



*Supplement of*

**Training deep learning models with a multi-station approach and static aquifer attributes for groundwater level simulation: what is the best way to leverage regionalised information?**

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Table S1: List of GWL stations and corresponding class and static attributes

Well ID	Class	longitude	latitude	Geological Context	Medium: Type of Porosity	Lithology
00068X0010/ F295	mixed	2.09	50.80	Magmatic and metamorphic	Matrix / cracks	Chalk
00182X0010/ P1	annual	2.27	50.50	Sedimentary	Matrix / cracks	Chalk
00241X0012/ P1	mixed	1.82	50.39	Sedimentary	Matrix / cracks	Chalk
00263X0006/ P1	mixed	2.70	50.39	Magmatic and metamorphic	Matrix / cracks	Chalk
00271X0002/ P2	mixed	2.89	50.35	Magmatic and metamorphic	Matrix / cracks	Chalk
00332X0007/ S1	mixed	1.95	50.19	Sedimentary	Matrix / cracks	Chalk
00471X0095/ PZ2013	mixed	2.58	50.02	Sedimentary	Matrix / cracks	Chalk
00572X0010/ S1	inertial	0.51	49.79	Sedimentary	Matrix/fracture/karst	Chalk
00578X0002/ S1	inertial	0.71	49.74	Sedimentary	Matrix/fracture/karst	Chalk
00583X0005/ S1	inertial	0.91	49.78	Sedimentary	Matrix/fracture/karst	Chalk
00608X0028/ S1	inertial	1.80	49.76	Sedimentary	Matrix/fracture/karst	Chalk
00671X0052/ S1	annual	4.04	49.84	Sedimentary	Matrix / cracks	Chalk
00755X0006/ S1	mixed	0.42	49.56	Sedimentary	Matrix/fracture/karst	Chalk
00766X0004/ S1	inertial	0.84	49.57	Sedimentary	Matrix/fracture/karst	Chalk
00773X0002/ S1	mixed	1.28	49.60	Sedimentary	Matrix/fracture/karst	Chalk
00791X0017/ S1	mixed	1.82	49.62	Sedimentary	Matrix / cracks	Chalk
00794X0021/ S1	mixed	2.09	49.60	Sedimentary	Matrix / cracks	Chalk
00805X0002/ S1	mixed	2.21	49.55	Sedimentary	Matrix / cracks	Chalk
00817X0145/ PZ_SN	mixed	2.70	49.55	Sedimentary	Matrix / cracks	Chalk

00821X0035/ S1	mixed	2.96	49.65	Sedimentary	Matrix / cracks	Chalk
00847X0043/ S1	annual	3.86	49.52	Sedimentary	Matrix / cracks	Chalk
00853X0030/ PZ2013	annual	4.16	49.61	Sedimentary	Matrix / cracks	Chalk
00862X0005/ S1	annual	4.42	49.60	Magmatic and metamorphic	Porous	Sand
00957X0005/ S1	mixed	-0.90	49.37	Sedimentary	Karst / fissures	Limeston e
00993X0002/ S1	inertial	0.98	49.48	Sedimentary	Matrix/fract ure/karst	Chalk
01003X0008/ S1	mixed	1.26	49.43	Sedimentary	Matrix/fract ure/karst	Chalk
01013X0004/ S1	mixed	1.63	49.44	Sedimentary	Matrix/fract ure/karst	Chalk
01024X0058/ S1	mixed	2.10	49.45	Sedimentary	Matrix / cracks	Chalk
01031X0023/ S1	mixed	2.21	49.50	Sedimentary	Matrix / cracks	Chalk
01045X0015/ S1	mixed	2.54	49.36	Sedimentary	Matrix / cracks	Chalk
01046X0010/ S1	mixed	2.61	49.38	Sedimentary	Matrix / cracks	Chalk
01053X0058/ S1	inertial	3.07	49.45	Alluvial	Porous	Sand
01074X0006/ S1	annual	3.92	49.49	Sedimentary	Matrix / cracks	Chalk
01086X0011/ LS4	annual	4.10	49.34	Sedimentary	Matrix / cracks	Chalk
01116X0138/ F1	annual	5.16	49.37	Magmatic and metamorphic	Karst / fissures	Limeston e
01192X0043/ S1	annual	-0.60	49.25	Sedimentary	Karst / fissures	Limeston e
01194X0069/ S1	mixed	-0.43	49.29	Sedimentary	Karst / fissures	Limeston e
01198X0002/ S1	inertial	-0.38	49.21	Sedimentary	Karst / fissures	Limeston e
01245X0010/ S1	inertial	1.09	49.22	Sedimentary	Matrix/fract ure/karst	Chalk
01252X0011/ S1	mixed	1.54	49.30	Sedimentary	Matrix/fract ure/karst	Chalk
01258X0020/ S1	mixed	1.71	49.20	Sedimentary	Matrix/fract ure/karst	Chalk
01264X0029/ S1	mixed	2.08	49.24	Sedimentary	Matrix/fract ure/karst	Chalk

