Clinic Session: Booth #3

20th International Workshop on Laser Ranging
10-14 October 2016, GFZ Potsdam, Germany

Precise quantity & quality assessment of SLR data

1. Global Performance Report (Torrence)
2. Hit Rate
3. LAGEOS POD Residual vs Cal Scatter
4. Cal Time Series & Interval
5. Bias wrt System Delay, Intensity, Bin RMS, Sun Elevation

(all charts available via ILRS NESC Forum)

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With a help of

Mark H Torrence (NASA GSFC)

Quick Links

- Network Map
- List of Stations
- Monthly Report Card
- Quarterly Report Card
- Network Status Page
- Procedure for estimating laser beam divergence
- Recent Station Upgrades

Table 1

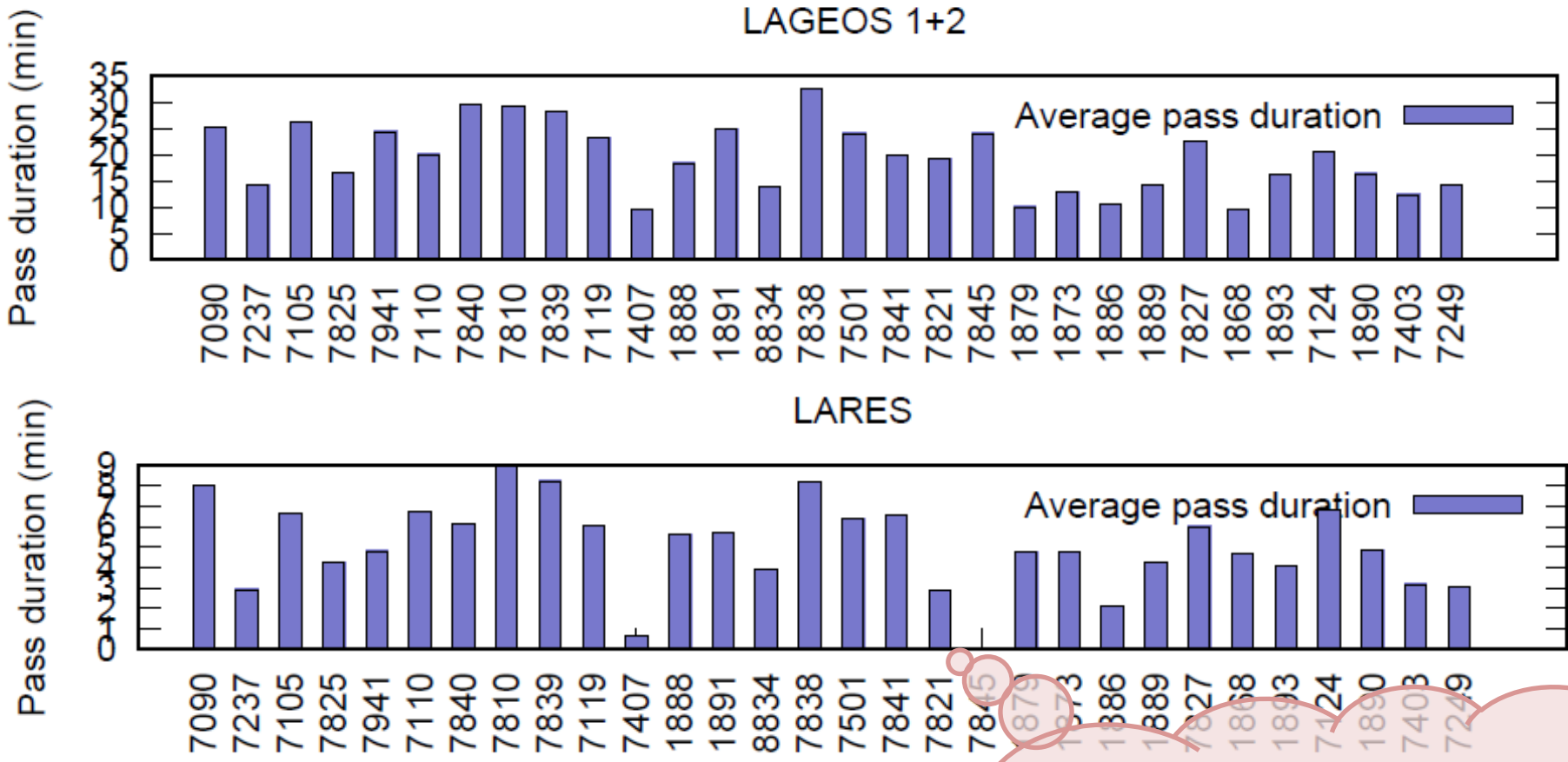
Site Information		Data Volume									Data Quality		
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14
Location	Station Number	LEO pass Tot	LAGEOS pass Tot	High pass Tot	Total passes	LEO NP Total	LAGEOS NP Total	High NP Total	Total NP	Minutes of Data	Cal. RMS	Star RMS	LAG RMS
Baseline		1000	400	100	1500								
Yarragadee	7090	15228	2769	7088	25085	278826	23782	25469	328077	180805	5.3	7.8	8.4
Changchun	7237	11183	1403	8208	20794	87895	7292	20664	115851	57585	4.3	8.1	9.9
Mount_Stromlo_2	7825	6689	1170	2314	10173	93457	8209	9081	110747	70758	3.2	5.5	7.6
Greenbelt	7105	6753	1235	1610	9598	121864	10929	5744	138537	80724	4.1	7.6	10.4
Herstmonceux	7840	3777	703	2960	7440	48689	6850	9198	64737	40165	3.6	9.3	12.5
Graz	7839	3758	613	2872	7243	69575	4188	14265	88028	46951	2.1	3.8	5.0
Zimmerwald_532	7810	4093	677	2190	6960	68064	6749	13096	87909	53997	5.5	8.8	11.8
Monument_Peak	7110	5014	715	943	6672	87031	5698	2551	95280	52946	4.6	7.3	10.4
Wettzell	8834	3154	366	2467	5987	26811	2392	10236	39439	23467	7.4	11.4	14.3
Matera_MLRO	7941	2179	1038	2053	5270	24143	9107	8006	41256	42873	1.1	2.7	4.2
