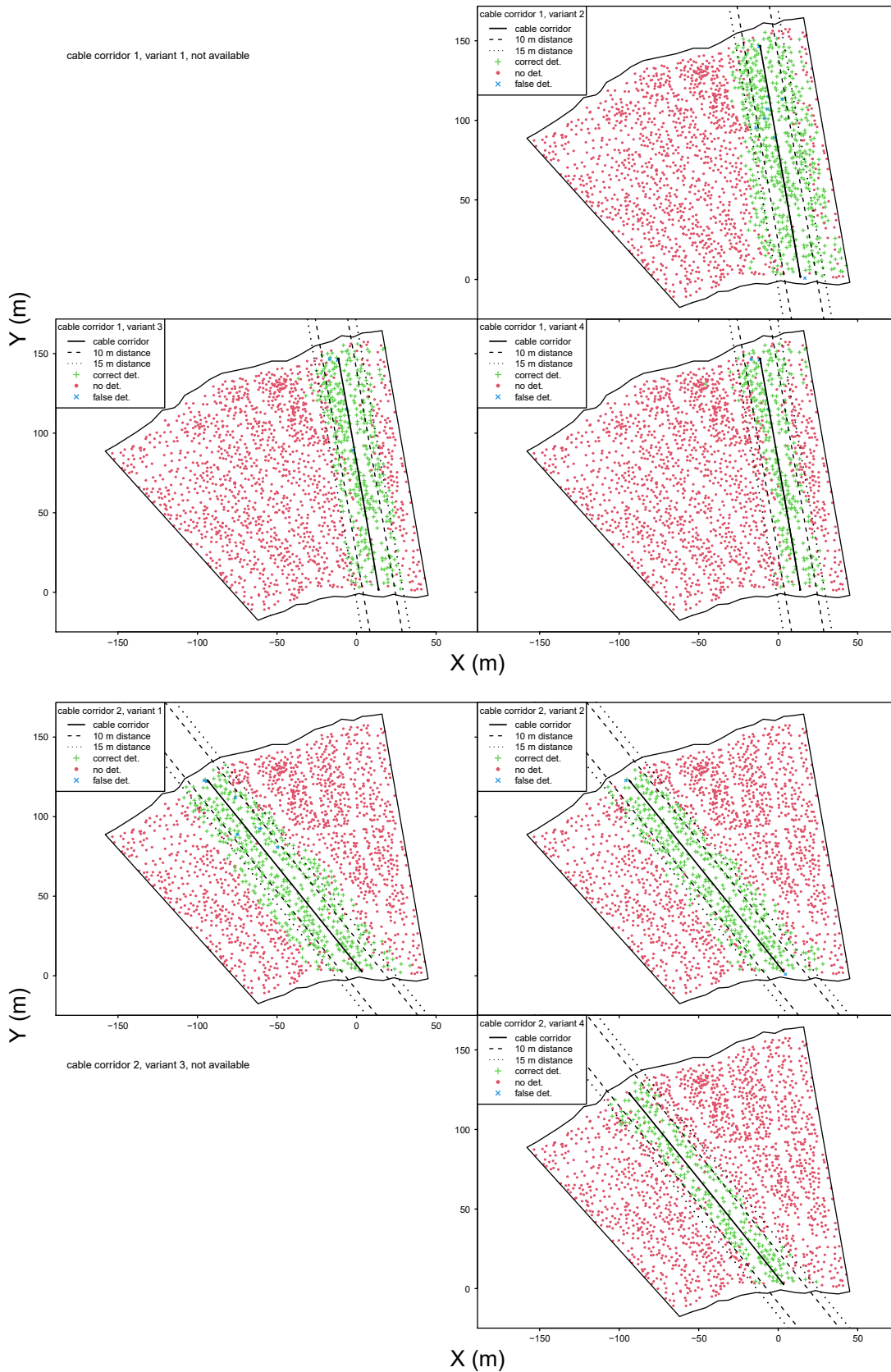
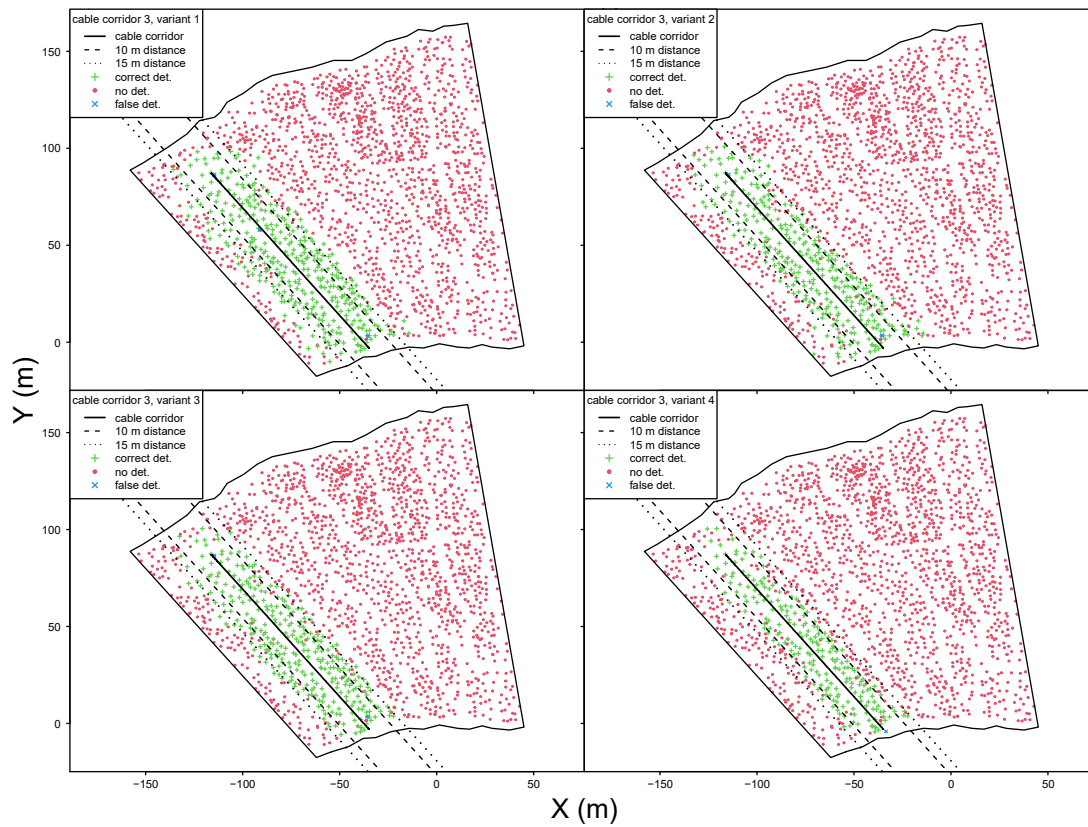




