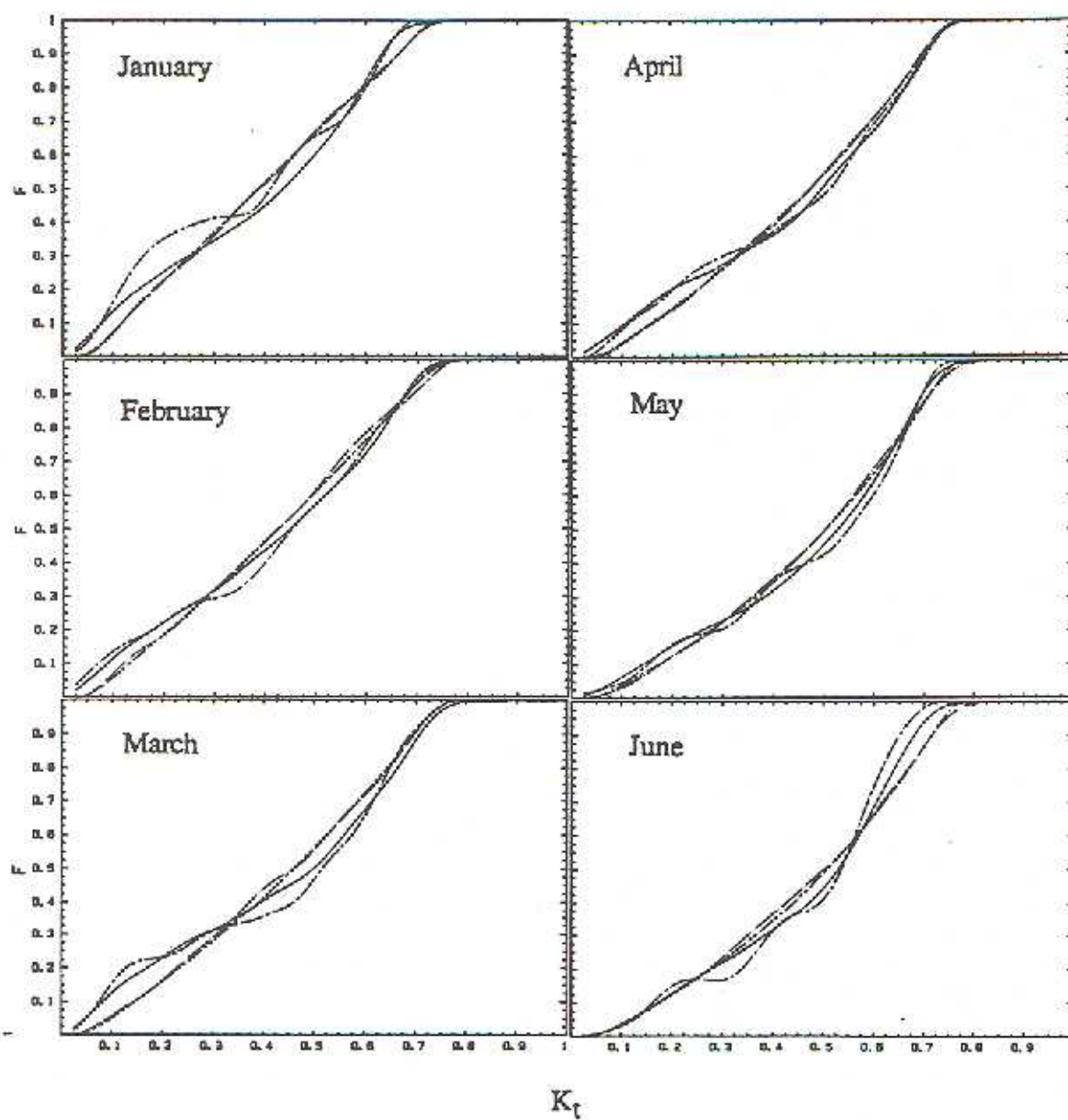
MADISON, WI
DAILY
 K_t DISTRIBUTION

— LONG TERM
— . — GENERATED
— — — TMY
— - - - BENDT CORRELATION



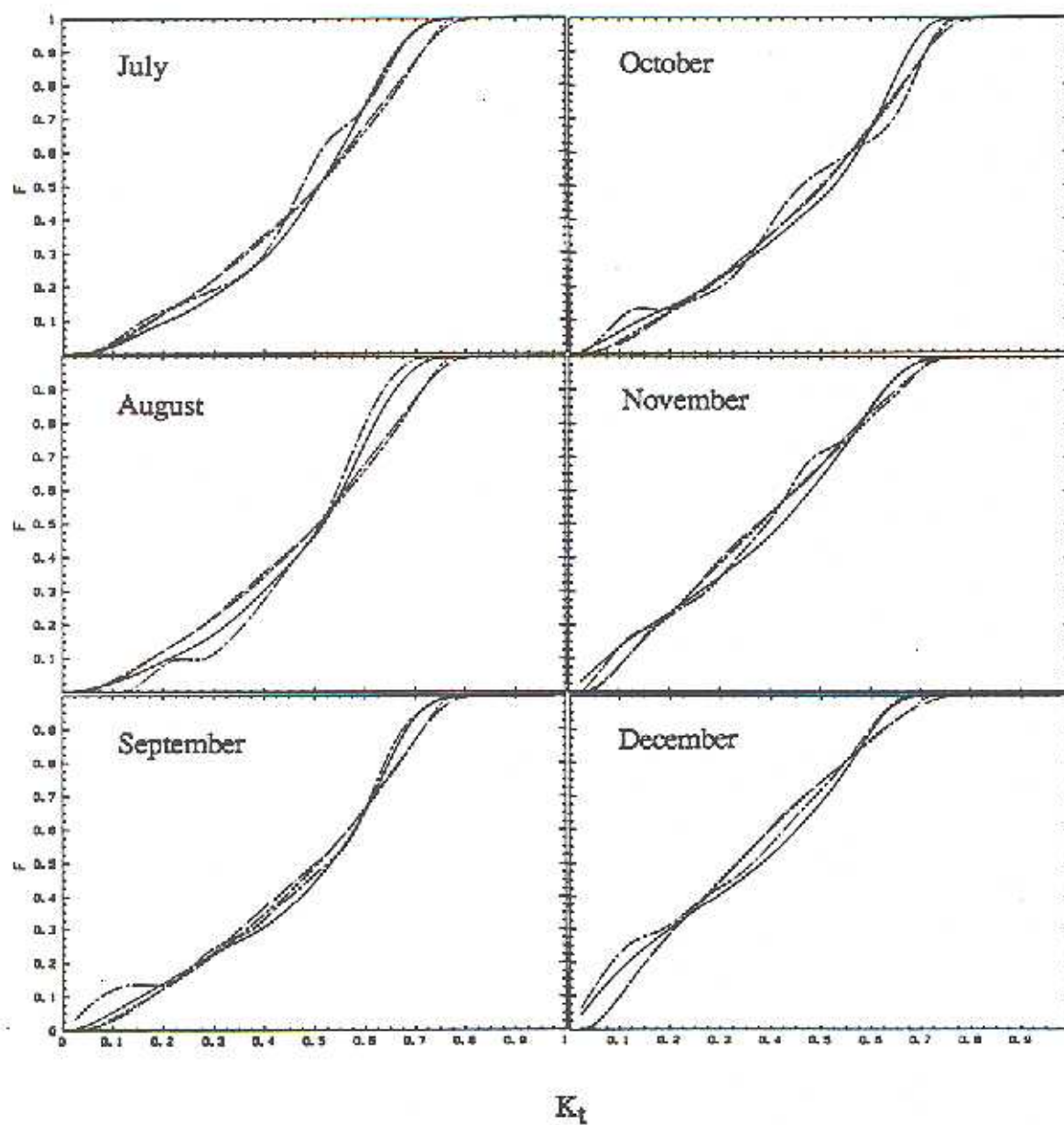
NEW YORK, NY
DAILY
 K_t DISTRIBUTION

— LONG TERM
— · — GENERATED
- - - TMY
- - - BENDT CORRELATION



NEW YORK, NY
DAILY
 K_t DISTRIBUTION

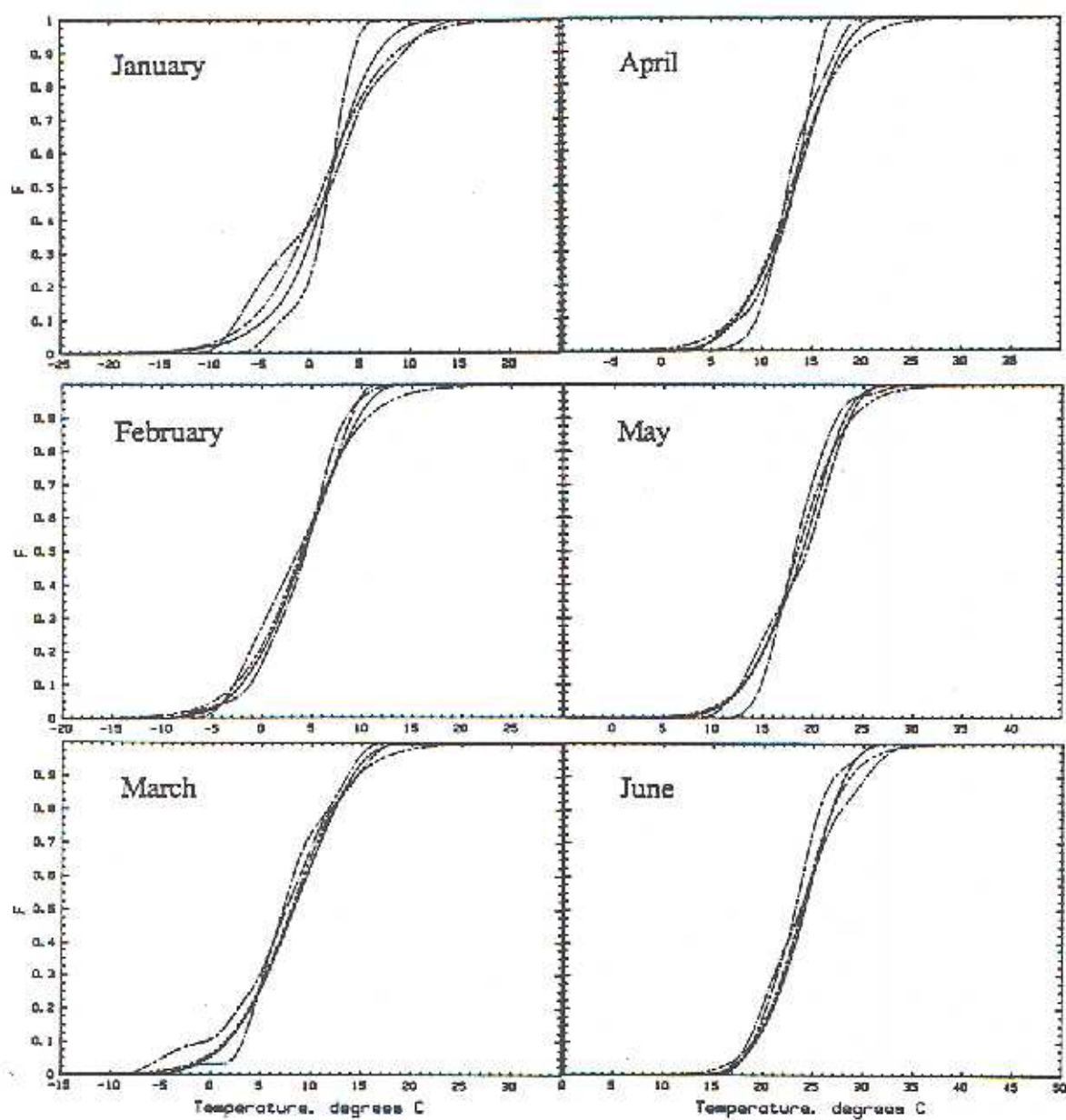
———— LONG TERM
— · — · — GENERATED
— · — · — TMY
— · — · — BENDT CORRELATION



ALBUQUERQUE, NM

DAILY
T DISTRIBUTION

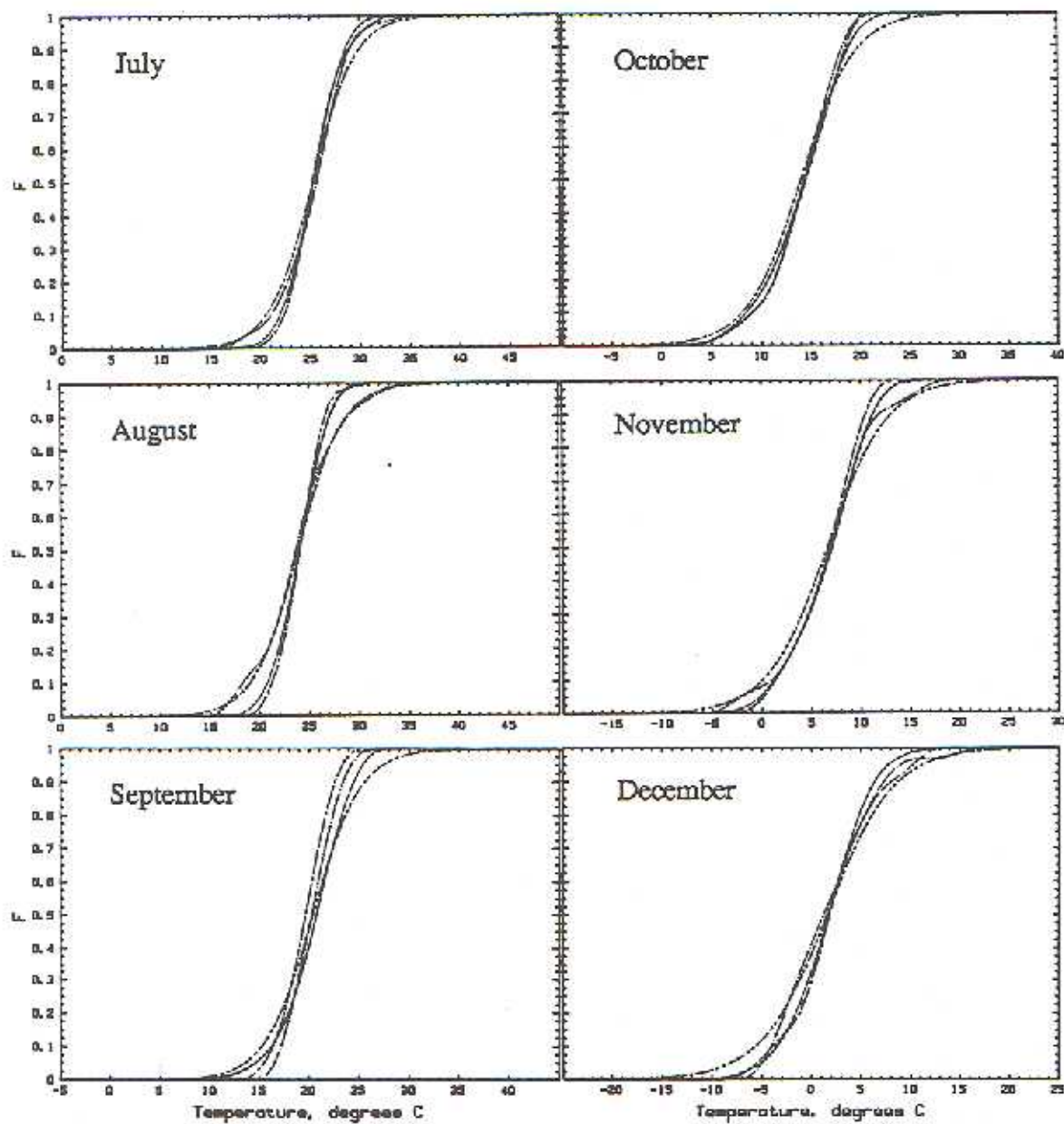
— LONG TERM
 — . — GENERATED
 — - - TMY
 — - - ERBS CORRELATION



ALBUQUERQUE, NM

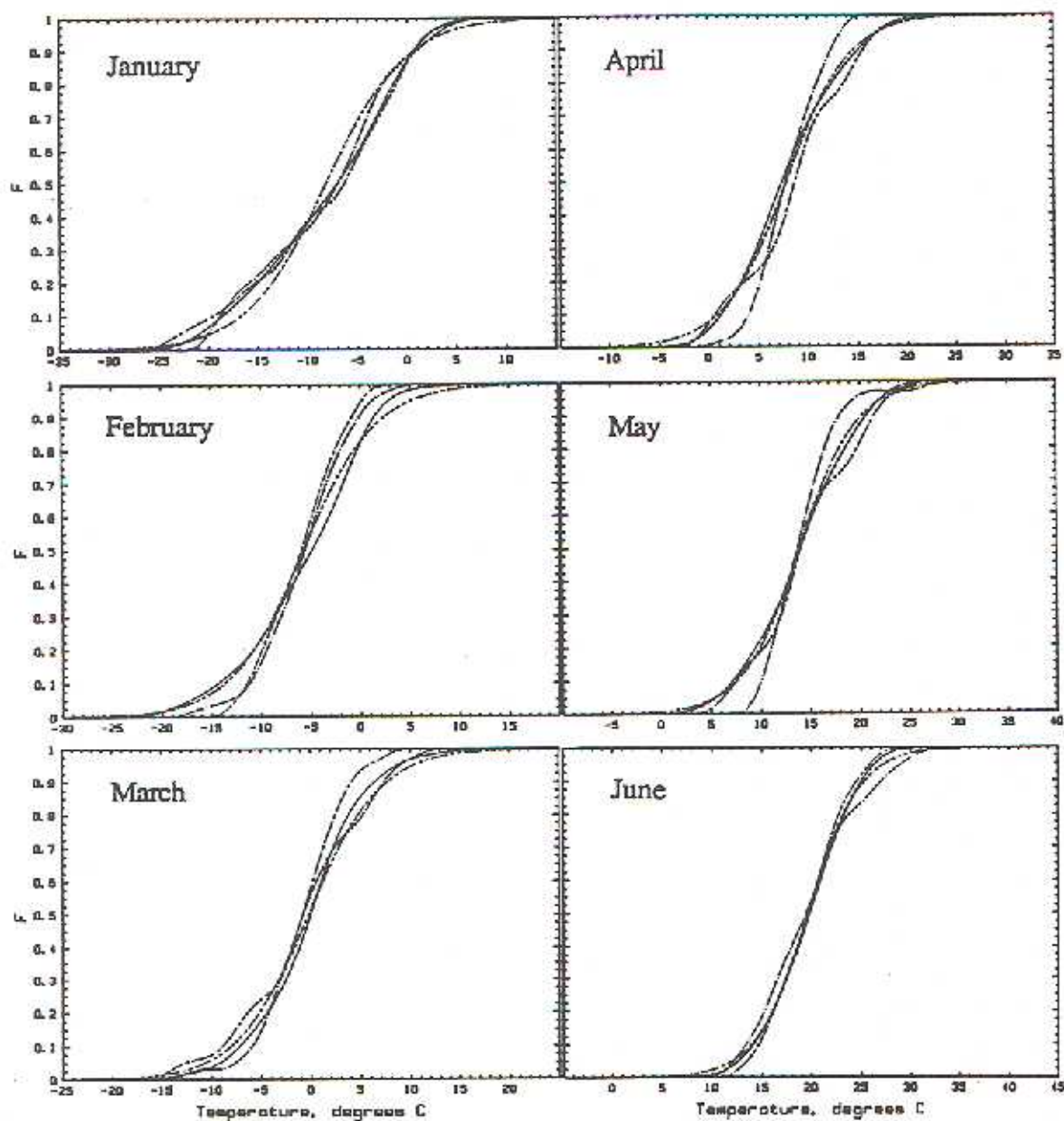
DAILY
T DISTRIBUTION

— LONG TERM
 - - - - - GENERATED
 - - - - - TMY
 - - - - - ERBS CORRELATION



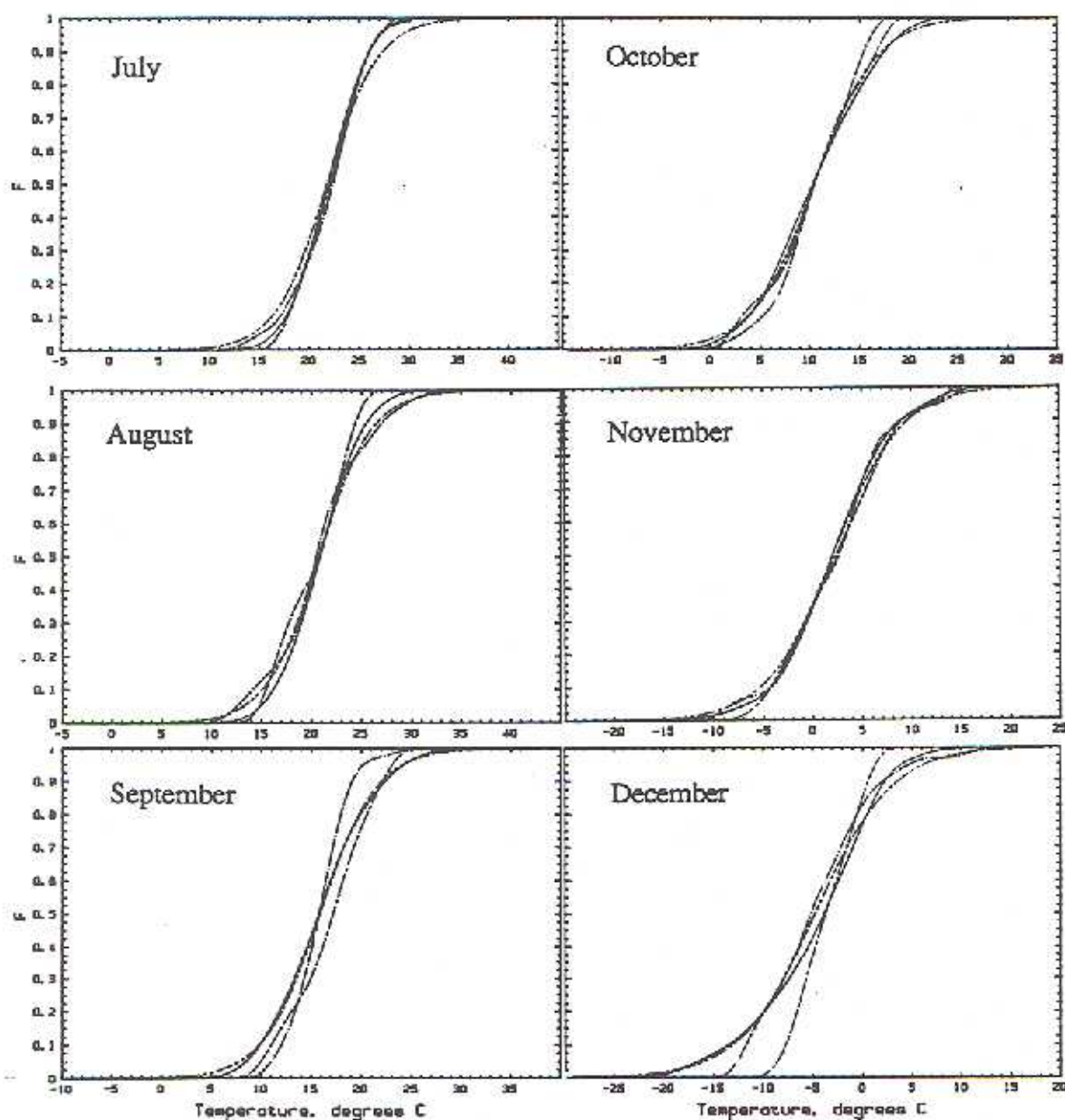
MADISON, WI
DAILY
T DISTRIBUTION

— LONG TERM
— . — GENERATED
— - — TMY
— - - — ERBS CORRELATION



MADISON, WI
DAILY
T DISTRIBUTION

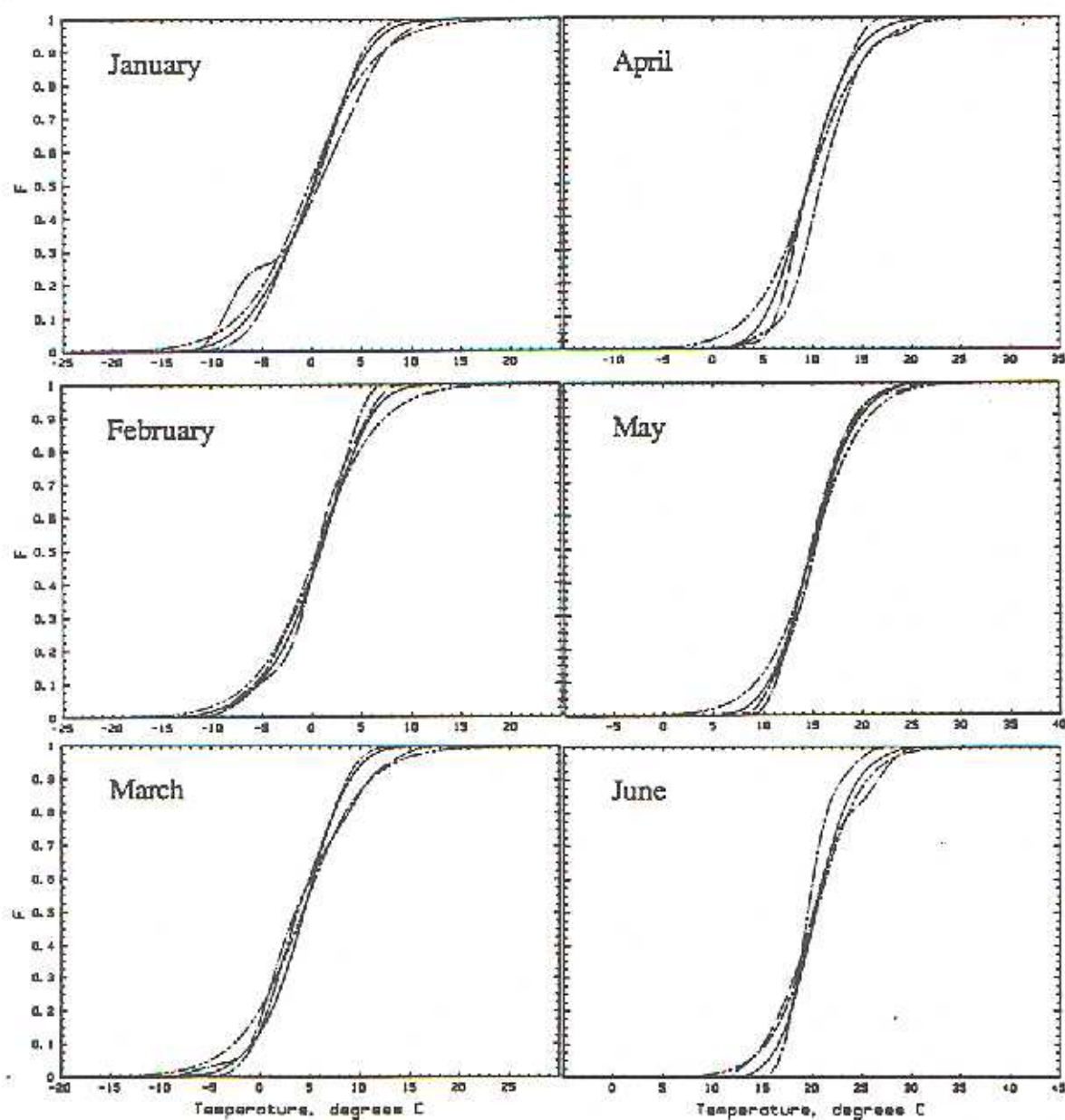
———— LONG TERM
- - - - - GENERATED
- - - - - TMY
- - - - - ERBS CORRELATION



