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Spatial and temporal variability of CO_2, N_2O and CH_4 fluxes from an urban park in Denmark

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Table S1. Soil nitrous oxide(N_2O) oversampling performance and hyperparameters.

Oversampling rate (x)	Performance					Hyperparameters			
Hot spot	Hot spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	AUC	Log Loss	Max depth	Mtries	Ntrees	Sample rate
1	35	98	85	0.84	0.4	7	7	200	0.7
1.5	44	95	84	0.85	0.4	7	7	100	0.9
2*	65	88	83	0.85	0.4	7	10	200	0.7
2.5	58	86	80	0.83	0.4	7	10	200	0.8
3	65	84	80	0.84	0.4	7	10	200	0.8
3.5	67	82	79	0.84	0.5	7	15	200	0.7
4	75	73	73	0.84	0.6	7	15	50	0.7

Note: * = Selected model. The oversampling rate (x) is the factor by which minority-class samples are duplicated during training. Hot spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. AUC is the area under the curve, indicating classification performance across thresholds. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S2. Soil methane (CH_4) oversampling performance and hyperparameters.

Oversampling rate (x)		Performance					Hyperparameters			
Hot Spot	Cold Spot	Hot spot accuracy (%)	Cold spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	Log Loss	Max depth	Mtries	Ntrees	Sample rate
1	1	47	63	95	86	0.34	7	7	200	0.9
2	2	47	83	89	86	0.34	7	7	100	0.8
3	3	47	83	89	86	0.35	7	10	100	0.8
4	4	67	85	85	84	0.52	7	10	50	0.9
5	2	67	85	90	87	0.34	7	8	200	0.8
6	2	67	83	91	88	0.33	7	8	100	0.8
6	3	73	85	87	86	0.36	7	7	100	0.7
7*	2*	67	85	91	88	0.33	7	10	200	0.9
8	2	67	81	89	86	0.33	7	10	50	0.9
9	2	73	81	90	87	0.35	7	8	100	0.7
9	3	73	85	86	85	0.38	7	10	100	0.8
10	2	60	83	90	87	0.35	7	10	100	0.8

Note: * = Selected model. The oversampling rate (x) is the factor by which minority-class samples are duplicated during training. Hot spot accuracy is the proportion of correctly classified hot spot cases. Cold spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S3. Ecosystem respiration (CO_2) oversampling performance and hyperparameters.

Oversampling rate (x)	Performance					Hyperparameters			
Hot spot	Hot spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	AUC	Log Loss	max depth	Mtries	Ntrees	Sample rate
1	50	96	90	0.86	0.29	7	6	200	0.9
2	57	96	91	0.88	0.27	7	6	200	0.9
3	57	95	90	0.88	0.28	7	7	200	0.9
4	60	95	90	0.88	0.28	7	7	200	0.8
5	56	97	91	0.88	0.29	7	10	100	0.8
6*	63	95	90	0.88	0.29	7	10	200	0.8
7	63	93	89	0.88	0.42	7	10	50	0.9

Note: * = Selected model. The oversampling rate (x) is the factor by which minority-class samples are duplicated during training. Hot spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. AUC is the area under the curve, indicating classification performance across thresholds. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S4. Predictor variables used to develop a random forest (RF) model to identify hot and cold spots of soil GHG fluxes.

Category	Variables	Temporal	Note
Soil physio-chemical properties	Soil temperature (°C)	Y	Recorded for each site and measuring date
	Soil moisture (%)	Y	Recorded for each site and measuring date
	pH	N	Measured in February 2024
	NO_3^- (mg N kg^{-1} SDW)	N	Measured in February 2024
	NH_4^+ (mg N kg^{-1} SDW)	N	Measured in February 2024
	SOC (g C kg^{-1} SDW)	N	Measured in February 2024
	TN (g N kg^{-1} SDW)	N	Measured in February 2024
	BD (g cm^{-3})	N	Measured in February 2024
	Sand (%)	N	Measured in February 2024
	Silt (%)	N	Measured in February 2024
	Clay (%)	N	Measured in February 2024
Vegetation	Grass height (cm)	Y	Recorded for each site and measuring date
Topography parameters	Distance to nearest tree (m)	N	Spatial analysis using ArcGIS Pro and the Danish Datafordeler (2023)
	Distance to nearest water (m)	N	
	Slope (%)	N	

Note: Soil moisture: volumetric water content, NO_3^-: soil nitrate concentration, NH_4^+: soil ammonium concentration, SOC: soil organic carbon, TN: soil total nitrogen, BD: soil bulk density, SDW: soil dry weight.

Table S5. Hyperparameter values used to tune each model.

Hyperparameters	Values
ntrees	50, 100, 200
max depth	3, 5, 7
sample rate	0.7, 0.8, 0.9
mtries	1, 2, 3, 4, 5, 6, 7, 8, 10, 15

Note: Ntrees: number of trees, max depth: max depth of the trees, sample rate: the fraction of training data sampled to build each tree, mtries: the number of variables in each tree split. Each row lists the candidate values of a given hyperparameter included in the grid search, and all possible combinations of these values were used to train and evaluate random forest (RF) models. Model performance metrics were calculated for each hyperparameter combination, and the final model was selected based on the best overall performance.

