

Analysis of Exploration vs. Exploitation in Adaptive Information Sampling

Appendix SA - Results with Extended Data

TABLE SI

PERFORMANCE METRICS FOR VARIANTS WITH INITIAL FIXED SWEEP
SCENARIO WITH SIGNAL PROPAGATION EXPONENT N=3.

Approach	Source location	Samples	Rmse	Variance	Cumulative Distance
Alpha 0.75	Src(0,0)	218 ± 3.46	4.3 ± 0.07	8.14 ± 2.5	87.2 ± 1.31
	Src(0,14)	219 ± 4	4.08 ± 0.05	16.55 ± 16.73	97.03 ± 21.16
	Src(4,7)	222 ± 0	4.38 ± 0.21	9.25 ± 1.16	79.65 ± 1.55
	Src(9,0)	220 ± 1	4.29 ± 0.1	7.1 ± 1.14	83.86 ± 2.27
	Src(9,14)	216 ± 5.48	4.32 ± 0.09	15.09 ± 11.41	118.02 ± 43.35
Alpha 0.5	Src(0,0)	212 ± 4.8	4.28 ± 0.06	9.62 ± 3.2	143.65 ± 35.3
	Src(0,14)	204 ± 8.72	4.1 ± 0.08	21.44 ± 15.62	183.58 ± 67.3
	Src(4,7)	198 ± 6.08	4.22 ± 0.05	12.25 ± 5.16	227.79 ± 44.2
	Src(9,0)	210 ± 6.71	4.17 ± 0.06	14.83 ± 14.58	139.26 ± 45.71
	Src(9,14)	213 ± 6.56	4.2 ± 0.08	9.1 ± 2.81	147.36 ± 53.53
Alpha 0.25	Src(0,0)	188 ± 5.66	4.17 ± 0.07	5.67 ± 0.46	320.34 ± 53.94
	Src(0,14)	184 ± 5.2	4.06 ± 0.08	5.67 ± 0.11	325.42 ± 35.96
	Src(4,7)	174 ± 0	4.14 ± 0.07	4.73 ± 0.11	434.77 ± 10.35
	Src(9,0)	182 ± 6.56	4.16 ± 0.04	5.87 ± 0.32	362.33 ± 55.26
	Src(9,14)	182 ± 7.55	4.1 ± 0.08	5.87 ± 0.28	386.88 ± 61.49
Max Variance	Src(0,0)	153 ± 2.45	4.18 ± 0.03	2.57 ± 0.1	617.44 ± 18.47
	Src(0,14)	153 ± 2	3.95 ± 0.08	2.44 ± 0.17	612.12 ± 14.42
	Src(4,7)	155 ± 0	4.44 ± 0.13	3.0 ± 0.11	618.93 ± 15.65
	Src(9,0)	154 ± 1.73	4.2 ± 0.04	2.17 ± 0.18	625.74 ± 14.94
	Src(9,14)	153 ± 2.65	4.16 ± 0.06	2.23 ± 0.14	617.44 ± 17.19
Max Mean	Src(0,0)	221 ± 0	4.31 ± 0.11	11.39 ± 6.55	84.99 ± 0.14
	Src(0,14)	222 ± 0	4.48 ± 0.23	69.25 ± 73.97	78.95 ± 1.06
	Src(4,7)	222 ± 1	4.77 ± 0.23	8.81 ± 0.63	77.74 ± 0.59
	Src(9,0)	222 ± 0	5.51 ± 0.43	4.74 ± 0.38	81.08 ± 1.44
	Src(9,14)	223 ± 0	4.49 ± 0.15	66.27 ± 33.04	70.39 ± 1.04
Max VarMaxMean	Src(0,0)	178 ± 15.68	4.28 ± 0.03	5.07 ± 0.37	402.33 ± 98.39
	Src(0,14)	178 ± 8.06	4.06 ± 0.13	5.19 ± 0.38	431.82 ± 59.98
	Src(4,7)	161 ± 13.08	4.46 ± 0.07	3.76 ± 0.84	563.6 ± 102.96
	Src(9,0)	180 ± 12.21	4.16 ± 0.1	5.14 ± 0.59	405.4 ± 80.93
	Src(9,14)	190 ± 9.9	4.23 ± 0.13	5.46 ± 1.26	324.07 ± 80.26
Fixed Sweep	Src(0,0)	36 ± 1.41	4.37 ± 0.07	6.84 ± 0.3	68.48 ± 0.74
	Src(0,14)	36 ± 1	4.25 ± 0.12	8.16 ± 0.34	68.08 ± 0.24
	Src(4,7)	36 ± 1.41	5.07 ± 0.13	9.43 ± 1.96	68.72 ± 1.03
	Src(9,0)	36 ± 0	5.99 ± 0.09	3.75 ± 0.32	68.25 ± 0.24
	Src(9,14)	37 ± 0	4.39 ± 0.04	7.43 ± 0.79	68.07 ± 0.1

TABLE SII

PERFORMANCE METRICS FOR VARIANTS WITH INITIAL RANDOM WALK
SCENARIO WITH SIGNAL PROPAGATION EXPONENT N=3.

Approach	Source location	Samples	Rmse	Variance	Cumulative Distance
Alpha 0.75	Src(0,0)	206 ± 14.56	4.32 ± 0.04	23.98 ± 10.6	140.94 ± 75.37
	Src(0,14)	191 ± 16.76	4.11 ± 0.12	18.94 ± 8.66	235.2 ± 63.26
	Src(4,7)	207 ± 12.57	4.38 ± 0.2	25.1 ± 3.64	197.24 ± 92.54
	Src(9,0)	209 ± 10.49	4.23 ± 0.05	27.19 ± 12.45	143.65 ± 29.05
	Src(9,14)	213 ± 6.56	4.59 ± 0.64	36.14 ± 22.46	158.95 ± 56.36
Alpha 0.5	Src(0,0)	201 ± 6.32	4.24 ± 0.06	15.19 ± 1.78	234.19 ± 42.78
	Src(0,14)	198 ± 7.62	4.11 ± 0.05	23.0 ± 20.5	265.11 ± 57.2
	Src(4,7)	181 ± 6.32	4.32 ± 0.07	13.37 ± 4.37	392.72 ± 51.95
	Src(9,0)	196 ± 11.45	4.22 ± 0.09	14.82 ± 3.07	260.51 ± 92.4
	Src(9,14)	194 ± 16.82	4.24 ± 0.07	14.24 ± 3.76	271.49 ± 101.21
Alpha 0.25	Src(0,0)	164 ± 7.62	4.15 ± 0.07	6.03 ± 0.6	530.88 ± 44.93
	Src(0,14)	169 ± 4.47	4.03 ± 0.03	5.89 ± 0.35	466.23 ± 57.16
	Src(4,7)	164 ± 2.24	4.1 ± 0.08	4.84 ± 0.1	535.12 ± 22.62
	Src(9,0)	172 ± 11.4	4.15 ± 0.06	5.94 ± 0.33	467.92 ± 109.09
	Src(9,14)	169 ± 5.66	4.12 ± 0.04	5.94 ± 0.2	470.4 ± 46.25
Max Variance	Src(0,0)	146 ± 3.32	4.21 ± 0.06	2.43 ± 0.09	685.97 ± 22.06
	Src(0,14)	145 ± 3.61	4.07 ± 0.09	2.39 ± 0.16	686.95 ± 12.98
	Src(4,7)	145 ± 3.87	4.25 ± 0.08	2.99 ± 0.13	703.79 ± 10.7
	Src(9,0)	146 ± 3.74	4.19 ± 0.07	2.26 ± 0.19	700.75 ± 8.85
	Src(9,14)	145 ± 3	4.16 ± 0.09	2.36 ± 0.08	703.92 ± 15.65
Max Mean	Src(0,0)	226 ± 0	4.88 ± 0.11	76.42 ± 50.15	57.99 ± 1.27
	Src(0,14)	225 ± 1.41	6.05 ± 1.42	62.87 ± 61.2	65.17 ± 8.5
	Src(4,7)	226 ± 1	6.23 ± 0.58	25.7 ± 3.18	58.29 ± 0.4
	Src(9,0)	226 ± 0	7.05 ± 0.52	11.67 ± 7.62	62.5 ± 2.35
	Src(9,14)	226 ± 0	6.12 ± 0.99	12.53 ± 4.21	63.27 ± 1.45
Max VarMaxMean	Src(0,0)	170 ± 11.05	4.26 ± 0.06	4.84 ± 0.11	489.43 ± 58.39
	Src(0,14)	173 ± 5.48	4.09 ± 0.07	5.1 ± 0.18	459.19 ± 62.19
	Src(4,7)	160 ± 3.87	4.26 ± 0.08	5.23 ± 1.12	586.45 ± 38.89
	Src(9,0)	169 ± 9.54	4.27 ± 0.07	4.86 ± 0.17	506.21 ± 86.01
	Src(9,14)	180 ± 10.3	4.12 ± 0.12	4.82 ± 0.15	406.98 ± 81.99
Random Walk	Src(0,0)	150 ± 1.41	4.52 ± 0.19	2.64 ± 0.3	520.5 ± 8.52
	Src(0,14)	150 ± 0	4.45 ± 0.1	2.52 ± 0.19	523.68 ± 2.16
	Src(4,7)	149 ± 1.41	4.18 ± 0.04	4.91 ± 0.15	520.63 ± 6.13
	Src(9,0)	150 ± 1	4.6 ± 0.23	2.81 ± 0.33	522.13 ± 4.16
	Src(9,14)	150 ± 1.41	4.5 ± 0.21	2.62 ± 0.27	517.76 ± 7.03

TABLE SIII

PERFORMANCE METRICS FOR VARIANTS WITH INITIAL FIXED SWEEP
SCENARIO WITH SIGNAL PROPAGATION EXPONENT N=2.

Approach	Source location	Samples	Rmse	Variance	Cumulative Distance
Alpha 0.75	Src(0,0)	218 ± 2	4.15 ± 0.13	7.04 ± 1.96	96.06 ± 10.12
	Src(0,14)	221 ± 1	4.05 ± 0.1	5.93 ± 1.93	81.12 ± 1.74
	Src(4,7)	221 ± 1	4.3 ± 0.11	6.61 ± 1.56	77.77 ± 0.44
	Src(9,0)	218 ± 3.16	4.24 ± 0.09	6.92 ± 2.88	108.05 ± 25.1
	Src(9,14)	222 ± 0	4.18 ± 0.05	4.48 ± 1.09	69.57 ± 0.7
Alpha 0.5	Src(0,0)	211 ± 2.65	4.21 ± 0.06	6.1 ± 0.43	128.74 ± 8.37
	Src(0,14)	214 ± 6.32	4.05 ± 0.14	5.53 ± 2.61	122.34 ± 51.18
	Src(4,7)	208 ± 6.71	4.17 ± 0.05	4.89 ± 0.43	166.94 ± 39.86
	Src(9,0)	216 ± 2.24	4.13 ± 0.04	4.9 ± 0.8	108.15 ± 6.37
	Src(9,14)	218 ± 4.58	4.24 ± 0.11	6.35 ± 2.15	109.94 ± 37.61
Alpha 0.25	Src(0,0)	197 ± 3.61	4.03 ± 0.05	3.8 ± 0.21	244.17 ± 34.61
	Src(0,14)	183 ± 5.83	3.94 ± 0.05	3.99 ± 0.15	325.84 ± 52.99
	Src(4,7)	180 ± 3.74	4.03 ± 0.04	3.15 ± 0.1	384.61 ± 36.33
	Src(9,0)	197 ± 9.49	4.1 ± 0.07	3.77 ± 0.16	238.37 ± 68.86
	Src(9,14)	184 ± 7.87	4.11 ± 0.05	3.91 ± 0.9	358.96 ± 69.58
Max Variance	Src(0,0)	154 ± 1.41	4.07 ± 0.08	1.6 ± 0.13	629.57 ± 8.02
	Src(0,14)	151 ± 1	3.96 ± 0.04	1.54 ± 0.13	617.18 ± 21.43
	Src(4,7)	150 ± 4.9	4.16 ± 0.05	1.95 ± 0.2	626.02 ± 26.1
	Src(9,0)	151 ± 2.24	4.15 ± 0.02	1.68 ± 0.04	632.61 ± 9.79
	Src(9,14)	151 ± 4.47	4.18 ± 0.07	1.43 ± 0.21	620.46 ± 23.43
Max Mean	Src(0,0)	219 ± 1	4.21 ± 0.19	42.41 ± 72.38	86.39 ± 2.04
	Src(0,14)	221 ± 0	4.03 ± 0.02	5.69 ± 1.35	79.9 ± 1.79
	Src(4,7)	221 ± 0	4.39 ± 0.16	5.4 ± 0.41	77.83 ± 0.84
	Src(9,0)	221 ± 0	5.18 ± 0.03	2.84 ± 0.22	79.99 ± 0.23
	Src(9,14)	223 ± 0	4.27 ± 0.12	6.67 ± 1.62	71.31 ± 3.48
Max VarMaxMean	Src(0,0)	213 ± 4.12	4.14 ± 0.13	4.49 ± 0.24	143.54 ± 25.95
	Src(0,14)	207 ± 11.66	4.06 ± 0.09	4.24 ± 0.33	193.91 ± 92.48
	Src(4,7)	214 ± 1.41	4.34 ± 0.09	4.62 ± 0.26	141.27 ± 16.72
	Src(9,0)	198 ± 8.19	4.19 ± 0.05	4.71 ± 0.22	266.91 ± 74.04
	Src(9,14)	213 ± 7	4.15 ± 0.11	3.8 ± 0.59	144.14 ± 38.94
Fixed Sweep	Src(0,0)	36 ± 1	4.28 ± 0.06	5.36 ± 0.76	68.19 ± 0.16
	Src(0,14)	36 ± 0	4.17 ± 0.15	3.8 ± 0.44	68.03 ± 0.13
	Src(4,7)	36 ± 1	4.69 ± 0.28	4.87 ± 0.67	68.27 ± 0.14
	Src(9,0)	37 ± 0	5.35 ± 0.15	3.13 ± 0.66	68.09 ± 0.33
	Src(9,14)	37 ± 0	4.28 ± 0.13	4.6 ± 0.51	68.2 ± 0.18

TABLE SIV

PERFORMANCE METRICS FOR VARIANTS WITH INITIAL RANDOM WALK
SCENARIO WITH SIGNAL PROPAGATION EXPONENT N=2.

