Logging Smart-Phone GNSS Raw Data

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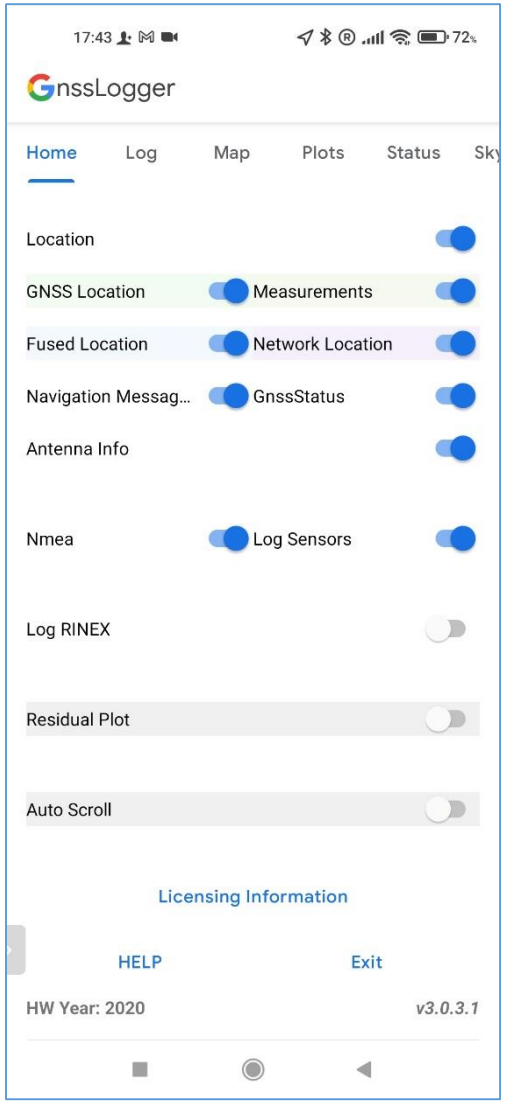
