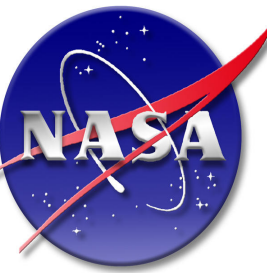


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A Multi-platform Package for the Visualization of the ILRS QC Reports

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Abstract

We developed a software package based on MATLABM that allows users to query a data base with ILRS-sanctioned QC reports and visualize the reported information as a function of the tracking site, tracked satellite target and reporting Analysis Center, over the selected period of interest. The user can perform simple statistics on the windowed data set. The “JCET QC Viewer” software works on multiple platforms (e.g. Windows, Linux and Mac OS), and does not require ownership or local availability of MATLABM. The software will be distributed by the ILRS along with a data base of all the available QC reports up to the release date and from all ACs. The users will be responsible for updating the data base by including the reports released beyond the date of release of the package. We will present the capabilities offered by this package and examples for each application. As long as there are no format or content changes in the distributed QC reports the software requires little maintenance. We plan to maintain the QC Viewer as resources and time permits and extend it to include any future additions or modifications to the current suite of distributed reports.

ILRS QC Resources

- The ILRS has dedicated Analysis Centers that monitor the quality of the data collected at all sites
- Most QC ACs deliver these reports on a weekly basis, some provide daily reports
- The information provided in these reports is compiled into a “report card” (originally quarterly, now monthly!) that is available online
 - For each site one can find short-term and long-term performance based on their statistics over the past 3-months and 1-year periods respectively

