First 2018 ILRS LARGE (Laser Ranging to GNSS s/c Experiment) Campaign

(February 15 – May 15, 2018)

Summary Report

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18-May-2018

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Campaign Overview

The first LARGE campaign for 2018 ran from February 15 through May 15. An objective of the campaign was to obtain improved temporal and spatial coverage with a subset of satellites from each of the GNSS constellations, GLONASS, Galileo, and Beidou/Compass. Each of the GNSS constellations chose four primary and four secondary satellites to for the campaign:

System	Primary	Secondary	Comments
GLONASS	GLONASS-131, -134, -136, -137	GLONASS-128, -132, -133, -135	
Galileo	Galileo-102, -202, -209, -210	Galileo-103, -203, -211, -213	March 15-April 15
		Galileo-103, -203, -215, -216	April 15-May 15
Compass	Compass-G1, -I3, -M3, -MS1	Compass-I5, -IS2, -I6B, -MS2	

The ILRS priority list was updated for this campaign. During the campaign, the ILRS had intended to provide GLONASS, Galileo, and Compass predictions to the stations for only the satellites selected in order to encourage stations to focus on only these targets; however, predictions for the full slate of GNSS satellites continued to be made available through the campaign.

The ILRS Central Bureau requested that stations track the primary satellites over at least two, preferably three, widely spaced segments over the arc, with each segment containing at least two normal points. For the secondary satellites, stations were asked to track at least one segment with at least two normal points over the arc. If some of the primary satellites could not be tracked due to daylight, weather conditions or other reasons, then stations were instructed to put more emphasis on the secondary satellites.

More information about LARGE and the 2018 campaign (as well as previous activities) can be found on the ILRS website at:

https://ilrs.cddis.eosdis.nasa.gov/science/ILRS_LARGE_sg/index.html

This report shows the performance of the ILRS stations during the first LARGE campaign in 2018.

LARGE 2018 Campaign #1 Pass Report
February 15-May 15, 2018

as of May 18, 2018

Passes		Primary												Secondary												Campaign Totals				Campaign NPTS/Pass			All Tracking Totals Totals					No. Sats. Tracked	
		GLONASS				Galileo				Compass				GLONASS				Galileo						Compass															
Site Name	Sta.	-131	-134	-136	-137	-102	-202	-209	-210	-G1	-I3	-M3	-MS1	-128	-132	-133	-135	-103	-203	-211	-213	-215	-216	-I5	-IS2	-I6B	-MS2	GLONASS	Galileo	Compass	Total	GLONASS	Galileo	Compass	GLONASS	Galileo	Compass	Other	All	GNSS	ALL
Altay	1879	14	8	8	9	2	0	1	0	0	3	1	0	16	22	24	22	0	0	0	0	0	0	0	0	0	0	123	3	4	130	2.3	2.0	1.8	349	14	4	88	455	36	43
Arequipa	7403	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	563	563	0	22
Arkhyz	1886	7	0	1	0	2	2	0	0	0	0	0	0	5	10	8	12	2	0	0	0	0	0	0	0	0	0	43	6	0	49	3.6	2.7	0.0	93	9	0	142	244	25	38
Badary	1890	3	0	0	0	0	3	0	0	0	0	0	0	4	4	3	4	0	0	0	0	0	0	0	0	0	0	18	3	0	21	2.9	3.3	0.0	19	3	0	251	273	7	28
Baikonur	1887	13	7	3	4	4	5	5	0	0	0	3	0	18	16	12	11	2	0	0	0	0	0	0	0	0	0	84	16	3	103	4.0	3.6	2.3	110	22	3	79	214	22	27
Beijing	7249	5	9	4	1	8	11	4	3	0	6	2	1	6	17	15	18	7	8	1	5	0	0	2	0	5	1	75	47	17	139	4.3	4.7	5.6	124	65	17	473	679	44	71
Borowiec	7811	1	0	0	0	0	2	0	0	0	0	0	0	2	0	6	3	0	0	0	0	0	0	0	0	0	0	12	2	0	14	4.6	5.0	0.0	12	2	0	389	403	5	30
Brasilia	7407	4	3	3	0	0	0	0	0	0	0	0	0	3	3	0	1	0	1	0	0	0	0	0	0	0	0	17	1	0	18	3.6	3.0	0.0	30	7	0	38	75	19	30
Changchun	7237	23	10	17	13	11	16	10	3	9	13	7	0	20	25	31	28	13	11	8	12	0	0	3	0	16	1	167	84	49	300	3.4	3.1	3.2	357	177	49	1583	2,166	47	80
Grasse	7845	5	11	6	2	2	2	5	5	0	0	5	1	1	0	1	0	0	0	0	0	1	1	0	0	0	0	26	16	6	48	4.4	5.0	3.5	26	16	6	118	166	14	23
Graz	7839	20	19	20	23	19	13	13	16	0	0	15	5	19	21	15	20	14	11	14	15	4	3	0	0	2	5	157	122	27	306	5.9	6.2	4.4	169	238	27	931	1,365	42	74
Greenbelt	7105	22	14	13	8	14	11	4	0	0	0	8	0	11	18	20	13	9	12	1	2	1	0	0	0	0	0	119	54	8	181	4.5	5.1	6.0	119	54	8	1869	2,050	17	45
Haleakala	7119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	228	228	0	23
Hartebeesthoek (HARL)	7501	6	17	11	14	2	4	4	9	0	0	1	0	5	11	9	7	10	4	1	3	5	5	0	0	0	0	80	47	1	128	7.4	5.3	2.0	80	47	1	628	756	19	48
Hartebeesthoek (HRTL)	7503	6	13	17	0	6	1	3	3	0	0	3	0	3	6	6	2	4	0	2	0	0	0	1	0	0	0	53	19	4	76	11.2	13.1	0.5	118	31	4	292	445	36	52
Herstmonceux	7840	37	31	38	37	24	23	20	21	0	0	26	8	26	26	25	23	22	22	13	11	3	3	0	0	1	3	243	162	38	443	3.6	3.8	4.5	512	325	38	1516	2,391	50	77
Irkutsk	1891	8	13	17	24	3	6	0	3	0	0	1	0	10	17	11	17	3	3	3	0	1	1	0	0	0	0	117	23	1	141	2.6	2.6	2.0	153	32	1	545	731	35	57
Katzively	1893	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	5.0	0.0	0.0	2	0	0	511	513	2	29
Kiev	1824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	137	137	0	19
Komsomolsk	1868	30	13	10	8	2	3	3	0	1	0	2	0	29	32	31	32	1	2	1	0	0	0	1	0	0	0	185	12	4	201	4.1	3.1	2.8	525	23	4	99	651	39	45
Kunming	7819	33	25	24	6	23	23	18	11	31	42	22	5	31	38	33	38	23	24	10	19	2	2	25	5	39	8	228	155	178	561	2.4	2.5	2.6	599	333	178	1267	2,377	51	77
Matera	7941	41	35	29	39	21	15	18	21	0	0	17	3	23	12	9	12	16	15	14	5	0	3	0	0	0	2	200	128	22	350	6.7	6.0	5.0	201	130	22	1304	1,657	23	50
McDonald	7080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	28	28	0	12
Mendeleevo	1874	5	0	2	1	4	1	0	0	0	0	2	0	5	6	7	5	1	1	0	0	0	0	0	0	0	0	31	7	2	40	2.8	2.6	2.0	61	15	2	80	158	25	39
Monument Peak	7110	5	8	5	11	11	7	1	4	0	0	11	2	4	8	4	9	4	10	6	0	1	1	0	0	0	7	54	45	20	119	2.8	3.9	4.6	54	46	20	1204	1,324	21	48
Mount Stromlo	7825	53	55	55	62	51	15	21	21	1	13	22	0	43	28	31	32	32	13	15	15	2	0	0	0	0	1	359	185	37	581	4.1	3.9	3.4	420	269	37	2217	2,943	37	65
Potsdam	7841	6	8	11	7	7	11	5	4	0	0	3	0	10	18	19	15	9	12	1	5	0	0	0	0	0	1	94	54	4	152	4.9	4.5	5.8	106	100	4	1456	1,666	33	61
Riga	1884	2	0	0	0	0	0	0	0	0	0	0	0	1	1	5	0	0	0	0	0	0	0	0	0	0	0	9	0	0	9	6.2	0.0	0.0	9	1	0	466	476	5	32
Sejong	7394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	28	28	0	13
Shanghai	7821	19	21	24	0	19	19	13	4	11	31	23	0	17	25	32	0	19	17	7	15	0	0	8	0	30	1	138	113	104	355	4.5	4.8	6.1	311	209	104	1040	1,664	45	73
Simeiz	1873	9	1	1	1	2	1	0	0	0	0	2	1	10	12	13	12	3	0	0	0	0	0	0	0	0	1	59	6	4	69	4.3	3.8	5.0	119	10	4	608	741	28	53
Simosato	7838	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0.0	0.0	5.0	0	0	1	450	451	1	17
Tahiti	7124	6	5	8	5	1	0	0	2	0	0	1	0	6	1	5	2	2	0	1	1	0	0	0	0	0	0	38	7	1	46	9.7	4.6	3.0	38	7	1	194	240	14	37
Wettzell (SOSW)	7827	30	18	18	18	16	18	16	6	0	0	21	2	33	34	32	35	19	16	6	17	3	2	1	0	0	0	218	119	24	361	3.3	2.7	2.0	564	264	24	963	1,815	47	72
Wettzell (WETL)	9834	46	46	41	39	24	22	18	19	0	0	19	0	31	31	30	38	16	11	16	15	10	7	2	0	0	1	302	158	22	482	4.2	4.1	3.7	426	249	22	1285	1,982	48	76
Yarragadee	7090	90	99	95	98	71	38	51	60	65	39	44	24	82	76	90	70	62	25	35	24	11	15	58	51	24	24	700	392	329	1,421	6.4	5.4	4.3	790	526	329	5044	6,689	42	84
Zelenchukskaya	1889	9	1	0	0	0	0	0	0	0	0	1	0	8	11	10	14	1	0	0	0	0	0	0	0	0	0	53	1	1	55	2.7	2.0	2.0	121	1	1	325	448	21	41
Zimmerwald	7810	16	17	0	0	13	0	14	12	0	0	16	0	19	18	14	0	21	17	17	17	0	0	3	0	5	1	84	111	25	220	2.4	3.6	3.1	250	248	25	1322	1,845	38	63
Totals:	38	575	508	481	430	362	272	247	227	118	147	279	52	501	547	551	495	315	235	172	181	44	43	104	57	122	57	4,088	2,098	936	7,122	4.5	4.3	4.0	6,867	3,473	936	29,761	41,037		