Approach	Source location	Samples	Rmse	Variance	Cumulative Distance
Alpha 0.75	Src(0,0)	199 ± 13.3	4.27 ± 0.19	68.25 ± 112.89	196.9 ± 50.99
	Src(0,14)	220 ± 7.94	3.98 ± 0.09	13.05 ± 4.11	100.6 ± 36.8
	Src(4,7)	218 ± 6.56	4.38 ± 0.2	14.56 ± 2.95	115.08 ± 47.51
	Src(9,0)	210 ± 10.54	4.21 ± 0.09	10.85 ± 2.14	169.41 ± 81.29
	Src(9,14)	223 ± 3.16	4.25 ± 0.1	9.01 ± 0.91	81.23 ± 20.35
Alpha 0.5	Src(0,0)	188 ± 17.69	4.11 ± 0.11	10.27 ± 0.44	337.03 ± 134.12
	Src(0,14)	194 ± 19.85	4.0 ± 0.11	8.15 ± 1.14	251.15 ± 117.29
	Src(4,7)	198 ± 4.24	4.23 ± 0.09	8.27 ± 3.82	248.43 ± 25
	Src(9,0)	205 ± 6.48	4.13 ± 0.12	8.56 ± 0.92	211.47 ± 53.82
	Src(9,14)	196 ± 15	4.1 ± 0.08	9.22 ± 2.33	279.89 ± 126.59
Alpha 0.25	Src(0,0)	170 ± 11.05	4.03 ± 0.03	4.22 ± 0.16	452.7 ± 58.65
	Src(0,14)	163 ± 10.25	3.99 ± 0.06	3.95 ± 0.39	499.61 ± 91.77
	Src(4,7)	166 ± 3.32	4.07 ± 0.06	3.21 ± 0.16	513.1 ± 30.55
	Src(9,0)	173 ± 9.22	4.11 ± 0.06	4.03 ± 0.06	432.53 ± 64.13
	Src(9,14)	179 ± 9.85	4.1 ± 0.06	3.84 ± 0.21	409.81 ± 81.41
Max Variance	Src(0,0)	145 ± 2.83	4.04 ± 0.07	1.71 ± 0.19	706.65 ± 20.44
	Src(0,14)	145 ± 1.41	4.0 ± 0.07	1.5 ± 0.14	714.51 ± 8.47
	Src(4,7)	142 ± 2	4.15 ± 0.07	1.88 ± 0.1	718.65 ± 25.38
	Src(9,0)	141 ± 5.83	1.77 ± 0.17	1.77 ± 0.17	709.49 ± 16.47
	Src(9,14)	141 ± 3.87	4.09 ± 0.09	1.64 ± 0.13	708.95 ± 12.11
Max Mean	Src(0,0)	218 ± 3.74	4.67 ± 0.41	310.41 ± 155.91	102.49 ± 23.41
	Src(0,14)	227 ± 0	4.43 ± 0.34	17.99 ± 4.97	60.72 ± 0.92
	Src(4,7)	223 ± 2.24	126.23 ± 117.88	79.15 ± 17.39	84.8 ± 31.34
	Src(9,0)	223 ± 3.46	5.46 ± 1.05	33.07 ± 55.04	63.38 ± 2.25

TABLE SV

PERFORMANCE METRICS IN MULTI-ROBOT FIXED VORONOI PARTITION (FVP) SCENARIOS.

Approach	Source location	Samples	Rmse	Variance	Distance
Alpha0.75	Src(0,0)	427 ± 26.32	4.15 ± 0.05	8.25 ± 1.06	147.61 ± 22.12
	Src(0,14)	413 ± 42.11	3.96 ± 0.07	7.39 ± 0.82	207.91 ± 27.87
	Src(4,7)	443 ± 40.07	4.14 ± 0.16	14.36 ± 2.27	99.02 ± 8.41
	Src(9,0)	423 ± 23.52	4.21 ± 0.07	8.71 ± 1.24	137.31 ± 15.42
	Src(9,14)	426 ± 31.46	4.08 ± 0.04	10.19 ± 0.93	153.77 ± 13.46
Alpha0.5	Src(0,0)	392 ± 11.49	4.17 ± 0.02	5.15 ± 0.37	226.44 ± 34.79
	Src(0,14)	368 ± 14.66	3.96 ± 0.08	4.85 ± 0.67	316.08 ± 17.68
	Src(4,7)	419 ± 13.6	3.97 ± 0.06	9.11 ± 0.65	148.17 ± 16.5
	Src(9,0)	426 ± 31.98	4.08 ± 0.1	6.0 ± 0.5	232.51 ± 15.78
	Src(9,14)	410 ± 51.71	4.05 ± 0.04	7.49 ± 0.66	200.52 ± 12.75
Alpha0.25	Src(0,0)	341 ± 7.55	4.14 ± 0.05	3.05 ± 0.23	396.0 ± 18.19
	Src(0,14)	333 ± 5.74	3.87 ± 0.03	3.32 ± 0.3	404.58 ± 19.24
	Src(4,7)	400 ± 26.68	4.03 ± 0.09	4.47 ± 0.24	269.8 ± 21.18
	Src(9,0)	359 ± 32.48	4.04 ± 0.04	3.88 ± 0.2	301.65 ± 30.46
	Src(9,14)	373 ± 16.79	4.03 ± 0.04	4.64 ± 0.32	288.09 ± 10.16
MaxVar	Src(0,0)	233 ± 4.36	4.07 ± 0.02	1.82 ± 0.12	591.97 ± 11.31
	Src(0,14)	237 ± 4.47	3.9 ± 0.03	1.85 ± 0.1	589.39 ± 7.57
	Src(4,7)	241 ± 1.41	4.01 ± 0.05	2.04 ± 0.07	594.53 ± 4.32
	Src(9,0)	235 ± 3.74	4.07 ± 0.04	1.81 ± 0.09	592.34 ± 10.7
	Src(9,14)	233 ± 3.74	4.06 ± 0.03	1.84 ± 0.11	596.3 ± 5.61
MaxMean	Src(0,0)	451 ± 28.58	5.47 ± 1.2	13.17 ± 0.77	62.97 ± 8.44
	Src(0,14)	495 ± 50.08	5.29 ± 1	10.44 ± 3.45	80.98 ± 10.35
	Src(4,7)	438 ± 32.28	5.3 ± 0.72	24.68 ± 2.81	52.73 ± 2.59
	Src(9,0)	426 ± 26.65	4.48 ± 0.09	19.15 ± 1.68	58.08 ± 8.81
	Src(9,14)	418 ± 35.83	4.3 ± 0.06	17.92 ± 2.68	89.22 ± 14.13
MaxVarMaxMean	Src(0,0)	385 ± 25.63	4.14 ± 0.05	4.12 ± 0.22	226.57 ± 17.21
	Src(0,14)	367 ± 30.53	3.99 ± 0.05	4.15 ± 0.3	240.89 ± 19.71
	Src(4,7)	390 ± 33.78	4.05 ± 0.05	4.3 ± 0.17	265.15 ± 21.57
	Src(9,0)	381 ± 30.4	4.1 ± 0.07	4.17 ± 0.24	244.34 ± 30.61
	Src(9,14)	360 ± 10.34	4.01 ± 0.08	4.27 ± 0.16	274.0 ± 23.08
RW	Src(0,0)	206 ± 7.68	4.73 ± 0.09	4.41 ± 0.49	513.45 ± 5.02
	Src(0,14)	208 ± 4.36	4.81 ± 0.21	4.36 ± 0.48	512.87 ± 7.79
	Src(4,7)	201 ± 4.69	4.11 ± 0.08	6.94 ± 0.66	518.83 ± 2.46
	Src(9,0)	201 ± 4.12	4.89 ± 0.48	4.42 ± 0.88	515.89 ± 4.42
	Src(9,14)	205 ± 6.24	5.32 ± 0.14	3.58 ± 0.45	512.06 ± 6.01

TABLE SVI

PERFORMANCE METRICS FOR MULTI-ROBOT DYNAMIC VORONOI PARTITION (DVP) SCENARIOS.

Approach	Source location	Samples	Rmse	Variance	Distance
Alpha0.75	Src(0,0)	440 ± 22.52	4.12 ± 0.02	8.75 ± 0.99	93.36 ± 14.12
	Src(0,14)	459 ± 37.76	4.14 ± 0.12	10.49 ± 2.04	90.44 ± 16.39
	Src(4,7)	533 ± 44.47	4.05 ± 0.07	11.49 ± 2.64	87.69 ± 13.62
	Src(9,0)	442 ± 32.88	4.13 ± 0.06	9.74 ± 1.53	90.04 ± 15.02
	Src(9,14)	443 ± 42.84	4.34 ± 0.21	10.0 ± 1.09	86.46 ± 20.69
Alpha0.5	Src(0,0)	406 ± 40.61	4.17 ± 0.05	8.01 ± 0.81	118.03 ± 11.78
	Src(0,14)	414 ± 31.24	4.07 ± 0.09	8.28 ± 0.38	121.39 ± 14.43
	Src(4,7)	395 ± 37.07	3.98 ± 0.06	8.38 ± 1.18	123.42 ± 9.97
	Src(9,0)	420 ± 46.97	4.08 ± 0.04	7.79 ± 1.19	120.66 ± 13.28
	Src(9,14)	405 ± 33.91	4.18 ± 0.06	7.83 ± 0.91	118.63 ± 7.72
Alpha0.25	Src(0,0)	401 ± 21.75	4.14 ± 0.09	4.56 ± 0.35	201.79 ± 32.02
	Src(0,14)	370 ± 42	4.02 ± 0.08	4.53 ± 0.37	216.35 ± 20.26
	Src(4,7)	361 ± 27.51	3.97 ± 0.04	3.98 ± 0.28	241.62 ± 21.72
	Src(9,0)	385 ± 19.05	4.11 ± 0.02	4.64 ± 0.53	214.91 ± 39.74
	Src(9,14)	393 ± 37.32	4.15 ± 0.06	4.78 ± 0.33	221.14 ± 13.03
MaxVar	Src(0,0)	249 ± 5.92	4.05 ± 0.03	1.72 ± 0.09	564.67 ± 7.72
	Src(0,14)	242 ± 10.54	3.94 ± 0.1	1.82 ± 0.28	514.68 ± 78.59
	Src(4,7)	240 ± 17.35	4.0 ± 0.05	2.22 ± 0.27	521.85 ± 54.78
	Src(9,0)	241 ± 7	4.06 ± 0.04	1.83 ± 0.13	547.96 ± 15.25
	Src(9,14)	246 ± 5.57	3.98 ± 0.03	1.73 ± 0.13	542.95 ± 18.25
MaxMean	Src(0,0)	457 ± 18.25	4.72 ± 0.41	16.03 ± 2.46	57.65 ± 5.13
	Src(0,14)	450 ± 18.95	4.15 ± 0.1	15.3 ± 1.68	75.75 ± 6.78
	Src(4,7)	457 ± 32.82	5.32 ± 0.63	57.51 ± 66.1	48.65 ± 3.88
	Src(9,0)	427 ± 33.2	4.25 ± 0.09	17.42 ± 4.07	63.51 ± 5.8
	Src(9,14)	430 ± 26.76	4.33 ± 0.11	14.11 ± 1.05	69.14 ± 7.03
MaxVarMaxMean	Src(0,0)	410 ± 16.76	4.15 ± 0.03	4.23 ± 0.23	226.57 ± 40.15
	Src(0,14)	400 ± 44.33	3.97 ± 0.07	4.49 ± 0.27	241.57 ± 36.57
	Src(4,7)	389 ± 22.45	4.03 ± 0.09	4.5 ± 0.25	244.56 ± 16.75
	Src(9,0)	412 ± 37.13	4.09 ± 0.07	4.18 ± 0.27	231.55 ± 15.98
	Src(9,14)	430 ± 46.38	4.12 ± 0.03	4.31 ± 0.09	225.17 ± 25.66
RW	Src(0,0)	204 ± 9.43	4.68 ± 0.07	3.18 ± 0.39	495.62 ± 27.34
	Src(0,14)	204 ± 6.32	4.86 ± 0.2	2.86 ± 0.22	488.74 ± 23.65
	Src(4,7)	207 ± 11.96	4.03 ± 0.04	5.28 ± 0.35	509.44 ± 21.2
	Src(9,0)	217 ± 18.19	5.0 ± 0.29	3.22 ± 0.57	499.83 ± 13.28
	Src(9,14)	221 ± 36.63	4.7 ± 0.26	4.0 ± 0.81	434.82 ± 144.25

TABLE SVII

SUMMARY OF PERFORMANCE METRICS FOR INITIAL FIXED SWEEP SCENARIO WITH N=3.