Table S6. Soil nitrous oxide(N_2O) stepwise elimination performance and hyperparameters.

No. of predictors	Performance					Hyperparameters			
	Hot spot accuracy (%)	Normal spot accuracy (%)	overall accuracy (%)	AUC	Log loss	Max depth	Mtries	Ntrees	Sample rate
15	65	88	83	0.85	0.39	7	10	200	0.7
14	58	89	83	0.84	0.4	7	8	50	0.8
13	71	84	81	0.84	0.41	7	10	50	0.7
12	60	87	82	0.83	0.41	7	10	200	0.7
11	68	84	81	0.84	0.41	7	6	200	0.8
10	65	86	82	0.83	0.41	7	6	200	0.8
9	65	84	80	0.82	0.43	7	6	200	0.8
8	60	87	81	0.81	0.45	7	4	50	0.9
7	56	89	83	0.82	0.42	7	5	100	0.7
6	46	89	80	0.81	0.44	7	5	50	0.9
5*	54	87	80	0.82	0.42	7	3	100	0.7
4	54	85	79	0.8	0.58	7	3	50	0.9
3	60	84	79	0.81	0.58	7	2	200	0.9
2	50	90	81	0.82	0.84	7	2	200	0.8
1	35	94	82	0.8	0.7	7	1	50	0.7

Note: * = Selected model. No. of predictors is the number of predictor variables used to train the model. Hot spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. AUC is the area under the curve, indicating classification performance across thresholds. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S7. Soil methane (CH_4) stepwise elimination performance and hyperparameters.

No. of predictors	Performance					Hyperparameters			
	Hot spot accuracy (%)	Cold spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	Log loss	Max depth	Mtries	Ntrees	Sample rate
15	67	85	91	88	0.33	7	10	200	0.9
14	73	83	89	87	0.33	7	7	50	0.9
13	67	83	90	87	0.33	7	10	200	0.9
12	60	83	89	87	0.33	7	7	100	0.9
11	67	83	90	87	0.33	7	7	200	0.8
10	53	83	90	87	0.34	7	8	100	0.9
9	60	83	91	87	0.34	7	7	200	0.8
8	53	83	92	88	0.35	7	6	200	0.8
7	53	83	91	87	0.36	7	4	100	0.9
6	53	81	91	87	0.37	7	4	200	0.8
5*	53	78	91	86	0.35	7	3	200	0.7
4	53	76	91	86	0.35	7	2	200	0.9
3	57	76	85	81	0.42	7	2	50	0.9
2	47	81	85	81	0.41	7	1	100	0.9
1	40	44	79	71	0.92	7	1	200	0.7

Note: * = Selected model. No. of predictors is the number of predictor variables used to train the model. Hot spot accuracy is the proportion of correctly classified hot spot cases. Cold spot accuracy is the proportion of correctly classified cold spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S8. Ecosystem respiration (CO_2) stepwise elimination performance and hyperparameters.

No. of predictors	Performance					Hyperparameters			
	Hot spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	AUC	Log loss	Max depth	Mtries	Ntrees	Sample rate
15	63	95	90	0.88	0.29	7	10	200	0.8
14	67	91	87	0.89	0.3	7	10	100	0.8
13	60	96	91	0.88	0.29	7	8	200	0.8
12	63	94	90	0.88	0.29	7	7	200	0.8
11	57	97	91	0.86	0.32	7	8	50	0.8
10	63	94	90	0.88	0.29	7	6	200	0.8
9	67	92	88	0.87	0.3	7	5	200	0.8
8	63	92	88	0.88	0.29	7	5	200	0.8
7	63	95	90	0.88	0.42	7	4	50	0.7
6	60	95	90	0.89	0.28	7	4	100	0.9
5	60	96	91	0.88	0.28	7	3	200	0.9
4*	67	94	90	0.88	0.3	7	3	100	0.8
3	63	88	85	0.85	0.34	7	2	50	0.8
2	53	95	89	0.87	0.35	7	1	50	0.8
1	33	87	80	0.8	0.75	7	1	200	0.7

Note: * = Selected model. No. of predictors is the number of predictor variables used to train the model. Hot spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. AUC is the area under the curve, indicating classification performance across thresholds. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution. Hyperparameter max depth is the max depth of the trees, mtries is the number of variables in each tree split, ntrees is the number of trees, sample rate is the fraction of training data sampled to build each tree.

Table S9. Topsoil (0-10 cm) physico-chemical properties as well as cumulative fluxes of soil nitrous oxide (N_2O), soil methane (CH_4), and ecosystem respiration (CO_2) for all sampling sites.