01287X0017/ S1	mixed	2.75	49.21	Magmatic and metamorphic	Matrix / cracks	Sand
01347X0002/ S1	annual	4.86	49.17	Magmatic and metamorphic	Porous	Gaize
01381X0070/ P25	annual	6.18	49.30	Sedimentary	Porous	Alluvium
01461X0012/ S1	inertial	-0.29	49.06	Sedimentary	Karst / fissures	Limeston e
01473X0087/ S1	inertial	0.24	49.06	Sedimentary	Matrix/fract ure/karst	Chalk
01491X0009/ S1	inertial	0.77	49.11	Sedimentary	Matrix/fract ure/karst	Chalk
01516X0004/ S1	inertial	1.61	48.98	Sedimentary	Matrix/fract ure/karst	Chalk
01584X0023/ LV3	annual	4.29	49.07	Sedimentary	Matrix / cracks	Chalk
01871X0031/ S1	mixed	3.65	48.89	Not available	Porous	Marl
01995X0012/ 342B	annual	7.98	48.81	Sedimentary	Porous	Alluvium
02206X0022/ S1	inertial	2.68	48.61	Magmatic and metamorphic	Karst / fissures	Limeston e
02225X0016/ S1	mixed	3.28	48.62	Sedimentary	Karst / fissures	Limeston e
02347X0022/ 314	mixed	7.75	48.65	Sedimentary	Porous	Alluvium
02566X0019/ S1	inertial	1.90	48.46	Magmatic and metamorphic	Karst / fissures	Limeston e
02617X0009/ S1	annual	3.83	48.44	Sedimentary	Matrix / cracks	Chalk
02636X0009/ S1	mixed	4.49	48.44	Sedimentary	Porous	Alluvium
02726X0029/ 238	annual	7.66	48.49	Sedimentary	Porous	Alluvium
02923X0007/ F	inertial	1.99	48.38	Magmatic and metamorphic	Porous	Sand
02931X0008/ S1	inertial	2.24	48.36	Magmatic and metamorphic	Matrix / cracks	Limeston e
02974X0004/ S1	annual	3.87	48.36	Sedimentary	Matrix / cracks	Chalk

03272X0006/ PZ	inertial	1.89	48.24	Magmatic and metamorphic	Karst / fissures	Limeston e
03276X0009/ P	inertial	1.92	48.10	Magmatic and metamorphic	Karst / fissures	Limeston e
03287X0018/ S1	inertial	2.35	48.09	Magmatic and metamorphic	Karst / fissures	Limeston e
03622X0027/ PZ	inertial	1.58	47.99	Magmatic and metamorphic	Karst / fissures	Limeston e
04132X0086/ PP6	mixed	7.31	47.82	Sedimentary	Porous	Alluvium
04137X0018/ 15	mixed	7.42	47.72	Sedimentary	Porous	Alluvium
04398X0002/ SONDAG	annual	5.32	47.53	Sedimentary	Karst	Limeston e
04458X0023/ S3	mixed	7.52	47.59	Sedimentary	Porous	Alluvium
00061X0117/ PZ1	mixed	1.82	50.87	Magmatic and metamorphic	Matrix / cracks	Chalk
00263X0129/ PZASA4	mixed	2.72	50.33	Magmatic and metamorphic	Matrix / cracks	Chalk
00275X0005/ P1	inertial	2.89	50.25	Magmatic and metamorphic	Matrix / cracks	Chalk
00346X0011/ S1	mixed	2.33	50.11	Sedimentary	Matrix / cracks	Chalk
00463X0036/ H1	mixed	2.36	49.95	Sedimentary	Matrix / cracks	Chalk
02603X0009/ S1	inertial	3.44	48.58	Sedimentary	Karst / fissures	Limeston e

Table S2: Station wise training and testing dates and period. The first four years in the training period were used to make sequences hence only ERA5 data was used for this period.

