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Multi-layer retrieval of aerosol optical depth in the troposphere using SEVIRI data: a case study of the European continent

Maryam Pashayi et al.

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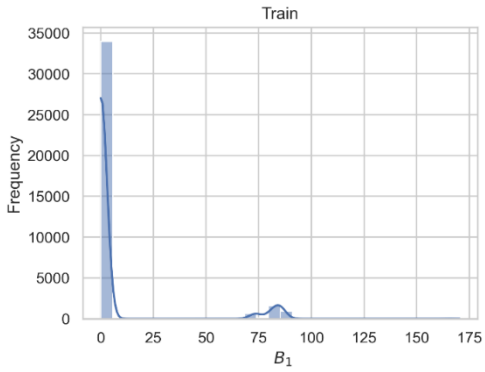
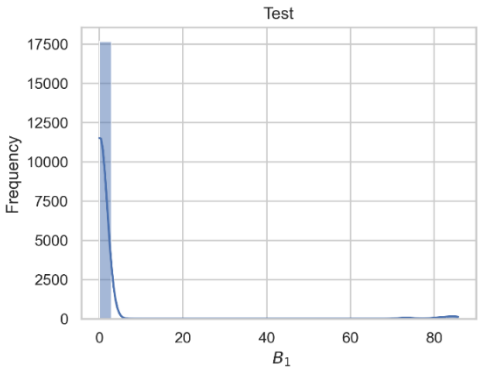

Train
Frequency
B_1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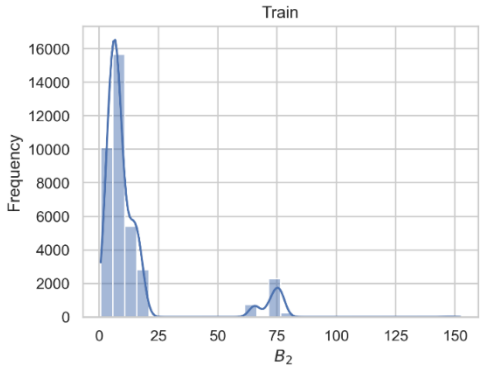
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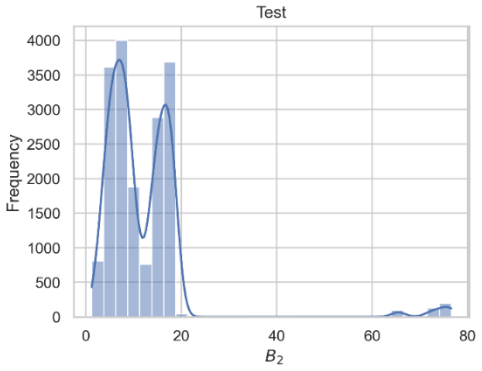
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Frequency
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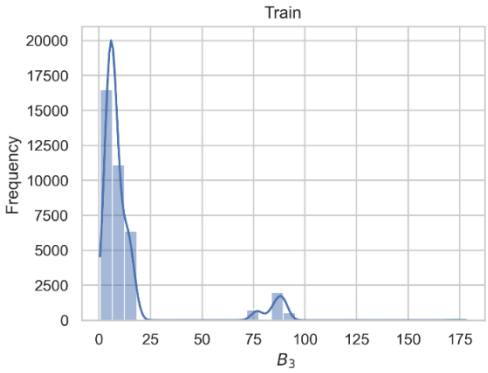
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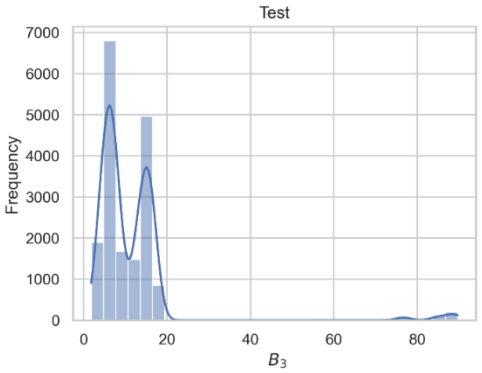
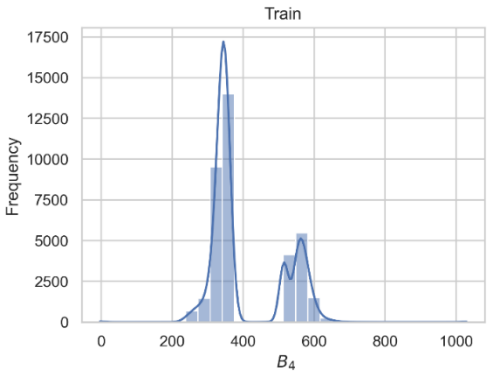

Test
Frequency
B_3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Frequency
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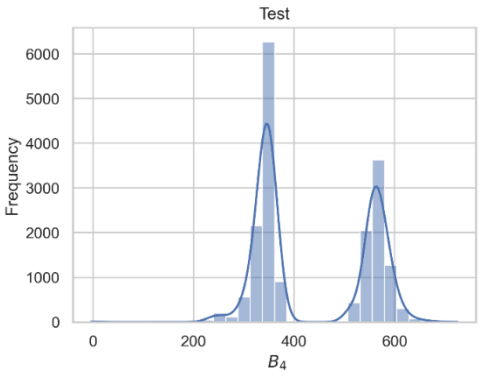
Test
Frequency
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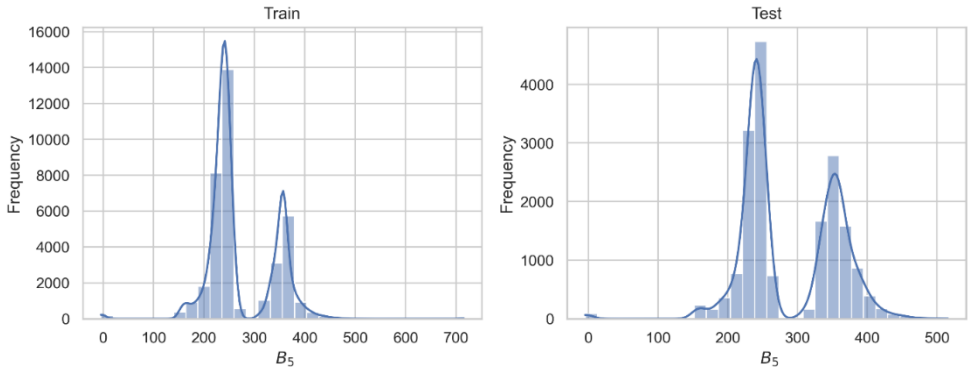
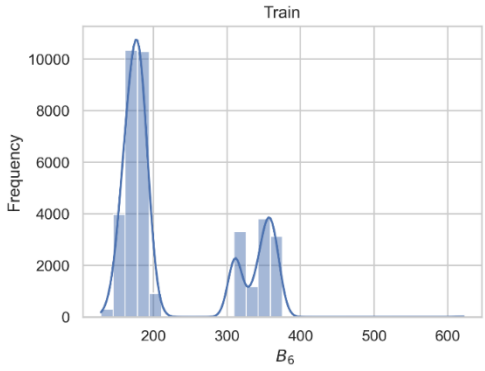

