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# **LAMPIRAN**

## Lampiran 1 Data Perhitungan A-Value

Wilayah	Latitude (LU)	Longitude (BT)	Jumlah N	Jumlah M*N	M rata-rata	Mmin	A-Value
1	2° - 2.5°	94° - 94.5°	0	0	0	0	0
2	2° - 2.5°	94.5° - 95°	0	0	0	0	0
3	2° - 2.5°	95° - 95.5°	0	0	0	0	0
4	2° - 2.5°	95.5° - 96°	0	0	0	0	0
5	2° - 2.5°	96° - 96.5°	10	50.212	5.0212	4.683	7.4845129
6	2° - 2.5°	96.5° - 97°	8	44.3	5.5375	4.855	4.158409
7	2° - 2.5°	97° - 97.5°	1	8.6	8.6	8.6	0
8	2° - 2.5°	97.5° - 98°	0	0	0	0	0
9	2.5° - 3°	94° - 94.5°	1	5.025	5.025	5.025	0
10	2.5° - 3°	94.5° - 95°	4	22.755	5.68875	4.855	3.209997
11	2.5° - 3°	95° - 95.5°	4	20.29	5.0725	4.685	6.2646209
12	2.5° - 3°	95.5° - 96°	8	43.394	5.42425	4.685	3.7866823
13	2.5° - 3°	96° - 96.5°	2	11.085	5.5425	4.685	2.7406241
14	2.5° - 3°	96.5° - 97°	0	0	0	0	0
15	2.5° - 3°	97° - 97.5°	0	0	0	0	0
16	2.5° - 3°	97.5° - 98°	0	0	0	0	0
17	3° - 3.5°	94° - 94.5°	1	5.11	5.11	5.11	0
18	3° - 3.5°	94.5° - 95°	0	0	0	0	0
19	3° - 3.5°	95° - 95.5°	0	0	0	0	0
20	3° - 3.5°	95.5° - 96°	3	19.695	6.565	5.145	1.9872591
21	3° - 3.5°	96° - 96.5°	2	10.625	5.3125	5.025	8.4332064
22	3° - 3.5°	96.5° - 97°	0	0	0	0	0
23	3° - 3.5°	97° - 97.5°	0	0	0	0	0
24	3° - 3.5°	97.5° - 98°	0	0	0	0	0
25	3.5° - 4°	94° - 94.5°	0	0	0	0	0
26	3.5° - 4°	94.5° - 95°	0	0	0	0	0
27	3.5° - 4°	95° - 95.5°	0	0	0	0	0
28	3.5° - 4°	95.5° - 96°	5	25.63	5.126	4.6	4.7760506
29	3.5° - 4°	96° - 96.5°	0	0	0	0	0
30	3.5° - 4°	96.5° - 97°	0	0	0	0	0
31	3.5° - 4°	97° - 97.5°	1	4.6	4.6	4.6	0
32	3.5° - 4°	97.5° - 98°	0	0	0	0	0
33	4° - 4.5°	94° - 94.5°	1	6.214	6.214	6.214	0
34	4° - 4.5°	94.5° - 95°	1	4.94	4.94	4.94	0
35	4° - 4.5°	95° - 95.5°	1	5.025	5.025	5.025	0
36	4° - 4.5°	95.5° - 96°	0	0	0	0	0
37	4° - 4.5°	96° - 96.5°	0	0	0	0	0
38	4° - 4.5°	96.5° - 97°	3	14.735	4.911666667	4.77	15.948996
39	4° - 4.5°	97° - 97.5°	0	0	0	0	0
40	4° - 4.5°	97.5° - 98°	0	0	0	0	0
41	4.5° - 5°	94° - 94.5°	1	5.524	5.524	5.524	0
42	4.5° - 5°	94.5° - 95°	3	16.879	5.626333333	4.855	3.3234972
43	4.5° - 5°	95° - 95.5°	7	36.516	5.216571429	4.685	4.9472411
44	4.5° - 5°	95.5° - 96°	2	11.125	5.5625	5.025	4.630857
45	4.5° - 5°	96° - 96.5°	6	31.354	5.225666667	5.025	12.351217
46	4.5° - 5°	96.5° - 97°	2	10.185	5.0925	4.685	5.6840257
47	4.5° - 5°	97° - 97.5°	1	4.77	4.77	4.77	0
48	4.5° - 5°	97.5° - 98°	1	5.3	5.3	5.3	0
49	5° - 5.5°	94° - 94.5°	12	61.82	5.151666667	4.855	8.7143107
50	5° - 5.5°	94.5° - 95°	7	36.76	5.251428571	4.855	6.5657442
51	5° - 5.5°	95° - 95.5°	0	0	0	0	0
52	5° - 5.5°	95.5° - 96°	1	5.062	5.062	5.062	0
53	5° - 5.5°	96° - 96.5°	1	5.4	5.4	5.4	0
54	5° - 5.5°	96.5° - 97°	0	0	0	0	0
55	5° - 5.5°	97° - 97.5°	0	0	0	0	0
56	5° - 5.5°	97.5° - 98°	0	0	0	0	0
57	5.5° - 6°	94° - 94.5°	0	0	0	0	0
58	5.5° - 6°	94.5° - 95°	0	0	0	0	0
59	5.5° - 6°	95° - 95.5°	0	0	0	0	0
60	5.5° - 6°	95.5° - 96°	0	0	0	0	0
61	5.5° - 6°	96° - 96.5°	0	0	0	0	0
62	5.5° - 6°	96.5° - 97°	0	0	0	0	0
63	5.5° - 6°	97° - 97.5°	0	0	0	0	0
64	5.5° - 6°	97.5° - 98°	0	0	0	0	0

## Lampiran 2 Data Perhitungan B-Value

Wilayah	Latitude (LU)	Longitude (BT)	Jumlah N	Jumlah M*N	M rata-rata	Mmin	B-Value
1	2° - 2.5°	94° - 94.5°	0	0	0	0	0
2	2° - 2.5°	94.5° - 95°	0	0	0	0	0
3	2° - 2.5°	95° - 95.5°	0	0	0	0	0
4	2° - 2.5°	95.5° - 96°	0	0	0	0	0
5	2° - 2.5°	96° - 96.5°	10	50.212	5.0212	4.683	1.28415139
6	2° - 2.5°	96.5° - 97°	8	44.3	5.5375	4.855	0.636336996
7	2° - 2.5°	97° - 97.5°	1	8.6	8.6	8.6	0
8	2° - 2.5°	97.5° - 98°	0	0	0	0	0
9	2.5° - 3°	94° - 94.5°	1	5.025	5.025	5.025	0
10	2.5° - 3°	94.5° - 95°	4	22.755	5.68875	4.855	0.52089955
11	2.5° - 3°	95° - 95.5°	4	20.29	5.0725	4.685	1.120774194
12	2.5° - 3°	95.5° - 96°	8	43.394	5.42425	4.685	0.587487318
13	2.5° - 3°	96° - 96.5°	2	11.085	5.5425	4.685	0.506472303
14	2.5° - 3°	96.5° - 97°	0	0	0	0	0
15	2.5° - 3°	97° - 97.5°	0	0	0	0	0
16	2.5° - 3°	97.5° - 98°	0	0	0	0	0
17	3° - 3.5°	94° - 94.5°	1	5.11	5.11	5.11	0
18	3° - 3.5°	94.5° - 95°	0	0	0	0	0
19	3° - 3.5°	95° - 95.5°	0	0	0	0	0
20	3° - 3.5°	95.5° - 96°	3	19.695	6.565	5.145	0.317007299
21	3° - 3.5°	96° - 96.5°	2	10.625	5.3125	5.025	1.510608696
22	3° - 3.5°	96.5° - 97°	0	0	0	0	0
23	3° - 3.5°	97° - 97.5°	0	0	0	0	0
24	3° - 3.5°	97.5° - 98°	0	0	0	0	0
25	3.5° - 4°	94° - 94.5°	0	0	0	0	0
26	3.5° - 4°	94.5° - 95°	0	0	0	0	0
27	3.5° - 4°	95° - 95.5°	0	0	0	0	0
28	3.5° - 4°	95.5° - 96°	5	25.63	5.126	4.6	0.825665399
29	3.5° - 4°	96° - 96.5°	0	0	0	0	0
30	3.5° - 4°	96.5° - 97°	0	0	0	0	0
31	3.5° - 4°	97° - 97.5°	1	4.6	4.6	4.6	0
32	3.5° - 4°	97.5° - 98°	0	0	0	0	0
33	4° - 4.5°	94° - 94.5°	1	6.214	6.214	6.214	0
34	4° - 4.5°	94.5° - 95°	1	4.94	4.94	4.94	0
35	4° - 4.5°	95° - 95.5°	1	5.025	5.025	5.025	0
36	4° - 4.5°	95.5° - 96°	0	0	0	0	0
37	4° - 4.5°	96° - 96.5°	0	0	0	0	0
38	4° - 4.5°	96.5° - 97°	3	14.735	4.911666667	4.77	3.065647059
39	4° - 4.5°	97° - 97.5°	0	0	0	0	0
40	4° - 4.5°	97.5° - 98°	0	0	0	0	0
41	4.5° - 5°	94° - 94.5°	1	5.524	5.524	5.524	0
42	4.5° - 5°	94.5° - 95°	3	16.879	5.626333333	4.855	0.563050994
43	4.5° - 5°	95° - 95.5°	7	36.516	5.216571429	4.685	0.817011556
44	4.5° - 5°	95.5° - 96°	2	11.125	5.5625	5.025	0.808
45	4.5° - 5°	96° - 96.5°	6	31.354	5.225666667	5.025	2.164285714
46	4.5° - 5°	96.5° - 97°	2	10.185	5.0925	4.685	1.065766871
47	4.5° - 5°	97° - 97.5°	1	4.77	4.77	4.77	0
48	4.5° - 5°	97.5° - 98°	1	5.3	5.3	5.3	0
49	5° - 5.5°	94° - 94.5°	12	61.82	5.151666667	4.855	1.463932584
50	5° - 5.5°	94.5° - 95°	7	36.76	5.251428571	4.855	1.095531532
51	5° - 5.5°	95° - 95.5°	0	0	0	0	0
52	5° - 5.5°	95.5° - 96°	1	5.062	5.062	5.062	0
53	5° - 5.5°	96° - 96.5°	1	5.4	5.4	5.4	0
54	5° - 5.5°	96.5° - 97°	0	0	0	0	0
55	5° - 5.5°	97° - 97.5°	0	0	0	0	0
56	5° - 5.5°	97.5° - 98°	0	0	0	0	0
57	5.5° - 6°	94° - 94.5°	0	0	0	0	0
58	5.5° - 6°	94.5° - 95°	0	0	0	0	0
59	5.5° - 6°	95° - 95.5°	0	0	0	0	0
60	5.5° - 6°	95.5° - 96°	0	0	0	0	0
61	5.5° - 6°	96° - 96.5°	0	0	0	0	0
62	5.5° - 6°	96.5° - 97°	0	0	0	0	0
63	5.5° - 6°	97° - 97.5°	0	0	0	0	0
64	5.5° - 6°	97.5° - 98°	0	0	0	0	0

**Lampiran 3** Perhitungan RMSE data PGA rumus empiris Fukushima & Tanaka terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

FUKUSHIMA & TANAKA = $\text{Log } A = 0.41 \cdot M_s - \log(R + 0.032 \cdot 10^{(0.41 \cdot M_s)}) - 0.0034 \cdot R + 1.30$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	M <sub>s</sub>	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.985074627	84	88.94123394	28.84513906	29.737726	0.029413856	0.030324041	
21-01-2013	5.58	95.18	4.704925373	12	38.76241408	30.15708487	13.625727	0.030751668	0.013894375	
29-04-2013	3.75	95.98	4.562686567	12	192.497222	1.684452274	1.113878	0.001717663	0.001135839	
16-07-2013	5.44	98.09	4.562686567	10	291.0868014	0.516955628	0.350455	0.000527148	0.000357365	
07-08-2013	2.1	97.82	4.562686567	12	450.4159014	0.096247343	0.139713	9.8145E-05	0.000142468	
13-10-2013	3.95	95.81	5.700597015	14	166.236187	6.815724553	6.391847	0.006950105	0.00651787	
22-10-2013	5.29	95.42	5.416119403	10	16.39980892	134.2860816	12.923598	0.136933695	0.013178402	
22-10-2013	5.02	95.89	5.131641791	10	64.39187186	22.36763177	12.923602	0.022808637	0.013178406	
01-12-2013	2	96.65	5.700597015	20	400.2579271	0.464028441	0.522618	0.000473177	0.000532922	
02-12-2013	2.03	96.45	5.131641791	25	390.4653869	0.302210616	0.246036	0.000308169	0.000250887	
20-12-2013	4.17	96.08	5.131641791	69	167.1278862	4.001760761	6.124955	0.00408066	0.006245716	
14-01-2014	2.16	94.11	4.847164179	10	389.9219519	0.232904017	0.300031	0.000237496	0.000305946	
24-03-2014	3.97	95.59	4.562686567	13	160.0218316	2.6064354	0.883069	0.002657824	0.00090048	
01-08-2014	4.46	96.41	4.704925373	12	148.6700935	3.495029157	2.519404	0.003563938	0.002569077	
04-08-2014	5.35	94.55	4.562686567	35	106.5308123	5.908014796	7.172565	0.006024498	0.007313981	
07-11-2014	4.68	94.79	5.416119403	85	137.7781025	7.88016312	10.495118	0.00803553	0.010702042	
17-12-2014	2.67	95.68	4.704925373	10	304.4373975	0.50883246	0.221535	0.000518865	0.000225903	
02-02-2015	4.02	95.72	4.562686567	10	156.3242339	2.745500043	3.107849	0.002799631	0.003169124	
02-03-2015	5.38	95.16	4.989402985	90	95.87628164	10.52335106	4.906848	0.010730832	0.005003592	
09-05-2015	4.81	96.01	3.424776119	10	90.01034554	2.753800889	1.115	0.002808095	0.001136984	
01-06-2015	4.49	95.54	4.562686567	55	115.122295	5.119812108	11.982442	0.005220755	0.01221869	
07-07-2015	4.88	94.58	4.704925373	20	114.894143	5.860423531	5.895859	0.005975969	0.006012103	
04-08-2015	4.61	95.02	4.704925373	49	111.4235763	6.204935687	2.514975	0.006327274	0.002564561	
21-10-2015	4.84	96.07	3.851492537	10	92.34789621	3.926716227	3.531362	0.004004136	0.003600987	
07-11-2015	4.9	96.07	3.282537313	12	88.22811187	2.493325348	0.571574	0.002542484	0.000582843	
08-11-2015	4.7	95.71	4.420447761	10	83.1533293	7.926212845	3.268981	0.008082488	0.003333433	
07-12-2015	5.07	95.66	4.562686567	26	50.05421027	19.09568975	1.270234	0.019472184	0.001295278	
15-12-2015	5.14	94.11	3.851492537	52	160.2914499	1.336390883	1.838514	0.001362739	0.0018169124	
20-12-2015	2.5	95.67	4.562686567	10	323.1717229	0.362495764	0.156597	0.000369643	0.000159684	
22-12-2015	4.39	95.3	2.998059701	10	114.0456696	1.208675262	0.356713	0.001232506	0.000363746	
08-01-2016	4.8	96.01	4.135970149	10	90.82300578	5.262898964	0.787802	0.005366663	0.000803334	
18-02-2016	5.18	94.53	3.993731343	13	106.5236888	3.484804112	0.168341	0.003553511	0.00017166	
12-10-2016	4.87	95.54	4.562686567	124	137.3261839	3.619005027	2.165198	0.003690358	0.002207888	
05-11-2016	2.82	95.21	4.847164179	10	288.1422211	0.697248246	0.282968	0.000710995	0.000288547	
07-12-2016	5.56	95.75	4.562686567	10	38.01004129	27.24179817	2.604837	0.027778903	0.002636195	
07-12-2016	5.5	95.95	4.420447761	10	56.2201311	14.30818329	2.00397	0.014590286	0.002043481	
07-12-2016	5.32	96.21	3.993731343	10	84.03761557	5.249413057	0.619273	0.005352912	0.000631483	
07-12-2016	5.5	96.1	3.567014925	16	73.3853558	4.384277761	0.450069	0.004470719	0.000468943	
07-12-2016	5.54	96.04	3.851492537	10	66.76083269	6.603530525	0.41991	0.006733727	0.000428189	
07-12-2016	5.46	96.01	3.851492537	14	62.76105971	7.239570755	0.570913	0.007382308	0.000582169	
07-12-2016	5.36	96.12	4.278208955	10	73.82316119	8.400745406	1.511215	0.008566376	0.00154101	
08-12-2016	5.23	96.04	2.998059701	10	67.6307292	2.921773143	0.264705	0.002979379	0.000269924	
08-12-2016	5.29	96.04	3.851492537	10	66.07665582	6.706497539	1.401723	0.006838724	0.00142936	
09-12-2016	5.32	96.15	2.71358209	10	77.49230066	1.809332697	0.162828	0.001845006	0.000166038	
09-12-2016	5.29	96.12	2.998059701	10	74.6998378	2.50473472	0.465349	0.002554119	0.000474524	
09-12-2016	5.37	96.03	3.851492537	23	67.1376511	6.547781053	0.524984	0.006676878	0.000535335	
10-12-2016	5.16	96.27	2.144626866	10	94.03084416	0.76772187	0.148911	0.000782858	0.000151847	
10-12-2016	5.17	96.13	2.286865672	7	78.73671416	1.18088232	0.191957	0.001204165	0.000195742	
10-12-2016	5.4	96.17	3.567014925	20	80.98257375	3.747956274	1.040096	0.003821852	0.001060603	
11-12-2016	5.16	95.96	2.429104478	10	62.21835543	1.942069132	0.07976	0.001980359	8.13326E-05	
11-12-2016	5.32	96.21	4.989402985	10	84.03761557	13.10573048	3.764745	0.013364126	0.003838972	
13-12-2016	5.51	96.29	2.855820896	15	93.78179746	1.505632861	0.202545	0.001535318	0.000206538	
14-12-2016	4.92	96.55	2.429104478	3	131.9849851	0.53163978	0.431165	0.000542122	0.000439666	
12-01-2017	5.24	96.17	2.571343284	10	81.15113729	1.469285506	0.291155	0.001498254	0.000296895	
13-01-2017	5.36	94.66	5.131641791	89	125.1974548	7.359146033	35.918593	0.007504241	0.036626772	
13-01-2017	5.33	96.56	1.148955224	43	128.9908951	0.166580788	0.022266	0.000169865	2.2705E-05	
16-02-2017	5.18	96.19	5.273880597	14	85.50779338	16.46500583	15.501547	0.016789633	0.015807179	
16-02-2017	5.21	96.13	5.131641791	12	77.98692776	16.77743988	4.86605	0.017108227	0.00496199	
17-02-2017	4.51	96.35	4.420447761	16	140.4296576	3.027514119	1.883363	0.003087205	0.001920496	
25-02-2017	5.14	96.22	3.851492537	10	89.46863373	4.143753206	3.335189	0.004225452	0.003400946	
20-03-2017	5.22	96.16	2.855820896	10	80.60447771	1.940547363	1.791136	0.001978808	0.00182645	
07-05-2017	3.92	95.86	4.420447761	23	171.6692085	1.944427599	0.917826	0.001982764	0.000935922	
21-07-2017	4.71	94.44	4.704925373	10	136.8227322	4.160281098	3.256913	0.004242306	0.003321127	
01-08-2017	4.58	95.44	3.851492537	51	104.1774415	3.177626116	4.458459	0.003240277	0.0004546363	
29-11-2017	4.57	94.65	3.709253731	60	141.4637941	1.534352005	0.779268	0.001564604	0.000794632	
09-12-2017	3.32	97.51	4.562686567	10	324.1298548	0.358731056	0.166533	0.000365804	0.000169816	
13-01-2018	5.11	94.79	2.998059701	15	82.17732469	2.148781545	1.612054	0.002191147	0.001643838	
17-01-2018	4.48	94.8	3.851492537	64	140.5263452	1.777577359	1.749273	0.001812624	0.001783762	