Code	Training Period (Dates)	Training Period (Years)	Testing Period (Dates)	Testing Period (Years)
00068X0010/F 295	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8

00182X0010/P 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00241X0012/P 1	1968-04-01 to 2014-12-01	47	2015-01-01 to 2022-12-01	8
00263X0006/P 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00271X0002/P 2	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00332X0007/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00471X0095/P Z2013	1966-06-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00572X0010/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00578X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00583X0005/S 1	1967-03-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00608X0028/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00671X0052/S 1	1970-03-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
00755X0006/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00766X0004/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00773X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00791X0017/S 1	1970-04-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
00794X0021/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00805X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00817X0145/P Z_SN	1966-11-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00821X0035/S 1	1970-04-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
00847X0043/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00853X0030/P Z2013	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00862X0005/S 1	1967-02-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
00957X0005/S 1	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
00993X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8

01003X0008/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01013X0004/S 1	1967-03-01 to 2014-12-01	48	2015-01-01 to 2022-08-01	8
01024X0058/S 1	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
01031X0023/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2020-03-01	5
01045X0015/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
01046X0010/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01053X0058/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
01074X0006/S 1	1966-10-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
01086X0011/L S4	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01116X0138/F 1	1971-05-01 to 2014-12-01	44	2015-01-01 to 2022-12-01	8
01192X0043/S 1	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
01194X0069/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01198X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01245X0010/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01252X0011/S 1	1967-03-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
01258X0020/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01264X0029/S 1	1970-04-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
01287X0017/S 1	1970-04-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
01347X0002/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01381X0070/P 25	1967-09-01 to 2014-12-01	47	2015-01-01 to 2022-12-01	8
01461X0012/S 1	1966-06-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01473X0087/S 1	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
01491X0009/S 1	1968-12-01 to 2014-12-01	46	2015-01-01 to 2022-12-01	8
01516X0004/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8

01584X0023/L V3	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01871X0031/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
01995X0012/3 42B	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02206X0022/S 1	1969-06-01 to 2014-12-01	46	2015-01-01 to 2022-12-01	8
02225X0016/S 1	1967-02-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
02347X0022/3 14	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02566X0019/S 1	1970-03-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
02617X0009/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02636X0009/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02726X0029/2 38	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02923X0007/F	1970-12-01 to 2014-12-01	44	2015-01-01 to 2022-12-01	8
02931X0008/S 1	1966-09-01 to 2014-12-01	48	2015-01-01 to 2022-12-01	8
02974X0004/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
03272X0006/P Z	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
03276X0009/P	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
03287X0018/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
03622X0027/P Z	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
04132X0086/P P6	1970-03-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
04137X0018/1 5	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-01-01	7
04398X0002/S ONDAG	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
04458X0023/S 3	1971-12-01 to 2014-12-01	43	2015-01-01 to 2022-12-01	8
00061X0117/P Z1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00263X0129/P ZASA4	1970-02-01 to 2014-12-01	45	2015-01-01 to 2022-12-01	8
00275X0005/P 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8



00346X0011/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
00463X0036/H 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8
02603X0009/S 1	1966-02-01 to 2014-12-01	49	2015-01-01 to 2022-12-01	8

Table S3: Best hyperparameters for all standalone models of single station approach

Code	Best Params GRU	Best Params LSTM	Best Params BILSTM
00068X0010/ F295	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00428564073579 5779, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00182X0010/ P1	{'learning_rate': 0.0072913051607 43269, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.00970748029584 1904, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.003463167158483 116, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00241X0012/ P1	{'learning_rate': 0.0069389690997 4053, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.00899346316958 4801, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00263X0006/ P1	{'learning_rate': 0.0068217773984 60312, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 144, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.00810305675553 2596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
00271X0002/ P2	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size':	{'learning_rate': 0.00514309427673 1783, 'optimizer': 'adam', 'epochs': 400, 'batch_size':	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224,

	32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	160, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00332X0007/S1	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001440785178275633, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
00471X0095/PZ2013	{'learning_rate': 0.009605417373868429, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0019406407042248572, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00572X0010/S1	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00578X0002/S1	{'learning_rate': 0.003729090520557473, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0019464388531750198, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00583X0005/S1	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.006821777398460312, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 144, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00608X0028/S1	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1,	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1,	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1,

