



Supplementary Materials

Table S1. Performance of CNN-GRU and GRU model to forecast the 1st Day Surface Soil moisture of Minendee Station with the optimum forecasting results based on the Nash-Sutcliffe coefficient (NS) and mean absolute error (MAE; Kg m⁻²) for the testing phase.

No.	Predictor Combinations	NS	MAE	NS	MAE
1	Sz	0.819	0.135	0.770	0.154
2	Sz, N3	0.811	0.138	0.750	0.161
3	Sz, N3, MJ4	0.786	0.144	0.766	0.155
4	Sz, N3, MJ4, GW	0.838	0.128	0.815	0.136
5	Sz, N3, MJ4, GW, MJ6	0.850	0.122	0.806	0.139
6	Sz, N3, MJ4, GW, MJ6, AO	0.797	0.144	0.801	0.141
7	Sz, N3, MJ4, GW, MJ6, AO, PN	0.827	0.133	0.826	0.133
8	Sz, N3, MJ4, GW, MJ6, AO, PN, N12	0.813	0.137	0.825	0.133
9	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r	0.826	0.123	0.829	0.132
10	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp	0.838	0.128	0.830	0.131
11	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St	0.807	0.148	0.801	0.147
12	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt	0.820	0.144	0.802	0.148
13	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A	0.853	0.122	0.819	0.141
14	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2	0.817	0.145	0.817	0.142
15	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn	0.817	0.141	0.816	0.142
16	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn	0.778	0.160	0.818	0.141
17	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1	0.852	0.125	0.812	0.144
18	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh	0.842	0.130	0.807	0.146
19	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle	0.852	0.132	0.842	0.134
20	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP	0.858	0.127	0.864	0.122
21	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G	0.885	0.115	0.868	0.122
22	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm	0.893	0.110	0.880	0.115
23	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm, VP	0.892	0.110	0.887	0.113
24	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm, VP, NA	0.892	0.112	0.889	0.112
25	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm, VP, NA, EPO	0.882	0.131	0.894	0.109
26	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm, VP, NA, EPO, SI	0.906	0.100	0.889	0.112
27	Sz, N3, MJ4, GW, MJ6, AO, PN, N12, r, Sp, St, Snt, A, MJ2, Tn, Rn, MJ1, Qh, Qle, WP, G, Rm, VP, NA, EPO, SI, N4				

Table S2. Caption identical to Table S1, except for 5th Day.

No.	Predictor Combinations	NS	MAE	NS	MAE
1	GW	0.308	0.276	0.175	0.295
2	GW, NA	0.321	0.273	−0.223	0.366
3	GW, NA, MJ6	0.316	0.274	0.210	0.290
4	GW, NA, MJ6, AO	0.302	0.277	0.253	0.284
5	GW, NA, MJ6, AO, MJ8	0.307	0.276	0.201	0.292
6	GW, NA, MJ6, AO, MJ8, A	0.251	0.280	0.223	0.289
7	GW, NA, MJ6, AO, MJ8, A, MJ1	0.304	0.272	0.207	0.291
8	GW, NA, MJ6, AO, MJ8, A, MJ1, TW	0.307	0.277	0.315	0.269
9	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz	0.823	0.131	0.820	0.132
10	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET	0.870	0.118	0.842	0.128
11	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn	0.847	0.128	0.836	0.132
12	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12	0.831	0.135	0.696	0.180
13	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN	0.840	0.129	0.809	0.144
14	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34	0.855	0.123	0.824	0.138
15	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St	0.831	0.136	0.789	0.151
16	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt	0.843	0.128	0.832	0.133
17	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle	0.893	0.107	0.874	0.115
18	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg	0.856	0.126	0.851	0.125
19	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI	0.860	0.122	0.870	0.117
20	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx	0.885	0.113	0.872	0.117
21	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4	0.882	0.115	0.847	0.127
22	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh	0.868	0.121	0.866	0.119
23	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP	0.885	0.115	0.872	0.116
24	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G	0.891	0.110	0.871	0.117
25	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G, Rn	0.901	0.105	0.894	0.106
26	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G, Rn, EP	0.905	0.103	0.894	0.106
27	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G, Rn, EP, N3, MJ10	0.904	0.102	0.893	0.106
28	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G, Rn, EP, N3, MJ10, MJ2	0.905	0.101	0.898	0.104
29	GW, NA, MJ6, AO, MJ8, A, MJ1, TW, Sz, ET, Tn, N12, PN, N34, St, Snt, Qle, Qg, SI, Tx, MJ4, Qh, WP, G, Rn, EP, N3, MJ10, MJ2, Sp	0.918	0.094		

Table S3. Caption identical to Table S1, except for 7th Day.