NEW YORK, NY

DAILY
T DISTRIBUTION

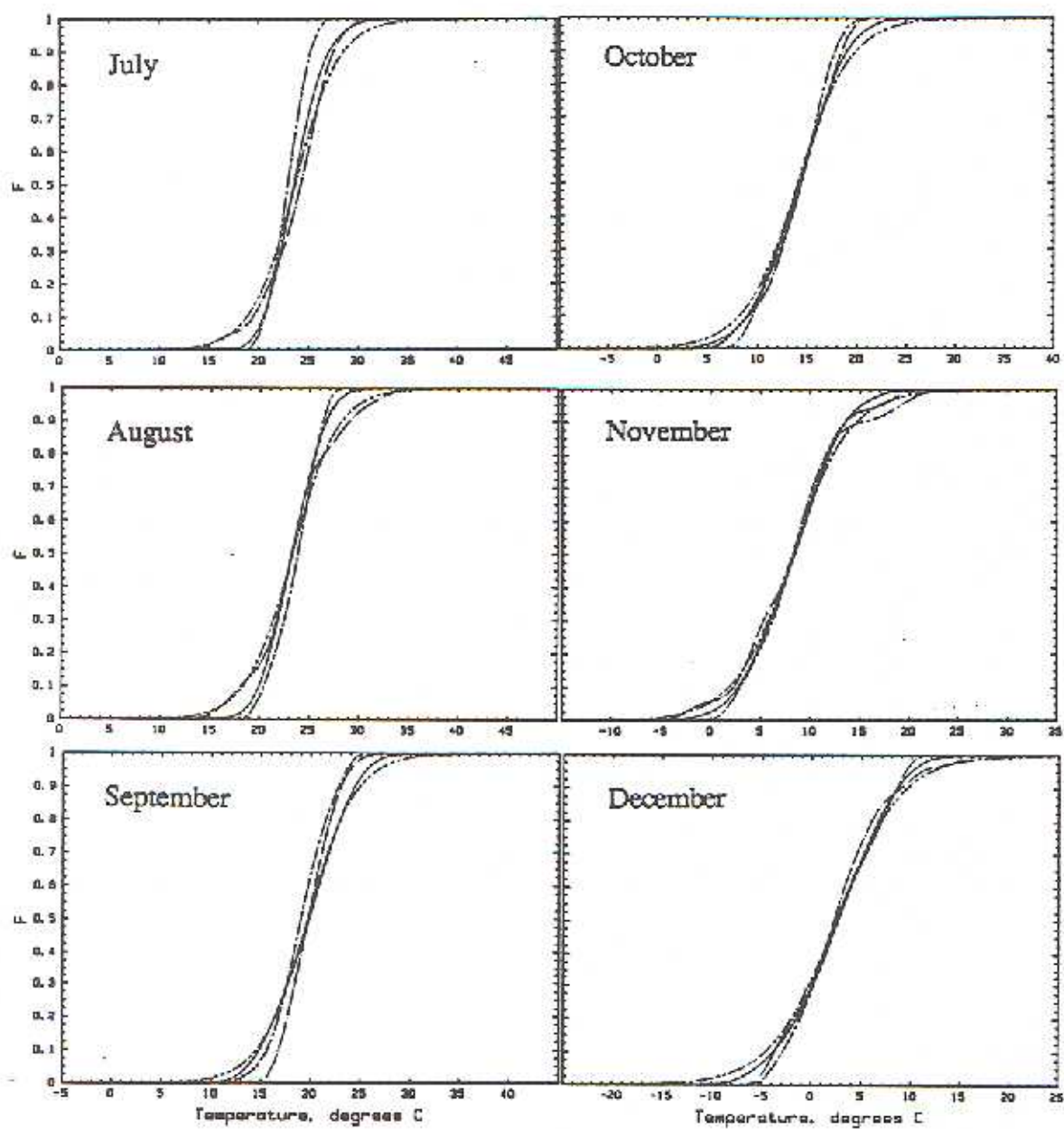
— LONG TERM
— . — GENERATED
— - - - TMY
— - - - ERBS CORRELATION



NEW YORK, NY

DAILY
T DISTRIBUTION

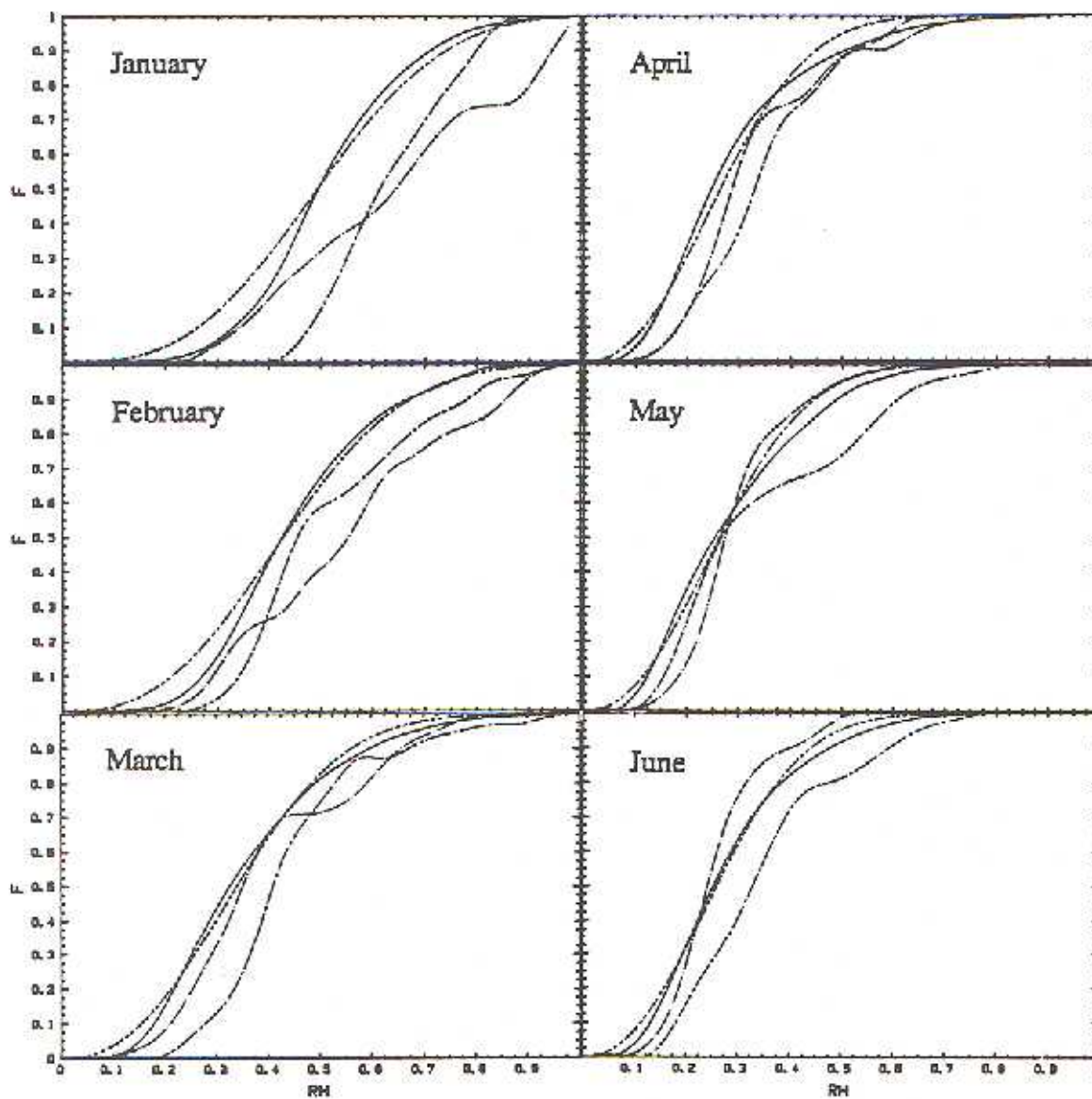
— LONG TERM
 — • — GENERATED
 — — — TMY
 — — — ERBS CORRELATION



ALBUQUERQUE, NM

DAILY
RH DISTRIBUTION

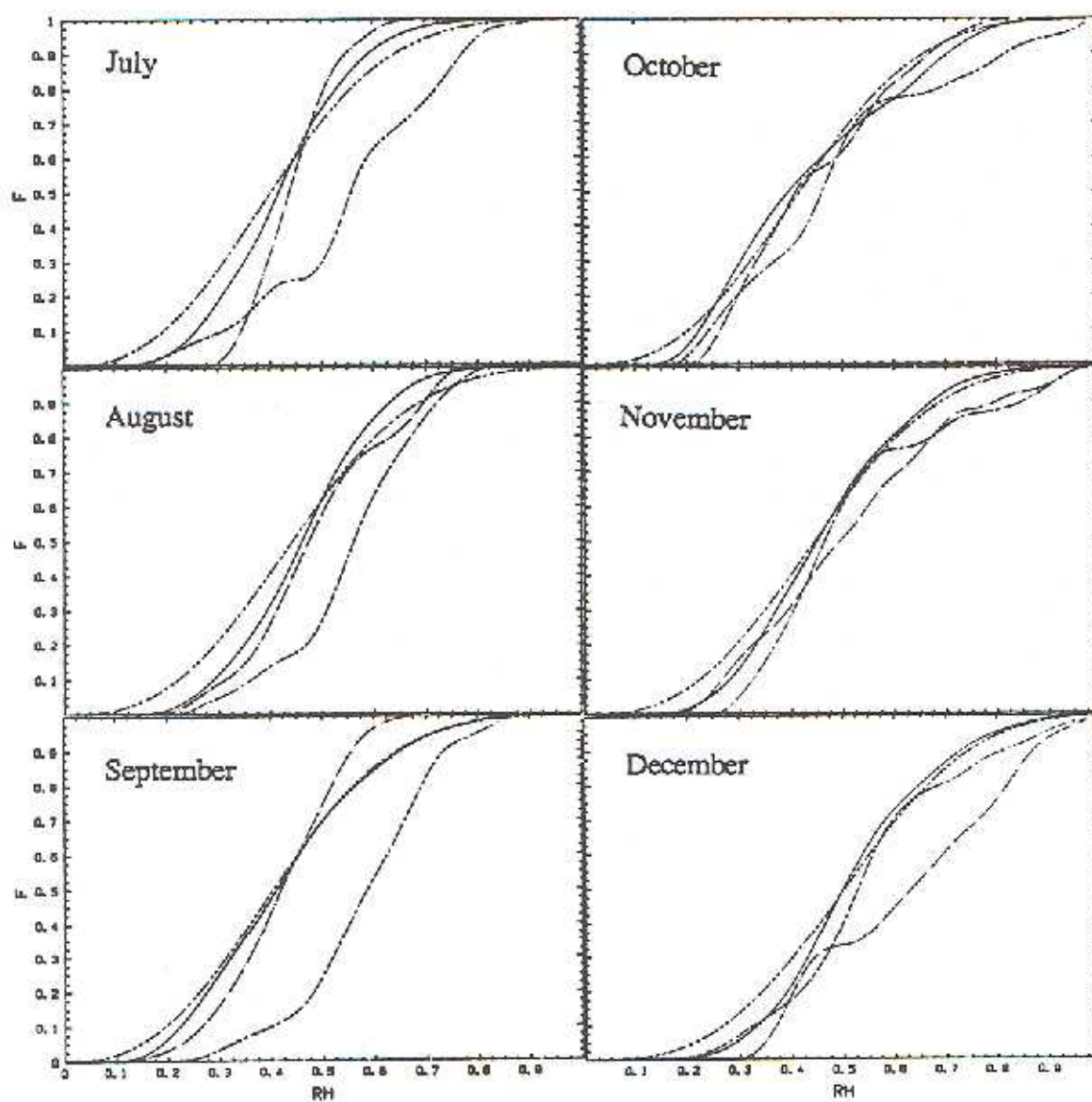
— LONG TERM
 — . — GENERATED
 - - - TMY
 — - — ERBS CORRELATION