Train
Frequency
B_5

Test
Frequency
B_5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Frequency
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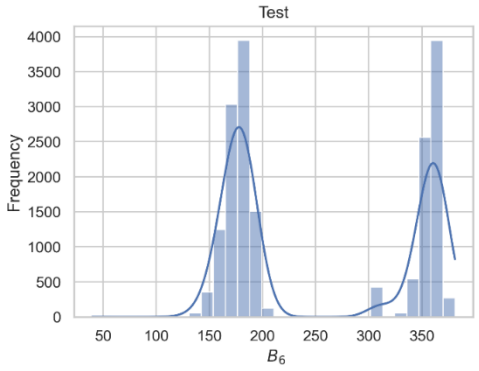
Test
Frequency
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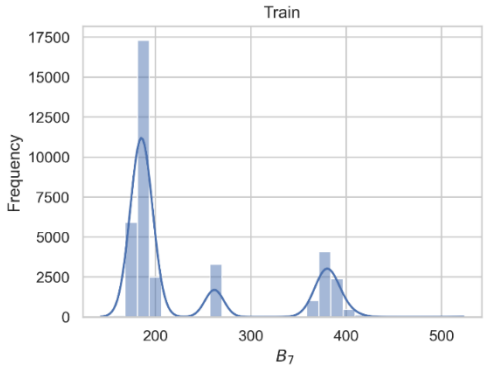
Train
Frequency
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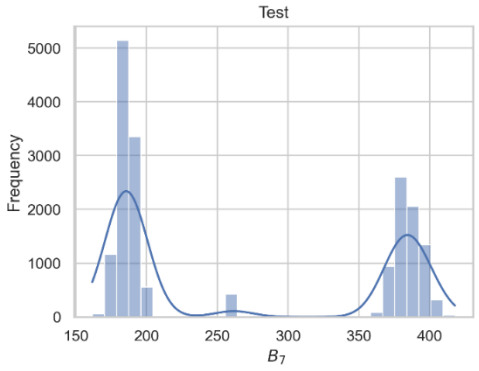
Test
Frequency
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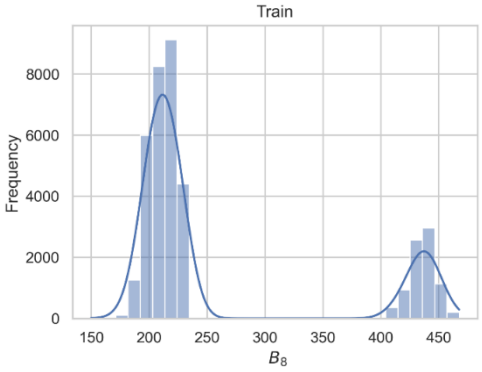
Train
Frequency
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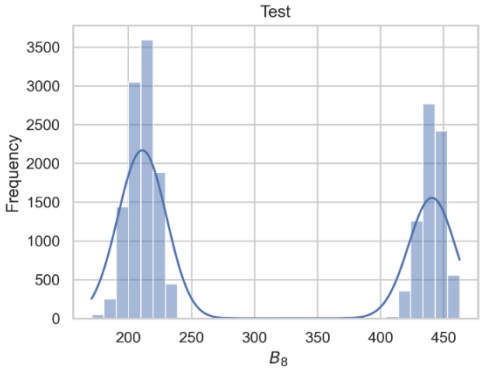
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Frequency
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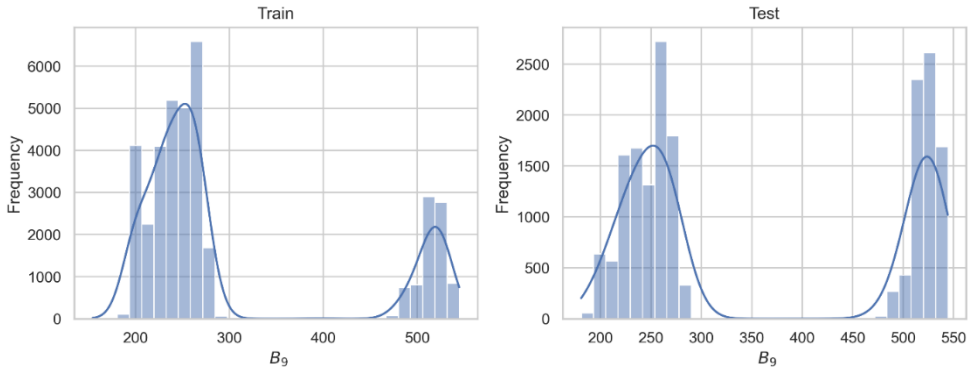
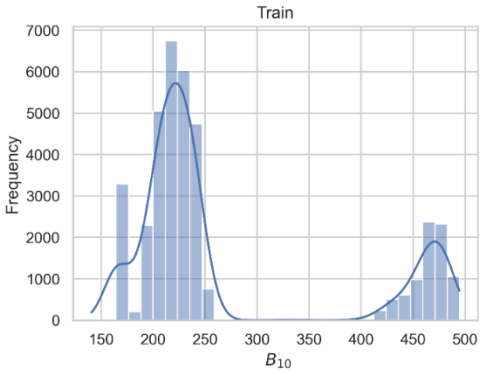
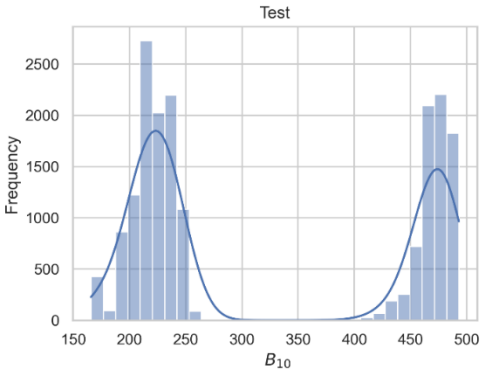
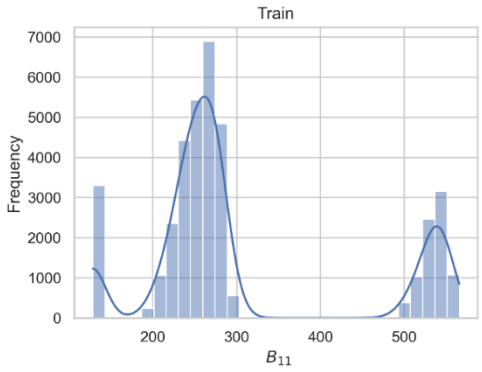
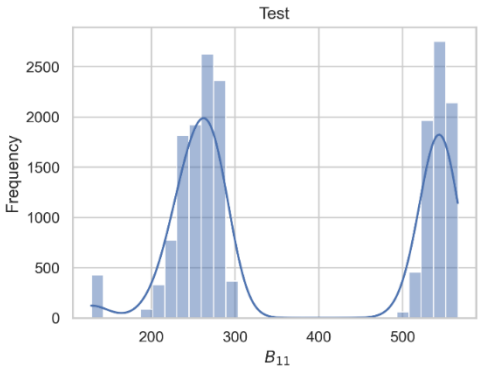