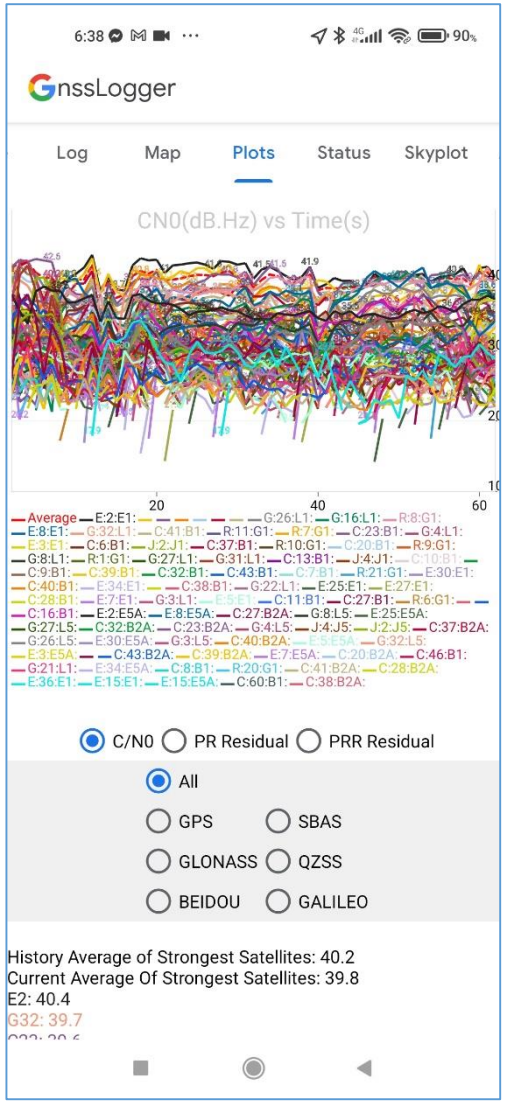
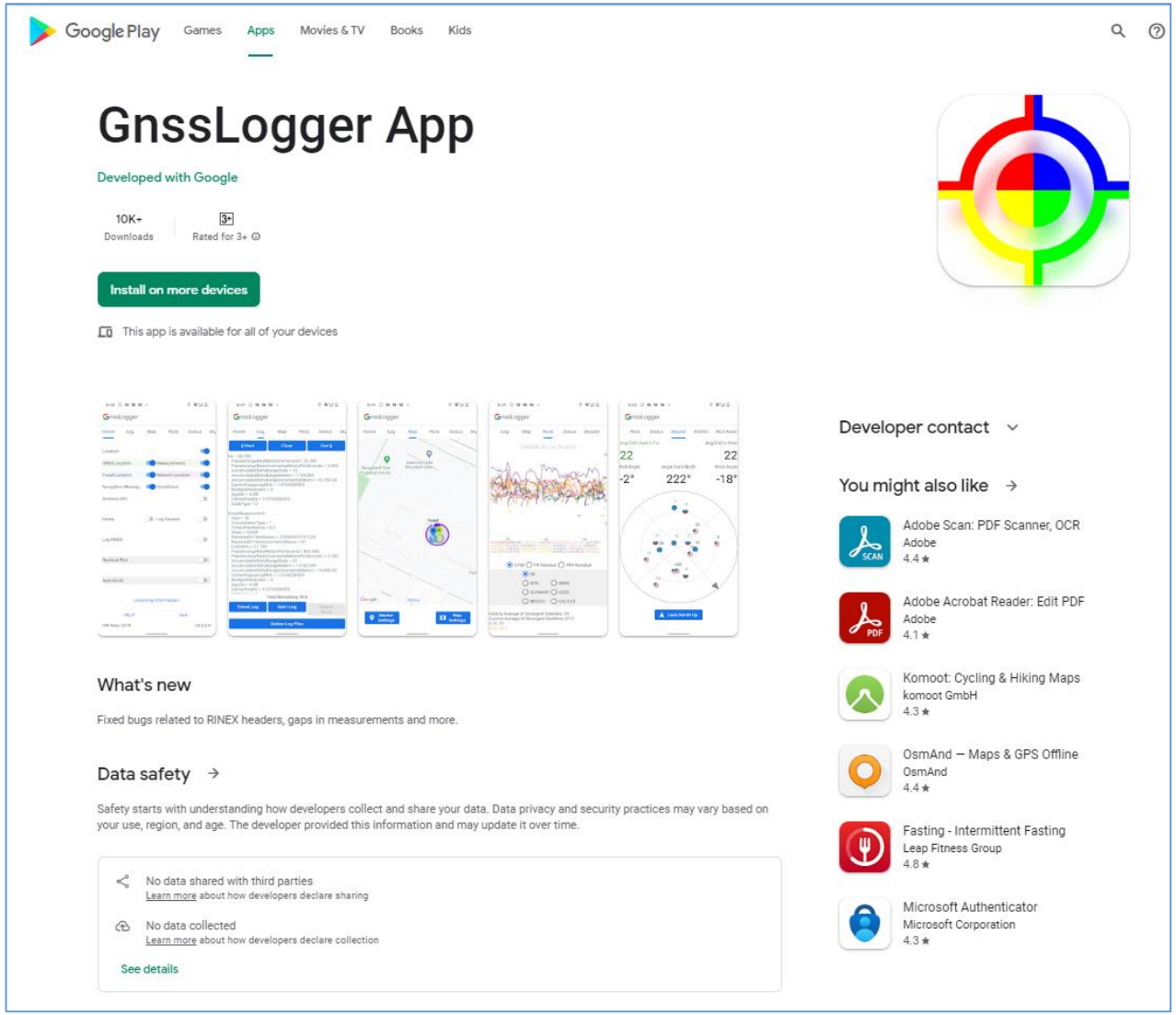
Objectives