Pass Summary by Network (Campaign Constellation vs. Total)

Network	Sta.	%GLO	%GAL	%COM	Tot.	GLO	GAL	COM	Tot.
Chinese Network	4	15%	19%	37%	19%	608	399	348	1,355
European Network	13	34%	42%	18%	34%	1,406	878	172	2,456
NASA Network	8	24%	26%	38%	27%	991	545	359	1,895
Russian Network	10	18%	4%	2%	12%	724	91	19	834
All Others	3	9%	9%	4%	8%	359	185	38	582
Totals:	38	57%	29%	13%	100%	4,088	2,098	936	7,122

Total passes/constellation>25	
Total passes/campaign>100	

LARGE 2018 Campaign #1 NPT Report
February 15-May 15, 2018

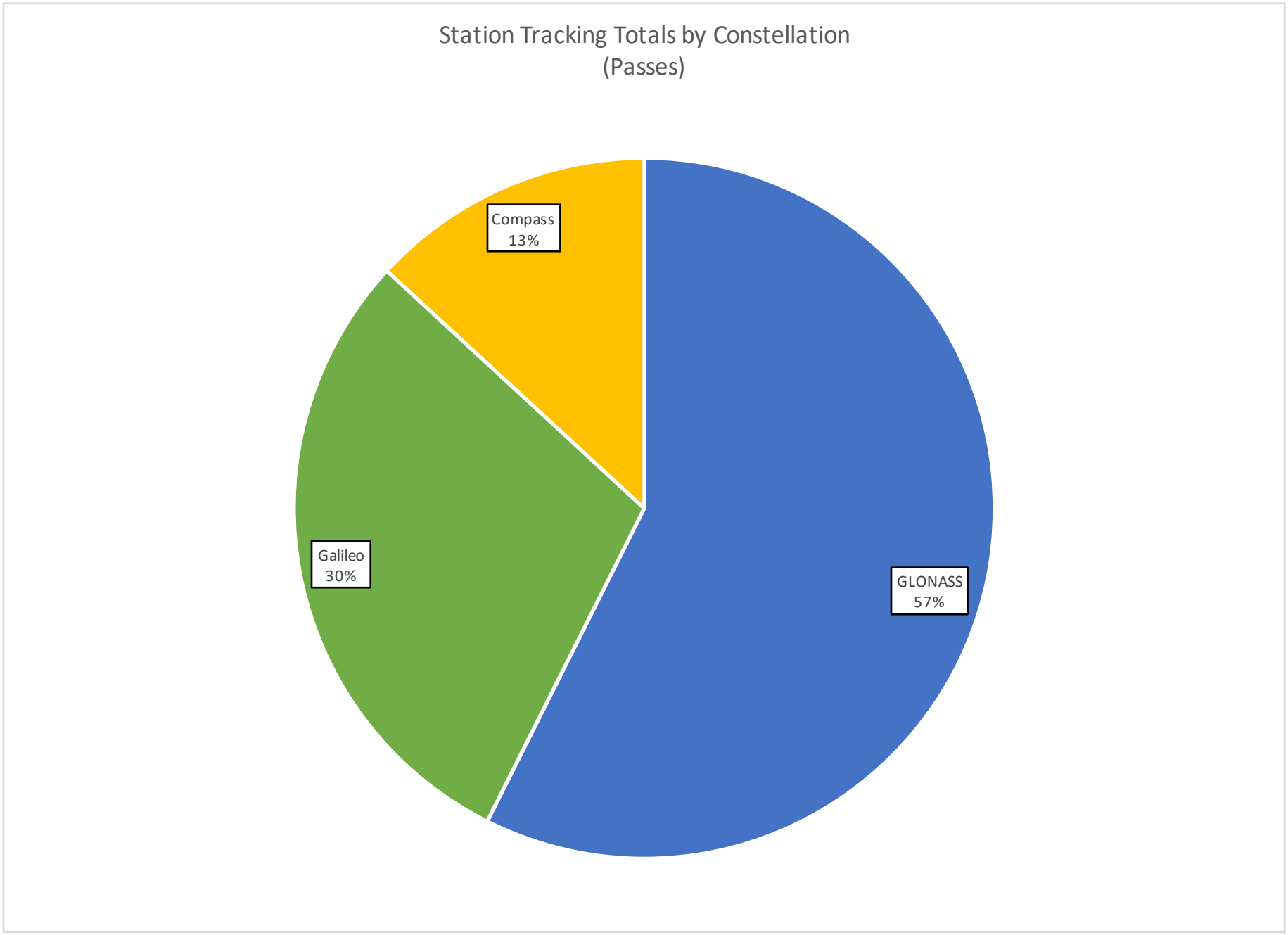
as of May 18, 2018

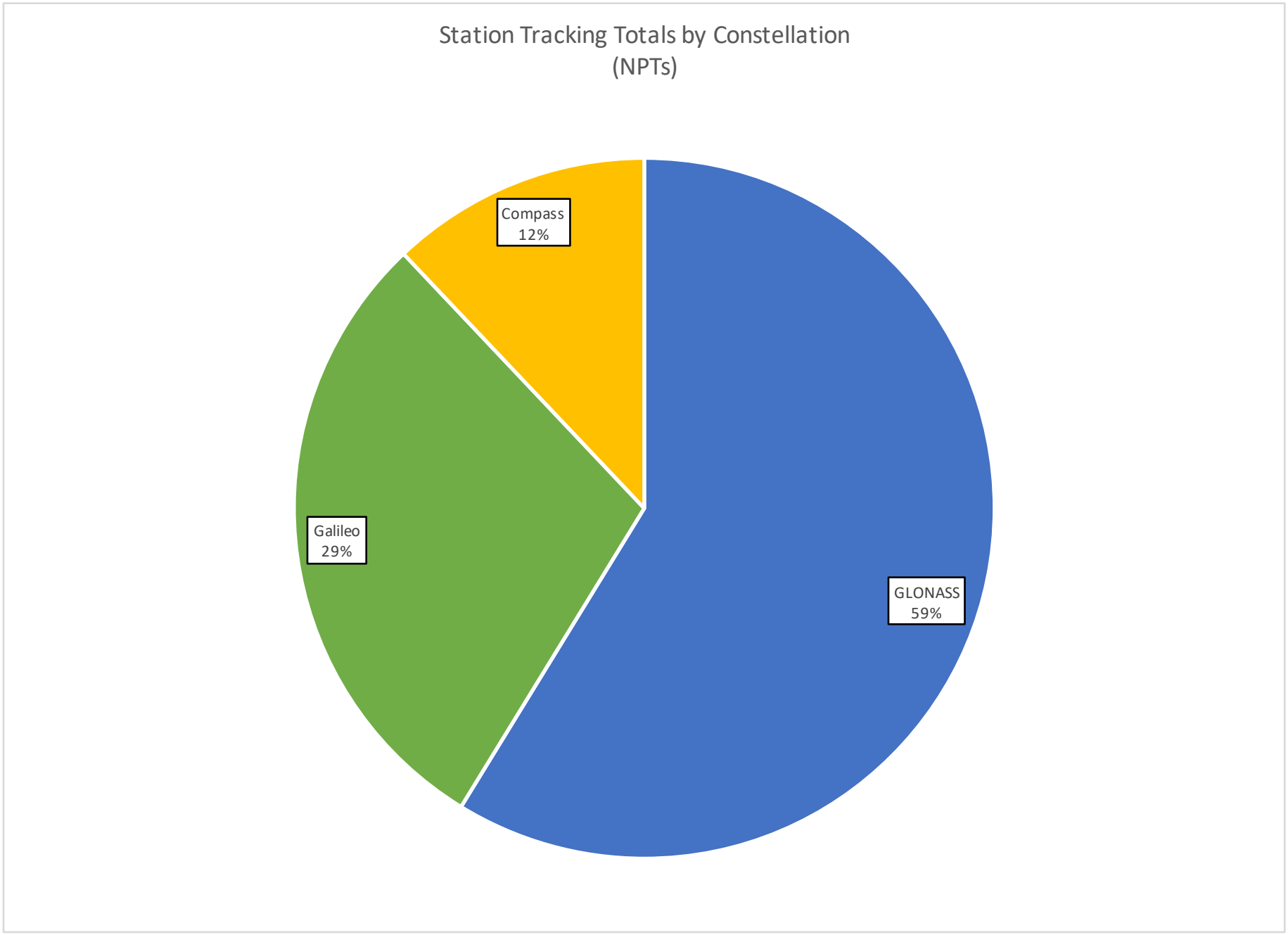
Number of NPTs		Primary												Secondary												Campaign Totals				All Tracking Totals				
		GLONASS				Galileo				Compass				GLONASS				Galileo						Compass										
Site Name	Sta.	-131	-134	-136	-137	-102	-202	-209	-210	-G1	-I3	-M3	-MS1	-128	-132	-133	-135	-103	-203	-211	-213	-215	-216	-I5	-I52	-I6B	-MS2	GLONASS	Galileo	Compass	Total	GLONASS	Galileo	Compass	Other	All
Altay	1879	32	16	15	18	4	0	2	0	0	5	2	0	34	49	62	59	0	0	0	0	0	0	0	0	0	0	285	6	7	298	768	29	7	551	1,355
Arequipa	7403	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5,977	5,977
Arkhyz	1886	24	0	3	0	4	6	0	0	0	0	0	0	19	37	30	40	6	0	0	0	0	0	0	0	0	0	153	16	0	169	339	27	0	1,187	1,553
Badary	1890	10	0	0	0	0	10	0	0	0	0	0	0	12	12	8	10	0	0	0	0	0	0	0	0	0	0	52	10	0	62	54	10	0	2,292	2,356
Baikonur	1887	59	28	9	15	17	11	23	0	0	0	7	0	67	60	55	45	6	0	0	0	0	0	0	0	0	0	338	57	7	402	434	73	7	363	877
Beijing	7249	26	52	20	4	33	52	16	14	0	28	11	12	30	66	66	55	26	43	9	26	0	0	9	0	29	6	319	219	95	633	477	280	95	3,344	4,196
Borowiec	7811	3	0	0	0	0	10	0	0	0	0	0	0	11	0	28	13	0	0	0	0	0	0	0	0	0	0	55	10	0	65	55	10	0	5,729	5,794
Brasilia	7407	18	8	11	0	0	0	0	0	0	0	0	0	8	14	0	3	0	3	0	0	0	0	0	0	0	0	62	3	0	65	102	22	0	332	456
Changchun	7237	84	33	52	39	26	56	46	6	40	42	19	0	77	82	107	87	35	30	22	40	0	0	11	0	42	1	561	261	155	977	1,166	546	155	16,961	18,828
Grasse	7845	31	41	25	9	11	11	23	28	0	0	16	5	5	0	3	0	0	0	0	0	3	4	0	0	0	0	114	80	21	215	114	80	21	1,275	1,490
Graz	7839	107	97	136	144	143	69	93	85	0	0	87	17	88	120	102	126	93	84	82	81	12	18	0	0	8	8	920	760	120	1,800	968	1,362	120	16,185	18,635
Greenbelt	7105	136	86	52	34	76	53	33	0	0	0	48	0	43	82	69	37	29	65	5	11	2	0	0	0	0	0	539	274	48	861	539	274	48	34,489	35,350
Haleakala	7119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,223	3,223
Hartebeesthoek (HARL)	7501	50	180	87	77	7	16	26	48	0	0	2	0	48	46	70	35	62	18	10	14	24	23	0	0	0	0	593	248	2	843	593	248	2	8,611	9,454
Hartebeesthoek (HRTL)	7503	27	52	61	0	22	4	6	4	0	0	18	0	13	25	23	6	17	0	4	0	0	0	2	0	0	0	207	57	20	284	423	90	20	2,687	3,220
Herstmonceux	7840	145	141	143	132	125	94	70	94	0	0	129	32	71	67	99	72	74	76	28	33	10	8	0	0	1	9	870	612	171	1,653	1,535	1,097	171	20,695	23,498