Train
Frequency
B_9

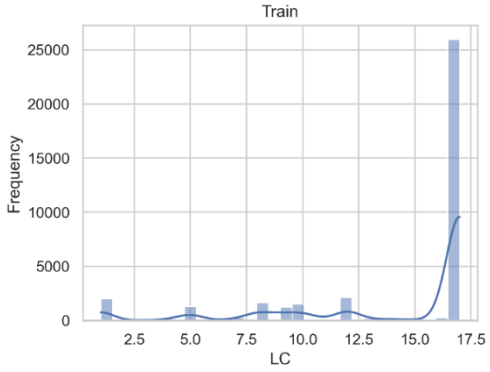
Test
Frequency
B_9

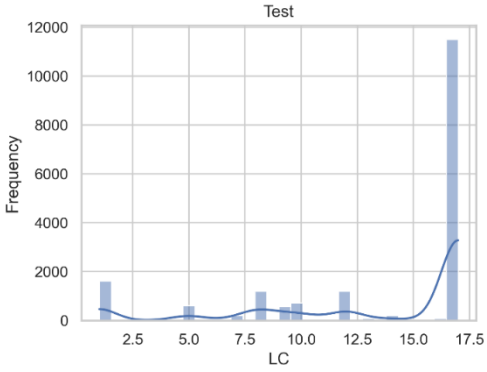

Train
Frequency
B_{10}

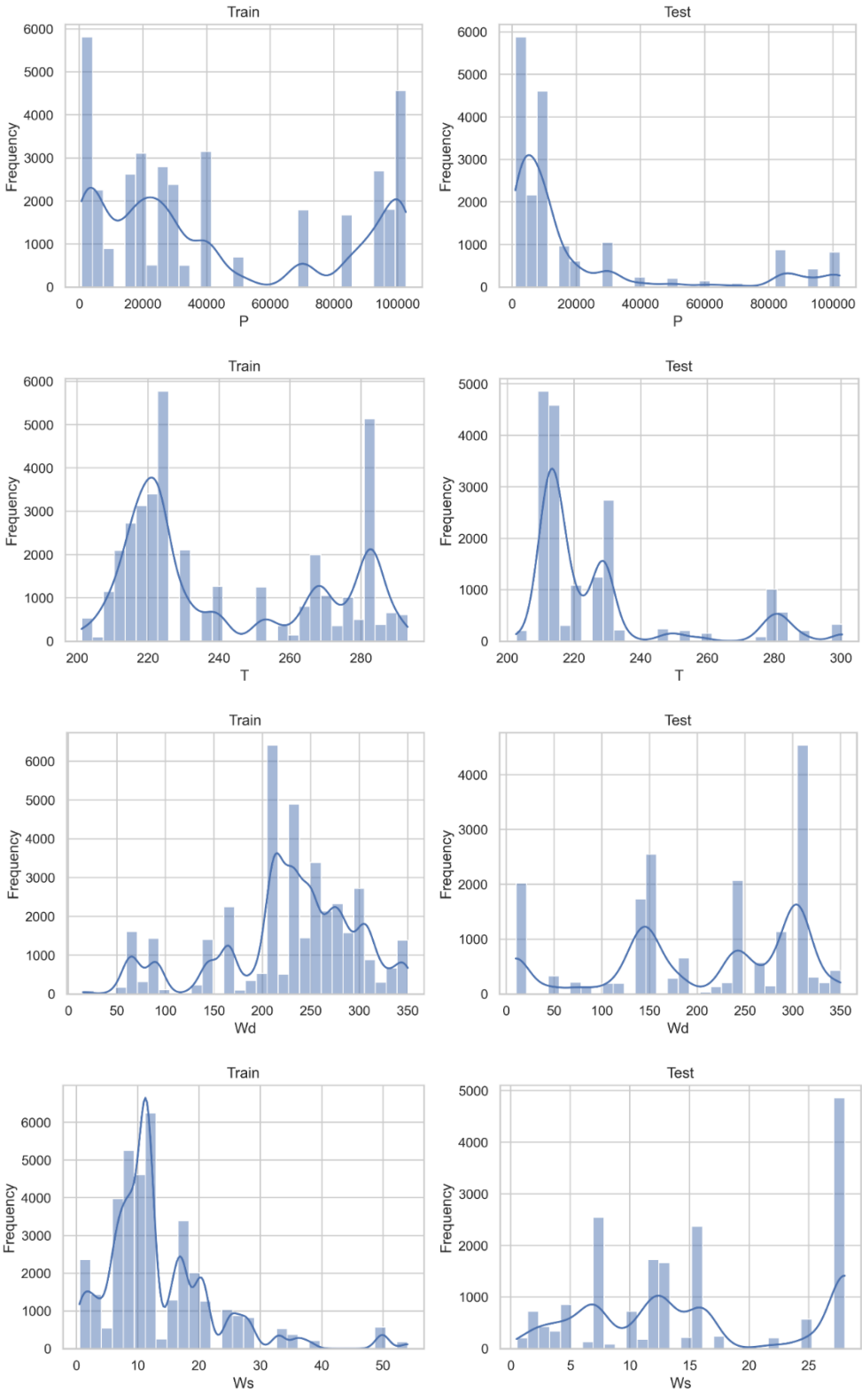

Test
Frequency
B_{10}


Train
Frequency
B_{11}


Test
Frequency
B_{11}


Train
Frequency
LC


Test
Frequency
LC


Train
Test
Frequency
P
T
Wd
Ws

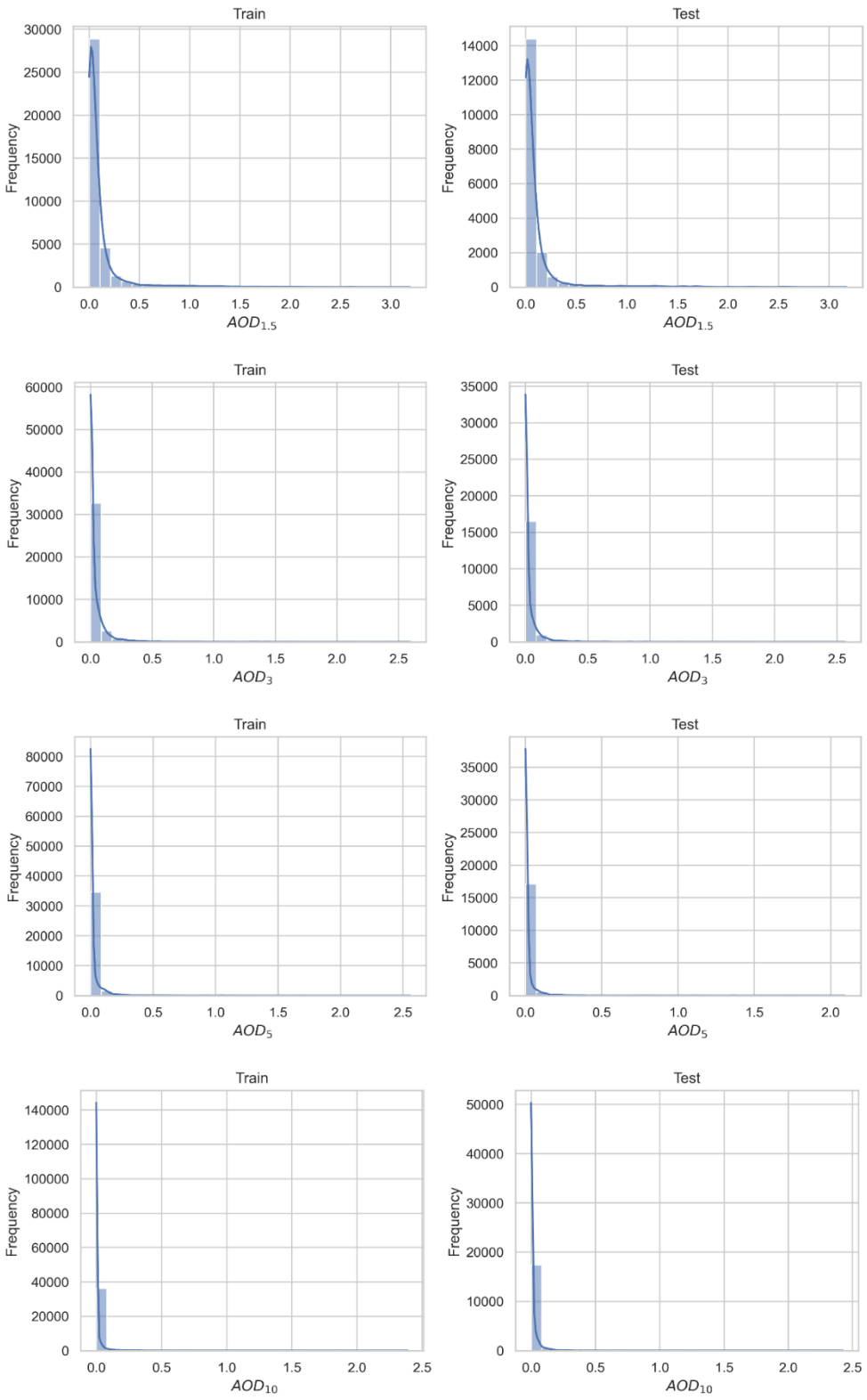


Figure S1. Distribution of SEVIRI bands (B_1 to B_{11}), P, T, LC, Ws, Wd, and multi-layer AOD values ($AOD_{1.5}$, AOD_3, AOD_5, and AOD_{10}) across the years 2017–2018 (training dataset) and 2019 (testing dataset).

Table S1. Statistical Metrics for 16 Cases Using Various Combinations of Meteorological and Land Cover Features with *Bi* as Input Features for the XGB Model.

XGB		MAE																			
		winter				spring				summer				autumn				annual			
Features	ID	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}
B_i	1	0.049	0.014	0.018	0.007	0.0222	0.010	0.010	0.008	0.0303	0.019	0.011	0.01	0.0265	0.012	0.008	0.004	0.0225	0.011	0.009	0.006
B_i, LC	2	0.036	0.014	0.018	0.006	0.0203	0.01	0.009	0.009	0.0294	0.020	0.012	0.010	0.0244	0.012	0.008	0.005	0.0209	0.011	0.008	0.005
B_i, P	3	0.007	0.018	0.014	0.035	0.0087	0.007	0.004	0.007	0.0246	0.015	0.009	0.008	0.0182	0.011	0.007	0.002	0.0108	0.008	0.006	0.004
B_i, T	4	0.036	0.013	0.018	0.006	0.02	0.01	0.009	0.009	0.0249	0.017	0.008	0.008	0.0191	0.010	0.006	0.003	0.0115	0.007	0.006	0.004
B_i, Ws, Wd	5	0.031	0.024	0.008	0.006	0.008	0.005	0.004	0.003	0.0165	0.022	0.008	0.009	0.0176	0.014	0.011	0.007	0.0033	0.007	0.002	0.001
B_i, LC, P	6	0.035	0.014	0.019	0.007	0.0209	0.010	0.010	0.008	0.0302	0.021	0.012	0.01	0.0199	0.012	0.009	0.004	0.0223	0.011	0.008	0.006
B_i, LC, T	7	0.038	0.014	0.018	0.006	0.0212	0.019	0.010	0.007	0.0297	0.02	0.012	0.010	0.021	0.012	0.008	0.004	0.0198	0.012	0.013	0.01
B_i, LC, Ws, Wd	8	0.124	0.016	0.021	0.008	0.0435	0.022	0.020	0.013	0.0224	0.009	0.006	0.007	0.0224	0.009	0.006	0.007	0.0226	0.012	0.008	0.006
B_i, P, T	9	0.041	0.014	0.015	0.006	0.0095	0.006	0.003	0.008	0.0229	0.017	0.01	0.009	0.0214	0.009	0.006	0.004	0.0115	0.008	0.005	0.004