- Provide information about Software, APPs and Tools to log GNSS raw data from smart-phones
- Learn data logging methods using GNSS Logger APK for Android
- Explore possibilities of using raw GNSS data for various applications
- References
  - Android GNSS Tutorial Resources
    - https://sites.google.com/view/gnsstutorial
  - GNSS Logger App
    - To log GNSS raw data from Android device
    - https://play.google.com/store/apps/details?id=com.google.android.apps.location.gps.gnsslogger
  - GPS Measurement Tools
    - Matlab code for processing GPS measurements
    - https://github.com/google/gps-measurement-tools

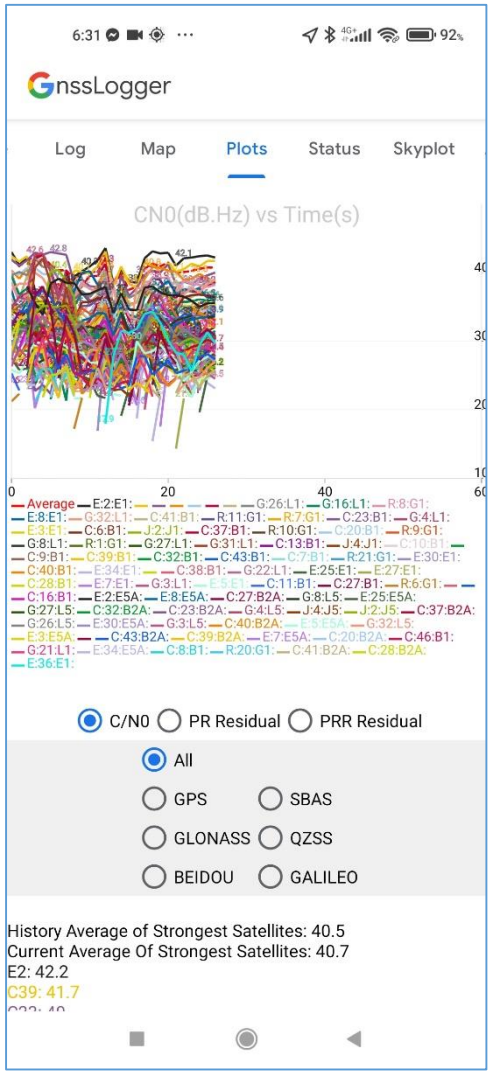
GnssLogger App: To Log GNSS Raw Data from Android Smart-Phone