Potsdam_3	7841	2976	316	258	3550	49215	3095	1536	53846	30875	7.3	10.3	11.8
Shanghai_2	7821	1593	266	1680	3539	12758	1955	6751	21464	12165	11.8	11.2	9.4
Badary	1890	2344	140	229	2713	24376	1082	887	26345	15568	-0.1	30.0	32.6
Arequipa	7403	2568	136		2704	27530	771		28301	17531	6.1	10.6	10.3
Haleakala	7119	2068	572		2640	31480	5259		36739	30610	5.0	8.5	10.6
Altay	1879	300	248	1972	2520	2655	1415	6993	11063	6610		45.7	32.9
Komsomolsk	1868	137	198	1868	2203	1223	1118	6232	8573	4489			34.2
Svetloe	1888	1497	380	292	2169	15276	3222	923	19421	17764	-0.1	36.4	33.9
Wettzell	7827	864	198	1050	2112	10955	1488	3607	16050	9119	7.3	10.2	10.6
Hartebeesthoek	7501	1458	348	256	2062	24773	3410	1496	29679	22435	9.8	19.4	19.0
Brasilia	7407	264	425	1363	2052	683	1477	5628	7788	4880	31.0	22.8	26.9
Arkhyz	1886	459	213	1277	1949	2934	866	4622	8422	4622		35.1	33.5
Simeiz	1873	1424	236	146	1806	17019	1557	709	19285	12749		11.2	12.7
Katzively	1893	1503	196	78	1777	16177	1470	487	18134	12647	25.4	9.6	10.2
Simosato	7838	1321	353	31	1705	25532	5751	249	31532	33995	6.1	9.2	13.9
Irkutsk	1891	416	377	882	1675	4374	4150	2714	11238	15927	-0.1	27.2	32.6
San_Fernando	7824	1291	86	42	1419	11466	415	119	12000	6508	5.6		
Zelenchukskya	1889	668	204	533	1405	6084	1484	1665	9233	8103	-0.1	24.4	35.7
Papeete	7124	764	178	450	1392	11635	1395	1667	14697	10403	8.0	8.6	9.5
Beijing	7249	468	109	328	905	4104	851	1322	6277	4695	3.8	10.4	13.2
Grasse_MEO	7845	382	266	52	700	13042	3102	331	16475	13780	8.7		15.6
Kiev	1824	513	54		567	3150	225		3375	2672	12.6	22.7	16.6
Mendeleevo	1874	155	106	280	541	2307	1530	930	4767	6005	-0.1	35.4	35.8
McDonald	7080	186	29	10	225	1292	133	31	1456	1129	9.5	12.0	12.1
Baikonur	1887	14	42	163	219	91	380	524	995	1231			
Borowiec	7811	100	47		147	1794	442		2236	2148	10.5	20.3	14.5