18-01-2018	5.68	95.03	1.148955224	10	57.69846963	0.650160442	0.309619	0.000662979	0.000315724	
08-02-2018	4.66	96.27	4.989402985	10	122.0521719	6.786789448	3.399838	0.006920599	0.00346687	
02-03-2018	3.42	97.83	3.709253731	113	357.9965135	0.111799842	1.514337	0.000114004	0.001544194	
02-03-2018	4.53	94.82	3.567014925	10	120.2577769	1.862719361	1.514337	0.001899445	0.001544194	
19-04-2018	2.07	96.14	4.135970149	16	377.6951348	0.135712726	0.130615	0.000138388	0.00013319	
16-05-2018	4.37	95.24	4.278208955	16	118.0362469	3.750548099	3.992864	0.003824495	0.004071588	
19-06-2018	5.55	96.86	4.135970149	10	156.0521523	1.851412201	0.201276	0.001887915	0.000205244	
18-09-2018	5.17	96.23	4.278208955	7	89.23470037	6.18560821	0.3087	0.006307565	0.000314786	
27-09-2018	4.58	97.81	4.704925373	10	275.7653587	0.702455337	0.0578	0.000716305	5.89396E-05	
14-10-2018	4.65	94.62	3.851492537	10	125.2482264	2.245467287	0.4547	0.002289739	0.000463665	
15-10-2018	3.84	96.05	4.704925373	23	186.4621497	2.080528548	0.5057	0.002121549	0.00051567	
18-10-2018	4.7	96.17	4.562686567	11	111.0969965	5.471155715	0.2715	0.005579026	0.000276853	
20-12-2018	4.63	96.73	3.567014925	3	164.6669823	0.962854732	0.0451	0.000981839	4.59892E-05	
24-12-2018	4.96	95.88	3.851492537	10	68.18951821	6.395659524	0.6478	0.006521758	0.000660572	
01-01-2019	5.42	94.51	4.420447761	51	116.5191903	4.38678042	0.8163	0.004473271	0.000832394	
09-01-2019	3.8	95.8	4.278208955	60	190.6802904	1.322298113	0.345	0.001348369	0.000351802	
05-12-2019	5.21	95.79	4.562686567	10	43.34179577	23.0809586	1.423	0.023536028	0.001451056	
18-01-2020	4.48	95.53	3.851492537	62	119.4430195	2.462933275	0.5096	0.002511493	0.000519647	
09-04-2020	5.24	95.51	2.855820896	10	21.13353349	11.59903056	0.8261	0.01182772	0.000842388	
15-04-2020	3.56	96.01	4.562686567	11	213.5783735	1.288762716	0.2558	0.001314172	0.000260843	
07 Mei 2020	4.99	95.26	3.567014925	16	53.08946427	7.070276616	0.8575	0.007209676	0.000874407	
04 Juni 2020	5.93	94.99	2.855820896	10	79.17072065	1.997779657	0.1294	0.002037168	0.000131951	
04 Juni 2020	5.74	95.24	2.998059701	5	45.22733847	5.186240876	0.1362	0.005288494	0.000138885	
18-06-2020	5.62	95.28	3.709253731	16	35.33894039	13.78904835	0.3685	0.014060916	0.000375765	
18-06-2020	5.96	95.01	3.140298507	10	80.29081319	2.549910315	0.1499	0.002600185	0.000152855	
13-07-2020	5.22	94.27	5.131641791	34	137.1871254	6.131124227	1.1691	0.006252007	0.00119215	
01-09-2020	3.07	95.71	4.562686567	10	260.532235	0.732972462	0.0696	0.000747424	7.09722E-05	
14-09-2020	4.19	96.7	5.131641791	125	227.7654027	1.838227582	0.3851	0.00187447	0.000392693	
09-10-2020	2.22	97.57	3.851492537	27	423.9380904	0.064443333	0.1539	6.57139E-05	0.000156934	
11-10-2020	4.76	95.77	4.135970149	71	105.8992334	4.020988071	0.8761	0.004100267	0.000893373	
15-10-2020	4.06	95.94	4.847164179	27	160.1631478	3.387451186	0.5135	0.003454239	0.000523624	
14-11-2020	5.58	95.59	4.847164179	10	26.58370276	53.00501505	19.1071	0.054050073	0.01948382	
01-12-2020	2.97	96.04	4.562686567	26	278.3803047	0.596868826	0.0902	0.000608637	9.19784E-05	
05-03-2021	4.89	96.01	4.420447761	4	83.29232402	7.904701527	0.6429	0.008060552	0.000655576	
24-03-2021	5.25	94.41	4.278208955	10	117.7726386	3.76658058	0.5204	0.003840843	0.00053066	
09-04-2021	4.76	96.15	3.851492537	6	104.548267	3.157305345	0.1382	0.003219555	0.000140925	
17-04-2021	5.04	95.38	4.704925373	92	100.6012555	7.460981658	5.1479	0.007608084	0.005249397	
01-05-2021	5.48	95.61	2.71358209	2	18.93981444	11.51837828	0.2548	0.011745477	0.000259824	
03-05-2021	5.43	94.6	4.278208955	49	106.7959461	4.51939385	0.9379	0.004608499	0.000956392	
11-05-2021	2.4	96.1	4.420447761	10	340.8934204	0.261871779	0.049	0.000267035	4.99661E-05	
24-05-2021	4.34	95.26	4.847164179	49	129.1258596	5.332938418	1.7473	0.005438084	0.00178175	
03-06-2021	5.87	95.25	3.140298507	5	57.3907053	4.254836181	0.1029	0.004338725	0.00104929	
12-06-2021	3.92	95.86	4.420447761	30	172.6539987	1.918619585	0.2675	0.001956447	0.000272774	
08-10-2021	4.42	95.43	5.416119403	46	117.9645097	10.68138817	1.2828	0.010891985	0.001308092	
05-12-2021	4.53	96.51	2.855820896	5	151.3069351	0.595970766	0.0843	0.000607721	8.59621E-05	

**Lampiran 4** Perhitungan RMSE data PGA rumus empiris Mc. Guire terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Mc. Guire => $A = (472.3 \cdot 10^{(0.278Ms)}) / (R+25)^{1.301}$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.985075	84	88.94123	45.95437004	29.737726	0.046860416	0.030324041	0.016846695
21-01-2013	5.58	95.18	4.704925	12	38.76241	43.09714072	13.625727	0.043946853	0.013894375	
29-04-2013	3.75	95.98	4.562687	12	192.4972	7.972922249	1.113878	0.008130118	0.001135839	
16-07-2013	5.44	98.09	4.562687	10	291.0868	4.902264442	0.350455	0.004998919	0.000357365	
07-08-2013	2.1	97.82	4.562687	12	450.4159	2.882517302	0.139713	0.00293935	0.000142468	
13-10-2013	3.95	95.81	5.700597	14	166.2362	19.5281565	6.391847	0.019913178	0.00651787	
22-10-2013	5.29	95.42	5.416119	10	16.39981	119.1747649	12.923598	0.12152444	0.013178402	
22-10-2013	5.02	95.89	5.131642	10	64.39187	36.49014798	12.923602	0.037209596	0.013178406	
01-12-2013	2	96.65	5.700597	20	400.2579	6.904100746	0.522618	0.007040223	0.000532922	
02-12-2013	2.03	96.45	5.131642	25	390.4654	4.944251186	0.246036	0.005041733	0.000250887	
20-12-2013	4.17	96.08	5.131642	69	167.1279	13.48538181	6.124955	0.013751262	0.006245716	
14-01-2014	2.16	94.11	4.847164	10	389.922	4.128148248	0.300031	0.00420954	0.000305946	
24-03-2014	3.97	95.59	4.562687	13	160.0218	9.839832818	0.883069	0.010033837	0.00090048	
01-08-2014	4.46	96.41	4.704925	12	148.6701	11.70320803	2.519404	0.011933951	0.002569077	
04-08-2014	5.35	94.55	4.562687	35	106.5308	15.33875218	7.172565	0.015641174	0.007313981	
07-11-2014	4.68	94.79	5.416119	85	137.7781	20.07302232	10.495118	0.020468786	0.010702042	
17-12-2014	2.67	95.68	4.704925	10	304.4374	5.08820568	0.221535	0.005188526	0.000225903	

02-02-2015	4.02	95.72	4.562687	10	156.3242	10.1016833	3.107849	0.01030085	0.003169124
02-03-2015	5.38	95.16	4.989403	90	95.87628	22.49811927	4.906848	0.022941697	0.005003592
09-05-2015	4.81	96.01	3.424776	10	90.01035	8.816312774	1.115	0.008990137	0.001136984
01-06-2015	4.49	95.54	4.562687	55	115.1223	14.12664038	11.982442	0.014405164	0.01221869
07-07-2015	4.88	94.58	4.704925	20	114.8941	15.50607956	5.895859	0.015811801	0.006012103
04-08-2015	4.61	95.02	4.704925	49	111.4236	16.02123721	2.514975	0.016337115	0.002564561
21-10-2015	4.84	96.07	3.851493	10	92.3479	11.28614161	3.531362	0.011508662	0.003600987
07-11-2015	4.9	96.07	3.282537	12	88.22811	8.214267081	0.571574	0.008376221	0.000582843
08-11-2015	4.7	95.71	4.420448	10	83.15333	18.06410806	3.268981	0.018420264	0.003333433
07-12-2015	5.07	95.66	4.562687	26	50.05421	31.82598536	1.270234	0.032453473	0.001295278
15-12-2015	5.14	94.11	3.851493	52	160.2914	6.22949759	1.838514	0.00635232	0.001874763
20-12-2015	2.5	95.67	4.562687	10	323.1717	4.322863001	0.156597	0.004408093	0.000159684
22-12-2015	4.39	95.3	2.99806	10	114.0457	5.241199332	0.356713	0.005344536	0.000363746
08-01-2016	4.8	96.01	4.13597	10	90.82301	13.77274706	0.787802	0.014044293	0.000803334
18-02-2016	5.18	94.53	3.993731	13	106.5237	10.65739543	0.168341	0.010867519	0.00017166
12-10-2016	4.87	95.54	4.562687	124	137.3262	11.66619604	2.165198	0.011896209	0.002207888
05-11-2016	2.82	95.21	4.847164	10	288.1422	5.95346397	0.282968	0.006070844	0.000288547
07-12-2016	5.56	95.75	4.562687	10	38.01004	39.95882489	2.604837	0.040746662	0.002656195
07-12-2016	5.5	95.95	4.420448	10	56.22013	26.21983579	2.00397	0.026736792	0.0002043481
07-12-2016	5.32	96.21	3.993731	10	84.03762	13.60155096	0.619273	0.013869722	0.000631483
07-12-2016	5.5	96.1	3.567015	16	73.38536	11.83165686	0.450069	0.012064932	0.000458943
07-12-2016	5.54	96.04	3.851493	10	66.76083	15.54231347	0.41991	0.015848749	0.000428189
07-12-2016	5.46	96.01	3.851493	14	62.76106	16.47013477	0.570913	0.016794863	0.000582169
07-12-2016	5.36	96.12	4.278209	10	73.82316	18.5493834	1.511215	0.018911594	0.00154101
08-12-2016	5.23	96.04	2.99806	10	67.63073	8.890581751	0.264705	0.00906587	0.000269924
08-12-2016	5.29	96.04	3.851493	10	66.07666	15.69438368	1.401723	0.016003817	0.00142936
09-12-2016	5.32	96.15	2.713582	10	77.4923	6.496575062	0.162828	0.006624663	0.000166038
09-12-2016	5.29	96.12	2.99806	10	74.69998	8.079346489	0.465349	0.008238641	0.000474524
09-12-2016	5.37	96.03	3.851493	23	67.13765	15.45966776	0.524984	0.015764474	0.000535335
10-12-2016	5.16	96.27	2.144627	10	94.03084	3.715276898	0.148911	0.003788528	0.000151847
10-12-2016	5.17	96.13	2.286866	7	78.73671	4.866743257	0.191957	0.004962697	0.000195742
10-12-2016	5.4	96.17	3.567015	20	80.98257	10.74034074	1.040096	0.0109521	0.001060603
11-12-2016	5.16	95.96	2.429104	10	62.21836	6.68002551	0.07976	0.00681173	8.13326E-05
11-12-2016	5.32	96.21	4.989403	10	84.03762	25.72676323	3.764745	0.026233998	0.003838972
13-12-2016	5.51	96.29	2.855821	15	93.7818	5.873358954	0.202545	0.005989159	0.000206538
14-12-2016	4.92	96.55	2.429104	3	131.985	3.109550264	0.431165	0.003170859	0.000439666
12-01-2017	5.24	96.17	2.571343	10	81.15114	5.666611084	0.291155	0.005778335	0.000296895
13-01-2017	5.36	94.66	5.131642	89	125.1975	18.57703313	35.918593	0.018943302	0.036626772
13-01-2017	5.33	96.56	1.148955	43	128.9909	1.405065099	0.022266	0.001432768	2.2705E-05
16-02-2017	5.18	96.19	5.273881	14	85.50779	30.33210701	15.501547	0.030930141	0.015807179
16-02-2017	5.21	96.13	5.131642	12	77.98693	30.35182768	4.86605	0.030950251	0.00496199
17-02-2017	4.51	96.35	4.420448	16	140.4297	10.39169586	1.883363	0.010596581	0.001920496
25-02-2017	5.14	96.22	3.851493	10	89.46863	11.65686416	3.335189	0.011886693	0.003400946
20-03-2017	5.22	96.16	2.855821	10	80.60448	6.844243296	1.791136	0.006979186	0.00182645
07-05-2017	3.92	95.86	4.420448	23	171.6692	8.297579191	0.917826	0.008461176	0.000935922
21-07-2017	4.71	94.44	4.704925	10	136.8227	12.8300034	3.256913	0.013082962	0.003321127
01-08-2017	4.58	95.44	3.851493	51	104.1774	9.960450967	4.458459	0.010156833	0.004546363
29-11-2017	4.57	94.65	3.709254	60	141.4638	6.538128281	0.779268	0.006667035	0.000794632
09-12-2017	3.32	97.51	4.562687	10	324.1299	4.307435075	0.166533	0.004392361	0.000169816
13-01-2018	5.11	94.79	2.99806	15	82.17732	7.353848082	1.612054	0.007498838	0.001643838
17-01-2018	4.48	94.8	3.851493	64	140.5263	7.214176109	1.749273	0.007356412	0.001783762
18-01-2018	5.68	95.03	1.148955	10	57.69847	3.154737917	0.309619	0.003216937	0.000315724
08-02-2018	4.66	96.27	4.989403	10	122.0522	17.43378268	3.399838	0.017777511	0.00346687
02-03-2018	3.42	97.83	3.709254	113	357.9965	2.211332361	1.514337	0.002254931	0.001544194
02-03-2018	4.53	94.82	3.567015	10	120.2578	7.126966943	1.514337	0.007267484	0.001544194
19-04-2018	2.07	96.14	4.13597	16	377.6951	2.722346323	0.130615	0.002776021	0.00013319
16-05-2018	4.37	95.24	4.278209	16	118.0362	11.46369574	3.992864	0.011689716	0.004071588
19-06-2018	5.55	96.86	4.13597	10	156.0522	7.702204472	0.201276	0.007854063	0.000205244
18-09-2018	5.17	96.23	4.278209	7	89.2347	15.35906492	0.3087	0.015661888	0.000314786
27-09-2018	4.58	97.81	4.704925	10	275.7654	5.728129309	0.0578	0.005841066	5.89396E-05
14-10-2018	4.65	94.62	3.851493	10	125.2482	8.182837023	0.4547	0.008344172	0.000463665

