

ILRS

Governing Board Meeting

April 14, 2007
17:00 - 20:00



Technical University of Vienna
Gusshausstr. 27-29, SEM 124
Vienna, Austria

ILRS Governing Board Meeting

Technical University of Vienna
SEM 124
Gusshausstr. 27-29
1040 Wien

Monday, April 14, 2008
17:00-20:00

Agenda

- | | |
|--|------------------------|
| 1. Opening Remarks (5 min.) | W. Gurtner |
| 2. ILRS Status/Action Items (15 min.) | M. Pearlman/C. Noll |
| 3. Working Group Briefs and Recommendations (5-10 min. each) | WG Chairs |
| a. Analysis | E. Pavlis/C. Luceri |
| b. Missions | G. Appleby |
| c. Data Formats and Procedures | W. Seemueller |
| d. Networks and Engineering | G. Kirchner |
| e. Transponders | |
| 4. Task Force Reports (5 min. each) | |
| a. Communications | E. Pavlis |
| b. Center-of-Mass Corrections | G. Appleby |
| 5. Laser Retroreflectors (5 min.) | M. Pearlman |
| 6. Data Replacement Policy (5 min.) | C. Noll/C. Luceri |
| 7. Stanford Counter Tests (5 min.) | G. Appleby/G. Kirchner |
| 8. NRL PERCS Satellite Support (5 min.) | M. Pearlman |
| 9. 16 th International Workshop on Laser Ranging (5 min.) | M. Pearlman |
| 10. ILRS Special Issue in Journal of Geodesy (5 min.) | E. Pavlis |
| 11. Coping with Future Satellite Missions (10 min.) | W. Gurtner |
| 12. GGOS Activities (5 min.) | M. Pearlman |
| 13. New Business | W. Gurtner/WG Chairs |
| 14. Other Business | W. Gurtner |



ILRS Governing Board

Ex-Officio Members:

Director, Central Bureau:	Mike Pearlman
Secretary, Central Bureau:	Carey Noll
President of IAG Commission I:	Zuheir Altamimi

Members Appointed or Elected by Organizations:

EUROLAS Network Representatives:	Giuseppe Bianco Werner Gurtner, Chair
NASA Network Representatives:	David Carter Jan McGarry
WPLTN Representatives:	Yang Fumin Hiroo Kunimori
IERS Representative:	Bob Schutz

Members Elected by their International Peers:

Analysis Representatives:	Erricos Pavlis Vincenza Luceri
Data Center Representative:	Wolfgang Seemueller
LLR Representative:	Juergen Mueller
At-Large Representatives:	Georg Kirchner Graham Appleby

Former Members:

Francois Barlier (former At-Large Member, 1998-2000)
Gerhard Beutler (former CSTG President, 1998-1999)
John Bosworth (former Director, ILRS Central Bureau, 1998-2001)
John Degnan (former Chairman and NASA Network Representative, 1998-2002)
Richard Eanes (former Analysis Center Representative, 1998-2000)
Yang Fumin (former WPLTN Network Representative, 1998-2002)
Ben Greene (former WPLTN Network Representative, 2002-2006)
John Luck (former At-Large Member, 1998-2002)
Ron Noomen (former Analysis Center Representative, 1998-2006)
Wolfgang Schlueter (former EUROLAS Network Representative, 1998-2002)
Ulrich Schreiber (former At-Large Member, 2002-2006)
Peter Shelus (former LLR Representative, 1998-2006)
Hermann Drewes (former President of IAG Commission I/CSTG, 1998-2007)

ILRS Status Review

Network Operations:

- 31 global stations regularly providing tracking data in 2008
- Most productive stations are Yarragadee, San Juan, Mt. Stromlo, Graz, Herstmonceux, Wettzell, Changchun and Riyadh; Concepción tracking has been exceptional
- Kunming back in operation
- Several other systems have recently undergone repair and upgrade
- Simosato seems to have been rescued (at least temporarily), but still not operational
- FTLRS in Burnie, Tasmania for a campaign to support Jason calibration/validation
- TROS going to Korea for three month tracking campaign in 2008
- NASA engineers now in Tahiti to refurbish and upgrade MOBLAS-8; upgrade will include CPF prediction and restricted tracking s/w
- Letters sent in support of Simosato and Herstmonceux in 2008; San Juan in 2007
- Daily station status report:
 - Analysts need current station availability information
 - Gurtner modified EUROSTAT reporting to generate daily status report
 - CB asked stations not already participating in EUROSTAT to use software to provide status messages