ILRS MONTHLY GLOBAL REPORT CARD

		DGFI			HITO UNI.			JCET			MCC			SHAO			
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 RMS (mm)	short term (mm)	long term (mm)	% good	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good
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
Yamaguchi	7090	3.7	15.6	1.8	100.0	2.0	7.5	1.9	100.0	3.2	14.8	2.8	99.8	2.4	16.8	2.9	98.3
Changchun	7237	4.2	28.7	4.7	99.1	3.1	25.2	2.8	99.7	3.1	28.6	3.5	96.8	4.1	30.9	10.5	96.4
Mount_Simola_2	7825	4.2	14.1	4.1	100.0	3.1	8.1	2.0	100.0	3.5	15.2	3.7	99.9	4.1	12.9	3.3	99.1
Zimmerwald_532	7810	3.1	11.8	7.8	99.9	1.4	5.4	3.1	99.8	2.1	13.0	7.8	99.9	2.6	13.6	3.2	98.5
Wettzell	8834	3.7	13.1	3.8	100.0	2.5	8.8	2.2	100.0	3.1	12.4	3.9	99.4	2.6	11.5	4.2	98.2
Graz	7839	2.5	11.2	3.8	100.0	0.8	4.4	1.8	100.0	1.3	11.7	4.9	98.5	1.9	12.0	4.5	98.5
Matera_MIRO	7941	2.6	12.0	4.7	99.9	1.2	6.0	2.6	100.0	2.1	12.4	4.4	100.0	1.8	14.3	3.7	99.5
Greenbelt	7105	4.5	12.8	4.2	99.9	2.2	6.6	1.7	99.8	3.3	11.5	2.8	99.2	2.5	16.8	5.7	97.0
Herstmonceux	7840	2.7	9.8	3.5	100.0	1.4	5.4	1.5	100.0	1.7	11.8	2.9	100.0	2.6	8.9	2.7	99.1
Monument_Peak	7110	5.8	17.2	5.3	99.7	3.8	12.3	2.0	99.7	5.7	20.5	4.9	98.0	3.9	20.5	3.9	94.4
Hartebeesthoek	7501	4.8	18.6	5.0	99.9	2.8	8.4	3.2	99.9	3.8	18.7	5.4	98.8	3.3	23.5	4.6	96.3
San_Juan	7408	15.0	44.1	9.5	97.5	5.8	33.0	10.7	98.0	7.2	33.0	8.3	79.2	7.4	30.5	9.0	91.5
Prokhorov_3	7841	3.8	10.7	4.2	100.0	1.7	7.7	2.7	99.6	2.7	10.9	5.0	99.4	2.1	7.4	2.9	98.2
Grasse_MEO	7845	4.2	14.1	3.1	100.0	2.8	9.5	3.1	100.0	3.5	13.3	2.6	100.0	3.1	12.9	3.3	99.5
Arequipa	7403	5.6	22.8	11.8	99.5	2.4	22.6	18.4	99.2	5.0	25.8	21.5	97.4	3.6	16.8	8.8	92.7
Shanghai_2	7821	8.0	44.8	19.7	99.4	3.8	43.9	18.8	100.0	4.1	46.2	24.6	94.1	5.0	46.6	21.5	98.0
Haleakala	7119	7.0	23.3	9.0	98.3	3.6	11.3	2.7	98.1	5.3	15.1	4.8	96.7	5.8	27.0	14.3	96.6
Simosato	7838	6.5	27.7	11.3	100.0	3.1	17.7	6.8	99.8	6.1	19.0	8.0	97.1	4.5	19.1	9.9	98.3
McDonald	7080	5.2	14.9	5.3	99.7	2.9	7.8	3.5	99.7	4.2	14.1	3.6	99.3	3.4	15.9	6.2	99.5
Kiev	1824	18.3	42.8	26.5	84.1	12.6	49.7	29.3	89.1	4.9	30.1	16.7	47.8	127.1	44.8	33.8	87.8
Katsinev	1859	15.8	15.7	5.4	98.9	9.8	17.8	3.5	97.9	7.0	20.5	6.5	76.9	12.1	18.8	10.4	96.3
Consejo_n_847	7405	9.0	40.8	11.7	99.1	1.8	50.3	8.7	100.0	9.9	57.3	87.5	2.6	38.8	14.6	93.2	92.0
Akhvitz	1886	9.5	22.4	14.1	100.0	6.8	26.8	15.3	99.8	7.3	25.5	12.7	93.7	7.5	27.2	19.5	100.0
Atay	1879	22.5	63.2	21.3	100.0									3.8	15.1	7.4	98.0
Beijing	7249	5.0	19.5	13.2	100.0					5.7	17.8	11.4	98.3	5.2	32.4	15.4	98.6
Simelz	1873					30.2	31.6	24.1	98.7	7.1	35.4	57.1	25.6	42.4	29.1	20.8	20.5
Bakonur	1887	10.5	25.0	21.7	100.0	7.3	26.5	10.3	99.8	8.1	29.3	20.4	89.2	7.3	18.0	17.2	95.8
Komsomolsk	1868	10.4	48.0	27.7	94.4	3.7	31.2	20.6	100.0					3.7	51.7	23.9	96.4
Papete	7124	4.9	17.3	9.4	100.0	2.5	7.8	3.8	100.0	4.0	13.2	4.3	99.5	3.8	20.4	7.9	100.0
Baidary	1890	6.1	14.8	9.8	92.3	5.2	12.4	6.5	100.0					6.4	17.3	22.4	91.3
Zelenchukskaya	1889					4.8	7.9	3.2	100.0								
Svetloe	1888					8.0	13.4		100.0								

Global Report Card Access at:

http://ilrs.gsfc.nasa.gov/network/system_performance/global_report_cards/monthly/