B_i, P, Ws, Wd	10	0.042	0.015	0.021	0.009	0.0358	0.023	0.019	0.012	0.0299	0.022	0.013	0.011	0.0292	0.015	0.008	0.004	0.0229	0.012	0.006	0.006
B_i, T, Ws, Wd	11	0.009	0.022	0.016	0.042	0.0295	0.029	0.019	0.011	0.0319	0.028	0.015	0.011	0.0257	0.013	0.009	0.004	0.0231	0.013	0.013	0.010
B_i, LC, P, T	12	0.071	0.014	0.017	0.007	0.0283	0.034	0.02	0.012	0.0468	0.025	0.013	0.012	0.0266	0.013	0.008	0.004	0.0175	0.009	0.003	0.006
B_i, LC, P, Ws, Wd	13	0.041	0.014	0.021	0.008	0.0449	0.029	0.030	0.024	0.0333	0.028	0.014	0.011	0.0299	0.013	0.008	0.005	0.0258	0.012	0.011	0.010
B_i, LC, T, Ws, Wd	14	0.039	0.016	0.022	0.009	0.0454	0.031	0.022	0.021	0.034	0.029	0.016	0.011	0.0264	0.013	0.008	0.009	0.0234	0.012	0.013	0.011
B_i, P, T, Ws, Wd	15	0.042	0.017	0.023	0.009	0.0348	0.026	0.022	0.018	0.0338	0.021	0.013	0.010	0.0308	0.014	0.011	0.004	0.0276	0.012	0.008	0.006
B_i, LC, P, T, Ws, Wd	16	0.045	0.018	0.024	0.009	0.0448	0.031	0.031	0.024	0.0851	0.065	0.075	0.041	0.0334	0.014	0.008	0.005	0.0218	0.011	0.008	0.006
		RMSE																			
B_i	1	0.0751	0.029	0.036	0.034	0.03	0.022	0.029	0.025	0.0491	0.028	0.021	0.025	0.0383	0.024	0.024	0.013	0.0349	0.018	0.016	0.017
B_i, LC	2	0.0581	0.029	0.035	0.033	0.0277	0.02	0.028	0.026	0.0478	0.029	0.021	0.025	0.0356	0.023	0.024	0.016	0.0322	0.017	0.015	0.016
B_i, P	3	0.0352	0.035	0.031	0.057	0.0176	0.018	0.027	0.022	0.0379	0.026	0.018	0.02	0.0248	0.021	0.024	0.009	0.014	0.011	0.011	0.014
B_i, T	4	0.0569	0.029	0.034	0.032	0.0273	0.02	0.028	0.023	0.0357	0.027	0.016	0.020	0.0253	0.02	0.024	0.011	0.0151	0.011	0.011	0.015
B_i, Ws, Wd	5	0.0392	0.035	0.021	0.018	0.0103	0.007	0.005	0.004	0.0347	0.030	0.021	0.018	0.0265	0.04	0.042	0.017	0.0091	0.013	0.007	0.006
B_i, LC, P	6	0.0565	0.031	0.037	0.034	0.0291	0.021	0.03	0.023	0.0489	0.03	0.022	0.024	0.0313	0.024	0.025	0.015	0.0337	0.018	0.016	0.017
B_i, LC, T	7	0.0585	0.029	0.034	0.033	0.0383	0.026	0.020	0.030	0.0483	0.029	0.021	0.026	0.0317	0.023	0.025	0.015	0.0307	0.018	0.021	0.020
B_i, LC, Ws, Wd	8	0.1814	0.033	0.040	0.035	0.0589	0.036	0.027	0.023	0.032	0.021	0.017	0.031	0.032	0.021	0.017	0.031	0.0347	0.018	0.015	0.016