	'n_units_l0': 80, 'dropout_l0': 0.2}	'n_units_l0': 80, 'dropout_l0': 0.2}	'n_units_l0': 70, 'dropout_l0': 0.2}
00671X0052/ S1	{'learning_rate': 0.0019869077621 547677, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.00810305675553 2596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.002765878983990 4367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
00755X0006/ S1	{'learning_rate': 0.0013001227621 881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.00276587898399 04367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.001471958750607 762, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
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00791X0017/ S1	{'learning_rate': 0.0065629117577 11773, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.00130012276218 81476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
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00805X0002/ S1	{'learning_rate': 0.0097734365310 85809, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.00100913266984 0099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001582159258248 7883, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00817X0145/ PZ_SN	{'learning_rate': 0.0022009248329 412116, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.00130012276218 81476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
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00847X0043/ S1	{'learning_rate': 0.0099812634292 3339, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.00763090117816 6286, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00853X0030/ PZ2013	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
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00957X0005/ S1	{'learning_rate': 0.0052626384661 67993, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.00574143477026 8582, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.004228752765456 0056, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00993X0002/ S1	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00526932902497 1373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
01003X0008/ S1	{'learning_rate': 0.0010091326698 40099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.00100913266984 0099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
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01031X0023/ S1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00100913266984 0099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001488662275444 4637, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}

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01046X0010/ S1	{'learning_rate': 0.0048710819863 5781, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.00924206212076 548, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
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01086X0011/ LS4	{'learning_rate': 0.0035650145243 888115, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00881975370696 4301, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
01116X0138/ F1	{'learning_rate': 0.0013001227621 881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.00862528356964 4069, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001848446353334 7947, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}

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01245X0010/ S1	{'learning_rate': 0.0077352050213 22065, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01252X0011/ S1	{'learning_rate': 0.0078658948723 88346, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.00100913266984 0099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001488662275444 4637, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
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01287X0017/S1	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01347X0002/S1	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.008863787581270316, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01381X0070/P25	{'learning_rate': 0.009774776777496903, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.008759599404809302, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01461X0012/S1	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0019869077621547677, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
01473X0087/S1	{'learning_rate': 0.007630901178166286, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.005906369914893648, 'optimizer': 'adam', 'epochs': 50, 'batch_size': 176, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0019869077621547677, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
01491X0009/S1	{'learning_rate': 0.0059131273523082, 'optimizer':	{'learning_rate': 0.001009132669840099, 'optimizer':	{'learning_rate': 0.0021556933852825582, 'optimizer':



	'adam', 'epochs': 100, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	'adam', 'epochs': 500, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
01516X0004/S1	{'learning_rate': 0.007476627885185544, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.006742941264953408, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}
01584X0023/LV3	{'learning_rate': 0.009707480295841904, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008091344208943023, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}
01871X0031/S1	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0027428312554128097, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 128, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01995X0012/342B	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0019464388531750198, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02206X0022/S1	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02225X0016/S1	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450,	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size':	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32,

	'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
02347X0022/ 314	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001986907762154 7677, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
02566X0019/ S1	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02617X0009/ S1	{'learning_rate': 0.0092821560837 36918, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.00250303532780 11654, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02636X0009/ S1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00526932902497 1373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
02726X0029/ 238	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00810305675553 2596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
02923X0007/ F	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1,	{'learning_rate': 0.00193623655969 48302, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 32, 'n_layers': 1,	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1,

	'n_units_l0': 40, 'dropout_l0': 0.2}	'n_units_l0': 90, 'dropout_l0': 0.2}	'n_units_l0': 70, 'dropout_l0': 0.2}
02931X0008/S1	{'learning_rate': 0.0059131273523082, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0027940569610945824, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 176, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
02974X0004/S1	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.008619339717805171, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}
03272X0006/PZ	{'learning_rate': 0.006595550405089572, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
03276X0009/P	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
03287X0018/S1	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008759599404809302, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.001559696717658343, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
03622X0027/PZ	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}

04132X0086/ PP6	{'learning_rate': 0.0097747767774 96903, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.00514309427673 1783, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.002155693385282 5582, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
04137X0018/ 15	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00130012276218 81476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
04398X0002/ SONDAG	{'learning_rate': 0.0088197537069 64301, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.00286458605026 92654, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.007227642053055 42, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
04458X0023/ S3	{'learning_rate': 0.0027940569610 945824, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00061X0117/ PZ1	{'learning_rate': 0.0097045383652 01885, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.00810305675553 2596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00263X0129/ PZASA4	{'learning_rate': 0.0071924740997 53512, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.00199776807603 72763, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001563524077320 178, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}