FS Scenario n=3	Samples	RMSE	Variance	Cumulative Distance
Alpha75	219 ± 4	4.27 ± 0.15	11.23 ± 9.93	93.15 ± 25.59
Alpha50	207 ± 8.66	4.19 ± 0.09	13.45 ± 10.97	168.33 ± 60.57
Alpha25	182 ± 7.42	4.13 ± 0.08	5.56 ± 0.51	365.95 ± 63.34
MaxVar	153 ± 2	4.18 ± 0.17	2.48 ± 0.33	618.33 ± 16.78
MaxMean	222 ± 0	4.71 ± 0.49	32.09 ± 46.63	78.63 ± 4.9
MaxVarMaxMean	177 ± 15.39	4.24 ± 0.17	4.92 ± 0.97	425.45 ± 115.94
FS	36 ± 1	4.82 ± 0.66	7.12 ± 2.13	68.32 ± 0.64

TABLE SVIII

SUMMARY OF PERFORMANCE METRICS FOR INITIAL RANDOM WALK SCENARIO WITH N=3.

RW Scenario n=3	Samples	RMSE	Variance	Cumulative Distance
Alpha75	205 ± 14.66	4.33 ± 0.35	26.27 ± 14.27	175.2 ± 75.87
Alpha50	194 ± 12.61	4.23 ± 0.1	16.13 ± 10.27	284.8 ± 91.59
Alpha25	168 ± 7.68	4.11 ± 0.07	5.73 ± 0.57	494.11 ± 70.57
MaxVar	145 ± 3.46	4.18 ± 0.1	2.49 ± 0.29	696.28 ± 16.86
MaxMean	226 ± 1	6.06 ± 1.1	37.84 ± 44.57	61.44 ± 4.94
MaxVarMaxMean	170 ± 10.63	4.2 ± 0.11	4.97 ± 0.54	489.65 ± 89.8
RW	150 ± 1	4.45 ± 0.22	3.1 ± 0.94	520.94 ± 6.34

TABLE SIX

SUMMARY OF PERFORMANCE METRICS FOR INITIAL FIXED SWEEP SCENARIO WITH N=2.

FS Variants n=2	Samples	Rmse	Variance	Cumulative Distance
Alpha75	220 ± 2.45	4.18 ± 0.13	6.19 ± 2.19	86.51 ± 18.35
Alpha50	213 ± 6	4.16 ± 0.11	5.55 ± 1.69	127.22 ± 40
Alpha25	188 ± 10.05	4.04 ± 0.08	3.72 ± 0.52	310.39 ± 80.73
MaxVar	151 ± 3.46	4.1 ± 0.1	1.64 ± 0.24	625.17 ± 20.06
MaxMean	221 ± 1.41	4.42 ± 0.42	12.6 ± 35.67	79.09 ± 5.23
MaxVarMaxMean	209 ± 9.54	4.18 ± 0.14	4.37 ± 0.48	177.95 ± 75.3
FS	36 ± 1	4.55 ± 0.47	4.35 ± 1.01	68.16 ± 0.22

TABLE SX

SUMMARY OF PERFORMANCE METRICS FOR INITIAL RANDOM WALK SCENARIO WITH N=2.

RW Variants n=2	Samples	Rmse	Variance	Cumulative Distance
Alpha75	214 ± 12.37	4.22 ± 0.2	23.15 ± 55.38	132.64 ± 67.37
Alpha50	196 ± 15.13	4.12 ± 0.13	8.89 ± 2.25	265.59 ± 109.57
Alpha25	170 ± 10.68	4.06 ± 0.07	3.85 ± 0.41	461.55 ± 79.04
MaxVar	143 ± 4	4.09 ± 0.1	1.7 ± 0.2	711.65 ± 18.14
MaxMean	223 ± 3.87	5.17 ± 1.09	98.82 ± 145.73	78.11 ± 24.49
MaxVarMaxMean	188 ± 16.61	4.12 ± 0.11	4.83 ± 0.58	352.52 ± 120.86
RW	149 ± 1	4.26 ± 0.2	1.9 ± 0.44	521.11 ± 6.45

TABLE SXI

SUMMARY OF PERFORMANCE METRICS FOR MULTI-ROBOT FIXED VORONOI PARTITIONING CASES WITH N=3.

FVP Scenario	Samples	RMSE	Variance	Cumulative Distance
Alpha75	426 ± 34.81	4.11 ± 0.12	9.78 ± 2.82	149.12 ± 39.72
Alpha50	403 ± 35.76	4.05 ± 0.1	6.52 ± 1.69	224.74 ± 58.42
Alpha25	361 ± 31.51	4.02 ± 0.1	3.87 ± 0.68	332.02 ± 60.44
MaxVar	236 ± 5	4.02 ± 0.07	1.87 ± 0.13	592.91 ± 8.69
MaxMean	445 ± 44.78	4.97 ± 0.91	17.07 ± 5.91	68.8 ± 16.94
MaxVarMaxMean	377 ± 29.65	4.06 ± 0.08	4.2 ± 0.23	250.19 ± 28.6
RW	204 ± 6.24	4.77 ± 0.46	4.74 ± 1.3	514.62 ± 5.96

TABLE SXII

SUMMARY OF PERFORMANCE METRICS FOR MULTI-ROBOT DYNAMIC VORONOI PARTITIONING CASES WITH N=3.

DVP Scenario	Samples	RMSE	Variance	Cumulative Distance
Alpha75	463 ± 51.11	4.16 ± 0.15	10.1 ± 1.98	89.6 ± 16.35
Alpha50	408 ± 39.29	4.1 ± 0.1	8.06 ± 0.97	120.42 ± 11.84
Alpha25	382 ± 34.22	4.08 ± 0.1	4.5 ± 0.47	219.16 ± 29.98
MaxVar	244 ± 10.72	4.01 ± 0.07	1.86 ± 0.27	538.42 ± 47.83
MaxMean	444 ± 29.83	4.55 ± 0.55	24.08 ± 34.05	62.94 ± 11
MaxVarMaxMean	408 ± 37.96	4.07 ± 0.09	4.34 ± 0.27	233.89 ± 29.84
RW	211 ± 20.95	4.65 ± 0.39	3.71 ± 1.01	485.69 ± 72.39

TABLE SXIII
SOURCE LOCALIZATION MEAN ACCURACY (%) BY ALL APPROACHES.

		Samples	Alpha75	Alpha50	Alpha25	MaxVar	MaxMean	MaxVarMaxMean	RW/FS
Singe robot cases	FS (n=2)	10	28	24	24	20	20	24	20
		25	32	40	40	40	36	40	36
		35	84	72	72	68	68	64	
		45	88	100	96	88	72	88	
		50	88	100	96	100	72	92	
		After half samples	100	100	100	100	72	92	44
		After last sample	100	100	100	100	72	92	76
	FS (n=3)	10	24	32	28	28	32	28	24
		25	40	32	24	40	32	32	28
		35	84	68	68	72	68	76	
		45	100	100	100	92	72	96	
		50	100	100	100	92	72	92	
		After half samples	100	100	100	96	72	96	48
		After last sample	100	100	100	100	72	100	68
	RW (n=2)	10	40	32	44	44	32	44	32
		25	96	100	100	100	72	100	64
		35	100	100	100	96	72	100	68
		45	100	100	100	100	72	100	68
		50	100	100	96	100	72	100	72
		After half samples	100	100	100	100	72	100	76
		After last sample	100	100	100	100	72	100	100
	RW (n=3)	10	56	48	44	60	52	56	40
		25	96	96	96	100	56	100	64
		35	100	96	96	100	56	100	80
		45	100	96	100	100	56	100	80
		50	100	100	100	100	56	100	80
		After half samples	100	100	100	100	56	100	80
		After last sample	100	100	100	100	56	100	100
Multi-robot cases	FVP (n=3)	10	40	40	32	36	36	48	48
		25	96	100	96	96	44	100	64
		35	100	100	100	100	56	100	64
		45	100	100	100	100	64	96	60
		50	100	100	100	100	64	96	60
		After half sample	100	100	100	100	76	100	60
		After last sample	100	100	100	100	76	100	60
	DVP (n=3)	10	36	40	28	32	32	40	48
		25	100	100	100	92	56	88	56
		35	100	100	100	96	76	100	56
		45	100	100	100	96	88	100	60
		50	100	100	100	96	92	100	60
		After half samples	100	100	100	100	96	100	60
		After last sample	100	100	100	100	96	100	68

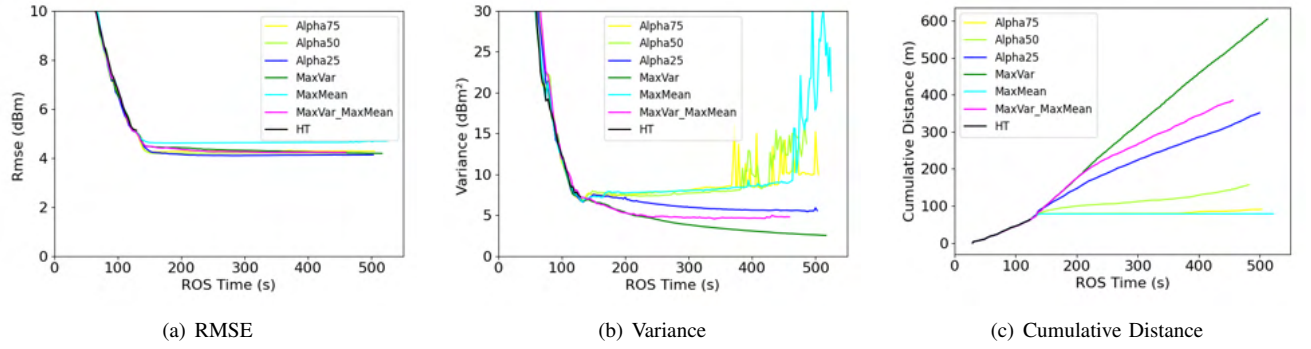


Figure S1. RMSE, Variance and Cumulative Distance for Fixed Sweep Variants for $n=3$.

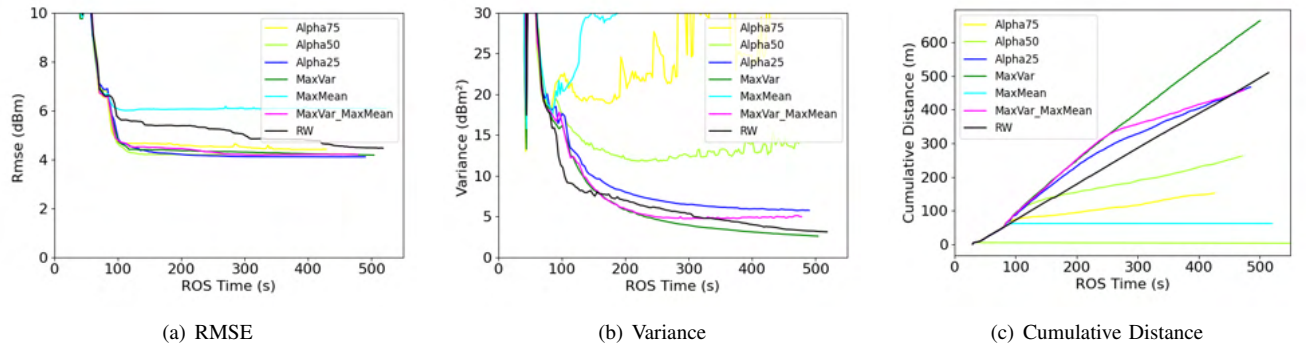


Figure S2. RMSE, Variance and Cumulative Distance for Random Walk Variants for $n=3$.

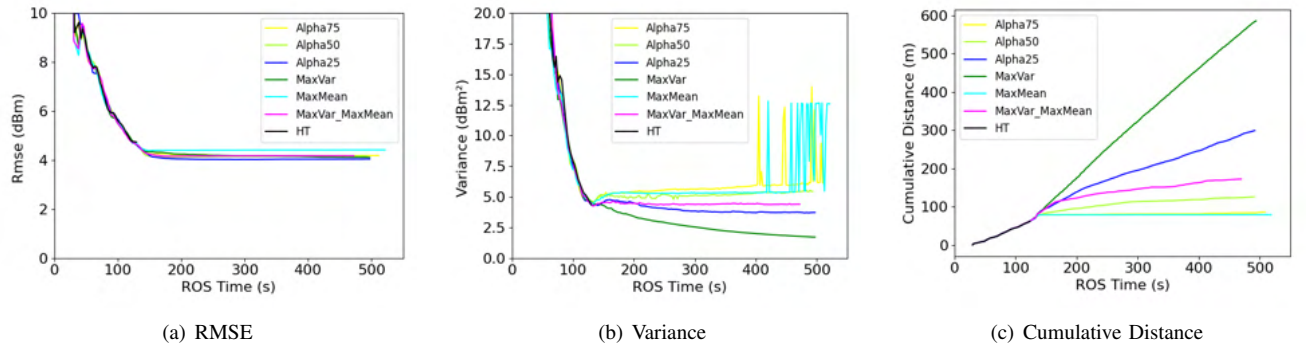


Figure S3. RMSE, Variance and Cumulative Distance for Hector Variants and $n=2$.

