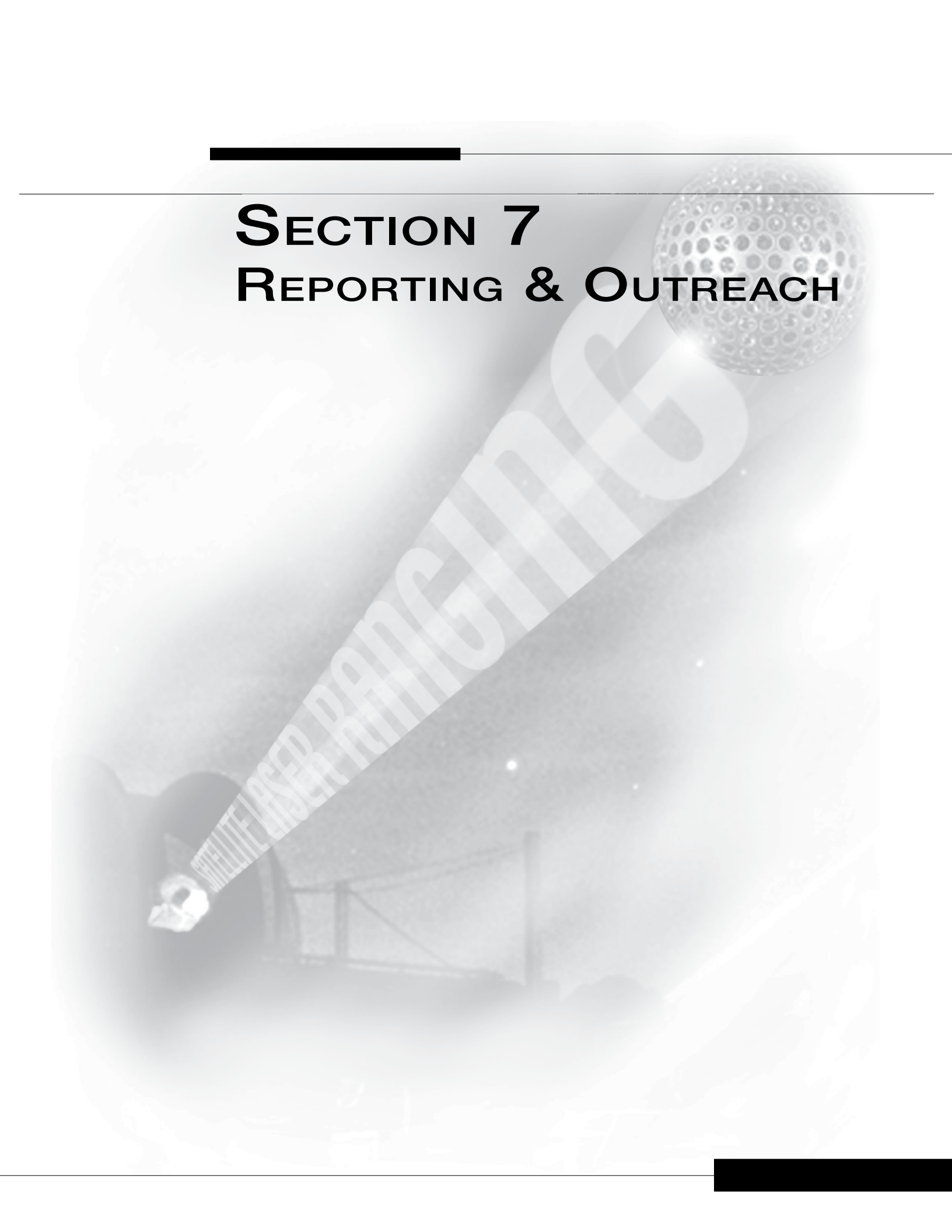

SECTION 7

REPORTING & OUTREACH



SECTION 7

REPORTING & OUTREACH

Carey Noll/NASA GSF

WEBSITE DEVELOPMENTS

The ILRS website, <http://ilrs.gsfc.nasa.gov>, is the central source of information for all aspects of the service. The website provides information on the organization and operation of ILRS and descriptions of ILRS components, data, and products. Furthermore, the website provides an entry point to the archive of these data and products available through the data centers. Links are provided to extensive information on the ILRS network stations including performance assessments and data quality evaluations. Descriptions of supported satellite missions (current, future, and past) are provided to aid in station acquisition and data analysis. The current format for the ILRS website has been in use since the early years of the service. Starting in 2010, the ILRS Central Bureau began efforts to redesign the look and feel for the website. The update will allow for a review of the contents, ensuring information is current and useful. Figure 7-1 shows an early mockup of the new design.