Irkutsk	1891	23	45	60	67	6	16	0	12	0	0	2	0	17	32	22	35	8	7	6	0	2	2	0	0	0	0	301	59	2	362	380	76	2	4,661	5,119
Katzively	1893	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	10	0	0	6,047	6,057
Kiev	1824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,097	1,097
Komsomolsk	1868	139	40	41	19	5	9	10	0	3	0	5	0	123	135	131	139	3	8	2	0	0	0	3	0	0	0	767	37	11	815	2,017	72	11	591	2,691
Kunming	7819	79	59	55	14	60	56	39	27	82	117	57	10	80	85	77	103	60	57	24	47	6	4	65	16	104	17	552	380	468	1,400	1,463	818	468	13,522	16,271
Matera	7941	345	292	167	275	128	96	120	101	0	0	97	7	126	50	44	45	104	80	108	16	0	15	0	0	0	7	1,344	768	111	2,223	1,346	782	111	14,870	17,109
McDonald	7080	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	304	304
Mendeleevo	1874	15	0	4	4	9	3	0	0	0	0	4	0	13	14	22	14	3	3	0	0	0	0	0	0	0	0	86	18	4	108	178	39	4	1,344	1,565
Monument Peak	7110	9	24	13	32	34	33	2	18	0	0	55	12	7	21	20	26	21	37	24	0	4	2	0	0	0	24	152	175	91	418	152	178	91	20,603	21,024
Mount Stromlo	7825	207	291	297	285	235	47	105	65	4	50	69	0	116	96	78	117	131	39	37	53	3	0	0	0	0	3	1,487	715	126	2,328	1,646	966	126	29,062	31,800
Potsdam	7841	27	38	52	23	37	49	21	19	0	0	17	0	51	91	98	77	42	52	4	20	0	0	0	0	0	6	457	244	23	724	505	454	23	22,831	23,813
Riga	1884	10	0	0	0	0	0	0	0	0	0	0	0	6	6	34	0	0	0	0	0	0	0	0	0	0	0	56	0	0	56	56	2	0	7,938	7,996
Sejong	7394	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	507	507
Shanghai	7821	91	90	103	0	97	84	72	18	53	235	110	0	80	115	139	0	95	87	25	68	0	0	35	0	202	4	618	546	639	1,803	1,387	998	639	8,658	11,682
Simeiz	1873	43	6	4	4	5	4	0	0	0	0	10	6	38	49	59	49	14	0	0	0	0	0	0	0	0	4	252	23	20	295	496	37	20	6,131	6,684
Simosato	7838	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	5	6,536	6,541
Tahiti	7124	60	51	138	36	4	0	0	13	0	0	3	0	52	3	21	6	8	0	3	4	0	0	0	0	0	0	367	32	3	402	367	32	3	2,980	3,382
Wettzell (SOSW)	7827	78	56	45	41	32	46	46	10	0	0	41	3	116	125	114	152	58	55	17	53	5	3	3	0	0	0	727	325	47	1,099	1,633	652	47	10,793	13,125
Wettzell (WETL)	9834	236	221	189	152	86	93	89	95	0	0	70	0	129	104	98	148	59	36	64	58	40	27	8	0	0	4	1,277	647	82	2,006	1,668	960	82	11,282	13,992
Yarragadee	7090	660	832	721	695	574	156	335	337	321	142	230	113	349	353	535	328	297	91	162	83	44	44	232	227	67	74	4,473	2,123	1,406	8,002	4,831	2,555	1,406	79,875	88,667
Zelenchukskaya	1889	24	3	0	0	0	0	0	0	0	0	2	0	24	26	26	38	2	0	0	0	0	0	0	0	0	0	141	2	2	145	326	2	2	2,932	3,262
Zimmerwald	7810	41	49	0	0	41	0	46	46	0	0	51	0	42	39	34	0	81	64	48	74	0	0	8	0	15	4	205	400	78	683	609	961	78	19,926	21,574
Totals:	38	2,844	2,836	2,503	2,119	1,821	1,084	1,223	1,040	503	619	1,167	217	1,895	2,004	2,274	1,865	1,334	935	684	681	155	150	376	243	468	171	18,340	9,107	3,764	31,211	26,637	13,732	3,764	396,391	440,524

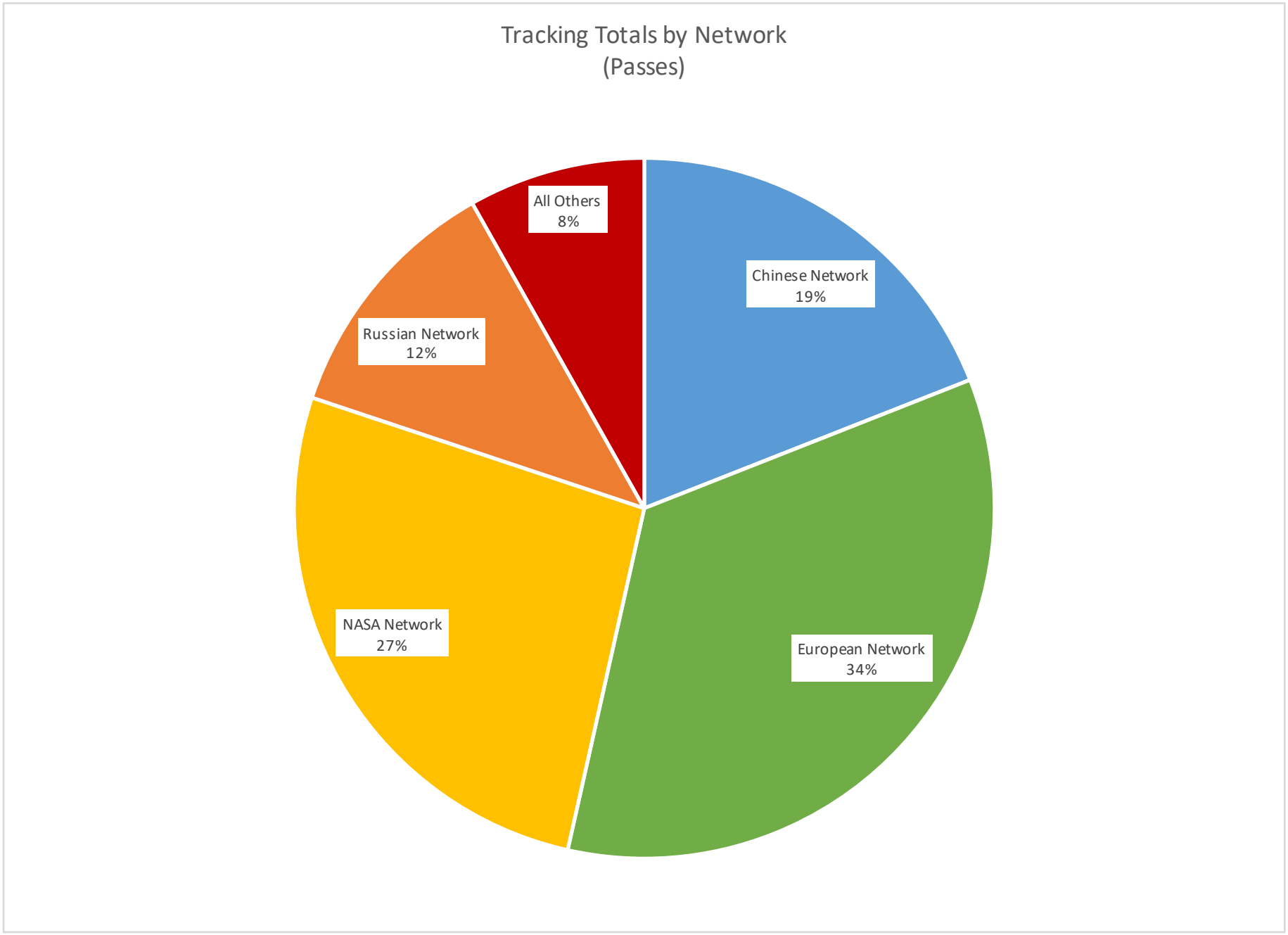
Pass Summary by Network (Campaign Constellation vs. Total)