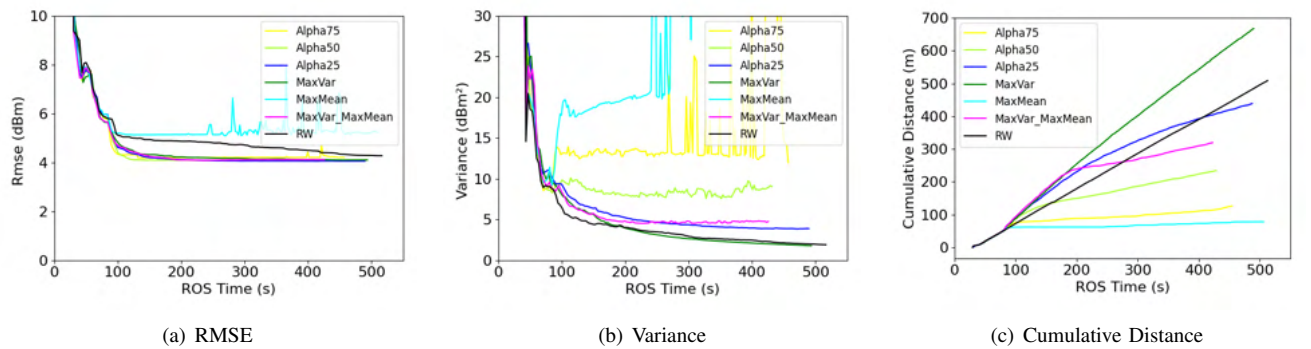


Figure S4. RMSE, Variance and Cumulative Distance for Random Walk Variants $n=2$.

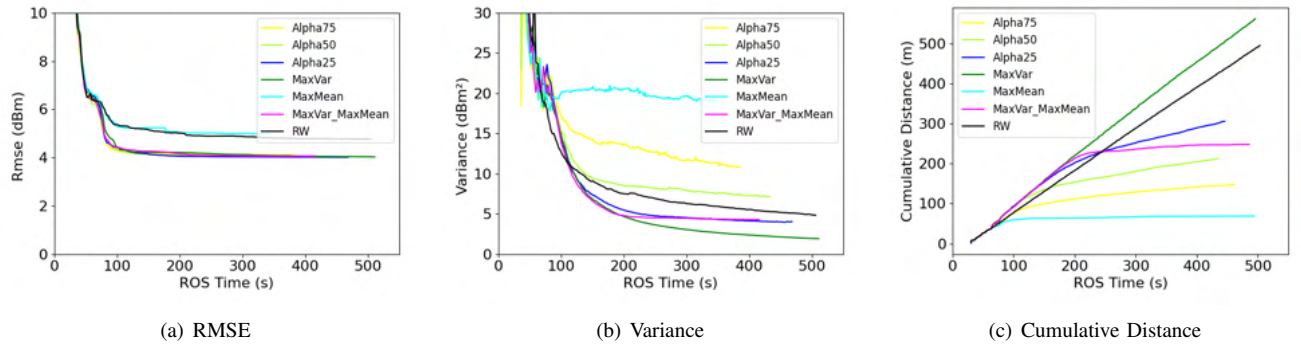


Figure S5. RMSE, Variance and Cumulative Distance for Multi-Robots in Fixed Voronoi Partitioning.

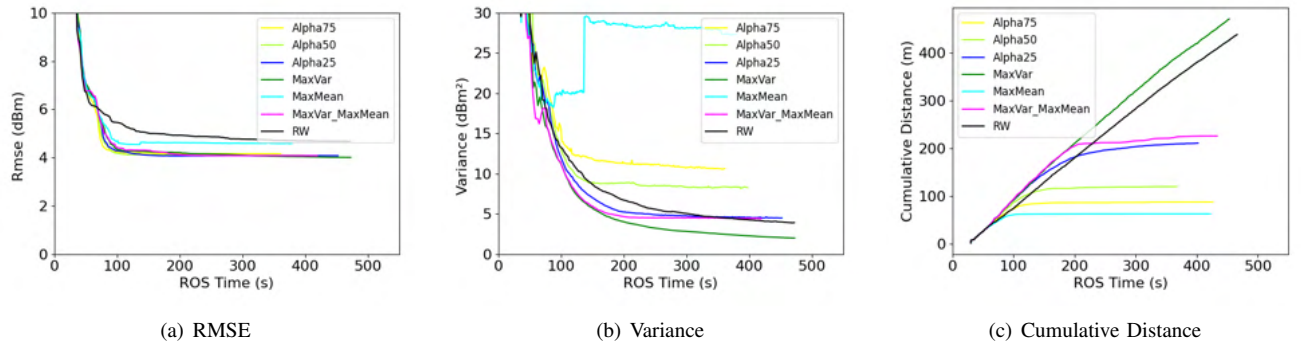


Figure S6. RMSE, Var and Cumulative Distance for Multi-Robots in Dynamic Voronoi Partitioning.

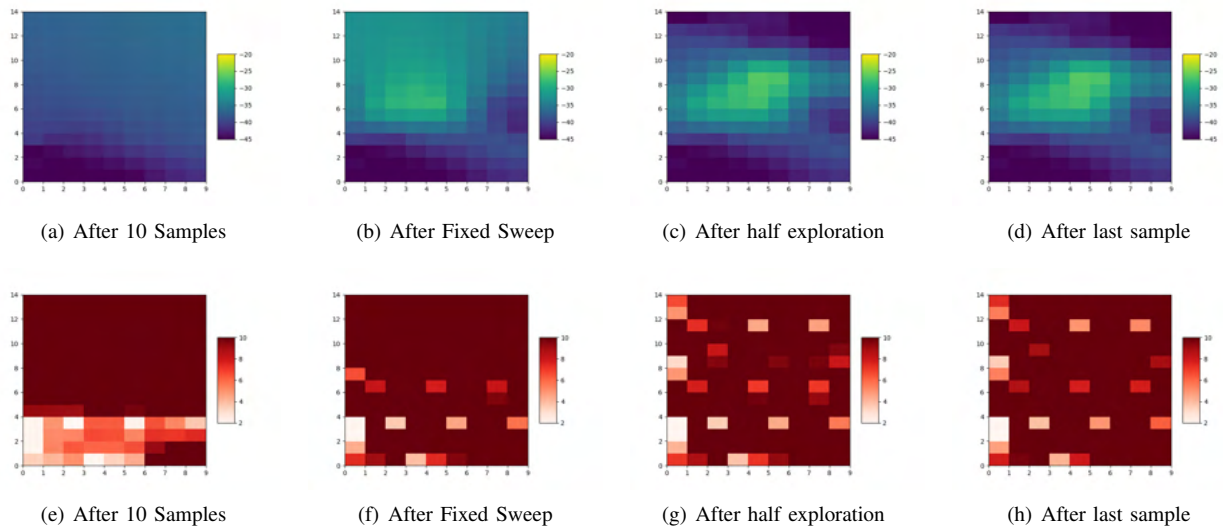


Figure S7. Mean and Variance for Fixed Sweep Baseline and Source location (4,7).

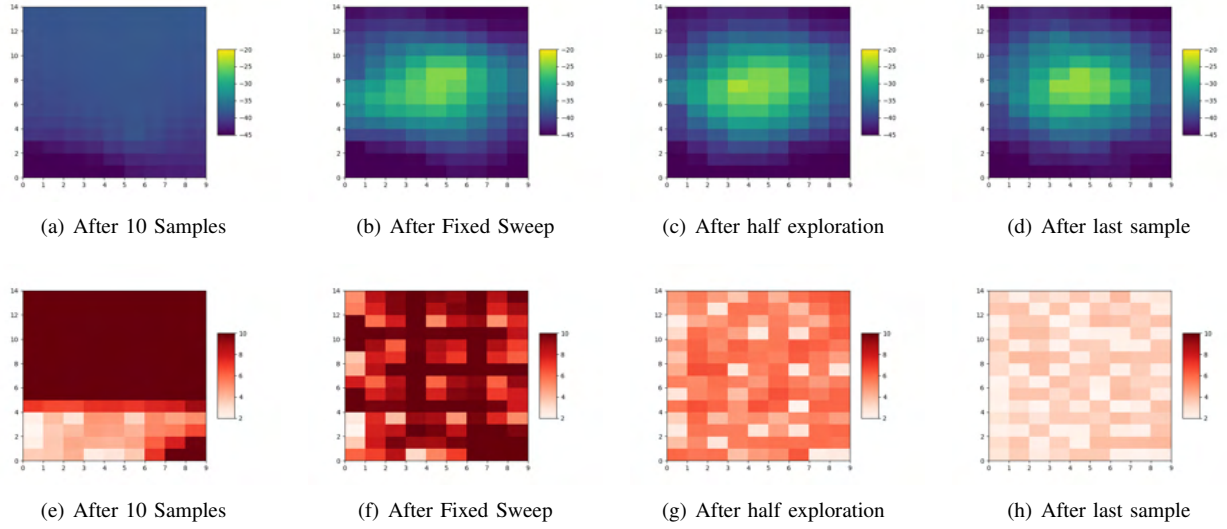


Figure S8. Fixed Sweep Scenario - Mean and Variance for MaxVar Approach and Source location (4,7)

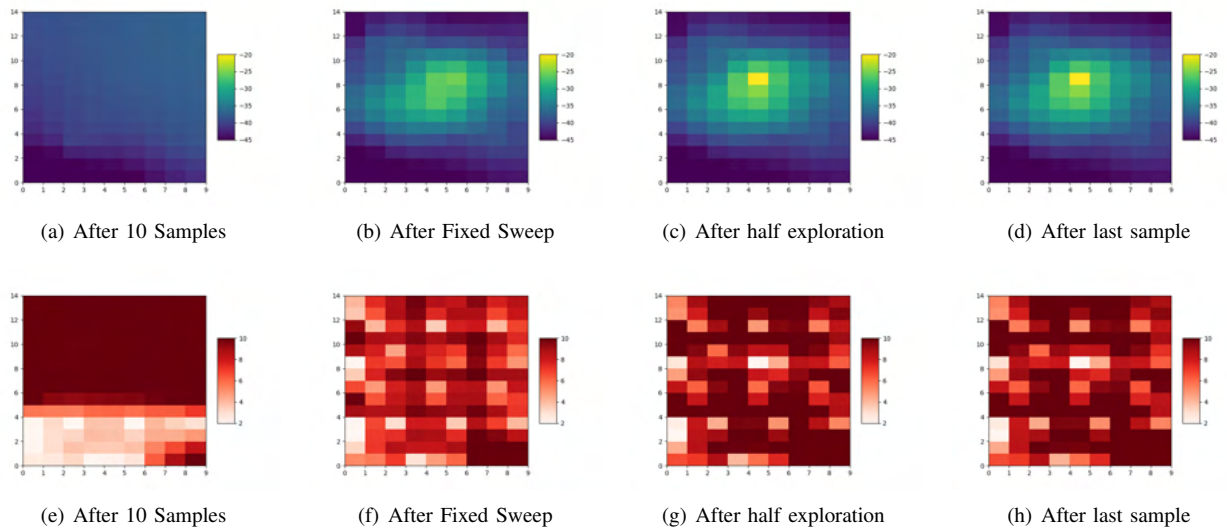


Figure S9. Fixed Sweep Scenario - Mean and Variance for MaxMean Approach and Source location (4,7)

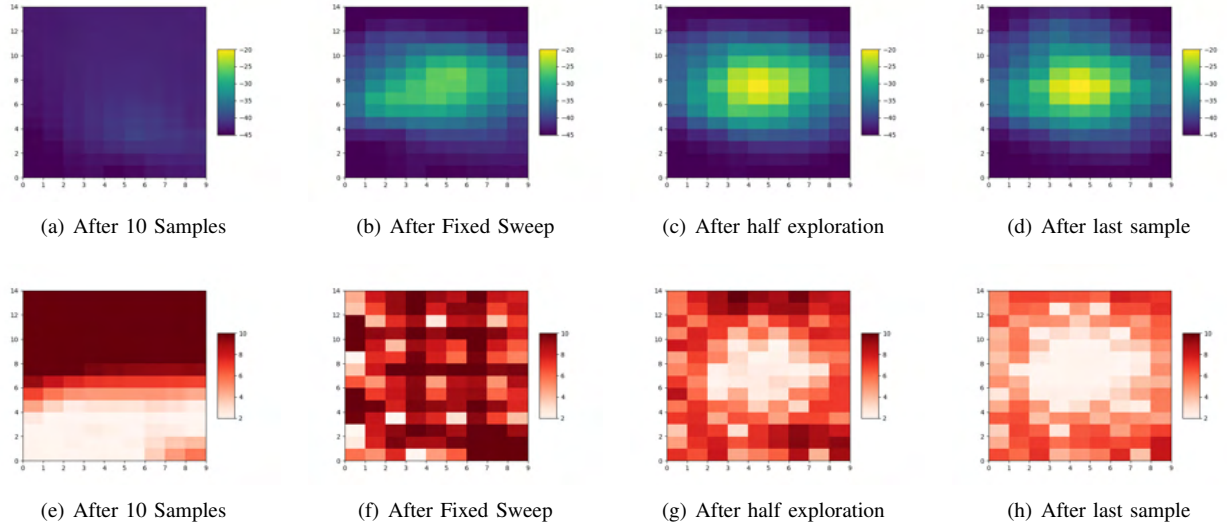


Figure S10. Fixed Sweep Scenario - Mean and Variance for Alpha0.25 Approach and Source location (4,7)