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No.	Predictor Combinations	NS	MAE	NS	MAE
1	GW	0.303	0.276	0.237	0.284
2	GW, AO	0.315	0.274	0.222	0.287
3	GW, AO, PN	0.325	0.272	0.219	0.287
4	GW, AO, PN, MJ4	0.341	0.269	0.227	0.286
5	GW, AO, PN, MJ4, N12	0.304	0.276	0.227	0.286
6	GW, AO, PN, MJ4, N12, Sz	0.782	0.146	0.774	0.149
7	GW, AO, PN, MJ4, N12, Sz, MJ1	0.790	0.146	0.774	0.149
8	GW, AO, PN, MJ4, N12, Sz, MJ1, A	0.772	0.150	0.767	0.151
9	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7	0.763	0.152	0.770	0.151
10	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St	0.744	0.164	0.651	0.193
11	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt	0.744	0.163	0.741	0.164
12	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx	0.741	0.164	0.681	0.184
13	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6	0.764	0.157	0.746	0.163
14	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5	0.762	0.158	0.750	0.162
15	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn	0.761	0.156	0.763	0.159
16	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh	0.784	0.150	0.829	0.133
17	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP	0.782	0.151	0.833	0.133
18	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle	0.846	0.128	0.834	0.132
19	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI	0.861	0.121	0.825	0.136
20	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP	0.849	0.128	0.812	0.142
21	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G	0.841	0.130	0.812	0.143
22	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP	0.849	0.127	0.822	0.137
23	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3	0.834	0.134	0.812	0.141
24	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3, Sp	0.836	0.133	0.822	0.138
25	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3, Sp, N34	0.846	0.130	0.838	0.132
26	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3, Sp, N34, MJ2	0.832	0.135	0.824	0.136
27	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3, Sp, N34, MJ2, MJ8	0.817	0.141	0.837	0.130
28	GW, AO, PN, MJ4, N12, Sz, MJ1, A, MJ7, St, Snt, Tx, MJ6, MJ5, Tn, Qh, VP, Qle, SI, WP, G, EP, N3, Sp, N34, MJ2, MJ8, NA	0.801	0.148	0.851	0.126

29	GW,AO,PN,MJ4,N12,Sz,MJ1,A,MJ7,St,Snt,Tx,MJ6,MJ5,Tn,Qh,VP,Qle, SI,WP,G,EP,N3,Sp,N34, MJ2,MJ8,NA,TW	0.850	0.158		
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Table S4. Caption identical to Table S1, except for 14th Day.

No.	Predictor Combinations	NS	MAE	NS	MAE
1	GW	0.303	0.276	0.218	0.367
2	GW, AO	0.445	0.248	0.299	0.272
3	GW, AO, PN	0.408	0.256	0.253	0.280
4	GW, AO, PN, A	0.348	0.264	0.254	0.280
5	GW, AO, PN, A, MJ8	0.434	0.249	0.257	0.279
6	GW, AO, PN, A, MJ8, N34	0.638	0.193	0.601	0.202
7	GW, AO, PN, A, MJ8, N34, MJ2	0.639	0.193	0.628	0.196
8	GW, AO, PN, A, MJ8, N34, MJ2, MJ6	0.639	0.196	0.625	0.196
9	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St	0.613	0.203	0.628	0.195
10	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt	0.661	0.190	0.634	0.194
11	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn	0.580	0.211	0.619	0.198
12	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N	0.654	0.191	0.608	0.201
13	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7	0.638	0.191	0.583	0.207
14	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1	0.670	0.184	0.644	0.192
15	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW	0.663	0.190	0.632	0.197
16	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW	0.670	0.188	0.586	0.211
17	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle	0.585	0.212	0.598	0.208
18	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg	0.618	0.207	0.584	0.211
19	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp	0.632	0.201	0.601	0.206
20	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP	0.624	0.200	0.607	0.206
21	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn	0.660	0.193	0.599	0.206
22	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r	0.700	0.179	0.660	0.192
23	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r, G	0.716	0.177	0.659	0.191
24	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r, G, WP	0.712	0.174	0.645	0.197
25	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r, G, WP, EP	0.656	0.193	0.660	0.191
26	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r, G, WP, EP, Sz	0.658	0.192	0.605	0.209
27	GW, AO, PN, A, MJ8, N34, MJ2, MJ6, St, Snt, Tn, N, MJ7, MJ1, TW, LW, Qle, Qg, Sp, EP, Rn, r, G, WP, EP, Sz, Qh	0.670	0.193		