ALBUQUERQUE, NM

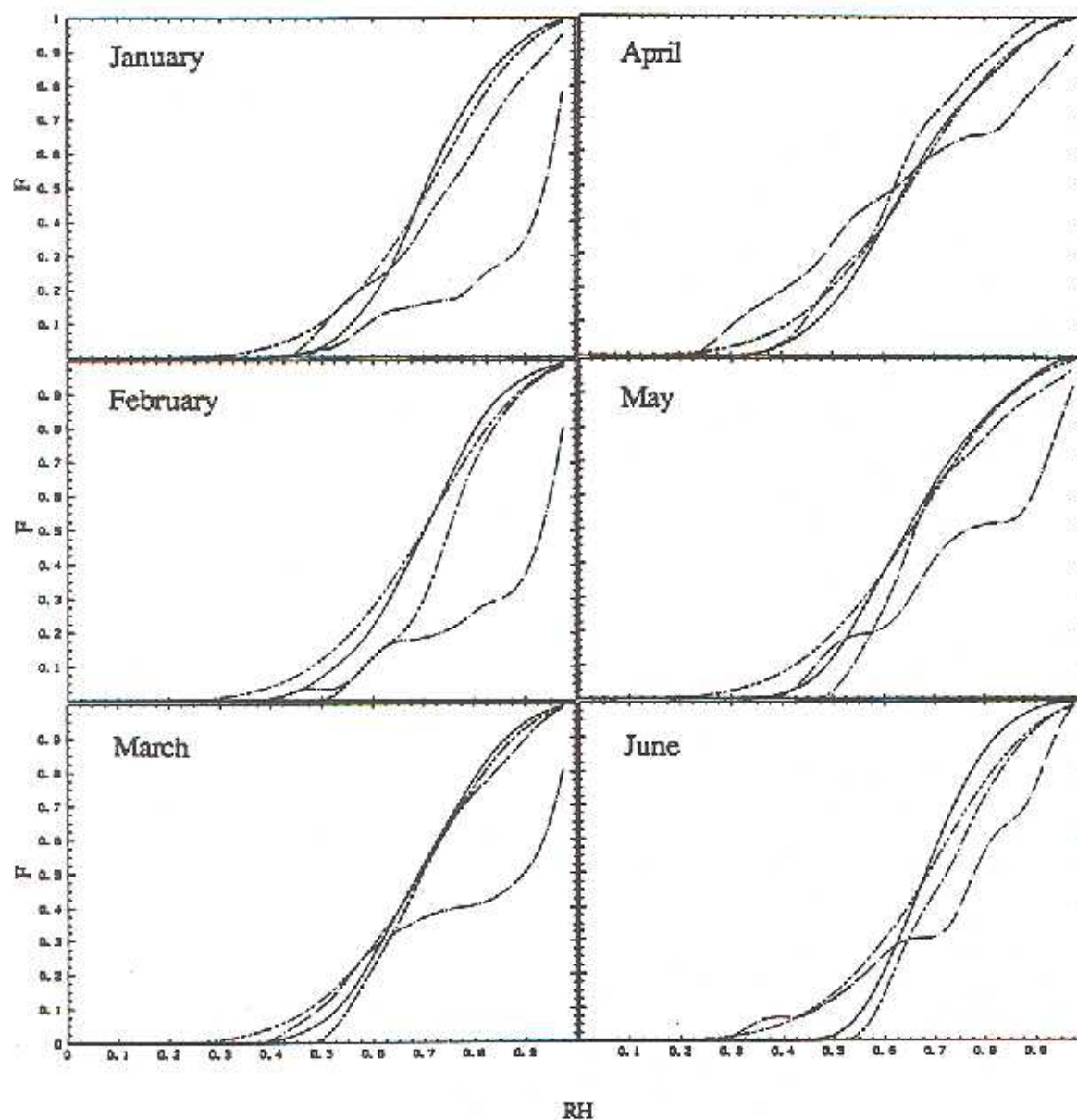
DAILY
RH DISTRIBUTION

— LONG TERM
 - - - GENERATED
 - - - TMY
 - - - ERBS CORRELATION



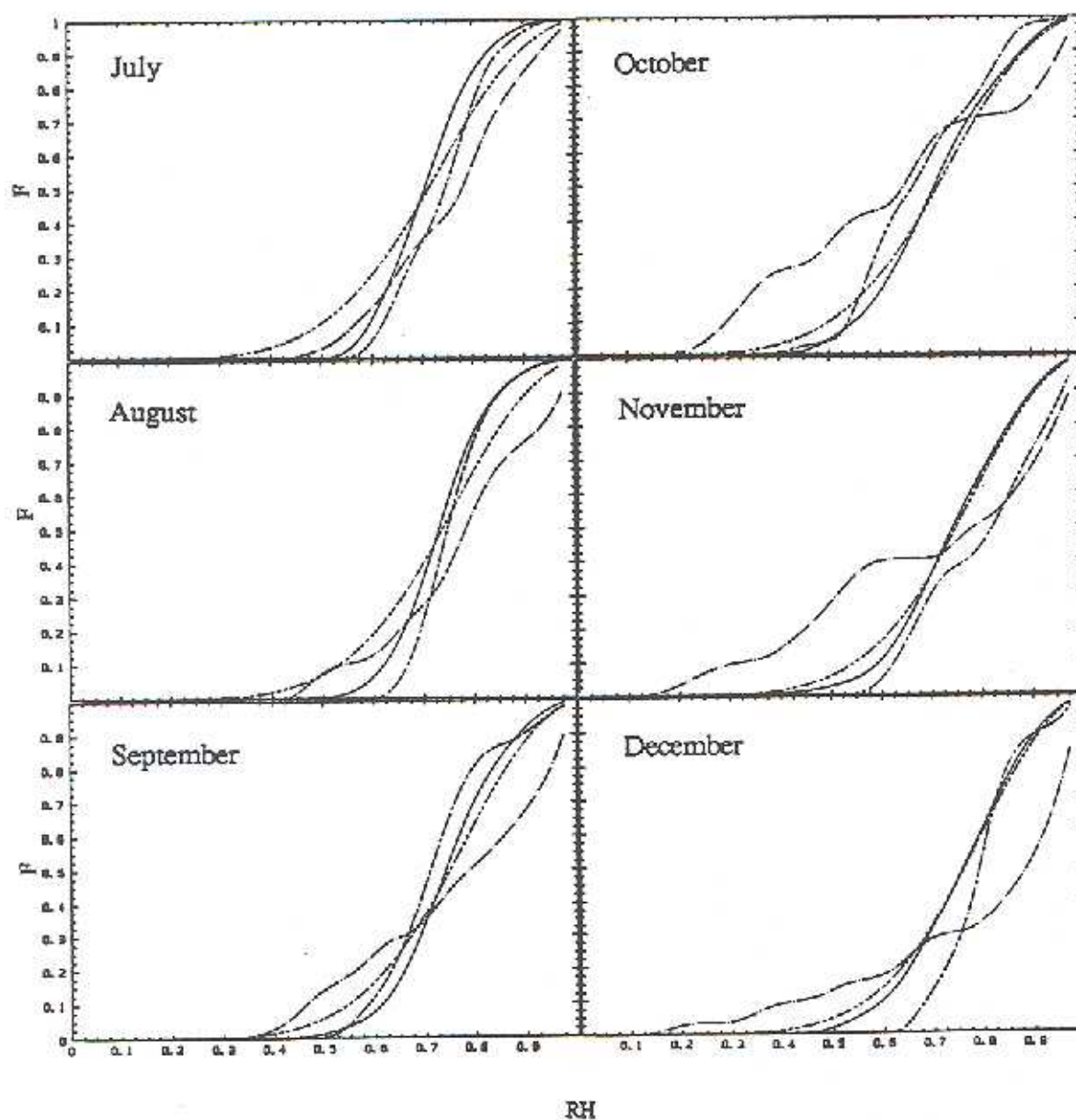
MADISON, WI
DAILY
RH DISTRIBUTION

— LONG TERM
- - - GENERATED
- - - TMY
- - - ERBS CORRELATION



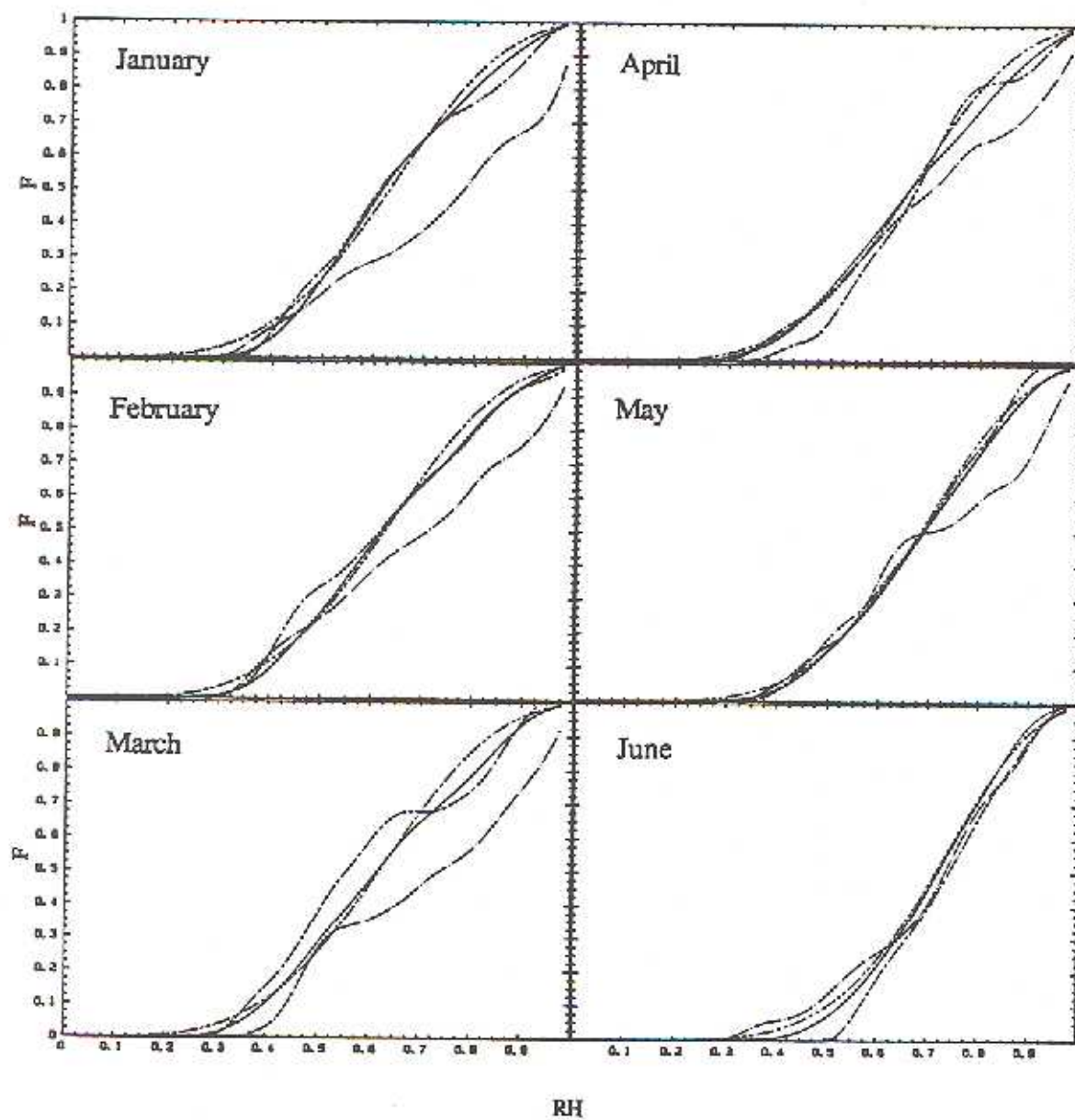
MADISON, WI
DAILY
RH DISTRIBUTION

— LONG TERM
— . — GENERATED
— - — TMY
— - - - ERBS CORRELATION



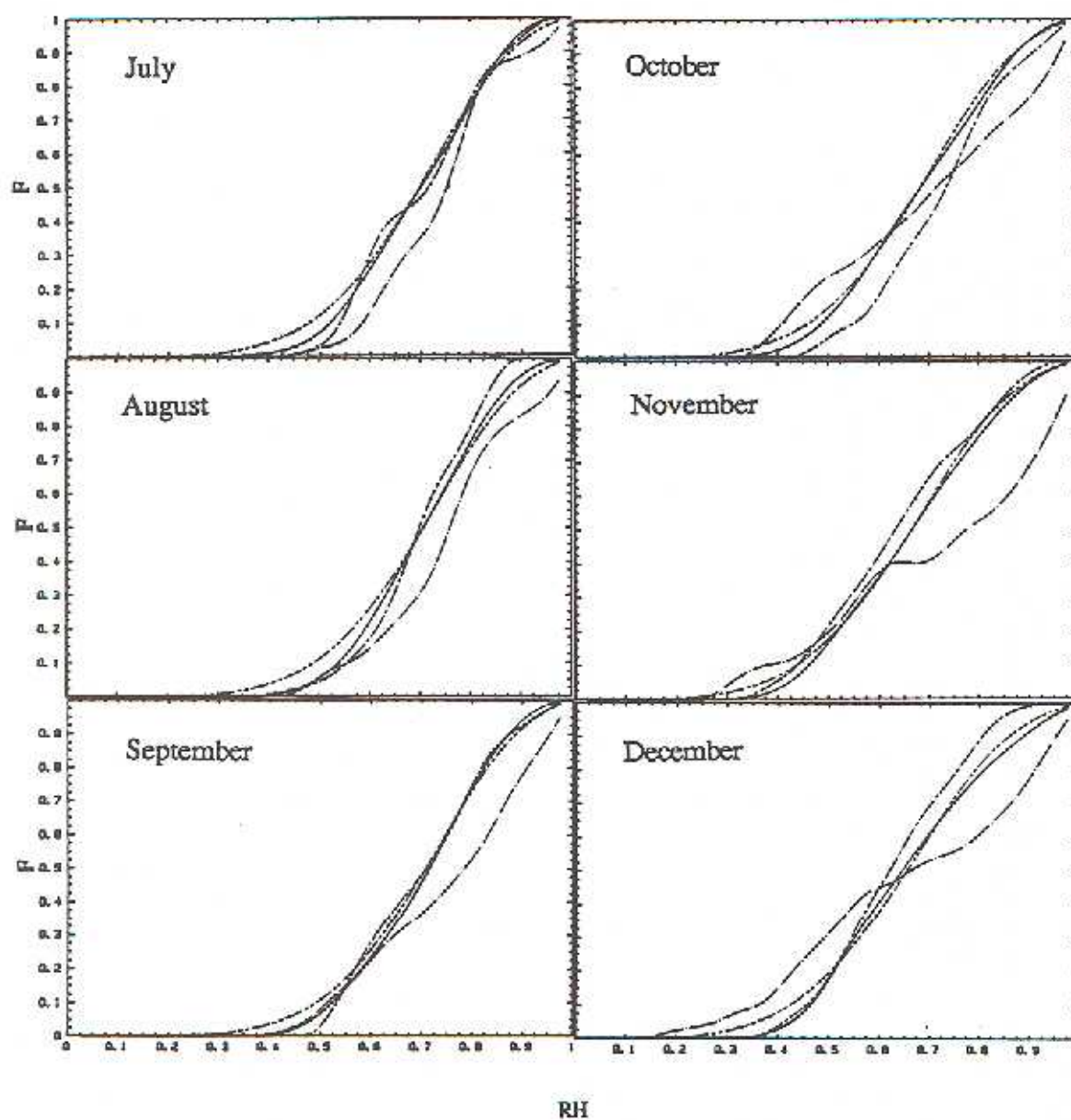
NEW YORK, NY
DAILY
RH DISTRIBUTION

— LONG TERM
— • — GENERATED
— - - TMY
— - - ERBS CORRELATION

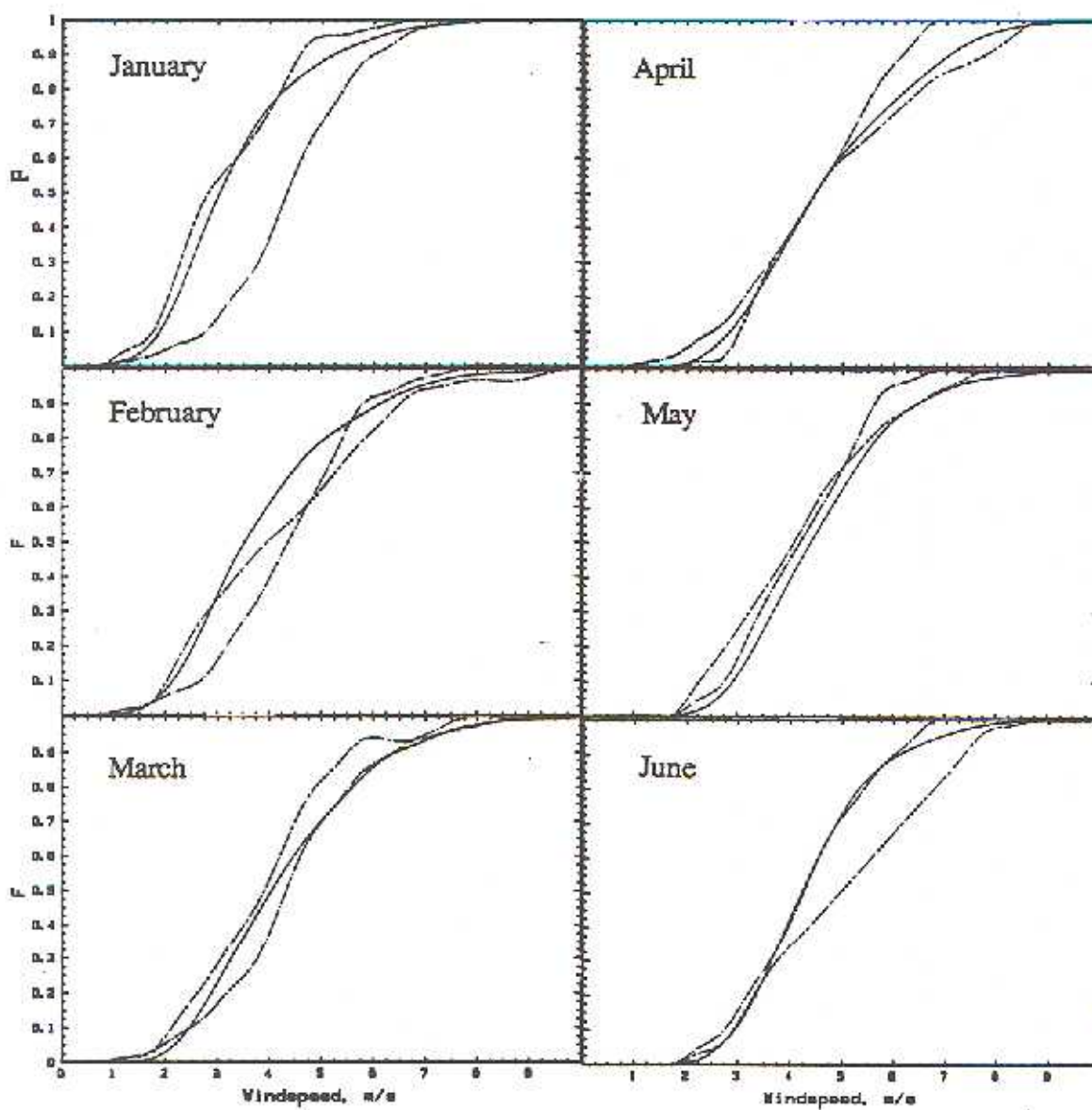


NEW YORK, NY
DAILY
RH DISTRIBUTION

— LONG TERM
— . — GENERATED
— - — TMY
— - - - ERBS CORRELATION



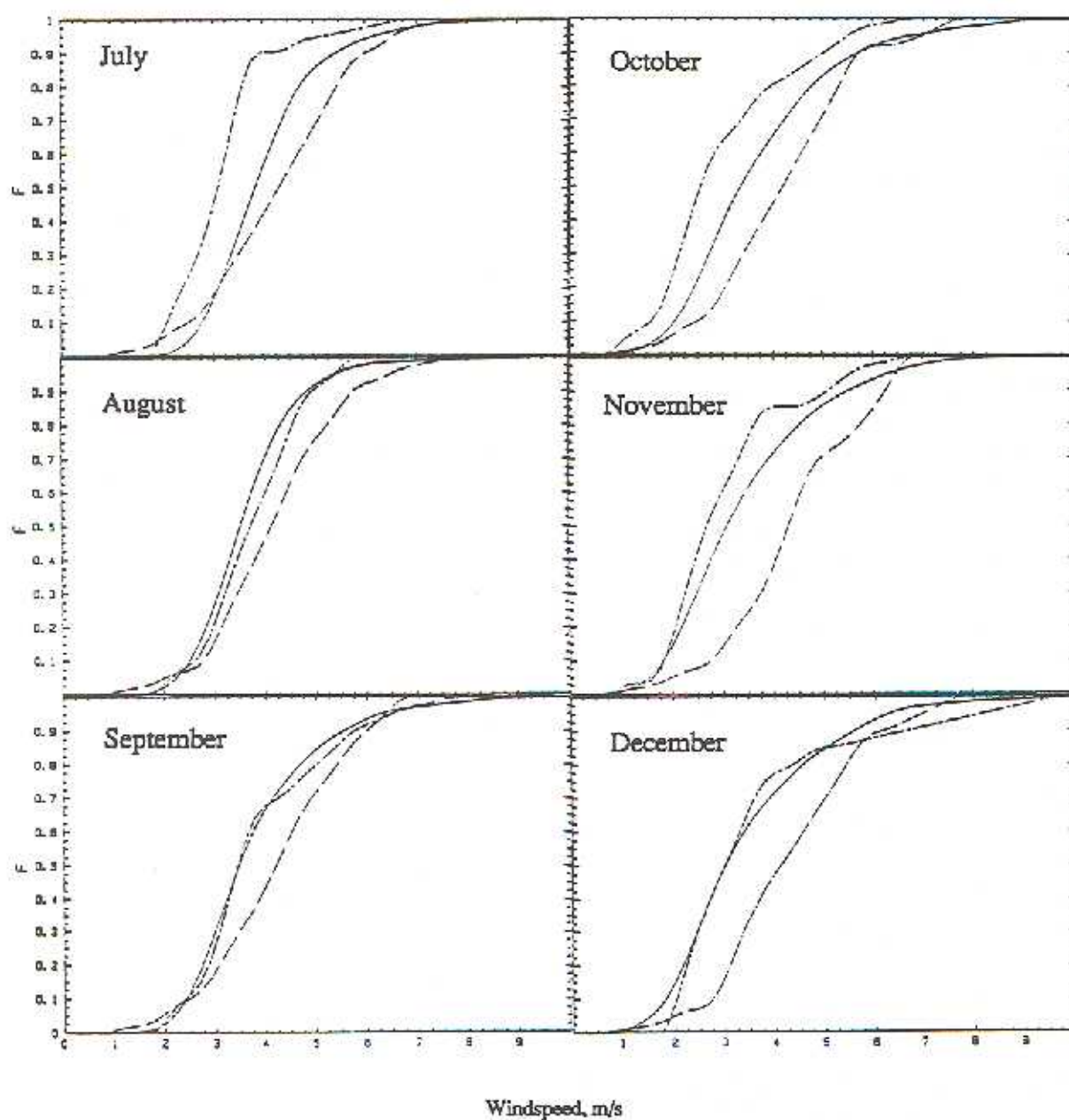
ALBUQUERQUE, NM

DAILY
WV DISTRIBUTION— LONG TERM
— . — GENERATED
— - — TMY

ALBUQUERQUE, NM

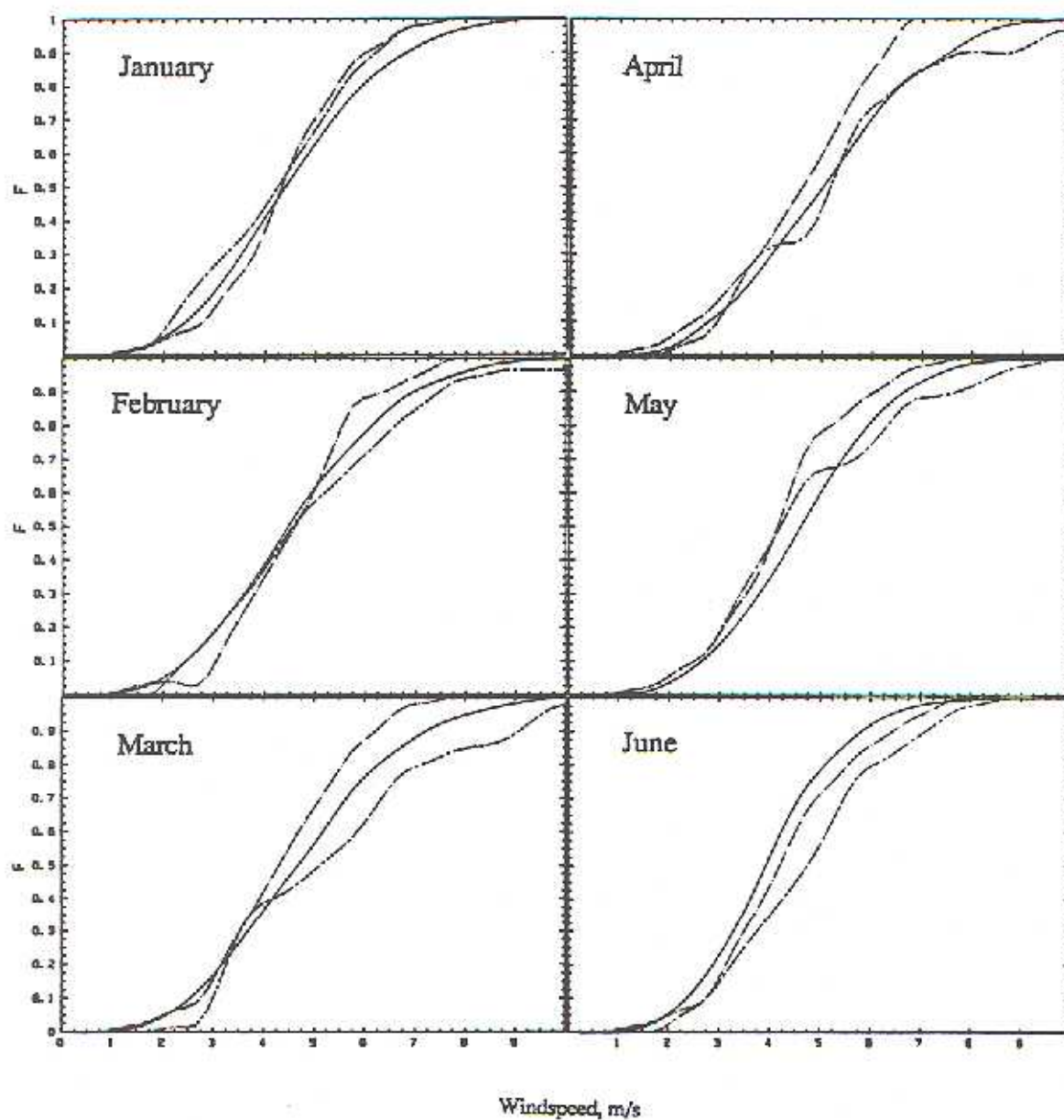
DAILY
WV DISTRIBUTION

— LONG TERM