Site	Latitude (N)	Longitutde (E)	SOC (g C kg^{-1} SDW)	TN (g N kg^{-1} SDW)	Clay (<0.002mm)	Silt (0.002-0.063mm)	Sand (0.063-0.2mm)	pH (H_2O)	NO_3^- (mg N kg^{-1} SDW)	NH_4^+ (mg N kg^{-1} SDW)	Soil bulk density (g cm^{-3})	Cumulative N_2O fluxes (kg N ha^{-1})	Cumulative CH_4 fluxes (kg C ha^{-1})	Cumulative CO_2 emissions (Mg C ha^{-1})	Cumulative non-CO_2 GWP (kg CO_2-eq ha^{-1})
1	56°10.0302'	10°12.2769'	55.7	4.6	9.8	16.44	64.72	7.7	0.91	24.85	0.84	0.41	1.52	8.53	230.67
2	56°10.0460'	10°12.2558'	25.4	2.1	7.38	14.66	74.03	5.8	2.26	13.48	1.26	0.33	1.44	8.67	191.72
3	56°10.0529'	10°12.2194'	38.9	3	11.48	20.73	61.57	7.4	2.8	15.08	1.15	0.16	-0.8	7.1	41.12
4	56°10.0601'	10°12.2260'	30	2	9.2	21.02	64.88	6.1	1.91	14.23	1.27	0.72	-0.28	5.2	299.55
5	56°10.0723'	10°12.2022'	26.4	2.1	8.49	21.84	65.53	6.4	0.98	13.38	1.38	0.32	-0.1	7.44	134.16
6	56°10.0814'	10°12.1682'	26.3	2.1	11.44	23.29	61.26	5.8	2.39	15.27	1.18	1.02	-0.25	3.93	428.81
7	56°10.0799'	10°12.1523'	27.1	2.1	9.69	16.06	69.88	5.6	1.04	12.08	1.35	1.27	-0.19	3.82	538.98
8	56°10.1085'	10°12.1384'	22.5	1.7	11.92	22.64	61.94	5	0.05	3.4	1.46	0.19	-0.19	1.84	73.76
9	56°10.1071'	10°12.1359'	23.8	2	10.93	22.56	63.03	6.2	1.82	9.38	1.32	0.16	-0.25	4.13	59.97
10	56°10.1025'	10°12.1880'	20.6	1.8	12.45	23.99	60.62	5.4	0.09	18.22	1.35	0.02	0.12	3.68	11.68
11	56°10.1188'	10°12.1606'	29.8	2.4	9	21.84	64.31	5.6	0.54	8.02	1.19	0.65	-0.04	7.08	275.41
12	56°10.1261'	10°12.0904'	21.5	1.7	11.23	24.28	61.41	5.9	0.17	8.65	1.33	-0.01	-0.26	6.15	-14.75
13	56°10.1457'	10°12.0543'	28.5	2.2	14.13	26.43	55.4	6	0.32	10.35	1.32	0.04	-0.48	6.41	-1.78
14	56°10.1530'	10°12.0380'	30.2	2.1	11.76	27.78	55.77	5.6	0.09	7.84	1.14	0.02	-0.26	4.33	-1.31
15	56°10.1821'	10°12.0246'	22.1	1.9	10.51	23.04	62.99	6	0.38	5.24	1.45	0.2	-0.13	8.5	82.42
16	56°10.1918'	10°12.0176'	33	1.8	11.63	24.78	58.16	6.3	1.06	4.05	1.33	0.18	-0.35	4.78	63.98
17	56°10.2119'	10°12.0365'	31.4	2.3	14.4	26.57	54.25	5.9	0.69	6	1.42	0.39	-0.25	4	160.26
18	56°10.2011'	10°12.0636'	29	2.2	13.9	27.08	54.63	6.1	0.46	6.3	1.29	0.03	-0.16	4.8	7.15
19	56°10.2181'	10°12.0680'	30.1	2.6	10.54	22.4	62.3	6.1	1.26	7.43	1.26	0.26	0.03	7.05	111.25
20	56°10.2425'	10°12.0956'	64.5	3.3	16.95	15.73	56.57	6.6	3.07	11.55	1.06	0.21	-0.67	6.54	64.08
21	56°10.2467'	10°12.1111'	37.2	2.6	12.72	26.25	55.34	6.4	0.55	11.14	1.26	0.41	-0.35	7.88	163.41
22	56°10.2161'	10°12.1457'	30.3	2.2	10.24	15	70.08	7.5	2.89	18.58	1.11	0.11	-0.6	5.37	25.7
23	56°10.2166'	10°12.1313'	44.8	2.7	12.7	24.39	55.58	5	0.06	10.93	1.12	0	-0.47	6.65	-14.93
24	56°10.2118'	10°12.1275'	39.1	2.5	11.66	24.55	57.41	5.4	0.62	12.98	1.3	0.54	-0.57	5.69	209.53
25	56°10.2193'	10°12.1017'	38.7	2.9	12.51	26.54	54.9	5.3	0.42	18.63	1.06	0.18	-0.79	7.78	50.45
26	56°10.1972'	10°12.1089'	65.8	6.4	14.41	25.53	49.82	6.7	0.48	21.71	0.64	-0.01	2.6	10.15	91.05
27	56°10.1912'	10°12.1748'	31.6	2.8	9.43	12.37	73.19	6.8	2.57	6.46	1.34	0.06	-0.06	3.09	22.85