00275X0005/ P1	{'learning_rate': 0.0093475920995 50283, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.00526932902497 1373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
00346X0011/ S1	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00455759994126 212, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.003824388422028 9666, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
00463X0036/ H1	{'learning_rate': 0.0010091326698 40099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.002221836274003 9905, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 144, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
02603X0009/ S1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.00315142526404 0375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

Table S4: Best hyperparameters for all wavelet models in single station approach

Code	Best Params GRU	Best Params LSTM	Best Params BILSTM
00068X0010/ F295	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}

00182X0010/ P1	{'learning_rate': 0.0095344032189 46923, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.006595199234314 37, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
00241X0012/ P1	{'learning_rate': 0.0070966206604 84497, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.006875829206466 048, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00263X0006/ P1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.006389829936455 146, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00271X0002/ P2	{'learning_rate': 0.0095344032189 46923, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.009469968207464 9, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 128, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
00332X0007/ S1	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.007224044366448 904, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00471X0095/ PZ2013	{'learning_rate': 0.0087950557776 15794, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.006040973157822 555, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00572X0010/ S1	{'learning_rate': 0.0074956599352	{'learning_rate': 0.001009132669840	{'learning_rate': 0.005269329024971

	95373, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00578X0002/S1	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.007045962219824817, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
00583X0005/S1	{'learning_rate': 0.00995265220245213, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
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00993X0002/S1	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
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01046X0010/ S1	{'learning_rate': 0.0095344032189 46923, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.006086547336704 553, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
01053X0058/ S1	{'learning_rate': 0.0092821560837 36918, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.002155693385282 5582, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.002500314424817 318, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
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01264X0029/ S1	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.0013001227621881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0024196194493571197, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
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01461X0012/ S1	{'learning_rate': 0.0097045383652 01885, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.009707480295841 904, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.008590069145513 27, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}
01473X0087/ S1	{'learning_rate': 0.0099526522024 5213, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.001967305713793 6214, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.007950991288447 225, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
01491X0009/ S1	{'learning_rate': 0.0044709229134 21275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.003826890237851 838, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
01516X0004/ S1	{'learning_rate': 0.0099891338549 917, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.007917876446858 305, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 144, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
01584X0023/ LV3	{'learning_rate': 0.0042842519067 62034, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
01871X0031/ S1	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}

01995X0012/ 342B	{'learning_rate': 0.0043589747030 68952, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.006806686454144 779, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
02206X0022/ S1	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02225X0016/ S1	{'learning_rate': 0.0013001227621 881476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001300122762188 1476, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.004875095617603 179, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}
02347X0022/ 314	{'learning_rate': 0.0087595994048 09302, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.002765878983990 4367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971 373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
02566X0019/ S1	{'learning_rate': 0.0081030567555 32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.006794402113345 505, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
02617X0009/ S1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.002765878983990 4367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}

02636X0009/ S1	{'learning_rate': 0.0097747767774 96903, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.007495659935295 373, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
02726X0029/ 238	{'learning_rate': 0.0097747767774 96903, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.008759599404809 302, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.008819753706964 301, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}
02923X0007/ F	{'learning_rate': 0.0044709229134 21275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
02931X0008/ S1	{'learning_rate': 0.0051430942767 31783, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02974X0004/ S1	{'learning_rate': 0.0092821560837 36918, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.009282156083736 918, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	{'learning_rate': 0.008103056755532 596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
03272X0006/ PZ	{'learning_rate': 0.0094699682074 649, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840 099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
03276X0009/ P	{'learning_rate': 0.0042287527654	{'learning_rate': 0.003151425264040	{'learning_rate': 0.003151425264040

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03287X0018/ S1	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.002974106488417 6733, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.006864998400835 032, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
03622X0027/ PZ	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.002765878983990 4367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.002765878983990 4367, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 160, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
04132X0086/ PP6	{'learning_rate': 0.0020822598979 197784, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040 375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.007214354848482 611, 'optimizer': 'adam', 'epochs': 450, 'batch_size': 144, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}
04137X0018/ 15	{'learning_rate': 0.0081733824901 97835, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 80, 'n_layers': 1, 'n_units_l0': 50, 'dropout_l0': 0.2}	{'learning_rate': 0.009707480295841 904, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421 275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}
04398X0002/ SONDAG	{'learning_rate': 0.0087595994048 09302, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.008819753706964 301, 'optimizer': 'adam', 'epochs': 500, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 20, 'dropout_l0': 0.2}	{'learning_rate': 0.009660529800880 094, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
04458X0023/ S3	{'learning_rate': 0.0081030567555	{'learning_rate': 0.004122917646627	{'learning_rate': 0.009707480295841