— . — GENERATED
- - - TMY



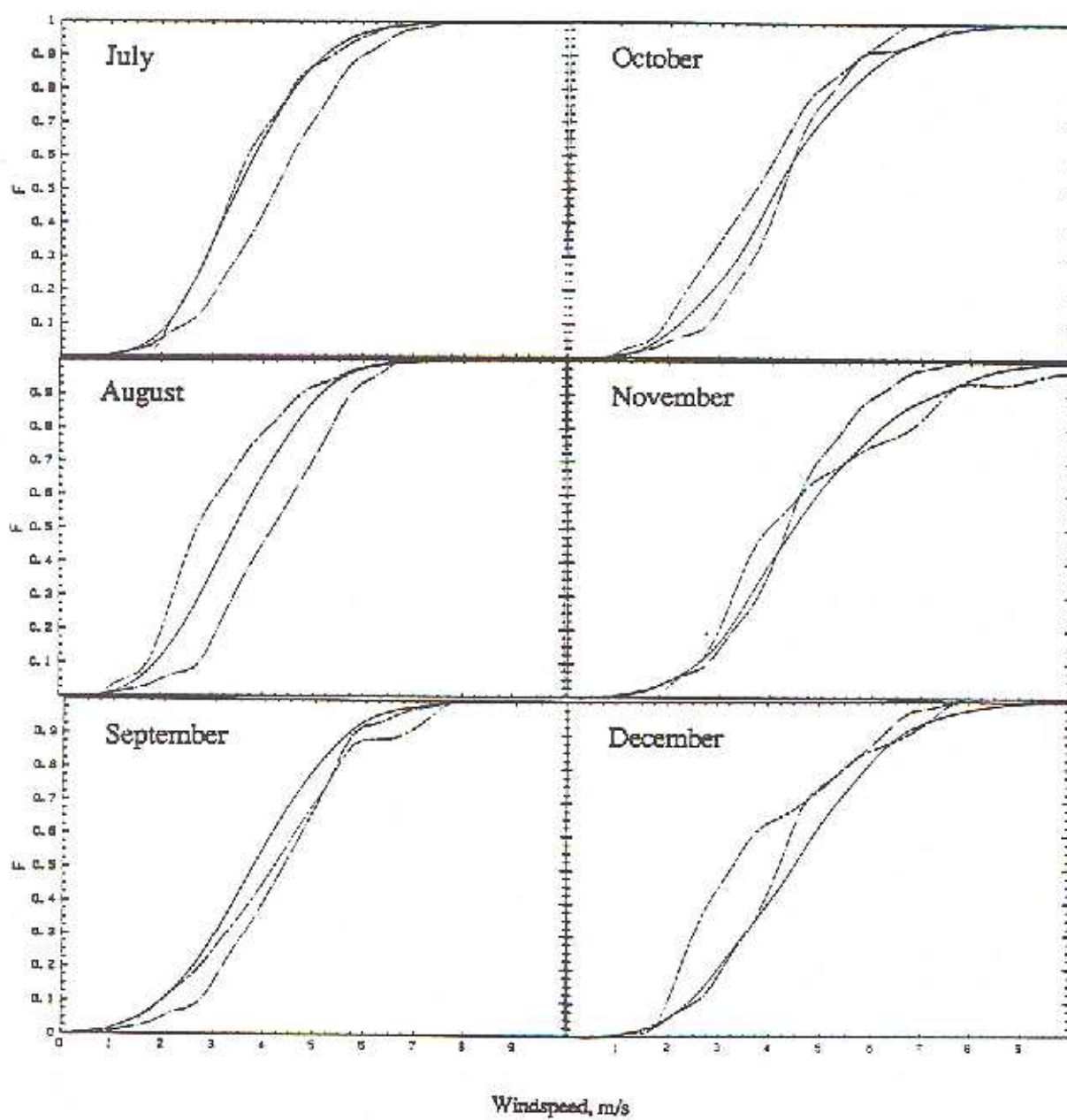
MADISON, WI
DAILY
WV DISTRIBUTION

— LONG TERM
- - - GENERATED
- - - TMY



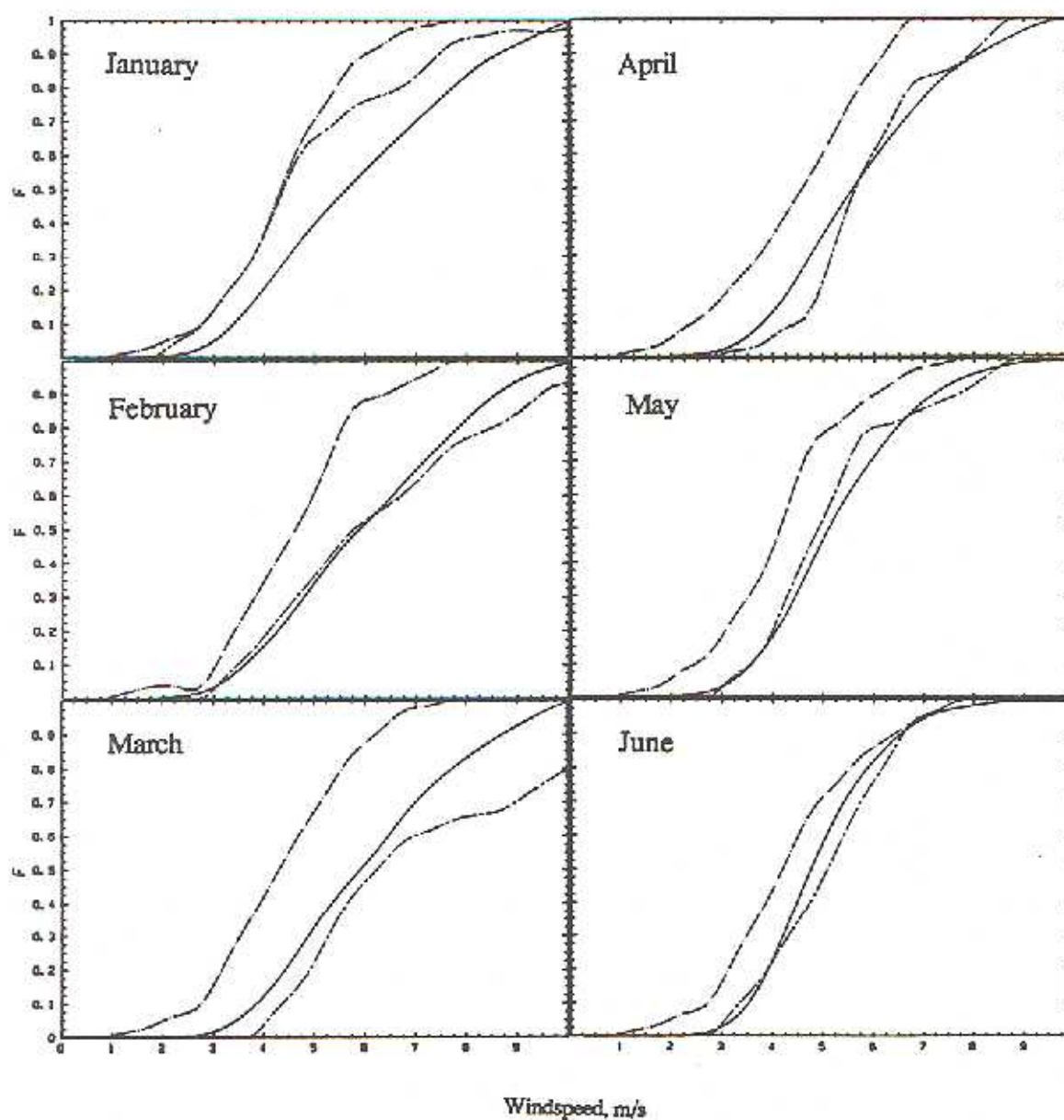
MADISON, WI
DAILY
WV DISTRIBUTION

— LONG TERM
— • — GENERATED
- - - TMY



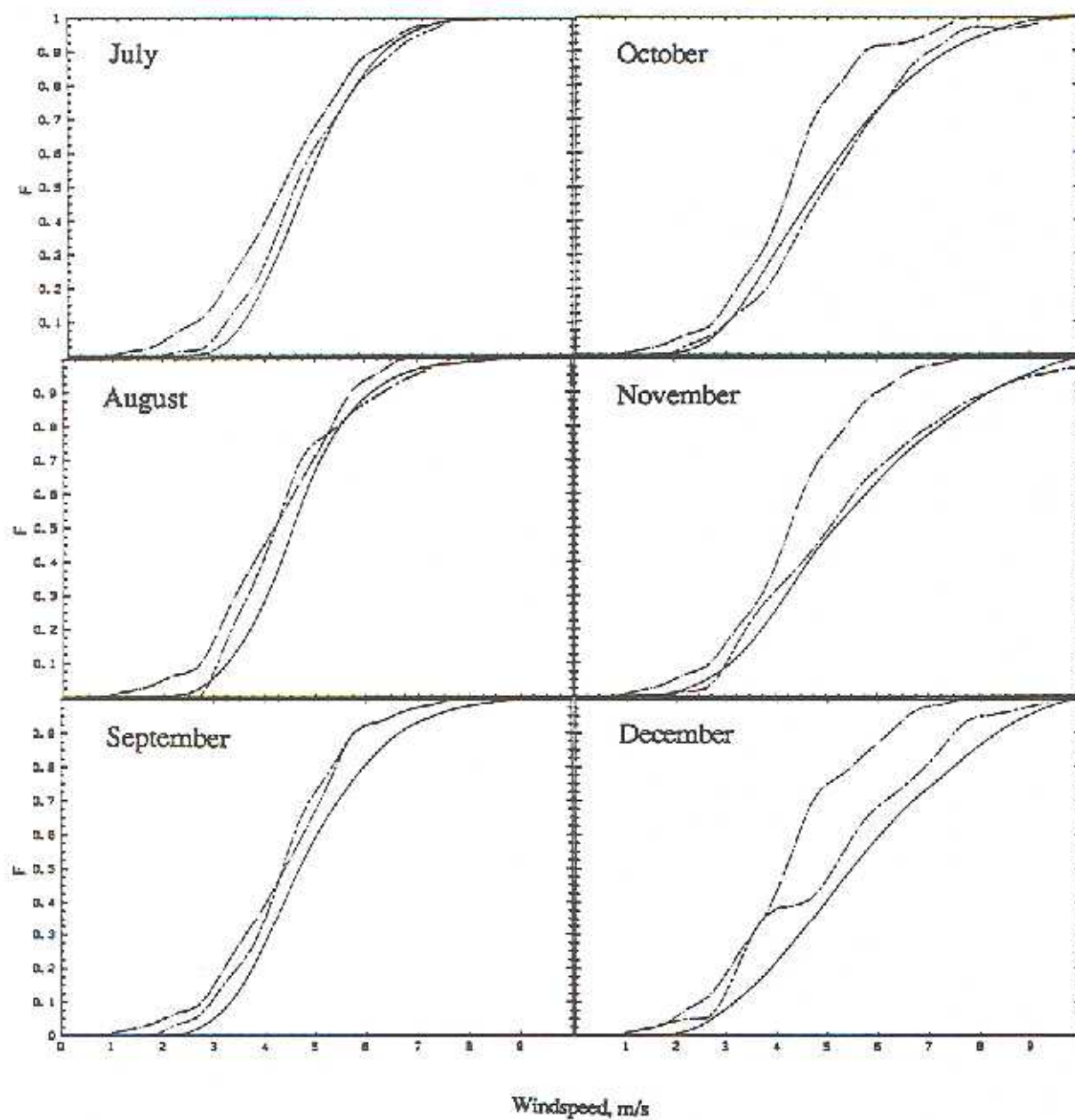
NEW YORK, NY
DAILY
WV DISTRIBUTION

— LONG TERM
- - - GENERATED
--- TMY



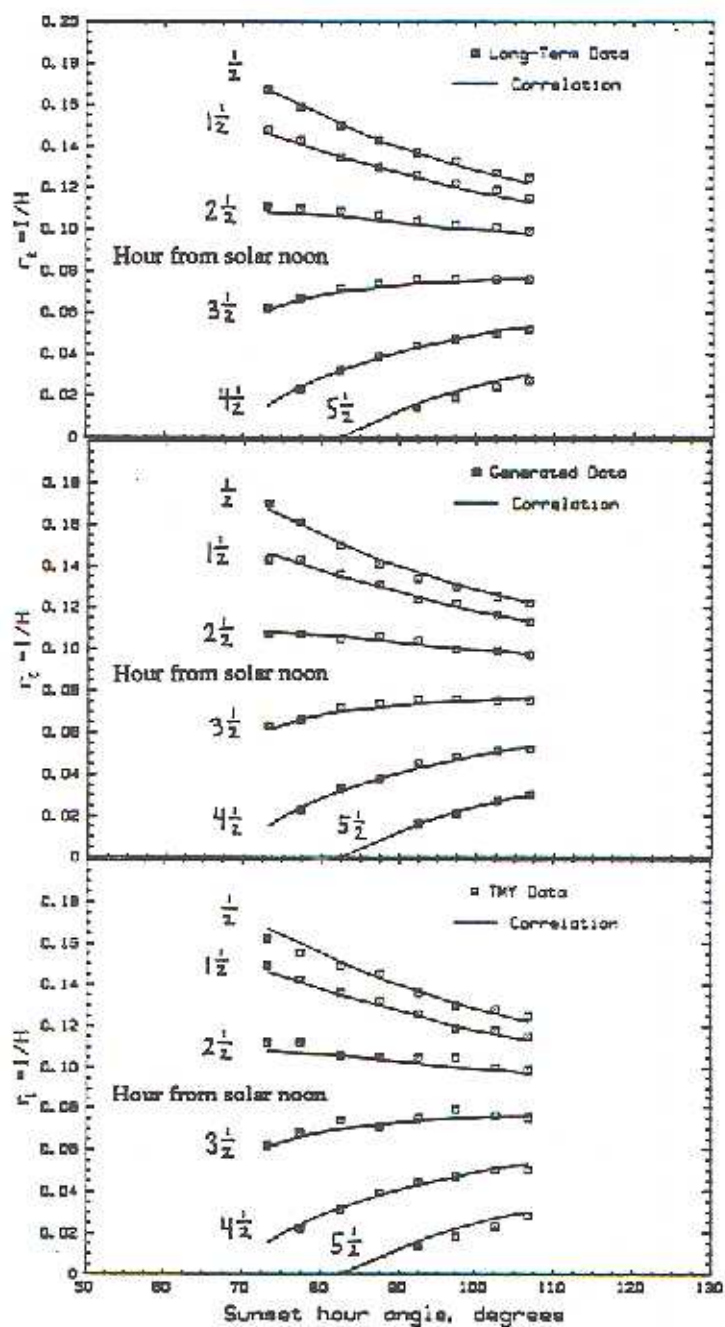
NEW YORK, NY
DAILY
WV DISTRIBUTION

— LONG TERM
— • — GENERATED
- - - TMY

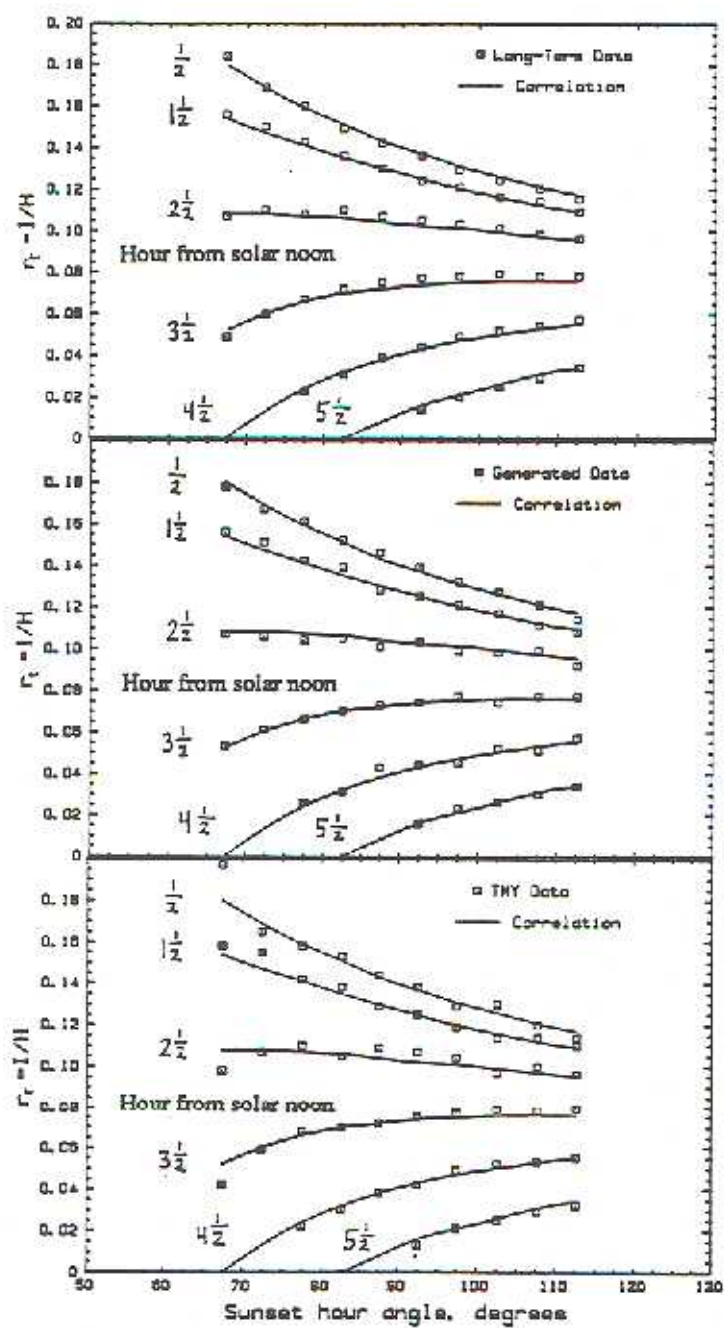


APPENDIX F
Diurnal Variation Comparisons

ALBUQUERQUE, NM I/H DIURNAL VARIATION

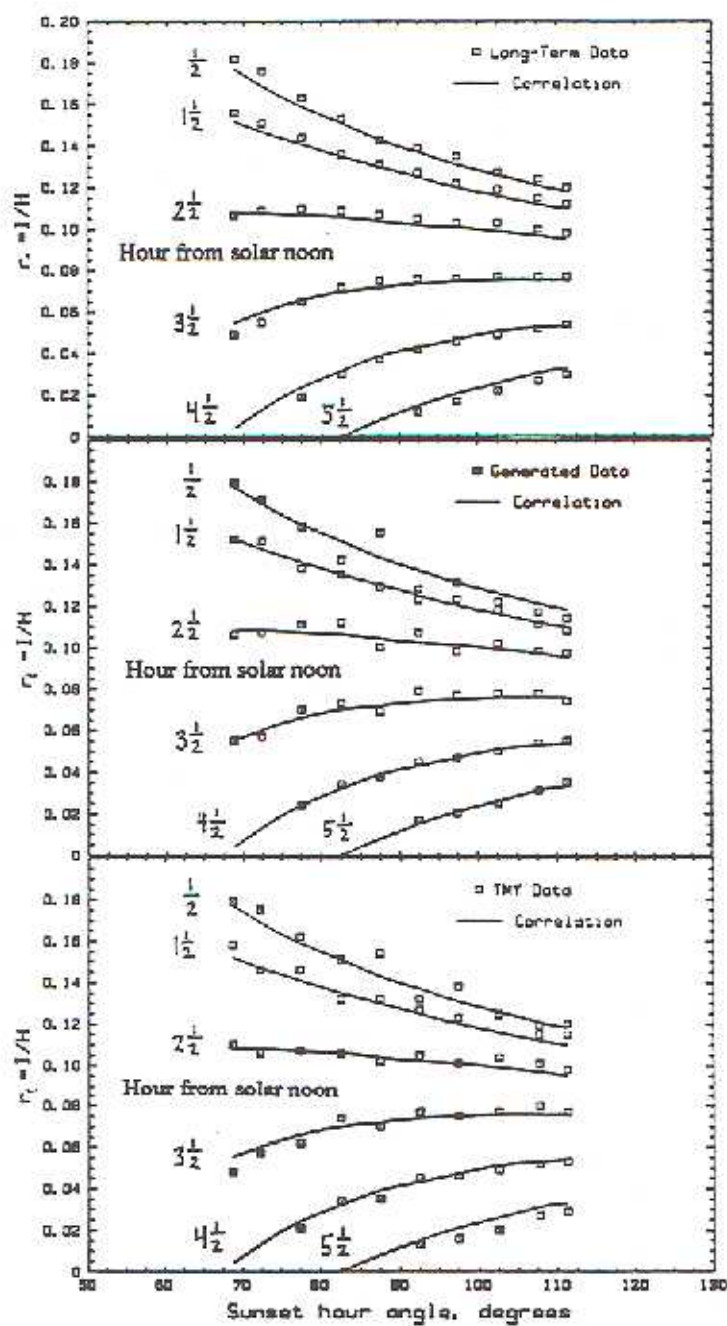


MADISON, WI I/H DIURNAL VARIATION



NEW YORK, NY

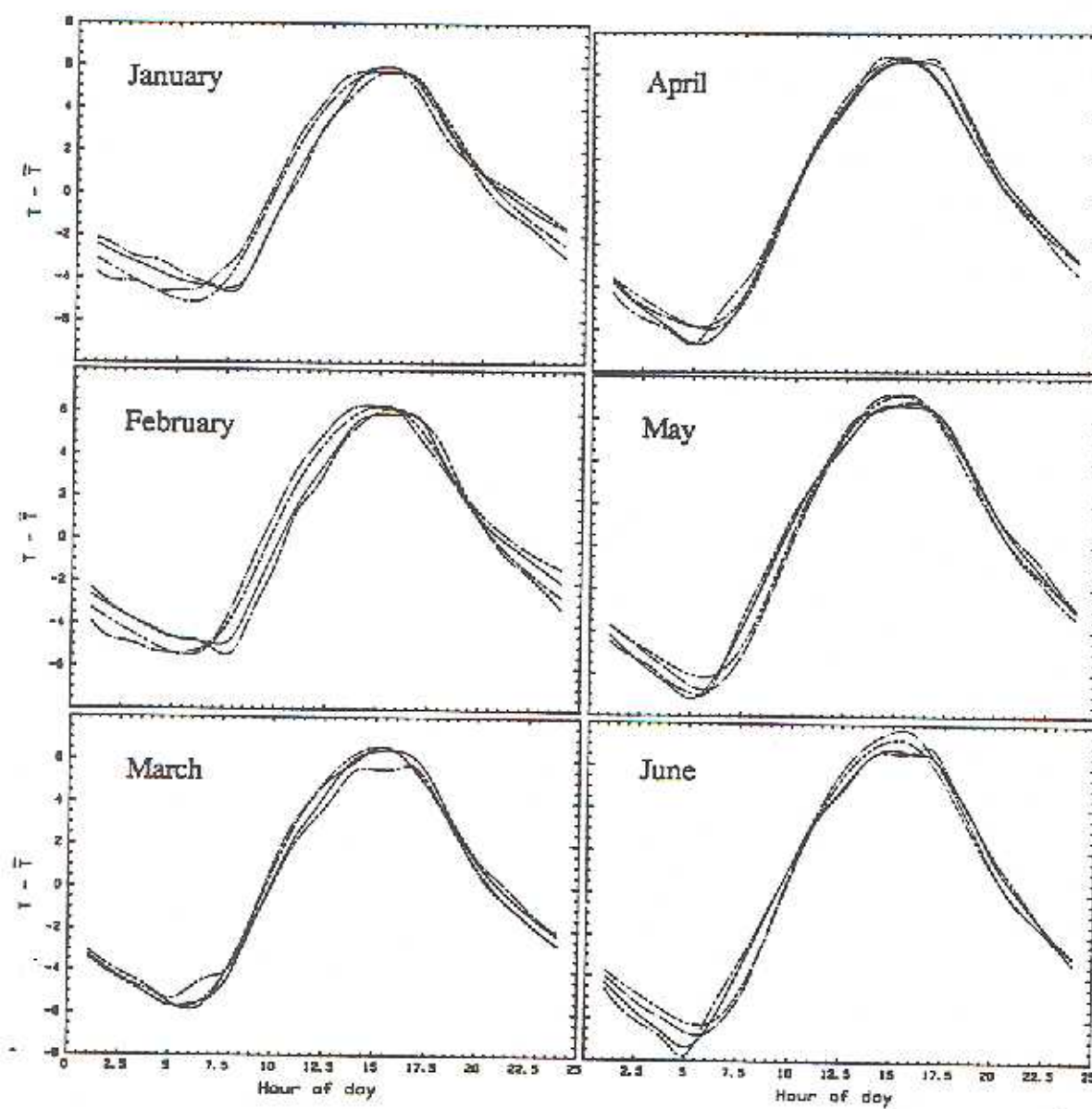
I/H DIURNAL VARIATION



ALBUQUERQUE, NM

T
DIURNAL VARIATION

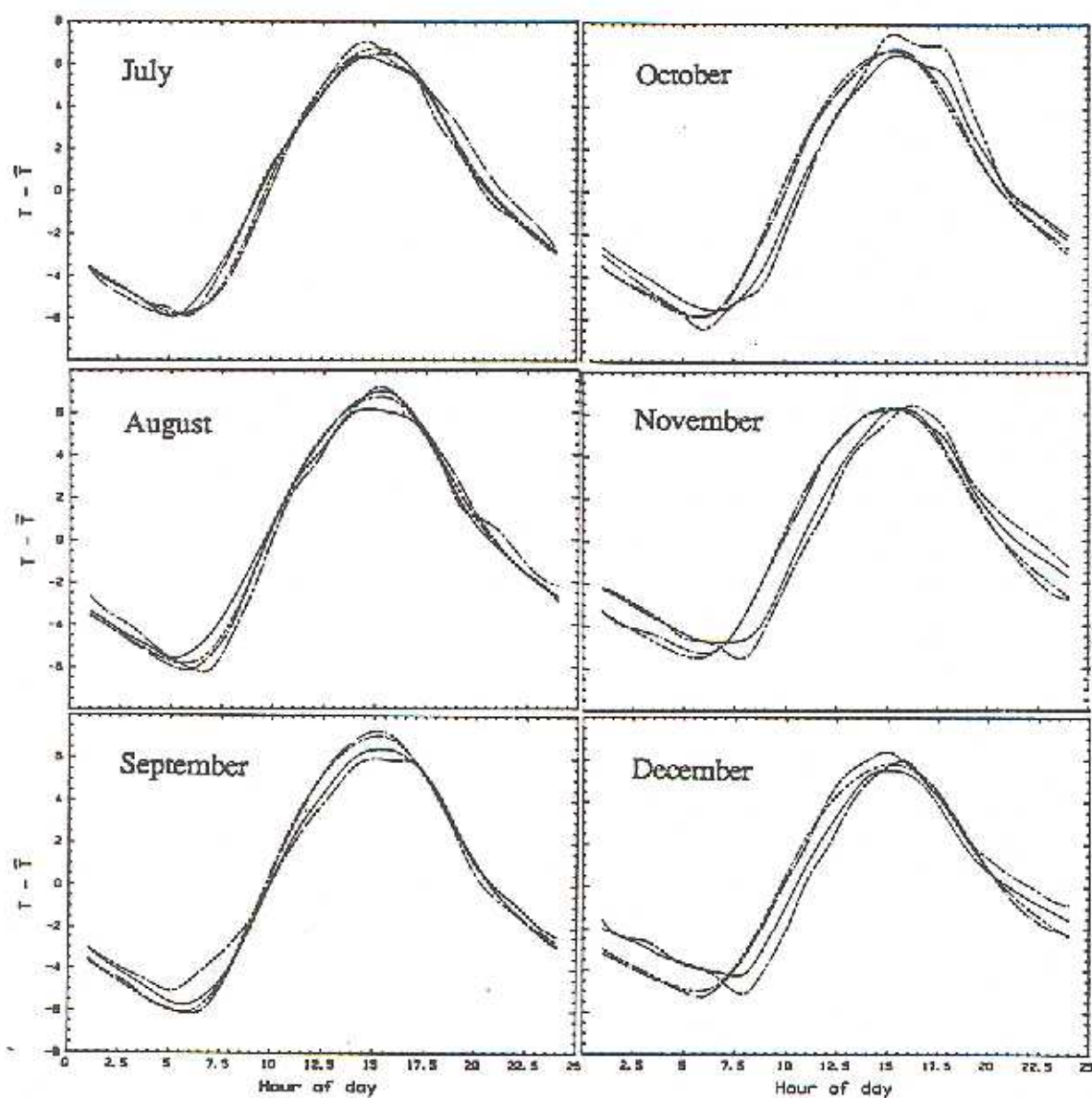
— LONG TERM
— . — GENERATED
— - — TMY
— - - - ERBS CORRELATION