B_i, P, T	9	0.0529	0.029	0.033	0.032	0.0209	0.016	0.027	0.021	0.0326	0.028	0.019	0.02	0.0268	0.019	0.023	0.012	0.0148	0.012	0.01	0.014
B_i, P, Ws, Wd	10	0.0668	0.031	0.039	0.037	0.0434	0.036	0.026	0.022	0.0438	0.031	0.024	0.024	0.0425	0.027	0.024	0.013	0.0343	0.018	0.015	0.017
B_i, T, Ws, Wd	11	0.0675	0.034	0.041	0.039	0.071	0.039	0.026	0.022	0.0447	0.041	0.025	0.025	0.0388	0.024	0.024	0.015	0.0351	0.019	0.022	0.022
B_i, LC, P, T	12	0.1001	0.029	0.032	0.034	0.0514	0.049	0.027	0.022	0.068	0.036	0.023	0.027	0.0375	0.024	0.024	0.014	0.0353	0.016	0.01	0.02
B_i, LC, P, Ws, Wd	13	0.0605	0.030	0.039	0.037	0.0647	0.061	0.04	0.032	0.0461	0.039	0.024	0.025	0.045	0.023	0.025	0.014	0.0376	0.019	0.019	0.023
B_i, LC, T, Ws, Wd	14	0.0604	0.034	0.041	0.038	0.0567	0.070	0.028	0.028	0.0486	0.042	0.027	0.025	0.0384	0.024	0.024	0.015	0.0352	0.019	0.021	0.022
B_i, P, T, Ws, Wd	15	0.0662	0.038	0.041	0.039	0.0425	0.042	0.030	0.026	0.0606	0.032	0.024	0.023	0.0447	0.027	0.026	0.013	0.0398	0.019	0.016	0.017
B_i, LC, P, T, Ws, Wd	16	0.0665	0.034	0.044	0.039	0.0574	0.068	0.04	0.034	0.121	0.094	0.091	0.066	0.0484	0.026	0.024	0.015	0.0331	0.018	0.015	0.016
R																					
B_i	1	0.944	0.945	0.697	0.78	0.986	0.995	0.873	0.95	0.971	0.945	0.936	0.876	0.973	0.951	0.87	0.915	0.991	0.984	0.967	0.926
B_i, LC	2	0.984	0.939	0.734	0.797	0.992	0.996	0.901	0.924	0.972	0.94	0.933	0.872	0.981	0.953	0.866	0.788	0.993	0.982	0.973	0.918
B_i, P	3	0.988	0.933	0.724	0.728	0.967	0.948	0.872	0.917	0.945	0.926	0.939	0.889	0.972	0.929	0.837	0.93	0.993	0.983	0.977	0.926
B_i, T	4	0.984	0.942	0.743	0.793	0.991	0.996	0.905	0.94	0.951	0.917	0.947	0.884	0.971	0.938	0.844	0.896	0.992	0.982	0.974	0.934
B_i, Ws, Wd	5	0.995	0.988	0.99	0.98	0.995	0.992	0.986	0.991	0.994	0.981	0.98	0.987	0.987	0.949	0.936	0.956	0.997	0.989	0.993	0.991
B_i, LC, P	6	0.988	0.926	0.696	0.757	0.989	0.995	0.873	0.952	0.97	0.934	0.925	0.877	0.994	0.959	0.847	0.881	0.99	0.982	0.968	0.923
B_i, LC, T	7	0.978	0.943	0.741	0.821	0.996	0.993	0.996	0.913	0.973	0.944	0.936	0.858	0.993	0.959	0.851	0.884	0.994	0.977	0.917	0.857
B_i, LC, Ws, Wd	8	0.989	0.989	0.987	0.835	0.963	0.996	0.993	0.975	0.989	0.989	0.987	0.835	0.96	0.948	0.892	0.826	0.989	0.981	0.97	0.924
B_i, P, T	9	0.943	0.899	0.81	0.747	0.949	0.957	0.871	0.922	0.959	0.914	0.927	0.882	0.968	0.944	0.851	0.884	0.993	0.981	0.978	0.929
B_i, P, Ws, Wd	10	0.967	0.91	0.661	0.636	0.982	0.996	0.989	0.981	0.969	0.924	0.914	0.873	0.961	0.943	0.892	0.889	0.989	0.978	0.971	0.919
B_i, T, Ws, Wd	11	0.973	0.89	0.633	0.565	0.93	0.978	0.985	0.983	0.97	0.822	0.909	0.866	0.986	0.959	0.859	0.886	0.989	0.975	0.908	0.835
B_i, LC, P, T	12	0.788	0.933	0.782	0.785	0.986	0.963	0.994	0.991	0.822	0.882	0.921	0.839	0.983	0.957	0.873	0.859	0.96	0.985	0.985	0.937
B_i, LC, P, Ws, Wd	13	0.971	0.918	0.661	0.656	0.988	0.943	0.986	0.967	0.962	0.842	0.914	0.873	0.949	0.96	0.861	0.863	0.98	0.977	0.943	0.832
B_i, LC, T, Ws, Wd	14	0.976	0.885	0.63	0.602	0.991	0.926	0.996	0.976	0.958	0.807	0.89	0.883	0.974	0.959	0.865	0.858	0.988	0.978	0.923	0.833
B_i, P, T, Ws, Wd	15	0.975	0.845	0.622	0.564	0.986	0.993	0.988	0.981	0.948	0.921	0.913	0.896	0.953	0.944	0.836	0.915	0.972	0.977	0.968	0.919
B_i, LC, P, T, Ws, Wd	16	0.956	0.882	0.571	0.559	0.991	0.938	0.992	0.979	0.983	0.983	0.973	0.968	0.939	0.944	0.862	0.883	0.992	0.982	0.971	0.934
R^2																					
B_i	1	0.759	0.792	0.456	0.479	0.887	0.868	0.691	0.758	0.77	0.801	0.824	0.637	0.857	0.808	0.679	0.727	0.896	0.897	0.88	0.802
B_i, LC	2	0.856	0.792	0.504	0.512	0.903	0.887	0.714	0.725	0.783	0.789	0.819	0.639	0.876	0.826	0.685	0.606	0.912	0.902	0.892	0.808
B_i, P	3	0.837	0.791	0.775	0.663	0.914	0.88	0.736	0.818	0.864	0.831	0.873	0.765	0.94	0.855	0.692	0.863	0.983	0.959	0.946	0.855