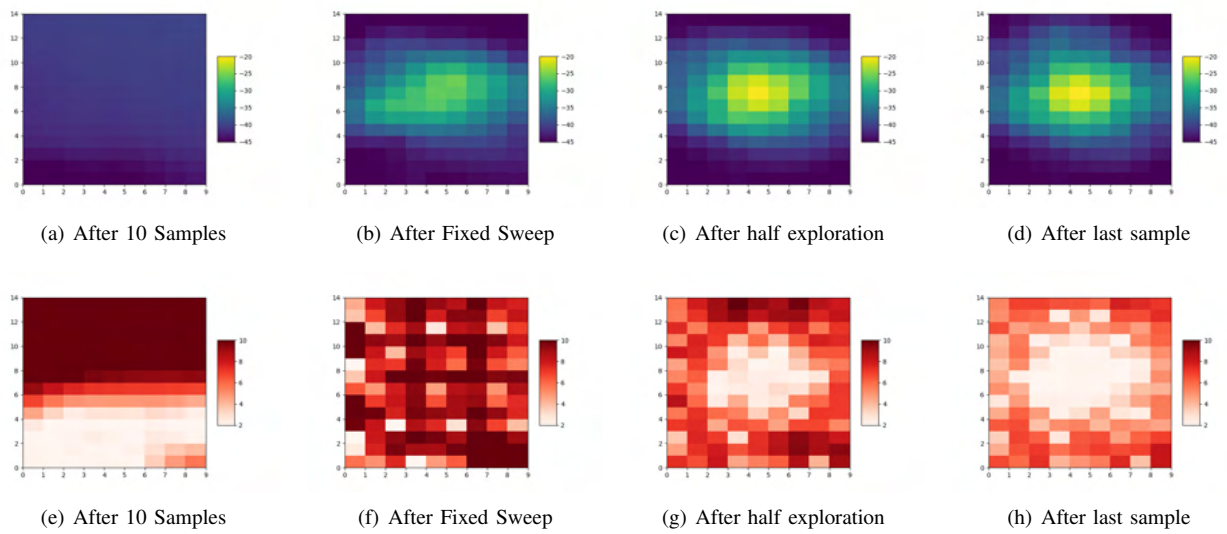


Figure S11. Fixed Sweep Scenario - Mean and Variance for Alpha0.5 Approach and Source location (4,7)

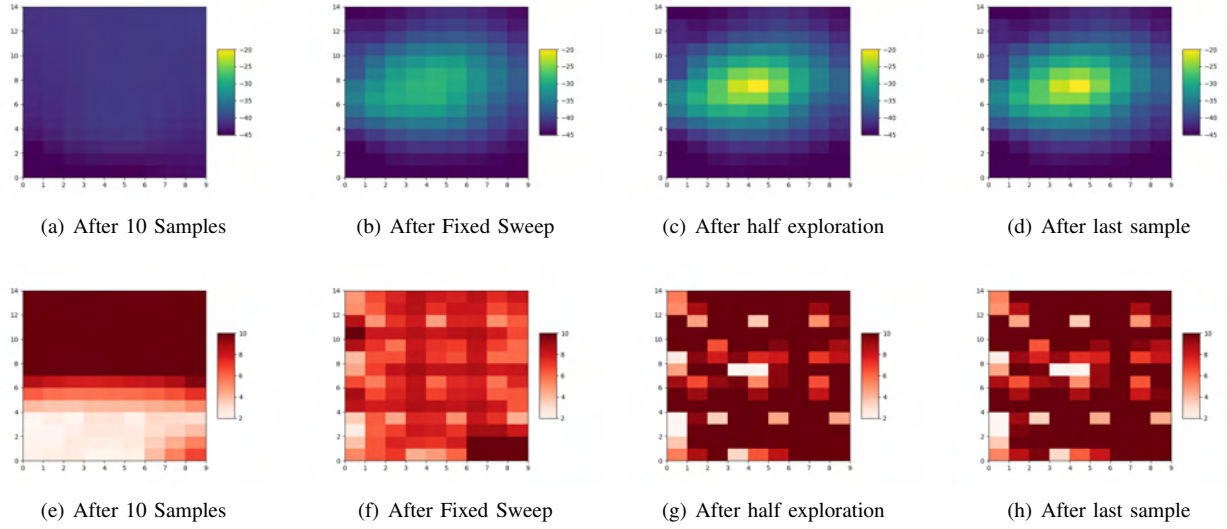


Figure S12. Fixed Sweep Scenario - Mean and Variance for Alpha0.75 Approach and Source location (4,7)

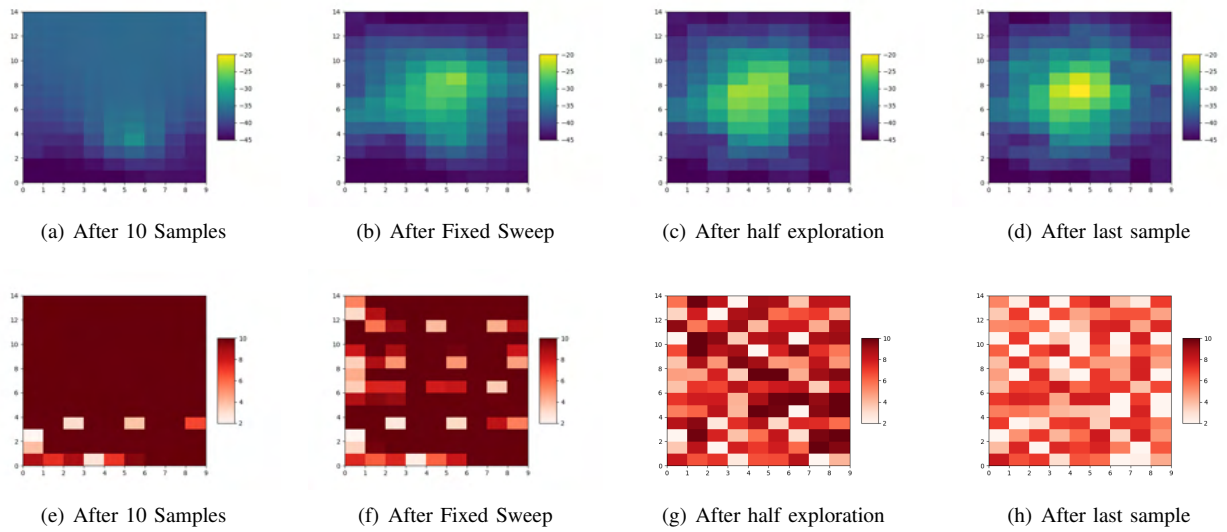


Figure S13. Fixed Sweep Scenario - Mean and Variance for MaxVarMaxMean Approach and Source location (4,7)

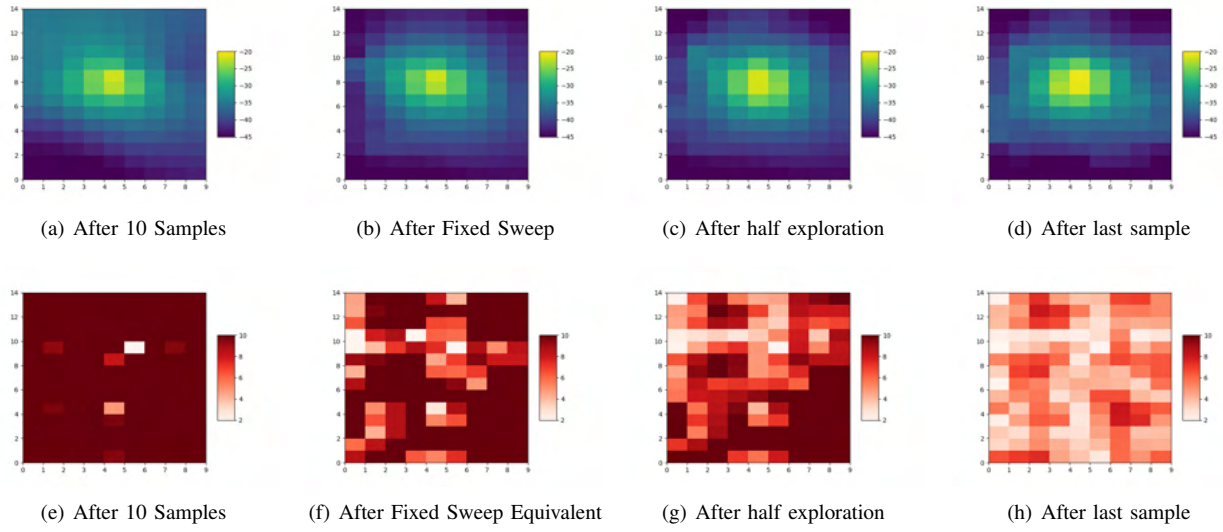


Figure S14. Mean and Variance for Random Walk Baseline and Source location (4,7).

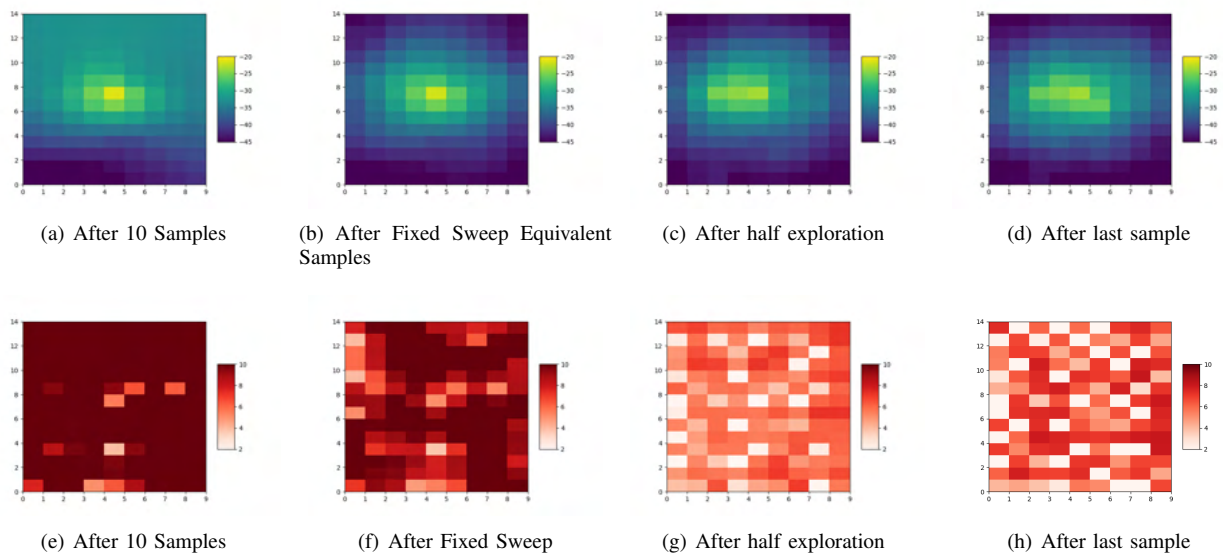


Figure S15. Random Walk Scenario - Mean and Variance for MaxVar Approach and Source location (4,7)

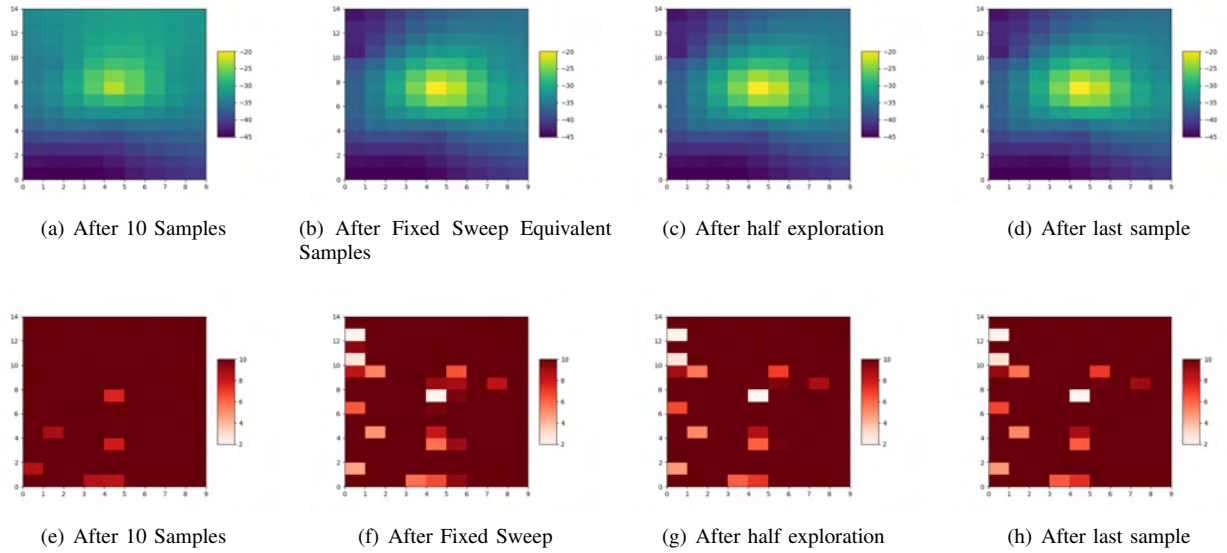


Figure S16. Random Walk Scenario - Mean and Variance for MaxMean Approach and Source location (4,7)