Table S5. Caption identical to Table S1, except for 21st Day.

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No.	Predictor Combinations	NS	MAE	NS	MAE
1	GW	0.416	0.249	0.347	0.260
2	GW, N12	0.396	0.253	0.320	0.265
3	GW, N12, MJ4	0.393	0.254	0.288	0.272
4	GW, N12, MJ4, MJ2	0.411	0.250	−0.189	0.364
5	GW, N12, MJ4, MJ2, AO	0.456	0.243	0.376	0.256
6	GW, N12, MJ4, MJ2, AO, A	0.444	0.244	0.290	0.270
7	GW, N12, MJ4, MJ2, AO, A, Sp	0.593	0.205	0.547	0.213
8	GW, N12, MJ4, MJ2, AO, A, Sp, Tx	0.545	0.213	0.537	0.214
9	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz	0.589	0.207	0.561	0.209
10	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St	0.621	0.198	0.576	0.206
11	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt	0.720	0.174	0.638	0.196
12	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8	0.643	0.199	0.677	0.185
13	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep	0.615	0.203	0.637	0.196
14	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP	0.644	0.194	0.682	0.182
15	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn	0.664	0.189	0.643	0.193
16	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg	0.718	0.170	0.649	0.192
17	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle	0.701	0.178	0.640	0.195
18	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn	0.686	0.181	0.643	0.195
19	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1	0.735	0.170	0.643	0.195
20	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI	0.689	0.184	0.648	0.194
21	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP	0.708	0.177	0.647	0.195
22	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G	0.699	0.182	0.648	0.196
23	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G, Rd	0.738	0.168	0.668	0.189
24	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G, Rd, Qh	0.672	0.186	0.643	0.193
25	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G, Rd, Qh, EP	0.655	0.194	0.648	0.196
26	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G, Rd, Qh, EP, N34	0.772	0.192	0.648	0.196
27	GW, N12, MJ4, MJ2, AO, A, Sp, Tx, Sz, St, Snt, MJ8, Ep, VP, Tn, Qg, Qle, Rn, MJ1, SOI, WP, G, Rd, Qh, EP, N34, r	0.681	0.187		