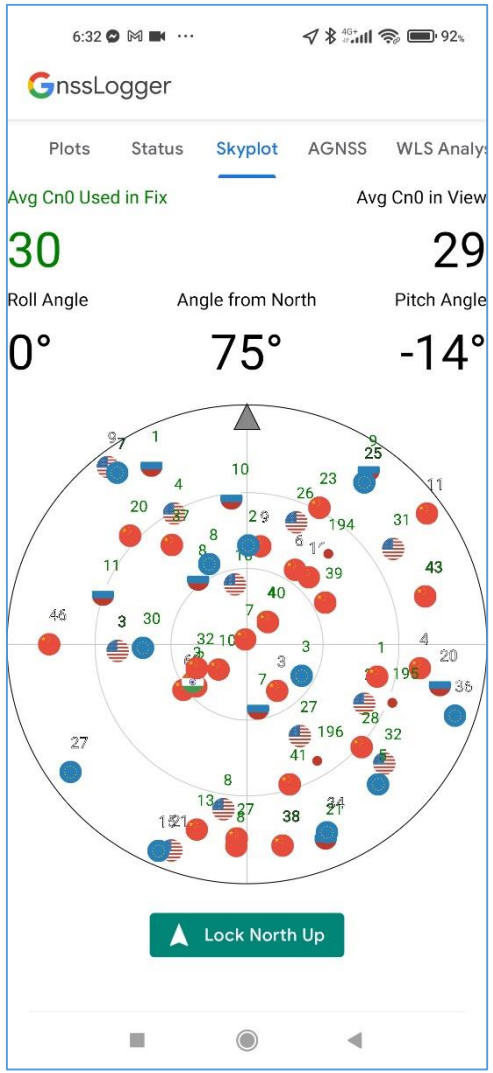


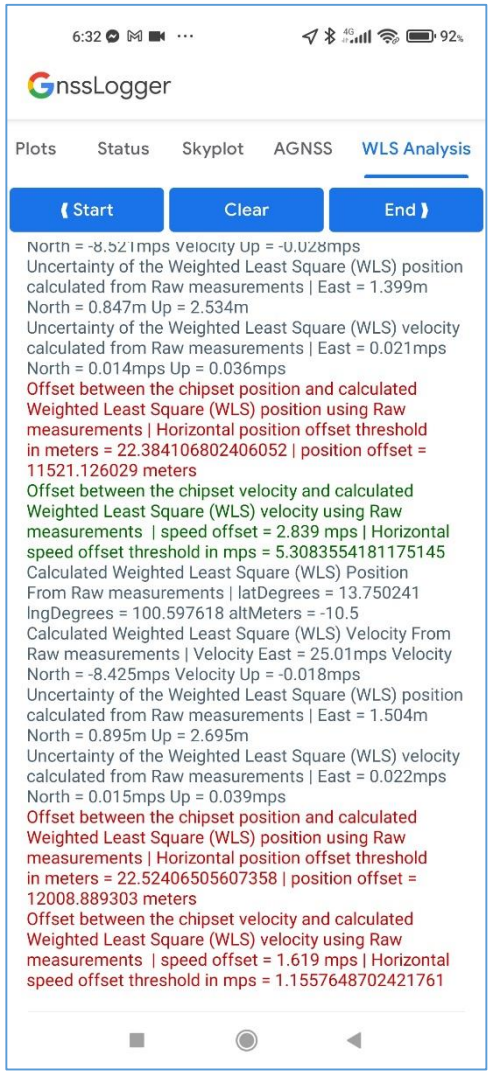


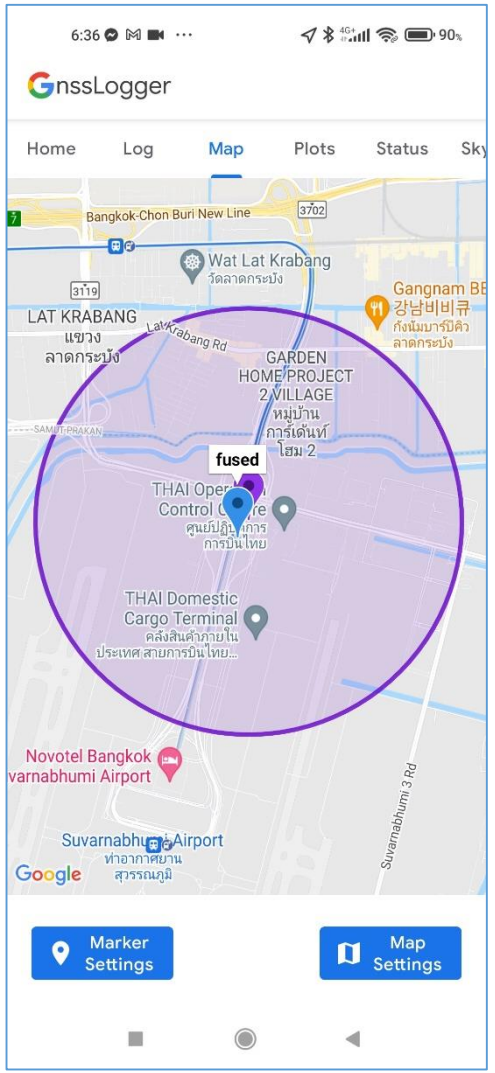


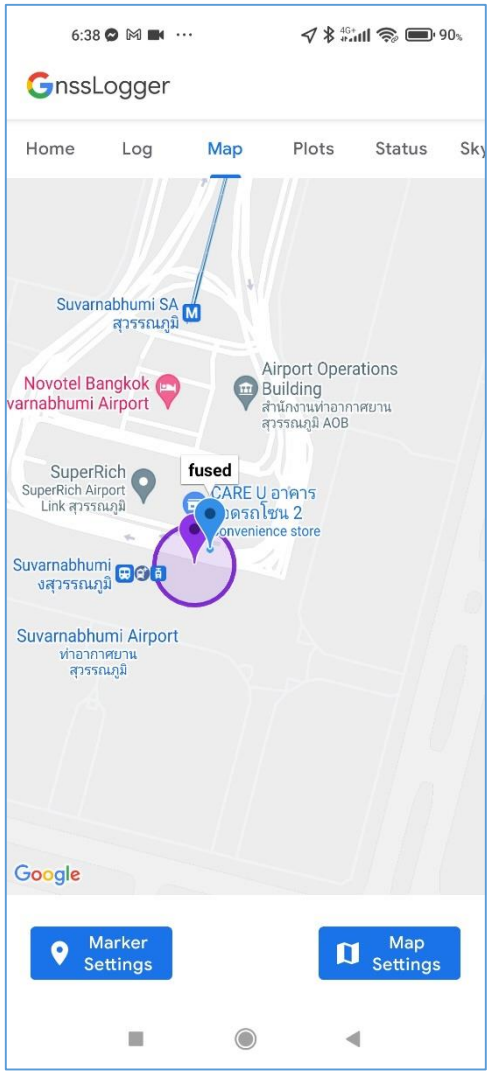
GnssLogger App: Signal Strength, Skyplot, Position Computation, Map Display