ALBUQUERQUE, NM

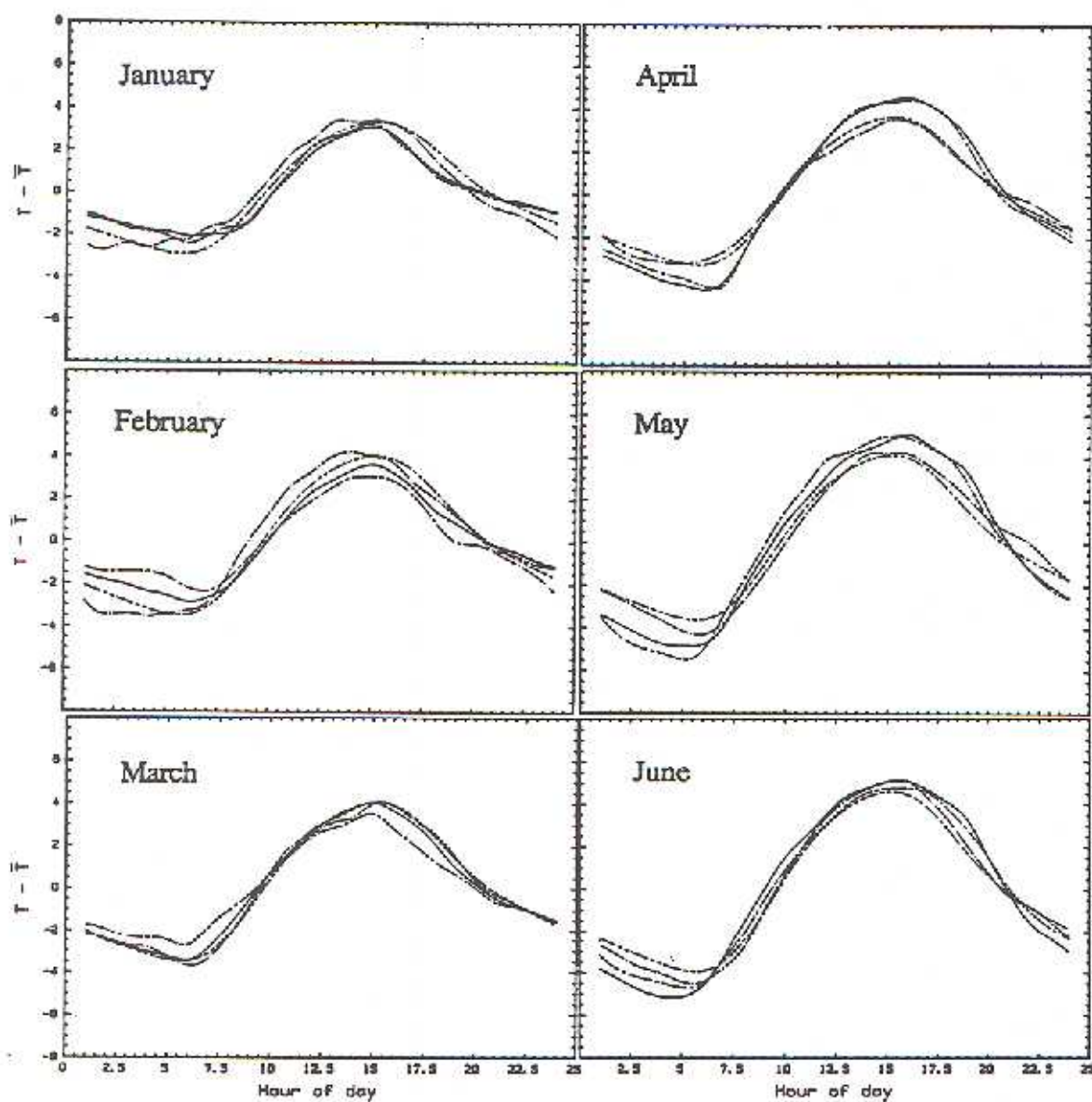
T
DIURNAL VARIATION

———— LONG TERM
 - - - - - GENERATED
 - - - - - TMY
 - - - - - ERBS CORRELATION



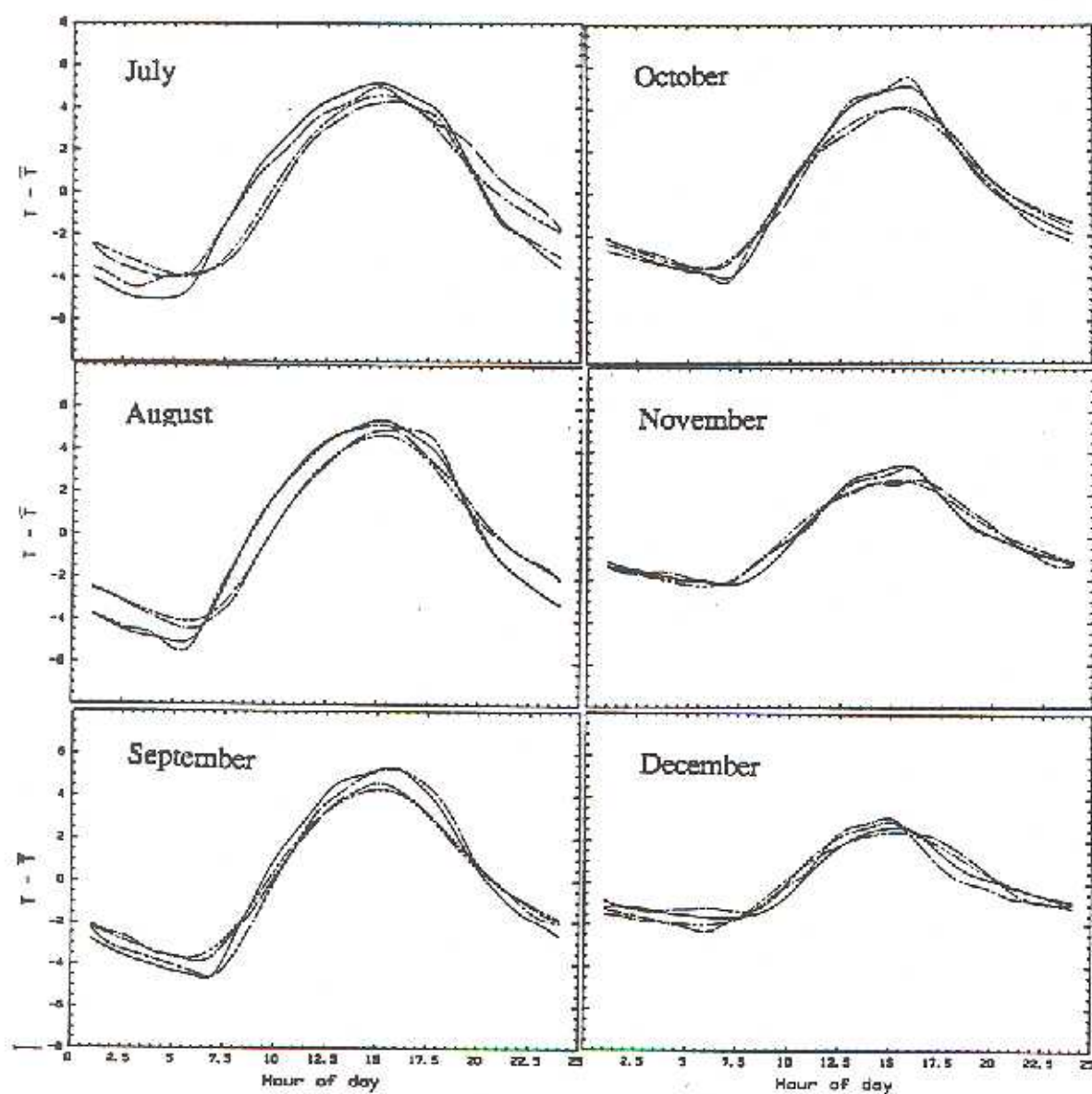
MADISON, WI
T
DIURNAL VARIATION

———— LONG TERM
——— · ——— GENERATED
——— TMY
——— ERBS CORRELATION



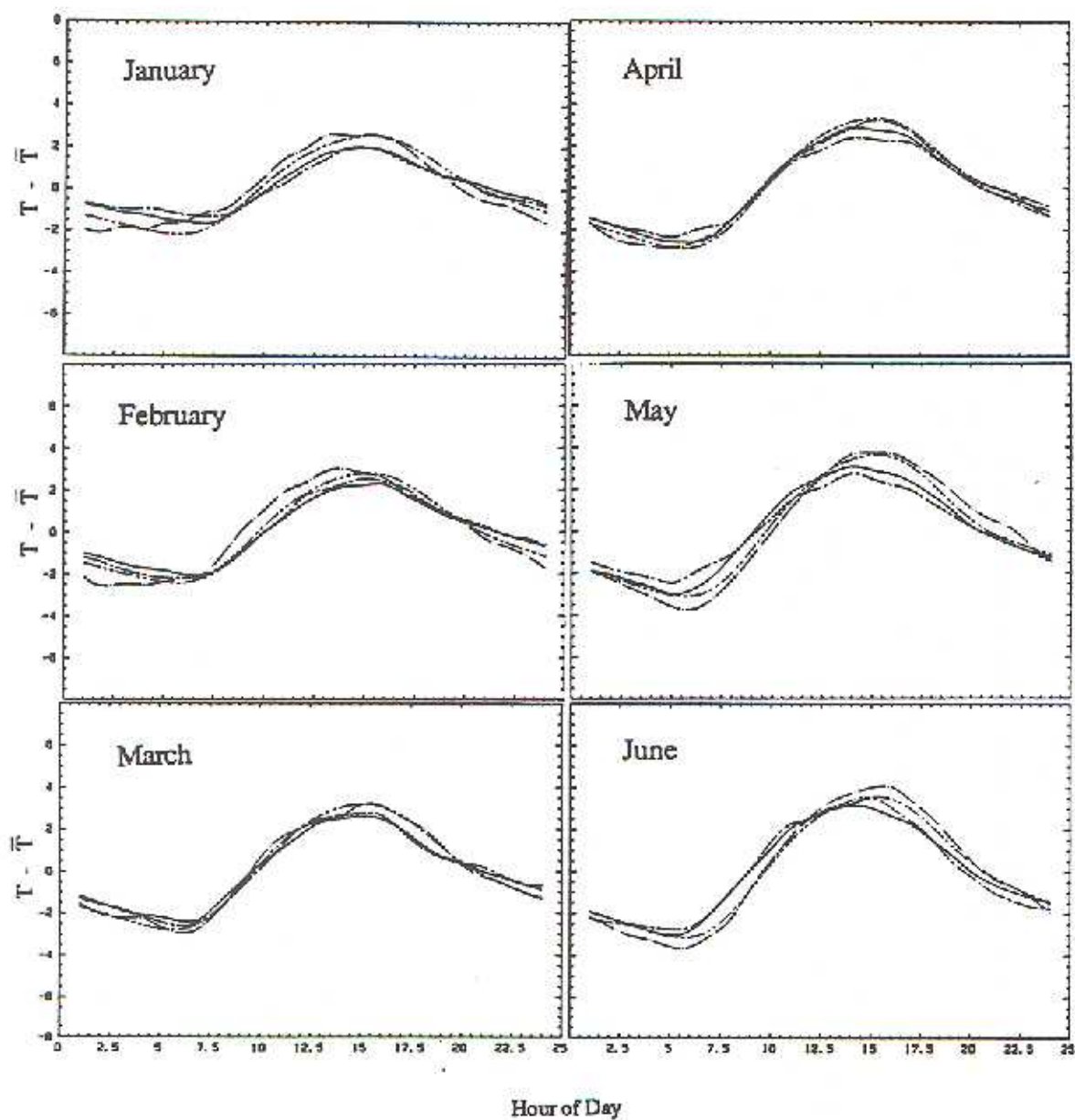
MADISON, WI
T
DIURNAL VARIATION

— LONG TERM
— . — GENERATED
— - — TMY
— - - ERBS CORRELATION



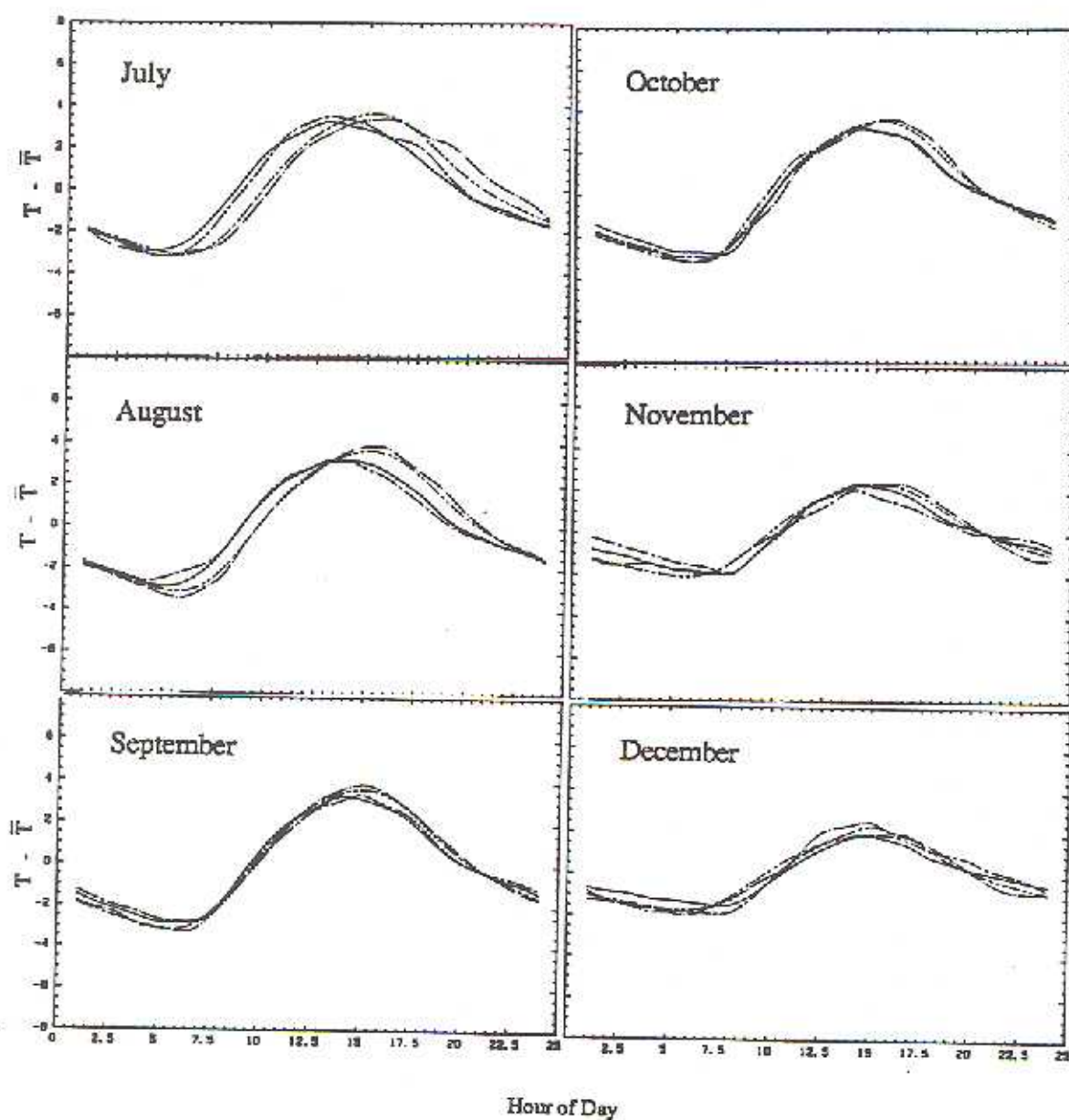
NEW YORK, NY
T
DIURNAL VARIATION

—— LONG TERM
- - - - - GENERATED
- - - - - TMY
- - - - - ERBS CORRELATION



NEW YORK, NY
T
DIURNAL VARIATION

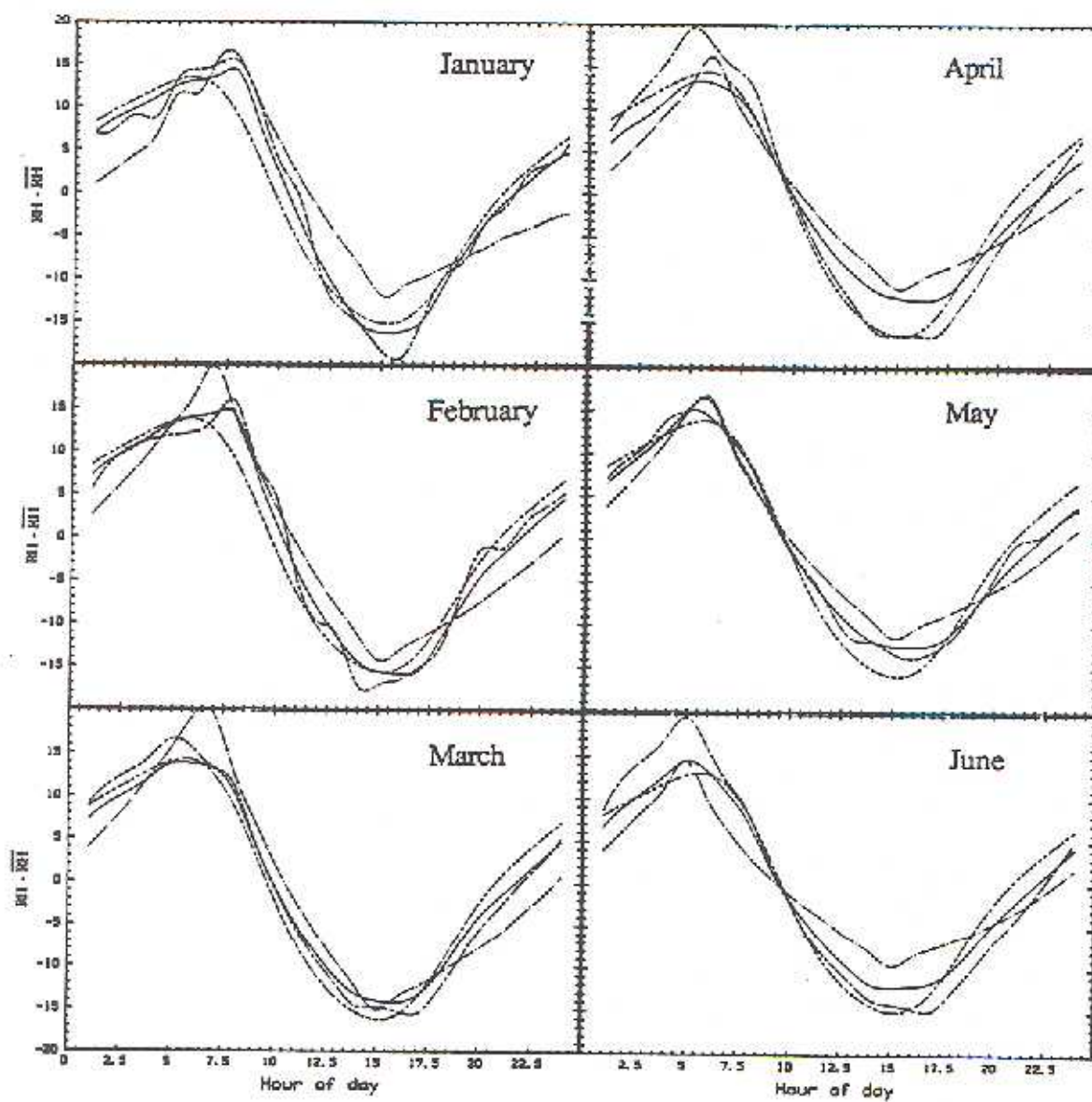
— LONG TERM
— . — GENERATED
- - - TMY
- - - ERBS CORRELATION



ALBUQUERQUE, NM

RH
DIURNAL VARIATION

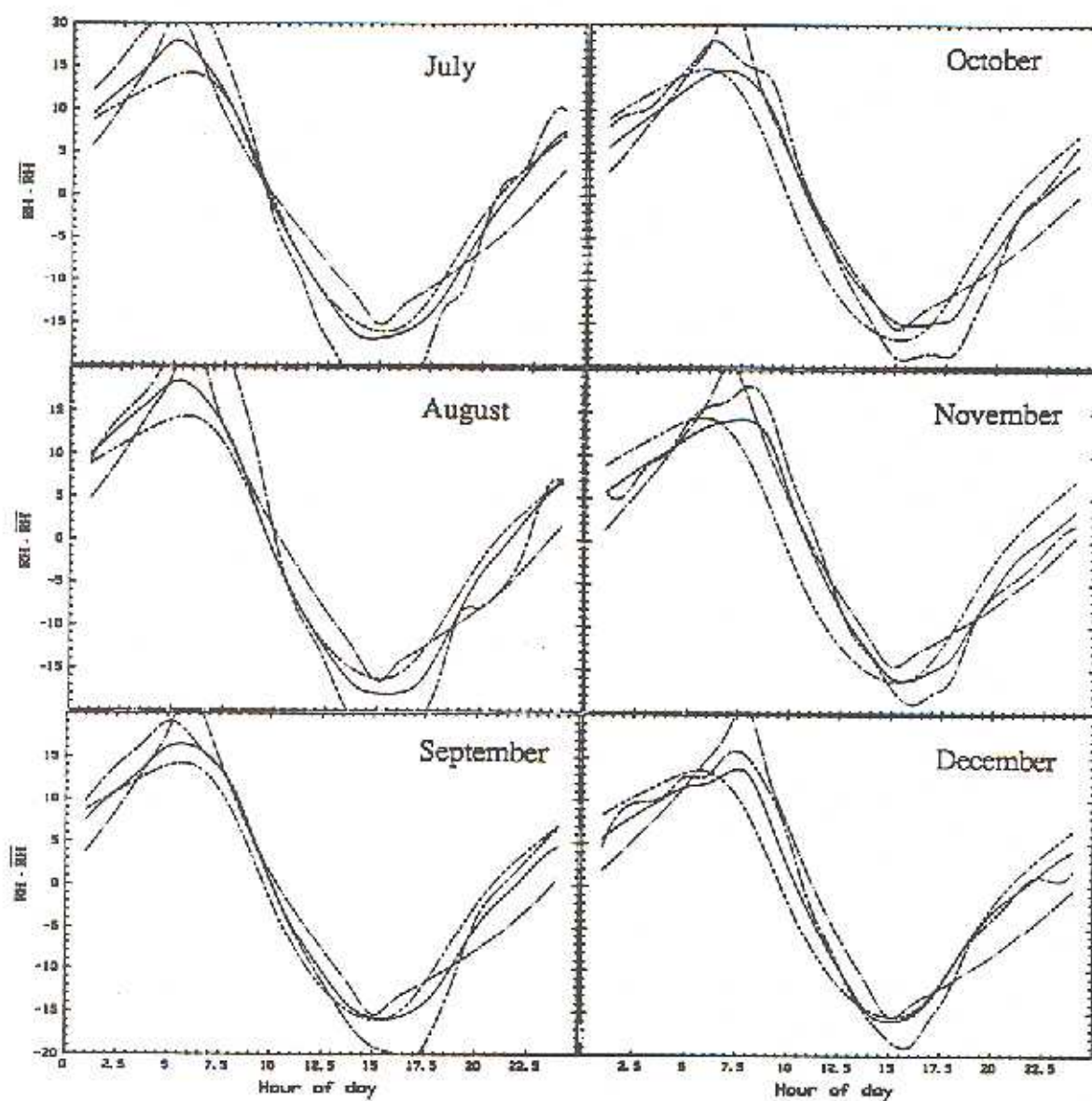
— LONG TERM
 — • — GENERATED
 — — — TMY
 — — — ERBS CORRELATION



ALBUQUERQUE, NM

RH
DIURNAL VARIATION

— LONG TERM
 — . — GENERATED
 — - - TMY
 — - - ERBS CORRELATION

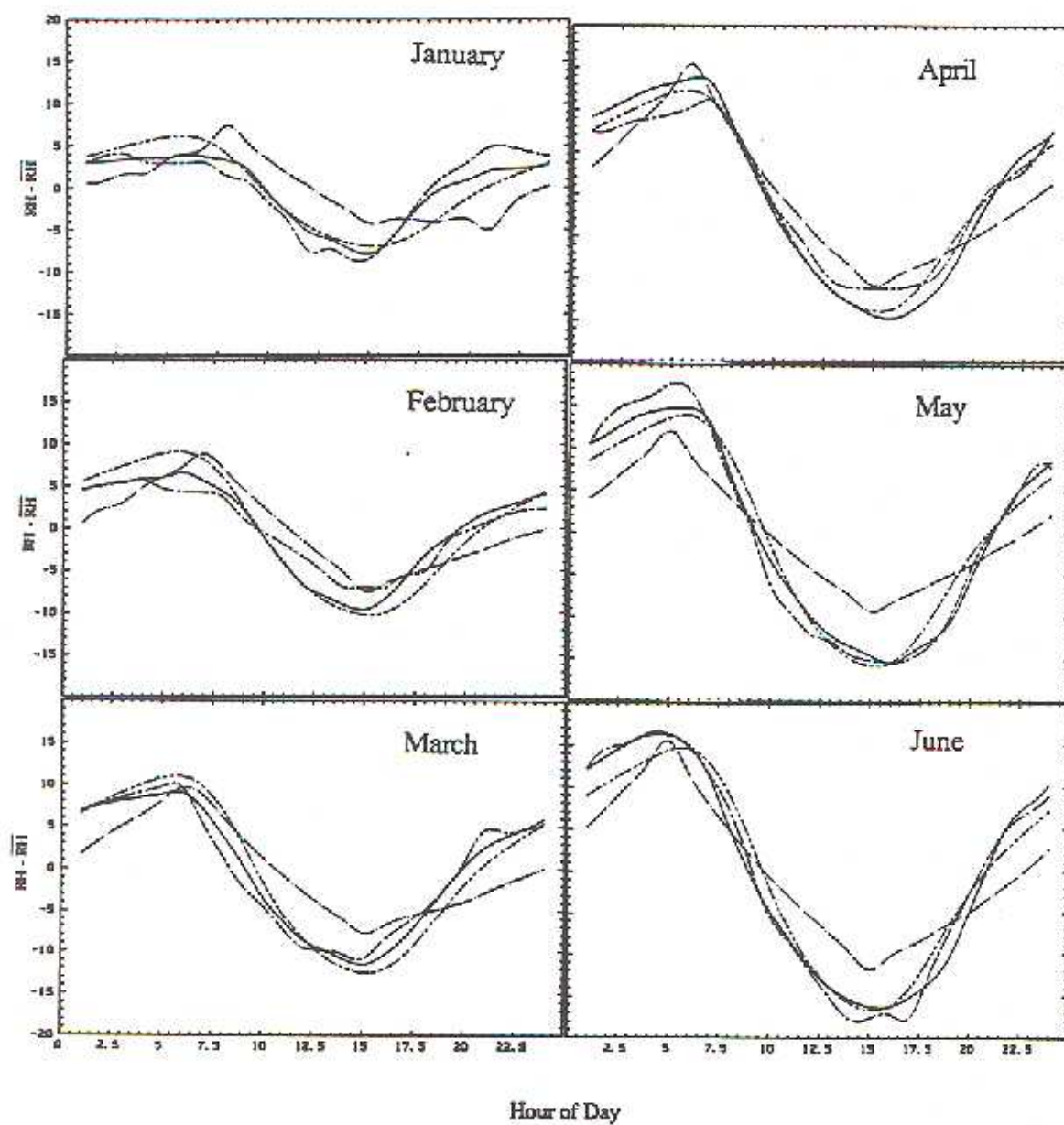


MADISON, WI

RH

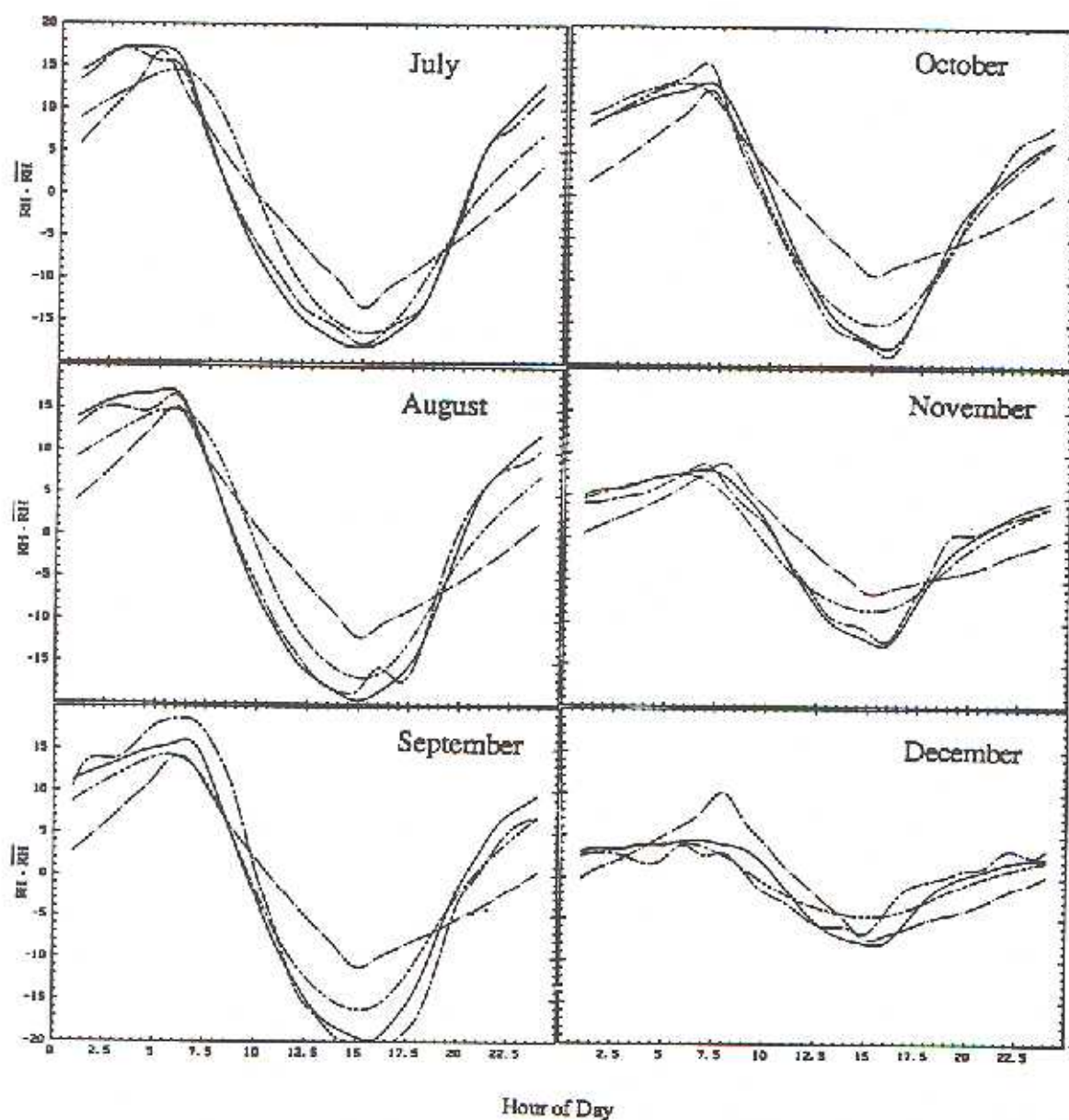
DIURNAL VARIATION

LONG TERM
GENERATED
TMY
ERBS CORRELATION



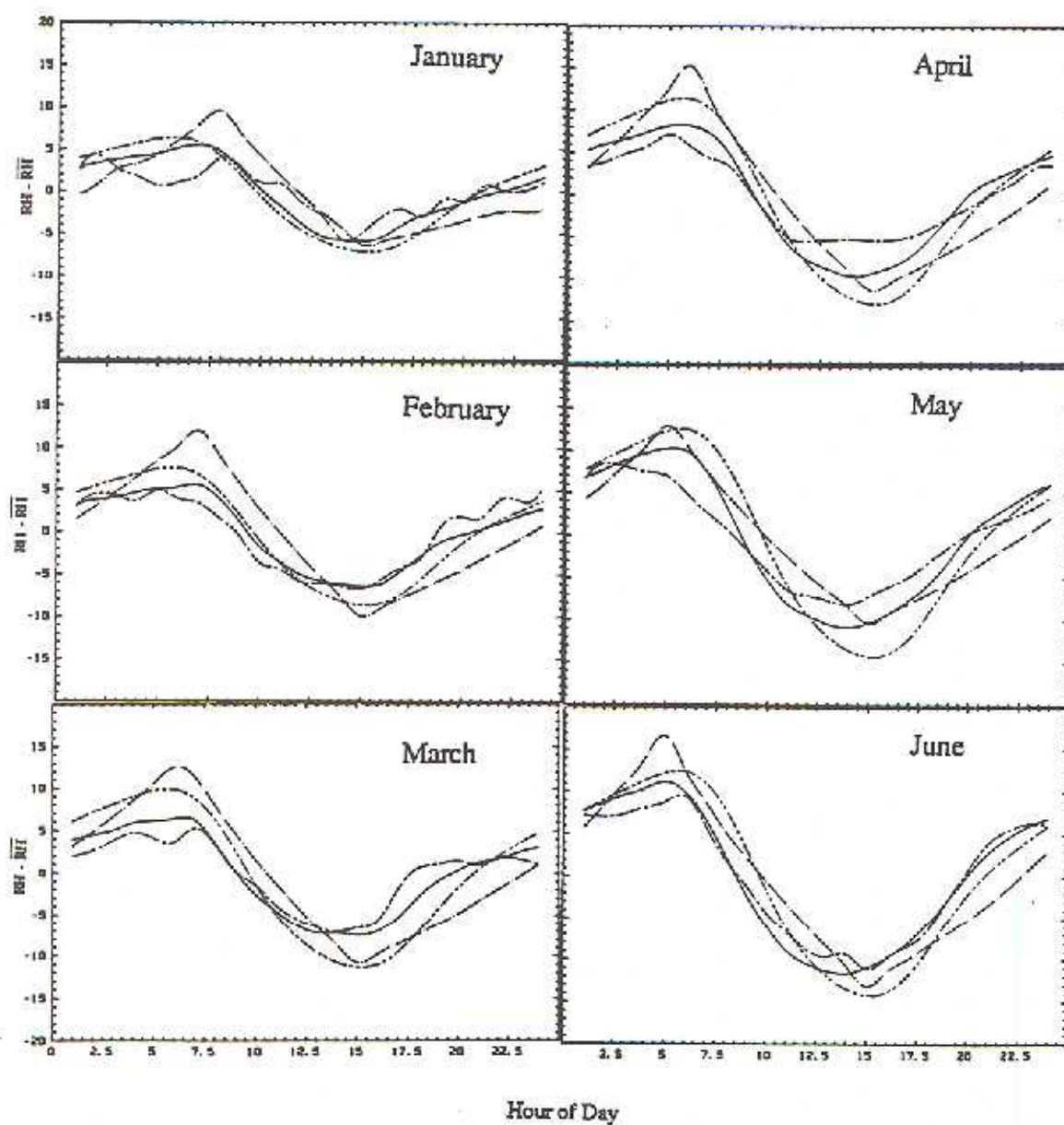
MADISON, WI
RH
DIURNAL VARIATION

— LONG TERM
— • — GENERATED
- - - TMY
- - - ERBS CORRELATION



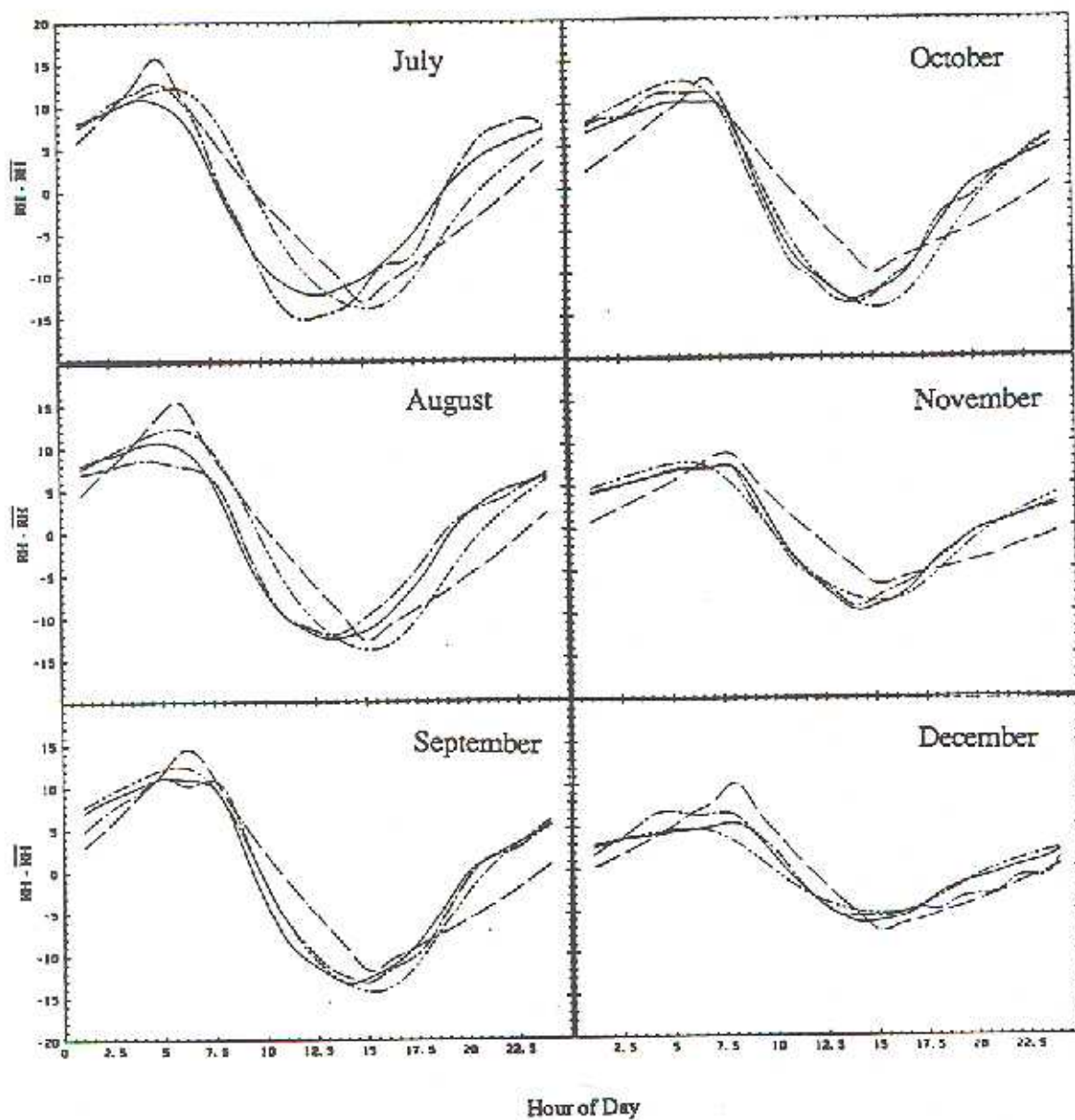
NEW YORK, NY
RH
DIURNAL VARIATION

———— LONG TERM
— · — · — GENERATED
— · — · — TMY
— · — · — ERBS CORRELATION



NEW YORK, NY
RH
DIURNAL VARIATION

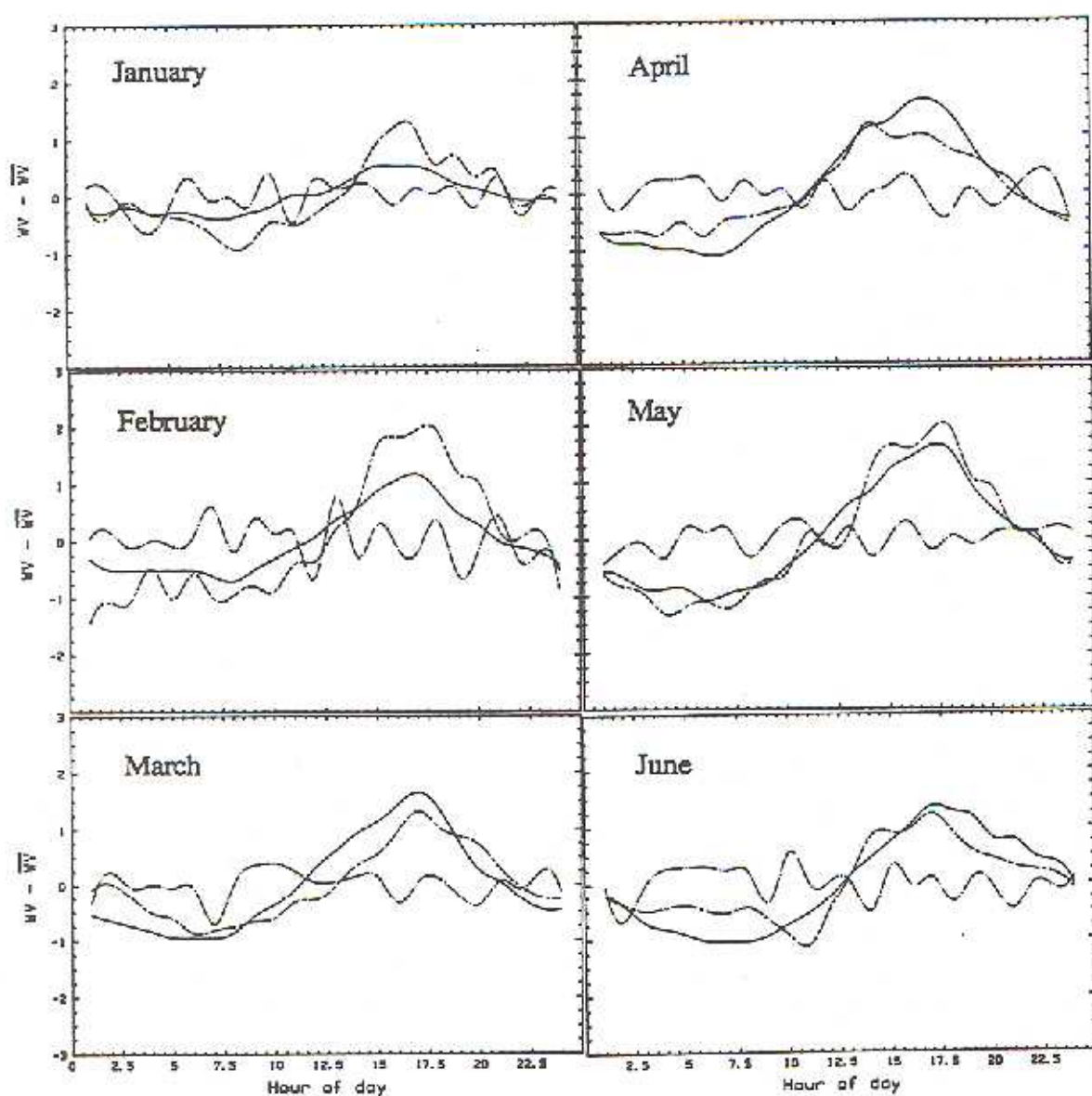
— LONG TERM
— · — GENERATED
— · — TMY
— · — ERBS CORRELATION