Mission Developments:

- Supporting 28 missions and lunar tracking
- ANDE-Active reentered in December, ANDE-Passive predicted to reenter in May; a few stations were able to track down below 300 km (good omen for GOCE)
- Two-month campaign on GPS-35 and -36 underway; satellites will soon be decommissioned
- ILRS GB approved support for GOCE (gravity field) scheduled for launch on May 31 (may slip due to some launch vehicle issues); organizing prediction test with ESOC using CHAMP
- QZS-1 (test for Japanese Navigation satellite system) approved for ILRS tracking; launch in 2009
- LRO launch now scheduled for late November
- GIOVE-B launch scheduled for April 27, 2008
- GPS campaign status
 - GPS-35 and -36 satellites will soon be decommissioned
 - Intensive campaign underway (21-Mar-2008 through 31-May-2008)
 - Nighttime passes visible for GPS-35 in Europe, Saudi Arabia, South Africa, Eastern Australia, Tahiti, and the Western U.S.
 - Nighttime passes visible for GPS-36 in Asia, South America, Australia, and Eastern U.S.

ILRS Web Site Developments:

- Updated plots of data availability since 2000
- Added new pages for missions and updated future mission list
- Added plots of data used in pos+eop product

ILRS Status Review

(continued)

Reports:

- EOS issued proceedings (document and CD) from 15th International Workshop on Laser Ranging held in Canberra, October 2006
- Updated CDDIS copy of proceedings Web site with links to papers and photos; see <http://cddis.gsfc.nasa.gov/lw15/index.html>
- Continue to update webpages for past international laser workshops with scans of proceedings reports (all but 1st, 6th, 7th, and 9th online in PDF form); see <http://ilrs.gsfc.nasa.gov/reports/workshop/index.html>
- ILRS 2005-2006 report completed and mailed (December 2007)
- Start 2007-2008 report in late fall 2008
- Started planning for 16th International Workshop on Laser Ranging to be held in Poznan Poland, October 13-17, 2008

Meetings:

- April 12-18, 2008: EGU, Vienna Austria
- June 02-08, 2008: IGS Analysis Workshop, Miami Beach FL
- June 16-20, 2008: AOGS, Busan Korea
- June 23-27, 2008: IAG Symposium on Gravity, Geoid, and Earth Observation 2008, Chania Crete Greece
- July 13-20, 2008: 37th COSPAR General Assembly, Montreal Canada
- October 13-17, 2008: 16th International Workshop on Laser Ranging, Posnan Poland
- November 11-15, 2008: OSTST and IDS Workshops, Nice France
- December 15-19, 2008: Fall AGU, San Francisco CA
- 2009: IAG Scientific Assembly, Buenos Aires Argentina
- 2011: IUGG General Assembly, Melbourne Australia