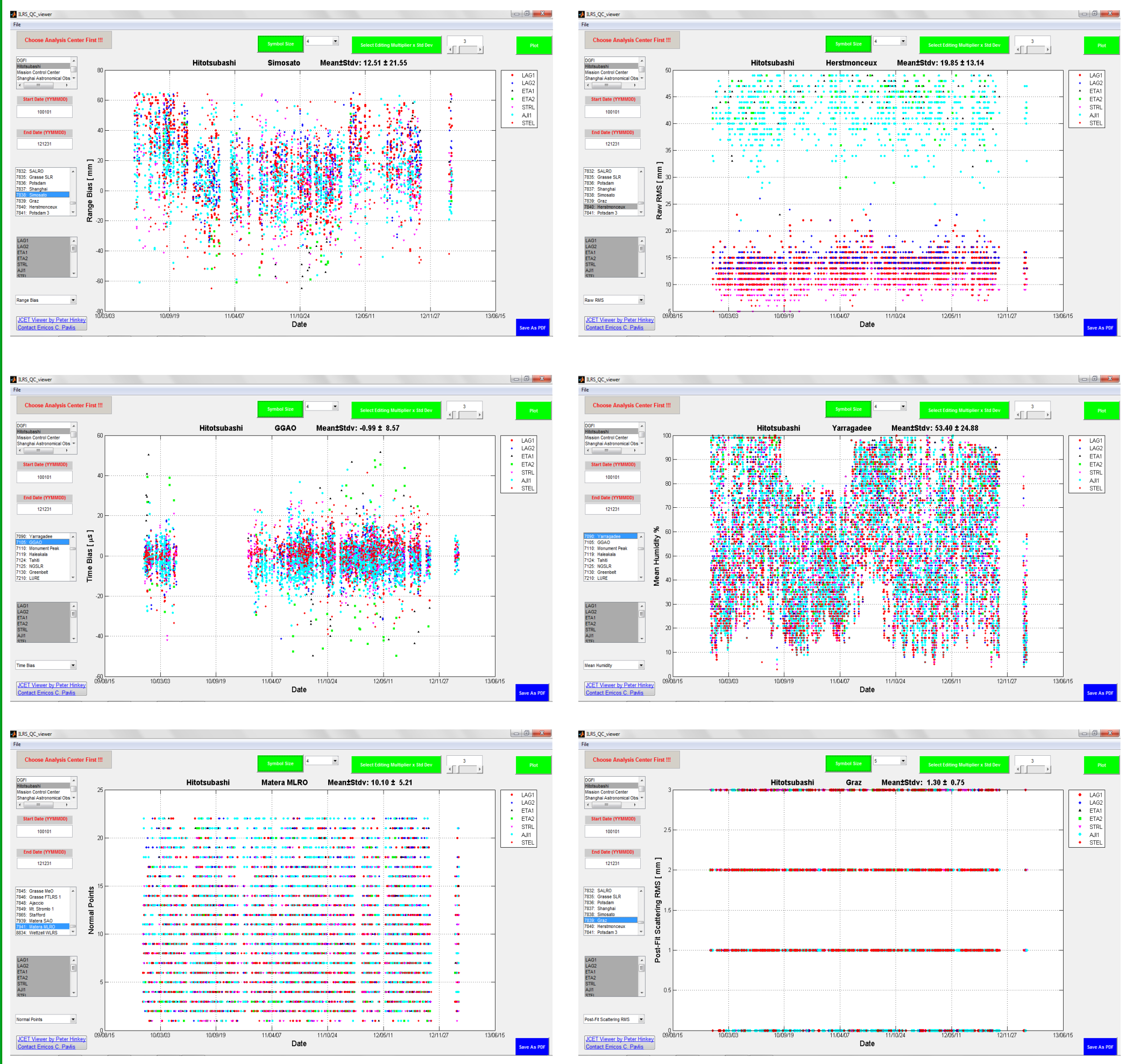
Access Reports directly from:

- 1) http://ilrs.dgfi.badw.de/fileadmin/quality/weekly_biases/
- 2) <ftp://cddis.gsfc.nasa.gov/pub/reports/slrhitu>
- 3) <ftp://cddis.gsfc.nasa.gov/pub/reports/slrjcet>
- 4) <ftp://cddis.gsfc.nasa.gov/pub/reports/slrsmcc>
- 5) <ftp://cddis.gsfc.nasa.gov/pub/reports/slrsao>