ALBUQUERQUE, NM

WV
DIURNAL VARIATION

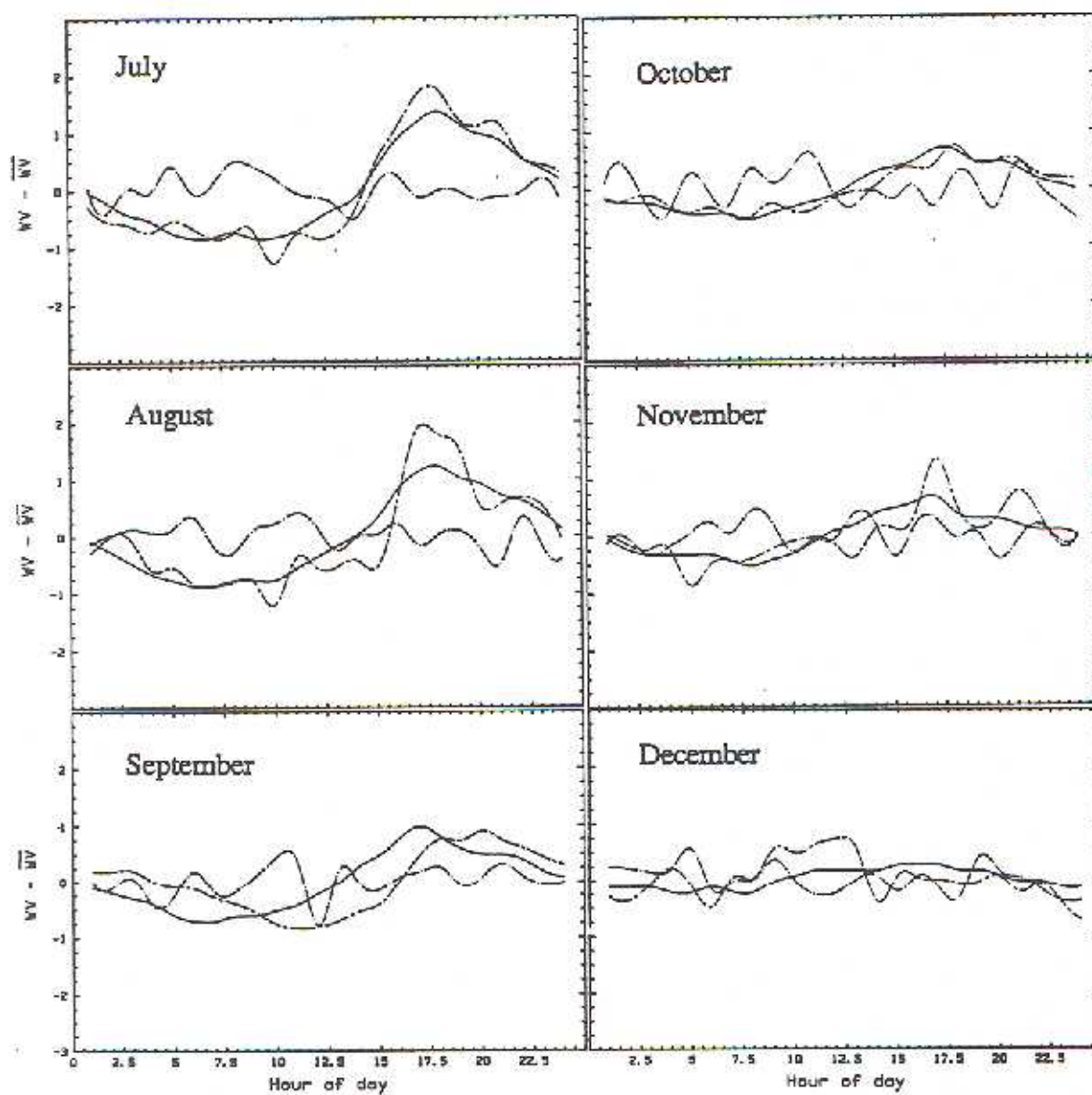
———— LONG TERM
——— . ——— GENERATED
—— - - ——— TMY



ALBUQUERQUE, NM

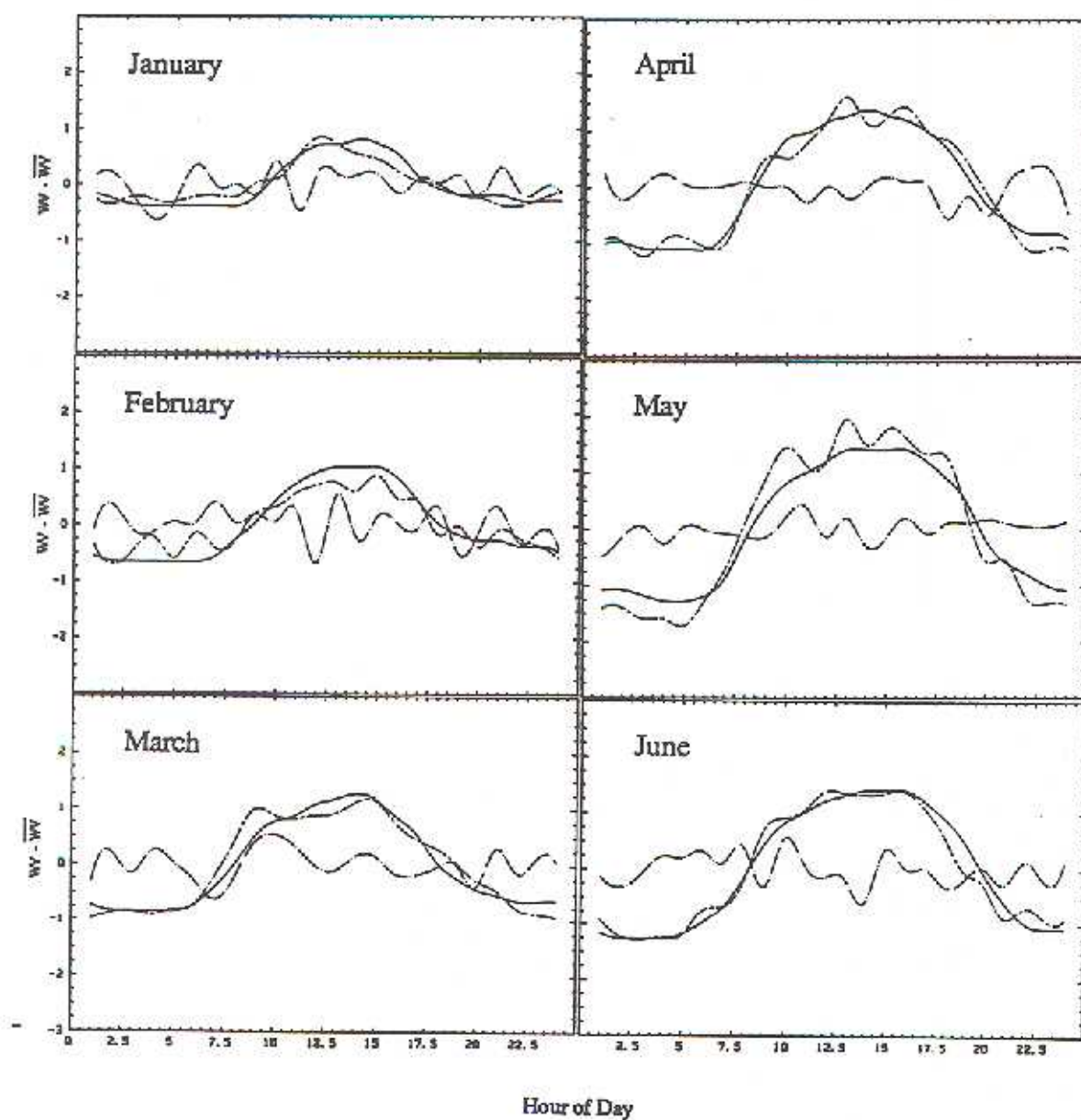
WV
DIURNAL VARIATION

———— LONG TERM
——— . ——— GENERATED
—— - - - TMY



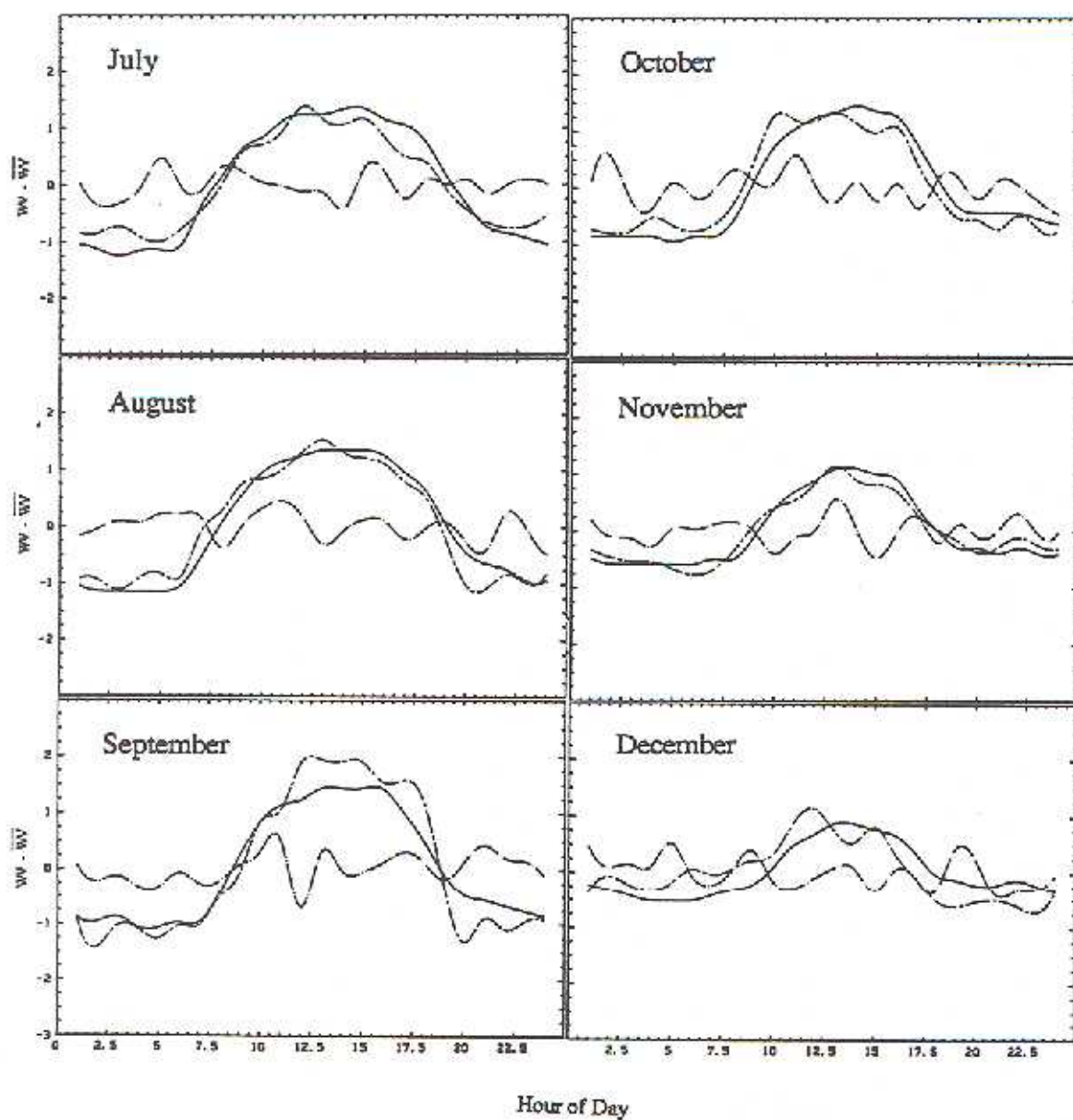
MADISON, WI
WV
DIURNAL VARIATION

—— LONG TERM
- - - - - GENERATED
- - - - - TMY



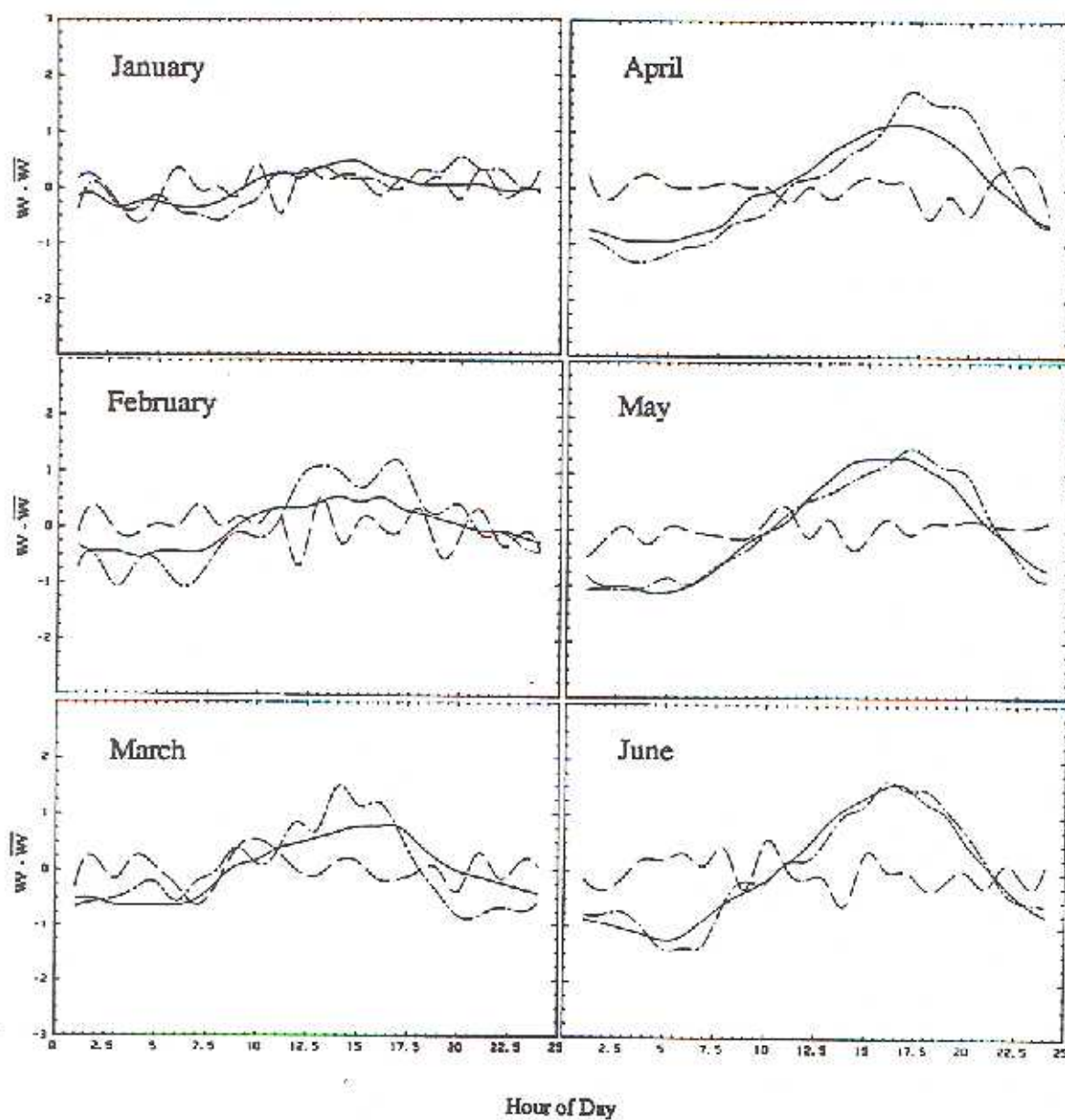
MADISON, WI
WV
DIURNAL VARIATION

— LONG TERM
— . — GENERATED
- - - TMY



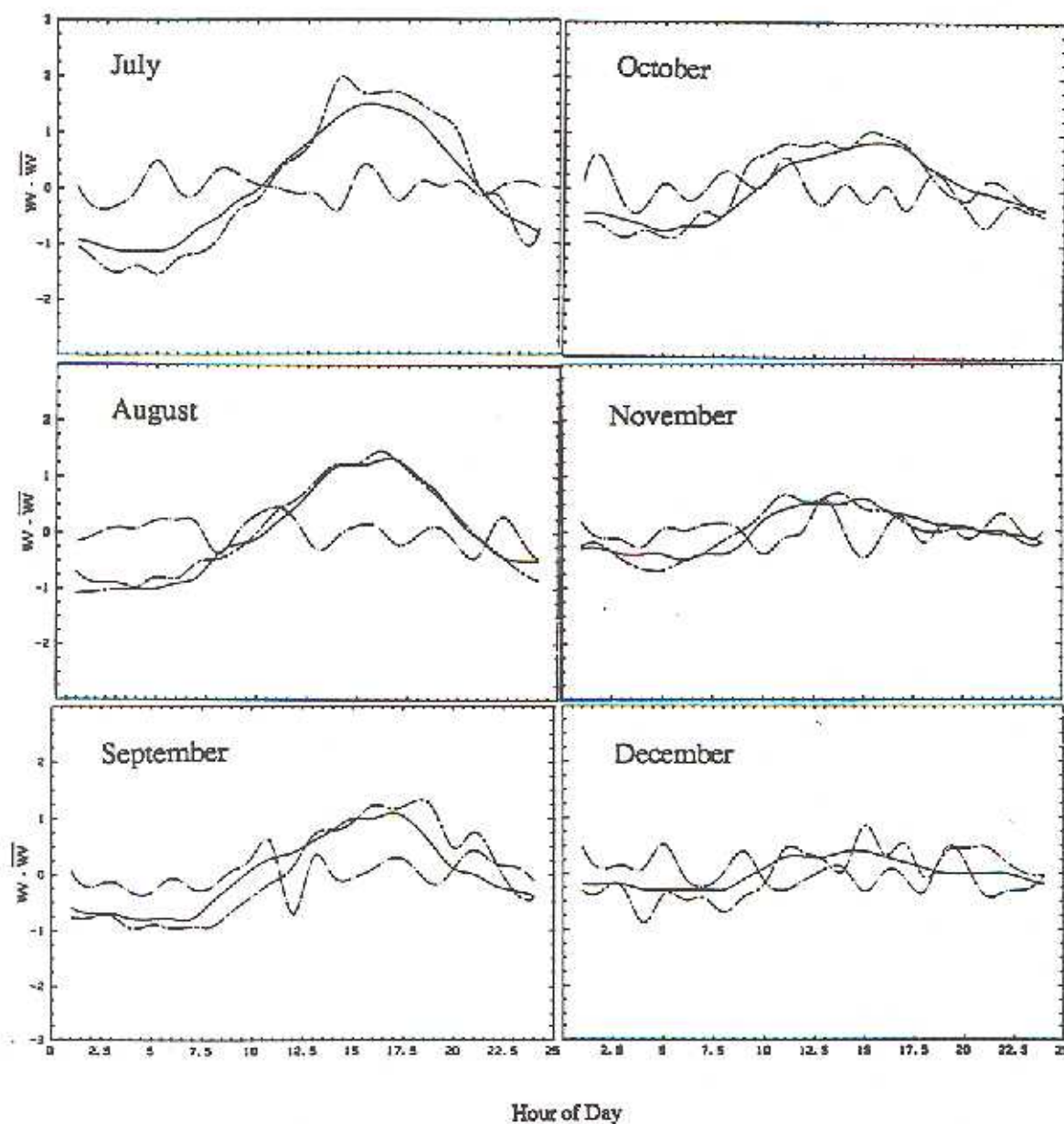
NEW YORK, NY
WV
DIURNAL VARIATION

—— LONG TERM
- - - - - GENERATED
- - - - - TMY



NEW YORK, NY
WV
DIURNAL VARIATION

———— LONG TERM
———— GENERATED
- - - - TMY



APPENDIX G

Subroutines to Convert Dewpoint and Humidity
Ratio to Relative Humidity

C.

SUBROUTINE PSYCH(TDB,TDP,RH)

C. This subroutine calculates the relative humidity given dry bulb

C. and dewpoint temperatures (at 1 atm). From Erbs' Ph.D. Thesis.

C. Temperatures must be in Celsius.

C.

REAL PSAT,PVDB,PVDP,RH,TDB,TDP

C.

PVDP = PSAT(TDP)

PVDB = PSAT(TDB)

RH = PVDP/PVDB*100.

RETURN

END

C.

C. Calculate saturation pressure of water at temperature T.

REAL FUNCTION PSAT(T)

REAL P1,P2,P3,P4,P5,P6,P7,P8,T,Z

C. Curve fits for the saturation pressure of water (atm) as a

C. function of temperature.

P1(Z)=-7.90298*(Z-1.0)

P2(Z)=5.02808*ALOG10(Z)

P3(Z)=-1.3816E-07*(10.**((11.344*(1.-1./Z))-1.))

P4(Z)=8.1328E-03*(10.**(-3.49149*(Z-1.))-1.)

P5(Z)=-9.09718*(Z-1.)

P6(Z)=-3.56654*ALOG10(Z)

P7(Z)=.876793*(1.-1./Z)

P8=-2.2199

C.

IF(T.GT.0.) GOTO 105

Z = 273.16/(T+273.16)

PSAT = 10.**((P5(Z)+P6(Z)+P7(Z)+P8))

RETURN

C.

105 Z = 373.16/(T+273.16)

PSAT = 10.**((P1(Z)+P2(Z)+P3(Z)+P4(Z))

RETURN

END

```
C
  SUBROUTINE RELHUM(W,T,RH)
C
  PATM=14.7
C Converts temperature from Celsius to Rankine
  TR = 9.*(T+273.15)/5.
C Calculate saturation vapor pressure
  IF(TR.GT.492.)THEN
    PWS = 2.4074E+07 * EXP(-9548./TR)
    GOTO 10
  ENDIF
  PWS = 4.933E+08 * EXP(-11040./TR)
C
10  WS = .62198 * PWS/(PATM-PWS)
  RH = W * (.62198+WS) / (WS*(.62198+W))
  RH = RH*100.
  IF(RH.GT.100.) RH=100.
  RETURN
END
```