GnssLogger App: Visible Satellite Status

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GnssLogger

Map Plots Status Skyplot AGNSS

ID	GNSS	Freq	C/N0	Used	Azim	Elev
3	L1	37.6	Y	268	39	
4	L1	42.8	Y	331	30	
8	L1	30.4	Y	188	24	
9	L1	22.4		322	1	
16	L1	44.4	Y	347	66	
21	L1	21.7		201	3	
22	L1	36.3	Y	116	39	
26	L1	39.6	Y	22	39	
27	L1	28.2	Y	150	47	
31	L1	27.5	Y	56	21	
32	L1	27.6	Y	130	19	
194	J1	37.0	Y	42	42	
195	J1	37.8	Y	113	28	
196	J1	30.8	Y	149	37	
10	G1	28.6	Y	354	32	
9	G1	25.5	Y	35	6	
11	G1	37.9	Y	289	30	
1	G1	27.7	Y	332	10	
20	G1	18.1		102	12	
21	G1	18.1	Y	158	7	
7	G1	34.8	Y	170	64	
8	G1	39.4	Y	323	58	
6	G1			158	14	
46	B1I	32.3		269	11	
43	B1I	28.9	Y	76	17	

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GnssLogger

Map Plots Status Skyplot AGNSS

ID	GNSS	Freq	C/N0	Used	Azim	Elev
6	G1				158	14
46	B1I	31.5			269	11
43	B1I	28.1			76	17
41	B1I	26.4	Y		163	33
40	B1I	33.5	Y		47	78
39	B1I	33.3	Y		62	54
38	B1I	21.6			170	9
37	B1I	37.4	Y		322	41
32	B1I	36.3	Y		246	68
28	B1I	32.3	Y		132	29
27	B1I	31.4	Y		183	13
23	B1I	30.6	Y		27	30
20	B1I	32.3	Y		314	27
16	B1I	37.3			43	54
13	B1I	34.7	Y		195	15
10	B1I	26.9	Y		226	75
9	B1I	40.8	Y		8	51
8	B1I	26.2	Y		183	10
7	B1I	27.7	Y		344	88
6	B1I	34.9			33	55
4	B1I	30.4			98	21
3	B1I	29.9	Y		147	68
1	B1I	32.2	Y		104	37
2	B1I				230	64
5	B1I				254	39

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GnssLogger

Map Plots Status Skyplot AGNSS

ID	GNSS	Freq	C/N0	Used	Azim	Elev
1	B1I	32.1	Y		104	37
2	B1I				230	64
5	B1I				254	39
11	B1I				55	2
31	B1I				9	59
56	B1I				199	36
58	B1I				148	9
59	B1I				105	42
60	B1I				234	59
61	B1I				143	70
2	E1	42.2	Y		0	0
3	E1	34.6	Y		119	65
5	E1	22.8			137	14
7	E1	29.4	Y		323	5
8	E1	37.3	Y		335	54
25	E1	26.3	Y		35	12
27	E1	22.8			234	4
30	E1	28.7	Y		266	49
34	E1	28.4			158	9
36	E1	25.1			110	3
15	E1				204	1
3	L5	17.9			268	39
4	L5	30.0	Y		331	30
8	L5	34.4	Y		188	24
26	L5	37.0	Y		22	39