15-10-2018	3.84	96.05	4.704925	23	186.4621	9.058567625	0.5057	0.009237168	0.00051567	
18-10-2018	4.7	96.17	4.562687	11	111.097	14.6726264	0.2715	0.014961915	0.000276853	
20-12-2018	4.63	96.73	3.567015	3	164.667	5.037103197	0.0451	0.005136416	4.59892E-05	
24-12-2018	4.96	95.88	3.851493	10	68.18952	15.23303071	0.6478	0.015533368	0.000660572	
01-01-2019	5.42	94.51	4.420448	51	116.5192	12.73185465	0.8163	0.012982879	0.000832394	
09-01-2019	3.8	95.8	4.278209	60	190.6803	6.71850473	0.345	0.006850968	0.000351802	
05-12-2019	5.21	95.79	4.562687	10	43.3418	35.95156686	1.423	0.036660396	0.001451056	
18-01-2020	4.48	95.53	3.851493	62	119.443	8.613261813	0.5096	0.008783083	0.000519647	
09-04-2020	5.24	95.51	2.855821	10	21.13353	20.10251534	0.8261	0.020498861	0.000842388	
15-04-2020	3.56	96.01	4.562687	11	213.5784	7.068817749	0.2558	0.007208188	0.000260843	
07 Mei 2020	4.99	95.26	3.567015	16	53.08946	15.98031464	0.8575	0.016295386	0.000874407	
04 Juni 2020	5.93	94.99	2.855821	10	79.17072	6.967051802	0.1294	0.007104416	0.000131951	
04 Juni 2020	5.74	95.24	2.99806	5	45.22734	12.74600146	0.1362	0.012997304	0.000138885	
18-06-2020	5.62	95.28	3.709254	16	35.33894	24.48121129	0.3685	0.024963888	0.000375765	
18-06-2020	5.96	95.01	3.140299	10	80.29081	8.243106603	0.1499	0.008405629	0.000152855	
13-07-2020	5.22	94.27	5.131642	34	137.1871	16.81059393	1.1691	0.017142035	0.00119215	
01-09-2020	3.07	95.71	4.562687	10	260.5322	5.595481548	0.0696	0.005705803	7.09722E-05	
14-09-2020	4.19	96.7	5.131642	125	227.7654	9.43797293	0.3851	0.009624054	0.000392693	
09-10-2020	2.22	97.57	3.851493	27	423.9381	1.969873297	0.1539	0.002008712	0.000156934	
11-10-2020	4.76	95.77	4.13597	71	105.8992	11.74579659	0.8761	0.011977379	0.000893373	
15-10-2020	4.06	95.94	4.847164	27	160.1631	11.79345654	0.5135	0.012025979	0.000523624	
14-11-2020	5.58	95.59	4.847164	10	26.5837	62.19433199	19.1071	0.063420569	0.01948382	
01-12-2020	2.97	96.04	4.562687	26	278.3803	5.171055819	0.0902	0.005273009	9.19784E-05	
05-03-2021	4.89	96.01	4.420448	4	83.29232	18.0339495	0.6429	0.018389511	0.000655576	
24-03-2021	5.25	94.41	4.278209	10	117.7726	11.49124036	0.5204	0.011717804	0.00053066	
09-04-2021	4.76	96.15	3.851493	6	104.5483	9.923373762	0.1382	0.010119025	0.000140925	
17-04-2021	5.04	95.38	4.704925	92	100.6013	17.84004849	5.1479	0.018191787	0.005249397	
01-05-2021	5.48	95.61	2.713582	2	18.93981	19.55398259	0.2548	0.019939513	0.000259824	
03-05-2021	5.43	94.6	4.278209	49	106.7959	12.75168175	0.9379	0.013003097	0.000956392	
11-05-2021	2.4	96.1	4.420448	10	340.8934	3.699798643	0.049	0.003772745	4.99661E-05	
24-05-2021	4.34	95.26	4.847164	49	129.1259	14.97281803	1.7473	0.015268025	0.00178175	
03-06-2021	5.87	95.25	3.140299	5	57.39071	11.34131376	0.1029	0.011564922	0.000104929	
12-06-2021	3.92	95.86	4.420448	30	172.654	8.243833868	0.2675	0.008406371	0.000272774	
08-10-2021	4.42	95.43	5.416119	46	117.9645	23.76551338	1.2828	0.024234079	0.001308092	
05-12-2021	4.53	96.51	2.855821	5	151.3069	3.513497675	0.0843	0.003582771	8.59621E-05	

**Lampiran 5** Perhitungan RMSE data PGA rumus empiris Campbell terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Campbell => $A = (0.0159 * Eks(0.868Ms)) / (R + 0.0606 * Eks(0.70Ms))^{*1.09}$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.985075	84	88.94123	20.12573719	29.737726	0.020522645	0.030324041	0.007054
21-01-2013	5.58	95.18	4.704925	12	38.76241	16.42957634	13.625727	0.016753591	0.013894375	
29-04-2013	3.75	95.98	4.562687	12	192.4972	2.62577911	1.113878	0.002677563	0.001135839	
16-07-2013	5.44	98.09	4.562687	10	291.0868	1.677718991	0.350455	0.001710806	0.000357365	
07-08-2013	2.1	97.82	4.562687	12	450.4159	1.044506847	0.139713	0.001065106	0.000142468	
13-10-2013	3.95	95.81	5.700597	14	166.2362	8.166274038	6.391847	0.008327324	0.00651787	
22-10-2013	5.29	95.42	5.416119	10	16.39981	68.96964106	12.923598	0.07032982	0.013178402	
22-10-2013	5.02	95.89	5.131642	10	64.39187	13.79893518	12.923602	0.01407107	0.013178406	
01-12-2013	2	96.65	5.700597	20	400.2579	3.172820301	0.522618	0.003235393	0.000532922	
02-12-2013	2.03	96.45	5.131642	25	390.4654	1.994771057	0.246036	0.002034111	0.000250887	
20-12-2013	4.17	96.08	5.131642	69	167.1279	4.989566941	6.124955	0.005087968	0.006245716	
14-01-2014	2.16	94.11	4.847164	10	389.922	1.562390941	0.300031	0.001593203	0.000305946	
24-03-2014	3.97	95.59	4.562687	13	160.0218	3.206226836	0.883069	0.003269458	0.00090048	
01-08-2014	4.46	96.41	4.704925	12	148.6701	3.923080744	2.519404	0.004000449	0.002569077	
04-08-2014	5.35	94.55	4.562687	35	106.5308	4.970863824	7.172565	0.005068896	0.007313981	
07-11-2014	4.68	94.79	5.416119	85	137.7781	7.830203062	10.495118	0.007984626	0.010702042	
17-12-2014	2.67	95.68	4.704925	10	304.4374	1.807073855	0.221535	0.001842712	0.000225903	
02-02-2015	4.02	95.72	4.562687	10	156.3242	3.2882021	3.107849	0.00335305	0.003169124	
02-03-2015	5.38	95.16	4.989403	90	95.87628	8.016030004	4.906848	0.008174117	0.005003592	

09-05-2015	4.81	96.01	3.424776	10	90.01035	2.240142129	1.115	0.002284321	0.001136984
01-06-2015	4.49	95.54	4.562687	55	115.1223	4.572983531	11.982442	0.004663169	0.01221869
07-07-2015	4.88	94.58	4.704925	20	114.8941	5.177467531	5.895859	0.005279575	0.006012103
04-08-2015	4.61	95.02	4.704925	49	111.4236	5.350945842	2.514975	0.005456474	0.002564561
21-10-2015	4.84	96.07	3.851493	10	92.3479	3.147069596	3.531362	0.003209134	0.003600987
07-11-2015	4.9	96.07	3.282537	12	88.22811	2.024833797	0.571574	0.002064766	0.000582843
08-11-2015	4.7	95.71	4.420448	10	83.15333	5.741936682	3.268981	0.005855176	0.003333433
07-12-2015	5.07	95.66	4.562687	26	50.05421	11.1362363	1.270234	0.011355859	0.001295278
15-12-2015	5.14	94.11	3.851493	52	160.2914	1.733030348	1.838514	0.001767208	0.001874763
20-12-2015	2.5	95.67	4.562687	10	323.1717	1.497817252	0.156597	0.001527356	0.000159684
22-12-2015	4.39	95.3	2.99806	10	114.0457	1.199013874	0.356713	0.00122266	0.000363746
08-01-2016	4.8	96.01	4.13597	10	90.82301	4.09194965	0.787802	0.004172649	0.000803334
18-02-2016	5.18	94.53	3.993731	13	106.5237	3.048722082	0.168341	0.003108847	0.00017166
12-10-2016	4.87	95.54	4.562687	124	137.3262	3.781666349	2.165198	0.003856246	0.002207888
05-11-2016	2.82	95.21	4.847164	10	288.1422	2.168776455	0.282968	0.002211548	0.000288547
07-12-2016	5.56	95.75	4.562687	10	38.01004	14.88531119	2.604837	0.015178871	0.002656195
07-12-2016	5.5	95.95	4.420448	10	56.22013	8.725061198	2.00397	0.008897132	0.002043481
07-12-2016	5.32	96.21	3.993731	10	84.03762	3.937226473	0.619273	0.004014874	0.000631483
07-12-2016	5.5	96.1	3.567015	16	73.38536	3.157377703	0.450069	0.003219646	0.000458943
07-12-2016	5.54	96.04	3.851493	10	66.76083	4.464252516	0.41991	0.004552294	0.000428189
07-12-2016	5.46	96.01	3.851493	14	62.76106	4.770838899	0.570913	0.004864927	0.000582169
07-12-2016	5.36	96.12	4.278209	10	73.82316	5.776046406	1.511215	0.005889958	0.00154101
08-12-2016	5.23	96.04	2.99806	10	67.63073	2.11243517	0.264705	0.002154095	0.000269924
08-12-2016	5.29	96.04	3.851493	10	66.07666	4.513983968	1.401723	0.004603006	0.00142936
09-12-2016	5.32	96.15	2.713582	10	77.4923	1.425899525	0.162828	0.00145402	0.000166038
09-12-2016	5.29	96.12	2.99806	10	74.69998	1.896907554	0.465349	0.001934317	0.000474524
09-12-2016	5.37	96.03	3.851493	23	67.13765	4.437308557	0.524984	0.004524819	0.000535335
10-12-2016	5.16	96.27	2.144627	10	94.03084	0.706543319	0.148911	0.000720477	0.000151847
10-12-2016	5.17	96.13	2.286866	7	78.73671	0.969067496	0.191957	0.000988179	0.000195742
10-12-2016	5.4	96.17	3.567015	20	80.98257	2.838802214	1.040096	0.002894787	0.001060603
11-12-2016	5.16	95.96	2.429104	10	62.21836	1.414881299	0.07976	0.001442785	8.13326E-05
11-12-2016	5.32	96.21	4.989403	10	84.03762	9.225561246	3.764745	0.009407502	0.003838972
13-12-2016	5.51	96.29	2.855821	15	93.7818	1.311008674	0.202545	0.001336864	0.000206538
14-12-2016	4.92	96.55	2.429104	3	131.985	0.625243017	0.431165	0.000637574	0.000439666
12-01-2017	5.24	96.17	2.571343	10	81.15114	1.199399846	0.291155	0.001223054	0.000296895
13-01-2017	5.36	94.66	5.131642	89	125.1975	6.803794948	35.918593	0.006937975	0.036626772
13-01-2017	5.33	96.56	1.148955	43	128.9909	0.211362683	0.022266	0.000215531	2.2705E-05
16-02-2017	5.18	96.19	5.273881	14	85.50779	11.53032674	15.501547	0.011757721	0.015807179
16-02-2017	5.21	96.13	5.131642	12	77.98693	11.26944232	4.86605	0.011491692	0.00496199
17-02-2017	4.51	96.35	4.420448	16	140.4297	3.266356239	1.883363	0.003330773	0.001920496
25-02-2017	5.14	96.22	3.851493	10	89.46863	3.256521064	3.335189	0.003320744	0.003400946
20-03-2017	5.22	96.16	2.855821	10	80.60448	1.544955677	1.791136	0.001575424	0.00182645
07-05-2017	3.92	95.86	4.420448	23	171.6692	2.629011101	0.917826	0.002680859	0.000935922
21-07-2017	4.71	94.44	4.704925	10	136.8227	4.290358105	3.256913	0.00437497	0.003321127
01-08-2017	4.58	95.44	3.851493	51	104.1774	2.762908506	4.458459	0.002817397	0.004546363
29-11-2017	4.57	94.65	3.709254	60	141.4638	1.754962543	0.779268	0.001789573	0.000794632
09-12-2017	3.32	97.51	4.562687	10	324.1299	1.493013742	0.166533	0.001522458	0.000169816
13-01-2018	5.11	94.79	2.99806	15	82.17732	1.710680931	1.612054	0.001744418	0.001643838
17-01-2018	4.48	94.8	3.851493	64	140.5263	1.99862659	1.749273	0.002038042	0.001783762
18-01-2018	5.68	95.03	1.148955	10	57.69847	0.507289029	0.309619	0.000517293	0.000315724
08-02-2018	4.66	96.27	4.989403	10	122.0522	6.190999965	3.399838	0.006313095	0.00346687
02-03-2018	3.42	97.83	3.709254	113	357.9965	0.640298304	1.514337	0.000652926	0.001544194
02-03-2018	4.53	94.82	3.567015	10	120.2578	1.85077252	1.514337	0.001887272	0.001544194
19-04-2018	2.07	96.14	4.13597	16	377.6951	0.874151102	0.130615	0.000891391	0.00013319
16-05-2018	4.37	95.24	4.278209	16	118.0362	3.486051912	3.992864	0.003554802	0.004071588
19-06-2018	5.55	96.86	4.13597	10	156.0522	2.280683836	0.201276	0.002325662	0.000205244
18-09-2018	5.17	96.23	4.278209	7	89.2347	4.71194237	0.3087	0.004804869	0.000314786
27-09-2018	4.58	97.81	4.704925	10	275.7654	2.011583317	0.0578	0.002051255	5.89996E-05
14-10-2018	4.65	94.62	3.851493	10	125.2482	2.263862288	0.4547	0.002308509	0.000463665
15-10-2018	3.84	96.05	4.704925	23	186.4621	3.072205429	0.5057	0.003132794	0.00051567
18-10-2018	4.7	96.17	4.562687	11	111.097	4.751498492	0.2715	0.004845205	0.000276853
20-12-2018	4.63	96.73	3.567015	3	164.667	1.316292765	0.0451	0.001342252	4.59892E-05
24-12-2018	4.96	95.88	3.851493	10	68.18952	4.363720486	0.6478	0.004449779	0.000660572
01-01-2019	5.42	94.51	4.420448	51	116.5192	3.994889938	0.8163	0.004073675	0.000832394
09-01-2019	3.8	95.8	4.278209	60	190.6803	2.07554443	0.345	0.002116477	0.000351802
05-12-2019	5.21	95.79	4.562687	10	43.3418	12.96590048	1.423	0.013221606	0.001451056
18-01-2020	4.48	95.53	3.851493	62	119.443	2.383153445	0.5096	0.002430153	0.000519647
09-04-2020	5.24	95.51	2.855821	10	21.13353	6.536297894	0.8261	0.006665203	0.000842388
15-04-2020	3.56	96.01	4.562687	11	213.5784	2.346494214	0.2558	0.00239277	0.000260843