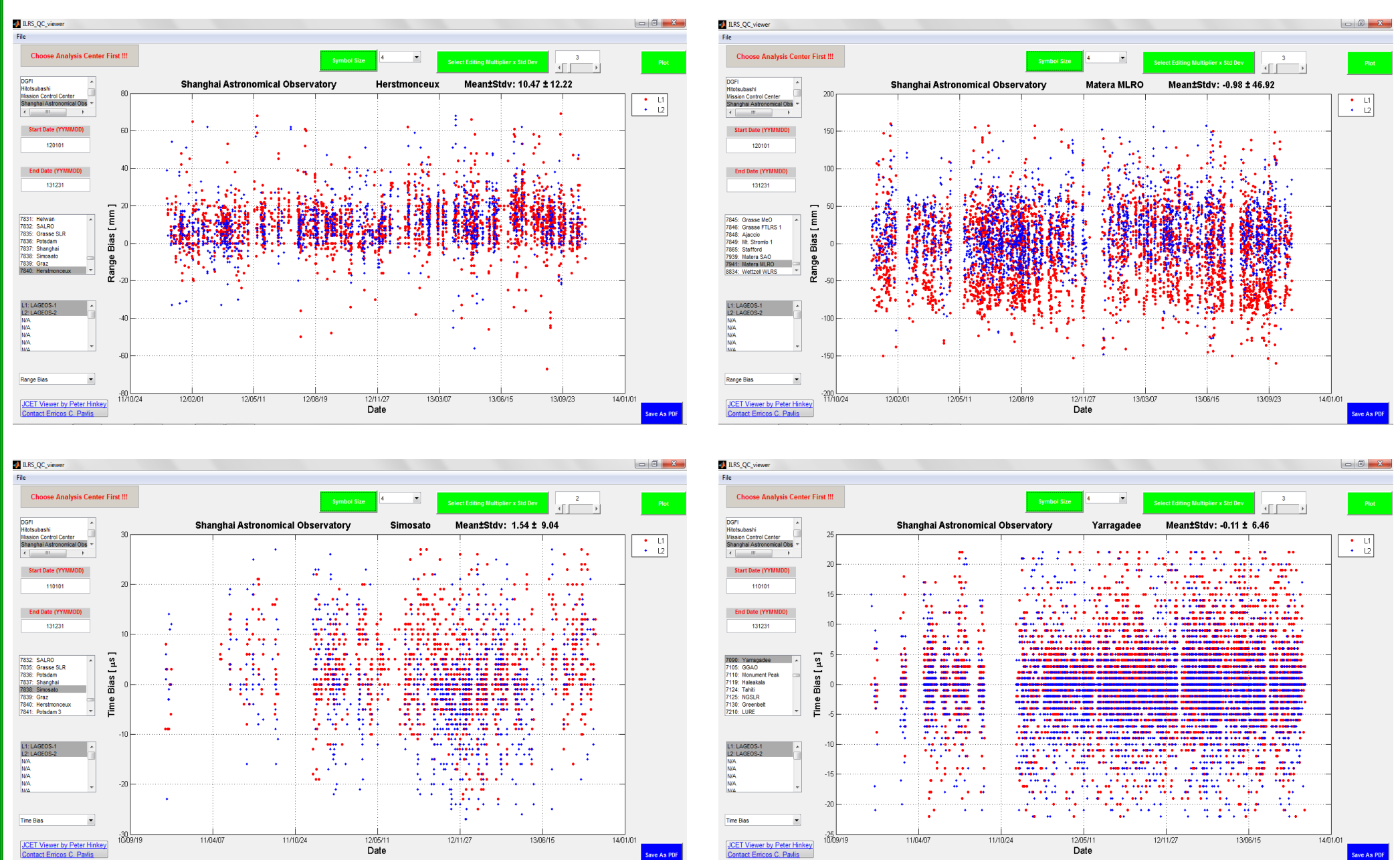
JCET QC Viewer

- The QC reports from each of the contributing ACs are in general formatted in a very tailored manner, containing different information, in different order, units, etc.
 - The information in these reports should be easily compared across AC, satellites, stations, evaluation metrics, etc., for these to be useful to the teams managing the various stations
 - In the past, the Graz team had devised a PC-based plotting package that was tailored to work with the UT/CSR reports, the only ones available at the time
- JCET’s MATLAB-based QC viewer works with ALL reports from DGFI, HITU, MCC, JCET, SHAO and (legacy) UT/CSR
 - The package will run on Mac, Linux and Windows environments and it will be distributed with examples, a historical QC report data base (up to a certain date) and a simple user’s manual