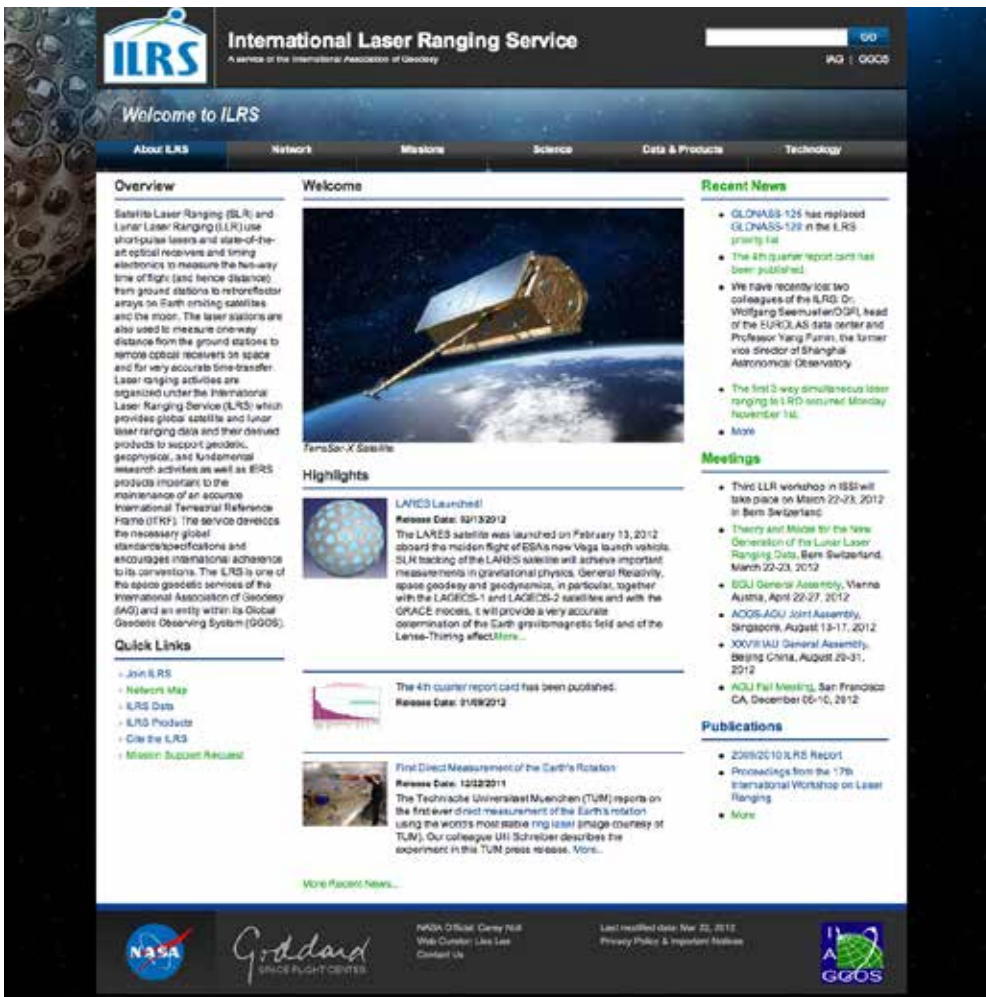


Figure 7-1. Prototype design for new ILRS website

STATION REPORTING

Station Performance Report Cards

The ILRS performance “report cards” are issued quarterly by the ILRS Central Bureau (CB). These reports are issued every three months and tabulate the previous 12 months of data quality, quantity, and operational compliance by station. The statistics are presented in one set of tables (one for artificial satellites and a second for lunar reflectors) by station and sorted by total passes in descending order (Figure 7-2). Plots of data volume (passes, normal points, minutes of data) and RMS (LAGEOS, Starlette, calibration) are created from this information and available on the report card website. A second table (Figure 7-3) summarizes independent assessments of station performance (see example in Figure 7-4) from several of the ILRS analysis/associate analysis centers (DGFI, JCET, Hitotsubashi University, MCC, SAO). The report cards are available on the ILRS website at http://ilrs.gsfc.nasa.gov/network/system_performance/global_report_cards/index.html.

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	11953	2223	2186	16362	236962	26114	18803	281879	209049	5.0	8.0	8.8
Mount Stromlo_2	7825	6265	1060	485	7810	66889	10274	2776	79939	56370	3.7	3.5	6.2
Changchun	7237	6537	811	441	7789	67535	6138	2094	75767	42094	5.5	10.3	13.5
Zimmerwald_532	7810	5130	1006	1098	7234	90674	13628	10025	114327	102063	12.1	7.8	10.4
Matera_MLRO	7941	4255	1256	972	6483	59463	14239	8220	81922	88781	.9	2.9	4.6
Graz	7839	4768	669	546	5983	89395	7803	4493	101691	61561	2.0	4.3	5.1
Herstmonceux	7840	3858	753	1246	5857	60912	8723	4483	74118	56157	5.7	9.6	14.6