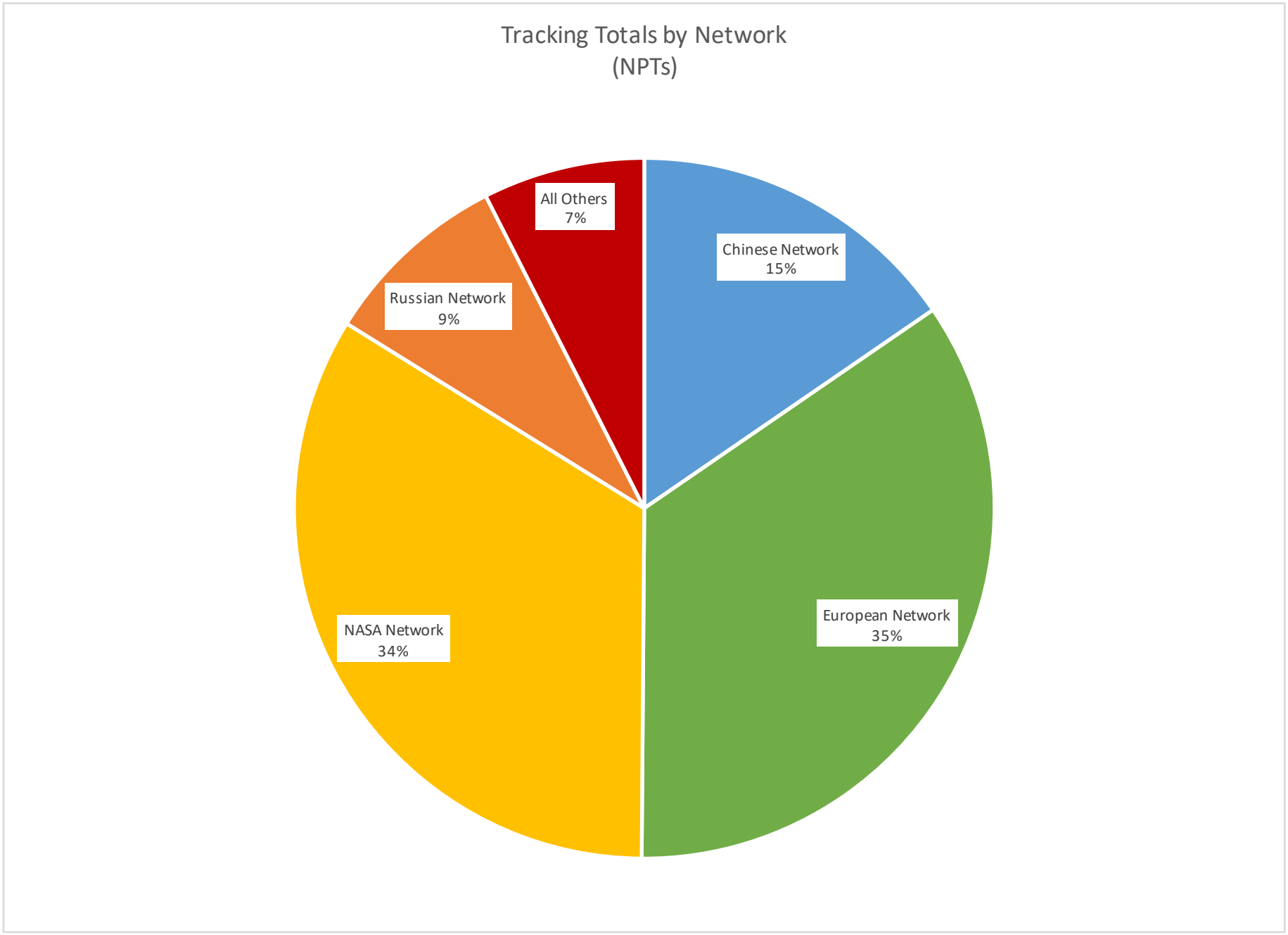
Network	Sta.	%GLO	%GAL	%COM	Tot.	GLO	GAL	COM	Tot.
Chinese Network	4	11%	15%	36%	15%	2,050	1,406	1,357	4,813
European Network	13	34%	42%	18%	35%	6,287	3,869	673	10,829
NASA Network	8	33%	31%	41%	34%	6,124	2,852	1,550	10,526
Russian Network	10	13%	3%	1%	9%	2,392	265	53	2,710
All Others	3	8%	8%	3%	7%	1,487	715	131	2,333
Totals:	38	59%	29%	12%	100%	18,340	9,107	3,764	31,211

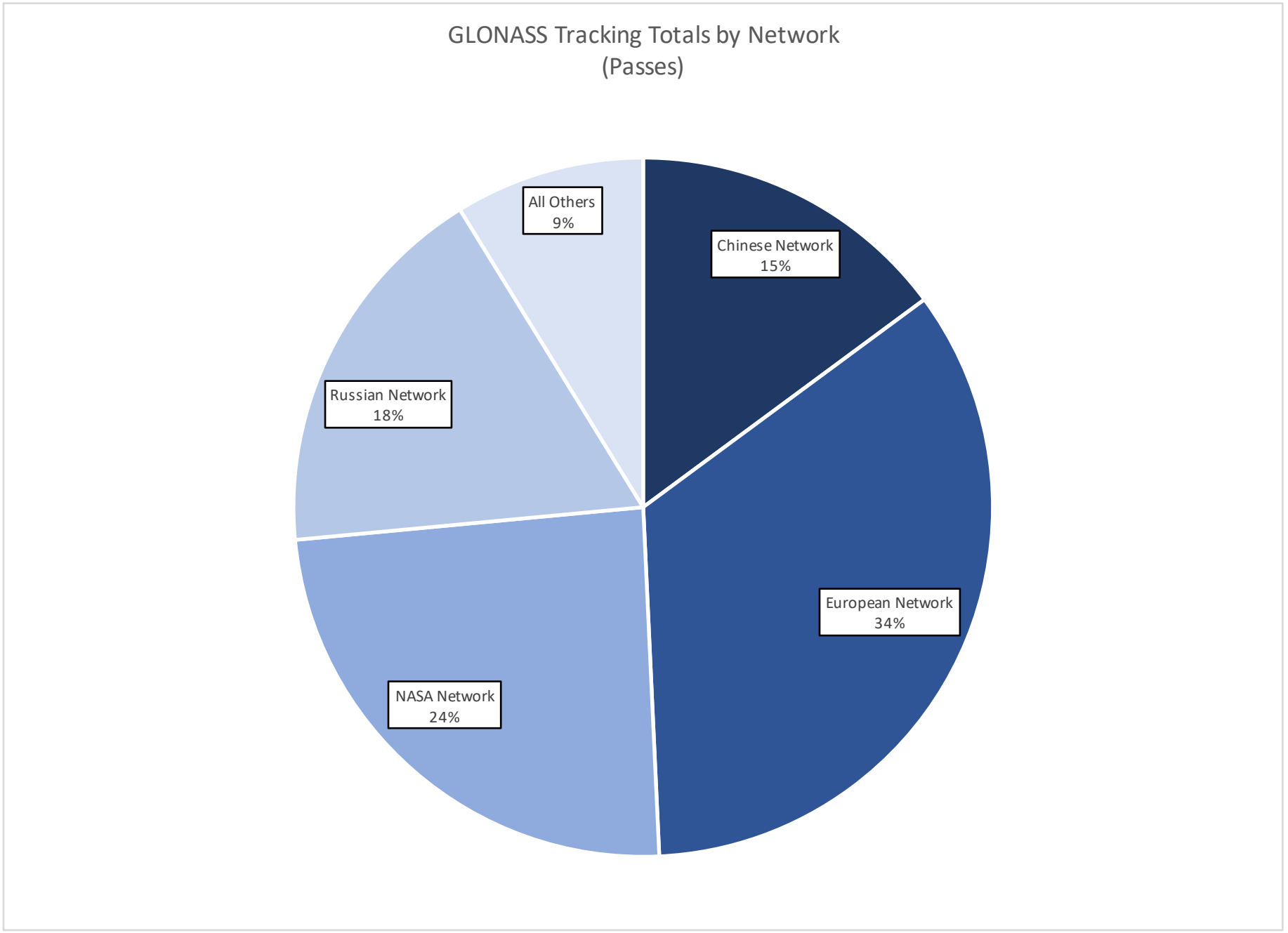
Total NPTs/constellation>100	
Total NPTs/campaign>250	