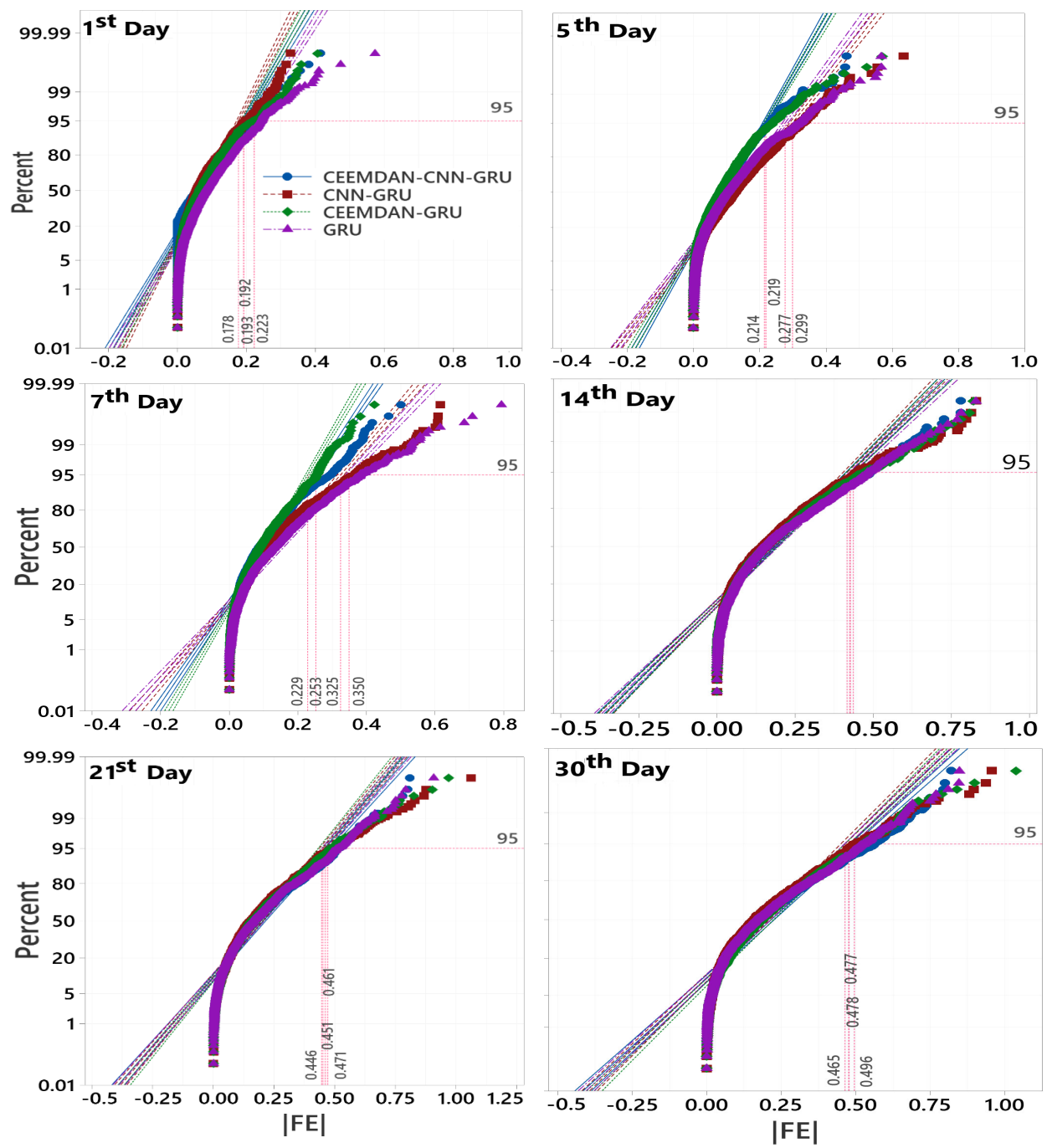
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Table S6. Caption identical to Table S1, except for 30th Day.