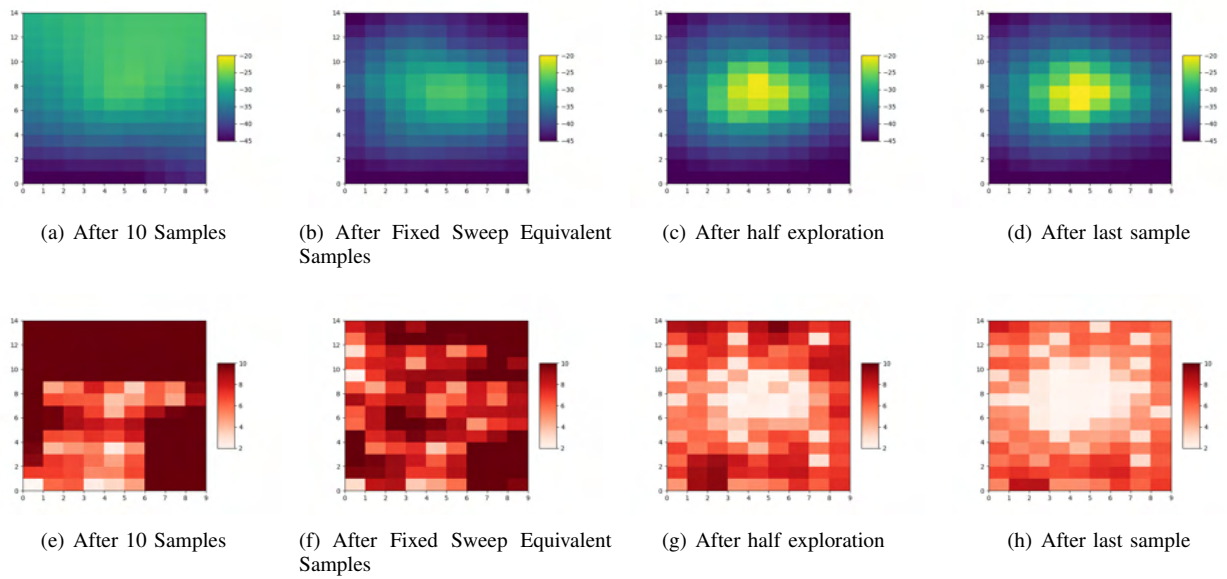


Figure S17. Random Walk Scenario - Mean and Variance for Alpha0.25 Approach and Source location (4,7)

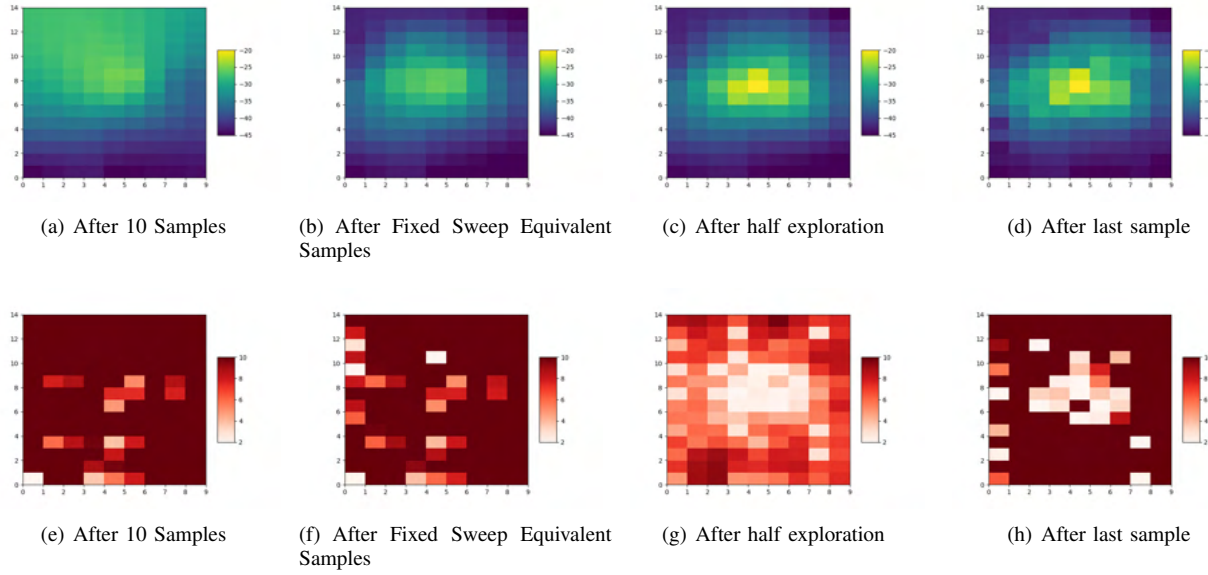


Figure S18. Random Walk Scenario - Mean and Variance for Alpha 0.5 Approach and Source location (4,7)

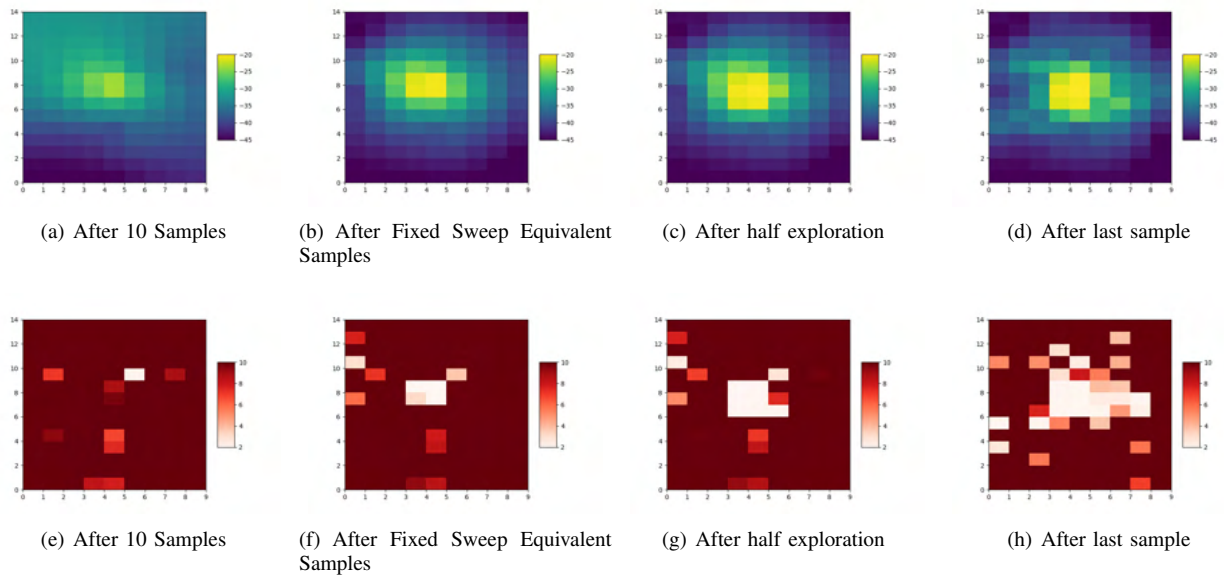


Figure S19. Random Walk Scenario - Mean and Variance for Alpha0.75 Approach and Source location (4,7)

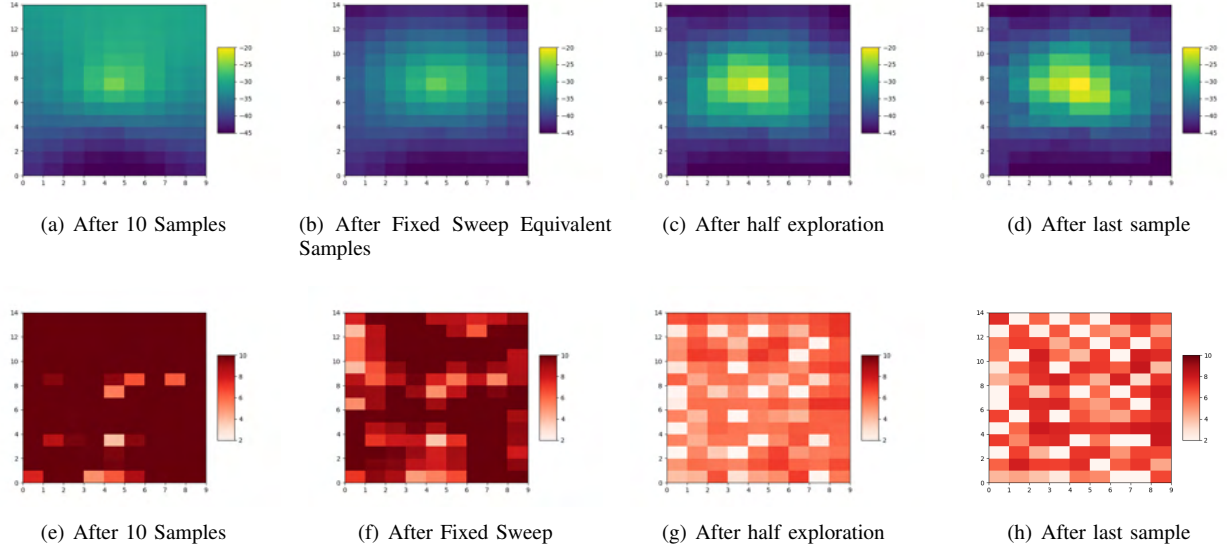


Figure S20. Random Walk Scenario - Mean and Variance for MaxVarMaxMean Approach and Source location (4,7)

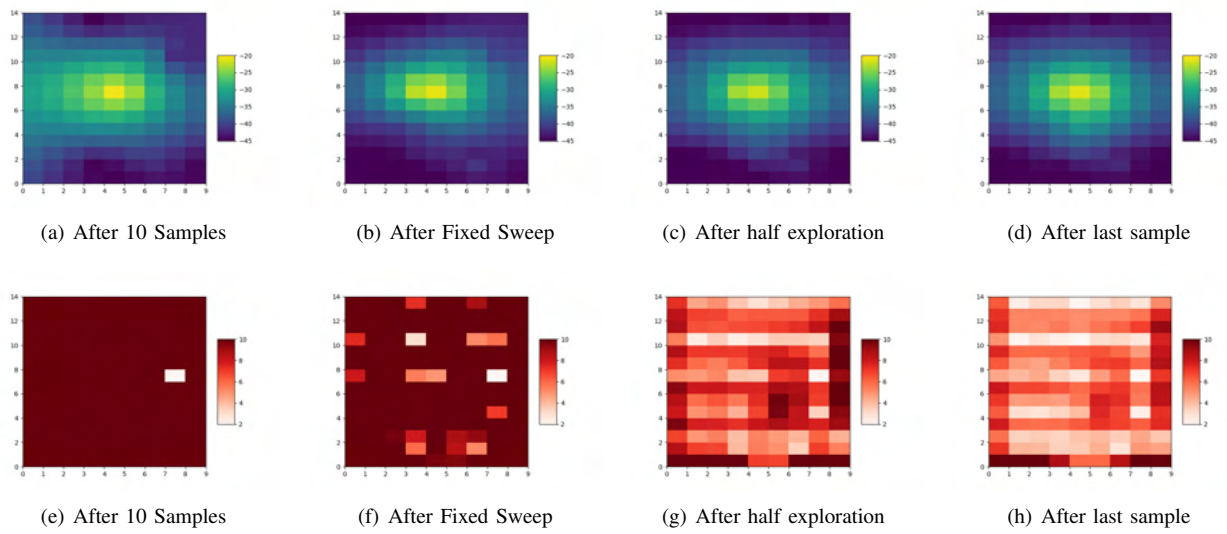


Figure S21. Fixed Voronoi Partition - Mean and Variance for Random Walk Baseline and Source location (4,7)

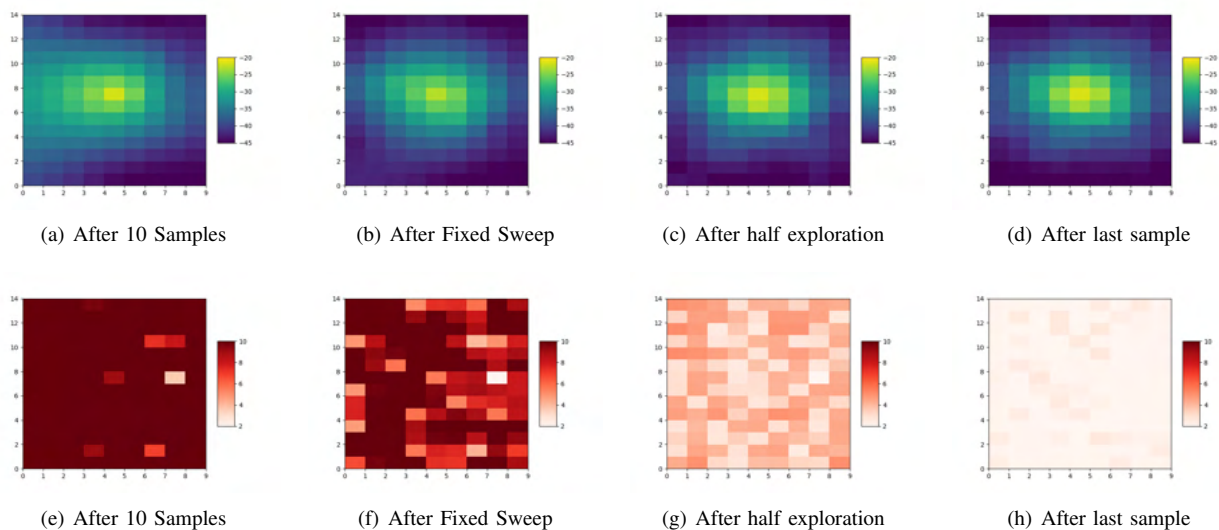


Figure S22. Fixed Voronoi Partition - Mean and Variance for MaxVar Approach and Source location (4,7)