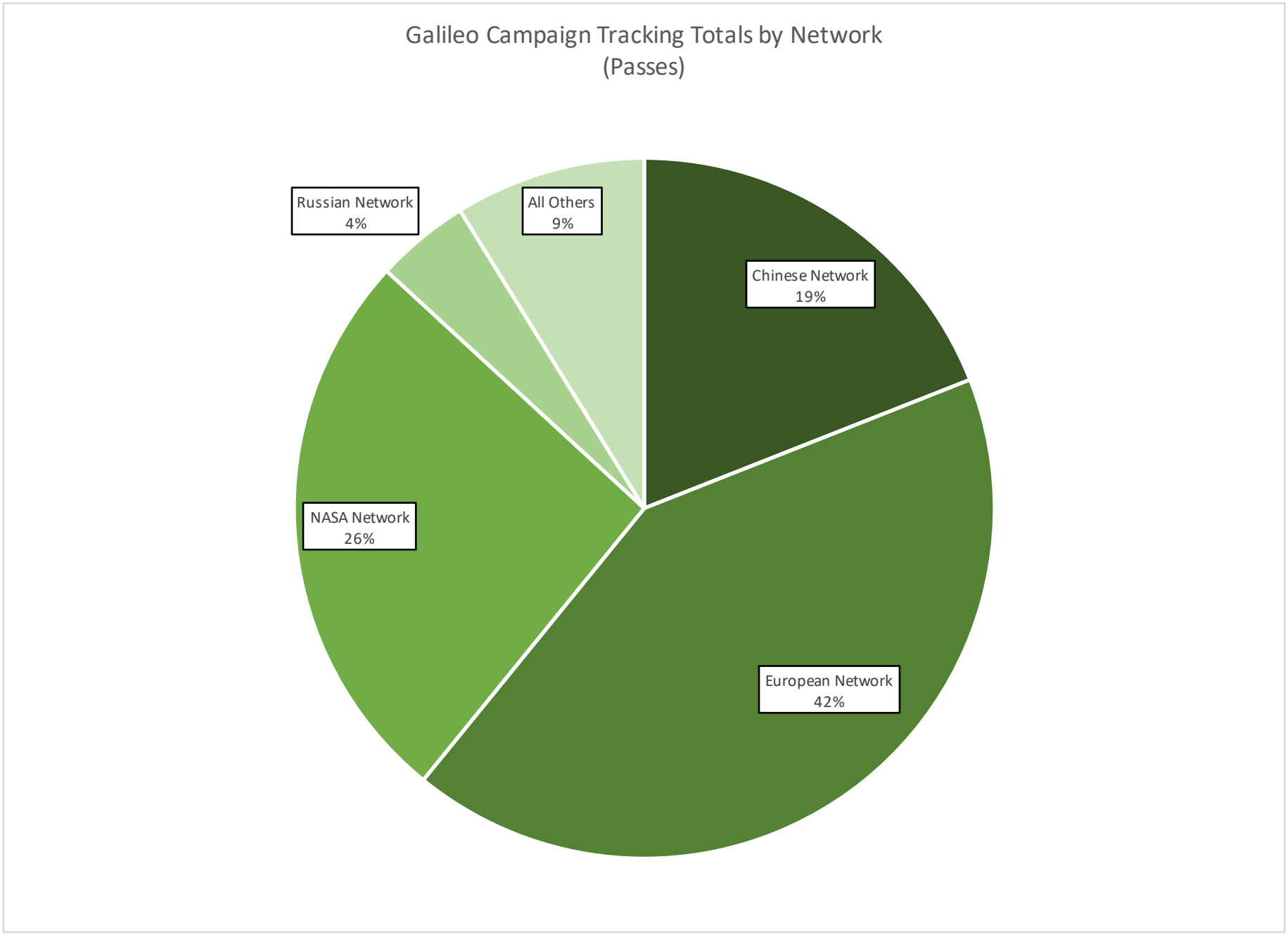

Station Tracking Totals by Constellation
(Passes)
Compass
13%
Galileo
30%
GLONASS
57%

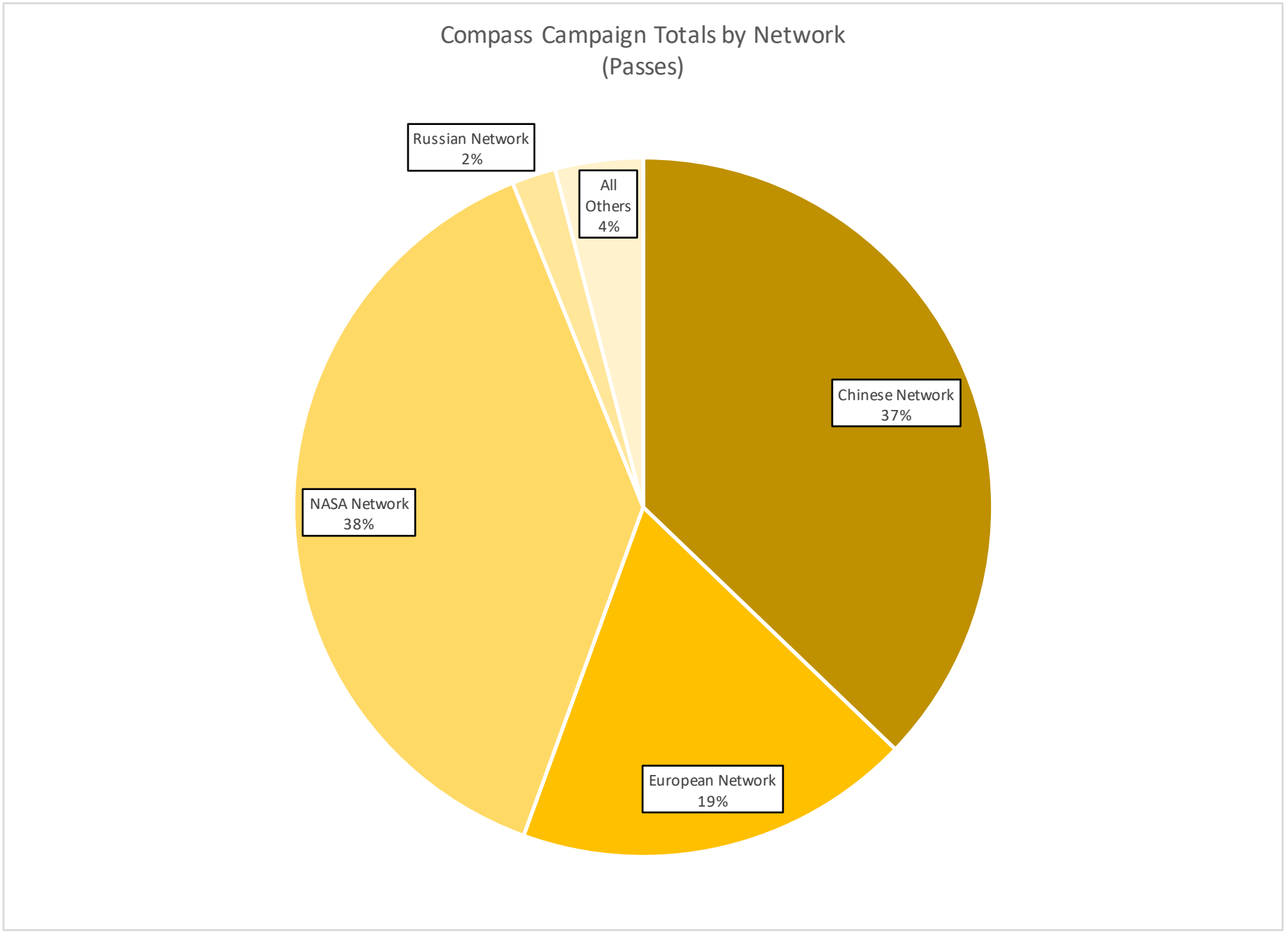

Station Tracking Totals by Constellation
(NPTs)
Compass
12%
Galileo
29%
GLONASS
59%