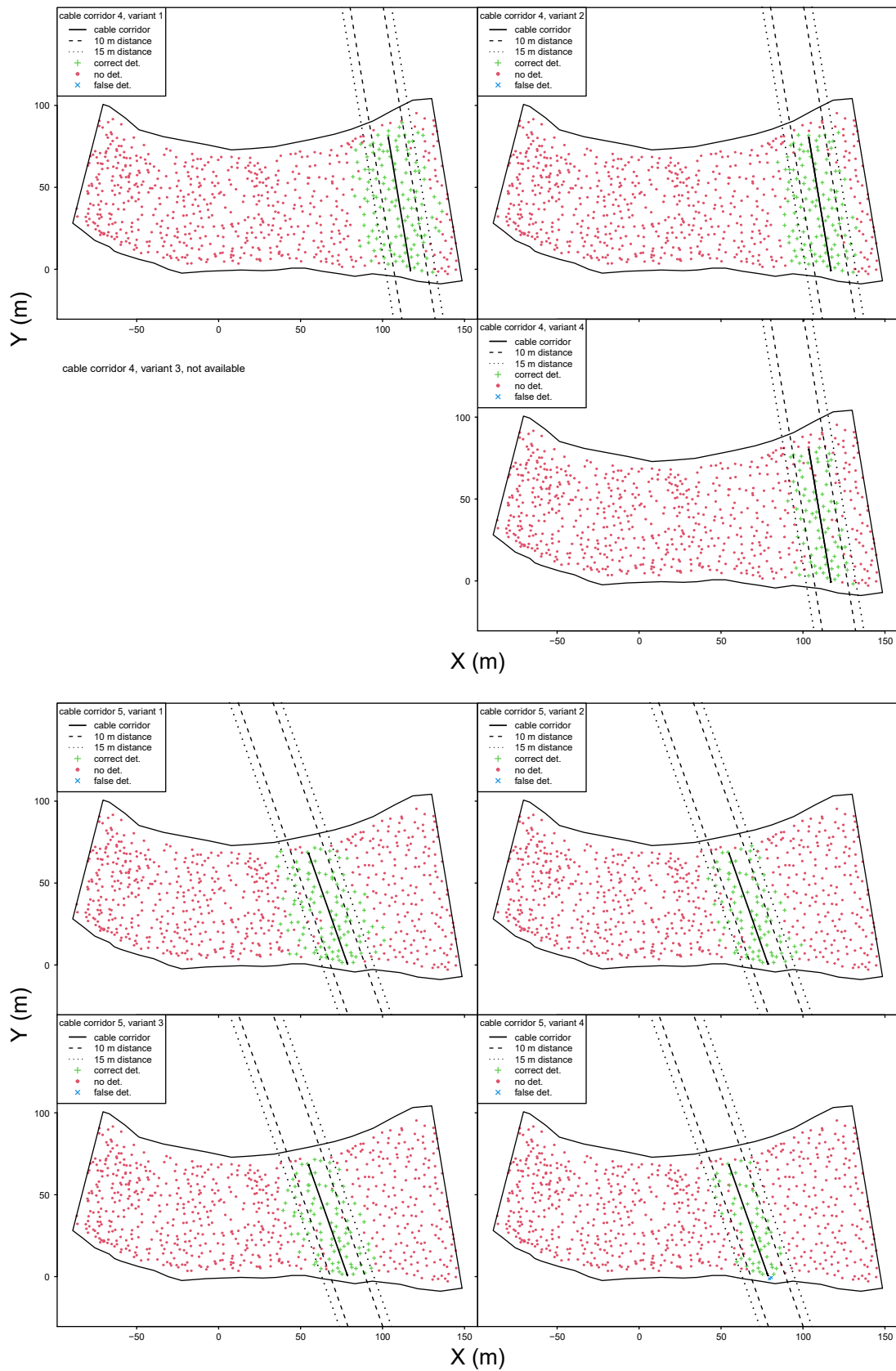
## Appendix A



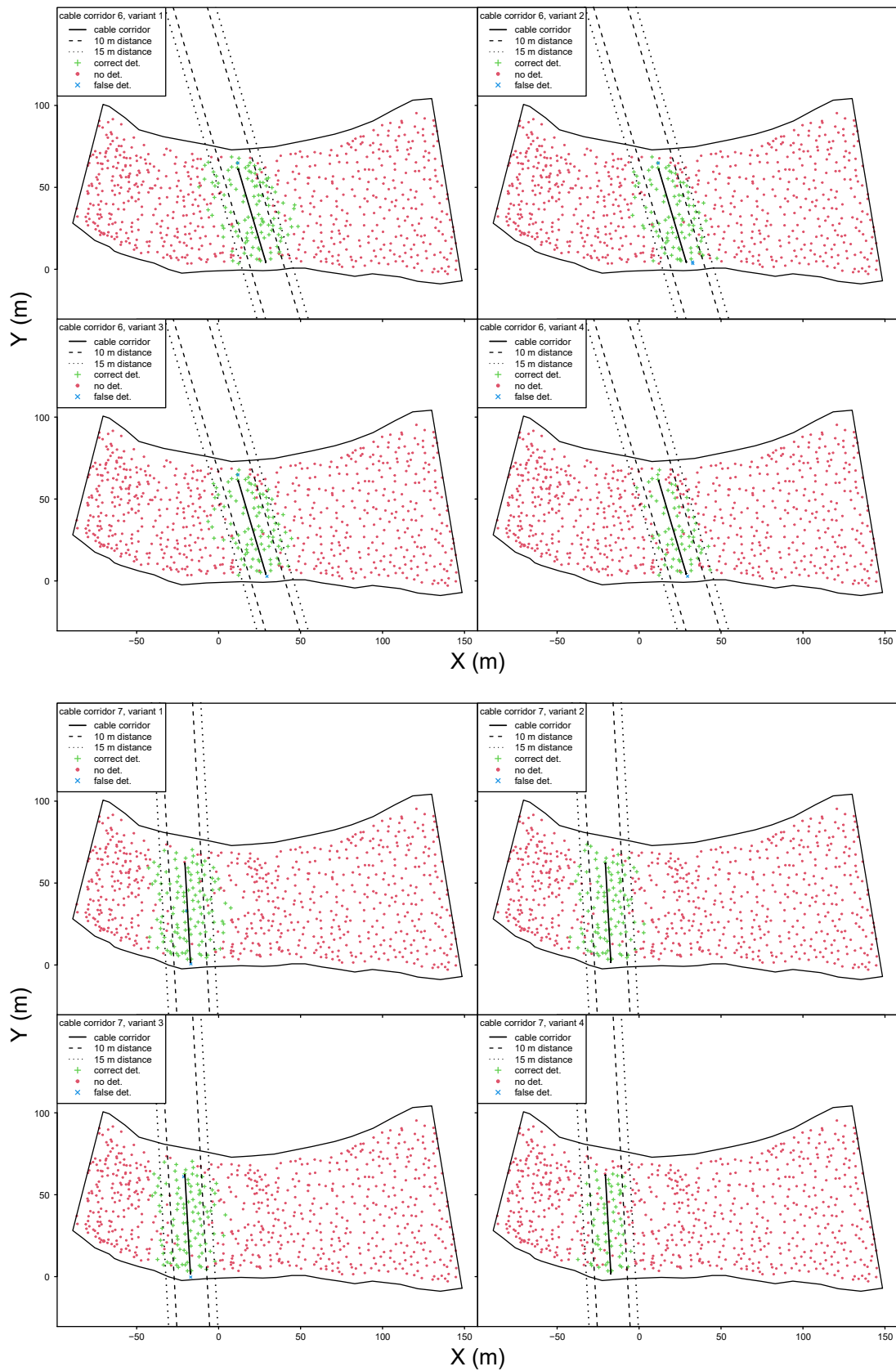
**Fig. A1** Result of final tree mapping in stand 1 for cable corridor 1 and 2.



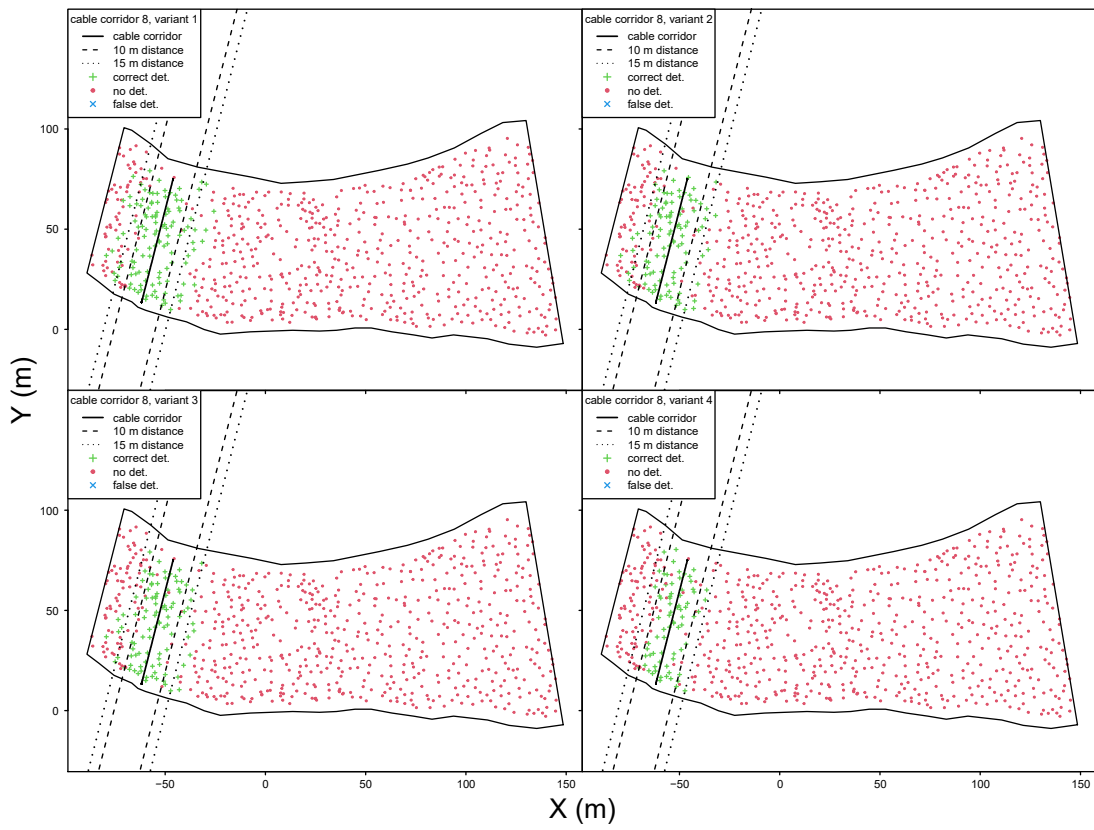
**Fig. A2** Result of final tree mapping in stand 1 for cable corridor 3.