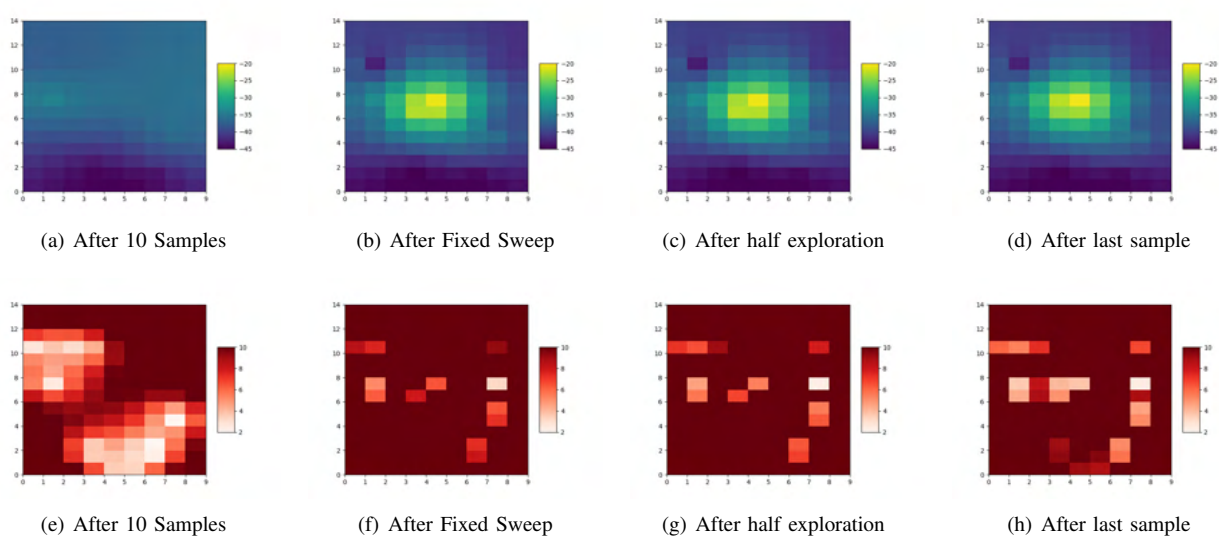


Figure S23. Fixed Voronoi Partition - Mean and Variance for MaxMean Approach and Source location (4,7)

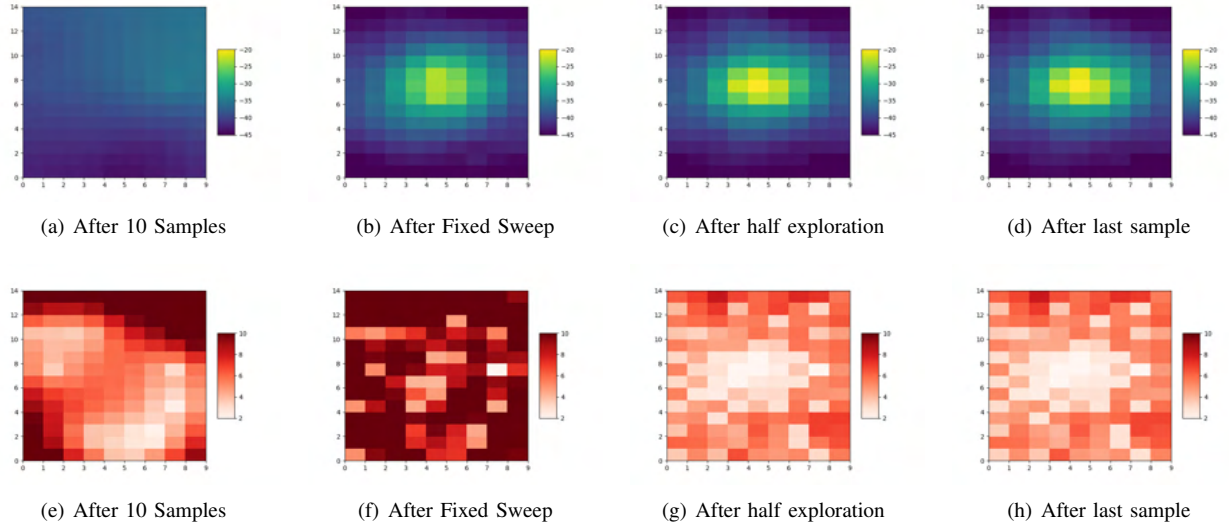


Figure S24. Fixed Voronoi Partition - Mean and Variance for Alpha0.25 Approach and Source location (4,7)

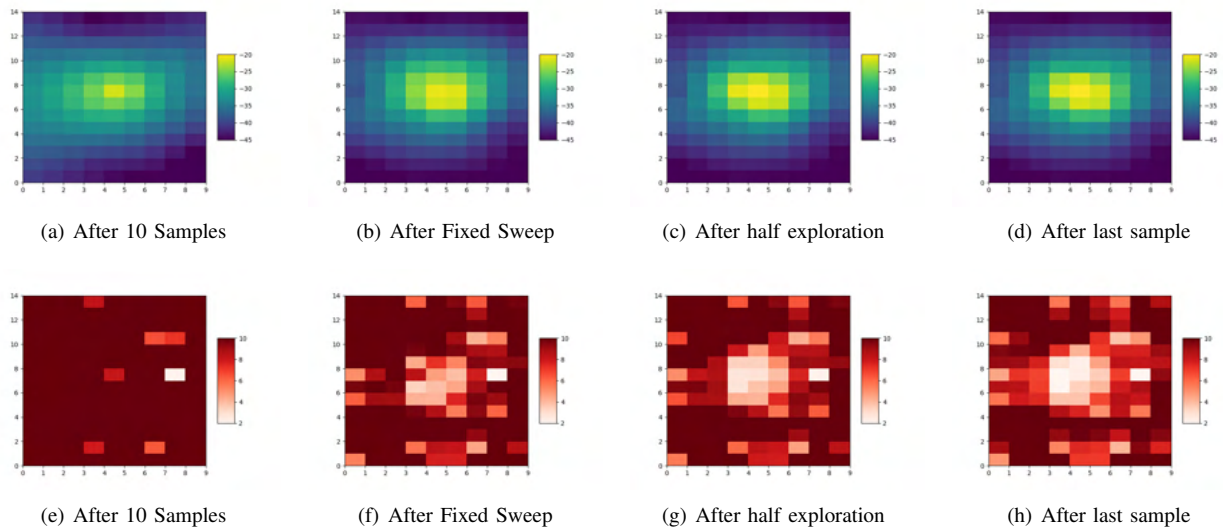


Figure S25. Fixed Voronoi Partition - Mean and Variance for Alpha0.5 Approach and Source location (4,7)

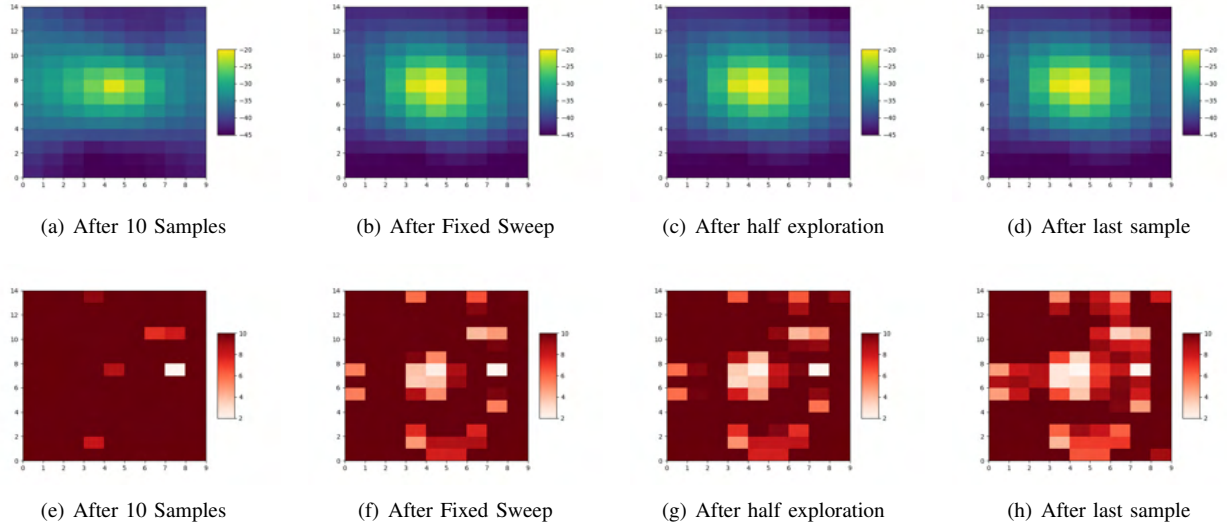


Figure S26. Fixed Voronoi Partition - Mean and Variance for Alpha0.75 Approach and Source location (4,7)

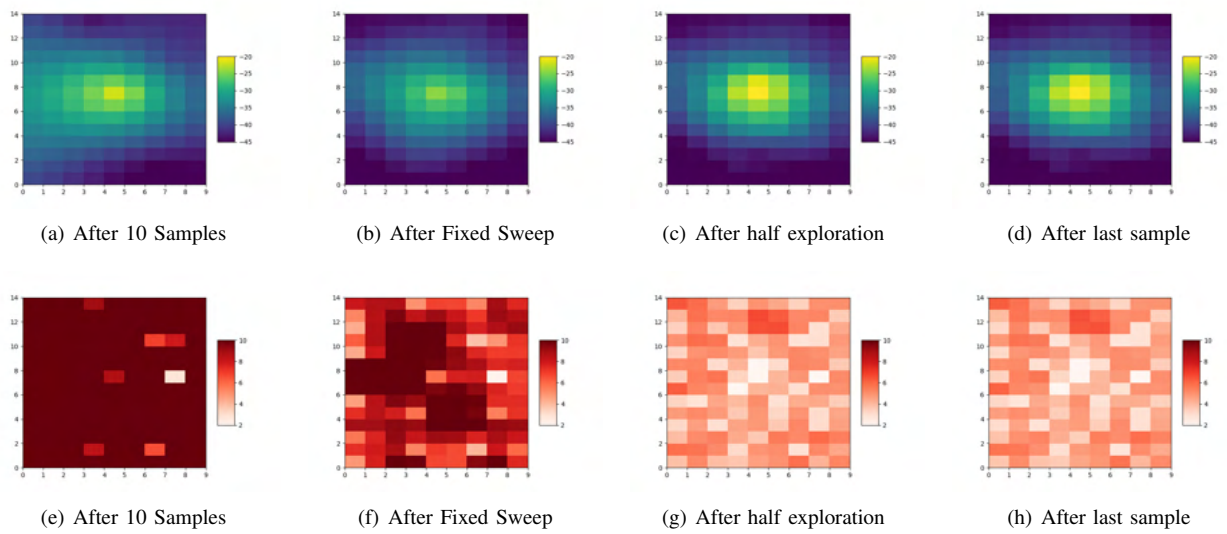


Figure S27. Fixed Voronoi Partition - Mean and Variance for MaxVarMaxMean Approach and Source location (4,7)

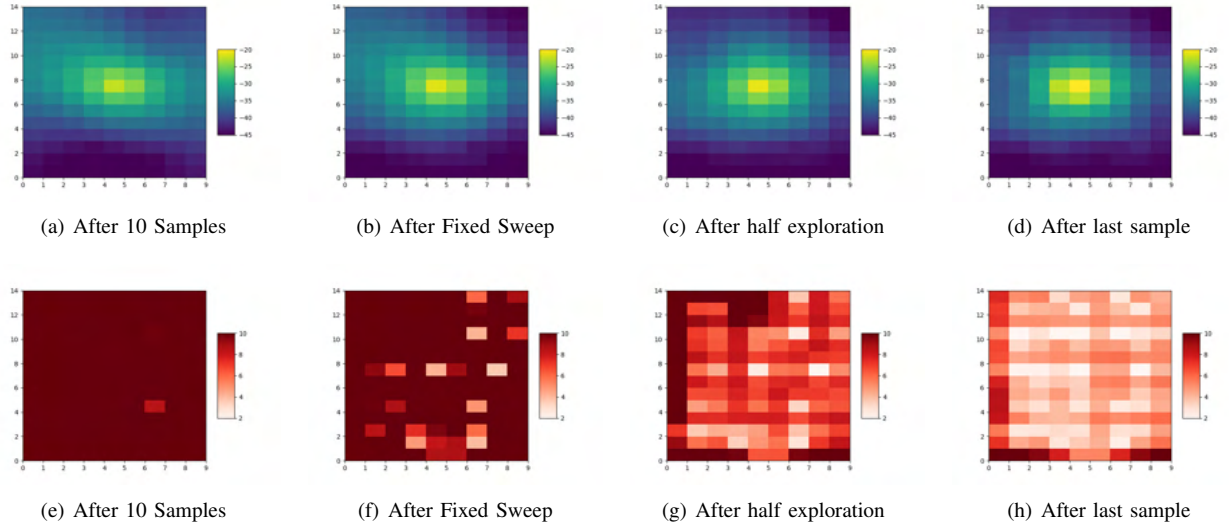


Figure S28. Dynamic Voronoi Partition - Mean and Variance for Random Walk Baseline and Source location (4,7)