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GnssLogger

Map Plots Status Skyplot AGNSS

ID	GNSS	Freq	C/N0	Used	Azim	Elev
9	L5				322	1
194	J5	22.6	Y		42	42
195	J5	22.2	Y		113	28
196	J5	19.8	Y		149	37
2	E5A	22.9	Y		0	0
3	E5A	23.8	Y		119	65
5	E5A	18.1	Y		137	14
7	E5A	17.2			323	5
8	E5A	26.8	Y		335	54
27	E5A	17.7			234	4
30	E5A	21.8	Y		266	49
34	E5A	27.3			158	9
25	E5A				35	12
36	E5A				110	3
20	B2A	23.6	Y		314	27
23	B2A	26.1	Y		27	30
27	B2A	30.1	Y		183	13
28	B2A	26.1	Y		132	29
32	B2A	23.0	Y		246	68
37	B2A	29.0	Y		322	41
38	B2A	29.9	Y		170	9
39	B2A	27.3	Y		62	54
40	B2A	22.0	Y		47	78
41	B2A	27.5	Y		163	33
43	B2A	21.7			76	17

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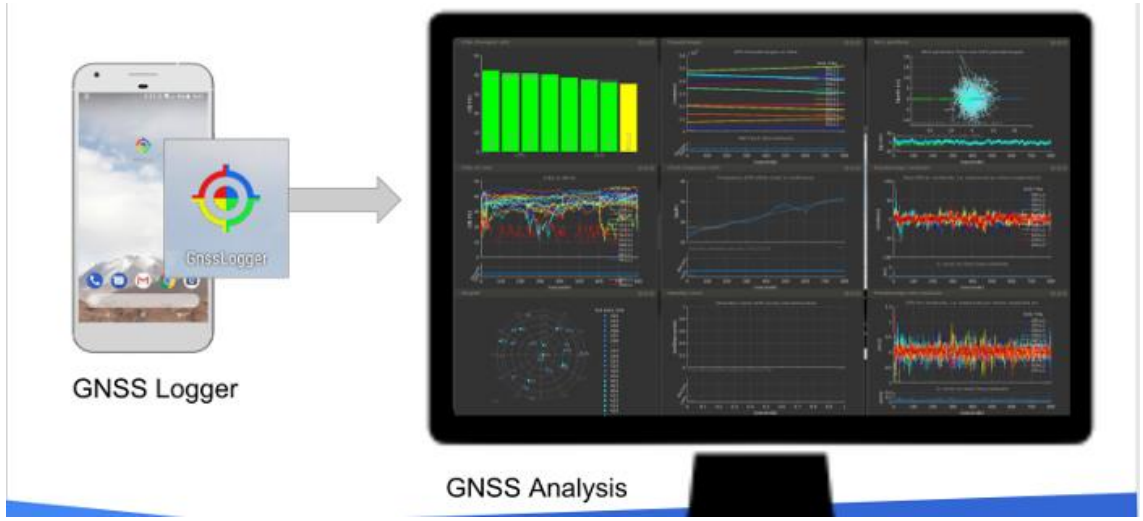
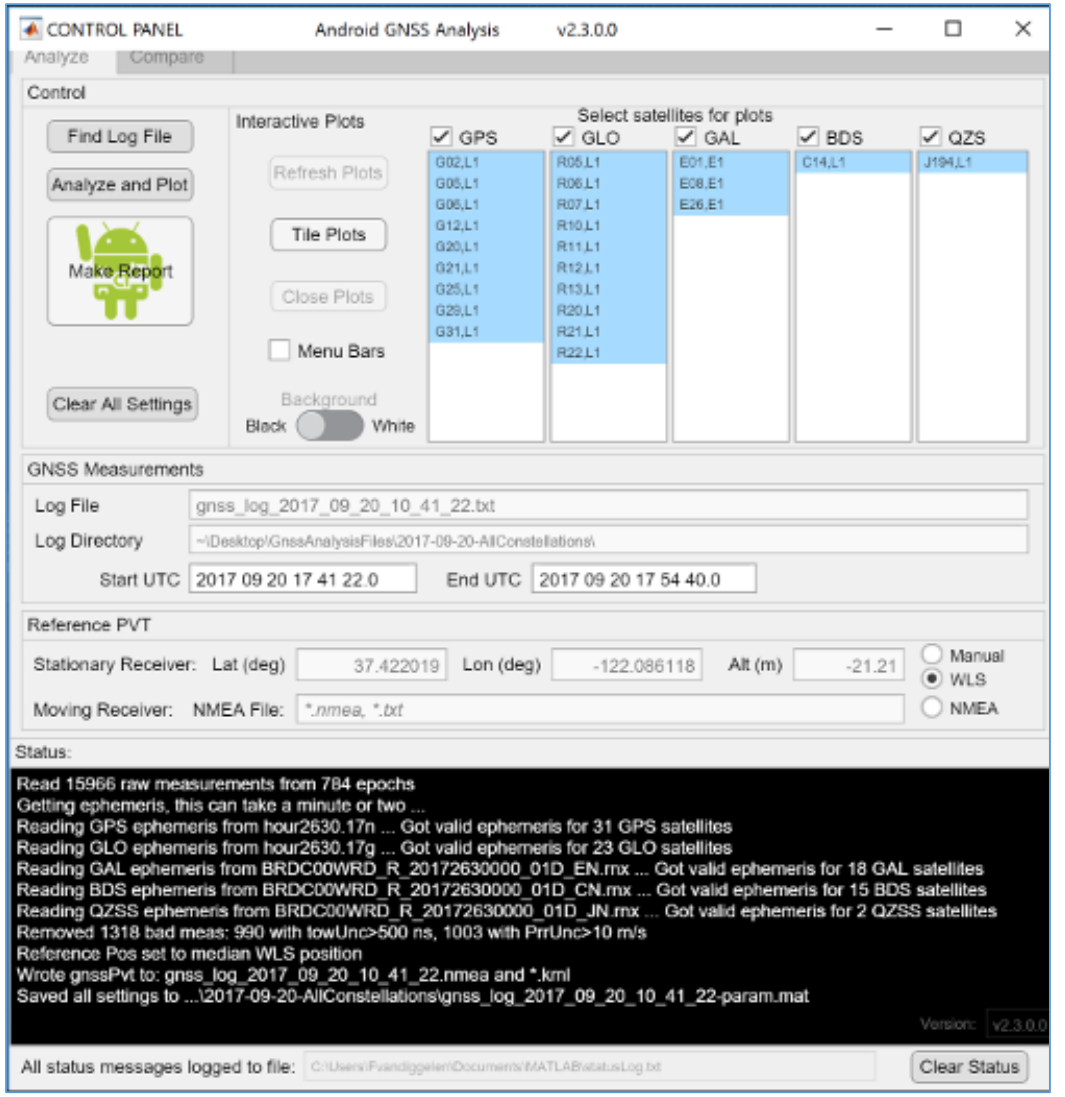
GnssLogger