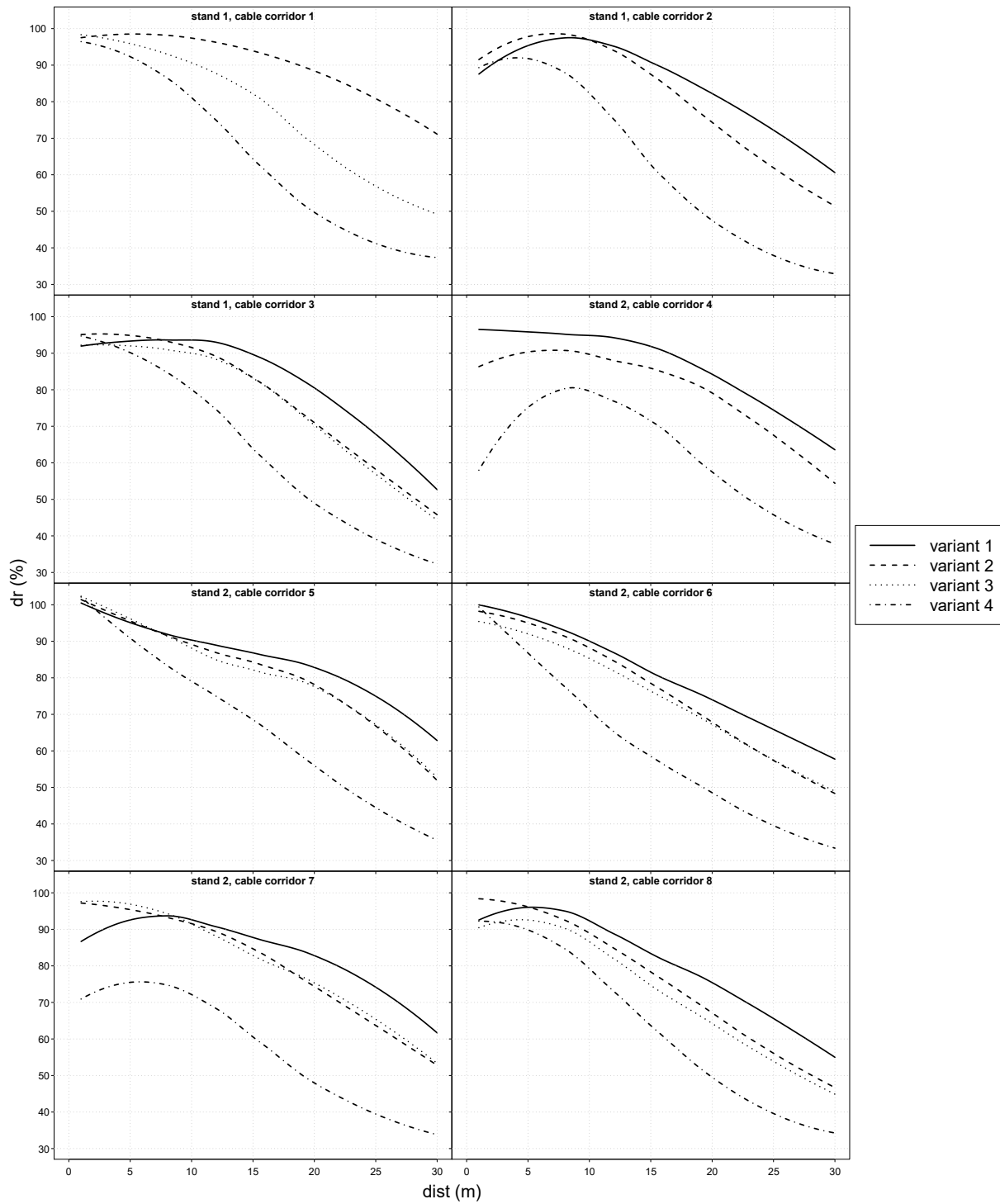
**Fig. A3** Result of final tree mapping in stand 2 for cable corridor 4 and 5.



**Fig. A4** Result of final tree mapping in stand 2 for cable corridor 6 and 7.



**Fig. A5** Result of final tree mapping in stand 2 for cable corridor 8.



**Fig. A6** Detection rates of individual cable corridors and scan variants over distance from the skyline.



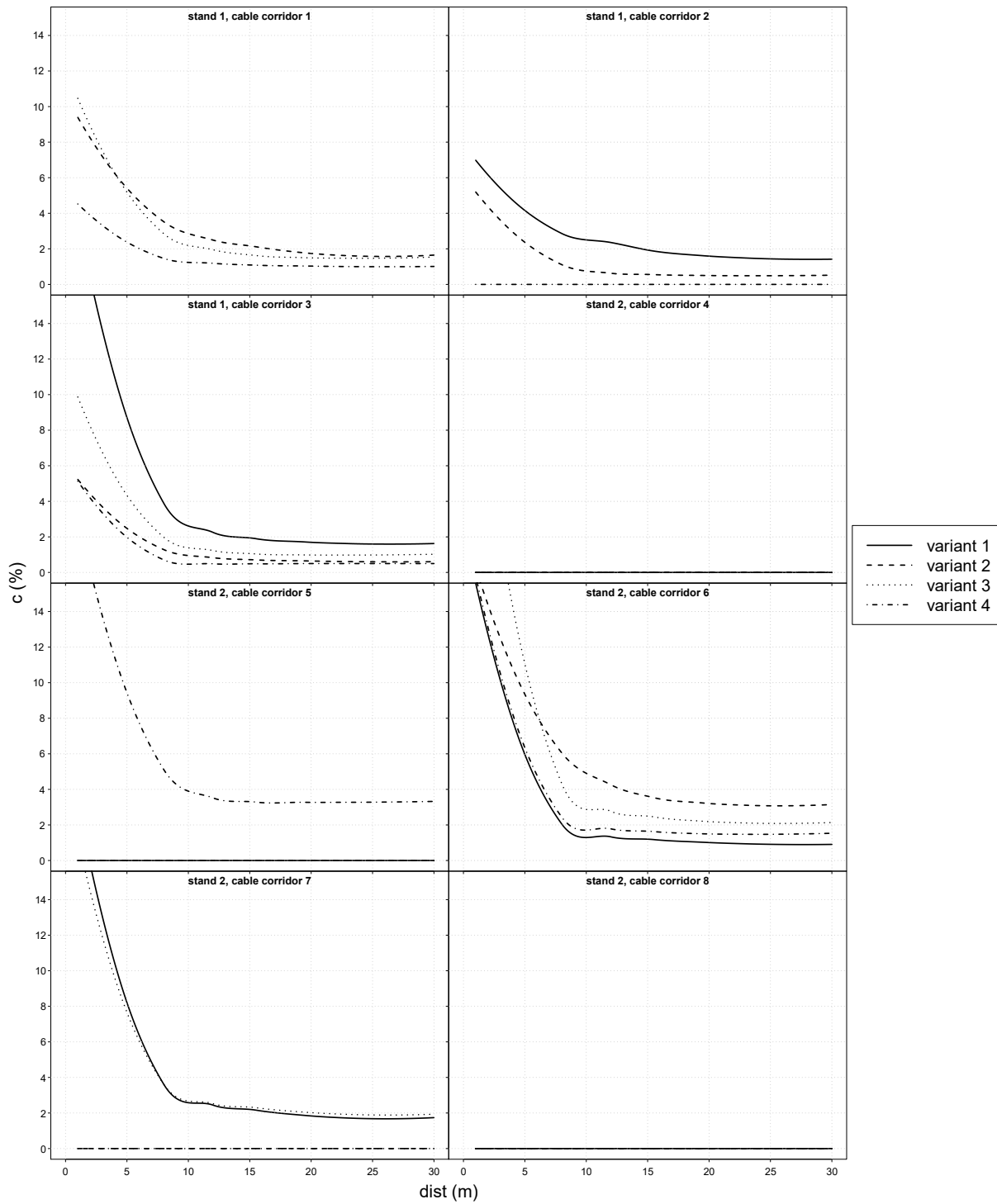
**Table A1.** Average detection rates over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m dr (%)	10 m dr (%)	15 m dr (%)	20 m dr (%)	25 m dr (%)	30 m dr (%)
stand 1	1	94.34	95.44	90.29	81.47	70.23	56.95
stand 1	2	97.30	95.54	88.68	78.67	67.79	56.74
stand 1	3	94.29	90.36	82.59	69.16	56.87	47.01
stand 1	4	91.58	81.21	63.67	48.75	39.46	34.36
stand 2	1	94.97	92.16	86.18	79.63	70.73	59.99
stand 2	2	94.44	89.53	82.16	72.99	62.00	50.76
stand 2	3	94.20	87.93	78.74	70.52	60.42	49.72
stand 2	4	83.08	76.33	64.43	51.70	41.64	34.98