14-09-2020	4.19	96.7	5.131642	125	227.7654	3.574087259	0.3851	0.003644573	0.000392693	
09-10-2020	2.22	97.57	3.851493	27	423.9381	0.602617895	0.1539	0.000614502	0.000156934	
11-10-2020	4.76	95.77	4.13597	71	105.8992	3.467647073	0.8761	0.003536034	0.000893373	
15-10-2020	4.06	95.94	4.847164	27	160.1631	4.091348804	0.5135	0.004172036	0.000523624	
14-11-2020	5.58	95.59	4.847164	10	26.5837	27.30493218	19.1071	0.027843424	0.01948382	
01-12-2020	2.97	96.04	4.562687	26	278.3803	1.760916142	0.0902	0.001795644	9.19784E-05	
05-03-2021	4.89	96.01	4.420448	4	83.29232	5.73165824	0.6429	0.005844695	0.000655576	
24-03-2021	5.25	94.41	4.278209	10	117.7726	3.494471216	0.5204	0.003563387	0.00053066	
09-04-2021	4.76	96.15	3.851493	6	104.5483	2.752319336	0.1382	0.002806599	0.000140925	
17-04-2021	5.04	95.38	4.704925	92	100.6013	5.971221803	5.1479	0.006088983	0.005249397	
01-05-2021	5.48	95.61	2.713582	2	18.93981	6.508690212	0.2548	0.006637051	0.000259824	
03-05-2021	5.43	94.6	4.278209	49	106.7959	3.883294302	0.9379	0.003959878	0.000956392	
11-05-2021	2.4	96.1	4.420448	10	340.8934	1.249893885	0.049	0.001274544	4.99661E-05	
24-05-2021	4.34	95.26	4.847164	49	129.1259	5.159056025	1.7473	0.0052608	0.00178175	
03-06-2021	5.87	95.25	3.140299	5	57.39071	2.85159134	0.1029	0.002907829	0.000104929	
12-06-2021	3.92	95.86	4.420448	30	172.654	2.612795852	0.2675	0.002664324	0.000272774	
08-10-2021	4.42	95.43	5.416119	46	117.9645	9.241720098	1.2828	0.00942398	0.001308092	
05-12-2021	4.53	96.51	2.855821	5	151.3069	0.779872982	0.0843	0.000795253	8.59621E-05	

**Lampiran 6** Perhitungan RMSE data PGA rumus empiris Donovan terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Donovan => $A = (1080 \text{ (Eks}(0.5Ms)) / (R+25))^{\wedge}1.32$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.98507463	84	88.941234	41.51904785	29.737726	0.042337646	0.030324041	0.01844621
21-01-2013	5.58	95.18	4.70492537	12	38.762414	47.10422333	13.625727	0.04803294	0.013894375	
29-04-2013	3.75	95.98	4.56268657	12	192.49722	8.684796607	1.113878	0.008856028	0.001135839	
16-07-2013	5.44	98.09	4.56268657	10	291.0868	5.302176218	0.350455	0.005406715	0.000357365	
07-08-2013	2.1	97.82	4.56268657	12	450.4159	3.093579392	0.139713	0.003154573	0.000142468	
13-10-2013	3.95	95.81	5.70059701	14	166.23619	18.18110056	6.391847	0.018539563	0.00651787	
22-10-2013	5.29	95.42	5.4161194	10	16.399809	118.8724835	12.923598	0.121216199	0.013178402	
22-10-2013	5.02	95.89	5.13164179	10	64.391872	37.32778417	12.923602	0.038063747	0.013178406	
01-12-2013	2	96.65	5.70059701	20	400.25793	6.330987812	0.522618	0.006455811	0.000532922	
02-12-2013	2.03	96.45	5.13164179	25	390.46539	4.912240402	0.246036	0.005009091	0.000250887	
20-12-2013	4.17	96.08	5.13164179	69	167.12789	13.59584728	6.124955	0.013863906	0.006245716	
14-01-2014	2.16	94.11	4.84716418	10	389.92195	4.268314573	0.300031	0.00435247	0.000305946	
24-03-2014	3.97	95.59	4.56268657	13	160.02183	10.75138037	0.883069	0.010963357	0.00090048	
01-08-2014	4.46	96.41	4.70492537	12	148.67009	12.55013129	2.519404	0.012797572	0.002569077	
04-08-2014	5.35	94.55	4.56268657	35	106.53081	16.86872475	7.172565	0.017201312	0.007313981	
07-11-2014	4.68	94.79	5.4161194	85	137.7781	19.50798642	10.495118	0.01989261	0.010702042	
17-12-2014	2.67	95.68	4.70492537	10	304.4374	5.390450883	0.221535	0.00549673	0.000225903	
02-02-2015	4.02	95.72	4.56268657	10	156.32423	11.04172257	3.107849	0.011259424	0.003169124	
02-03-2015	5.38	95.16	4.98940299	90	95.876282	23.34364158	4.906848	0.02380389	0.005003592	
09-05-2015	4.81	96.01	3.42477612	10	90.010346	11.40070536	1.115	0.011625484	0.001136984	
01-06-2015	4.49	95.54	4.56268657	55	115.1223	15.51704414	11.982442	0.015822981	0.01221869	
07-07-2015	4.88	94.58	4.70492537	20	114.89414	16.6966728	5.895859	0.017025868	0.006012103	
04-08-2015	4.61	95.02	4.70492537	49	111.42358	17.25962165	2.514975	0.017599916	0.002564561	
21-10-2015	4.84	96.07	3.85149254	10	92.347896	13.7422336	3.531362	0.014013178	0.003600987	
07-11-2015	4.9	96.07	3.28253731	12	88.228112	10.83922038	0.571574	0.011052929	0.000582843	
08-11-2015	4.7	95.71	4.42044776	10	83.153329	20.34132	3.268981	0.020742374	0.003333433	
07-12-2015	5.07	95.66	4.56268657	26	50.05421	35.37557243	1.270234	0.036073045	0.001295278	
15-12-2015	5.14	94.11	3.85149254	52	160.29145	7.519615467	1.838514	0.007667874	0.001874763	
20-12-2015	2.5	95.67	4.56268657	10	323.17172	4.666928415	0.156597	0.004758943	0.000159684	
22-12-2015	4.39	95.3	2.9980597	10	114.04567	7.169292349	0.356713	0.007310644	0.000363746	
08-01-2016	4.8	96.01	4.13597015	10	90.823006	16.11866557	0.787802	0.016436465	0.000803334	
18-02-2016	5.18	94.53	3.99373134	13	106.52369	12.69305737	0.168341	0.012943316	0.00017166	
12-10-2016	4.87	95.54	4.56268657	124	137.32618	12.77866928	2.165198	0.013030616	0.002207888	

05-11-2016	2.82	95.21	4.84716418	10	288.14222	6.188610286	0.282968	0.006310626	0.000288547
07-12-2016	5.56	95.75	4.56268657	10	38.010041	44.56333308	2.604837	0.045441953	0.002656195
07-12-2016	5.5	95.95	4.42044776	10	56.220131	29.68627627	2.00397	0.030271577	0.002043481
07-12-2016	5.32	96.21	3.99373134	10	84.037616	16.25738615	0.619273	0.01657792	0.000631483
07-12-2016	5.5	96.1	3.56701493	16	73.385356	15.04260311	0.450069	0.015339186	0.000458943
07-12-2016	5.54	96.04	3.85149254	10	66.760833	19.01327969	0.41991	0.01938815	0.000428189
07-12-2016	5.46	96.01	3.85149254	14	62.76106	20.16537395	0.570913	0.020562959	0.000582169
07-12-2016	5.36	96.12	4.27820896	10	73.823161	21.34083887	1.511215	0.021761599	0.00154101
08-12-2016	5.23	96.04	2.9980597	10	67.630729	12.25539853	0.264705	0.012497029	0.000269924
08-12-2016	5.29	96.04	3.85149254	10	66.076656	19.20204104	1.401723	0.019580633	0.00142936
09-12-2016	5.32	96.15	2.71358209	10	77.492301	9.301611148	0.162828	0.009485004	0.000166038
09-12-2016	5.29	96.12	2.9980597	10	74.699984	11.12158364	0.465349	0.011340859	0.000474524
09-12-2016	5.37	96.03	3.85149254	23	67.137651	18.91070472	0.524984	0.019283552	0.000535335
10-12-2016	5.16	96.27	2.14462687	10	94.030844	5.744510192	0.148911	0.00585777	0.000151847
10-12-2016	5.17	96.13	2.28686567	7	78.736714	7.395702669	0.191957	0.007541518	0.000195742
10-12-2016	5.4	96.17	3.56701493	20	80.982574	13.6358343	1.040096	0.013904681	0.001060603
11-12-2016	5.16	95.96	2.42910448	10	62.218355	9.98377239	0.07976	0.010180615	8.13326E-05
11-12-2016	5.32	96.21	4.98940299	10	84.037616	26.74595264	3.764745	0.027273282	0.003838972
13-12-2016	5.51	96.29	2.8558209	15	93.781797	8.220297303	0.202545	0.00838237	0.000206538
14-12-2016	4.92	96.55	2.42910448	3	131.98499	4.595834464	0.431165	0.004686447	0.000439666
12-01-2017	5.24	96.17	2.57134328	10	81.151137	8.271100828	0.291155	0.008434176	0.000296895
13-01-2017	5.36	94.66	5.13164179	89	125.19745	18.81702731	35.918593	0.019188028	0.036626772
13-01-2017	5.33	96.56	1.14895522	43	128.9909	2.485551437	0.022266	0.002534557	2.2705E-05
16-02-2017	5.18	96.19	5.2738806	14	85.507793	30.29379896	15.501547	0.030891078	0.015807179
16-02-2017	5.21	96.13	5.13164179	12	77.986928	30.96515344	4.86605	0.031575669	0.00496199
17-02-2017	4.51	96.35	4.42044776	16	140.42966	11.60759217	1.883363	0.01183645	0.001920496
25-02-2017	5.14	96.22	3.85149254	10	89.468634	14.20033384	3.335189	0.014480311	0.003400946
20-03-2017	5.22	96.16	2.8558209	10	80.604478	9.600563048	1.791136	0.00978985	0.00182645
07-05-2017	3.92	95.86	4.42044776	23	171.66921	9.238038808	0.917826	0.009420178	0.000935922
21-07-2017	4.71	94.44	4.70492537	10	136.82273	13.77695184	3.256913	0.014048581	0.003321127
01-08-2017	4.58	95.44	3.85149254	51	104.17744	12.10593444	4.458459	0.012344618	0.004546363
29-11-2017	4.57	94.65	3.70925373	60	141.46379	8.067441925	0.779268	0.008226501	0.000794632
09-12-2017	3.32	97.51	4.56268657	10	324.12985	4.650029745	0.166533	0.004741711	0.000169816
13-01-2018	5.11	94.79	2.9980597	15	82.177325	10.1090025	1.612054	0.010308314	0.001643838
17-01-2018	4.48	94.8	3.85149254	64	140.52635	8.726902563	1.749273	0.008898964	0.001783762
18-01-2018	5.68	95.03	1.14895522	10	57.69847	5.647022891	0.309619	0.005758361	0.000315724
08-02-2018	4.66	96.27	4.98940299	10	122.05217	18.02173265	3.399838	0.018377053	0.00346687
02-03-2018	3.42	97.83	3.70925373	113	357.99651	2.685720451	1.514337	0.002738673	0.001544194
02-03-2018	4.53	94.82	3.56701493	10	120.25778	8.994296623	1.514337	0.00917163	0.001544194
19-04-2018	2.07	96.14	4.13597015	16	377.69513	3.11149736	0.130615	0.003172844	0.000133119
16-05-2018	4.37	95.24	4.27820896	16	118.03625	13.0989404	3.992864	0.013357202	0.004071588
19-06-2018	5.55	96.86	4.13597015	10	156.05215	8.937939046	0.201276	0.009114161	0.000205244
18-09-2018	5.17	96.23	4.27820896	7	89.2347	17.6251006	0.3087	0.017972601	0.000314786
27-09-2018	4.58	97.81	4.70492537	10	275.76536	6.078894479	0.0578	0.006198747	5.89396E-05
14-10-2018	4.65	94.62	3.85149254	10	125.24823	9.91691033	0.4547	0.010112434	0.000463665
15-10-2018	3.84	96.05	4.70492537	23	186.46215	9.677835379	0.5057	0.009868646	0.00051567
18-10-2018	4.7	96.17	4.56268657	11	111.097	16.12569646	0.2715	0.016443634	0.000276853
20-12-2018	4.63	96.73	3.56701493	3	164.66698	6.324731824	0.0451	0.006449432	4.59892E-05
24-12-2018	4.96	95.88	3.85149254	10	68.189518	18.6294574	0.6478	0.01899676	0.000660572
01-01-2019	5.42	94.51	4.42044776	51	116.51919	14.26381009	0.8163	0.014545038	0.000832394
09-01-2019	3.8	95.8	4.27820896	60	190.68029	7.617197562	0.345	0.00776738	0.000351802
05-12-2019	5.21	95.79	4.56268657	10	43.341796	40.03248274	1.423	0.040821772	0.001451056
18-01-2020	4.48	95.53	3.85149254	62	119.44302	10.44636693	0.5096	0.01065233	0.000519647
09-04-2020	5.24	95.51	2.8558209	10	21.133533	28.64542788	0.8261	0.029210207	0.000842388
15-04-2020	3.56	96.01	4.56268657	11	213.57837	7.686445246	0.2558	0.007837993	0.000260843
07 Mei 2020	4.99	95.26	3.56701493	16	53.089464	20.40653083	0.8575	0.02080887	0.000874407
04 Juni 2020	5.93	94.99	2.8558209	10	79.170721	9.775367671	0.1294	0.009968101	0.000131951
04 Juni 2020	5.74	95.24	2.9980597	5	45.227338	17.66265359	0.1362	0.018010894	0.000138885
18-06-2020	5.62	95.28	3.70925373	16	35.33894	30.79562571	0.3685	0.031402799	0.000375765
18-06-2020	5.96	95.01	3.14029851	10	80.290813	11.11157134	0.1499	0.011330649	0.000152855
13-07-2020	5.22	94.27	5.13164179	34	137.18713	17.00293893	1.1691	0.017338172	0.000119215
01-09-2020	3.07	95.71	4.56268657	10	260.53223	6.063644951	0.0696	0.006183197	7.09722E-05
14-09-2020	4.19	96.7	5.13164179	125	227.7654	9.465822161	0.3851	0.009652452	0.000392693
09-10-2020	2.22	97.57	3.85149254	27	423.93809	2.338183616	0.1539	0.002384284	0.000156934
11-10-2020	4.76	95.77	4.13597015	71	105.89923	13.71454127	0.8761	0.01398494	0.000893373