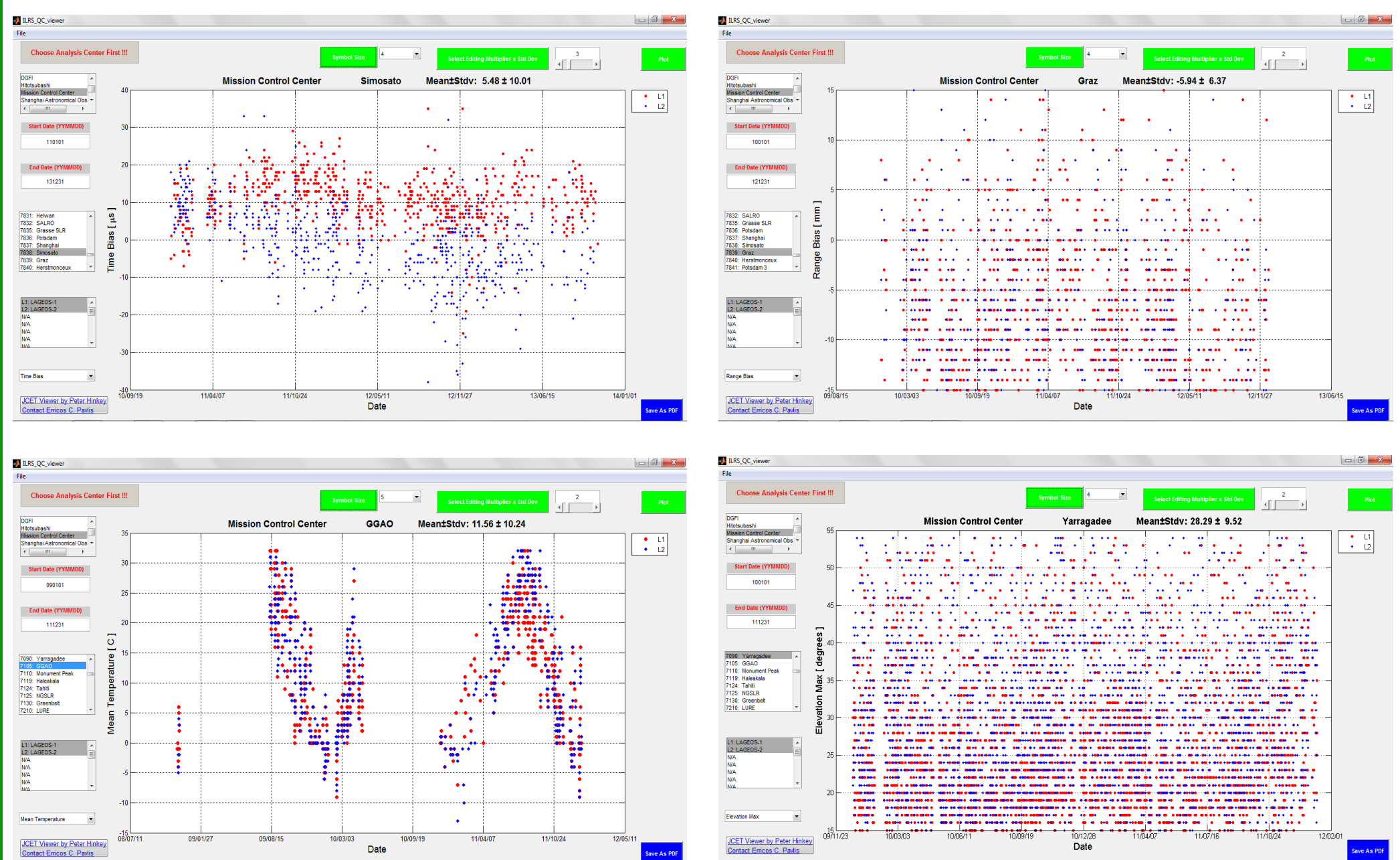
HITOTSUBASHI UNIVERSITY REPORTS



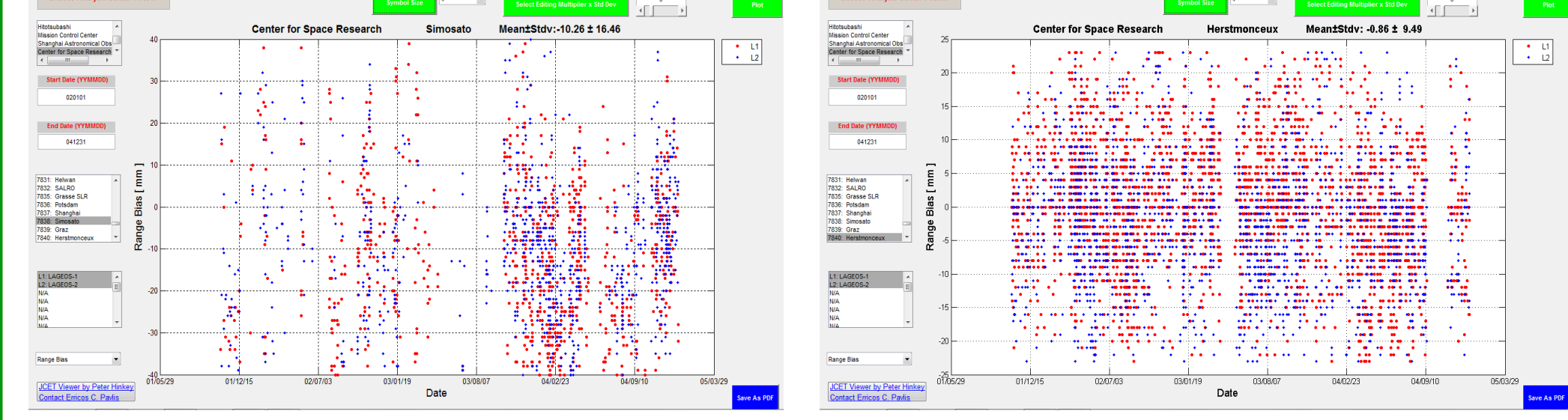
SHANGHAI ASTRONOMICAL OBSERVATORY REPORTS



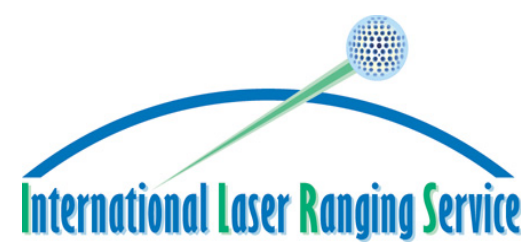
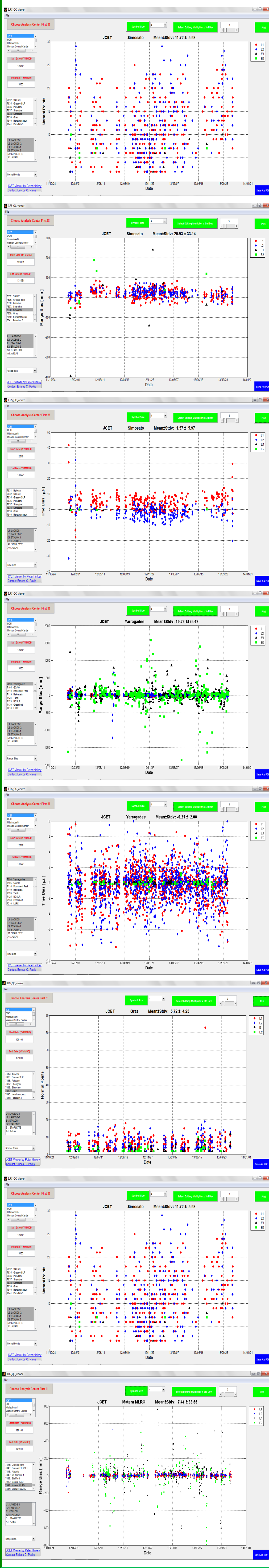
MISSION CONTROL CENTER REPORTS



UNIV. of TEXAS, CENTER FOR SPACE RESEARCH REPORTS (LEGACY)

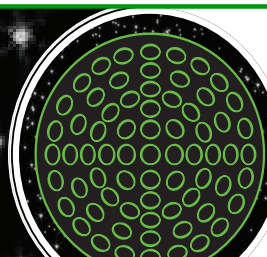


UNIVERSITY of MARYLAND JCET REPORTS



We gratefully acknowledge the support of the ILRS and their network for making their SLR tracking data available to us for this study and NASA's financial support through Grant NNX11AI44G.

19th Celebrating 50 Years of SLR
Remembering the Past and Planning for the Future
International Workshop on Laser Ranging



To obtain an executable and installation instructions from JCET, contact:
Erricos C. Pavlis: epavlis@umbc.edu