APPENDIX H

Computer Listing for the Weather Generator

```

C      SUBROUTINE TYPE46(TIME,XIN,OUT,T,DTDT,PAR,INFO)
C#####
C#              WEATHER DATA GENERATOR
C#              1/29/85
C#####
C
C      CHARACTER LOCAT*32,MONTH(12)*3,CARD*3,RADUNITS*7,TUNITS*1
C      CHARACTER COMP*4,FILNAM*20
C      LOGICAL LDAY,LMON,FIRST,SCALL,SMULT,RTN1,WEATHR,OK,CHECK
C      INTEGER*4 ISEEDKT,ISEEDT
C      REAL KTMEAN,I0(24),LAST(10),NEXT(10)
C
C      DIMENSION IMDAY(12),INFO(10)
C      DIMENSION TMV(12),CBT(12),DPDEV(12),DEVM(12),DEV(12),TAV(12),
C      .      DPAV(12),SBT(12),VW(12),DAYN(12),BCF(12),
C      .      ACF(12),FNORML(31),XTIME(13),RCONV(2),WVCONV(2),
C      .      TCONV2(2),TCONV1(2),ACONV(2),PAR(18),OUT(20)
C      DIMENSION DBTMP(24,31),TMHR(24)
C      DIMENSION TTAVE(31),TTMAX(31),TTMIN(31),FHRKT(24),SMBT(12),
C      .      DBTMP2(24)
C      DIMENSION RATIO(12),SMULT(20)
C
C      COMMON /SKIP/ LENGTH,ISKIP,RATIO(12),SMULT(20),MN,IPART,
C      +  SCALL,WEATHR,MUNIT
C      COMMON/CLOCK1/NUM,IDENOM,NSTP,ION(20),IOFF(20),INTP(20),INTR(20)
C      COMMON /LUNITS/ LUR,LUW,IFORM
C      COMMON /SIM/ TIME0,TFINAL,DELT
C
C      COMMON /HRTEMP/ISEEDT,SM,DAYN,M1,ITMODEL
C
C#####
C#  LDAY,LMON - LOGICAL FLAGS TO INDICATE WHETHER MONTHLY
C#              OR DAILY CALCULATIONS ARE NEEDED
C#  RTN1      - INDICATES IF TIME SHOULD BE SKIPPED THIS CALL
C#  FIRST     - INDICATES FIRST CALL WHEN CALCULATIONS ARE PER-
C#              FORMED (USED TO LOOP THROUGH TWICE TO CALC INITIAL
C#              VALUES

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C# TCONV,ETC. - USED TO CONVERT FROM ENGLISH UNITS TO SI UNITS
C# XTIME - STARTING HOURS OF EACH MONTH, USED TO DETERMINE
C#          STARTING HOUR, DAY, MONTH
C# FNORML - F-VALUES FOR NORMAL DISTRIBUTION CURVE.
C# ACF - CORRELATION COEF. FOR ERB'S CORRELATIONS FOR DEV
C#          OF MONTHLY AVG MAX TEMP., ETC
C# MONTH - NAMES OF THE MONTHS, USED IN THE WEATHER SUMMARY
C# SCE, SCI - SOLAR CONSTANTS, BTU/HR-FT2
C# DAYN - NUMBER OF DAYS IN EACH MONTH
C#####
DATA LDAY/.TRUE./, LMON/.TRUE./, FIRST/.TRUE./, RTN1/.FALSE./, IERR/0/
DATA ALT/0./, TCONV1/32.0, 0.0/, TCONV2/1.8, 1.0/, WVCONV/.447, 1.0/,
; RCONV/11.36, 1.0/, PI/3.1415927/, PI12/3.8197/, LASTD/31/
; DTR/0.01745329/, ACONV/0.34048, 1.0/
DATA XTIME/0., 744., 1416., 2160., 2880., 3624., 4344., 5088., 5832.,
; 6552., 7296., 8016., 8760./
DATA FNORML/-2.110, -1.70, -1.401, -1.211, -1.057, -0.925, -0.808, -0.70,
; -0.60, -0.506, -0.415, -0.33, -0.245, -0.162, -0.083, 0.0, 0.083, 0.162,
; 0.245, 0.33, 0.415, 0.506, 0.60, 0.70, 0.808, 0.925, 1.057, 1.211, 1.401,
; 1.70, 2.110/
DATA ACF/.8033, 1.8151, 2.9018, 2.397., .6159., .3275, 1.2187, 1.4222,
; .2053, 3.0621, 3.0242, 5.0849/, BCF/.79., .6899., .5823., .6053., .7343,
; .7920., .9717, 1.0269., .8326., .5167., .5811., .3777/
DATA MONTH/'JAN', 'FEB', 'MAR', 'APR', 'MAY', 'JUN', 'JUL', 'AUG',
; 'SEP', 'OCT', 'NOV', 'DEC'/
DATA DAYN/31.0, 28.0, 31.0, 30.0, 31.0, 30.0, 31.0, 31.0, 30.0, 31.0,
; 30.0, 31.0/, SCI/426.7/, SCE/368.5/
DATA IMDAY/17, 16, 16, 15, 15, 11, 17, 16, 15, 15, 14, 10/
DATA ISEEDKT/1745623671/, ISEEDT/1126010767/, LENGTH/31/
C COMP: TYPE OF COMPUTER. "MAIN"(MAINFRAME),
"MICRO"(MICROCOMPUTER, IE. IBM)
DATA COMP/'MAIN'/. CHECK/.FALSE./
C
C#####
C# INITIALIZE ON FIRST CALL TO UNIT (IF ITERATIVE CALL, RETURN)
C# IF TIME IS NOT A WHOLE NUMBER, INTERPOLATE (DATA GENERATED
C# ON THE HOUR ONLY).
C#####

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      IF(INFO(7).GT.0) RETURN
      IF((TIME-INT(TIME)).GT.1.E-6) GOTO 490
      IF(INFO(7).GT.-1) GOTO 230
C ONLY ONE WEATHER GENERATOR IS ALLOWED
      IF (.NOT.CHECK) THEN
        IUNIT=INFO(1)
        CHECK=.TRUE.
      END IF
      IF (INFO(1).NE.IUNIT) THEN
        CALL TYPECK(6,INFO,0,0,0)
        RETURN
      END IF
C CHECK FOR PROPER NUMBER OF PARAMETERS
      NP=5
      IF (INFO(4).GT.5) NP=6
      IF (INFO(4).GT.6) NP=17
      IF (INFO(4).GT.17) NP=18
      CALL TYPECK(1,INFO,0,NP,0)
C#####
C# SET PARAMETERS - PAR 1 IS INPUT UNITS(1=SI,2=ENG)
C#      PAR 2 IS OUTPUT UNITS(1=SI,2=ENG)
C#      PAR 3 IS LU FOR DATA
C#      PAR 4 IS CITY NUMBER
C#      PAR 5 IS TEMPERATURE MODEL(1=STOCHASTIC,2=COSINE)
C#      PAR 6-17 ARE OPTIONAL MONTHLY WIND VELOCITIES
C#      (WIND VELOCITY IS OTHERWISE SET TO 9 MPH)
C#      PAR 18 IS OPT. ALTITUDE
C#####
      IU=INT(PAR(1)+.001)
      IOU=INT(PAR(2)+.001)
      LUD=INT(PAR(3)+.001)
      NCITY=INT(PAR(4)+.001)
      ITMODEL=INT(PAR(5)+.001)
      IF(INFO(4).EQ.6.OR.INFO(4).EQ.18) ALT=PAR(INFO(4))/ACONV(IU)
      DO 10 JI=1,12
        VW(JI)=9.
      10 IF(INFO(4).GT.6) VW(JI)=PAR(JI+5)/WVCONV(IU)
C
      IF((IU.NE.1).AND.(IU.NE.2)) CALL TYPECK(4,INFO,0,0,0)

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      IF((IOU.NE.1).AND.(IOU.NE.2)) CALL TYPECK(4,INFO,0,0,0)
      IF((ITMODEL.NE.1).AND.(ITMODEL.NE.2)) CALL TYPECK(4,INFO,0,0,0)
      IF(LENGTH.EQ.7)GOTO 20
      LENGTH=31
20  INFO(6)=20
C#####
C#  OUTPUT FROM TYPES 24,27,28 IS MEANINGFUL ONLY AT MONTHLY
C#  INTERVALS IF LENGTH .LT. 31
C#  SET THE # OF TIMESTEPS PER DAY, AND THE MULTIPLIERS FOR
C#  INTEGRATION
C#####
      IF(LENGTH.EQ.31)GOTO 50
      DO 30 III=1,20
        IF(INTP(III).LE.0.OR.INTP(III).GE.(TFINAL-2*DELT))GOTO 30
        IERR=5
30  CONTINUE
      NSDAY=IFIX(24*FLOAT(IDENOM)/FLOAT(NUM)+.5)
      DO 40 III=1,12
40  RATIO(III)=DAYN(III)/FLOAT(LENGTH)
C#####
C#  OPEN DATA FILE AND SKIP TO THE SPECIFIED CITY (STOP IF ERROR)
C#  NTOTAL IS THE TOTAL # OF CITIES IN THE DATA BASE
C#  WRITE WEATHER SUMMARY TO LUW
C#####
CCCC 50 INQUIRE(FILE='[TRNSYS.NEW.WEATHER]WDATA.DAT',EXIST=OK)
CCCC  IF(.NOT.OK) THEN
CCCC 55  WRITE(LUW,56)
CCCC 56  FORMAT(' ** ERROR ** - TYPE30 : WEATHER FILE COULD NOT BE
OPENED')
CCCC  STOP
CCCC  END IF
50  IF(COMP.EQ.'MAIN') THEN
      OPEN(LUD,STATUS='OLD')
    ELSE
      WRITE(*,1011) INFO(1), INFO(2)
      READ(*,1012) FILNAM
      OPEN(LUD,FILE=FILNAM,STATUS='OLD')
    END IF

```

```

REWIND LUD
READ(LUD,*,END=520,ERR=520) NTOTAL
IF(NCITY.LE.NTOTAL) GOTO 60
IERR=4
GOTO 190
60 NS=(NCITY-1)*4
DO 70 JJ=1,NS
  READ(LUD,1000,ERR=520,END=520) CARD
1000 FORMAT(A3)
70 CONTINUE
C##### READ LATITUDE & LOCATION. #####
  READ(LUD,1100,END=520,ERR=520) LOCAT,XLAT
1100 FORMAT(A32,F5.2)
C##### READ WEATHER DATA (SOLAR,HUM RATIO,TEMP.) #####
  READ(LUD,*,END=520,ERR=520) SBT,DPAV,TAV
  CLOSE(UNIT=LUD)
  DO 80 JK=1,12
    80 DPAV(JK)=DPAV(JK)/10000.
C
C##### WRITE SUMMARY TO LUW #####
C
  RADUNITS=' MJ/m2 '
  TUNITS='C'
  IF(IU.EQ.2)THEN
    RADUNITS='BTU/FT2'
    TUNITS='F'
  WRITE(LUW,1200,ERR=530)LOCAT,XLAT,MONTH,RADUNITS,SBT,TUNITS,
&          TAV,DPAV
  ELSE
    DO 1167 IJK=1,12,1
      SMBT(IJK)=SBT(IJK)/10.**3
1167 CONTINUE
    WRITE(LUW,1200,ERR=530) LOCAT,XLAT,MONTH,RADUNITS,SMBT,
&          TUNITS,TAV,DPAV
  ENDIF
1200 FORMAT(/,2X,72('*'),//,
;20X,'WEATHER DATA SUMMARY',//4X,
;'CITY NO. LOCATION LAT.',/3X,42('*')/,5X,
; A32,3X,F5.2,/,4X,12(A3,3X)/,2X,12('-----')/,2X,

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; 'AVG. HORIZONTAL SOLAR ('A7,')',/,2X,12F6.0,/,2X,
; 'AVG. DRY BULB TEMPERATURE (DEG. 'A1,')',/,2X,12F6.1,/,2X,
; 'AVG. HUMIDITY RATIO',/,2X,12(F5.4,1X),/,2X,72('*')//)
C
C##### IF INPUTS ARE IN SI, CONVERT SI TO ENGLISH #####
  IF(IU.EQ.1) THEN
    DO 81 JK=1,12,1
      SBT(JK)=SBT(JK)*.09290304/1.055
      TAV(JK)=TAV(JK)*9./5. + 32.0
81  CONTINUE
    ENDIF
C
C# GENERATE NECESSARY STATISTICS FROM DARYL ERBS CORRELATIONS #
  STDV=0.
  AVM=0.
  DO 90 JL=1,12
    STDV=STDV+TAV(JL)*TAV(JL)
90  AVM=AVM+TAV(JL)
    VARYR=(STDV-AVM*AVM/12.)/11.
    DO 100 JP=1,12
      DEV(JP)=9.273-0.07952*TAV(JP)+0.0097111*VARYR
      DEVM(JP)=(DEV(JP)-ACF(JP))/BCF(JP)
100  DPDEV(JP)=DEVM(JP)
    DO 110 JO=1,12
      TG1=-9548./ALOG(6.10451E-07*(DPAV(JO)/(.622+DPAV(JO))))-460.
      IF (TG1 .GE. 32.) GO TO 110
      TG1=-11040./ALOG(2.97912E-08*(DPAV(JO)/(.622+DPAV(JO))))-460.
110  DPAV(JO)=TG1
C
C##### PREPARE SINE AND COSINE VALUES OF LATITUDE. #####
  IFLG=0
  DAYL=0.
  DO 140 MON=1,12
    CALL EXHRAD(TMDAY(MON),MON,XLAT,HRAD,WS)
    CBT(MON)=SBT(MON)/HRAD
140  TMV(MON)=TAV(MON)+23.22*CBT(MON)-4.689
C
C##### COMPUTE AVERAGE PRESSURE FOR THIS LOCATION #####

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PBAV=29.92-5.031*ALT/5000.
C
C##### SET INITIAL MONTH DAY AND HOUR #####
C
  IF(TIME.GT.8760.)IERR=1
160 DO 170 IMON=1,12
170 IF(TIME.GE.XTIME(IMON).AND.TIME.LT.XTIME(IMON+1)) GOTO 180
180 TDAY=TIME-XTIME(IMON)
  IDAY=INT(TDAY+.001)/24+1
  IHR=MOD(INT(TIME+.001),24)
  IF(IHR.EQ.0) IHR=-1
  MON=IMON
  KK=IDAY
  NT=ABS(IHR)
C##### CHECK FOR ERRORS #####
  IF(LENGTH.NE.31.AND.IDAY.NE.1) IERR=2
  IF(IHR.GT.1)IERR=3
  IF(DELT.GT.1.0)IERR=6
  IF(IERR.EQ.0)GOTO 200
190 IF(IERR.EQ.1)WRITE(LUW,1400)
  IF(IERR.EQ.2)WRITE(LUW,1500)
  IF(IERR.EQ.3)WRITE(LUW,1600)
  IF(IERR.EQ.4)WRITE(LUW,1700) NTOTAL,NCITY
  IF(IERR.EQ.5)WRITE(LUW,1300)
  IF(IERR.EQ.6)WRITE(LUW,1800)
1300 FORMAT(' ** WARNING ** - OUTPUT MUST BE ON A MONTHLY BASIS
IF',/
; , ' YOU ARE USING CONDENSED MONTHLY DATA.')
1400 FORMAT(' ** ERROR ** - STARTING TIME MUST BE LESS THAN 8760
HRS')
1500 FORMAT(' ** ERROR ** - SIMULATION MUST START ON THE 1ST DAY OF
; ,/ ' MONTH FOR CONDENSED DATA')
1600 FORMAT(' ** ERROR ** - SIMULATION MUST START ON THE FIRST
HOUR ',
; 'OF THE DAY',/ ' (ie. HOUR 1, 25, 745,...)')
1700 FORMAT(' ** ERROR ** - THERE ARE ONLY ',I3,' CITIES IN THE DATA',
; ' BASE',/ ' YOU SPECIFIED CITY ',I6)
1800 FORMAT(' ** ERROR ** - TIMESTEP MUST BE LESS THAN OR EQUAL TO

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1',
  ;' HOUR')
  STOP
C
200 DAYL=0.
  IF(MON.EQ.1) GOTO 220
  DO 210 I=1,MON-1
210 IF(LNE.1)DAYL=DAYL+DAYN(I-1)
220 NDAY=INT(DAYN(MON)+.001)
  NDAY=MIN0(LENGTH,NDAY)
  RETURN
C#####
C#          MAIN CALCULATION LOOP
C#  FIRST PUT THE NEXT HOUR'S VALUES INTO THIS HOUR'S ARRAY.
C#  THEN DETERMINE IF TIME HAS SKIPPED THIS TIMESTEP (ONLY IN
C#  7 DAY MONTH MODE). THEN DETERMINE IF MONTHLY OR DAILY
C#  CALCULATIONS ARE NEEDED.
C#  (THIS PROGRAM IS ADAPTED FROM LARRY O. DEGELMAN'S WEATHER
C#  SIMULATOR, DEVELOPED AT THE DEPT. OF ARCH., TEXAS A&M UNIV.
C#  REPORT NO. CS02, MAY 1978
C#####
C
C#####
C#          VARIABLES
C#          =====
C# DB -- DRY BULB TEMPERATURE, (F)
C# DP -- DEW POINT TEMPERATURE, (F)
C# RH -- RELATIVE HUMIDITY, (0-1.)
C# PB -- BAROMETRIC PRESSURE, (IN. HG.)
C# DH -- TOTAL SOLAR INSOLATION ON A HORIZONTAL SURFACE,
C#       (BTUH/FT2)
C# DN -- DIRECT NORMAL INSOLATION, (BTUH/SQ.FT.)
C# DFH -- DIFFUSE INSOLATION ON HORIZONTAL (BTUH/SQ.FT.)
C# WV -- WIND VELOCITY, (MPH)
C# DATE -- DAY OF THE MONTH
C# NT -- SOLAR TIME (1-24)
C# MON -- NUMBER OF THE MONTH, (1-12)
C#

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C#####
230 DO 240 IN=1,10
240 LAST(IN)=NEXT(IN)
    IF(RTN1) THEN
        RTN1=.FALSE.
        ISKIP=ISKIP1
        ISKIP1=-1
        SCALL=.TRUE.
    END IF
C
    IF(NT.LT.24) GOTO 250
    NT=0
    KK=KK+1
    LDAY=.TRUE.
250 CONTINUE
    IF(KK.LE.NDAY) GOTO 260
    KK=1
    MON=MON+1
    LMON=.TRUE.
    LDAY=.TRUE.
260 CONTINUE
    IF(.NOT.LMON) GOTO 300
C##### BEGIN MONTHLY CALCULATIONS #####
    LMON=.FALSE.
    IF(MON.GT.12) MON=1
    IF(MON.EQ.1) DAYL=0.
    IF(MON.GT.1) DAYL=DAYL+DAYN(MON-1)
    SM=2.61-0.0290*(TAV(MON)-32.0)+0.0664*SQRT(VARYR)
    IF(ITMODEL.EQ.2)GOTO 282
C#####
C# IF USING STOCHASTIC HOURLY TEMPERATURE MODEL,
C# GENERATE THE HOURLY DRY BULB TEMPERATURES FOR THE MONTH
C#####
    CALL ARTEMP(CBT(MON),TAV(MON),DAYN(MON),ISEEDT,SM,TTAVE,
    &          TTMIN,TTMAX,DBTMP,MON)
C
282 NDAY=INT(DAYN(MON)+.001)
    NDAY=MIN0(LENGTH,NDAY)

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      XMULT=DAYN(MON)/LENGTH
      IF(LENGTH.EQ.31) XMULT=1.
C##### SET DAILY INCREMENT COUNTER #####
      INC=INT(XMULT+.001)
      I=-INC/2
      IF(KK.NE.1)I=KK
      I1=1
      M1=MON
C##### I1MON IS NEXT MONTH. #####
      I1MON=MOD(MON,12)+1
C
      300 IF(.NOT.LDAY) GOTO 400
C##### BEGIN DAILY CALCULATIONS #####
      LDAY=.FALSE.
      IF(I.GT.2) MN=MON
      I=I+INC
C#####
C#  CALCULATE THE NUMBER OF TIMESTEPS SKIPPED BETWEEN DAYS IF
C#  LENGTH EQUALS 7.
C#  ISKIP IS THE # OF SKIPPED TIMESTEPS : ISKIP IS SET
C#  EQUAL TO ISKIP1 ON THE NEXT CALL TO THIS SUBROUTINE (THE
C#  CURRENT CALL IS CALCULATING THE NEXT HR'S VALUES)
C#####
      ISKIP=-1
      IF(INC.EQ.1) GOTO 320
      IF(LASTD.GT.I.AND.MON.GT.1) ISKIP1=(INT(DAYN(MON-1)+0.1)-
;   LASTD+I-1)*NSDAY
      IF(LASTD.GT.I.AND.MON.EQ.1) ISKIP1=(INT(DAYN(12)+0.1)-
;   LASTD+I-1)*NSDAY
      IF(LASTD.LE.I)ISKIP1=(INC-1)*NSDAY
      IF(TIME.EQ.TIME0) ISKIP1=24-MOD(INT(TIME0+.001),24)
      310 IF(ISKIP1.GT.0) RTN1=.TRUE.
      320 CONTINUE
      LASTD=I
      IF(IFLG.EQ.0) GO TO 340
C##### I1 IS NEXT DAY. #####
      330 I1=MOD(LNDAY)+1
      IF (I1.EQ.1) M1=I1MON
      DATE=I

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C##### SET WEATHER VARIABLES FOR TODAY. #####
  TMIN=TMIN2
  TAVE=TAVE2
  TMAX=TMAX2
  DPMIN=DPMIN2
  DPV=DPAV2
  DPMAX=DPMAX2
C
  CT=CT1
  PBV=PBV2
  WVA=WVA2
  SDWV=0.35*WVA
340 TAVE2=TTAVE(I1)
  TMIN2=TTMIN(I1)
  TMAX2=TTMAX(I1)
C##### FIND MAX AND MIN TEMPERATURES AND #####
C##### SOLAR CONDITIONS FOR TOMORROW. #####
CALL STCURV(CBT(M1),CT1,FNORML,TAV(M1),DEV(M1),TMV(M1),DEVM(M1),
; DPAV(M1),DPDEV(M1),PBAV,PBV2,TMIN2,TAVE2,TMAX2,DPMIN2,
; DPAV2,DPMAX2,VW(M1),WVA2,LENGTH)
C
  IF(IFLG.EQ.1) GO TO 350
  IFLG=1
  GO TO 330
350 CONTINUE
C
380 DAY=DAYL+DATE
C COMPUTE EXTRATERRESTRIAL SOLAR RADIATION, SUNSET HOUR ANGLE
  CALL EXHRAD(INT(DATE),MON,XLAT,H0,WSET)
C##### COMPUTE SUNRISE APPARENT SOLAR TIME #####
  TR=-WSET/15.0+12.0
C#### INITIALIZE EARTH-SUN GEOMETRY BEFORE THE SUN RISE TIME. ####
C##### SOLAR TIME OF SUNRISE (TR) AND SUNSET (TS) #####
  TS=24.0-TR
  SUMI=0.0
  CHIKT=0.0
C# V. GRAHAM'S CORRELATIONS FOR AR1 COEFFICIENT AND kt STD. DEV. #
  PHIKT=0.3455+1.0745*CT-1.1327*CT**2

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      ASD=0.1557*SIN(PI*CT/933)
      TSVARKT=1.0-PHIKT**2
C##### STARTING HOUR OF EACH DAY #####
      KTR=TR+1.0
      IF (ABS(KTR-TR) .LT. 0.01) KTR=TR+0.5
      NIGHT=1
C
      DO 395 JHR=1,24,1
C
      ST1=FLOAT(JHR-1)
      ST2=FLOAT(JHR)
      IF(ST2.LE.TR)GOTO 395
      IF(ST1.GE.TS)GOTO 395
      IF(ST1.LT.TR)ST1=TR
      IF(ST2.GT.TS)ST2=TS
C
C KTMEAN IS THE "AVERAGE" LONG-TERM kt VALUE EXPECTED FOR THE
C HOUR
      KTMEAN=CT*RTRD(WSET,ST1,ST2)
C
C IF DAILY KT IS <0.1 OR >0.7, SET HOURLY VALUES EQUAL TO LONG-TERM
      IF(CT.GE.0.7 .OR. CT.LE.0.1) THEN
      FHRKT(JHR)=KTMEAN
      GOTO 42
      ENDIF
C
C#####
C#  GENERATE HOURLY kt VALUES USING TRANSFORMED STOCHASTIC
C#  MODEL [VICTOR GRAHAM, PHD THESIS OR ISES MONTREAL PAPER]
C#####
C
      RXKT=RANDOM(0.0,SQRT(TSVARKT),ISEEDKT)
      CHIKT=PHIKT*CHIKT+RXKT
      ARGKT=0.5+0.5*ERF(CHIKT/SQRT(2.))
      HKT=ALOG(1.0/ARGKT-1.0)/(-1.58)
C
      FHRKT(JHR)=KTMEAN+HKT*ASD
      IF(FHRKT(JHR).LT.0.0)FHRKT(JHR)=0.0
      IF(FHRKT(JHR).GT.0.964)FHRKT(JHR)=0.964

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C##### CONVERT kt TO RADIATION VALUES #####
42  CALL EXIRAD(ST1,ST2,INT(DATE),MON,XLAT,I0(JHR))
    FDH=FHRKT(JHR)*I0(JHR)
    SUMI=SUMI+FDH
C
395  CONTINUE
C
C## COMPARE WITH ORIGINAL DAILY VALUE, CFKT IS CORRECTION FACTOR
    GENKT=SUMI/H0
    CFKT=CT/GENKT
C##### BEGIN HOURLY CALCULATIONS #####
400  IF(IHR.EQ.-1) GOTO 410
    IF(.NOT.FIRST) NT=NT+1
    FIRST=.FALSE.
410  IHR=ABS(IHR)
    ICK=MOD(INT(TIME+.001),24)
    IF(LENGTH.EQ.7.AND.ICK+1.NE.NT.AND.TIME.NE.TIME0)NT=ICK+1
    DN=0.
    DFH=0.
    DH=0.
    ST1=NT-1
    ST2=NT
C##### DAYLIGHT TIME IS "NIGHT=0"; NIGHTTIME IS "NIGHT=1". #####
    IF(ST2.GE.TR) NIGHT=0
    IF(ST1.GE.TS) NIGHT=1
    IF(ST1.LT.TR) ST1=TR
    IF(ST2.GT.TS) ST2=TS
C##### CALCULATE TEMPERATURES #####
    IF(ITMODEL.EQ.1)DB=DBTMP(NT,I)
    CALL TEMPER(DB,DP,NT,KTR,TMIN,TMAX,TMIN2,DPMIN,DPMAX,DPMIN2,
    &      NIGHT,ITMODEL)
C##### CALCULATE PRESSURE. #####
    PB=PBV
C##### COMPUTE ENTHALPY (H) AND RELATIVE HUMIDITY (RH). #####
    CALL PSYCHA(DB,DP,PB,H,RH)
C##### FIND WIND SPEED FOR THIS HOUR. #####
420  RNUM=RAND(0)
    XMW=31.0*RNUM+1.0

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      MW=INT(XMW)
      WV=WVA+SDWV*FNORML(INT(MW))
C
      IF(NIGHT.EQ.1) GO TO 480
C
C##### CORRECT HOURLY kt VALUES, CALCULATE TOTAL RADIATION #####
      HRKT=FHRKT(NT)*CFKT
      IF(HRKT.LT.0.0)HRKT=0.0
      IF(HRKT.GT.0.964)HRKT=0.964
      DH=HRKT*I0(NT)
C
C##### FIND DIFFUSE FRACTION FROM ERBS' CORRELATION #####
      IF(HRKT.LE.0.22)DIFF=1.0-0.09*HRKT
      IF(HRKT.GT.0.22 .AND. HRKT.LE.0.80)DIFF=0.9511-0.1604*HRKT
      & +4.388*HRKT**2-16.638*HRKT**3+12.336*HRKT**4
      IF(HRKT.GT.0.80)DIFF=0.165
C
C### CALCULATE DIFFUSE (DFH) AND DIRECT NORMAL (DN) RADIATION ###
C##### COSTHZ IS COSINE OF ZENITH ANGLE #####
      DFH=DIFF*DH
      DN=(DH-DFH)/COSTHZ(MON,INT(DATE),ST1,ST2,XLAT)
C
      480 CONTINUE
C#####
C#          SET NEXT HOUR OUTPUTS
C#####
      NEXT(1)=FLOAT(MON)
      NEXT(2)=DATE
      NEXT(3)=FLOAT(NT)
      NEXT(4)=(DB-TCONV1(IOU))/TCONV2(IOU)
      NEXT(5)=(DP-TCONV1(IOU))/TCONV2(IOU)
      NEXT(6)=RH
      NEXT(7)=DH*RCONV(IOU)
      NEXT(8)=DN*RCONV(IOU)
      NEXT(9)=DFH*RCONV(IOU)
      NEXT(10)=WV*WVCONV(IOU)
      TLAST=TNEXT
      TNEXT=TIME
C#####

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C# SET CURRENT OUTPUTS (INTERPOLATE NON-SOLAR VALUES IF
NECESSARY)
C#####
490 CONTINUE
    IF(ABS(TIME-TIME0).LT.,0001) THEN
        DO 500 IN=1,10
500  LAST(IN)=NEXT(IN)
        LAST(3)=TIME0
        END IF
        R=FLOAT(IPART)/FLOAT(IDENOM)
        OUT(1)=LAST(1)
        OUT(2)=LAST(2)
        OUT(3)=LAST(3)+(NEXT(3)-LAST(3))*R
        OUT(4)=LAST(4)+(NEXT(4)-LAST(4))*R
        OUT(5)=LAST(5)+(NEXT(5)-LAST(5))*R
        OUT(6)=LAST(6)+(NEXT(6)-LAST(6))*R
        OUT(7)=LAST(7)
        OUT(8)=LAST(8)
        OUT(9)=LAST(9)
        OUT(10)=LAST(10)+(NEXT(10)-LAST(10))*R
        OUT(19)=TLAST
        OUT(20)=TNEXT
C##### REPEAT HOURLY CALC IF NEEDED (ON FIRST CALL) #####
    IF((NT.GT.MOD(INT(TIME+.001),24).AND..NOT.FIRST).OR.
    +TIME.GT.TIME0) GOTO 510
    GOTO 230
510 RETURN
520 WRITE(LUW,1800)
1011 FORMAT(/2X,'**** UNIT 'I3,' TYPE 'I3,' CHILLER'/4X,
.   'ENTER FILE NAME FOR DATA INPUT: ')
1012 FORMAT(A20)
1800 FORMAT(' ** ERROR IN TYPE46 ** - INPUT WEATHER DATA IS IN',
.   'ERROR',/,
.   'CHECK DATA FILE',/)
    RETURN
530 WRITE(LUW,1900)
1900 FORMAT(' ** ERROR IN WRITING TYPE46 WEATHER SUMMARY **')
    RETURN
540 WRITE(LUW,2000)

```

```

2000 FORMAT(' ** ERROR IN TYPE46 ** - WEATHER FILE COULD NOT BE ',
; ' OPENED')
STOP
END
C
SUBROUTINE STCURV
(CBT,CT,FNORML,TAV,DEV,TM,DEVM,DPAV,DPDEV,PBAV,
+ PBV,TMIN,TAVE,TMAX,DPMIN,DPAVE,DPMAX,VW,WVA,LEN)
C
C *** SUBROUTINE TO COMPUTE KT VALUE FROM CUMULATIVE
DISTRIBUTION CURVE
C AND COMPUTE TAVE,TMAX,TMIN,DPAVE,DPMIN, AND DPMAX.
C
C IMPLICIT NONE
REAL CBT,CT,FNORML(31),TAV,DEV,TM,DEVM,DPAV,DPDEV,PBAV,PBV,
& TMAX,DPMIN,DPAVE,DPMAX,VW,WVA,RNUM,TMIN,
& RAND,F,BENDT,PHIT1,PHIT2,AR1,AR2,HT,TSVART,ARGT,CHIT,CHIT1,
& CHIT2,DPY,RXT,SM,TAVE,DAYN(12),XMEAN,TSUM
INTEGER LEN,MPROF(31,8),LIST(21,3),NTM,IDAY,IND,M,IKT,ITMODEL,K,
& NDP,MON,ISQ
INTEGER*4 ISEEDT
C DIMENSION FNORML(31),MPROF(31,8),LIST(21,3),DBTMP(24),TMHR(24)
COMMON /HRTEMP/ISEEDT,SM,DAYN,M1,ITMODEL
DATA NTM/0/,IDAY/0/
C
DATA MPROF/ 24,28,11,19,18,3,2,4,9,20,14,23,8,16,21,26,
115,10,22,17,5,1,6,29,12,7,31,30,27,13,25,
2 24,29,14,21,31,30,23,5,12,11,2,1,7,16,25,10,
38,3,4,9,18,6,13,26,20,22,15,17,27,19,28,
4 20,29,13,26,31,30,21,12,14,11,2,1,3,15,25,9,
55,7,6,4,19,8,10,23,22,27,16,18,28,17,24,
6 12,27,16,25,28,30,26,15,18,11,2,1,3,13,14,10,
76,9,5,4,24,7,8,20,23,31,17,19,29,21,22,
8 22,15,17,10,4,3,7,1,2,11,30,31,28,14,9,27,
929,26,19,20,13,24,21,8,6,5,25,23,16,18,12,
A 12,5,17,8,23,10,27,26,21,30,31,25,9,20,29,1,
B6,28,19,13,18,22,4,7,3,14,11,2,16,24,15,
C 24,27,11,19,18,3,2,4,9,20,14,23,8,16,21,7,
D22,10,28,6,5,1,26,29,12,17,31,30,15,13,25,

```

```

E      24,27,11,4,18,3,2,19,9,25,14,23,8,16,21,26,
      F22,10,15,17,5,1,6,29,12,7,31,20,28,13,30/
C
      DATA LIST/6,10,12,22,25,27,31,14*0,4,5,11,17,18,20,22,23,24,25,26,
      127,30,31,7*0,1,2,4,5,6,7,12,13,14,16,17,18,19,21,22,23,25,27,28,
      230,31/
C
      IF(LEN.GT.21) GO TO 10
      IND=LEN/7
      IDAY=MOD(IDAY,LEN)+1
      M=LIST(IDAY,IND)
      GO TO 30
C
      10 IF(NTM.EQ.1) GO TO 20
      NTM=1
      RNUM=Rand(0)
      M=31.*RNUM + 1.0
      20 M=MOD(M,31) + 1
C *** SOLAR VALUES FOR TODAY.
C
      30 ISQ=7
      IF(CBT.LE.0.45)ISQ=1
      IF(CBT.GE.0.55)ISQ=8
      31 IKT=MProf(M,ISQ)
      IF(IKT.GT.INT(DAYN(M1)+.001))THEN
      M=MOD(M+1,31)
      GOTO 31
      ENDIF
      F=FLOAT(IKT)/DAYN(M1)-1.0/DAYN(M1)/2.0
      CT= BENDT(F,CBT)
      IF(TTMODEL.EQ.1)GOTO 34
C
C *** MAXIMUM DB TEMP FOR TODAY.
C
      32 K=MProf(M,2)
      TMAX=TM+DEVM*FNORML(K)
C
C *** SET VALUES FOR DEWPOINT LIMITS.