San Juan	7406	2741	481	777	3999	41758	5285	5742	52785	51593	6.2	8.8	8.7
Monument Peak	7110	2646	544	448	3638	48952	6563	3238	58753	42894	4.8	9.3	10.2
San Fernando	7824	2719	287	44	3050	33551	1378	154	35083	13651	6.5	13.6	17.5
Grasse_MEO	7845	1514	654	867	3035	48092	7400	4165	59657	48139	5.1	15.2	13.6
Potsdam_3	7841	2336	387	58	2781	46361	4123	440	50924	22528	13.0	13.7	17.7

Figure 7-2. Table 1 of the ILRS Report Card for the fourth quarter of 2010

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	20.0	95	10.0	20.0	20.0	95	10.0	20.0	20.0	95	10.0	20.0	20.0	95	10.0	20.0	20.0	95
Yarragadee	7090	4.1	23.4	3.4	100.0	2.2	9.0	3.7	100.0	5.2	30.5	5.0	99.8	2.8	13.8	4.2	97.5	2.3	11.3	3.4	96.1
Mount Stromlo_2	7825	5.2	21.5	4.3	99.8	4.0	12.0	2.9	100.0	5.3	28.6	3.7	98.6	3.7	14.6	2.8	96.8	2.5	10.3	3.7	94.8
Changchun	7237	6.3	25.1	7.4	99.5	3.9	21.0	7.3	99.4	6.5	32.9	4.9	96.1	3.9	21.0	8.5	97.0	1.7	23.3	4.3	95.3
Zimmerwald_532	7810	2.8	15.7	3.2	99.9	1.4	8.9	2.1	99.9	3.5	21.2	3.6	99.8	2.7	10.1	2.8	98.3	0.9	9.4	2.0	95.0
Matera_MLRO	7941	2.8	20.4	2.8	99.8	1.7	10.7	3.9	99.9	3.5	25.4	3.5	99.5	2.5	17.1	4.3	99.2	2.1	28.5	3.9	98.8
Graz	7839	3.1	16.6	3.3	100.0	1.3	8.5	3.3	100.0	3.7	25.7	21.6	100.0	2.3	8.3	3.1	98.7	1.2	7.0	2.8	95.4
Herstmonceux	7840	3.3	16.5	3.2	100.0	2.0	8.5	2.1	100.0	3.6	23.0	3.1	99.7	2.5	11.0	2.4	98.3	1.3	7.3	1.6	94.5
San Juan	7406	5.7	52.0	29.6	98.5	3.2	55.6	26.9	99.4	8.0	52.8	26.5	96.8	4.8	18.5	12.0	97.1				
Monument Peak	7110	3.5	24.4	4.9	99.9	1.5	13.9	2.4	99.9	6.4	33.5	4.8	98.0	1.9	14.1	3.0	99.0	1.2	14.8	3.2	96.8
San Fernando	7824	4.6	24.5	7.0	100.0	3.0	16.3	7.9	99.6	3.9	29.7	8.1	99.5	2.9	11.4	12.1	95.5				
Grasse_MEO	7845	4.0	17.9	6.0	100.0	2.3	13.0	6.4	99.9	3.7	26.4	5.3	99.1	3.0	9.8	4.4	97.5	1.8	13.2	5.1	95.9