### Lampiran 9 Perhitungan Metode Inversi Linier untuk rumus empiris Donovan

A	Ln A (D)	R	Dkal	G		Gt														
29.737726	3.39241648	88.94123394	2.314485937	1	5.985074627	4.735682824	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13.625727	2.6119597	38.76241408	1.735840096	1	4.704925373	4.155163896	5.985075	4.704925	4.562686567	4.562687	4.562687	5.700597	5.416119	5.131642	5.700597	5.131642	5.700597	5.131642	5.700597	5.131642
1.113878	0.10784762	192.497222	-0.388342553	1	4.562686567	5.382186078	4.735683	4.155164	5.382186078	5.756017	6.16419	5.2535092	3.723276	4.49303	6.052696	6.029399				
0.350455	-1.048523	291.0868014	-0.984575862	1	4.562686567	5.756016864														
0.139713	-1.968165	450.4159014	-1.635582764	1	4.562686567	6.164190003														
6.391847	1.85502327	166.236187	1.154249481	1	5.700597015	5.253509245	Gt*G					(Gt*G) Inv								
12.923598	2.55905494	16.39980892	3.26052098	1	5.416119403	3.723276265	113	464.2354	559.2728819			0.8430821	-0.01697	-0.15447						
12.923602	2.55905525	64.39187186	1.698478901	1	5.131641791	4.493029759	464.2354	1998.852	2314.175029			-0.0169726	0.012105	-0.00662						
0.522618	-0.6489045	400.2579271	-0.120395907	1	5.700597015	6.052695872	559.2729	2314.175	2798.244481			-0.1544667	-0.00662	0.036704						
0.246036	-1.4022774	390.4653869	-0.751920409	1	5.131641791	6.029399306														
6.124955	1.81237141	167.1278862	0.478149054	1	5.131641791	5.258161224														
0.300031	-1.2038695	389.9219519	-1.08417328	1	4.847164179	6.028090435	Gt*D			M										
0.883069	-0.1243519	160.0218316	-0.130423102	1	4.562686567	5.220473827	-26.2166			2.833430954	Ln b1	17.0037	b1							
2.519404	0.92402237	148.6700935	0.137732138	1	4.704925373	5.157157485	-26.356			1.175278522	b2									
7.172565	1.97026333	106.5308123	0.413818578	1	4.562686567	4.879241138	-158.538			-1.594928326	b3									
10.495118	2.3509102	137.7781025	1.076885989	1	5.416119403	5.092387939														
0.221535	-1.5071747	304.4373975	-0.883387004	1	4.704925373	5.797386344														
3.107849	1.13393085	156.3242339	-0.098226204	1	4.562686567	5.200286776														
4.906848	1.59063178	95.87628164	1.050058527	1	4.989402985	4.794767557														
1.115	0.1088544	90.01034554	-0.709473362	1	3.424776119	4.745022086														
11.982442	2.48344241	115.122295	0.312900383	1	4.562686567	4.942515577														
5.895859	1.77425024	114.894143	0.482669631	1	4.704925373	4.940886015														
							RMSE													
							1.04732													

### Lampiran 10 Perhitungan Metode Inversi Linier untuk rumus empiris Fukushima & Tanaka

A	Ln A (D)	R	Dkal	G		Gt														
29.737726	1.47330776	88.94123394	1.051980107	1	5.985074627	1.991407765	88.94123	1	1	1	1	1	1	1	1	1	1	1	1	1
13.625727	1.13435968	38.76241408	0.59659124	1	4.704925373	1.617837837	38.76241	5.985075	4.704925	4.562686567	4.562687	5.700597	5.416119	5.131642	5.700597	5.131642	5.700597	5.131642	5.700597	5.131642
1.113878	0.04683763	192.497222	-0.085324842	1	4.562686567	2.289752227	192.4972	1.991408	1.617838	2.289752227	2.467553	2.655899	2.2385297	1.336819	1.835421	2.609823	2.596081	2.233487	2.594426	
0.350455	-0.453677	291.0868014	-0.474982974	1	4.562686567	2.4675531	291.0868	88.94123	38.76241	192.497222	291.0868	450.4159	166.23619	16.39981	64.39187	400.2579	390.4654	167.1279	389.922	
0.139713	-0.8547632	450.4159014	-1.10507206	1	4.562686567	2.655898677	450.4159													
6.391847	0.80562637	166.236187	0.601199674	1	5.700597015	2.238529709	166.2362	Gt*G				(Gt*G) Inv								
12.923598	1.11138344	16.39980892	1.045363992	1	5.416119403	1.336818603	16.39981	113	464.2354	232.412737	15525.81	2.1936311	-0.02486	-1.22867	0.003235					
12.923602	1.11138357	64.39187186	0.7115312	1	5.131641791	1.835420765	64.39187	464.2354	1998.852	964.0440645	66723.96	-0.0248629	0.012218	-0.01214	-2.6E-06					
0.522618	-0.2818156	400.2579271	-0.323919433	1	5.700597015	2.609823224	400.2579	232.4127	964.0441	486.710337	34670.77	-1.2286671	-0.01214	0.754592	-0.00199					
0.246036	-0.6090013	390.4653869	-0.576574902	1	5.131641791	2.596081103	390.4654	15525.81	66723.96	34670.7732	3153367	0.0032346	-2.6E-06	-0.00199	6.33E-06					
6.124955	0.7871029	167.1278862	0.306277261	1	5.131641791	2.2343872	167.1279													
0.300031	-0.5228339	389.9219519	-0.720116267	1	4.847164179	2.594425698	389.922	Gt*D		M										
0.883069	-0.0540054	160.0218316	0.042951765	1	4.562686567	2.2105803	160.0218	-11.3857		-1.668388996	b4									
2.519404	0.40129781	148.6700935	0.160623575	1	4.704925373	2.180090282	148.6701	-11.4463		0.512120029	b1									
7.172565	0.85567449	106.5308123	0.254078797	1	4.562686567	2.037055156	106.5308	-29.4994		0.00372322	b2									
10.495118	1.02098733	137.7781025	0.567871036	1	5.416119403	2.155628199	137.7781	-4087.64		-0.00395904	b3									
0.221535	-0.6545577	304.4373975	-0.454921446	1	4.704925373	2.487357443	304.4374													
3.107849	0.49245991	156.3242339	0.05753461	1	4.562686567	2.200577642	156.3242													
4.906848	0.6908026	95.87628164	0.514643347	1	4.989402985	1.997521807	95.87628													
1.115	0.04727487	90.01034554	-0.263556369	1	3.424776119	1.958190498	90.01035													
11.982442	1.07854534	115.122295	0.220187549	1	4.562686567	2.070031666	115.1223													

### Lampiran 11 Perhitungan RMSE data PGA rumus empiris Mc. Guire (setelah dimodifikasi) terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Mc. Guire => $A = (17.0037 \cdot 10^{\wedge}(0.5104 \cdot Ms)) / (R + 25)^{\wedge}1.5949$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.985074627	84	88.94123	10.11870948	29.737726	0.010318212	0.030324041	0.004685
21-01-2013	5.58	95.18	4.704925373	12	38.76241	5.673316633	13.625727	0.005785173	0.013894375	
29-04-2013	3.75	95.98	4.562686567	12	192.4972	0.678162434	1.113878	0.000691533	0.001135839	
16-07-2013	5.44	98.09	4.562686567	10	291.0868	0.373591934	0.350455	0.000380958	0.000357365	
07-08-2013	2.1	97.82	4.562686567	12	450.4159	0.194838065	0.139713	0.00019868	0.000142468	
13-10-2013	3.95	95.81	5.700597015	14	166.2362	3.171407408	6.391847	0.003233936	0.00651787	
22-10-2013	5.29	95.42	5.416119403	10	16.39981	26.06034317	12.923598	0.026574154	0.013178402	
22-10-2013	5.02	95.89	5.131641791	10	64.39187	5.465226604	12.923602	0.00557298	0.013178406	



01-12-2013	2	96.65	5.700597015	20	400.2579	0.88652382	0.522618	0.000904003	0.000532922	
02-12-2013	2.03	96.45	5.131641791	25	390.4654	0.471446239	0.246036	0.000480741	0.000250887	
20-12-2013	4.17	96.08	5.131641791	69	167.1279	1.613002601	6.124955	0.001644805	0.006245716	
14-01-2014	2.16	94.11	4.847164179	10	389.922	0.338174923	0.300031	0.000344842	0.000305946	
24-03-2014	3.97	95.59	4.562686567	13	160.0218	0.877697242	0.883069	0.000895002	0.00090048	
01-08-2014	4.46	96.41	4.704925373	12	148.6701	1.147624686	2.519404	0.001170251	0.002569077	
04-08-2014	5.35	94.55	4.562686567	35	106.5308	1.51252198	7.172565	0.001542343	0.007313981	
07-11-2014	4.68	94.79	5.416119403	85	137.7781	2.935326032	10.495118	0.0029932	0.010702042	
17-12-2014	2.67	95.68	4.704925373	10	304.4374	0.413372279	0.221535	0.000421522	0.000225903	
02-02-2015	4.02	95.72	4.562686567	10	156.3242	0.906415703	3.107849	0.000924287	0.003169124	
02-03-2015	5.38	95.16	4.989402985	90	95.87628	2.857649171	4.906848	0.002913991	0.005003592	
09-05-2015	4.81	96.01	3.424776119	10	90.01035	0.491903452	1.115	0.000501602	0.001136984	
01-06-2015	4.49	95.54	4.562686567	55	115.1223	1.367332882	11.982442	0.001394292	0.01221869	
07-07-2015	4.88	94.58	4.704925373	20	114.8941	1.620323275	5.895859	0.00165227	0.006012103	
04-08-2015	4.61	95.02	4.704925373	49	111.4236	1.686561539	2.514975	0.001719814	0.002564561	
21-10-2015	4.84	96.07	3.851492537	10	92.3479	0.786573039	3.531362	0.000802081	0.003600987	
07-11-2015	4.9	96.07	3.282537313	12	88.22811	0.426676595	0.571574	0.000435089	0.000582843	
08-11-2015	4.7	95.71	4.420447761	10	83.15333	1.748436025	3.268981	0.001782909	0.003333433	
07-12-2015	5.07	95.66	4.562686567	26	50.05421	3.700862717	1.270234	0.00377383	0.001295278	
15-12-2015	5.14	94.11	3.851492537	52	160.2914	0.379614402	1.838514	0.000387099	0.001874763	
20-12-2015	2.5	95.67	4.562686567	10	323.1717	0.320208024	0.156597	0.000326521	0.000159684	
22-12-2015	4.39	95.3	2.998059701	10	114.0457	0.220105685	0.356713	0.000224445	0.000363746	
08-01-2016	4.8	96.01	4.135970149	10	90.82301	1.122008693	0.787802	0.00114413	0.000803334	
18-02-2016	5.18	94.53	3.993731343	13	106.5237	0.775076309	0.168341	0.000790358	0.00017166	
12-10-2016	4.87	95.54	4.562686567	124	137.3262	1.081408835	2.165198	0.00110273	0.002207888	
05-11-2016	2.82	95.21	4.847164179	10	288.1422	0.529758226	0.282968	0.000540203	0.000288547	
07-12-2016	5.56	95.75	4.562686567	10	38.01004	4.891702369	2.604837	0.004988148	0.002656195	
07-12-2016	5.5	95.95	4.420447761	10	56.22013	2.760688195	2.00397	0.002815119	0.002043481	
07-12-2016	5.32	96.21	3.993731343	10	84.03762	1.045233686	0.619273	0.001065842	0.000631483	
07-12-2016	5.5	96.1	3.567014925	16	73.38536	0.74580117	0.450069	0.000760506	0.000458943	
07-12-2016	5.54	96.04	3.851492537	10	66.76083	1.164402218	0.41991	0.00118736	0.000428189	
07-12-2016	5.46	96.01	3.851492537	14	62.76106	1.250181565	0.570913	0.00127483	0.000582169	
07-12-2016	5.36	96.12	4.278208955	10	73.82316	1.70820928	1.511215	0.001741889	0.00154101	
08-12-2016	5.23	96.04	2.998059701	10	67.63073	0.420702821	0.264705	0.000428997	0.000269924	
08-12-2016	5.29	96.04	3.851492537	10	66.07666	1.178384117	1.401723	0.001201617	0.00142936	
09-12-2016	5.32	96.15	2.71358209	10	77.4923	0.256273837	0.162828	0.000261327	0.000166038	
09-12-2016	5.29	96.12	2.998059701	10	74.69998	0.374140145	0.465349	0.000381517	0.000474524	
09-12-2016	5.37	96.03	3.851492537	23	67.13765	1.156816398	0.524984	0.001179624	0.000535335	
10-12-2016	5.16	96.27	2.144626866	10	94.03084	0.103440742	0.148911	0.00010548	0.000151847	
10-12-2016	5.17	96.13	2.286865672	7	78.73671	0.152247072	0.191957	0.000155249	0.000195742	
10-12-2016	5.4	96.17	3.567014925	20	80.98257	0.66237115	1.040096	0.000675431	0.001060603	
11-12-2016	5.16	95.96	2.429104478	10	62.21836	0.237291854	0.07976	0.00024197	8.13326E-05	
11-12-2016	5.32	96.21	4.989402985	10	84.03762	3.36824911	3.764745	0.003434658	0.003838972	
13-12-2016	5.51	96.29	2.855820896	15	93.7818	0.239406432	0.202545	0.000244127	0.000206538	
14-12-2016	4.92	96.55	2.429104478	3	131.985	0.092936059	0.431165	9.47684E-05	0.000439666	
12-01-2017	5.24	96.17	2.571343284	10	81.15114	0.205026416	0.291155	0.000209069	0.000296895	
13-01-2017	5.36	94.66	5.131641791	89	125.1975	2.388769613	35.918593	0.002435867	0.036626772	
13-01-2017	5.33	96.56	1.148955224	43	128.9909	0.021287974	0.022266	2.17077E-05	2.2705E-05	
16-02-2017	5.18	96.19	5.273880597	14	85.50779	4.606008588	15.501547	0.004696822	0.015807179	
16-02-2017	5.21	96.13	5.131641791	12	77.98693	4.36060982	4.86605	0.004446585	0.00496199	
17-02-2017	4.51	96.35	4.420447761	16	140.4297	0.887714893	1.883363	0.000905217	0.001920496	
25-02-2017	5.14	96.22	3.851492537	10	89.46863	0.818363267	3.335189	0.000834498	0.003400946	
20-03-2017	5.22	96.16	2.855820896	10	80.60448	0.288790875	1.791136	0.000294485	0.00182645	
07-05-2017	3.92	95.86	4.420447761	23	171.6692	0.673689587	0.917826	0.000686972	0.000935922	
21-07-2017	4.71	94.44	4.704925373	10	136.8227	1.284518013	3.256913	0.001309844	0.003321127	
01-08-2017	4.58	95.44	3.851492537	51	104.1774	0.67485985	4.458459	0.000688166	0.004546363	
29-11-2017	4.57	94.65	3.709253731	60	141.4638	0.381033892	0.779268	0.000388546	0.000794632	
09-12-2017	3.32	97.51	4.562686567	10	324.1299	0.318807633	0.166533	0.000325093	0.000169816	
13-01-2018	5.11	94.79	2.998059701	15	82.17732	0.333381864	1.612054	0.000339955	0.001643838	
17-01-2018	4.48	94.8	3.851492537	64	140.5263	0.454437378	1.749273	0.000463397	0.001783762	
18-01-2018	5.68	95.03	1.148955224	10	57.69847	0.057379064	0.309619	5.85104E-05	0.000315724	
08-02-2018	4.66	96.27	4.989402985	10	122.0522	2.090424626	3.399838	0.00213164	0.00346687	
02-03-2018	3.42	97.83	3.709253731	113	357.9965	0.10088094	1.514337	0.00010287	0.001544194	
02-03-2018	4.53	94.82	3.567014925	10	120.2578	0.400637626	1.514337	0.000408537	0.001544194	
19-04-2018	2.07	96.14	4.135970149	16	377.6951	0.153767929	0.130615	0.0001568	0.00013319	
16-05-2018	4.37	95.24	4.278208955	16	118.0362	0.947153329	3.992864	0.000965828	0.004071588	
19-06-2018	5.55	96.86	4.135970149	10	156.0522	0.550264493	0.201276	0.000561114	0.000205244	
18-09-2018	5.17	96.23	4.278208955	7	89.2347	1.355686214	0.3087	0.001382415	0.000314786	
27-09-2018	4.58	97.81	4.704925373	10	275.7654	0.477982288	0.0578	0.000487406	5.89396E-05	
14-10-2018	4.65	94.62	3.851492537	10	125.2482	0.530337072	0.4547	0.000540793	0.000463665	