Table 2

Site Information		DGFI Orbital Analysis				Hitotsubashi Univ. Orbital Analysis				JCET Orbital Analysis				MCC Orbital Analysis				SHAO Orbital Analysis			
Station Location	Station Number	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG. NP	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG. NP	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG. NP	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG. NP	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG. NP
Baseline		10.0	20.0	10.0	95	10.0	20.0	10.0	95	10.0	20.0	10.0	95	10.0	20.0	10.0	95	10.0	20.0	10.0	95
Yarragadee	7090	3.5	14.7	1.5	100.0	2.2	6.9	1.7	100.0	2.5	18.2	1.8	99.7	2.6	14.8	1.6	97.9				
Changchun	7237	4.9	27.2	5.8	99.9	3.8	27.1	4.3	100.0	2.2	33.2	6.6	98.4	3.6	15.6	14.7	98.6				
Mount_Stromlo_2	7825	3.4	14.5	3.2	100.0	2.6	7.2	2.1	100.0	2.0	19.3	3.2	100.0	2.7	12.6	5.1	98.1				
Greenbelt	7105	3.6	10.5	5.6	99.9	2.3	7.5	7.2	100.0	2.4	16.7	7.7	99.6	2.4	11.6	8.0	97.3				
Herstmonceux	7840	1.9	10.0	4.0	100.0	1.1	6.1	1.7	100.0	0.8	13.6	3.7	100.0	1.5	9.5	1.6	99.5				
Graz	7839	1.8	9.0	4.1	100.0	1.2	6.1	2.4	100.0	0.7	13.7	5.1	100.0	1.9	7.7	3.2	98.4				
Zimmerwald_532	7810	2.2	10.0	5.3	99.6	1.5	7.9	2.7	100.0	1.3	15.8	3.8	100.0	2.3	10.4		98.5				
Monument_Peak	7110	5.4	22.7	5.8	99.7	2.8	19.1	4.0	100.0	2.6	25.4	7.3	98.7	2.4	12.9	5.0	97.4				
Wettzell	8834	3.0	10.0	3.9	100.0	2.5	8.2	3.5	100.0	2.2	12.4	4.2	100.0	2.9	8.8	5.4	96.7				
Matera_MLRO	7941	2.3	11.9	9.8	100.0	1.4	8.2	2.6	100.0	1.3	17.9	7.0	100.0	1.6	12.4	3.9	99.6				
Potsdam_3	7841	3.9	8.4	4.1	99.3	2.0	8.3	2.7	100.0	2.0	13.7	3.9	99.1	2.3	8.0	3.4	95.4				
Shanghai_2	7821	2.0	15.1	12.3	100.0	1.2	14.0	9.6	100.0	1.0	22.5	8.8	100.0	1.5	16.7	10.9	99.0				
Badary	1890	9.5	15.7	10.2	100.0	7.1	15.2	8.7	100.0	6.1	18.5	9.9	94.6	7.6	15.5	18.8	93.7				