28	56°10.1827'	10°12.1729'	39.5	3	12.21	18.83	62.8	6.7	3.19	6.8	1.25	0.53	-0.41	4.25	211.19
29	56°10.1865'	10°12.1930'	23.8	1.8	13.18	21.6	61.85	7.1	2.99	3.43	1.5	0.08	-0.08	5.03	30.04
30	56°10.1906'	10°12.2204'	27.8	2.2	12.48	18.26	65.22	7.4	3.48	7.84	1.16	0.53	-0.32	6.39	215.88
31	56°10.1698'	10°12.2083'	32.3	2.7	16.49	22.09	56.81	6.1	1.78	15.02	1.28	0.88	-0.4	4.64	362.81
32	56°10.1413'	10°12.1802'	92.7	5.9	12.71	11.77	60.11	6.3	0.11	15.66	0.71	0.21	5.44	4.65	284.04
33	56°10.1453'	10°12.2147'	50.9	4	13.45	24.95	53.4	6.2	1.08	29.06	1.09	0.15	-0.33	10.17	51.76
34	56°10.1492'	10°12.2385'	17	1.1	8.01	4.9	84.67	8.4	2.49	12.99	1.49	0.04	0.05	4.07	21.12
35	56°10.1274'	10°12.2612'	28.5	2.3	13.23	21.49	60.97	5.7	0.28	11.51	1.21	0.06	-0.26	5.53	16.38
36	56°10.1535'	10°12.2963'	28	2.1	13.88	20.74	61.05	6.2	2.17	11.65	1.19	5.1	0.06	6.22	2191.04
37	56°10.1251'	10°12.3218'	41.6	2.8	14.42	15.88	62.92	7.3	7.24	12.14	1.2	0.16	-0.24	2.56	58.47
38	56°10.1287'	10°12.3059'	55	4.2	17.29	27.13	45.43	7.3	12.37	7.48	1.03	0.37	-0.17	3.68	152.84
39	56°10.0820'	10°12.3154'	43.8	3.6	15.92	23.33	54.33	7.2	1.99	18.48	1.1	0.07	-0.34	7.33	17.37
40	56°10.1153'	10°12.2329'	55.2	4.6	14.33	26.09	50.87	6.8	0.26	22.58	1.13	1.75	1.36	9.45	800.66
41	56°10.0693'	10°12.2798'	53.4	4	15.22	18.17	55.95	7.4	6.21	23.09	1.02	0.51	-0.25	9.16	208.81
42	56°10.0711'	10°12.3101'	43.1	2.6	10.06	13.28	69.24	8.1	1.19	15.56	1.25	0.01	-0.83	10.14	-25.25
43	56°10.2074'	10°12.0220'	33.8	2.1	12.33	24.91	57.11	5.8	0.55	10.72	1.47	0.05	-0.46	6.1	4.36
44	56°10.1366'	10°12.1934'	79.5	5.4	15.12	14.95	57.39	7.1	4.48	12.61	0.69	0.19	-0.41	4.79	66.86
45	56°10.1377'	10°12.1938'	71.4	4.3	14.65	16.87	56.99	7.3	4.37	15.07	0.84	0.1	-0.51	3.24	22.58
46	56°10.1345'	10°12.1954'	70.9	4.8	11.27	24.42	52	7.5	4.39	16.64	0.99	0.5	-0.24	2.84	207.67
47	56°10.1323'	10°12.1909'	48.3	3.1	12.37	20.82	59.21	5.9	1.36	14	1.14	0.36	-0.25	4.62	143.86
48	56°10.1293'	10°12.1890'	31.6	2.2	12.16	23.91	58.61	5.9	0.8	14.72	1.23	0.04	-0.24	3.11	8.83
49	56°10.1267'	10°12.1911'	25	2	13.71	22.37	60.51	5.9	0.34	8.68	1.29	0.08	-0.1	3.83	30.57
50	56°10.1234'	10°12.1931'	28.9	2.2	13.55	21.04	60.81	5.8	0.67	13.2	1.27	0.19	-0.15	2.04	78.13
51	56°10.1206'	10°12.1885'	32.1	2.6	13.36	23.2	58.2	6.1	1.1	12.92	1.35	0.47	-0.42	4.17	187.68
52	56°10.1465'	10°12.1682'	46.1	4.1	10.49	24.16	57.34	5.2	0.27	3.05	1.08	9.96	0.01	0.71	4272.8
53	56°10.1455'	10°12.1668'	41.1	3.7	11.02	26.33	56.06	7.2	2.86	11.8	1.28	0.38	0.35	4.75	176.02
54	56°10.1434'	10°12.1646'	56.9	4.4	10.69	25.66	54.38	6.5	1.17	20.64	1.01	0.12	-0.06	4.76	51.4
55	56°10.1425'	10°12.1614'	47.9	3.6	11.17	27.55	53.65	6	4.42	10.34	1.1	0.44	-0.24	3.75	180.65
56	56°10.1393'	10°12.1570'	39	2.9	10.61	23.18	59.66	6	7.17	10.86	1.17	0.56	-0.44	4.33	225.1

Note: SOC: soil organic carbon, TN: soil total nitrogen, NO_3^-: soil nitrate concentration, NH_4^+: soil ammonium concentration, SDW: soil dry weight. GWP: global warming potential.

Table S10. The performance metrics for each greenhouse gases (GHG) of soil nitrous oxide (N_2O), soil methane (CH_4), and ecosystem respiration (CO_2) of the final models.