Figure 7-3. Table 2 of the ILRS Report Card for the fourth quarter of 2010

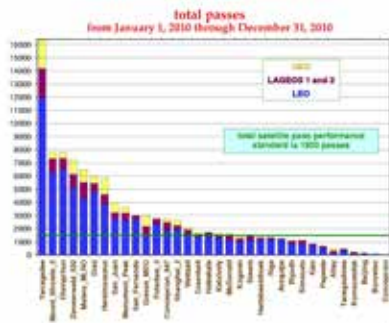
```

Author: Toshimichi Otsubo, Hitotsubashi University
#
# #contact t.otsubo@srv.cc.hit-u.ac.jp (Toshimichi Otsubo)
# #website http://gec.science.hit-u.ac.jp/slr/bias/
# #version 0.15 (2005/02/23)
# #createdAt 2011/01/12 00:20:25
#
# each line contains:
# sat = 4-char satellite name
# site = 4-char site name (CDP ID)
# date/time = pass starting time
# dur = pass duration (min)
# rb = estimated range bias (mm) with 1-sigma error
# tb = estimated time bias (microsec) with 1-sigma error
# prec = post-fit scattering rms (mm)
# bad/total = number of bad/total normal-points
# rms = single-shot rms (mm)
# pres/temp/humi = pressure (hPa), temperature (K) and humidity (%)
# sdelay = applied system delay (mm)
# shift = system delay shift (mm)
# rms = calibration single-shot rms (mm)
# cfg = system configuration flag; SCH and SCI
# r = data release flag
# wlen = laser wavelength (nm)
#
# 1824 = KIEV
# sat site date time dur rb mm error tb us error prec bad total rms pres temp hum sdelay shift rms cfg r wlen
ERS2 1824 2010/12/29 19:58 5 -165 ( 3 ) ----- ( ----- ) 1 1 / 4 13 995.6 264.6 85 30800 0 12 2 2 0 532
JAS2 1824 2010/12/29 22:28 5 108 ( 36 ) ----- ( ----- ) 6 1 / 4 16 995.6 263.6 85 30800 0 12 2 2 0 532
JASN 1824 2010/12/29 23:29 8 368 ( ----- ) ----- ( ----- ) 0 1 / 2 30 995.6 263.6 83 30767 0 11 2 2 0 532
STRL 1824 2010/12/29 23:44 2 ----- ( ----- ) ----- ( ----- ) ----- 2 / 3 54 995.6 263.6 83 30767 0 11 2 2 0 532
GL09 1824 2010/12/30 01:08 7 132 ( 364 ) ----- ( ----- ) 63 0 / 3 24 995.6 263.2 81 30840 146 8 2 2 0 532
STRL 1824 2010/12/30 01:35 3 -7 ( 4 ) ----- ( ----- ) 1 1 / 4 28 995.6 263.5 81 30913 0 6 2 2 0 532
STRL 1824 2010/12/30 03:25 1 -107 ( 50 ) ----- ( ----- ) 11 0 / 3 20 995.6 263.7 80 30913 0 6 2 2 0 532
#
# 1873 = SIMEIS
# sat site date time dur rb mm error tb us error prec bad total rms pres temp hum sdelay shift rms cfg r wlen
JAS2 1873 2011/01/05 15:20 7 -135 ( 175 ) 290.9 ( 65.5 ) 94 1 / 25 38 982.4 271.4 79 11043 0 0 0 1 0 532
JASN 1873 2011/01/05 16:22 9 -83 ( 159 ) 283.2 ( 70.8 ) 71 0 / 24 26 982.8 271.2 83 11043 0 0 0 1 0 532
LAG2 1873 2011/01/05 16:35 14 -97 ( 89 ) 322.4 ( 129.2 ) 65 0 / 9 40 982.7 271.1 84 11043 0 0 0 1 0 532
LAG1 1873 2011/01/05 17:45 18 36 ( 336 ) 215.1 ( 202.2 ) 94 0 / 10 56 982.8 270.4 89 11043 0 0 0 1 0 532
STRL 1873 2011/01/07 02:24 2 1461 ( 225 ) ----- ( ----- ) 50 0 / 5 57 983.0 271.5 86 11043 0 0 0 1 0 532
LAG2 1873 2011/01/07 16:39 25 -133 ( 89 ) 229.2 ( 100.4 ) 56 0 / 9 42 984.0 273.3 52 11049 0 0 0 1 0 532
LAG1 1873 2011/01/07 18:41 9 -425 ( 934 ) 494.8 ( 556.9 ) 65 0 / 6 37 983.9 272.9 32 11049 0 0 0 1 0 532
GL09 1873 2011/01/07 23:48 54 -71 ( 63 ) 92.0 ( 458.7 ) 91 0 / 7 58 984.0 272.0 57 11049 0 0 0 1 0 532