Arequipa	7403	6.7	36.4	16.4	96.3	3.3	35.4	18.6	100.0	3.0	40.5	17.4	95.2	4.0	38.0	20.0	92.8				
Haleakala	7119	4.3	20.1	5.3	99.3	2.7	8.4	2.0	100.0	2.6	18.0	2.9	99.0	3.7	14.4	6.1	98.9				
Altay	1879	6.6	25.5	9.1	100.0	3.5	24.4	7.0	100.0	3.1	28.8	6.7	100.0	3.8	26.9	12.9	99.1				
Komsomolsk	1868	13.1	46.9	31.7	100.0	6.3	42.0	22.8	100.0	4.2	39.9	35.5	98.4	4.9	24.3	19.0	98.7				
Svetloe	1888	12.4	23.9	6.5	100.0	10.1	25.3	7.0	100.0	5.4	32.8	8.6	88.1	8.8	11.9	8.0	90.0				
Wettzell	7827	2.3	9.7	7.8	100.0	1.5	7.9	1.9	100.0	1.3	17.5	7.4	100.0	1.7	15.0		97.5				
Hartebeesthoek	7501	5.7	17.4	3.6	100.0	3.8	12.4	3.3	100.0	3.6	21.1	4.5	97.9	3.0	10.4	3.4	96.1				
Brasilia	7407	5.3	24.7	6.4	100.0	4.6	18.7	6.6	100.0	2.6	30.5	10.7	97.9	5.9	25.3	12.9	92.5				
Arkhyz	1886	9.6	38.2	18.7	100.0	7.7	27.8	15.3	100.0	4.1	36.5	20.9	99.3	6.9	24.4	10.0	98.7				
Simeiz	1873	27.0	27.9	27.2	99.1	24.0	28.3	25.2	100.0	6.4	38.7	20.6	64.1	21.8	28.6	18.8	91.8				
Katzively	1893	14.0	17.9	6.6	97.1	12.4	14.4	4.0	100.0	5.2	25.3	13.9	81.2	9.3	16.0		90.3				
Simosato	7838	4.9	16.1	4.0	99.9	3.5	13.5	5.0	100.0	3.1	15.5	5.9	98.7	4.1	11.5	17.1	99.8				
Irkutsk	1891	7.6	10.4	5.4	100.0	6.1	12.2	8.0	100.0	4.5	22.8	4.1	95.9	5.8	15.3	6.0	94.1				
Zelenchukskya	1889	7.5	25.8	8.9	100.0	5.6	26.0	11.1	100.0	4.8	21.9	8.6	99.2	5.1	22.2	12.8	96.8				
Papeete	7124	4.7	14.3	6.7	100.0	2.6	11.7	3.4	100.0	2.9	17.4	6.8	99.5	4.0	23.2	9.4	97.1				
Beijing	7249	7.9	14.7		99.4	6.5	16.5		100.0	4.9	16.7		96.9	6.4	14.6		99.0				
Grasse_MEO	7845	4.6	12.9	4.9	100.0	2.9	14.0	2.2	100.0	2.9	22.2	7.5	99.7	3.0	18.6	8.5	96.5				
Mendeleevo	1874	6.1	9.4	7.1	100.0					4.2	14.0	5.1	97.4	5.5	14.2	6.6	97.8				
Baikonur	1887	6.0	24.0		100.0	4.8	18.5		100.0					5.2	17.3		98.1				
Borowiec	7811	3.4	8.7	28.4	96.9	3.0	9.6	8.2	100.0	2.2	11.3	29.8	99.2	3.2	7.5		100.0				
Riga	1884	12.2	40.9		100.0	7.4	40.1		100.0					9.3	15.0		97.1				