```

```

C
34  NDP=31
    IF(TMAX.LT.70.) GO TO 40
    IF(K.GT.12) NDP=MIN0(NDP,12+32-K)
C
C *** COMPUTE AVERAGE TEMPERATURE FOR TODAY.
C
40  IF(ITMODEL.EQ.2)THEN
    K=MPROF(M,3)
    TAVE=TAV+DEV*FNORMAL(K)
    TMIN=2.*TAVE-TMAX
    ENDIF
C
C *** COMPUTE AVERAGE DEWPOINT TEMPERATURE FOR TODAY.
C
    DPY=DPMIN
    K=MPROF(M,4)
    DPAVE=DPAV+DPDEV*FNORMAL(K) + 0.6
    IF(DPAVE.GT.TAVE) DPAVE=TAVE-1.0
C
C *** FIX THE MINIMUM,MAXIMUM AND AVERAGE DEWPOINT FOR TODAY.
    DPMIN=AMIN1(TMIN,(DPAVE+DPY)*0.5)
    DPMAX=AMIN1(2.0*DPAVE-DPMIN,TMAX-
1.0,DPAV+DPDEV*FNORMAL(NDP))
    DPMAX=AMAX1(DPMAX,DPMIN-7.0)
    DPMAX=AMIN1(DPMAX,TMAX)
    DPMIN=AMIN1(TMIN,2.0*DPAVE-DPMAX)
    DPAVE=0.5*(DPMIN+DPMAX)
C
C *** AVERAGE BAROMETRIC PRESSURE TODAY.
    K=MPROF(M,5)
    PBV=PBAV+0.17*FNORMAL(K)
C
C *** AVERAGE WIND SPEED TODAY.
    K=MPROF(M,6)
    WVA=(1.+0.31*FNORMAL(K))*VW
    RETURN
    END

```

```

C
  SUBROUTINE ARTEMP(CBT,TAV,DAYN,ISEEDT,SM,TAVE,TTMIN,
&      TTMAX,DBTMP,MN)
C
C *** SUBROUTINE TO STOCHASTICALLY GENERATE A MONTH'S HOURLY
C   AMBIENT TEMPERATURES FROM AN AR2 MODEL.
C
  IMPLICIT NONE
  INTEGER K,IDAY,KHR,ISEEDT,MN
  REAL TSTAR,PI,RHS,CBT,TAMP,TMHR(24),TAV,PHIT1,PHIT2,RXT,HT,
&   AR1,AR2,TSVART,DAYN,TSUM,TMAX,TMIN,TTMAX(31),TTMIN(31),SM,
&   RANDOM,CHIT,CHIT1,CHIT2,ARGT,ERF,DBTMP(24,31),TAVE(31),
&   TOTSUM,GENAV,CF
C
  DATA CHIT1/0.0/,CHIT2/0.0/
  PI=3.1415927
C
C *** FIND 24 HOURLY MONTHLY AVERAGE DRY BULB TEMPERATURES
C *** FROM ERBS CORRELATION
  DO 280 K=1,24,1
    TSTAR=2.0*PI*FLOAT(K-1)/24.
    RHS=0.4632*COS(TSTAR-3.805) + 0.0984*COS(2.0*TSTAR-0.360)
&    + 0.0168*COS(3.0*TSTAR-0.822) + 0.0138*COS(4.0*TSTAR-3.513)
    TAMP=46.44*CBT-9.378
    TMHR(K)=RHS*TAMP + TAV
280  CONTINUE
C
C *** GENERATE HOURLY TEMPERATURES FOR THE MONTH
C
  TOTSUM=0.0
  PHIT1=1.178
  PHIT2=-0.202
  AR1=PHIT1/(1.0-PHIT2)
  AR2=PHIT2 + PHIT1**2/(1.0-PHIT2)
  TSVART=1.0-PHIT1*AR1-PHIT2*AR2
C
  DO 273 IDAY=1,INT(DAYN),1
    TSUM=0.0
    TMAX=-1000.0

```

```

TMIN=1000.0
DO 231 KHR=1,24,1
  RXT=RANDOM(0.0,SQRT(TSVART),ISEEDT)
  CHIT=PHIT1*CHIT1+PHIT2*CHIT2+RXT
  CHIT2=CHIT1
  CHIT1=CHIT
  ARGT=0.5+0.5*ERF(CHIT/SQRT(2.0))
  HT=ALOG(1.0/ARGT-1.0)/(-3.396)
  DBTMP(KHR,IDAY)=HT*SQRT(DAYN)*SM+TMHR(KHR)
  TSUM=TSUM+DBTMP(KHR,IDAY)
  IF(DBTMP(KHR,IDAY).GT.TMAX)TMAX=DBTMP(KHR,IDAY)
  IF(DBTMP(KHR,IDAY).LT.TMIN)TMIN=DBTMP(KHR,IDAY)
231  CONTINUE
  TAVE(IDAY)=TSUM/24.
  TOTSUM=TOTSUM+TSUM
  TTMIN(IDAY)=TMIN
  TTMAX(IDAY)=TMAX
273  CONTINUE
C
C *** COMPUTE GENERATED MONTHLY-AVERAGE TEMPERATURE; COMPARE
TO INPUT
C *** CF IS A CORRECTION FACTOR TO ENSURE GENERATED MEAN
MATCHES INPUT
  GENAV=TOTSUM/(DAYN*24.)
  CF=TAV-GENAV
C
C *** "CORRECT" TEMPERATURES
  DO 300 IDAY=1,INT(DAYN),1
    DO 310 KHR=1,24,1
      DBTMP(KHR,IDAY)=DBTMP(KHR,IDAY)+CF
310  CONTINUE
      TTMIN(IDAY)=TTMIN(IDAY)+CF
      TTMAX(IDAY)=TTMAX(IDAY)+CF
      TAVE(IDAY)=TAVE(IDAY)+CF
300  CONTINUE
C
  RETURN
END

```

```

C
  SUBROUTINE
    TEMPER(TEMP,DP,NT,KTR,TMIN,TMAX,TMIN2,DPMIN,DPMAX,
      & DPMIN2,NIGHT,ITMODEL)
C
C *** SUBROUTINE TO COMPUTE HOURLY TEMPERATURES
C
  IMPLICIT NONE
  REAL
    TEMP,DP,TMIN,TMAX,TMIN2,DPMIN,DPMAX,DPMIN2,DELT,TAV,AMPL,
      & RANGE,DEPL,DEPR,RATIO,DEP
  INTEGER KTR,NT,NIGHT,KENTRY,ITMODEL,IHR
  DATA KENTRY/1/
C
C *** COMPUTES TEMPERATURE ANY TIME OF DAY AT HOUR "NT", WHERE
  "NT"
C *** IS ACTUAL CLOCK TIME AND "IHR" IS TIME FROM SUNRISE
  HOUR,"KTR".
C *** TEMP IS THE DRY BULB TEMPERATURE TO BE COMPUTED.
C *** DP IS THE DEWPOINT TEMPERATURE TO BE COMPUTED.
C *** TMIN IS THE MINIMUM TEMPERATURE TODAY.
C *** TMAX IS THE MAXIMUM TEMPERATURE TODAY.
C *** TMIN2 IS THE MINIMUM TEMPERATURE TOMORROW.
C
C *** SET UP FOR FIRST HOUR ENTRY INTO SUBROUTINE.
  IF(KENTRY.NE.1) GO TO 10
  KENTRY=2
  DELT=10
  IF(ITMODEL.EQ.2)THEN
    TAV=(TMAX+TMIN)/2.
    AMPL=TMAX-TAV
  ENDIF
  RANGE=KTR+9
  DEPL=TMAX-DPMAX
  DEPR=TMIN-DPMIN
  GO TO 40
C *** START HERE ON ALL HOURS BUT 1ST HOUR.
10 IHR=NT-KTR
  DELT=0.

```

```

      IF(IHR.EQ.0) GO TO 20
      IF(NT.EQ.15) GO TO 30
      IF(IHR.LT.0) DELT=NT+9
      IF(IHR.GT.0.AND.NT.LT.15) DELT=IHR
      IF(NT.GT.15) DELT=NT-15
      GO TO 40
C
C *** MORNING VALUES.
20  IF(ITMODEL.EQ.2)THEN
      TAV=(TMAX+TMIN)/2.
      AMPL=TAV-TMAX
      ENDIF
      RANGE=15-NT
C *** ESTABLISH DEWPOINT DEPRESSIONS.
      DEPL=TMIN-DPMIN
      DEPR=TMAX-DPMAX
      GO TO 40
C
C *** AFTERNOON VALUES.
30  IF(ITMODEL.EQ.2)THEN
      TAV=(TMAX+TMIN2)/2.
      AMPL=TMAX-TAV
      ENDIF
      RANGE=24-IHR
      DEPL=TMAX-DPMAX
      DEPR=TMIN2-DPMIN2
C *** DRY BULB TEMPERATURE.
40  IF(ITMODEL.EQ.2)THEN
      TEMP=TAV+AMPL*COS(3.1415927*DELT/RANGE)
      ENDIF
C
C *** DEWPOINT TEMPERATURE.
      RATIO=DELT/RANGE
      DEP=DEPL+(DEPR-DEPL)*RATIO
      DP=TEMP-DEP
C
      RETURN
      END

```

```

C
  SUBROUTINE PSYCHA (DB,DP,PB,H,RH)
  IMPLICIT NONE
  REAL DB,DP,PB,H,RH,W,HUMRAT,W2
C *** PSYCHROMETRIC ROUTINE, WRITTEN BY L.O. DEGELMAN, 7/20/81.
C   GIVEN DB (DRY BULB), DP (DEWPOINT), AND PB (PRESSURE), THIS
C   SUBROUTINE COMPUTES H (ENTHALPY) AND RH (RELATIVE HUMIDITY).
C *** FIND THE HUMIDITY RATIO FROM A FUNCTION, HUMRAT.
      W=HUMRAT(DP,PB)
C *** FIND ENTHALPY (H).
      H=0.24*DB+(1061.+0.444*DB)*W
C *** FIND MAXIMUM POSSIBLE HUMIDITY RATIO AT DB.
      W2=HUMRAT(DB,PB)
      RH=100.*W/W2
      RETURN
      END
C
  REAL FUNCTION COSTHZ(MONTH,DAY,BHR,EHR,XLAT)
C ***** CALCULATES ZENITH ANGLE *****
  IMPLICIT NONE
  INTEGER MONTH,DAY
  REAL PDAYS(12),PI,DTR,RXLAT,YRDAY,DEC,W,XLAT,BHR,EHR,
&   W1,W2
C
      DATA PDAYS/0.,31.,59.,90.,120.,151.,181.,212.,243.,273.,
&   304.,334./
C
      PI=3.1415927
      DTR=PI/180.
      RXLAT=XLAT*DTR
      YRDAY=PDAYS(MONTH)+FLOAT(DAY)
      DEC=23.45*SIN(360./365.*(284.+YRDAY)*DTR)*DTR
      W1=(BHR-12.)*15.*DTR
      W2=(EHR-12.)*15.*DTR
      W=(W1+W2)/2.0
      COSTHZ=COS(DEC)*COS(RXLAT)*COS(W) + SIN(DEC)*SIN(RXLAT)
C
      RETURN
      END

```

```

C
  REAL FUNCTION HUMRAT(T,PB)
  IMPLICIT NONE
  REAL W1,T,PB,PDP,W
C *** THIS FUNCTION COMPUTES THE HUMIDITY RATIO AT TEMP (T) AND
C  PRESSURE (PB).
C *** FIRST COMPUTE THE HUMIDITY AS IF AT SEA LEVEL (PB=29.92 "HG.)
  W1=((T*3.67113E-8-3.56797E-7)*T+5.97982E-5)*T+9.47894E-4
C  PARTIAL VAPOR PRESSURE AT SEA LEVEL.
  PDP=29.92*W1/(W1+0.622)
C  NOW, HUMIDITY RATIO AT PRESSURE (PB).
  W=0.622*PDP/(PB-PDP)
  HUMRAT=AMAX1(W,0.0001)
  RETURN
END

C
  REAL FUNCTION BENDT(F,KTBAR)
C ** COMPUTES THE VALUE OF KT CORRESPONDING TO F USING BENDT ***
C ***** EXPRESSION FOR THE LIU AND JORDAN KT DISTRIBUTION *****
  IMPLICIT NONE
  REAL F,KTBAR,KT,KMIN,KMAX,CGAM,GAM
C
  KMIN = 0.05
  KMAX = .6313 + .267*KTBAR - 11.9*(KTBAR-.75)**8
  CGAM = (KMAX-KMIN) / (KMAX-KTBAR)
  GAM = -1.498 + (1.184*CGAM - 27.182*EXP(-1.5*CGAM))/(KMAX-KMIN)
  BENDT = LOG( (1.-F) * EXP(GAM*KMIN) + F * EXP(GAM*KMAX) ) / GAM
C
  RETURN
END

C
C#####
C#
C#  RANDOM NUMBER GENERATOR USING PARTS OF THE SINE OF AN
C#  ANGLE
C#  X1,X2 ARE THE PRIMING NUMBERS - CHANGE THEM AND YOU WILL
C#  GET A DIFFERENT SEQUENCE OF RANDOM NUMBERS.
C#

```

C#####

```

REAL FUNCTION RAND(I)
IMPLICIT NONE
  REAL X1,X2,RAD,X3,ANG,X,R,Y
  INTEGER I,NX,NUM
  DATA X1/0.12345678/,X2/0.87654321/,RAD/1.57079637/
  X3=.275*(X2*X1+1.)
  ANG=RAD*X3*(X2+.054)
  X=10.*SIN(ANG)
  NX=X
  Y=NX
  R=X-Y
  NUM=100000.*R
  RAND=(NUM-1000*(NUM/1000))/1000.
  X1=X2
  X2=R
  RETURN
END

```

C

```

REAL FUNCTION RTRD(DWSET,HRI,HRF)

```

C **** COMPUTES THE VALUE OF $RT/RD = (I/H)/(I_0/H_0)$ FROM *****

C ***** EXPRESSIONS OF COLLARES-PEREIRA AND RABL *****

```

IMPLICIT NONE
  REAL A,B,DTR,DWSET,HRF,HRI,PI,W,WF,WI,WSET
  PI=3.1415927
  DTR = PI/180.
  WSET = DWSET*DTR
  A = .409 + .5016 * SIN(WSET-60.*DTR)
  B = .6609 - .4767 * SIN(WSET-60.*DTR)
  WI = DTR* (HRI-12.)*15.
  WF = DTR* (HRF-12.)*15.
  W = (WI+WF)/2.
  RTRD = A + B*COS(W)
  RETURN
END

```

C

```

SUBROUTINE EXHRAD(DAY,MONTH,XLAT,HEX,WS)

```

C *** CALCULATES EXTRATERRESTRIAL RADIATION ON A HORIZONTAL *****

```

C ***** SURFACE, INTEGRATED OVER A DAY, IN BTU/FT2. *****
  IMPLICIT NONE
  REAL A,B,C,DEC,DTR,GSC,HEX,H0,PDAYS(12),PI,RXLAT
  REAL WS,XLAT,YRDAY
  INTEGER DAY,MONTH
C
  DATA PDAYS/0.,31.,59.,90.,120.,151.,181.,212.,243.,273.,304.,
+      334./
C
  PI = 3.1415927
  DTR = PI/180.
  GSC = 1353.0/3.155
C-----GSC in Btu/ft^2 hr
  RXLAT = XLAT*DTR
C
  YRDAY = PDAYS(MONTH) + FLOAT(DAY)
  DEC = 23.45 * SIN(360./365.*(284.+YRDAY)*DTR) * DTR
  WS = ACOS(-TAN(RXLAT)*TAN(DEC))
C
  A = 24./PI * GSC * (1.+0.33*COS(360./365.*YRDAY*DTR))
  B = COS(RXLAT)*COS(DEC)*SIN(WS)
  C = WS*SIN(RXLAT)*SIN(DEC)
  HEX = A*(B+C)
  WS = WS/DTR
C
  RETURN
  END
C
  SUBROUTINE EXIRAD(HRI,HRF,DAY,MONTH,XLAT,IEX)
C
C *** CALCULATES EXTRATERRESTRIAL RADIATION ON A HORIZONTAL ***
C ***** SURFACE, INTEGRATED OVER AN HOUR, IN BTU/FT2. *****
C
  IMPLICIT NONE
  REAL A,B,C,DEC,DTR,GSC,HRI,HRF,IEX,PDAYS(12),PI
  REAL RXLAT,WS,W1,W2,XLAT,YRDAY
  INTEGER DAY,HR,MONTH
C
  DATA PDAYS/0.,31.,59.,90.,120.,151.,181.,212.,243.,273.,304.,

```

```

+      334./
C
  PI = 3.1415927
  DTR = PI/180.
  GSC = 1353./3.155
C-----GSC in Btu/ft^2 hr
  W2 = (HRF-12.)*15.*DTR
  W1 = (HRI-12.)*15.*DTR
  RXLAT = XLAT*DTR
C
  YRDAY = PDAYS(MONTH) + FLOAT(DAY)
  DEC = 23.45 * SIN(360./365.*(284.+YRDAY)*DTR) * DTR
  WS = ACOS(-TAN(RXLAT)*TAN(DEC))
C
  A = 12./PI * GSC * (1.+0.33*COS(360./365.*YRDAY*DTR))
  B = COS(RXLAT)*COS(DEC)*(SIN(W2)-SIN(W1))
  C = (W2-W1)*SIN(RXLAT)*SIN(DEC)
  IEX = A*(B+C)
C
  RETURN
  END
C.
  REAL FUNCTION RANDOM(MEAN,SD,ISEED)
C. GENERATE NID(MEAN,VARIANCE) USING DIRECT COS-SIN METHOD
C. SEE HANDBOOK OF MATHEMATICAL FUNCTIONS, ABRAMOWITZ AND
  STEGUN
C. DOVER 1972
  IMPLICIT NONE
  REAL MEAN,SD,PI,R1,R2,X
  INTEGER*4 ISEED
  PI=3.1415927
10  R1=RAN(ISEED)
  R2=RAN(ISEED)
  X=SQRT(-2*LOG(R1))*COS(2*PI*R2)
  RANDOM=X*SD+MEAN
  RETURN
  END
C.

```

```

REAL FUNCTION ERF(XCOPY)
IMPLICIT NONE
REAL XCOPY,X
C
C COMPUTE THE ERROR FUNCTION OF A REAL VARIABLE X
C
  REAL SQPI2, X0, E0, H, PH, X02, DE, EC0, EC1, EC2
  REAL E(200), EC(51), X1
  INTEGER I,I0,I1
  DATA (E(I), I = 1, 50) /
1 .0112834156,.0225645747,.0338412223,.0451111061,.0563719778,
1 .0676215944,.0788577198,.0900781258,.1012805939,.1124629160,
1 .1236228962,.1347583518,.1458671148,.1569470331,.1679959714,
1 .1790118132,.1899924612,.2009358390,.2118398922,.2227025892,
1 .2335219230,.2442959116,.2550225996,.2657000590,.2763263902,
1 .2868997232,.2974182185,.3078800680,.3182834959,.3286267595,
1 .3389081503,.3491259948,.3592786550,.3693645293,.3793820536,
1 .3893297011,.3992059840,.4090094534,.4187387001,.4283923550,
1 .4379690902,.4474676184,.4568866945,.4662251153,.4754817198,
1 .4846553900,.4937450509,.5027496707,.5116682612,.5204998778/
  DATA (E(I), I = 51, 100) /
1 .5292436198,.5378986305,.5464640969,.5549392505,.5633233663,
1 .5716157638,.5798158062,.5879229004,.5959364972,.6038560908,
1 .6116812189,.6194114619,.6270494433,.6345858291,.6420293274,
1 .6493766880,.6566277023,.6637822027,.6708400622,.6778011938,
1 .6846655502,.6914331231,.6981039429,.7046780779,.7111556337,
1 .7175367528,.7238216140,.7300104313,.7361034538,.7421009647,
1 .7480032806,.7538107509,.7595237569,.7651427115,.7706680576,
1 .7761002683,.7814398455,.7866873192,.7918432468,.7969082124,
1 .8018828528,.8067677215,.8115635586,.8162710190,.8208908073,
1 .8254236496,.8298702930,.8342315043,.8385080696,.8427007929/
  DATA (E(I), I = 101, 150) /
1 .8468104962,.8508380177,.8547842115,.8586499465,.8624361061,
1 .8661435866,.8697732972,.8733261584,.8768031019,.8802050696,
1 .8835330124,.8867878902,.8899706704,.8930823276,.8961238429,
1 .8990962029,.9020003990,.9048374269,.9076082860,.9103139782,
1 .9129555080,.9155338810,.9180501041,.9205051843,.9229001283,
1 .9252359418,.9275136293,.9297341930,.9318986327,.9340079449,
1 .9360631228,.9380651551,.9400150262,.9419137153,.9437621961,

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1 .9455614366,.9473123980,.9490160353,.9506732958,.9522851198,
1 .9538524394,.9553761786,.9568572531,.9582965696,.9596950256,
1 .9610535095,.9623728999,.9636540654,.9648978648,.9661051465/
DATA (E(I), I = 151, 200) /
1 .9672767481,.9684134969,.9695162091,.9705856899,.9716227333,
1 .9726281220,.9736026275,.9745470093,.9754620158,.9763483833,
1 .9772068366,.9780380884,.9788428397,.9796217795,.9803755850,
1 .9811049213,.9818104416,.9824927870,.9831525869,.9837904586,
1 .9844070075,.9850028274,.9855784998,.9861345950,.9866716712,
1 .9871902752,.9876909442,.9881741959,.9886405487,.9890905016,
1 .9895245446,.9899431565,.9903468051,.9907359476,.9911110301,
1 .9914724883,.9918207476,.9921562228,.9924793184,.9927904292,
1 .9930899398,.9933782251,.9936556502,.9939225709,.9941793336,
1 .9944262755,.9946637246,.9948920004,.9951114132,.9953222650/
DATA EC/.5641896,.5627896,
1 .5614099,.5600500,.5587090,.5573865,.5560817,.5547941,.5535232,
1 .5522685,.5510295,.5498058,.5485969,.5474024,.5462219,.5450551,
1 .5439016,.5427611,.5416332,.5405176,.5394141,.5383223,.5372420,
1 .5361729,.5351147,.5340672,.5330302,.5320035,.5309867,.5299798,
1 .5289825,.5279946,.5270159,.5260463,.5250855,.5241333,.5231898,
1 .5222545,.5213275,.5204085,.5194974,.5185940,.5176983,.5168101,
1 .5159292,.5150555,.5141890,.5133294,.5124767,.5116307,.5107914/
DATA SQPI2 / 0.8862269255 / H / 0.01 /

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C

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X = ABS (XCOPY)
IF (X .GT. 2.) GO TO 20
  X0 = 100. * X
  I0 = INT (X0 + 0.5)
  IF (I0 .EQ. 0) THEN
    E0 = 0.
  ELSE
    E0 = E(I0)
  END IF
10  X0 = FLOAT (I0) / 100.
  PH = (X - X0)
  X02 = X0 * X0
  DE = EXP (-X02) * PH * (1. + PH*(-X0+PH*(2.*X02-1.)/3.))/SQPI2
  ERF = E0 + DE

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```
GOTO 40
20  X0 = 1. + 200. / X / X
    I1 = INT (X0)
    X1 = FLOAT (I1)
    EC1 = EC (I1)
    EC2 = EC (I1 + 1)
    EC0 = EC1 + (X0 - X1) * (EC2 - EC1)
    ERF = 1. - EC0 / X / EXP (X * X)
40  CONTINUE
    IF (XCOPY.LT.0.0) ERF=-ERF
RETURN
END
```

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