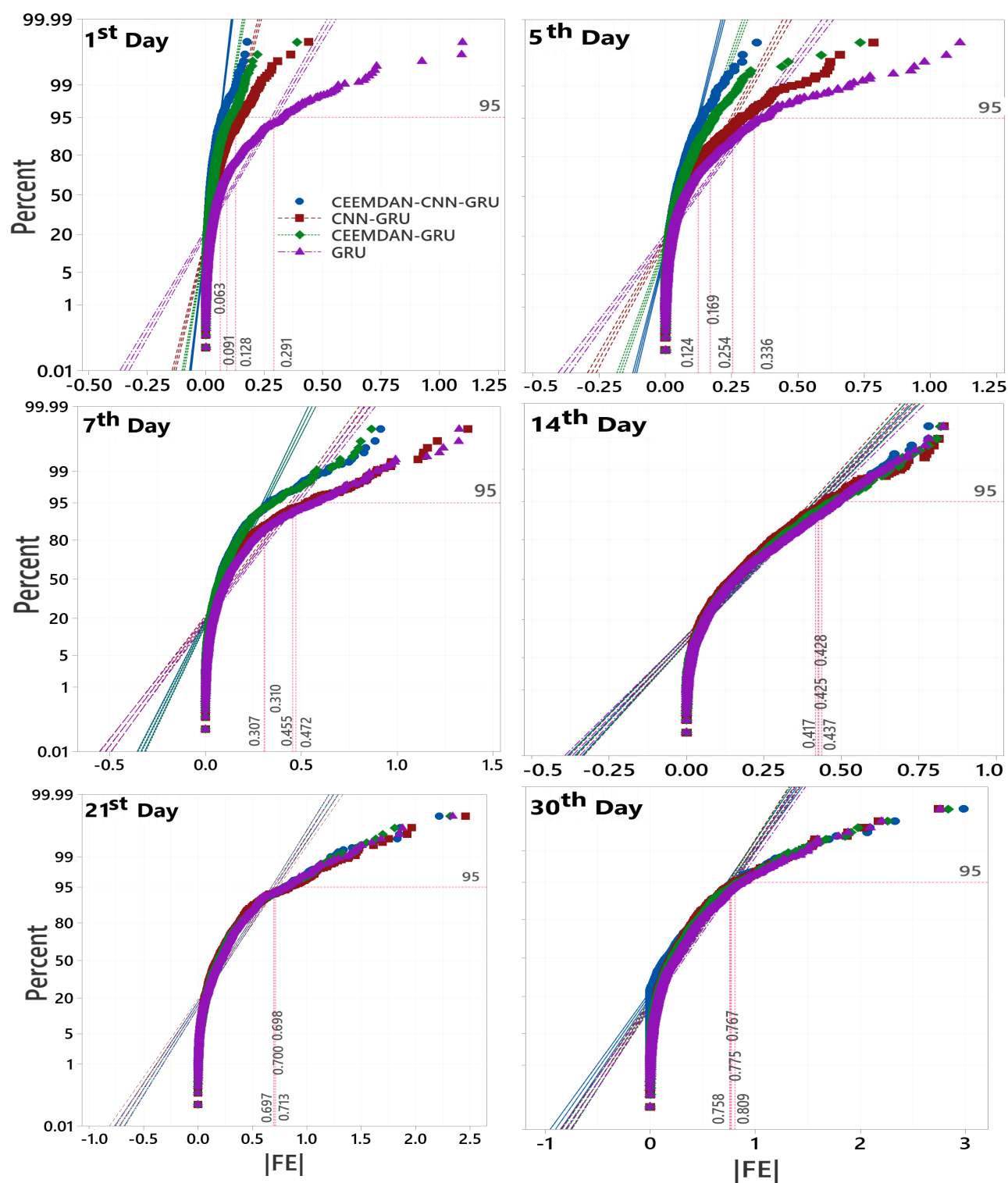
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No.	Predictor Combinations	NS	MAE	NS	MAE
1	GW	0.436	0.241	0.405	0.246
2	GW, AO	0.481	0.234	0.404	0.246
3	GW, AO, MJ5	0.487	0.232	0.416	0.243
4	GW, AO, MJ5, PN	0.562	0.217	0.360	0.254
5	GW, AO, MJ5, PN, MJ2	0.477	0.234	0.382	0.252
6	GW, AO, MJ5, PN, MJ2, MJ7	0.483	0.233	0.462	0.236
7	GW, AO, MJ5, PN, MJ2, MJ7, N12	0.515	0.224	0.365	0.255
8	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp	0.589	0.208	0.374	0.251
9	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A	0.521	0.221	0.441	0.238
10	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34	0.568	0.210	0.468	0.234
11	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz	0.630	0.197	0.497	0.228
12	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd	0.566	0.208	0.618	0.191
13	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW	0.640	0.189	−0.208	0.366
14	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP	0.582	0.204	0.502	0.225
15	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1	0.699	0.216	−0.198	0.364
16	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx	0.704	0.214	0.535	0.219
17	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle	0.705	0.181	0.550	0.214
18	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI	0.599	0.201	−0.182	0.363
19	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh	0.618	0.223	0.584	0.205
20	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh, N4			0.613	0.196
21	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh, N4, G			0.614	0.200
22	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh, N4, G, WP			0.627	0.196
23	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh, N4, G, WP, MJ4			0.607	0.203
24	GW, AO, MJ5, PN, MJ2, MJ7, N12, Sp, A, N34, Sz, Rd, LW, VP, MJ1, Tx, Qle, SOI, Qh, N4, G, WP, MJ4, EP			0.632	0.194

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(a)



(b)