```

Figure 7-4. Example of weekly station bias report from Hitotsubashi University.

Example plots from the last 2010 report card are shown in Figure 7-5-a, -b, and -c.



7-5a. Total passes for 2010q4 report card

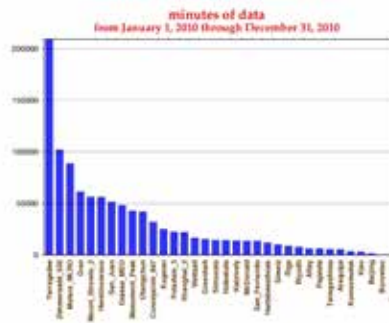


Figure 7-5b. Minutes of data for 2010q4 report card



Figure 7-5c. LAGEOS RMS for 2010q4 report card

The report card is used to assess the performance of the stations in the ILRS network. The Central Bureau maintains lists of the operational and associate stations, classified according to the results posted in the ILRS report cards. Performance guidelines, defined on the ILRS website, cover yearly data quantity (number of passes), data quality (normal point precision and short and long term bias stability) and operational compliance factors (timely data delivery, correct data formatting, required station documentation). Current operational vs. associate status can be viewed on the ILRS website at: <http://ilrs.gsfc.nasa.gov/network/>.

Station Specific Performance Charts

To further aid analysis by station operators and users, the ILRS Central Bureau generates data plots summarizing station performance and environmental parameters. These plots, created for each active station in the network, are accessible through the “Lageos Performance tab in the Stations Section on the ILRS website. These plots summarize station performance on LAGEOS including data RMS, calibration RMS, system delay, observations per normal point, and full-rate observations per pass. For each parameter, two plots are generated, one covering the last year and a second showing the information from 2000 to the present. Examples of these plots for selected stations in the network are shown in Figure 7-6.

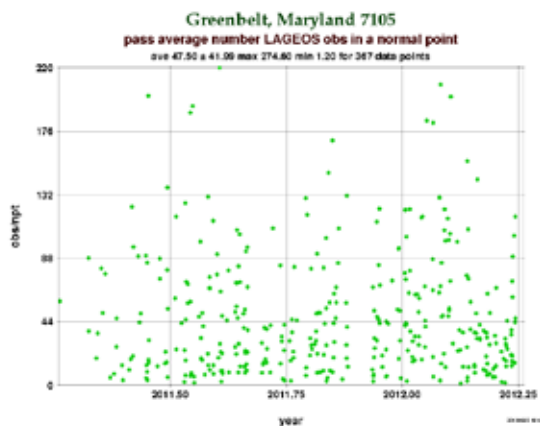


Figure 7-6a. Average number of LAGEOS observations per normal point at Goddard MOBLAS-7 for the past year