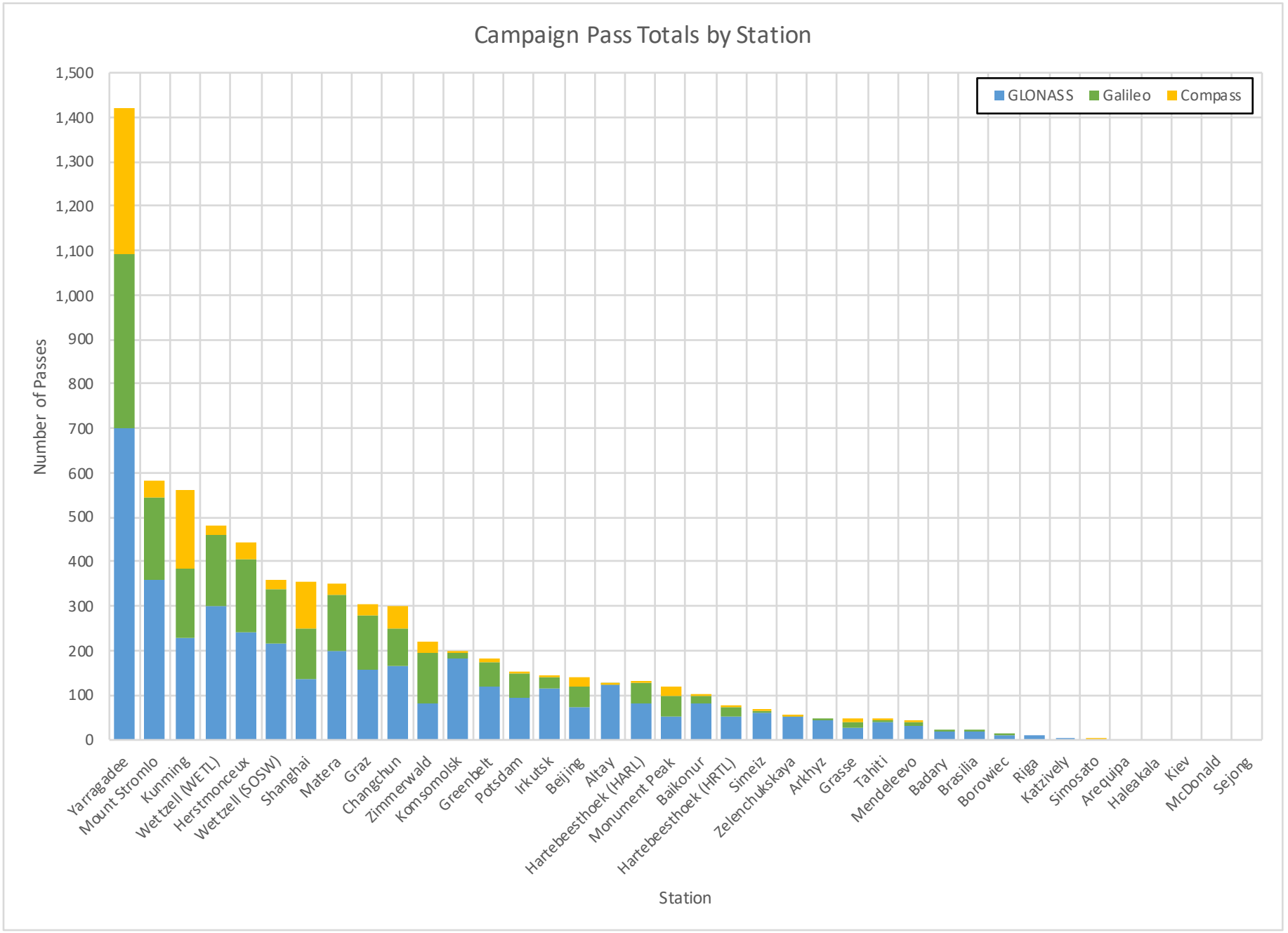

Tracking Totals by Network
(Passes)
All Others
8%
Chinese Network
19%
Russian Network
12%
NASA Network
27%
European Network
34%

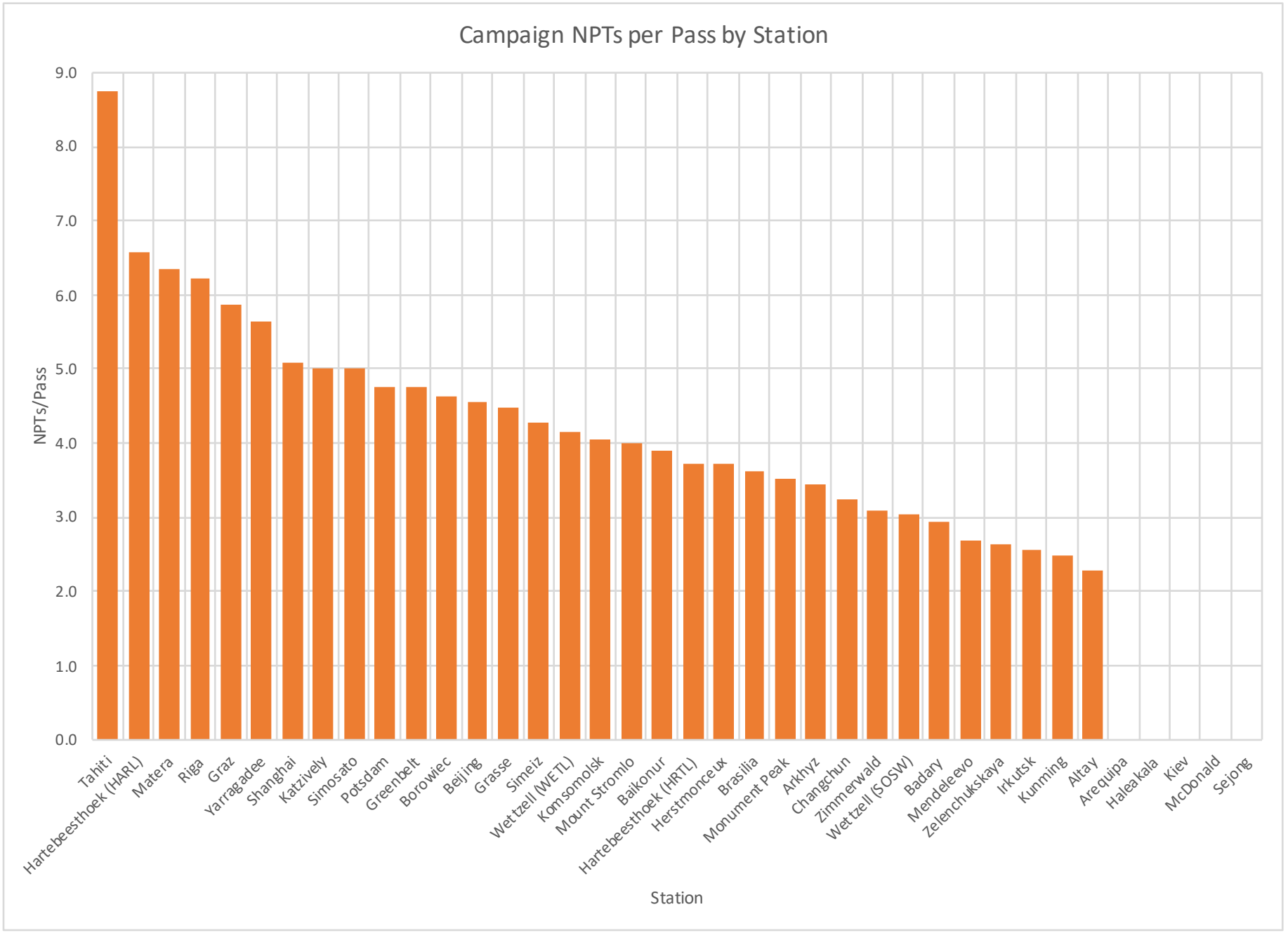

Tracking Totals by Network
(NPTs)
All Others
7%
Chinese Network
15%
Russian Network
9%
European Network
35%
NASA Network
34%

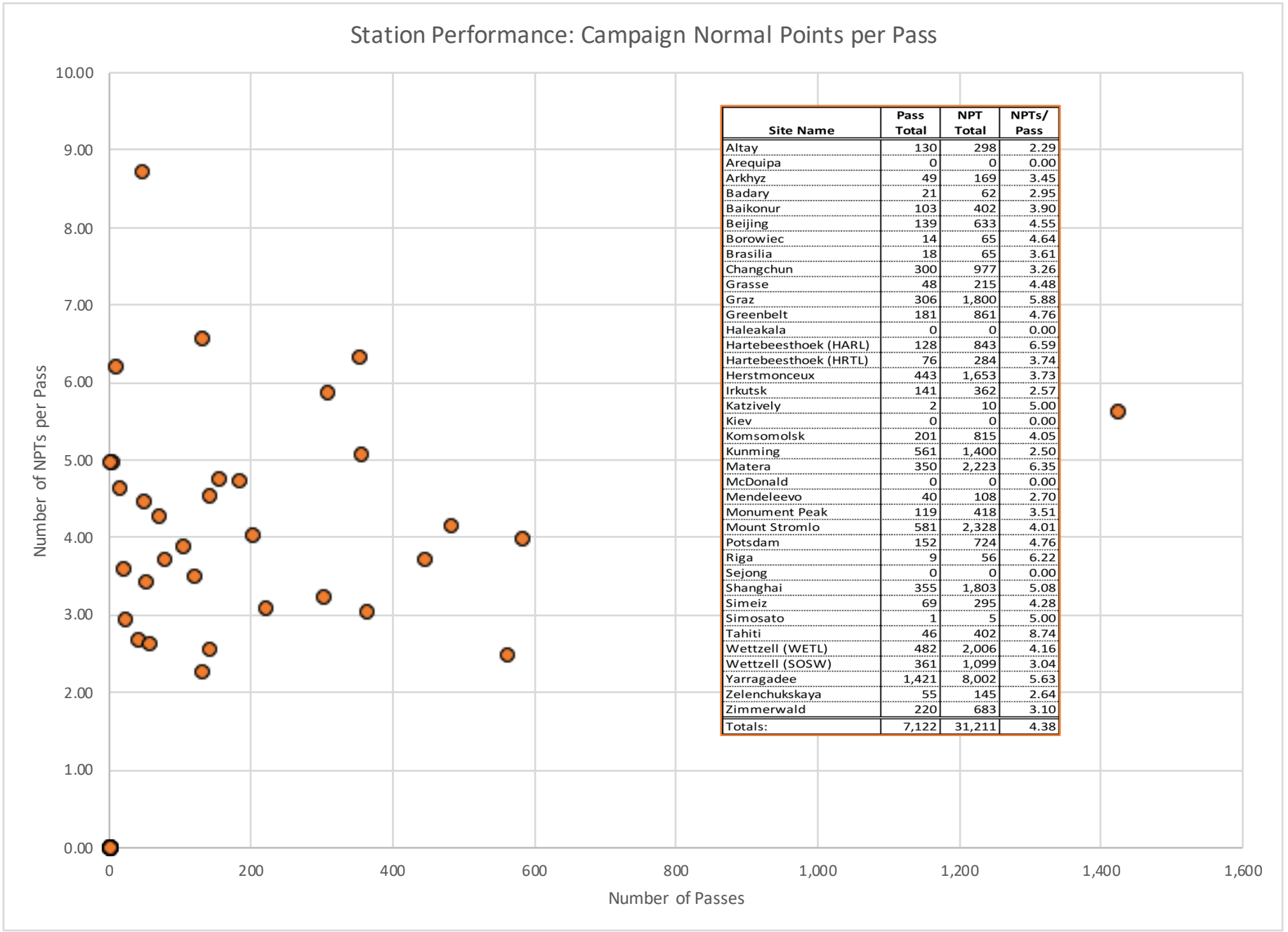

GLONASS Tracking Totals by Network
(Passes)
All Others
9%
Chinese Network
15%
Russian Network
18%
European Network
34%
NASA Network
24%