GHG	Hot spot accuracy (%)	Cold spot accuracy (%)	Normal spot accuracy (%)	Overall accuracy (%)	AUC	Log loss
N_2O	54	n/a	87	80	0.82	0.42
CH_4	53	78	91	86	n/a	0.36
CO_2	67	n/a	94	90	0.88	0.30

Note: Hot spot accuracy is the proportion of correctly classified hot spot cases. Cold spot accuracy is the proportion of correctly classified hot spot cases. Normal spot accuracy is the proportion of correctly classified normal spot cases. Overall accuracy is the total proportion of correctly classified cases across all classes. AUC is the area under the curve, indicating classification performance across thresholds. Log loss is the cross-entropy loss, measuring the quality of the predicted probability distribution.

Figure S1: Soil greenhouse gases fluxes measurement with the fast closed chamber approach

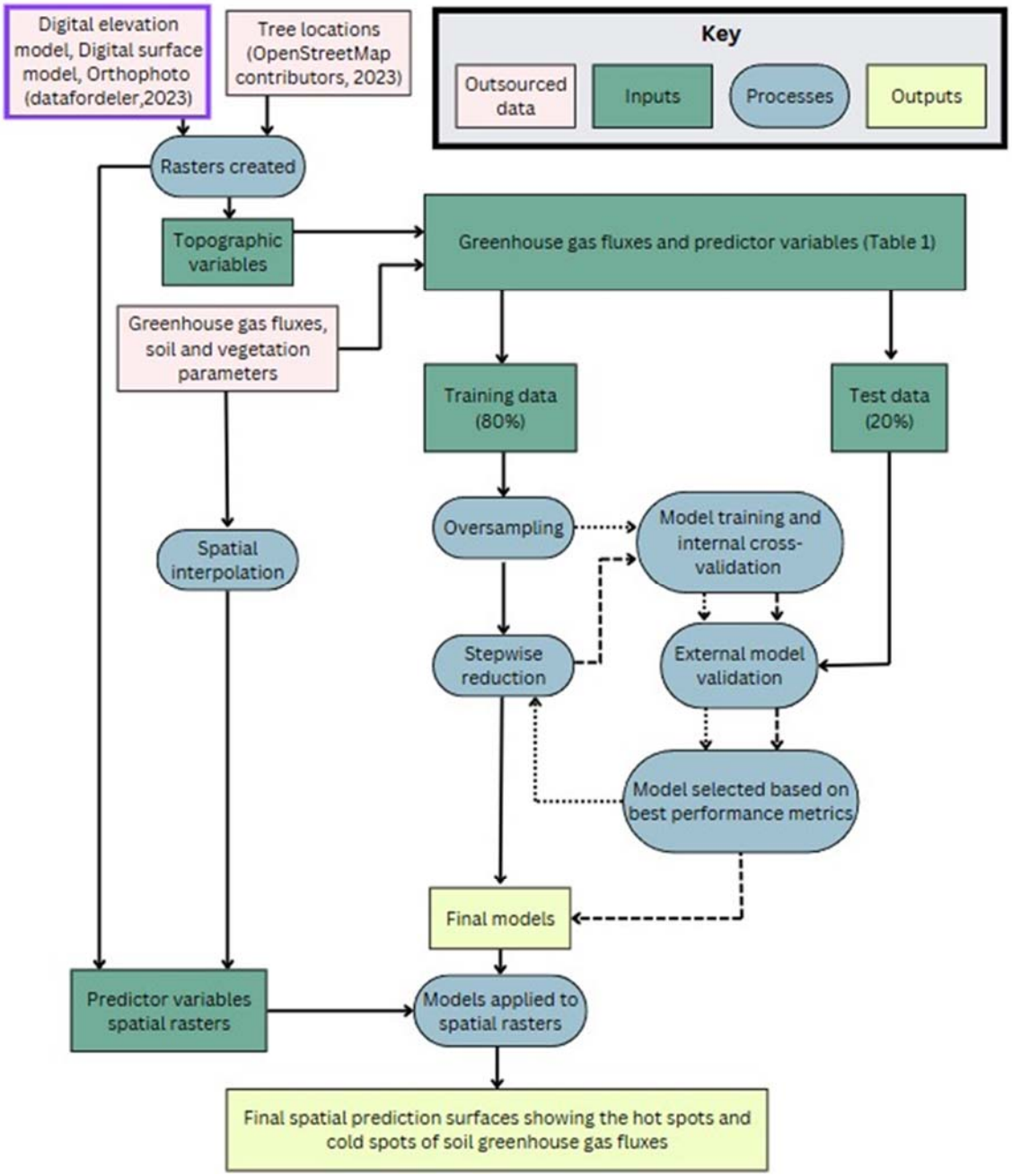
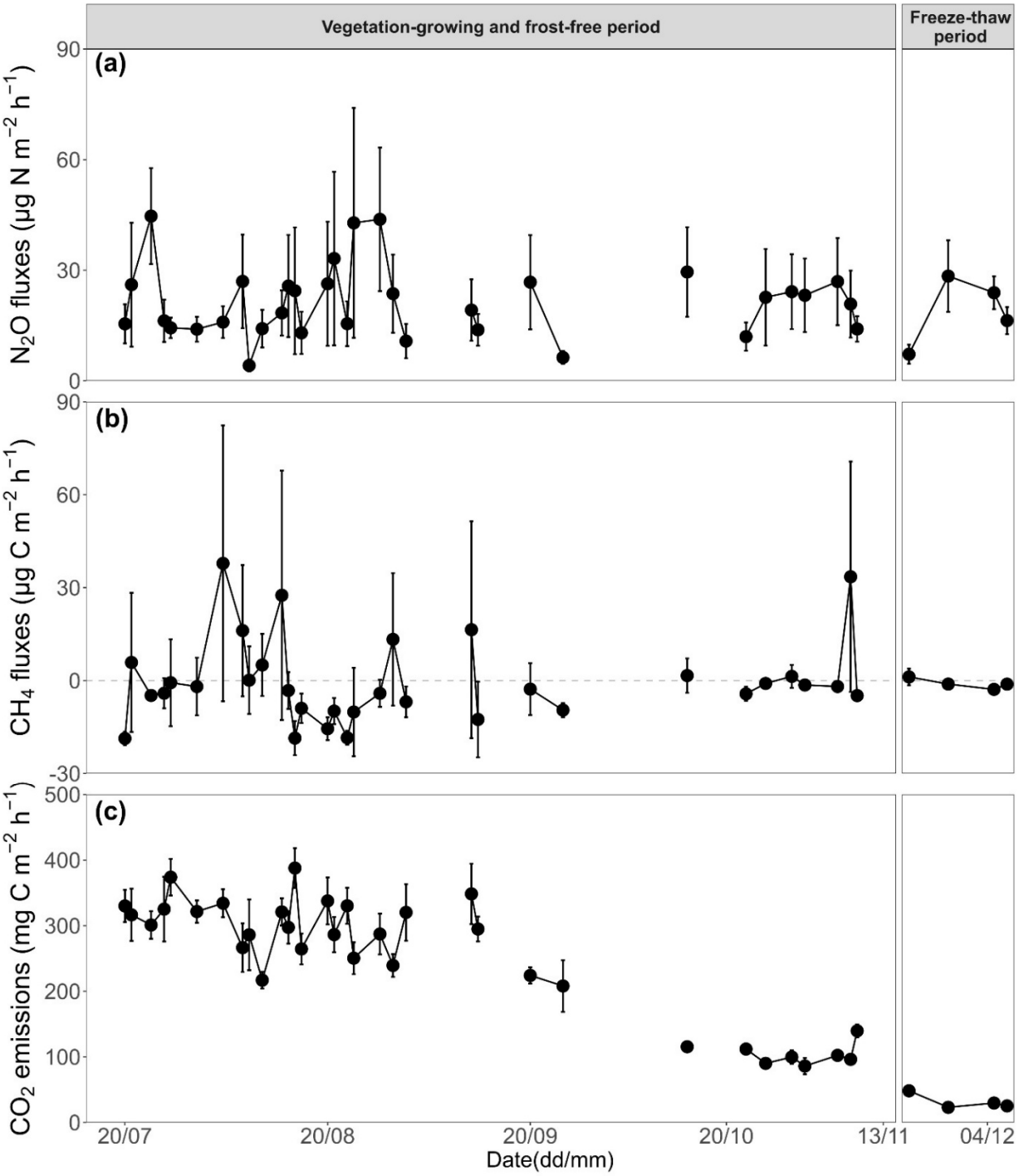