15-10-2018	3.84	96.05	4.704925373	23	186.4621	0.838346976	0.5057	0.000854876	0.00051567	
18-10-2018	4.7	96.17	4.562686567	11	111.097	1.432397716	0.2715	0.001460639	0.000276853	
20-12-2018	4.63	96.73	3.567014925	3	164.667	0.261805542	0.0451	0.000266967	4.59892E-05	
24-12-2018	4.96	95.88	3.851492537	10	68.18952	1.136061104	0.6478	0.00115846	0.000660572	
01-01-2019	5.42	94.51	4.420447761	51	116.5192	1.138687605	0.8163	0.001161138	0.000832394	
09-01-2019	3.8	95.8	4.278208955	60	190.6803	0.491979473	0.345	0.000501679	0.000351802	
05-12-2019	5.21	95.79	4.562686567	10	43.3418	4.297316496	1.423	0.004382043	0.001451056	
18-01-2020	4.48	95.53	3.851492537	62	119.443	0.564735624	0.5096	0.00057587	0.000519647	
09-04-2020	5.24	95.51	2.855820896	10	21.13353	1.081967344	0.8261	0.0011033	0.000842388	
15-04-2020	3.56	96.01	4.562686567	11	213.5784	0.58513336	0.2558	0.00059667	0.000260843	
07 Mei 2020	4.99	95.26	3.567014925	16	53.08946	1.078082916	0.8575	0.001099339	0.000874407	
04 Juni 2020	5.93	94.99	2.855820896	10	79.17072	0.29515616	0.1294	0.000300976	0.000131951	
04 Juni 2020	5.74	95.24	2.998059701	5	45.22734	0.654275039	0.1362	0.000667175	0.000138885	
18-06-2020	5.62	95.28	3.709253731	16	35.33894	1.922521918	0.3685	0.001960427	0.000375765	
18-06-2020	5.96	95.01	3.140298507	10	80.29081	0.405360303	0.1499	0.000413352	0.000152855	
13-07-2020	5.22	94.27	5.131641791	34	137.1871	2.113383367	1.1691	0.002155051	0.00119215	
01-09-2020	3.07	95.71	4.562686567	10	260.5322	0.439353679	0.0696	0.000448016	7.09722E-05	
14-09-2020	4.19	96.7	5.131641791	125	227.7654	1.041451517	0.3851	0.001061985	0.000392693	
09-10-2020	2.22	97.57	3.851492537	27	423.9381	0.092549281	0.1539	9.4374E-05	0.000156934	
11-10-2020	4.76	95.77	4.135970149	71	105.8992	0.923080576	0.8761	0.00094128	0.000893373	
15-10-2020	4.06	95.94	4.847164179	27	160.1631	1.224653621	0.5135	0.001248799	0.000523624	
14-11-2020	5.58	95.59	4.847164179	10	26.5837	9.402640325	19.1071	0.009588025	0.01948382	
01-12-2020	2.97	96.04	4.562686567	26	278.3803	0.398856782	0.0902	0.000406721	9.19784E-05	
05-03-2021	4.89	96.01	4.420447761	4	83.29232	1.744858209	0.6429	0.00177926	0.000655576	
24-03-2021	5.25	94.41	4.278208955	10	117.7726	0.949943984	0.5204	0.000968673	0.00053066	
09-04-2021	4.76	96.15	3.851492537	6	104.5483	0.671781522	0.1382	0.000685027	0.000140925	
17-04-2021	5.04	95.38	4.704925373	92	100.6013	1.924207241	5.1479	0.001962145	0.0005249397	
01-05-2021	5.48	95.61	2.71358209	2	18.93981	0.989375518	0.2548	0.001008882	0.000259824	
03-05-2021	5.43	94.6	4.278208955	49	106.7959	1.079218799	0.9379	0.001100497	0.000956392	
11-05-2021	2.4	96.1	4.420447761	10	340.8934	0.25029128	0.049	0.000255226	4.99661E-05	
24-05-2021	4.34	95.26	4.847164179	49	129.1259	1.640942552	1.7473	0.001673296	0.00178175	
03-06-2021	5.87	95.25	3.140298507	5	57.39071	0.599401214	0.1029	0.000611219	0.000104929	
12-06-2021	3.92	95.86	4.420447761	30	172.654	0.668344105	0.2675	0.000681521	0.000272774	
08-10-2021	4.42	95.43	5.416119403	46	117.9645	3.61041611	1.2828	0.0036816	0.001380892	
05-12-2021	4.53	96.51	2.855820896	5	151.3069	0.12752031	0.0843	0.000130035	8.59621E-05	

**Lampiran 12** Perhitungan RMSE data PGA rumus empiris Campbell (setelah dimodifikasi) terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Campbell => $A = (0.0023 * E_k(1.1630 * M_s)) / (R + 0.0606 * E_k(0.70 M_s))^{1.2279}$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.98507463	84	88.9412339	9.108740781	29.737726	0.009288331	0.030324041	0.00494574
21-01-2013	5.58	95.18	4.70492537	12	38.7624141	5.717780324	13.625727	0.005830513	0.013894375	
29-04-2013	3.75	95.98	4.56268657	12	192.497222	0.705778071	1.113878	0.000719693	0.001135839	
16-07-2013	5.44	98.09	4.56268657	10	291.086801	0.426105692	0.350455	0.000434507	0.000357365	
07-08-2013	2.1	97.82	4.56268657	12	450.415901	0.249845695	0.139713	0.000254772	0.000142468	
13-10-2013	3.95	95.81	5.70059701	14	166.236187	3.128184355	6.391847	0.00318986	0.00651787	
22-10-2013	5.29	95.42	5.4161194	10	16.3998089	32.83062259	12.923598	0.033477918	0.013178402	
22-10-2013	5.02	95.89	5.13164179	10	64.3918719	5.083679365	12.923602	0.00518391	0.013178406	
01-12-2013	2	96.65	5.70059701	20	400.257927	1.078375565	0.522618	0.001099637	0.000532922	
02-12-2013	2.03	96.45	5.13164179	25	390.465387	0.575387049	0.246036	0.000586732	0.000250887	
20-12-2013	4.17	96.08	5.13164179	69	167.127886	1.616232503	6.124955	0.001648098	0.006245716	
14-01-2014	2.16	94.11	4.84716418	10	389.921952	0.414528134	0.300031	0.000422701	0.000305946	
24-03-2014	3.97	95.59	4.56268657	13	160.021832	0.883847873	0.883069	0.000901274	0.00090048	
01-08-2014	4.46	96.41	4.70492537	12	148.670093	1.139034556	2.519404	0.001161492	0.002569077	
04-08-2014	5.35	94.55	4.56268657	35	106.530812	1.448465388	7.172565	0.001477024	0.007313981	
07-11-2014	4.68	94.79	5.4161194	85	137.778103	2.830435285	10.495118	0.002886241	0.010702042	
17-12-2014	2.67	95.68	4.70492537	10	304.437398	0.475657696	0.221535	0.000485036	0.000225903	
02-02-2015	4.02	95.72	4.56268657	10	156.324234	0.909345471	3.107849	0.000927274	0.003169124	
02-03-2015	5.38	95.16	4.98940299	90	95.8762816	2.685402934	4.906848	0.002738349	0.005003592	
09-05-2015	4.81	96.01	3.42477612	10	90.0103455	0.478015002	1.115	0.00048744	0.001136984	
01-06-2015	4.49	95.54	4.56268657	55	115.122295	1.318536079	11.982442	0.001344533	0.01221869	

07-07-2015	4.88	94.58	4.70492537	20	114.894143	1.556935774	5.895859	0.001587633	0.006012103
04-08-2015	4.61	95.02	4.70492537	49	111.423576	1.615826336	2.514975	0.001647684	0.002564561
21-10-2015	4.84	96.07	3.85149254	10	92.3478962	0.758697081	3.531362	0.000773656	0.003600987
07-11-2015	4.9	96.07	3.28253731	12	88.2281119	0.415492827	0.571574	0.000423685	0.000582843
08-11-2015	4.7	95.71	4.42044776	10	83.1533293	1.659656371	3.268981	0.001692379	0.003333433
07-12-2015	5.07	95.66	4.56268657	26	50.0542103	3.59362947	1.270234	0.003664482	0.001295278
15-12-2015	5.14	94.11	3.85149254	52	160.29145	0.387425762	1.838514	0.000395064	0.001874763
20-12-2015	2.5	95.67	4.56268657	10	323.171723	0.374994438	0.156597	0.000382388	0.000159684
22-12-2015	4.39	95.3	2.9980597	10	114.04567	0.218438427	0.356713	0.000222745	0.000363746
08-01-2016	4.8	96.01	4.13597015	10	90.8230058	1.07497196	0.787802	0.001096166	0.000803334
18-02-2016	5.18	94.53	3.99373134	13	106.523689	0.751579735	0.168341	0.000766398	0.00017166
12-10-2016	4.87	95.54	4.56268657	124	137.326184	1.064476617	2.165198	0.001085464	0.002207888
05-11-2016	2.82	95.21	4.84716418	10	288.142221	0.599788067	0.282968	0.000611614	0.000288547
07-12-2016	5.56	95.75	4.56268657	10	38.0100413	4.983058378	2.604837	0.005081305	0.002656195
07-12-2016	5.5	95.95	4.42044776	10	56.2201311	2.65899234	2.00397	0.002711418	0.0002043481
07-12-2016	5.32	96.21	3.99373134	10	84.0376156	1.00253566	0.619273	0.001022302	0.000631483
07-12-2016	5.5	96.1	3.56701493	16	73.3853558	0.722418876	0.450069	0.000736662	0.000458943
07-12-2016	5.54	96.04	3.85149254	10	66.7608327	1.124918273	0.41991	0.001147097	0.000428189
07-12-2016	5.46	96.01	3.85149254	14	62.7610597	1.212317536	0.570913	0.00123622	0.000582169
07-12-2016	5.36	96.12	4.27820896	10	73.8231612	1.627332449	1.511215	0.001659417	0.00154101
08-12-2016	5.23	96.04	2.9980597	10	67.6307292	0.413433289	0.264705	0.000421585	0.000269924
08-12-2016	5.29	96.04	3.85149254	10	66.0766558	1.139045106	1.401723	0.001161503	0.00142936
09-12-2016	5.32	96.15	2.71358209	10	77.4923007	0.251904883	0.162828	0.000256871	0.000166038
09-12-2016	5.29	96.12	2.9980597	10	74.6999838	0.366231181	0.465349	0.000373452	0.000474524
09-12-2016	5.37	96.03	3.85149254	23	67.1376511	1.117272807	0.524984	0.001139301	0.000535335
10-12-2016	5.16	96.27	2.14462687	10	94.0308442	0.102789247	0.148911	0.000104816	0.000151847
10-12-2016	5.17	96.13	2.28686567	7	78.7367142	0.150647569	0.191957	0.000153618	0.000195742
10-12-2016	5.4	96.17	3.56701493	20	80.9825738	0.640846231	1.040096	0.000653481	0.001060603
11-12-2016	5.16	95.96	2.42910448	10	62.2183554	0.236898473	0.07976	0.000241569	8.13326E-05
11-12-2016	5.32	96.21	4.98940299	10	84.0376156	3.146041841	3.764745	0.00320807	0.003838972
13-12-2016	5.51	96.29	2.8558209	15	93.7817975	0.235275755	0.202545	0.000239915	0.000206538
14-12-2016	4.92	96.55	2.42910448	3	131.984985	0.094410505	0.431165	9.62719E-05	0.000439666
12-01-2017	5.24	96.17	2.57134328	10	81.1511373	0.201914597	0.291155	0.000205896	0.000296895
13-01-2017	5.36	94.66	5.13164179	89	125.197455	2.29209245	35.918593	0.002337284	0.036626772
13-01-2017	5.33	96.56	1.14895522	43	128.990895	0.021950926	0.022266	2.23837E-05	2.2705E-05
16-02-2017	5.18	96.19	5.2738806	14	85.5077934	4.263293309	15.501547	0.004347349	0.015807179
16-02-2017	5.21	96.13	5.13164179	12	77.9869278	4.046774299	4.86605	0.004126561	0.00496199
17-02-2017	4.51	96.35	4.42044776	16	140.429658	0.879079408	1.883363	0.000896412	0.001920496
25-02-2017	5.14	96.22	3.85149254	10	89.4686337	0.788486707	3.335189	0.000804033	0.003400946
20-03-2017	5.22	96.16	2.8558209	10	80.6044777	0.283080132	1.791136	0.000288661	0.00182645
07-05-2017	3.92	95.86	4.42044776	23	171.669208	0.688383391	0.917826	0.000701956	0.000935922
21-07-2017	4.71	94.44	4.70492537	10	136.822732	1.259854286	3.256913	0.001284694	0.003321127
01-08-2017	4.58	95.44	3.85149254	51	104.177442	0.655202432	4.458459	0.000668121	0.004546363
29-11-2017	4.57	94.65	3.70925373	60	141.463794	0.382737981	0.779268	0.000390284	0.000794632
09-12-2017	3.32	97.51	4.56268657	10	324.129855	0.373639957	0.166533	0.000381007	0.000169816
13-01-2018	5.11	94.79	2.9980597	15	82.1773247	0.32598723	1.612054	0.000332414	0.001643838
17-01-2018	4.48	94.8	3.85149254	64	140.526345	0.454934021	1.749273	0.000463904	0.001783762
18-01-2018	5.68	95.03	1.14895522	10	57.6984696	0.058855082	0.309619	6.00155E-05	0.000315724
08-02-2018	4.66	96.27	4.98940299	10	122.052172	2.007318412	3.399838	0.002046895	0.00346687
02-03-2018	3.42	97.83	3.70925373	113	357.996513	0.122918576	1.514337	0.000125342	0.001544194
02-03-2018	4.53	94.82	3.56701493	10	120.257777	0.395792673	1.514337	0.000403596	0.001544194
19-04-2018	2.07	96.14	4.13597015	16	377.695135	0.188905957	0.130615	0.00019263	0.00013319
16-05-2018	4.37	95.24	4.27820896	16	118.036247	0.921372815	3.992864	0.000939539	0.004071588
19-06-2018	5.55	96.86	4.13597015	10	156.052152	0.556435075	0.201276	0.000567406	0.000205244
18-09-2018	5.17	96.23	4.27820896	7	89.2347004	1.293772393	0.3087	0.001319281	0.000314786
27-09-2018	4.58	97.81	4.70492537	10	275.765359	0.536719532	0.0578	0.000547302	5.89396E-05
14-10-2018	4.65	94.62	3.85149254	10	125.248226	0.523496129	0.4547	0.000533817	0.000463665
15-10-2018	3.84	96.05	4.70492537	23	186.46215	0.864822648	0.5057	0.000881874	0.00051567
18-10-2018	4.7	96.17	4.56268657	11	111.096997	1.376661039	0.2715	0.001403804	0.000276853
20-12-2018	4.63	96.73	3.56701493	3	164.666982	0.269614407	0.0451	0.00027493	4.59892E-05
24-12-2018	4.96	95.88	3.85149254	10	68.1895182	1.096421875	0.6478	0.001118039	0.000660572
01-01-2019	5.42	94.51	4.42044776	51	116.51919	1.102889243	0.8163	0.001124634	0.000832394
09-01-2019	3.8	95.8	4.27820896	60	190.68029	0.513738898	0.345	0.000523868	0.000351802
05-12-2019	5.21	95.79	4.56268657	10	43.3417958	4.265358884	1.423	0.004349456	0.001451056
18-01-2020	4.48	95.53	3.85149254	62	119.443019	0.554672949	0.5096	0.000565609	0.000519647
09-04-2020	5.24	95.51	2.8558209	10	21.1335335	1.437392661	0.8261	0.001465733	0.000842388
15-04-2020	3.56	96.01	4.56268657	11	213.578374	0.621799963	0.2558	0.00063406	0.000260843
07 Mei 2020	4.99	95.26	3.56701493	16	53.0894643	1.070071209	0.8575	0.001091169	0.000874407
04 Juni 2020	5.93	94.99	2.8558209	10	79.1707206	0.289352369	0.1294	0.000295057	0.000131951