**Table A2.** Detection rates for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m dr (%)	10 m dr (%)	15 m dr (%)	20 m dr (%)	25 m dr (%)	30 m dr (%)
1	2	98.51	97.40	93.91	88.44	80.84	71.12
1	3	95.89	90.63	82.16	68.26	56.9	49.22
1	4	92.32	81.11	64.32	49.73	41.21	37.35
2	1	95.35	96.92	90.81	82.24	72.21	60.60
2	2	97.81	96.89	87.49	74.36	61.91	51.41
2	4	91.8	82.30	62.76	47.52	37.92	32.92
3	1	93.32	93.61	89.65	80.51	67.83	52.67
3	2	94.87	91.57	83.29	71.00	58.22	45.81
3	3	92.00	89.99	83.15	70.35	56.91	44.35
3	4	90.16	80.07	63.87	48.95	39.11	32.34
4	1	95.84	94.86	91.87	84.25	74.43	63.58
4	2	90.35	89.70	85.89	79.12	67.57	54.41
4	4	75.15	79.64	71.48	57.51	45.79	37.78
5	1	95.11	90.32	86.82	82.84	74.97	62.84
5	2	95.56	89.15	84.31	78.16	66.82	51.91
5	3	96.17	88.10	82.16	77.58	67.17	52.74
5	4	90.86	79.06	68.53	55.98	44.48	35.54
6	1	96.53	90.05	81.53	74.00	65.88	57.75
6	2	95.02	88.22	78.50	67.89	57.38	48.35
6	3	92.03	85.29	76.38	67.25	57.53	48.98
6	4	86.79	71.25	58.53	48.55	39.56	33.39
7	1	92.57	92.64	87.78	82.81	74.17	61.67
7	2	95.40	91.55	84.67	74.37	63.69	52.80
7	3	96.89	91.50	82.83	75.34	65.39	53.36
7	4	75.50	72.15	60.54	47.96	39.45	33.80
8	1	96.03	92.34	83.39	75.42	65.59	54.99
8	2	96.15	88.97	78.34	67.14	56.08	46.70
8	3	92.56	86.61	74.68	64.25	53.89	44.88
8	4	89.84	79.27	63.67	49.52	39.59	34.26





**Fig. A7** Commission errors of individual cable corridors and scan variants over distance from the skyline.



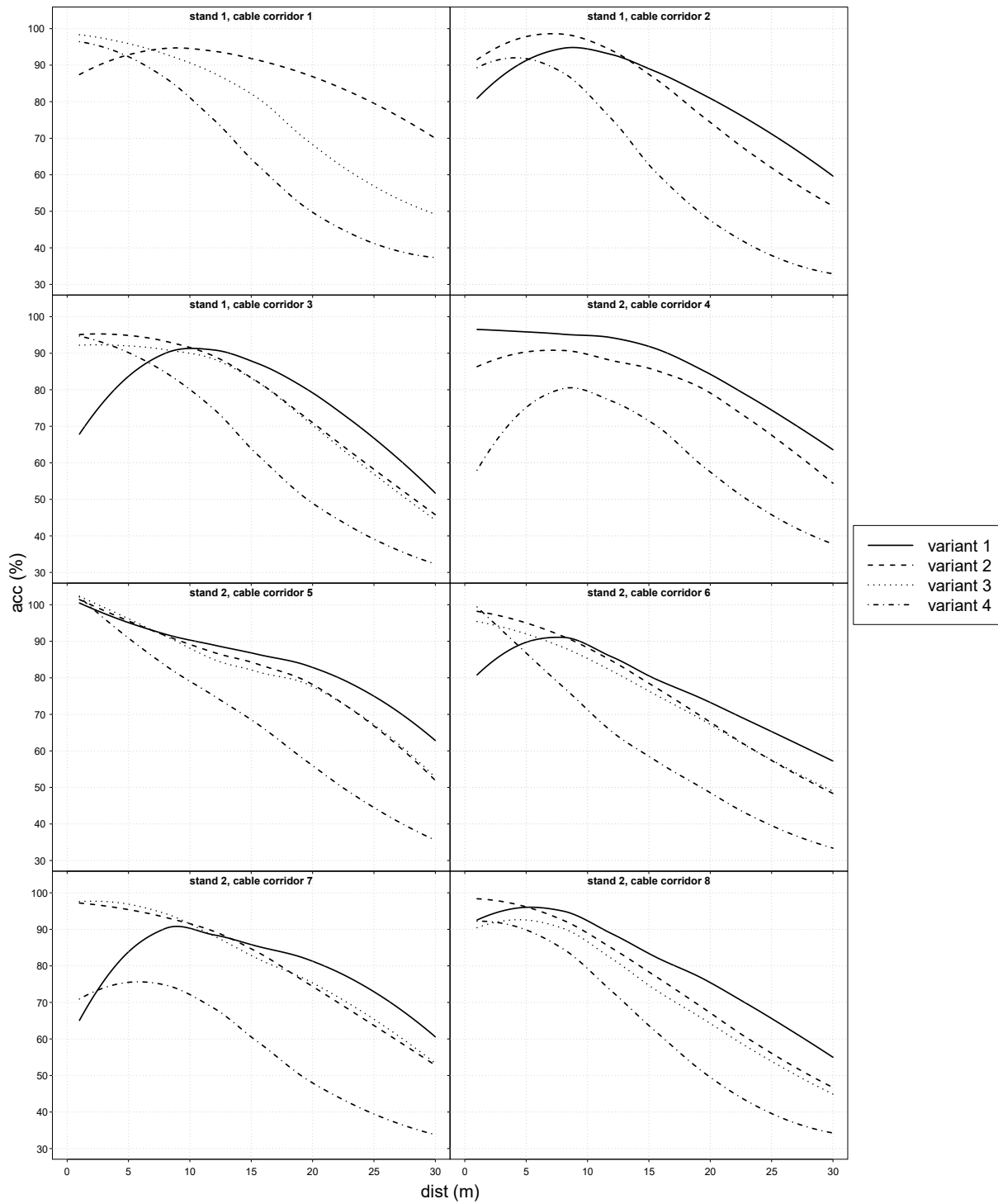


**Table A3.** Average commission errors over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		c (%)	c (%)	c (%)	c (%)	c (%)	c (%)
stand 1	1	6.29	2.54	1.93	1.62	1.49	1.53
stand 1	2	3.69	1.59	1.24	1.06	0.99	1.02
stand 1	3	4.83	1.83	1.40	1.28	1.27	1.33
stand 1	4	1.52	0.58	0.52	0.49	0.49	0.51
stand 2	1	2.85	0.78	0.69	0.58	0.51	0.50
stand 2	2	1.62	0.98	0.72	0.62	0.59	0.62
stand 2	3	4.65	1.40	1.24	1.09	1.01	1.00
stand 2	4	2.88	1.03	0.91	0.89	0.89	0.91