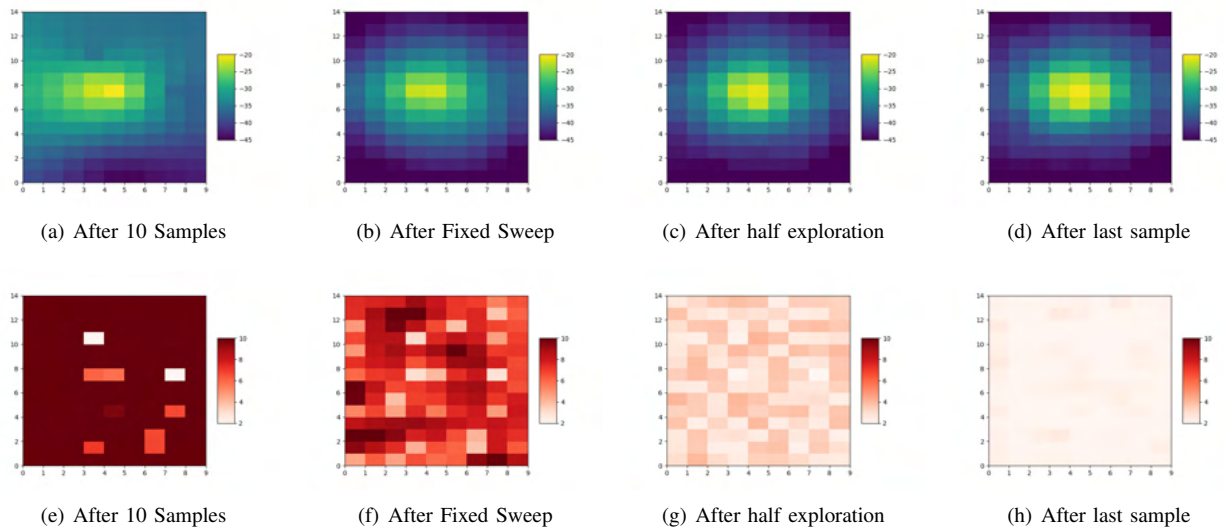


Figure S29. Dynamic Voronoi Partition - Mean and Variance for MaxVar Approach and Source location (4,7)

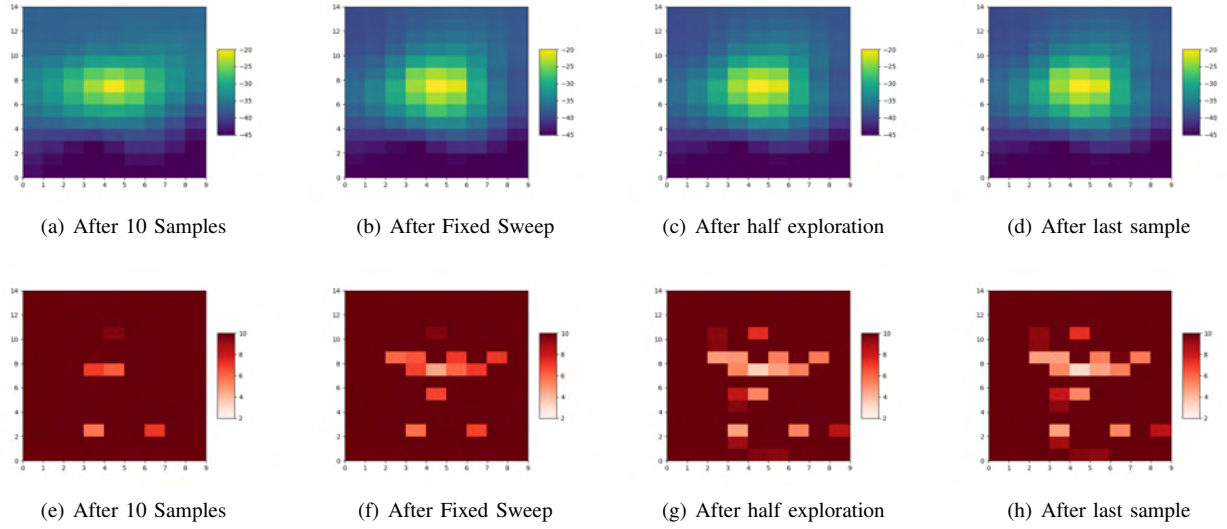


Figure S30. Dynamic Voronoi Partition - Mean and Variance for MaxMean Approach and Source location (4,7)

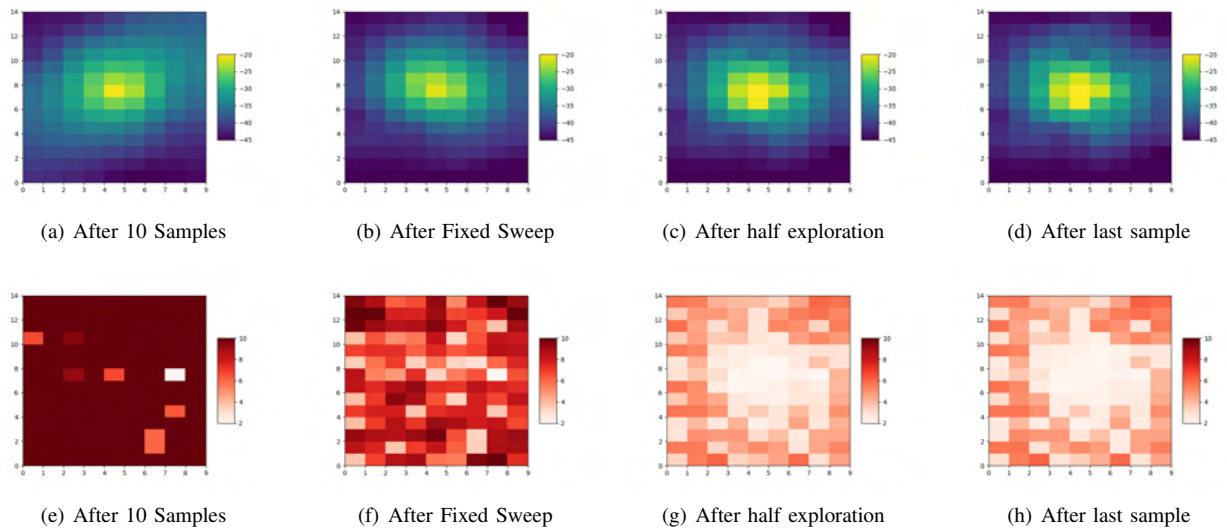


Figure S31. Dynamic Voronoi Partition - Mean and Variance for Alpha0.25 Approach and Source location (4,7)

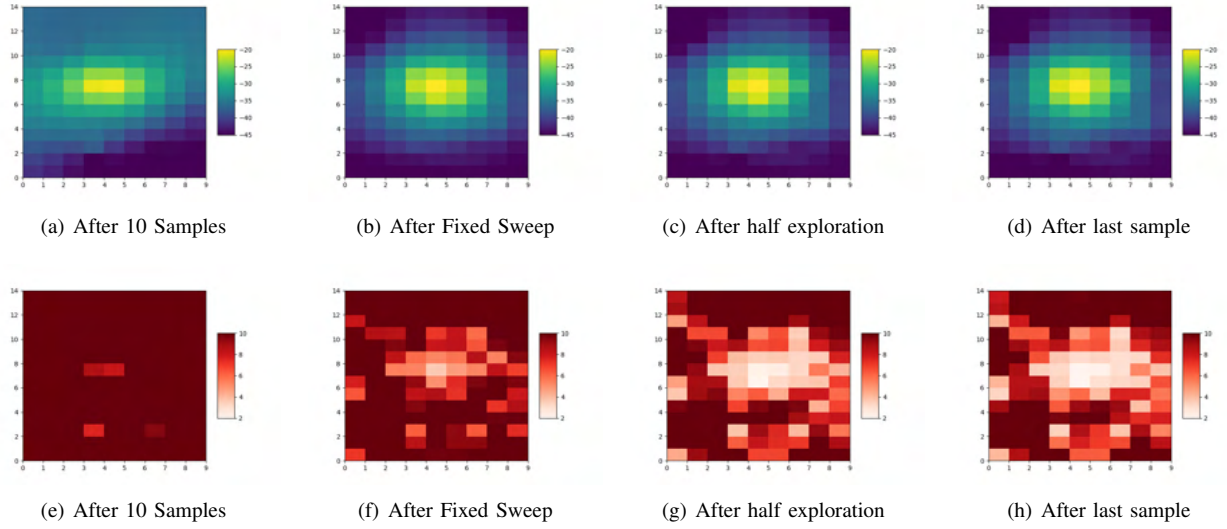


Figure S32. Dynamic Voronoi Partition - Mean and Variance for Alpha0.5 Approach and Source location (4,7)

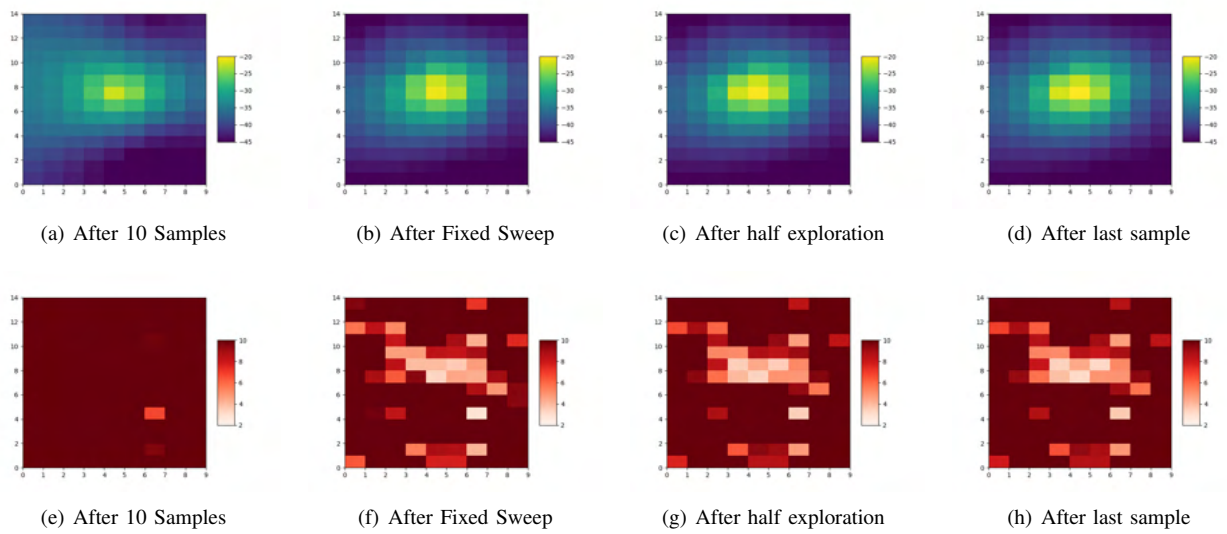
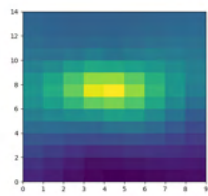
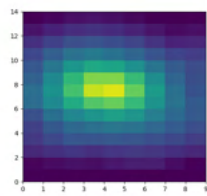


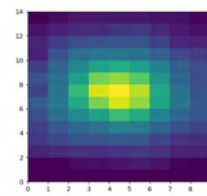
Figure S33. Dynamic Voronoi Partition - Mean and Variance for Alpha0.75 Approach and Source location (4,7)



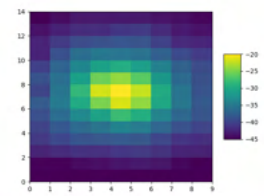
(a) After 10 Samples



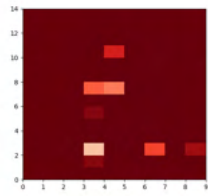
(b) After Fixed Sweep



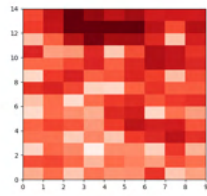
(c) After half exploration



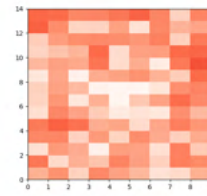
(d) After last sample



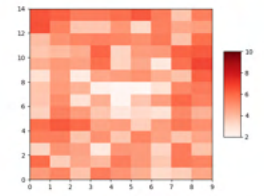
(e) After 10 Samples



(f) After Fixed Sweep



(g) After half exploration



(h) After last sample

Figure S34. Dynamic Voronoi Partition - Mean and Variance for MaxVarMaxMean Approach and Source location (4,7)