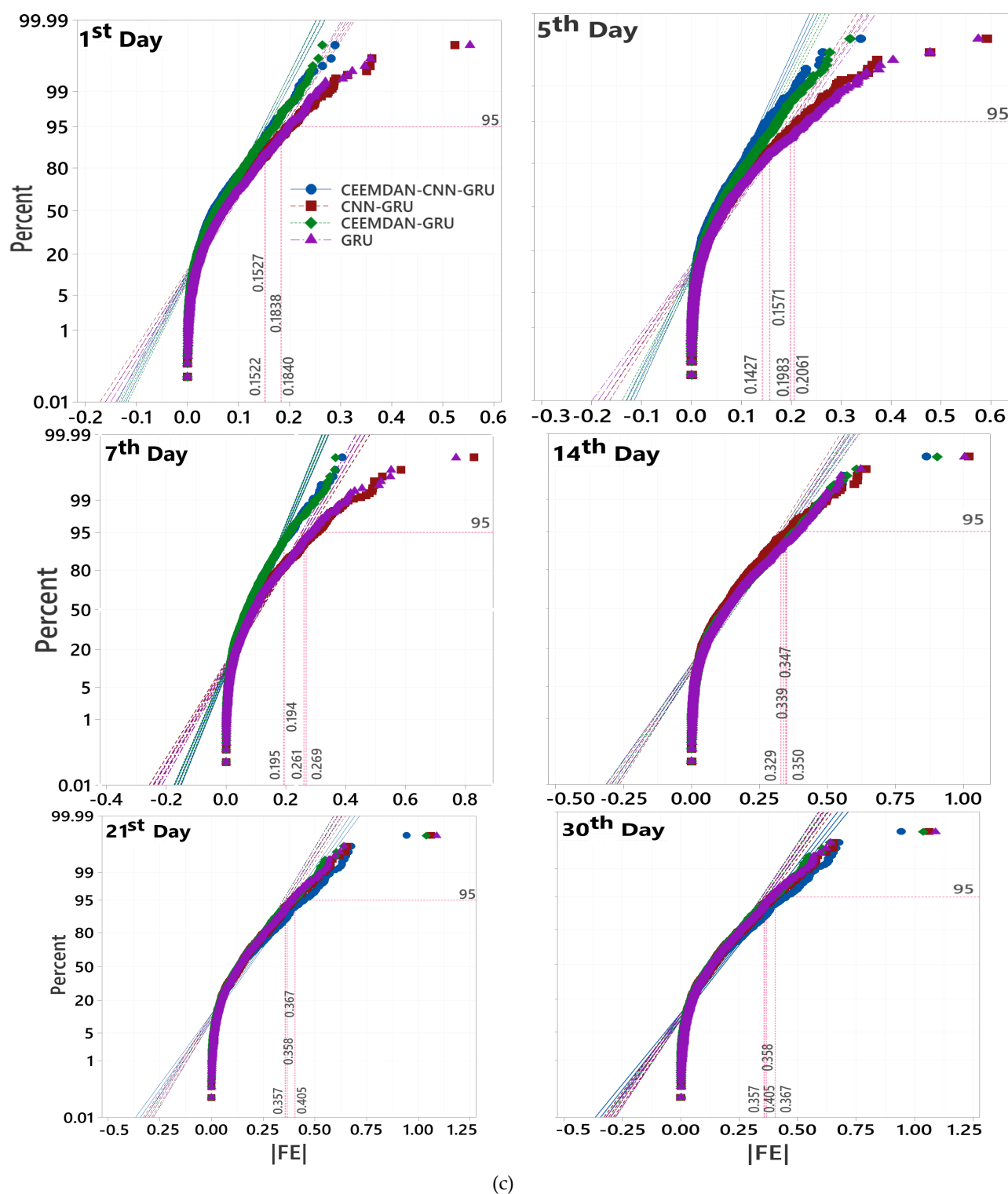


Figure S1. Probability plot for the objective model (i.e., CEEMDAN-CNN-GRU), benchmark model (i.e., CNN-GRU, CEEMDAN-GRU), and the standalone model (i.e., GRU) for (a) Deniliquin, (b) Fairfield and (c) Gabo Island stations at different n^{th} ($n = 1, 5, 7, 14, 21$ and 30) Days. The reference points are provided at 95 percentiles on the probability of comparing the model.

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