Pass duration is perhaps longer

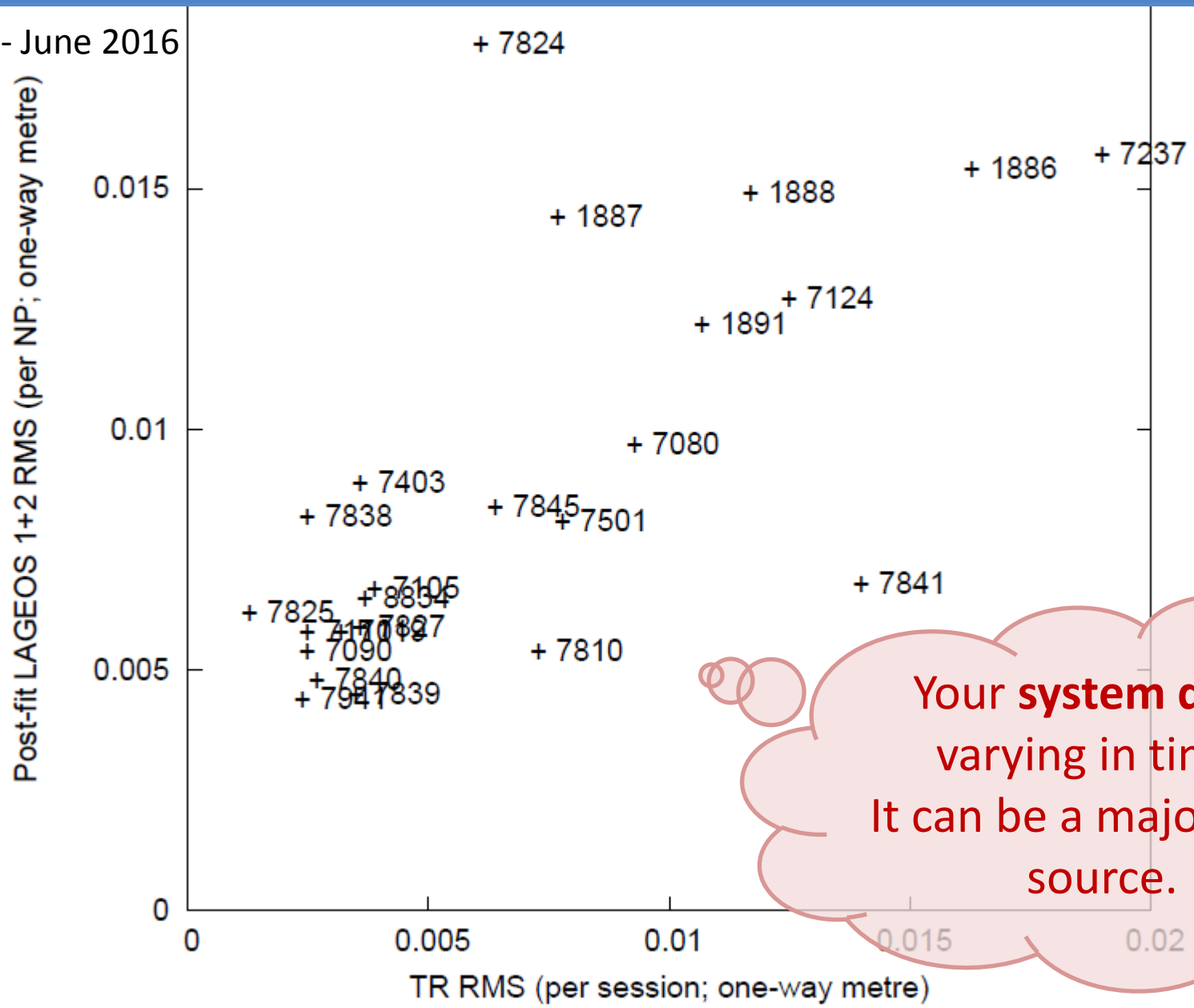
July 2015- June 2016



Do not stop tracking just after a few NPs. Think interleaving for high targets.

Suspect your calibration!

July 2015- June 2016



Your **system delay** varying in time?
It can be a major error source.

ILRS | Network | System P... | Station performance chart...

sgf.rgo.ac.uk/forumNESC/index.php?topic=21.0

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Station performance charts (Potsdam Workshop Spoiler)

A huge number of global charts and station-by-station charts available!

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September 20, 2016, 04:03:20 PM

Toshimichi Otsubo
Newbie
Posts: 2

Station performance charts (Potsdam Workshop Spoiler)
« **on:** September 20, 2016, 04:03:20 PM »

Hello from Tokyo.

Just 2 weeks before the Potsdam workshop, we have generated a huge number of station-by-station charts so as to assess+assist the productivity and the quality of every SLR station.

The details are introduced in the 'systematics' session and the 'clinic' session, but you will be able to directly get to the points if you look at them in advance.

This year, in addition to the usual tests, we look into the calibration (= system delay measurement) - frequency, stability, etc.

// Data span: 1 year = July 2015 to June 2016