

## Chapter 7

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# Appendix

## Sets of Lidar Data used for the Intercomparison of Retrieval Algorithms

In the following the numerical values of the data sets which have been used for the intercomparison of retrieval algorithms are presented.

Table A1: Signals collected by the CNRS lidar system. Averaging over 52000 laser shots.

<i>R</i> / m	on	off	<i>R</i> / m	on	off
3855	59.049 81	53.098 71	9 555	0.587 805	1.444 105
4005	51.109 40	46.685 80	9 705	0.502 379	1.313 522
4155	44.484 31	41.368 89	9 855	0.424 552	1.196 924
4305	38.742 26	36.761 55	10 005	0.356 652	1.090 393
4455	33.802 55	32.797 06	10 155	0.301 399	0.982 218
4605	29.587 22	29.268 14	10 305	0.252 711	0.887 178
4755	25.920 04	26.258 86	10 455	0.220 832	0.814 480
4905	22.662 51	23.560 79	10 605	0.189 539	0.740 170
5055	19.827 87	21.132 22	10 755	0.159 999	0.672 100
5205	17.373 86	18.972 83	10 905	0.144 420	0.628 163
5355	15.249 53	17.088 72	11 055	0.127 292	0.589 782
5505	13.452 62	15.386 99	11 205	0.106 364	0.538 885
5655	11.902 63	13.914 06	11 355	0.086 0845	0.493 228
5805	10.545 03	12.606 24	11 505	0.071 321	0.452 501
5955	9.337 647	11.425 23	11 655	0.060 426	0.408 478
6105	8.271 733	10.365 29	11 805	0.050 061	0.367 177
6255	7.346 106	9.432 814	11 955	0.041 447	0.334 205
6405	6.511 194	8.590 814	12 105	0.033 867	0.305 615
6555	5.774 912	7.806 616	12 255	0.028 307	0.277 726
6705	5.121 319	7.086 160	12 405	0.024 756	0.248 976
6855	4.548 074	6.471 806	12 555	0.021 446	0.227 474
7005	4.049 449	5.901 170	12 705	0.018 229	0.210 689
7155	3.608 712	5.386 601	12 855	0.016 349	0.191 323
7305	3.224 250	4.926 263	13 005	0.014 314	0.175 515
7455	2.893 031	4.521 024	13 155	0.011 335	0.167 560
7605	2.614 432	4.144 959	13 305	0.010 365	0.158 949
7755	2.356 154	3.817 550	13 455	0.010 279	0.145 559
7905	2.129 844	3.521 914	13 605	0.007 3275	0.133 410
8055	1.924 384	3.251 821	13 755	0.005 9127	0.125 393
8205	1.746 584	3.006 607	13 905	0.006 2467	0.118 416
8355	1.583 104	2.781 272	14 055	0.006 1090	0.107 258
8505	1.416 304	2.565 777	14 205	0.004 383	0.100 056
8655	1.265 21	2.374 532	14 355	0.002 714	0.099 218
8805	1.130 03	2.190 309	14 505	0.004 343	0.094 843
8955	0.999 134	2.016 882	14 655	0.004 903	0.086 270
9105	0.881 727	1.854 386	14 805	0.003 069	0.077 387
9255	0.776 625	1.707 721	14 955	0.002 252	0.071 249
9405	0.680 209	1.577 722			

Table A2: Signals collected by the EPFL lidar system. Averaging over 5000 laser shots and 20 sampling channels. The altitude of the lidar system was of 491 m at the time of the data taking.

<i>R</i> / m	on	off	<i>R</i> / m	on	off
63	9.6863	6.9009	2223	0.0278	3.2961
183	6.1639	5.6004	2343	0.0154	1.5935
303	67.6228	60.5695	2463	0.0100	1.1769
423	95.8346	93.9900	2583	0.0105	1.1599
543	75.7652	90.5577	2703	0.0079	1.0971
663	50.4911	75.1144	2823	0.0060	0.6936
783	32.4220	62.1928	2943	0.0051	1.1350
903	20.4518	53.4497	3063	0.0062	2.1500
1023	12.4623	45.9682	3183	0.0052	2.0177
1143	7.0651	39.2587	3303	0.0029	1.5357
1263	3.5854	33.4689	3423	0.0022	1.0046
1383	1.5884	27.4225	3543	0.0019	0.4554
1503	0.6997	21.9741	3663	0.0020	0.1831
1623	0.3483	17.6161	3783	0.0021	0.0694
1743	0.1887	14.2431	3903	0.0006	0.0357
1863	0.1092	10.8155	4023	0.0028	0.0184
1983	0.0640	7.6199	4143	0.0013	0.0105
2103	0.0497	6.9457	4263	0.0001	0.0044

Table A3: Signals collected by the MPI lidar system. Averaging over 9000 laser shots and 20 sampling channels.

<i>R</i> / m	on	off	<i>R</i> / m	on	off
76.25	42.962	62.108	1876.25	8.8867	73.047
226.25	276.71	239.64	2026.25	5.3185	57.871
376.25	1653.3	1431.2	2176.25	3.3477	43.115
526.25	2224.4	2406.7	2326.25	2.4672	34.345
676.25	1238.6	1753.7	2476.25	5.9310	144.47
826.25	469.66	791.12	2626.25	3.4621	89.853
976.25	239.31	524.17	2776.25	1.2034	15.457
1126.25	129.78	359.04	2926.25	0.9794	11.482
1276.25	76.190	268.89	3076.25	0.7953	9.6716
1426.25	41.921	181.48	3226.25	0.6754	8.2766
1576.25	25.914	140.54	3376.25	0.5951	7.1789
1726.25	15.560	101.85	3526.25	0.4796	6.2536

Table A4: Signals collected by the RIVM lidar system. Averaging over many laser shots and 5 sampling channels. The original 30m resolution data set can be obtained under an electronic form from [Arnoud.Apituley@rivm.nl](mailto:Arnoud.Apituley@rivm.nl).

<i>R</i> / m	on	off	<i>R</i> / m	on	off
65	19.115	13.643	2315	1.7520	1.7307
215	491.19	405.44	2465	1.3254	1.3716
365	1353.9	625.98	2615	1.0354	1.1145
515	1001.4	483.39	2765	0.834 40	0.871 67
665	614.30	310.01	2915	0.687 86	0.760 82
815	343.45	182.15	3065	0.541 25	0.647 32
965	195.02	111.03	3215	0.455 40	0.520 22
1115	111.37	66.838	3365	0.385 48	0.461 07
1265	65.124	41.918	3515	0.308 55	0.395 71
1415	37.169	25.520	3665	0.224 81	0.339 71
1565	23.394	17.402	3815	0.188 93	0.285 89
1715	14.481	11.754	3965	0.181 57	0.223 87
1865	9.0985	7.8767	4115	0.140 68	0.221 50
2015	5.6879	5.0523	4265	0.108 57	0.164 45
2165	2.7225	2.4950	4415	0.088 630	0.145 11