**Table A4.** Commission errors for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		c (%)	c (%)	c (%)	c (%)	c (%)	c (%)
1	2	5.41	2.85	2.17	1.74	1.58	1.65
1	3	5.19	2.19	1.66	1.49	1.47	1.54
1	4	2.38	1.24	1.09	1.03	0.99	1.01
2	1	4.16	2.50	1.93	1.59	1.44	1.42
2	2	2.37	0.75	0.56	0.50	0.49	0.52
2	4	0.00	0.00	0.00	0.00	0.00	0.00
3	1	8.71	2.61	1.94	1.69	1.60	1.63
3	2	2.48	0.95	0.72	0.64	0.60	0.60
3	3	4.33	1.38	1.06	0.98	0.98	1.02
3	4	1.98	0.46	0.49	0.50	0.50	0.50
4	1	0.00	0.00	0.00	0.00	0.00	0.00
4	2	0.00	0.00	0.00	0.00	0.00	0.00
4	4	0.00	0.00	0.00	0.00	0.00	0.00
5	1	0.00	0.00	0.00	0.00	0.00	0.00
5	2	0.00	0.00	0.00	0.00	0.00	0.00
5	3	0.00	0.00	0.00	0.00	0.00	0.00
5	4	9.43	3.90	3.31	3.27	3.28	3.32
6	1	5.96	1.29	1.20	1.01	0.91	0.91
6	2	9.35	4.91	3.62	3.21	3.08	3.15
6	3	11.06	2.87	2.50	2.19	2.09	2.14
6	4	6.34	1.71	1.65	1.49	1.47	1.53
7	1	8.21	2.58	2.20	1.83	1.68	1.74
7	2	0.00	0.00	0.00	0.00	0.00	0.00
7	3	7.66	2.67	2.33	2.02	1.89	1.93
7	4	0.00	0.00	0.00	0.00	0.00	0.00
8	1	0.00	0.00	0.00	0.00	0.00	0.00
8	2	0.00	0.00	0.00	0.00	0.00	0.00
8	3	0.00	0.00	0.00	0.00	0.00	0.00
8	4	0.00	0.00	0.00	0.00	0.00	0.00



**Fig. A8** Overall accuracies of individual cable corridors and scan variants over distance from the skyline.



**Table A5.** Average overall accuracies over all cable corridors for different scan variants in 5 to 30 m distance.

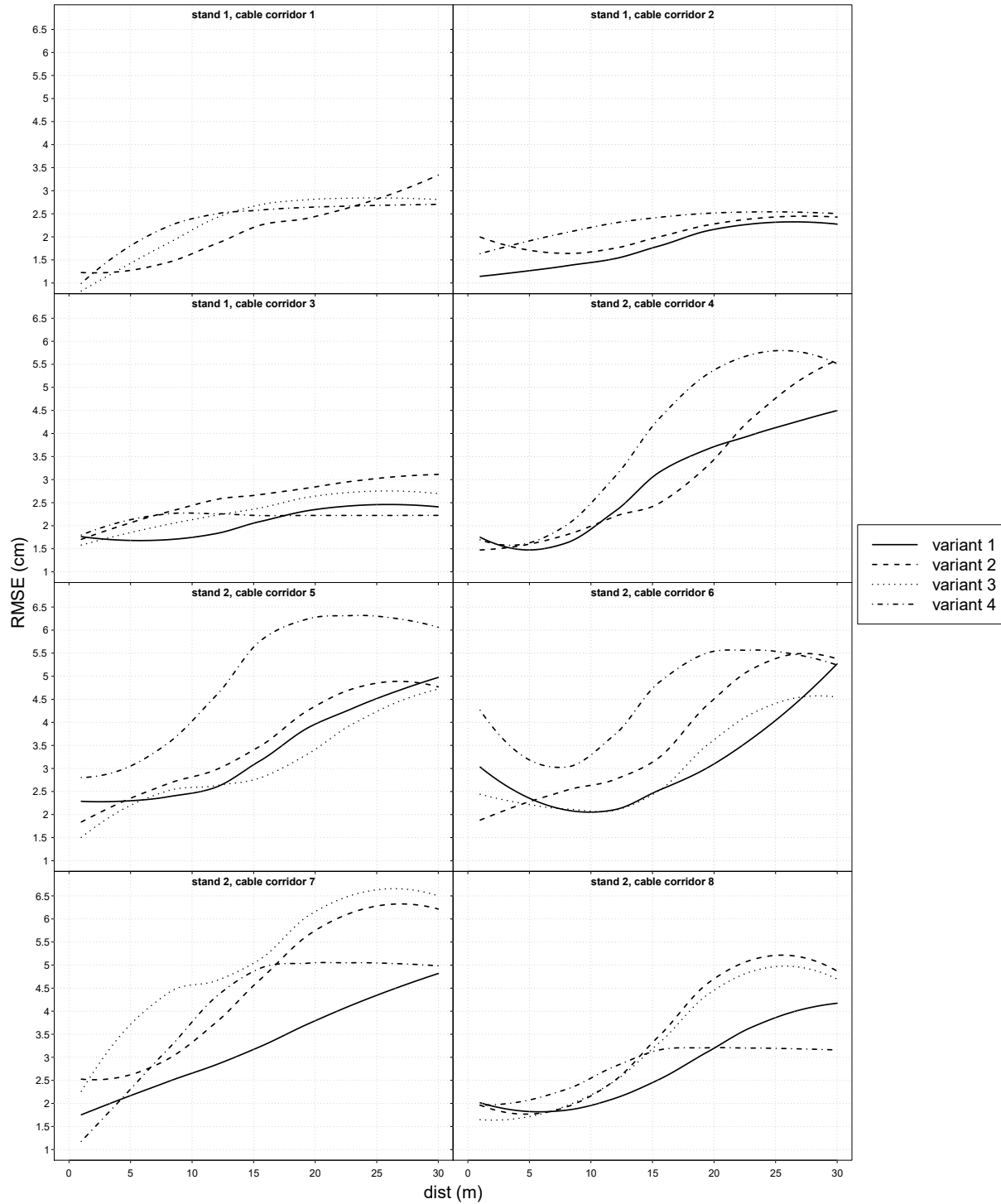
stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		acc (%)	acc (%)	acc (%)	acc (%)	acc (%)	acc (%)
stand 1	1	87.91	92.99	88.5	80.13	69.17	56.04
stand 1	2	93.56	94.00	87.57	77.81	67.11	56.17
stand 1	3	89.34	88.71	81.40	68.26	56.16	46.39
stand 1	4	90.14	80.73	63.32	48.49	39.25	34.16
stand 2	1	92.12	91.45	85.60	79.17	70.36	59.68
stand 2	2	92.86	88.64	81.58	72.53	61.62	50.44
stand 2	3	89.38	86.74	77.74	69.76	59.81	49.21
stand 2	4	80.62	75.53	63.84	51.25	41.28	34.65