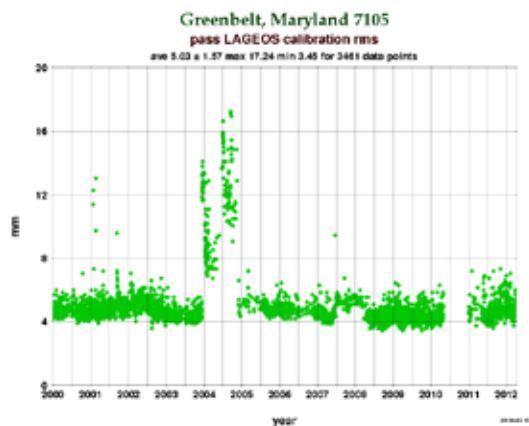


Figure 7-6b. Average LAGEOS pass RMS at Goddard MOBLAS-7 for the past ten years

The “Satellite Data Info” tab shows a table of plots providing statistics on all currently tracked satellites as a function of time; full-rate observations per normal point and normal point rms are also computed as a function of range and time. Examples of these satellite plots for a selected station in the network are shown in Figure 7-7. These plots are also accessible through the Satellite Missions section of the ILRS website (organized by mission, matrix of all stations tracking mission).

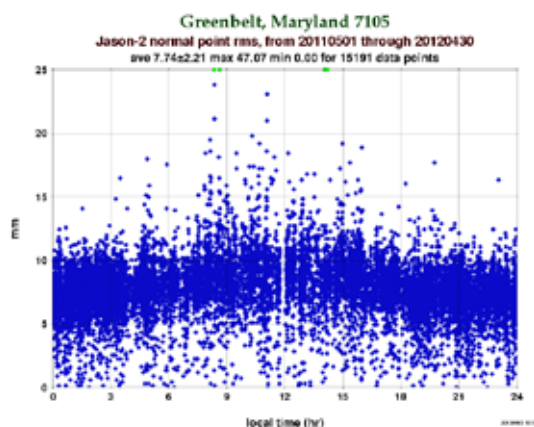


Figure 7-7a. Jason-2 normal point RMS at Goddard MOBLAS-7 (as a function of local time) for the past year

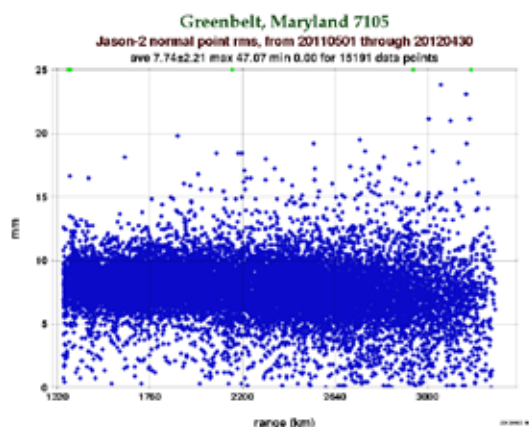


Figure 7-7b. Jason-2 normal point RMS at Goddard MOBLAS-7 (as a function of range) for the past year

The “Meteorological Data” tab presents plots of environmental parameters: temperature, humidity, and pressure; plots spanning the last year and since 2000 are also created for this category. Examples of these met data plots are shown in Figure 7-8.