Figure S2: Workflow summary showing the methods used to develop the Random Forest models to predict the spatial distribution of hot spots and cold spots of soil greenhouse gas (GHG) fluxes. The solid line follows the overall workflow, the dotted line follows the oversampling workflow, and the dashed line follows the stepwise reduction workflow.



90 **Figure S3: Seasonal variations in daily mean soil nitrous oxide (N_2O) (a), soil methane (CH_4) (b) and ecosystem (i.e. soil and plant) respiration (CO_2) fluxes (c) for the urban park over the entire observation period from July to December, 2023.The vegetation-growing and frost-free period spans from 20 July to 21 November, 2023, while the freeze-thaw period spans from 22 November to 31 December, 2023. The data shown are means ± standard errors (n=56). The data gaps between September 20 to October 20, for example, are due to logistical and operational constraints.**

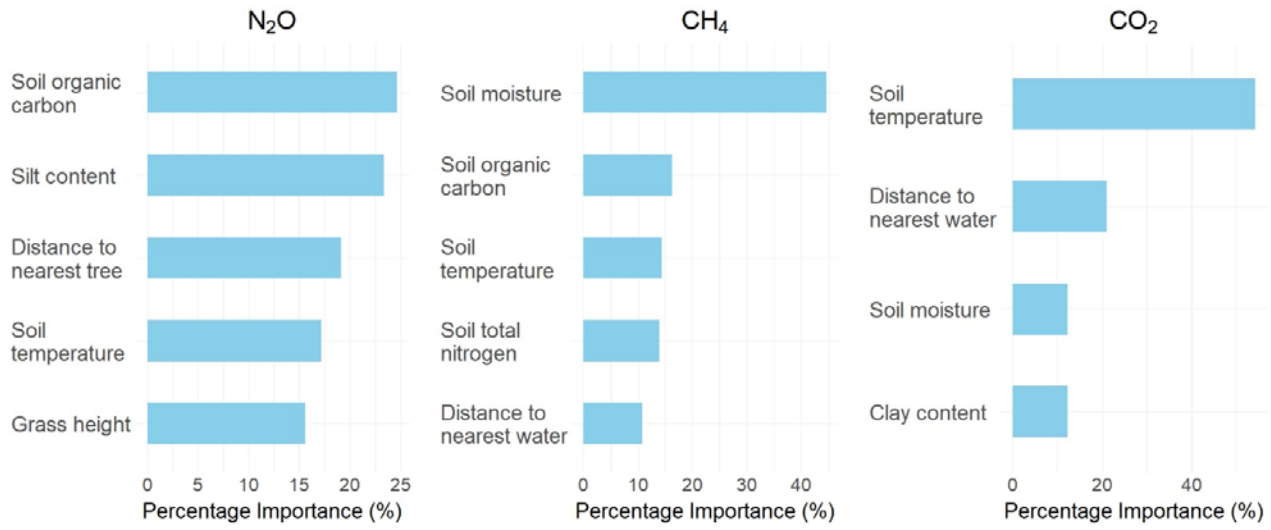


Figure S4: Predictors variables importance plots showing the relative importance assigned by the random forest algorithm to predictor variables in the final models for soil nitrous oxide (N_2O), soil methane (CH_4), and ecosystem respiration (CO_2). Model performance was evaluated using the area under the receiver operating characteristic curve (AUC) and log loss (see Tables S6-8).