**Table A6.** Overall accuracies for individual cable corridors and different scan variants in 5 to 30 m distance.

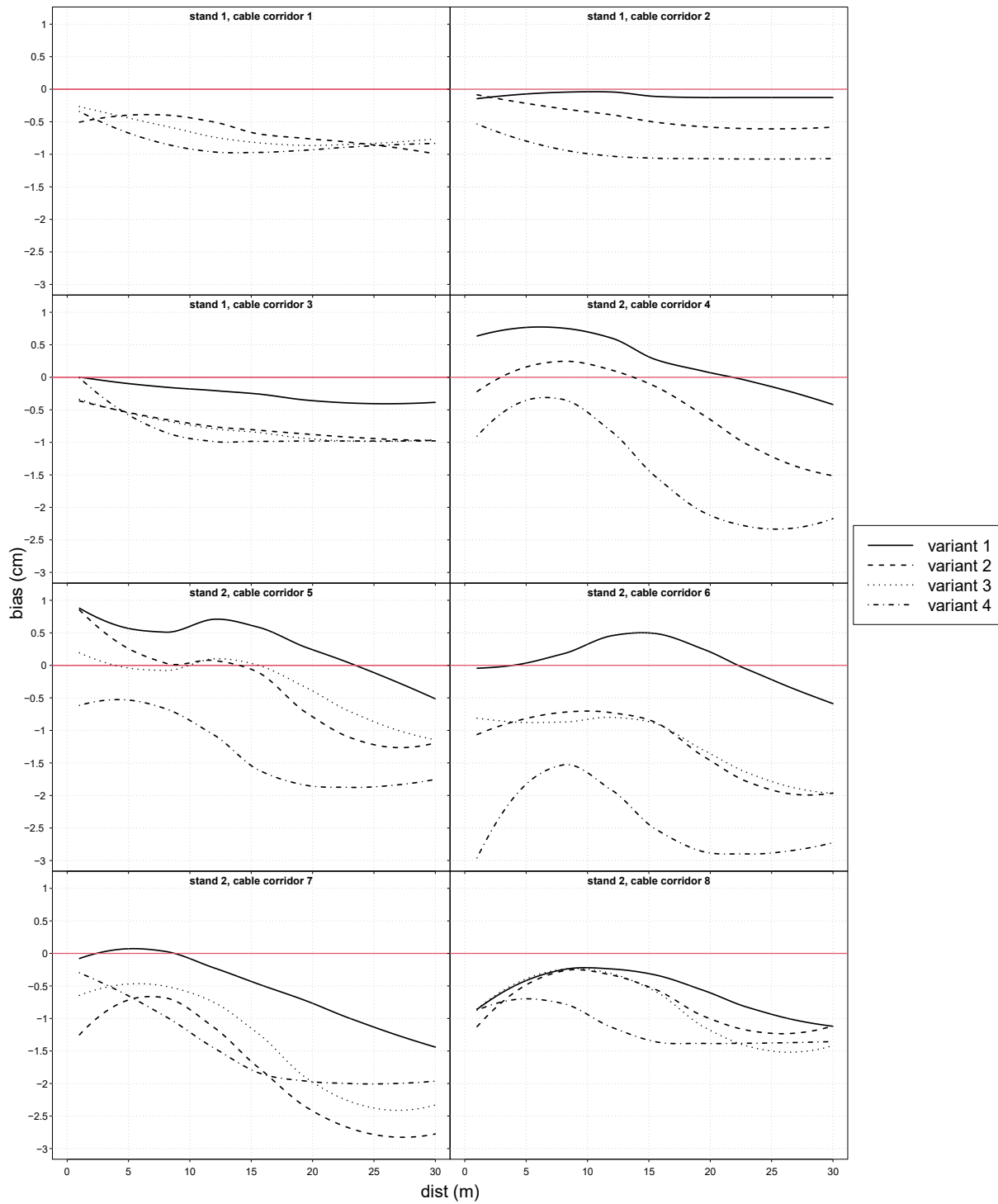
cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		acc (%)	acc (%)	acc (%)	acc (%)	acc (%)	acc (%)
1	2	92.84	94.56	91.82	86.86	79.55	69.97
1	3	95.89	90.63	82.16	68.26	56.90	49.22
1	4	92.32	81.11	64.32	49.73	41.21	37.35
2	1	91.27	94.44	89.03	80.92	71.16	59.65
2	2	97.81	96.89	87.49	74.36	61.91	51.41
2	4	91.80	82.30	62.76	47.52	37.92	32.92
3	1	83.68	91.32	87.88	79.16	66.75	51.73
3	2	94.87	91.57	83.29	71.00	58.22	45.81
3	3	92.00	89.99	83.15	70.35	56.91	44.35
3	4	90.16	80.07	63.87	48.95	39.11	32.34
4	1	95.84	94.86	91.87	84.25	74.43	63.58
4	2	90.35	89.70	85.89	79.12	67.57	54.41
4	4	75.15	79.64	71.48	57.51	45.79	37.78
5	1	95.11	90.32	86.82	82.84	74.97	62.84
5	2	95.56	89.15	84.31	78.16	66.82	51.91
5	3	96.17	88.10	82.16	77.58	67.17	52.74
5	4	90.86	79.06	68.53	55.98	44.48	35.54
6	1	89.72	89.05	80.54	73.25	65.29	57.23
6	2	95.02	88.22	78.50	67.89	57.38	48.35
6	3	92.03	85.29	76.38	67.25	57.53	48.98
6	4	86.79	71.25	58.53	48.55	39.56	33.39
7	1	83.84	90.29	85.82	81.26	72.91	60.58
7	2	95.40	91.55	84.67	74.37	63.69	52.80
7	3	96.89	91.50	82.83	75.34	65.39	53.36
7	4	75.50	72.15	60.54	47.96	39.45	33.80
8	1	96.03	92.34	83.39	75.42	65.59	54.99
8	2	96.15	88.97	78.34	67.14	56.08	46.70
8	3	92.56	86.61	74.68	64.25	53.89	44.88
8	4	89.84	79.27	63.67	49.52	39.59	34.26



## Appendix B



**Fig. B1** dbh RMSE of individual cable corridors and scan variants over distance from the skyline.



**Fig. B2** dbh bias of individual cable corridors and scan variants over distance from the skyline.



**Table B1.** Average dbh RMSE over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)
stand 1	1	1.47	1.59	1.90	2.25	2.38	2.33
stand 1	2	1.66	1.91	2.27	2.5	2.76	3.02
stand 1	3	1.61	2.15	2.53	2.74	2.81	2.76
stand 1	4	1.93	2.3	2.42	2.49	2.51	2.51
stand 2	1	2.02	2.23	2.86	3.56	4.18	4.74
stand 2	2	2.17	2.62	3.44	4.62	5.34	5.38
stand 2	3	2.64	3.07	3.55	4.61	5.20	5.20
stand 2	4	2.48	3.25	4.53	5.14	5.24	5.05

**Table B2.** Average dbh bias over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		bias (cm)	bias (cm)	bias (cm)	bias (cm)	bias (cm)	bias (cm)
stand 1	1	-0.08	-0.1	-0.17	-0.23	-0.25	-0.24
stand 1	2	-0.38	-0.48	-0.64	-0.73	-0.80	-0.86
stand 1	3	-0.49	-0.69	-0.82	-0.9	-0.90	-0.85
stand 1	4	-0.69	-0.95	-1.00	-0.99	-0.97	-0.95
stand 2	1	0.16	0.24	0.11	-0.19	-0.52	-0.82
stand 2	2	-0.35	-0.32	-0.65	-1.26	-1.67	-1.71
stand 2	3	-0.46	-0.42	-0.65	-1.26	-1.66	-1.73
stand 2	4	-0.78	-1.02	-1.69	-2.03	-2.09	-1.99

**Table B3.** dbh RMSE for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)	RMSE (cm)
1	2	1.27	1.63	2.21	2.44	2.82	3.34
1	3	1.43	2.15	2.66	2.82	2.85	2.81
1	4	1.81	2.39	2.57	2.65	2.68	2.70
2	1	1.27	1.44	1.76	2.16	2.32	2.28
2	2	1.71	1.67	1.97	2.28	2.43	2.43
2	4	1.91	2.21	2.41	2.52	2.54	2.50
3	1	1.68	1.75	2.06	2.35	2.46	2.41
3	2	2.06	2.44	2.66	2.84	3.02	3.11
3	3	1.85	2.13	2.36	2.64	2.75	2.70
3	4	2.13	2.27	2.22	2.22	2.22	2.22
4	1	1.47	1.92	3.05	3.71	4.13	4.50
4	2	1.60	1.99	2.42	3.44	4.76	5.59
4	4	1.63	2.49	4.16	5.37	5.79	5.51
5	1	2.30	2.46	3.08	3.96	4.52	4.97
5	2	2.35	2.82	3.40	4.35	4.85	4.77
5	3	2.20	2.59	2.75	3.41	4.24	4.72
5	4	3.05	4.03	5.63	6.28	6.30	6.06
6	1	2.35	2.05	2.46	3.10	4.04	5.27
6	2	2.28	2.63	3.14	4.51	5.38	5.38
6	3	2.22	2.07	2.43	3.62	4.41	4.55
6	4	3.19	3.29	4.74	5.54	5.54	5.24
7	1	2.17	2.66	3.17	3.79	4.34	4.82
7	2	2.62	3.32	4.56	5.75	6.28	6.22
7	3	3.72	4.57	5.04	6.16	6.63	6.50
7	4	2.31	3.77	4.86	5.05	5.05	4.98
8	1	1.82	1.96	2.45	3.20	3.86	4.17
8	2	1.77	2.16	3.32	4.70	5.21	4.87
8	3	1.71	2.19	3.19	4.45	4.97	4.70
8	4	2.07	2.55	3.12	3.21	3.19	3.16