04 Juni 2020	5.93	94.99	2.8558209	10	79.1707206	0.289352369	0.1294	0.000295057	0.000131951	
04 Juni 2020	5.74	95.24	2.9980597	5	45.2273385	0.674620589	0.1362	0.000687922	0.000138885	
18-06-2020	5.62	95.28	3.70925373	16	35.3389404	2.058281211	0.3685	0.002098863	0.000375765	
18-06-2020	5.96	95.01	3.14029851	10	80.2908132	0.395377231	0.1499	0.000403173	0.000152855	
13-07-2020	5.22	94.27	5.13164179	34	137.187125	2.052429246	1.1691	0.002092895	0.00119215	
01-09-2020	3.07	95.71	4.56268657	10	260.532235	0.487908651	0.0696	0.000497528	7.09722E-05	
14-09-2020	4.19	96.7	5.13164179	125	227.765403	1.109876308	0.3851	0.001131759	0.000392693	
09-10-2020	2.22	97.57	3.85149254	27	423.93809	0.117864868	0.1539	0.000120189	0.000156934	
11-10-2020	4.76	95.77	4.13597015	71	105.899233	0.892084489	0.8761	0.000909673	0.000893373	
15-10-2020	4.06	95.94	4.84716418	27	160.163148	1.226092605	0.5135	0.001250267	0.000523624	
14-11-2020	5.58	95.59	4.84716418	10	26.5837028	10.40381449	19.1071	0.010608938	0.01948382	
01-12-2020	2.97	96.04	4.56268657	26	278.380305	0.449982931	0.0902	0.000458855	9.19784E-05	
05-03-2021	4.89	96.01	4.42044776	4	83.292324	1.656309998	0.6429	0.001688966	0.000655576	
24-03-2021	5.25	94.41	4.27820896	10	117.772639	0.923879967	0.5204	0.000942095	0.00053066	
09-04-2021	4.76	96.15	3.85149254	6	104.548267	0.652374285	0.1382	0.000665237	0.000140925	
17-04-2021	5.04	95.38	4.70492537	92	100.601256	1.828325497	5.1479	0.001864373	0.005249397	
01-05-2021	5.48	95.61	2.71358209	2	18.9398144	1.393365423	0.2548	0.001420837	0.000259824	
03-05-2021	5.43	94.6	4.27820896	49	106.795946	1.040473687	0.9379	0.001060988	0.000956392	
11-05-2021	2.4	96.1	4.42044776	10	340.89342	0.297890994	0.049	0.000303764	4.99661E-05	
24-05-2021	4.34	95.26	4.84716418	49	129.12586	1.592089284	1.7473	0.001623479	0.00178175	
03-06-2021	5.87	95.25	3.14029851	5	57.3907053	0.595160599	0.1029	0.000606895	0.000104929	
12-06-2021	3.92	95.86	4.42044776	30	172.653999	0.683602285	0.2675	0.00069708	0.000272774	
08-10-2021	4.42	95.43	5.4161194	46	117.96451	3.411453448	1.2828	0.003478714	0.001308092	
05-12-2021	4.53	96.51	2.8558209	5	151.306935	0.131055816	0.0843	0.00013364	8.59621E-05	

**Lampiran 13** Perhitungan RMSE data PGA rumus empiris Donovan (setelah dimodifikasi) terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

Donovan => $A = (17.0037 \text{ (Eks}(1.1753\text{Ms}))/(\text{R}+25))^{\wedge}1.5949$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.98507463	84	88.94123	10.12237825	29.737726	0.010321953	0.030324041	0.004685098
21-01-2013	5.58	95.18	4.70492537	12	38.76241	5.674933591	13.625727	0.005786822	0.013894375	
29-04-2013	3.75	95.98	4.56268657	12	192.4972	0.678349874	1.113878	0.000691724	0.001135839	
16-07-2013	5.44	98.09	4.56268657	10	291.0868	0.373695193	0.350455	0.000381063	0.000357365	
07-08-2013	2.1	97.82	4.56268657	12	450.4159	0.194891917	0.139713	0.000198734	0.000142468	
13-10-2013	3.95	95.81	5.70059701	14	166.2362	3.172502611	6.391847	0.003235052	0.00651787	
22-10-2013	5.29	95.42	5.4161194	10	16.39981	26.06889357	12.923598	0.026582873	0.013178402	
22-10-2013	5.02	95.89	5.13164179	10	64.39187	5.466925548	12.923602	0.005574713	0.013178406	
01-12-2013	2	96.65	5.70059701	20	400.2579	0.886829969	0.522618	0.000904315	0.000532922	
02-12-2013	2.03	96.45	5.13164179	25	390.4654	0.471592795	0.246036	0.000480891	0.000250887	
20-12-2013	4.17	96.08	5.13164179	69	167.1279	1.613504026	6.124955	0.001645316	0.006245716	
14-01-2014	2.16	94.11	4.84716418	10	389.922	0.338274221	0.300031	0.000344944	0.000305946	
24-03-2014	3.97	95.59	4.56268657	13	160.0218	0.877939832	0.883069	0.000895249	0.00090048	
01-08-2014	4.46	96.41	4.70492537	12	148.6701	1.147951771	2.519404	0.001170585	0.002569077	
04-08-2014	5.35	94.55	4.56268657	35	106.5308	1.512940031	7.172565	0.001542769	0.007313981	
07-11-2014	4.68	94.79	5.4161194	85	137.7781	2.936289113	10.495118	0.002994182	0.010702042	
17-12-2014	2.67	95.68	4.70492537	10	304.4374	0.413490094	0.221535	0.000421643	0.000225903	
02-02-2015	4.02	95.72	4.56268657	10	156.3242	0.90666623	3.107849	0.000924542	0.003169124	
02-03-2015	5.38	95.16	4.98940299	90	95.87628	2.858512886	4.906848	0.002914872	0.005003592	
09-05-2015	4.81	96.01	3.42477612	10	90.01035	0.4920055	1.115	0.000501706	0.001136984	
01-06-2015	4.49	95.54	4.56268657	55	115.1223	1.367710804	11.982442	0.001394677	0.01221869	
07-07-2015	4.88	94.58	4.70492537	20	114.8941	1.620785085	5.895859	0.001652741	0.006012103	
04-08-2015	4.61	95.02	4.70492537	49	111.4236	1.687042228	2.514975	0.001720304	0.002564561	
21-10-2015	4.84	96.07	3.85149254	10	92.3479	0.786756552	3.531362	0.000802268	0.003600987	
07-11-2015	4.9	96.07	3.28253731	12	88.22811	0.426761435	0.571574	0.000435176	0.000582843	
08-11-2015	4.7	95.71	4.42044776	10	83.15333	1.748904214	3.268981	0.001783386	0.003333433	
07-12-2015	5.07	95.66	4.56268657	26	50.05421	3.701885611	1.270234	0.003774873	0.001295278	
15-12-2015	5.14	94.11	3.85149254	52	160.2914	0.379702968	1.838514	0.000387189	0.001874763	
20-12-2015	2.5	95.67	4.56268657	10	323.1717	0.320296527	0.156597	0.000326612	0.000159684	
22-12-2015	4.39	95.3	2.9980597	10	114.0457	0.220145657	0.356713	0.000224486	0.000363746	
08-01-2016	4.8	96.01	4.13597015	10	90.82301	1.122289802	0.787802	0.001144417	0.000803334	
18-02-2016	5.18	94.53	3.99373134	13	106.5237	0.775263818	0.168341	0.000790549	0.00017166	

18-02-2016	5.18	94.53	3.99373134	13	106.5237	0.775263818	0.168341	0.000790549	0.00017166
12-10-2016	4.87	95.54	4.56268657	124	137.3262	1.081707729	2.165198	0.001103035	0.002207888
05-11-2016	2.82	95.21	4.84716418	10	288.1422	0.529913778	0.282968	0.000540362	0.000288547
07-12-2016	5.56	95.75	4.56268657	10	38.01004	4.893054404	2.604837	0.004989527	0.002656195
07-12-2016	5.5	95.95	4.42044776	10	56.22013	2.761427441	2.00397	0.002815872	0.002043481
07-12-2016	5.32	96.21	3.99373134	10	84.03762	1.045486553	0.619273	0.0010661	0.000631483
07-12-2016	5.5	96.1	3.56701493	16	73.38536	0.745962317	0.450069	0.00076067	0.000458943
07-12-2016	5.54	96.04	3.85149254	10	66.76083	1.164673881	0.41991	0.001187637	0.000428189
07-12-2016	5.46	96.01	3.85149254	14	62.76106	1.250473241	0.570913	0.001275128	0.000582169
07-12-2016	5.36	96.12	4.27820896	10	73.82316	1.708651977	1.511215	0.00174234	0.00154101
08-12-2016	5.23	96.04	2.9980597	10	67.63073	0.420779222	0.264705	0.000429075	0.000269924
08-12-2016	5.29	96.04	3.85149254	10	66.07666	1.178659041	1.401723	0.001201898	0.00142936
09-12-2016	5.32	96.15	2.71358209	10	77.4923	0.256315961	0.162828	0.00026137	0.000166038
09-12-2016	5.29	96.12	2.9980597	10	74.69998	0.374208091	0.465349	0.000381586	0.000474524
09-12-2016	5.37	96.03	3.85149254	23	67.13765	1.157086291	0.524984	0.0011799	0.000535335
10-12-2016	5.16	96.27	2.14462687	10	94.03084	0.10345418	0.148911	0.000105494	0.000151847
10-12-2016	5.17	96.13	2.28686567	7	78.73671	0.152268161	0.191957	0.00015527	0.000195742
10-12-2016	5.4	96.17	3.56701493	20	80.98257	0.66251427	1.040096	0.000675577	0.001060603
11-12-2016	5.16	95.96	2.42910448	10	62.21836	0.237326769	0.07976	0.000242006	8.13326E-05
11-12-2016	5.32	96.21	4.98940299	10	84.03762	3.369267151	3.764745	0.003435696	0.003838972
13-12-2016	5.51	96.29	2.8558209	15	93.7818	0.239447847	0.202545	0.000244169	0.000206538
14-12-2016	4.92	96.55	2.42910448	3	131.985	0.092949733	0.431165	9.47823E-05	0.000439666
12-01-2017	5.24	96.17	2.57134328	10	81.15114	0.205058349	0.291155	0.000209101	0.000296895
13-01-2017	5.36	94.66	5.13164179	89	125.1975	2.389512197	35.918593	0.002436624	0.036626772
13-01-2017	5.33	96.56	1.14895522	43	128.9909	0.021289456	0.022266	2.17092E-05	2.2705E-05
16-02-2017	5.18	96.19	5.2738806	14	85.50779	4.607480126	15.501547	0.004698322	0.015807179
16-02-2017	5.21	96.13	5.13164179	12	77.98693	4.361965378	4.86605	0.004447967	0.00496199
17-02-2017	4.51	96.35	4.42044776	16	140.4297	0.887952602	1.883363	0.00090546	0.001920496
25-02-2017	5.14	96.22	3.85149254	10	89.46863	0.818554196	3.335189	0.000834693	0.003400946
20-03-2017	5.22	96.16	2.8558209	10	80.60448	0.288840832	1.791136	0.000294536	0.00182645
07-05-2017	3.92	95.86	4.42044776	23	171.6692	0.673869985	0.917826	0.000687156	0.000935922
21-07-2017	4.71	94.44	4.70492537	10	136.8227	1.284884115	3.256913	0.001310217	0.003321127
01-08-2017	4.58	95.44	3.85149254	51	104.1774	0.675017299	4.458459	0.000688326	0.004546363
29-11-2017	4.57	94.65	3.70925373	60	141.4638	0.381119506	0.779268	0.000388634	0.000794632
09-12-2017	3.32	97.51	4.56268657	10	324.1299	0.318895749	0.166533	0.000325183	0.000169816
13-01-2018	5.11	94.79	2.9980597	15	82.17732	0.333442408	1.612054	0.000340017	0.001643838
17-01-2018	4.48	94.8	3.85149254	64	140.5263	0.454543401	1.749273	0.000463505	0.001783762
18-01-2018	5.68	95.03	1.14895522	10	57.69847	0.057383057	0.309619	5.85144E-05	0.000315724
08-02-2018	4.66	96.27	4.98940299	10	122.0522	2.09105645	3.399838	0.002132284	0.00346687
02-03-2018	3.42	97.83	3.70925373	113	357.9965	0.100903607	1.514337	0.000102893	0.001544194
02-03-2018	4.53	94.82	3.56701493	10	120.2578	0.400724193	1.514337	0.000408625	0.001544194
19-04-2018	2.07	96.14	4.13597015	16	377.6951	0.153806454	0.130615	0.000156839	0.00013319
16-05-2018	4.37	95.24	4.27820896	16	118.0362	0.947398792	3.992864	0.000966078	0.004071588
19-06-2018	5.55	96.86	4.13597015	10	156.0522	0.550402357	0.201276	0.000561254	0.000205244
18-09-2018	5.17	96.23	4.27820896	7	89.2347	1.356037552	0.3087	0.001382773	0.000314786
27-09-2018	4.58	97.81	4.70492537	10	275.7654	0.478118518	0.0578	0.000487545	5.89396E-05
14-10-2018	4.65	94.62	3.85149254	10	125.2482	0.530460803	0.4547	0.000540919	0.000463665
15-10-2018	3.84	96.05	4.70492537	23	186.4621	0.838585914	0.5057	0.00085512	0.00051567
18-10-2018	4.7	96.17	4.56268657	11	111.097	1.432793621	0.2715	0.001461043	0.000276853
20-12-2018	4.63	96.73	3.56701493	3	164.667	0.26186211	0.0451	0.000267025	4.59892E-05
24-12-2018	4.96	95.88	3.85149254	10	68.18952	1.136326154	0.6478	0.00115873	0.000660572
01-01-2019	5.42	94.51	4.42044776	51	116.5192	1.138992518	0.8163	0.001161449	0.000832394
09-01-2019	3.8	95.8	4.27820896	60	190.6803	0.492106974	0.345	0.000501809	0.000351802
05-12-2019	5.21	95.79	4.56268657	10	43.3418	4.298504246	1.423	0.004383254	0.001451056
18-01-2020	4.48	95.53	3.85149254	62	119.443	0.56486738	0.5096	0.000576004	0.000519647
09-04-2020	5.24	95.51	2.8558209	10	21.13353	1.082154511	0.8261	0.00110349	0.000842388
15-04-2020	3.56	96.01	4.56268657	11	213.5784	0.585295087	0.2558	0.000596835	0.000260843
07 Mei 2020	4.99	95.26	3.56701493	16	53.08946	1.07831586	0.8575	0.001099576	0.000874407
04 Juni 2020	5.93	94.99	2.8558209	10	79.17072	0.295207219	0.1294	0.000301028	0.000131951
04 Juni 2020	5.74	95.24	2.9980597	5	45.22734	0.654393858	0.1362	0.000667296	0.000138885
18-06-2020	5.62	95.28	3.70925373	16	35.33894	1.922953888	0.3685	0.001960867	0.000375765
18-06-2020	5.96	95.01	3.14029851	10	80.29081	0.405437411	0.1499	0.000413431	0.000152855
13-07-2020	5.22	94.27	5.13164179	34	137.1871	2.114040343	1.1691	0.002155721	0.00119215
01-09-2020	3.07	95.71	4.56268657	10	260.5322	0.439475114	0.0696	0.00044814	7.09722E-05
14-09-2020	4.19	96.7	5.13164179	125	227.7654	1.041775267	0.3851	0.001062315	0.000392693
09-10-2020	2.22	97.57	3.85149254	27	423.9381	0.092570873	0.1539	9.4396E-05	0.000156934