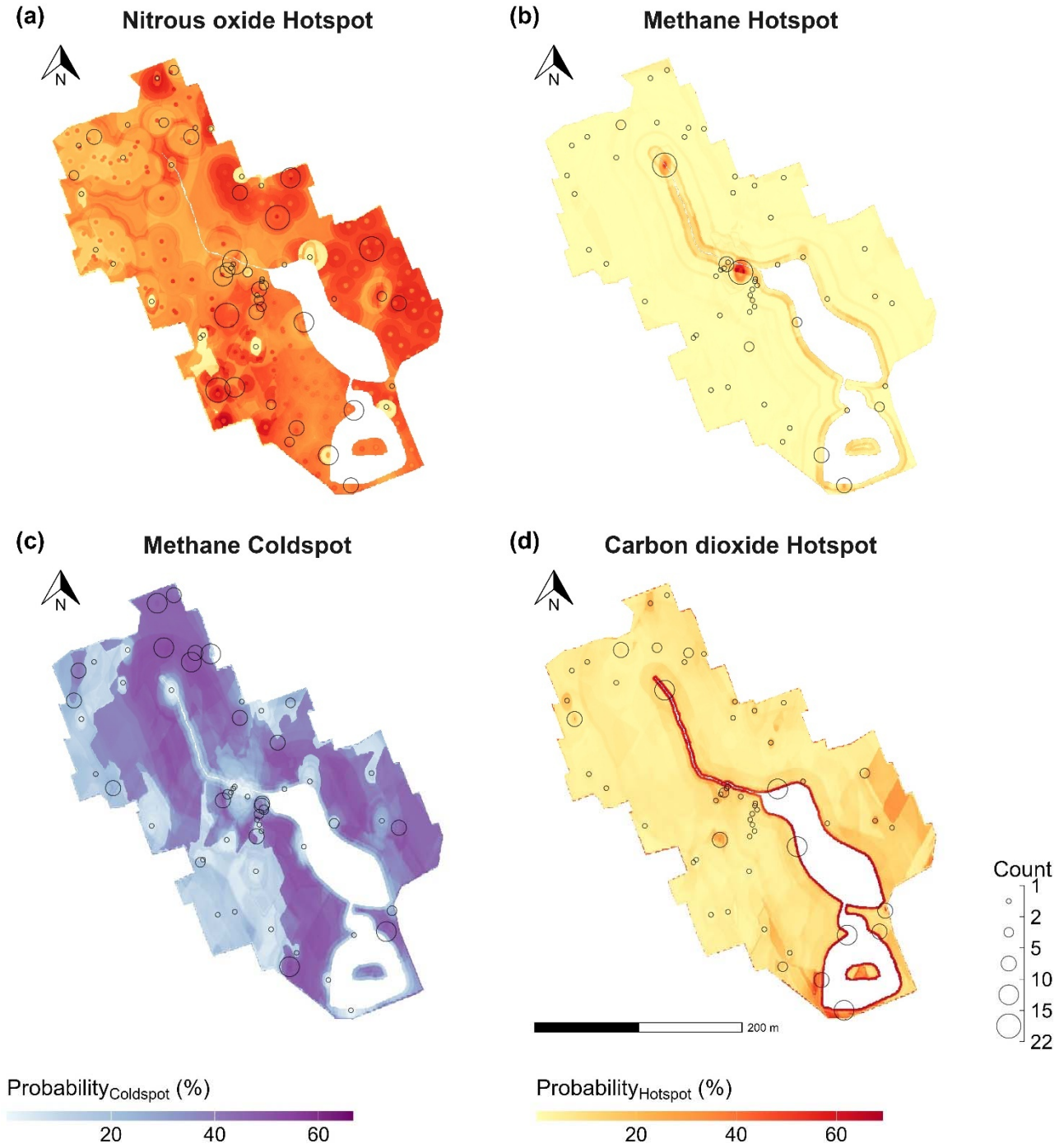


Figure S5: Shown are observed hot/cold flux frequency compared to the area with the highest overall mean probability of being classified as nitrous oxide (N_2O) emission hot spots(a), methane (CH_4) emission hot spots(b), CH_4 uptake cold spots(c) and carbon dioxide (CO_2) emission hot spots(d). The definition of hot and cold spots can be found in the Materials and Methods section. The circle size ("Count") indicates the frequency of observed hot/cold fluxes based on the in-situ measurements.

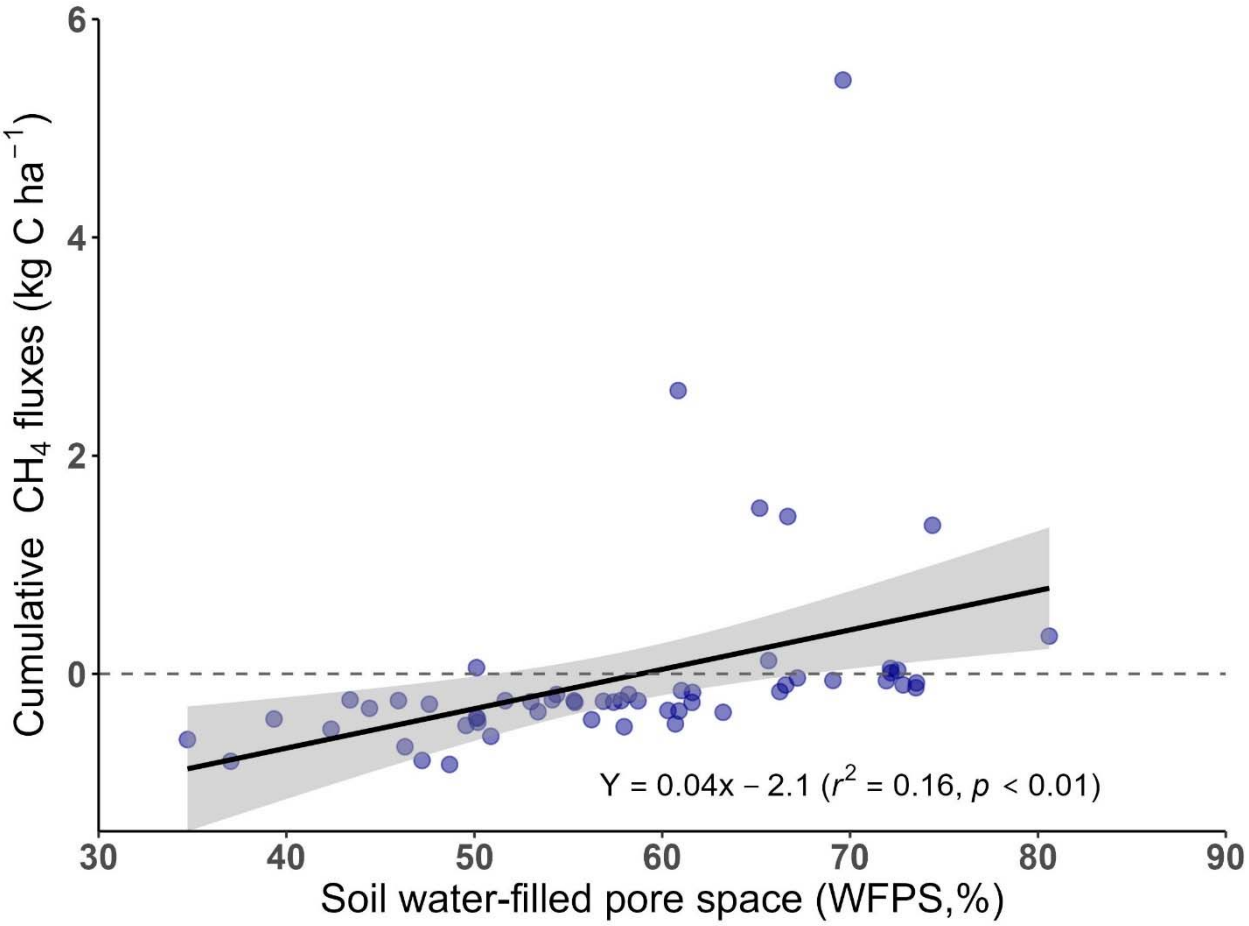


Figure S6: The relationships between cumulative methane (CH_4) fluxes and soil water-filled pore space across all the sampling sites. The shaded area represents the 95% confidence band.

Reference

Datafordeler: Digital Elevation Model, Datafordeler [data set], https://datafordeler.dk/dataoversigt/danmarks-hoejdemodel-dhm/terraen-praedefineret-geotiff/, 2023.

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