Galileo Campaign Tracking Totals by Network
(Passes)
Russian Network
4%
All Others
9%
Chinese Network
19%
NASA Network
26%
European Network
42%

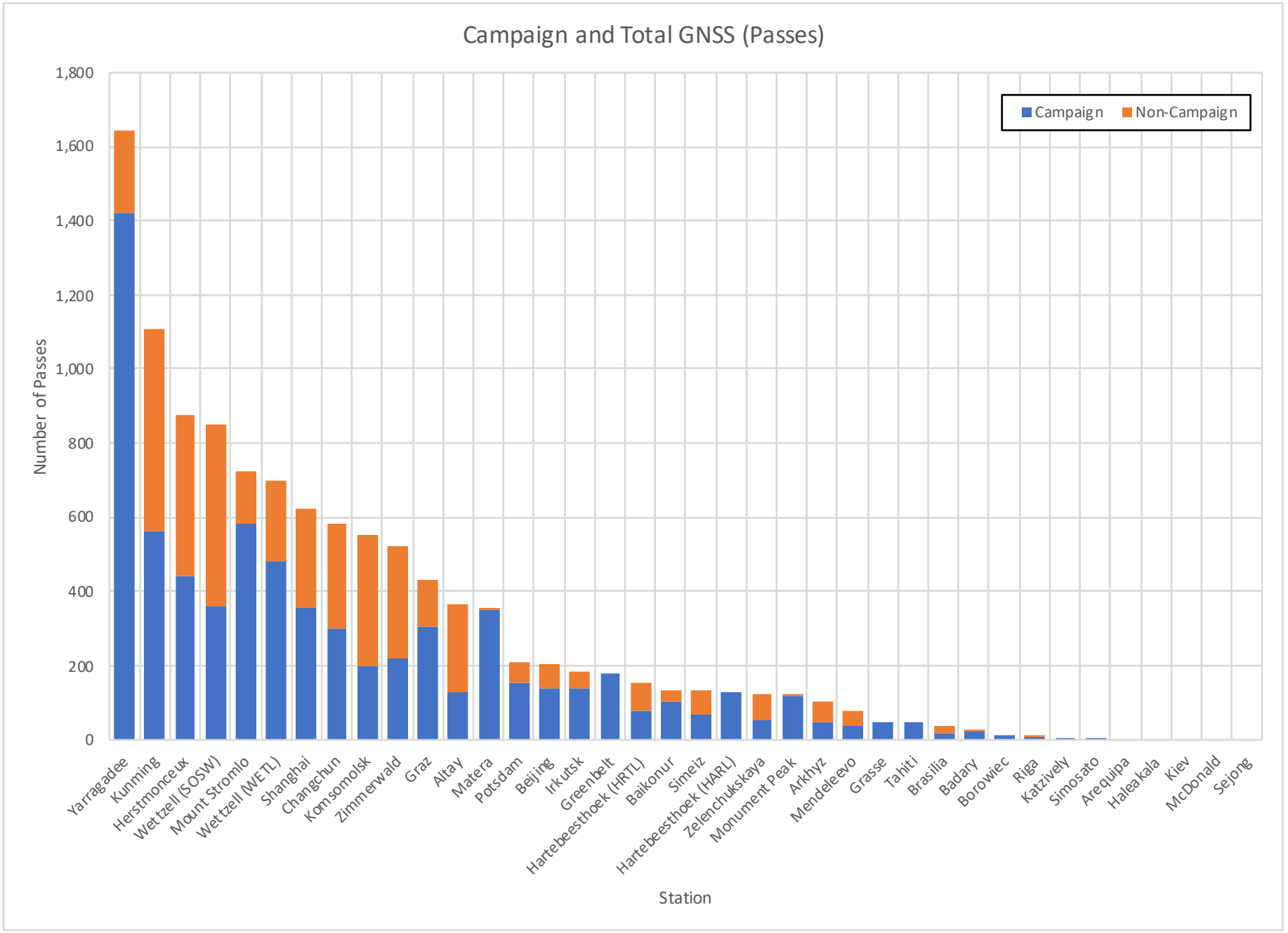

Compass Campaign Totals by Network
(Passes)
Russian Network
2%
All
Others
4%
Chinese Network
37%
NASA Network
38%
European Network
19%

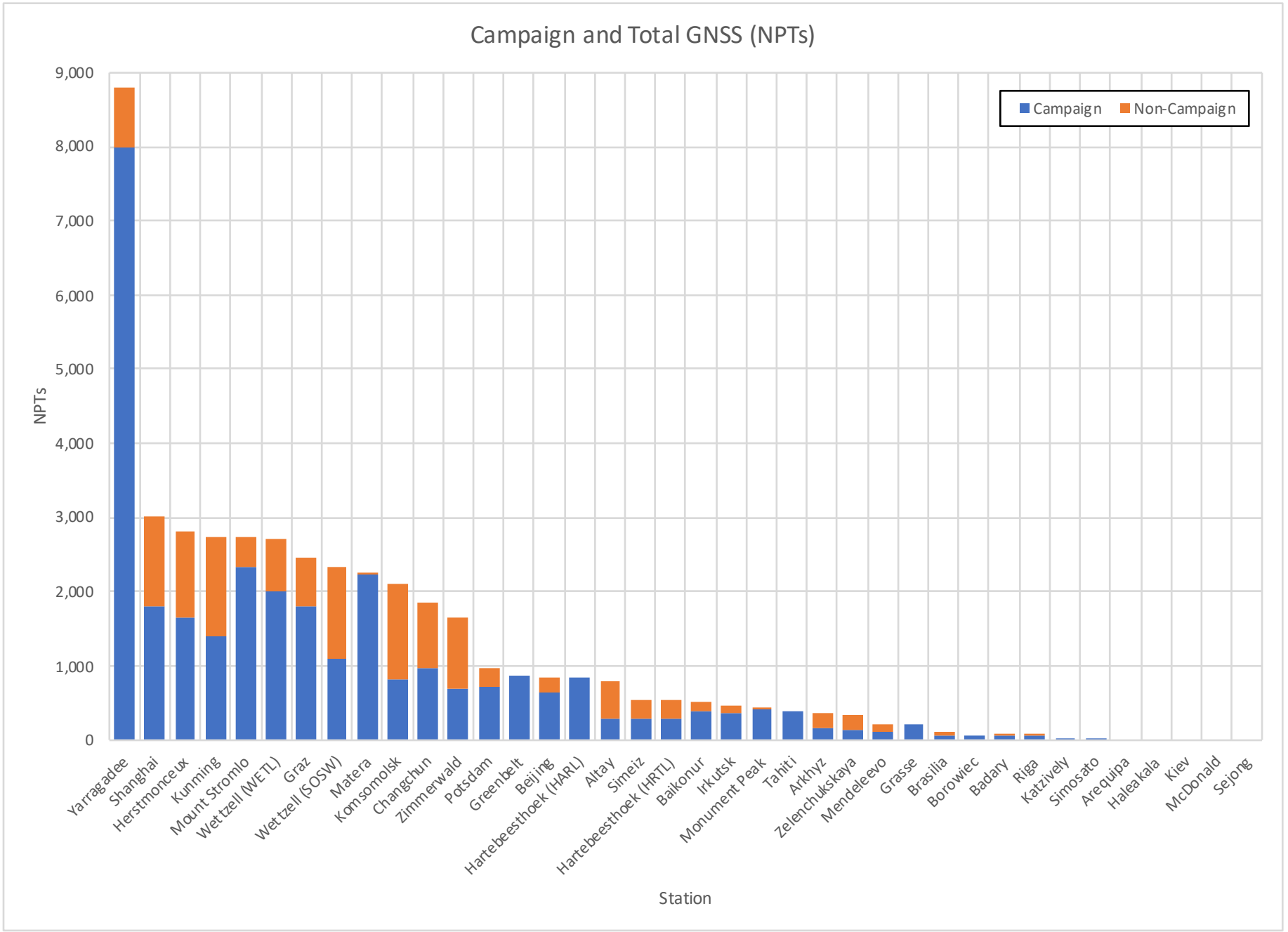

Campaign Pass Totals by Station
GLONASS
Galileo
Compass
Number of Passes
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
Yarragadee
Mount Stromlo
Kunming
Wettzell (WETL)
Herstmonceux
Wettzell (SOSW)
Shanghai
Matera
Graz
Changchun
Zimmerwald
Komsomolsk
Greenbelt
Potsdam
Irkutsk
Beijing
Altay
Hartebeesthoek (HARL)
Monument Peak
Baikonur
Hartebeesthoek (HRTL)
Simeiz
Zelenchukskaya
Arkhyz
Grasse
Tahiti
Mendeleevo
Badary
Brasilia
Borowiec
Riga
Katzively
Simosato
Arequipa
Haleakala
Kiev
McDonald
Sejong
Station


Campaign NPTs per Pass by Station
NPTs/Pass
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Tahiti
Hartebeesthoek (HARL)
Matera
Riga
Graz
Yarragadee
Shanghai
Katzively
Simosato
Potsdam
Greenbelt
Borowiec
Beijing
Grasse
Simeiz
Wettzell (WETL)
Komsomolsk
Mount Stromlo
Baikonur
Hartebeesthoek (HRTL)
Herstmonceux
Brasilia
Monument Peak
Arkhyz
Changchun
Zimmerwald
Wettzell (SOSW)
Badary
Mendeleevo
Zelenchukskaya
Irkutsk
Kunming
Altay
Arequipa
Haleakala
Kiev
McDonald
Sejong
Station