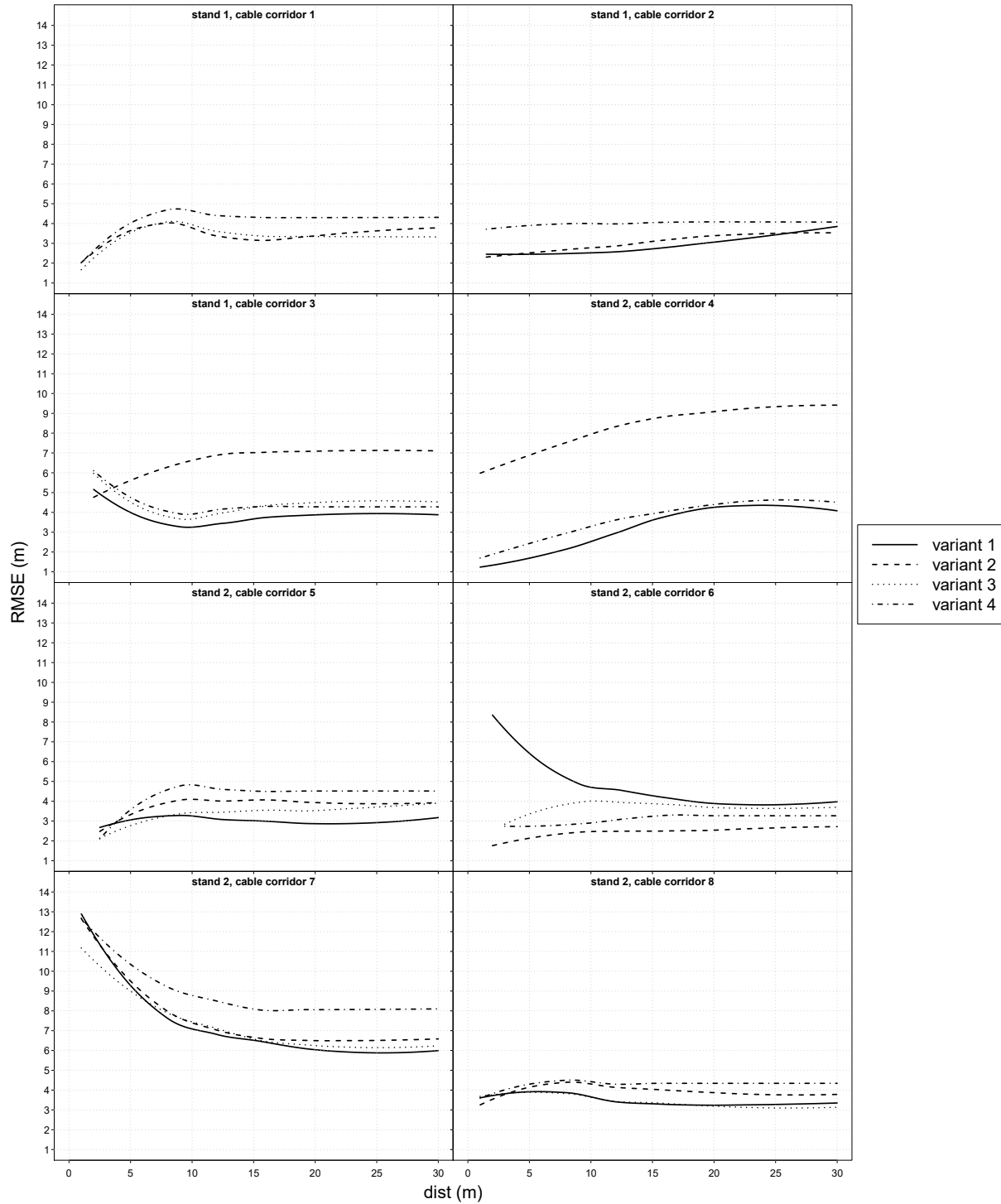
**Table B4.** dbh bias for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		bias (cm)	bias (cm)	bias (cm)	bias (cm)	bias (cm)	bias (cm)
1	2	-0.40	-0.44	-0.66	-0.77	-0.86	-0.99
1	3	-0.44	-0.66	-0.81	-0.87	-0.83	-0.76
1	4	-0.67	-0.92	-0.97	-0.93	-0.87	-0.83
2	1	-0.07	-0.04	-0.10	-0.13	-0.13	-0.13
2	2	-0.22	-0.35	-0.49	-0.58	-0.61	-0.58
2	4	-0.80	-0.99	-1.06	-1.07	-1.07	-1.07
3	1	-0.10	-0.18	-0.25	-0.36	-0.41	-0.38
3	2	-0.54	-0.71	-0.80	-0.88	-0.94	-0.97
3	3	-0.55	-0.74	-0.84	-0.95	-0.99	-0.96
3	4	-0.58	-0.94	-0.99	-0.98	-0.98	-0.98
4	1	0.77	0.70	0.31	0.07	-0.14	-0.42
4	2	0.16	0.21	-0.10	-0.65	-1.22	-1.51
4	4	-0.35	-0.54	-1.43	-2.12	-2.33	-2.17
5	1	0.57	0.6	0.61	0.24	-0.11	-0.51
5	2	0.26	0.04	-0.06	-0.79	-1.22	-1.19
5	3	-0.04	0.00	0.03	-0.39	-0.87	-1.15
5	4	-0.53	-0.85	-1.54	-1.86	-1.87	-1.75
6	1	0.03	0.32	0.50	0.21	-0.22	-0.59
6	2	-0.82	-0.70	-0.84	-1.46	-1.92	-1.96
6	3	-0.88	-0.83	-0.87	-1.36	-1.79	-1.97
6	4	-1.83	-1.65	-2.45	-2.89	-2.88	-2.72
7	1	0.07	-0.08	-0.43	-0.77	-1.13	-1.44
7	2	-0.72	-0.86	-1.66	-2.42	-2.78	-2.78
7	3	-0.47	-0.60	-1.15	-1.98	-2.38	-2.33
7	4	-0.65	-1.21	-1.79	-1.97	-2.01	-1.96
8	1	-0.42	-0.22	-0.31	-0.61	-0.94	-1.12
8	2	-0.48	-0.26	-0.52	-1.01	-1.23	-1.12
8	3	-0.39	-0.24	-0.53	-1.18	-1.50	-1.42
8	4	-0.70	-0.94	-1.33	-1.39	-1.38	-1.35