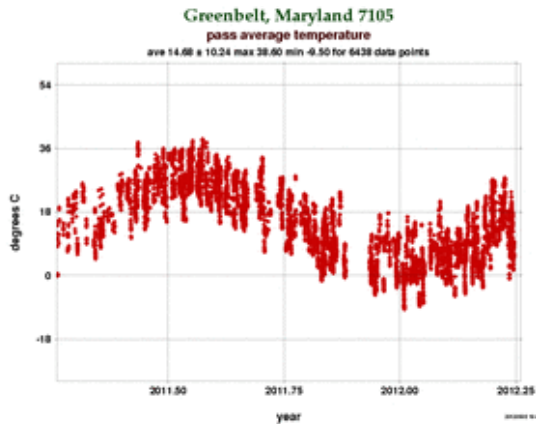


Figure 7-8a. Average temperature at Goddard MOBLAS-7 for the past year

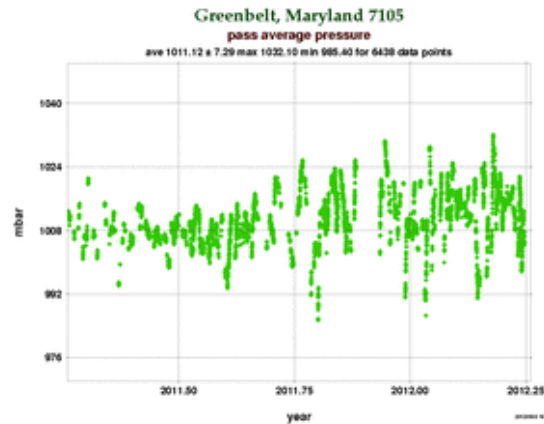


Figure 7-8b. Average pressure at Goddard MOBLAS-7 for the past year

Real-Time Daily Station Status Reports

Station status information is available on a daily and near-real time basis through the EUROSTAT utility. These reports allow the ILRS community to quickly view the status of the stations in the tracking network. ILRS stations can automatically upload status information to EUROSTAT (maintained by the Astronomical Institute of the University of Berne, AIUB) that is then used to generate an overview of the current activities of the tracking stations. The real-time report (Figure 7-9) shows actual station operations at that point in time. The daily report (Figure 7-10) provides a one-line entry per day showing if stations are currently staffed, operational, off-shift, off-line because of system problems, etc. The ILRS encourages all stations in the network to participate in the daily and, if possible, real-time exchange of status information so that experience can be shared in a timeframe to help performance other stations.

DOY	Date	BURF	CONL	FTLR	GRZL	HERL	MATM	MDOL	POT3	POTS	SFEL	TEST	WETL	YARL	ZIML
261	17-Sep-2008		OUT	OPER	OPER	OPER	OPER		OPER		OUT		OPER	OPER	OPER
260	16-Sep-2008		OUT	OPER	OPER	OPER	OUT	OPER	OPER		OPER		OPER	OPER	DOWN
259	15-Sep-2008		OUT	OPER	OUT	OPER	OPER		OPER		OPER		OPER	OPER	DOWN
258	14-Sep-2008			OPER	OUT	OPER			OUT		OPER		OPER	OPER	DOWN
257	13-Sep-2008			OPER	OUT	OPER	OPER		OPER		OPER		OPER	OPER	DOWN
256	12-Sep-2008			OPER	OPER	OPER	OPER		OPER		OPER		OPER	OPER	DOWN
255	11-Sep-2008			OPER		OPER	OPER		OPER		OPER		OPER	OPER	OPER
254	10-Sep-2008					OPER	OPER		OPER		OPER		OPER	OPER	OPER
253	09-Sep-2008					OPER	OPER		OPER		OPER		OPER	OPER	OPER
252	08-Sep-2008		OUT			OPER	OPER		OPER		OPER		OPER	OPER	OPER
251	07-Sep-2008					OUT	OPER		OPER				OPER	OPER	OPER

Figure 7-9. EUROSTAT real-time station status report.

Station Name	Date	Time	Station ID	Status	Count	HTS	HTS Value	HTS Error
Ftlrs_Ajacci	2008-09-17	19:57:33	lageos1	CUR	0	HTS7611	0.000	
Herstmonceux	2008-09-17	19:56:56		OUT				
Potsdam-3	2008-09-17	19:57:01		OUT				
San_Fernando	2008-09-17	19:57:36		OUT				
Wettzell	2008-09-17	19:57:11	Larets	LST	36	HTS7611	0.000	
Yarragadee	2008-09-17	19:57:40	Lageos2	CUR	2	HTS7601	0.000	
Zimmerwald	2008-09-17	19:57:48	Lageos1	CUR	8405	HTS7611	0.000	(auto)

Figure 7-10. Daily station status report (for Sept. 17, 2008).