B_i, T	4	0.862	0.797	0.526	0.532	0.894	0.888	0.722	0.785	0.879	0.814	0.891	0.753	0.938	0.871	0.701	0.799	0.981	0.959	0.94	0.834
B_i, Ws, Wd	5	0.881	0.869	0.893	0.851	0.901	0.879	0.862	0.885	0.889	0.879	0.876	0.86	0.966	0.874	0.826	0.904	0.993	0.974	0.985	0.981
B_i, LC, P	6	0.864	0.767	0.446	0.474	0.883	0.88	0.679	0.788	0.773	0.776	0.797	0.643	0.905	0.817	0.663	0.663	0.903	0.898	0.882	0.794
B_i, LC, T	7	0.854	0.795	0.518	0.516	0.902	0.901	0.886	0.668	0.778	0.794	0.815	0.607	0.902	0.826	0.669	0.657	0.92	0.894	0.782	0.702
B_i, LC, Ws, Wd	8	0.885	0.885	0.865	0.544	0.908	0.812	0.803	0.856	0.798	0.773	0.793	0.716	0.816	0.804	0.716	0.681	0.897	0.896	0.886	0.88
B_i, P, T	9	0.881	0.799	0.547	0.541	0.88	0.903	0.738	0.824	0.899	0.804	0.851	0.768	0.93	0.884	0.718	0.78	0.981	0.957	0.952	0.862
B_i, P, Ws, Wd	10	0.81	0.765	0.37	0.374	0.88	0.911	0.907	0.865	0.817	0.766	0.771	0.668	0.824	0.76	0.681	0.723	0.9	0.891	0.888	0.79
B_i, T, Ws, Wd	11	0.805	0.724	0.321	0.317	0.864	0.844	0.831	0.867	0.81	0.587	0.746	0.622	0.854	0.816	0.679	0.654	0.895	0.878	0.765	0.639
B_i, LC, P, T	12	0.573	0.793	0.58	0.462	0.825	0.805	0.893	0.861	0.621	0.67	0.783	0.577	0.863	0.816	0.681	0.683	0.896	0.967	0.969	0.86
B_i, LC, P, Ws, Wd	13	0.844	0.778	0.376	0.389	0.847	0.749	0.858	0.839	0.798	0.612	0.763	0.635	0.803	0.831	0.675	0.682	0.88	0.887	0.827	0.632
B_i, LC, T, Ws, Wd	14	0.844	0.724	0.309	0.352	0.886	0.67	0.907	0.863	0.776	0.556	0.712	0.623	0.856	0.818	0.678	0.673	0.894	0.888	0.791	0.643
B_i, P, T, Ws, Wd	15	0.813	0.651	0.322	0.316	0.891	0.882	0.881	0.867	0.751	0.746	0.772	0.749	0.805	0.762	0.636	0.747	0.865	0.884	0.88	0.796
B_i, LC, P, T, Ws, Wd	16	0.812	0.717	0.203	0.312	0.888	0.692	0.872	0.853	0.833	0.842	0.842	0.804	0.772	0.772	0.677	0.65	0.907	0.898	0.887	0.806

Table S2. Statistical Metrics for 16 Cases Using Various Combinations of Meteorological and Land Cover Features with *Bi* as Input Features for the RF Model.

RF		**MAE**																			
		winter				spring				summer				autumn				annual			
Features	ID	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}	$AOD_{1.5}$	AOD_3	AOD_5	AOD_{10}
B_i	1	0.0102	0.009	0.004	0.014	0.0132	0.01	0.009	0.008	0.0234	0.016	0.01	0.008	0.0177	0.009	0.007	0.002	0.0098	0.008	0.005	0.008
B_i, LC	2	0.01	0.009	0.005	0.013	0.0149	0.012	0.017	0.008	0.0224	0.017	0.01	0.008	0.0185	0.009	0.007	0.002	0.0091	0.008	0.005	0.008
B_i, P	3	0.0107	0.007	0.01	0.008	0.0131	0.01	0.009	0.008	0.0228	0.015	0.010	0.008	0.0197	0.009	0.007	0.002	0.0118	0.007	0.005	0.003
B_i, T	4	0.0125	0.007	0.009	0.008	0.013	0.012	0.009	0.008	0.0223	0.016	0.01	0.008	0.0193	0.009	0.007	0.002	0.0111	0.008	0.006	0.003
B_i, Ws, Wd	5	0.0017	0.007	0.005	0.002	0.0165	0.01	0.009	0.008	0.0204	0.017	0.01	0.008	0.0387	0.011	0.005	0.001	0.0128	0.007	0.004	0.003
B_i, LC, P	6	0.0068	0.002	0.009	0.003	0.0127	0.010	0.009	0.008	0.0225	0.016	0.010	0.008	0.0135	0.008	0.007	0.002	0.009	0.008	0.005	0.008
B_i, LC, T	7	0.0118	0.012	0.009	0.008	0.0131	0.012	0.009	0.008	0.0227	0.017	0.010	0.008	0.0192	0.008	0.007	0.002	0.009	0.008	0.005	0.01
B_i, LC, Ws, Wd	8	0.0103	0.010	0.01	0.005	0.0183	0.012	0.011	0.009	0.0246	0.017	0.01	0.008	0.026	0.01	0.005	0.002	0.0161	0.011	0.008	0.004
B_i, P, T	9	0.0177	0.013	0.011	0.009	0.0127	0.011	0.009	0.008	0.0216	0.015	0.01	0.008	0.0202	0.008	0.007	0.002	0.0132	0.009	0.006	0.003
B_i, P, Ws, Wd	10	0.0122	0.009	0.01	0.005	0.0107	0.010	0.009	0.008	0.0225	0.018	0.01	0.008	0.0242	0.011	0.005	0.002	0.016	0.011	0.008	0.007