Map Plots Status Skyplot AGNSS

ID	GNSS	Freq	C/N0	Used	Azim	Elev
20	B2A	18.5	Y		314	27
23	B2A	28.5	Y		27	30
27	B2A	27.9	Y		183	13
28	B2A	21.3	Y		132	29
32	B2A	20.5	Y		246	68
37	B2A	26.0	Y		322	41
38	B2A	22.2	Y		170	9
39	B2A	23.7	Y		62	54
40	B2A	20.1	Y		47	78
41	B2A	19.3	Y		163	33
43	B2A	17.4			76	17
3	UNKNOWN	27.8	Y		235	65
4	UNKNOWN	29.2	Y		43	78
20	B1C	29.2	Y		314	27
23	B1C	23.2	Y		27	30
27	B1C	29.4	Y		183	13
28	B1C	27.4	Y		132	29
32	B1C	29.8	Y		246	68
37	B1C	34.6	Y		322	41
38	B1C	26.1	Y		170	9
39	B1C	33.2	Y		62	54
40	B1C	36.2	Y		47	78
41	B1C	23.8	Y		163	33
43	B1C	21.4			76	17

GPS Measurement Tool





The GNSS Analysis app is built on MATLAB, but you don't need to have MATLAB to run it. The app is compiled into an executable that installs a copy of the MATLAB Runtime.

https://developer.android.com/guide/topics/sensors/gnss.html