Site Name	Pass Total	NPT Total	NPTs/ Pass
Altay	130	298	2.29
Arequipa	0	0	0.00
Arkhyz	49	169	3.45
Badary	21	62	2.95
Baikonur	103	402	3.90
Beijing	139	633	4.55
Borowiec	14	65	4.64
Brasilia	18	65	3.61
Changchun	300	977	3.26
Grasse	48	215	4.48
Graz	306	1,800	5.88
Greenbelt	181	861	4.76
Haleakala	0	0	0.00
Hartebeesthoek (HARL)	128	843	6.59
Hartebeesthoek (HRTL)	76	284	3.74
Herstmonceux	443	1,653	3.73
Irkutsk	141	362	2.57
Katzively	2	10	5.00
Kiev	0	0	0.00
Komsomolsk	201	815	4.05
Kunming	561	1,400	2.50
Matera	350	2,223	6.35
McDonald	0	0	0.00
Mendeleevo	40	108	2.70
Monument Peak	119	418	3.51
Mount Stromlo	581	2,328	4.01
Potsdam	152	724	4.76
Riga	9	56	6.22
Sejong	0	0	0.00
Shanghai	355	1,803	5.08
Simeiz	69	295	4.28
Simosato	1	5	5.00
Tahiti	46	402	8.74
Wettzell (WETL)	482	2,006	4.16
Wettzell (SOSW)	361	1,099	3.04
Yarragadee	1,421	8,002	5.63
Zelenchukskaya	55	145	2.64
Zimmerwald	220	683	3.10
Totals:	7,122	31,211	4.38


Campaign and Total GNSS (Passes)
Campaign
Non-Campaign
Number of Passes
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
Yarragadee
Kunming
Herstmonceux
Wettzell (SOSW)
Mount Stromlo
Wettzell (WETL)
Shanghai
Changchun
Komsomolsk
Zimmerwald
Graz
Altay
Matera
Potsdam
Beijing
Irkutsk
Greenbelt
Hartebeesthoek (HRTL)
Baikonur
Simeiz
Hartebeesthoek (HARL)
Zelenchukskaya
Monument Peak
Arkhyz
Mendeleevo
Grasse
Tahiti
Brasilia
Badary
Borowiec
Riga
Katzively
Simosato
Arequipa
Haleakala
Kiev
McDonald
Sejong
Station


Campaign and Total GNSS (NPTs)
Campaign
Non-Campaign
NPTs
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
Yarragadee
Shanghai
Herstmonceux
Kunming
Mount Stromlo
Wettzell (WETL)
Graz
Wettzell (SOSW)
Matera
Komsomolsk
Changchun
Zimmerwald
Potsdam
Greenbelt
Beijing
Hartebeesthoek (HARL)
Altay
Simeiz
Hartebeesthoek (HRTL)
Baikonur
Irkutsk
Monument Peak
Tahiti
Arkhyz
Zelenchukskaya
Mendeleevo
Grasse
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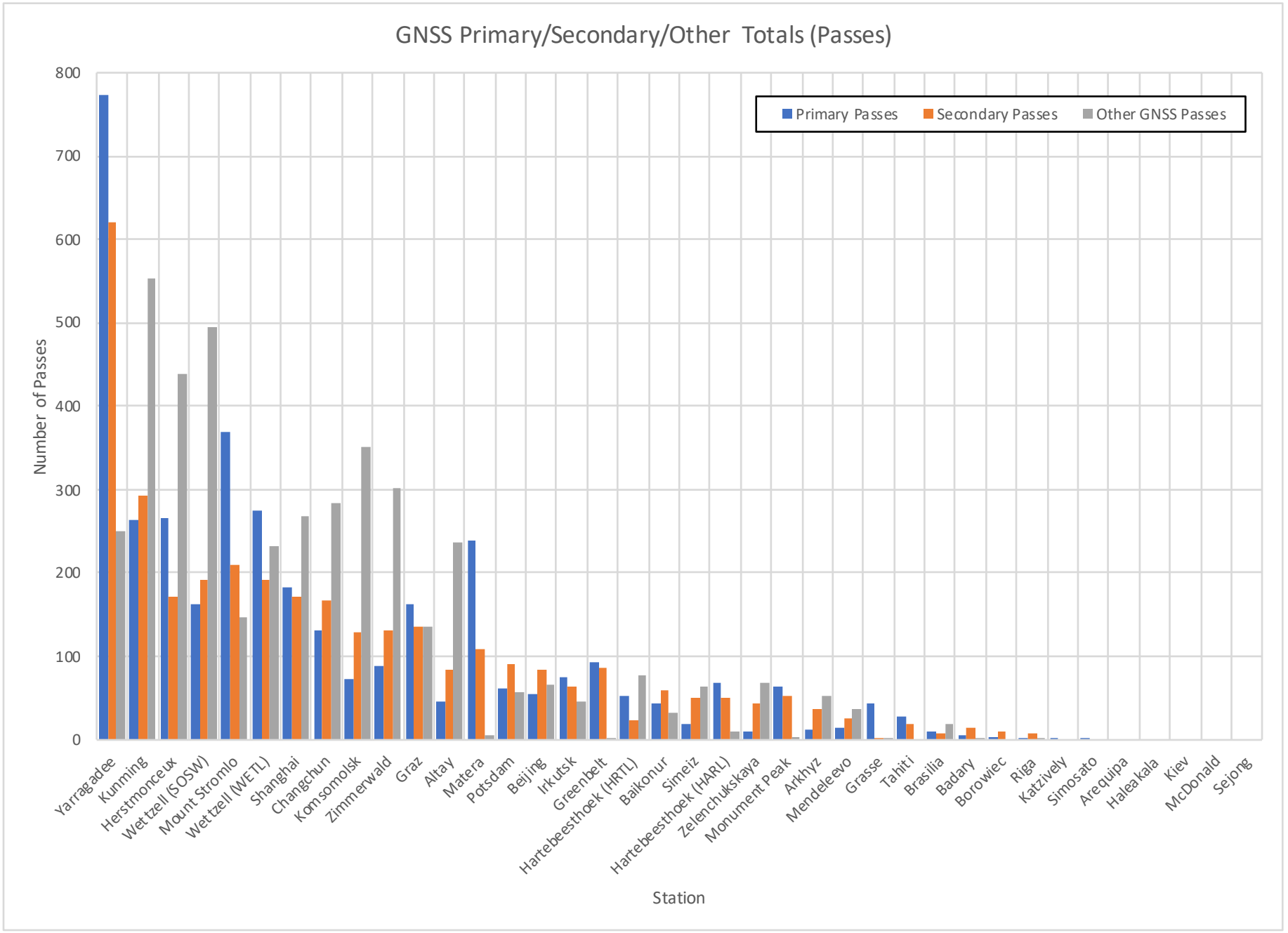
Badary
Riga
Katzively
Simosato
Arequipa
Haleakala
Kiev
McDonald
Sejong
Station


GNSS Primary/Secondary/Other Totals (Passes)
Primary Passes
Secondary Passes
Other GNSS Passes
Number of Passes
800
700
600
500
400
300
200
100
0
Yarragadee
Kunming
Herstmonceux
Wettzell (SOSW)
Mount Stromlo
Wettzell (WETL)
Shanghai
Changchun
Komsomolsk
Zimmerwald
Graz
Altay
Matera
Potsdam
Beijing
Irkutsk
Greenbelt
Hartebeesthoek (HRTL)
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Haleakala
Kiev
McDonald
Sejong
Station

18-May-2018

Observations from the First 2018 ILRS LARGE Campaign

(February 15 – May 15, 2018)

- The Campaign lasted about 90 days. An average of one pass per constellation per day would amount to a total of 270 passes; nine stations met or nearly met this tracking level while fifteen stations obtained 100 passes or more.
    - Why did more than half the stations take so little data? What is limiting their performance?
- About 60% of the tracking (passes and NP's) was on GLONASS.
    - Stations need to put a little more effort in tracking satellites in the other constellations.
- The European network benefitted from a large number of stations; the NASA network benefitted from the extraordinary performance of the Yarragadee station.
    - If we had organized this campaign differently and included an Australian network with Yarragadee and Mt. Stromlo, the charts would have looked much different.
- With the Russian stations in Brasilia, Hartebeesthoek, and the planned stations in Mexico, Grand Canary, and Java we expect the Russian participation to grow significantly.
- Some stations obtained more data on the non-campaign satellites than they did on the campaign satellites.
    - If these stations had focused on just the campaign satellites would they have taken more data on the campaign satellites? Same question with NP's.
- Some stations obtained a large number of NP's per pass; but this is most valuable if these points are spread out to sample the pass.
- Did daylight conditions influence the selection of satellites supported?
- The final chart shows the performance of each station in terms of number of passes taken and average number of NP's per pass. Our congratulations to those stations on the upper right quadrant of the graph.
- We need to recognize that stations operate under a wide range of different conditions and constraints; we hope that all stations will benefit from experience and improve their performance over time; SLR is unique and we need to keep improving our data products including those for our newer GNSS users.

18-May-2018

Planning for the Next 2018 ILRS LARGE Campaigns

The ILRS would like to organize the next 3-month LARGE campaign, starting on or about June 15.

Some options for the second 2018 LARGE Campaign:

1. Run a similar campaign, but suppress the predictions from the GLONASS, Galileo, and Compass satellites not selected for the campaign.
2. Revert to the full slate of GNSS satellites and let the stations do the best they can, with the caveat the they should place some additional stress on the Galileo and Compass/Beidou constellations.
3. Run the campaign using the same conditions as the first campaign for 2018, but ask some of the more prolific stations to expand their coverage to a wider set of GNSS satellites.

The ILRS CB has asked the constellations for their feedback on this first campaign and suggestions for future campaigns.

This report includes charts to highlight campaign performance and issues. If you have other suggestions that could be included in future campaign reports, please inform the CB.

The primary objective of these campaigns is to maximize the SLR utility to the data users. The ILRS must, of course, balance its resource among all users.