B_i, T, Ws, Wd	11	0.0103	0.010	0.012	0.005	0.0108	0.011	0.01	0.008	0.0238	0.027	0.013	0.008	0.0167	0.009	0.007	0.002	0.0121	0.008	0.005	0.01
B_i, LC, P, T	12	0.0135	0.011	0.01	0.005	0.0128	0.011	0.009	0.008	0.047	0.021	0.010	0.009	0.0193	0.008	0.007	0.002	0.0138	0.011	0.012	0.003
B_i, LC, P, Ws, Wd	13	0.0113	0.01	0.01	0.005	0.0294	0.013	0.010	0.009	0.0228	0.027	0.013	0.008	0.0256	0.009	0.006	0.002	0.0171	0.008	0.005	0.01
B_i, LC, T, Ws, Wd	14	0.0094	0.010	0.010	0.005	0.0121	0.011	0.01	0.008	0.0231	0.028	0.014	0.008	0.0195	0.0089	0.006	0.001	0.0128	0.011	0.011	0.016
B_i, P, T, Ws, Wd	15	0.0255	0.01	0.011	0.013	0.0231	0.015	0.021	0.016	0.0297	0.017	0.011	0.008	0.0265	0.009	0.006	0.002	0.0225	0.007	0.005	0.003
B_i, LC, P, T, Ws, Wd	16	0.0101	0.011	0.012	0.005	0.0106	0.011	0.01	0.008	0.0428	0.02	0.012	0.009	0.0295	0.009	0.006	0.003	0.0184	0.017	0.011	0.01

RMSE

B_i	1	0.0072	0.015	0.017	0.028	0.0184	0.013	0.015	0.018	0.0328	0.025	0.021	0.017	0.0242	0.02	0.024	0.005	0.0126	0.015	0.013	0.016
B_i, LC	2	0.0146	0.017	0.028	0.016	0.0194	0.015	0.021	0.033	0.0317	0.026	0.021	0.017	0.0246	0.021	0.024	0.005	0.0118	0.015	0.013	0.016
B_i, P	3	0.0138	0.011	0.017	0.017	0.019	0.013	0.015	0.019	0.0313	0.023	0.023	0.017	0.0276	0.019	0.023	0.005	0.0153	0.013	0.013	0.008
B_i, T	4	0.017	0.012	0.017	0.015	0.0187	0.014	0.015	0.019	0.032	0.025	0.022	0.017	0.0264	0.02	0.025	0.006	0.0145	0.014	0.013	0.007
B_i, Ws, Wd	5	0.0023	0.017	0.007	0.017	0.0211	0.013	0.014	0.019	0.0278	0.028	0.022	0.017	0.052	0.025	0.016	0.005	0.0154	0.012	0.011	0.007
B_i, LC, P	6	0.0093	0.026	0.013	0.019	0.0186	0.013	0.015	0.019	0.0318	0.025	0.023	0.017	0.017	0.018	0.024	0.005	0.0118	0.015	0.012	0.016
B_i, LC, T	7	0.0161	0.015	0.017	0.028	0.0189	0.014	0.014	0.019	0.0321	0.026	0.022	0.017	0.0236	0.019	0.023	0.005	0.0116	0.014	0.013	0.018
B_i, LC, Ws, Wd	8	0.0157	0.015	0.017	0.026	0.0242	0.017	0.014	0.015	0.032	0.026	0.023	0.018	0.0349	0.020	0.018	0.005	0.0214	0.021	0.017	0.009
B_i, P, T	9	0.0225	0.019	0.014	0.017	0.0168	0.01	0.015	0.019	0.0323	0.025	0.022	0.017	0.0257	0.019	0.027	0.005	0.0173	0.017	0.014	0.008
B_i, P, Ws, Wd	10	0.0172	0.014	0.017	0.026	0.0149	0.013	0.015	0.02	0.0315	0.025	0.022	0.018	0.0331	0.021	0.016	0.005	0.0214	0.021	0.018	0.015
B_i, T, Ws, Wd	11	0.0134	0.015	0.018	0.025	0.0133	0.015	0.015	0.02	0.0297	0.041	0.025	0.018	0.0212	0.02	0.025	0.007	0.0154	0.014	0.013	0.019
B_i, LC, P, T	12	0.0182	0.014	0.017	0.028	0.0168	0.014	0.016	0.019	0.0645	0.034	0.023	0.02	0.0245	0.02	0.024	0.005	0.0422	0.049	0.035	0.004
B_i, LC, P, Ws, Wd	13	0.0144	0.014	0.017	0.026	0.0422	0.018	0.013	0.015	0.0305	0.039	0.025	0.018	0.0365	0.020	0.022	0.005	0.0223	0.014	0.013	0.019
B_i, LC, T, Ws, Wd	14	0.0123	0.015	0.017	0.025	0.0144	0.014	0.014	0.02	0.0312	0.042	0.027	0.017	0.0247	0.019	0.023	0.004	0.0163	0.015	0.035	0.035
B_i, P, T, Ws, Wd	15	0.0368	0.015	0.014	0.017	0.0521	0.021	0.034	0.040	0.0466	0.027	0.023	0.017	0.0346	0.02	0.023	0.006	0.0283	0.013	0.014	0.008
B_i, LC, P, T, Ws, Wd	16	0.0132	0.014	0.018	0.024	0.0144	0.014	0.015	0.02	0.0726	0.03	0.025	0.019	0.0388	0.02	0.023	0.008	0.0222	0.023	0.014	0.013

R

B_i	1	0.973	0.933	0.836	0.891	0.979	0.976	0.968	0.936	0.96	0.936	0.913	0.912	0.972	0.943	0.842	0.985	0.995	0.963	0.961	0.905
B_i, LC	2	0.973	0.933	0.84	0.906	0.987	0.971	0.922	0.789	0.961	0.925	0.915	0.915	0.972	0.935	0.837	0.983	0.995	0.966	0.962	0.906
B_i, P	3	0.984	0.985	0.932	0.959	0.975	0.977	0.968	0.931	0.963	0.938	0.899	0.914	0.964	0.951	0.851	0.984	0.992	0.972	0.96	0.981
B_i, T	4	0.981	0.984	0.935	0.965	0.975	0.974	0.968	0.929	0.964	0.932	0.91	0.914	0.967	0.933	0.824	0.979	0.992	0.968	0.958	0.981
B_i, Ws, Wd	5	1	0.977	0.995	0.956	0.985	0.977	0.967	0.928	0.966	0.914	0.906	0.914	0.875	0.923	0.93	0.984	0.993	0.984	0.972	0.985