09-10-2020	2.22	97.57	3.85149254	27	423.9381	0.092570873	0.1539	9.4396E-05	0.000156934
11-10-2020	4.76	95.77	4.13597015	71	105.8992	0.923311845	0.8761	0.000941516	0.000893373
15-10-2020	4.06	95.94	4.84716418	27	160.1631	1.225013215	0.5135	0.001249166	0.000523624
14-11-2020	5.58	95.59	4.84716418	10	26.5837	9.40540121	19.1071	0.00959084	0.01948382
01-12-2020	2.97	96.04	4.56268657	26	278.3803	0.398967023	0.0902	0.000406833	9.19784E-05
05-03-2021	4.89	96.01	4.42044776	4	83.29232	1.74532544	0.6429	0.001779737	0.000655576
24-03-2021	5.25	94.41	4.27820896	10	117.7726	0.95019017	0.5204	0.000968924	0.00053066
09-04-2021	4.76	96.15	3.85149254	6	104.5483	0.671938253	0.1382	0.000685186	0.000140925
17-04-2021	5.04	95.38	4.70492537	92	100.6013	1.924755662	5.1479	0.001962705	0.005249397
01-05-2021	5.48	95.61	2.71358209	2	18.93981	0.989538143	0.2548	0.001009048	0.000259824
03-05-2021	5.43	94.6	4.27820896	49	106.7959	1.079498488	0.9379	0.001100782	0.000956392
11-05-2021	2.4	96.1	4.42044776	10	340.8934	0.250358302	0.049	0.000255294	4.99661E-05
24-05-2021	4.34	95.26	4.84716418	49	129.1259	1.64142438	1.7473	0.001673787	0.00178175
03-06-2021	5.87	95.25	3.14029851	5	57.39071	0.599515233	0.1029	0.000611335	0.000104929
12-06-2021	3.92	95.86	4.42044776	30	172.654	0.668523072	0.2675	0.000681704	0.000272774
08-10-2021	4.42	95.43	5.4161194	46	117.9645	3.611600689	1.2828	0.003682808	0.001308092
05-12-2021	4.53	96.51	2.8558209	5	151.3069	0.127542369	0.0843	0.000130057	8.59621E-05

**Lampiran 14** Perhitungan RMSE data PGA rumus empiris Fukushima & Tanaka (setelah dimodifikasi) terhadap data PGA perekaman akselerometer BMKG Periode 2013-2021

FUKUSHIMA & TANAKA = $\text{Log } A = 0.5121 * M_s + \text{Log } (R + 0.032 * 10^{(0.41 * M_s)}) - 0.0040 * R - 1.6684$										
Tgl/Bln/Thn	Latitude (LU)	Longitude (BT)	Ms	Depth (km)	R	PGA Empiris (Gal)	PGA Obs (gal)	PGA Empiris (g)	PGA Obs (g)	RMSE
21-01-2013	5.49	95.21	5.985075	84	88.94123	11.17274764	29.737726	0.011393032	0.030324041	0.00451951
21-01-2013	5.58	95.18	4.704925	12	38.76241	3.907766696	13.625727	0.003984813	0.013894375	
29-04-2013	3.75	95.98	4.562687	12	192.4972	0.806556854	1.113878	0.000822459	0.001135839	
16-07-2013	5.44	98.09	4.562687	10	291.0868	0.325787586	0.350455	0.000332211	0.000357365	
07-08-2013	2.1	97.82	4.562687	12	450.4159	0.075216827	0.139713	7.66998E-05	0.000142468	
13-10-2013	3.95	95.81	5.700597	14	166.2362	3.928380469	6.391847	0.004005833	0.00651787	
22-10-2013	5.29	95.42	5.416119	10	16.39981	11.08005049	12.923598	0.011298507	0.013178402	
22-10-2013	5.02	95.89	5.131642	10	64.39187	5.113724544	12.923602	0.005214548	0.013178406	
01-12-2013	2	96.65	5.700597	20	400.2579	0.456562638	0.522618	0.000465564	0.000532922	
02-12-2013	2.03	96.45	5.131642	25	390.4654	0.255421654	0.246036	0.000260458	0.000250887	
20-12-2013	4.17	96.08	5.131642	69	167.1279	1.991893521	6.124955	0.002031166	0.006245716	
14-01-2014	2.16	94.11	4.847164	10	389.922	0.183545755	0.300031	0.000187165	0.000305946	
24-03-2014	3.97	95.59	4.562687	13	160.0218	1.087035211	0.883069	0.001108467	0.00090048	
01-08-2014	4.46	96.41	4.704925	12	148.6701	1.426849751	2.519404	0.001454982	0.002569077	
04-08-2014	5.35	94.55	4.562687	35	106.5308	1.776501775	7.172565	0.001811528	0.007313981	
07-11-2014	4.68	94.79	5.416119	85	137.7781	3.648027979	10.495118	0.003719953	0.010702042	
17-12-2014	2.67	95.68	4.704925	10	304.4374	0.340757887	0.221535	0.000347476	0.000225903	
02-02-2015	4.02	95.72	4.562687	10	156.3242	1.124597186	3.107849	0.00114677	0.003169124	
02-03-2015	5.38	95.16	4.989403	90	95.87628	3.240104168	4.906848	0.003303987	0.005003592	
09-05-2015	4.81	96.01	3.424776	10	90.01035	0.540296026	1.115	0.000550949	0.001136984	
01-06-2015	4.49	95.54	4.562687	55	115.1223	1.641805583	11.982442	0.001674176	0.01221869	
07-07-2015	4.88	94.58	4.704925	20	114.8941	1.945702234	5.895859	0.001984064	0.006012103	
04-08-2015	4.61	95.02	4.704925	49	111.4236	2.008678882	2.514975	0.002048282	0.002564561	
21-10-2015	4.84	96.07	3.851493	10	92.3479	0.874683254	3.531362	0.000891929	0.003600987	
07-11-2015	4.9	96.07	3.282537	12	88.22811	0.464393923	0.571574	0.00047355	0.000582843	
08-11-2015	4.7	95.71	4.420448	10	83.15333	1.861406339	3.268981	0.001898106	0.003333433	
07-12-2015	5.07	95.66	4.562687	26	50.05421	2.980556801	1.270234	0.003039322	0.001295278	
15-12-2015	5.14	94.11	3.851493	52	160.2914	0.468763537	1.838514	0.000478006	0.001874763	
20-12-2015	2.5	95.67	4.562687	10	323.1717	0.242527826	0.156597	0.00024731	0.000159684	
22-12-2015	4.39	95.3	2.99806	10	114.0457	0.262024868	0.356713	0.000267191	0.000363746	
08-01-2016	4.8	96.01	4.13597	10	90.82301	1.240541996	0.787802	0.001265001	0.000803334	
18-02-2016	5.18	94.53	3.993731	13	106.5237	0.908275141	0.168341	0.000926183	0.00017166	
12-10-2016	4.87	95.54	4.562687	124	137.3262	1.339011502	2.165198	0.001365412	0.002207888	
05-11-2016	2.82	95.21	4.847164	10	288.1422	0.468146388	0.282968	0.000477376	0.000288547	
07-12-2016	5.56	95.75	4.562687	10	38.01004	3.327014416	2.604837	0.003392611	0.002656195	

07-12-2016	5.5	95.95	4.420448	10	56.22013	2.382120253	2.00397	0.002429087	0.002043481
07-12-2016	5.32	96.21	3.993731	10	84.03762	1.116313678	0.619273	0.001138323	0.000631483
07-12-2016	5.5	96.1	3.567015	16	73.38536	0.744131812	0.450069	0.000758803	0.000458943
07-12-2016	5.54	96.04	3.851493	10	66.76083	1.105823178	0.41991	0.001127626	0.000428189
07-12-2016	5.46	96.01	3.851493	14	62.76106	1.147063161	0.570913	0.001169679	0.000582169
07-12-2016	5.36	96.12	4.278209	10	73.82316	1.71446859	1.511215	0.001748271	0.00154101
08-12-2016	5.23	96.04	2.99806	10	67.63073	0.401021656	0.264705	0.000408928	0.000269924
08-12-2016	5.29	96.04	3.851493	10	66.07666	1.112771875	1.401723	0.001134712	0.00142936
09-12-2016	5.32	96.15	2.713582	10	77.4923	0.261972086	0.162828	0.000267137	0.000166038
09-12-2016	5.29	96.12	2.99806	10	74.69998	0.375880114	0.465349	0.000383291	0.000474524
09-12-2016	5.37	96.03	3.851493	23	67.13765	1.102014473	0.524984	0.001123742	0.000535335
10-12-2016	5.16	96.27	2.144627	10	94.03084	0.115092037	0.148911	0.000117361	0.000151847
10-12-2016	5.17	96.13	2.286866	7	78.73671	0.15659524	0.191957	0.000159683	0.000195742
10-12-2016	5.4	96.17	3.567015	20	80.98257	0.694092592	1.040096	0.000707777	0.001060603
11-12-2016	5.16	95.96	2.429104	10	62.21836	0.215435191	0.07976	0.000219683	8.13326E-05
11-12-2016	5.32	96.21	4.989403	10	84.03762	3.611685544	3.764745	0.003682894	0.003838972
13-12-2016	5.51	96.29	2.855821	15	93.7818	0.266835517	0.202545	0.000272097	0.000206538
14-12-2016	4.92	96.55	2.429104	3	131.985	0.113619862	0.431165	0.00011586	0.000439666
12-01-2017	5.24	96.17	2.571343	10	81.15114	0.214215997	0.291155	0.00021844	0.000296895
13-01-2017	5.36	94.66	5.131642	89	125.1975	2.927766229	35.918593	0.002985491	0.036626772
13-01-2017	5.33	96.56	1.148955	43	128.9909	0.025812296	0.022266	2.63212E-05	2.2705E-05
16-02-2017	5.18	96.19	5.273881	14	85.50779	4.983753918	15.501547	0.005082015	0.015807179
16-02-2017	5.21	96.13	5.131642	12	77.98693	4.514900567	4.86605	0.004603917	0.00496199
17-02-2017	4.51	96.35	4.420448	16	140.4297	1.100428585	1.883363	0.001122125	0.001920496
25-02-2017	5.14	96.22	3.851493	10	89.46863	0.898085397	3.335189	0.000915792	0.003400946
20-03-2017	5.22	96.16	2.855821	10	80.60448	0.301100118	1.791136	0.000307037	0.00182645
07-05-2017	3.92	95.86	4.420448	23	171.6692	0.825889901	0.917826	0.000842173	0.000935922
21-07-2017	4.71	94.44	4.704925	10	136.8227	1.590877512	3.256913	0.001622244	0.003321127
01-08-2017	4.58	95.44	3.851493	51	104.1774	0.784736664	4.458459	0.000800209	0.004546363
29-11-2017	4.57	94.65	3.709254	60	141.4638	0.47121929	0.779268	0.00048051	0.000794632
09-12-2017	3.32	97.51	4.562687	10	324.1299	0.240399615	0.166533	0.000245139	0.000169816
13-01-2018	5.11	94.79	2.99806	15	82.17732	0.350987968	1.612054	0.000357908	0.001643838
17-01-2018	4.48	94.8	3.851493	64	140.5263	0.562088208	1.749273	0.00057317	0.001783762
18-01-2018	5.68	95.03	1.148955	10	57.69847	0.049625516	0.309619	5.06039E-05	0.000315724
08-02-2018	4.66	96.27	4.989403	10	122.0522	2.54818486	3.399838	0.002598425	0.00346687
02-03-2018	3.42	97.83	3.709254	113	357.9965	0.064354199	1.514337	6.5623E-05	0.001544194
02-03-2018	4.53	94.82	3.567015	10	120.2578	0.48411218	1.514337	0.000493657	0.001544194
19-04-2018	2.07	96.14	4.13597	16	377.6951	0.088795701	0.130615	9.05464E-05	0.00013319
16-05-2018	4.37	95.24	4.278209	16	118.0362	1.142922585	3.992864	0.001165457	0.004071588
19-06-2018	5.55	96.86	4.13597	10	156.0522	0.681636869	0.201276	0.000695076	0.000205244
18-09-2018	5.17	96.23	4.278209	7	89.2347	1.488611467	0.3087	0.001517961	0.000314786
27-09-2018	4.58	97.81	4.704925	10	275.7654	0.443584746	0.0578	0.000452331	5.89396E-05
14-10-2018	4.65	94.62	3.851493	10	125.2482	0.646745893	0.4547	0.000659497	0.000463665
15-10-2018	3.84	96.05	4.704925	23	186.4621	1.008249743	0.5057	0.001028129	0.00051567
18-10-2018	4.7	96.17	4.562687	11	111.097	1.703597161	0.2715	0.001737186	0.000276853
20-12-2018	4.63	96.73	3.567015	3	164.667	0.321966651	0.0451	0.000328315	4.59892E-05
24-12-2018	4.96	95.88	3.851493	10	68.18952	1.091451318	0.6478	0.001112971	0.000660572
01-01-2019	5.42	94.51	4.420448	51	116.5192	1.370593302	0.8163	0.001397616	0.000832394
09-01-2019	3.8	95.8	4.278209	60	190.6803	0.586410868	0.345	0.000597973	0.000351802
05-12-2019	5.21	95.79	4.562687	10	43.3418	3.169034188	1.423	0.003231516	0.001451056
18-01-2020	4.48	95.53	3.851493	62	119.443	0.682148607	0.5096	0.000695598	0.000519647
09-04-2020	5.24	95.51	2.855821	10	21.13353	0.518167067	0.8261	0.000528383	0.000842388
15-04-2020	3.56	96.01	4.562687	11	213.5784	0.66447009	0.2558	0.000677571	0.000260843
07 Mei 2020	4.99	95.26	3.567015	16	53.08946	0.896026528	0.8575	0.000913693	0.000874407
04 Juni 2020	5.93	94.99	2.855821	10	79.17072	0.305082492	0.1294	0.000311098	0.000131951
04 Juni 2020	5.74	95.24	2.99806	5	45.22734	0.492199492	0.1362	0.000501904	0.000138885
18-06-2020	5.62	95.28	3.709254	16	35.33894	1.24603193	0.3685	0.001270599	0.000375765
18-06-2020	5.96	95.01	3.140299	10	80.29081	0.422321552	0.1499	0.000430648	0.000152855
13-07-2020	5.22	94.27	5.131642	34	137.1871	2.622528687	1.1691	0.002674235	0.00119215
01-09-2020	3.07	95.71	4.562687	10	260.5322	0.431495357	0.0696	0.000440003	7.09722E-05
14-09-2020	4.19	96.7	5.131642	125	227.7654	1.140783641	0.3851	0.001163276	0.000392693
09-10-2020	2.22	97.57	3.851493	27	423.9381	0.041488008	0.1539	4.2306E-05	0.000156934
11-10-2020	4.76	95.77	4.13597	71	105.8992	1.080312504	0.8761	0.001101612	0.000893373
15-10-2020	4.06	95.94	4.847164	27	160.1631	1.518336214	0.5135	0.001548272	0.000523624

14-11-2020	5.58	95.59	4.847164	10	26.5837	5.163530152	19.1071	0.005265335	0.01948382
01-12-2020	2.97	96.04	4.562687	26	278.3803	0.366175591	0.0902	0.000373395	9.19784E-05
05-03-2021	4.89	96.01	4.420448	4	83.29232	1.85903612	0.6429	0.001895689	0.000655576
24-03-2021	5.25	94.41	4.278209	10	117.7726	1.14569155	0.5204	0.00116828	0.00053066
09-04-2021	4.76	96.15	3.851493	6	104.5483	0.782071187	0.1382	0.000797491	0.000140925
17-04-2021	5.04	95.38	4.704925	92	100.6013	2.218399325	5.1479	0.002262138	0.005249397
01-05-2021	5.48	95.61	2.713582	2	18.93981	0.446917359	0.2548	0.000455729	0.000259824
03-05-2021	5.43	94.6	4.278209	49	106.7959	1.26712592	0.9379	0.001292109	0.000956392
11-05-2021	2.4	96.1	4.420448	10	340.8934	0.174228047	0.049	0.000177663	4.99661E-05
24-05-2021	4.34	95.26	4.847164	49	129.1259	2.019195204	1.7473	0.002059006	0.00178175
03-06-2021	5.87	95.25	3.140299	5	57.39071	0.520845643	0.1029	0.000531115	0.000104929
12-06-2021	3.92	95.86	4.420448	30	172.654	0.818449856	0.2675	0.000834587	0.000272774
08-10-2021	4.42	95.43	5.416119	46	117.9645	4.375956986	1.2828	0.004462234	0.001308092
05-12-2021	4.53	96.51	2.855821	5	151.3069	0.157365181	0.0843	0.000160468	8.59621E-05