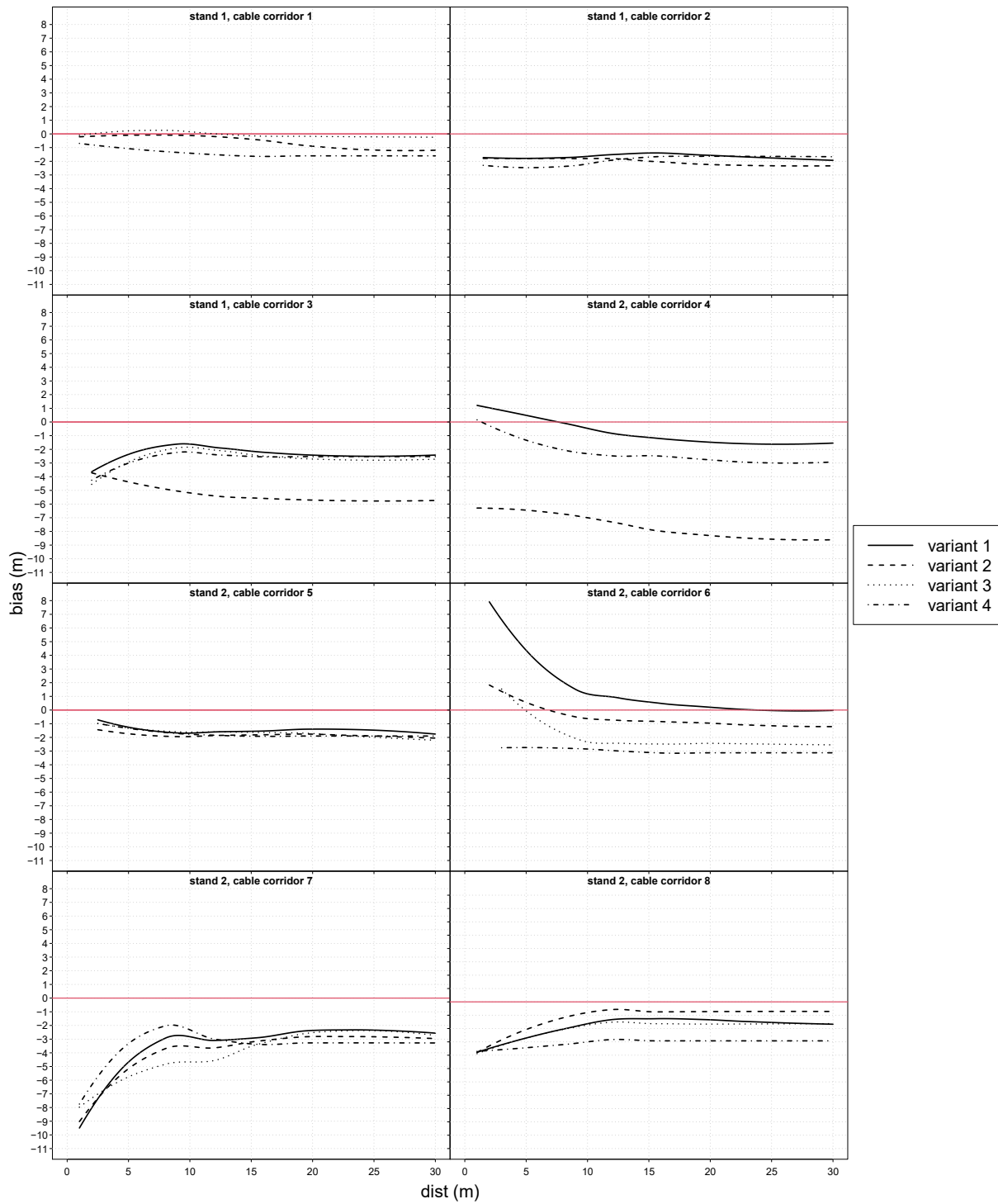




## Appendix C



**Fig. C1** Height RMSE of individual cable corridors and scan variants over distance from the skyline.



**Fig. C2** Height bias of individual cable corridors and scan variants over distance from the skyline.



**Table C1.** Average height RMSE over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)
stand 1	1	3.03	2.94	3.19	3.44	3.66	3.86
stand 1	2	3.94	4.70	4.62	4.69	4.75	4.79
stand 1	3	3.78	3.89	3.84	3.95	3.99	3.95
stand 1	4	4.07	4.26	4.22	4.23	4.23	4.23
stand 2	1	5.81	4.63	4.60	4.46	4.38	4.41
stand 2	2	6.30	5.63	5.90	6.14	6.29	6.31
stand 2	3	6.17	4.98	4.73	4.53	4.47	4.55
stand 2	4	6.01	5.15	5.24	5.32	5.36	5.34

**Table C2.** Average height bias over all cable corridors for different scan variants in 5 to 30 m distance.

stand	variant	5 m	10 m	15 m	20 m	25 m	30 m
		bias (m)	bias (m)	bias (m)	bias (m)	bias (m)	bias (m)
stand 1	1	-1.88	-1.66	-1.73	-1.95	-2.08	-2.14
stand 1	2	-1.78	-2.32	-2.46	-2.65	-2.73	-2.70
stand 1	3	-0.85	-0.89	-1.23	-1.41	-1.47	-1.43
stand 1	4	-1.90	-1.97	-1.95	-1.93	-1.93	-1.94
stand 2	1	-1.38	-1.18	-1.45	-1.39	-1.49	-1.61
stand 2	2	-3.44	-2.78	-3.17	-3.48	-3.72	-3.76
stand 2	3	-3.40	-2.56	-2.37	-2.09	-2.12	-2.31
stand 2	4	-2.49	-2.40	-2.71	-2.78	-2.83	-2.81

**Table C3.** Height RMSE for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)	RMSE (m)
1	2	3.64	3.78	3.16	3.38	3.63	3.78
1	3	3.54	3.94	3.40	3.34	3.33	3.33
1	4	4.02	4.64	4.32	4.30	4.30	4.31
2	1	2.45	2.52	2.72	3.06	3.43	3.85
2	2	2.52	2.78	3.10	3.39	3.51	3.53
2	4	3.90	4.00	4.05	4.08	4.08	4.07
3	1	4.00	3.25	3.67	3.87	3.94	3.88
3	2	5.61	6.63	7.02	7.09	7.13	7.11
3	3	4.52	3.66	4.26	4.5	4.58	4.53
3	4	4.76	3.91	4.28	4.28	4.28	4.28
4	1	1.69	2.53	3.61	4.26	4.35	4.08
4	2	6.89	7.94	8.73	9.08	9.34	9.41
4	4	2.43	3.29	3.93	4.4	4.63	4.51
5	1	3.06	3.26	3.02	2.87	2.92	3.18
5	2	3.33	4.10	4.06	3.93	3.87	3.93
5	3	2.77	3.43	3.53	3.53	3.70	3.91
5	4	3.57	4.83	4.51	4.52	4.52	4.52
6	1	6.42	4.70	4.28	3.89	3.82	3.98
6	2	2.13	2.47	2.49	2.54	2.66	2.72
6	3	3.35	4.01	3.88	3.68	3.64	3.70
6	4	2.74	2.90	3.24	3.27	3.27	3.27
7	1	9.28	7.09	6.52	6.04	5.88	5.99
7	2	9.50	7.40	6.66	6.50	6.51	6.58
7	3	8.99	7.44	6.58	6.25	6.14	6.24
7	4	10.35	8.78	8.09	8.06	8.07	8.10
8	1	3.92	3.66	3.31	3.24	3.27	3.35
8	2	4.15	4.31	4.04	3.87	3.76	3.78
8	3	3.89	3.64	3.36	3.19	3.10	3.13
8	4	4.30	4.43	4.34	4.34	4.34	4.34



**Table C4.** Height bias for individual cable corridors and different scan variants in 5 to 30 m distance.

cable corridor	variant	5 m	10 m	15 m	20 m	25 m	30 m
		bias (m)	bias (m)	bias (m)	bias (m)	bias (m)	bias (m)
1	2	-0.10	-0.12	-0.39	-0.90	-1.18	-1.19
1	3	0.22	0.16	-0.14	-0.18	-0.21	-0.24
1	4	-1.08	-1.41	-1.63	-1.60	-1.60	-1.60
2	1	-1.79	-1.64	-1.39	-1.57	-1.76	-1.93
2	2	-1.79	-1.8	-1.99	-2.24	-2.33	-2.33
2	4	-2.47	-2.19	-1.69	-1.63	-1.64	-1.67
3	1	-2.37	-1.61	-2.13	-2.42	-2.51	-2.42
3	2	-4.38	-5.18	-5.55	-5.71	-5.78	-5.74
3	3	-2.93	-1.85	-2.39	-2.71	-2.79	-2.72
3	4	-3.01	-2.2	-2.52	-2.53	-2.53	-2.53
4	1	0.49	-0.47	-1.13	-1.48	-1.62	-1.54
4	2	-6.45	-7.00	-7.86	-8.31	-8.57	-8.61
4	4	-1.33	-2.32	-2.46	-2.77	-2.99	-2.93
5	1	-1.26	-1.69	-1.55	-1.39	-1.47	-1.76
5	2	-1.73	-1.94	-1.82	-1.76	-1.90	-2.05
5	3	-1.31	-1.61	-1.63	-1.72	-1.99	-2.21
5	4	-1.34	-1.77	-1.91	-1.90	-1.90	-1.90
6	1	4.37	1.18	0.59	0.2	-0.03	-0.03
6	2	0.56	-0.63	-0.82	-0.96	-1.15	-1.21
6	3	-0.06	-2.34	-2.48	-2.43	-2.49	-2.55
6	4	-2.74	-2.85	-3.10	-3.13	-3.13	-3.12
7	1	-4.67	-2.82	-2.93	-2.36	-2.34	-2.56
7	2	-5.16	-3.53	-3.21	-2.81	-2.83	-2.96
7	3	-5.76	-4.67	-3.52	-2.52	-2.38	-2.73
7	4	-3.32	-2.32	-3.35	-3.27	-3.27	-3.28
8	1	-2.71	-1.64	-1.27	-1.34	-1.54	-1.68
8	2	-2.07	-0.8	-0.74	-0.73	-0.72	-0.72
8	3	-2.71	-1.74	-1.63	-1.67	-1.65	-1.63
8	4	-3.44	-3.00	-2.91	-2.92	-2.92	-2.92