B_i, LC, P	6	0.981	0.87	0.954	0.846	0.976	0.975	0.968	0.932	0.96	0.929	0.897	0.913	0.987	0.952	0.846	0.984	0.995	0.963	0.963	0.906
B_i, LC, T	7	0.983	0.973	0.934	0.84	0.975	0.974	0.97	0.93	0.96	0.928	0.905	0.913	0.975	0.942	0.848	0.98	0.995	0.967	0.963	0.873
B_i, LC, Ws, Wd	8	0.987	0.973	0.931	0.856	0.98	0.979	0.972	0.967	0.959	0.924	0.9	0.913	0.945	0.938	0.91	0.983	0.982	0.93	0.929	0.971
B_i, P, T	9	0.982	0.982	0.975	0.933	0.98	0.975	0.969	0.93	0.957	0.93	0.9	0.914	0.969	0.945	0.8	0.982	0.988	0.955	0.952	0.978
B_i, P, Ws, Wd	10	0.984	0.977	0.933	0.856	0.981	0.975	0.966	0.927	0.957	0.926	0.9	0.909	0.951	0.936	0.928	0.983	0.981	0.929	0.926	0.926
B_i, T, Ws, Wd	11	0.985	0.972	0.931	0.869	0.979	0.967	0.965	0.927	0.97	0.813	0.868	0.909	0.979	0.947	0.835	0.96	0.992	0.968	0.961	0.861
B_i, LC, P, T	12	0.981	0.974	0.934	0.845	0.98	0.974	0.966	0.93	0.806	0.874	0.899	0.887	0.974	0.942	0.84	0.979	0.969	0.93	0.956	0.999
B_i, LC, P, Ws, Wd	13	0.987	0.977	0.931	0.857	0.937	0.978	0.975	0.967	0.962	0.83	0.865	0.91	0.939	0.932	0.871	0.984	0.981	0.967	0.96	0.868
B_i, LC, T, Ws, Wd	14	0.987	0.972	0.93	0.863	0.982	0.972	0.967	0.926	0.962	0.799	0.846	0.912	0.972	0.942	0.856	0.987	0.997	0.996	0.965	0.94
B_i, P, T, Ws, Wd	15	0.956	0.979	0.975	0.951	0.987	0.996	0.98	0.966	0.943	0.915	0.892	0.913	0.945	0.942	0.858	0.979	0.969	0.972	0.957	0.98
B_i, LC, P, T, Ws, Wd	16	0.985	0.974	0.93	0.878	0.979	0.971	0.966	0.928	0.74	0.904	0.874	0.899	0.928	0.943	0.857	0.955	0.979	0.965	0.979	0.968
									R^2											
B_i	1	0.946	0.871	0.64	0.787	0.958	0.953	0.92	0.767	0.898	0.85	0.814	0.724	0.943	0.873	0.896	0.796	0.987	0.923	0.92	0.815
B_i, LC	2	0.946	0.871	0.641	0.808	0.975	0.941	0.849	0.606	0.904	0.828	0.82	0.827	0.941	0.862	0.826	0.813	0.988	0.931	0.923	0.817
B_i, P	3	0.967	0.968	0.868	0.899	0.95	0.954	0.92	0.856	0.907	0.863	0.789	0.827	0.926	0.881	0.71	0.814	0.98	0.943	0.919	0.96
B_i, T	4	0.962	0.965	0.874	0.897	0.95	0.948	0.92	0.852	0.902	0.844	0.807	0.825	0.932	0.867	0.85	0.814	0.982	0.934	0.914	0.96
B_i, Ws, Wd	5	0.999	0.946	0.988	0.877	0.97	0.953	0.925	0.853	0.927	0.81	0.8	0.824	0.937	0.922	0.936	0.915	0.98	0.962	0.939	0.968
B_i, LC, P	6	0.961	0.698	0.875	0.695	0.953	0.95	0.919	0.855	0.904	0.843	0.787	0.806	0.972	0.894	0.901	0.805	0.988	0.924	0.924	0.817
B_i, LC, T	7	0.965	0.946	0.872	0.638	0.949	0.948	0.928	0.853	0.902	0.837	0.797	0.797	0.946	0.883	0.908	0.806	0.989	0.932	0.924	0.756
B_i, LC, Ws, Wd	8	0.973	0.946	0.867	0.787	0.96	0.959	0.944	0.918	0.902	0.83	0.794	0.822	0.881	0.867	0.818	0.863	0.961	0.862	0.859	0.919
B_i, P, T	9	0.964	0.964	0.949	0.871	0.96	0.95	0.92	0.852	0.901	0.844	0.8	0.827	0.936	0.881	0.905	0.861	0.975	0.91	0.902	0.904
B_i, P, Ws, Wd	10	0.967	0.952	0.87	0.69	0.963	0.95	0.915	0.848	0.906	0.841	0.795	0.815	0.893	0.848	0.857	0.861	0.961	0.861	0.85	0.849
B_i, T, Ws, Wd	11	0.97	0.944	0.862	0.721	0.959	0.934	0.917	0.849	0.916	0.788	0.747	0.716	0.956	0.869	0.87	0.817	0.98	0.935	0.921	0.737
B_i, LC, P, T	12	0.962	0.948	0.872	0.645	0.96	0.947	0.912	0.852	0.804	0.773	0.791	0.763	0.941	0.873	0.892	0.906	0.804	0.804	0.896	0.798
B_i, LC, P, Ws, Wd	13	0.972	0.952	0.867	0.687	0.942	0.95	0.951	0.919	0.911	0.722	0.741	0.714	0.87	0.864	0.88	0.866	0.958	0.933	0.918	0.749
B_i, LC, T, Ws, Wd	14	0.973	0.944	0.864	0.806	0.963	0.943	0.924	0.847	0.907	0.858	0.808	0.82	0.941	0.876	0.818	0.82	0.993	0.991	0.901	0.859
B_i, P, T, Ws, Wd	15	0.988	0.947	0.815	0.822	0.905	0.958	0.948	0.902	0.894	0.814	0.779	0.824	0.884	0.872	0.824	0.835	0.932	0.943	0.912	0.907
B_i, LC, P, T, Ws, Wd	16	0.968	0.949	0.853	0.74	0.958	0.942	0.922	0.848	0.799	0.783	0.774	0.76	0.903	0.871	0.823	0.809	0.958	0.93	0.859	0.838