PUBLICATIONS

2007-2008 Report

The 2007-2008 ILRS Report was issued and can be viewed on the ILRS website (http://ilrs.gsfc.nasa.gov/about/reports/annualrpts/ilrsreport_2007.html).

The bi-annual publication provides summary reports for all components of the ILRS.

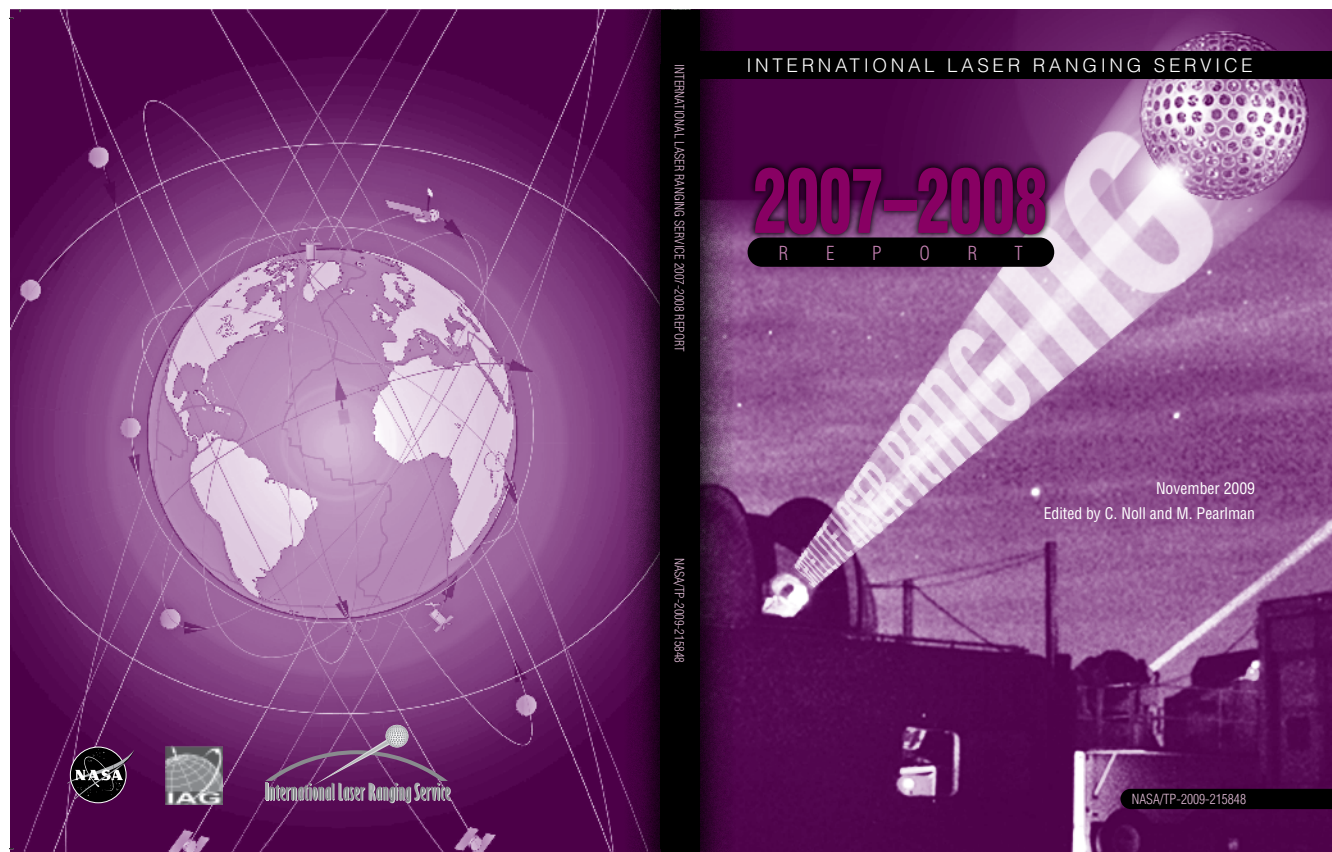


Figure 7-11. The 2007-2008 ILRS Report Cover