	32596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	0265, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 48, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	904, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 30, 'dropout_l0': 0.2}
00061X0117/ PZ1	{'learning_rate': 0.009534403218946923, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.006875829206466048, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}
00263X0129/ PZASA4	{'learning_rate': 0.0022046805972118027, 'optimizer': 'adam', 'epochs': 400, 'batch_size': 16, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.009751298348816691, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}
00275X0005/ P1	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00346X0011/ S1	{'learning_rate': 0.008103056755532596, 'optimizer': 'adam', 'epochs': 200, 'batch_size': 32, 'n_layers': 1, 'n_units_l0': 40, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
00463X0036/ H1	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
02603X0009/ S1	{'learning_rate': 0.007495659935295373, 'optimizer':	{'learning_rate': 0.00455759994126212, 'optimizer':	{'learning_rate': 0.005269329024971373, 'optimizer':

	'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	'adam', 'epochs': 400, 'batch_size': 112, 'n_layers': 1, 'n_units_l0': 100, 'dropout_l0': 0.2}	'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
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Table S5: Input shape of different multi-station approaches

Approach	Shape of input data for training (Standalone)	Wavelet
NO	(39952, 48, 7)	(39952, 48, 35)
OHE	(39952, 48, 83)	(39952, 48, 111)
STAT	(39952, 48, 24)	(39952, 48, 52)
STAT_OHE	(39952, 48, 100)	(39952, 48, 128)

Table S6: Hyperparameters of Multi-station Standalone Models

Approach	GRU	LSTM	BiLSTM
NO	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70,	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80,	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

	'dropout_l0': 0.2}	'dropout_l0': 0.2}	
OHE	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
STAT	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.003487742134799628, 'optimizer': 'adam', 'epochs': 100, 'batch_size': 96, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0029166390295633435, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
STAT_OHE	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

Table S7: Hyperparameters of Multi-station Wavelet models

Approach	GRU	LSTM	BiLSTM
NO	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

OHE	{'learning_rate': 0.001009132669840099 , 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373 , 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373 , 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
STAT	{'learning_rate': 0.001009132669840099 , 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373 , 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373 , 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
STAT_OHE	{'learning_rate': 0.001009132669840099 , 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099 , 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373 , 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}

Table S8: Hyperparameters of cluster based multi-station standalone models

Approach	GW L Type	GRU	LSTM	BILSTM
Cluster_NO	annual	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size':	{'learning_rate': 0.001009132669 840099, 'optimizer': 'adam', 'epochs':	{'learning_rate': 0.001009132669 840099, 'optimizer': 'adam', 'epochs':

		240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.0027940569610945824, 'optimizer': 'adam', 'epochs': 250, 'batch_size': 192, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
Cluster_OHE	annual	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

Cluster_Static	annual	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.005028014857866192, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 256, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
Cluster_Static_OHE	annual	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}

		224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}
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Table S9: Hyperparameters of cluster based multi-station wavelet models

Approach	GW L Type	GRU	LSTM	BILSTM
Cluster_NO	annual	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1,	{'learning_rate': 0.006821777398460312, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 144, 'n_layers': 1,	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1,

		'n_units_l0': 70, 'dropout_l0': 0.2}	'n_units_l0': 50, 'dropout_l0': 0.2}	'n_units_l0': 80, 'dropout_l0': 0.2}
Cluster_OHE	annual	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0010091326698 40099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
Cluster_Static	annual	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0044709229134 21275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0050280148578 66192, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 256, 'n_layers': 1, 'n_units_l0': 90, 'dropout_l0': 0.2}	{'learning_rate': 0.0031514252640 40375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.0010091326698 40099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.0052693290249 71373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}



Cluster_Static_OHE	annual	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.004470922913421275, 'optimizer': 'adam', 'epochs': 350, 'batch_size': 208, 'n_layers': 1, 'n_units_l0': 60, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	inertial	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.003151425264040375, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 64, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}
	mixed	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.005269329024971373, 'optimizer': 'adam', 'epochs': 150, 'batch_size': 240, 'n_layers': 1, 'n_units_l0': 80, 'dropout_l0': 0.2}	{'learning_rate': 0.001009132669840099, 'optimizer': 'adam', 'epochs': 300, 'batch_size': 224, 'n_layers': 1, 'n_units_l0': 70, 'dropout_l0': 0.2}