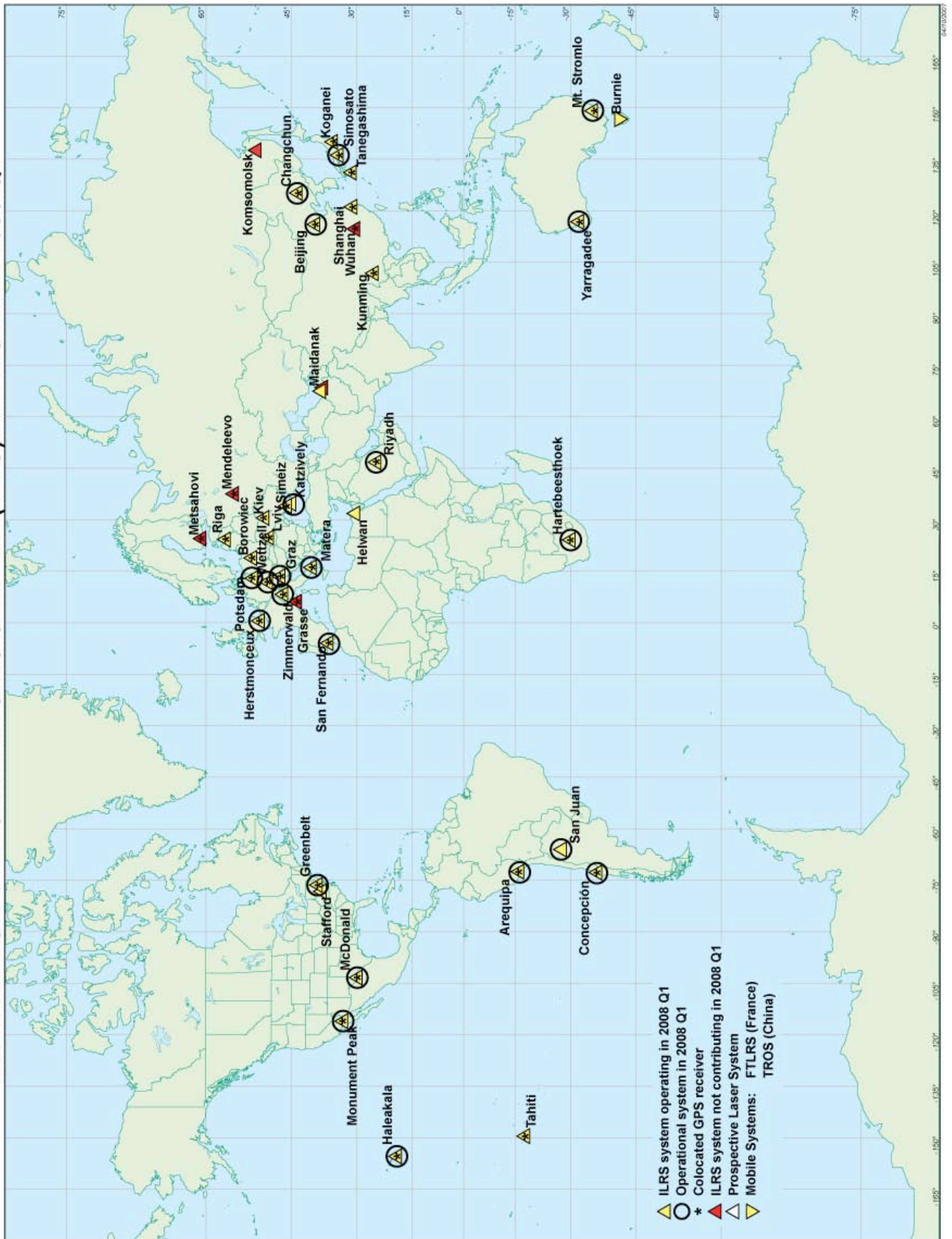
NGSLR (Next Generation SLR, formerly SLR2000)

- Successfully ranged to GLONASS-95 (as well as many LEO and many LAGEOS) with the eyesafe laser
- Successfully ranged to multiple LEO, as well as LAGEOS, ETALON and GLONASS with LRO laser, but so far no luck with GPS
- Full time operator has been hired and will be onboard in next couple of weeks; will hire a second operator shortly
- Began process of applying for NGSLR membership in ILRS
- Expect to perform an intercomparison with MOBLAS-7 in summer of 2008 and begin operations in the fall with two shifts
- Working on completing the automated closed-loop tracking

Data Replacement Policy:

- Previous policy:
 - Data can be re-supplied by stations within 30 days of the date of the data
 - Station must ensure that normal point release flag is incremented
 - Data Centers automatically replace these data
 - Data older than 30 days NOT forwarded to Operations Centers
 - Station issues email detailing problems with data older than 30 days
 - Data older than 30 days NOT removed from DC archive files
- New policy:
 - Automated replacement of data within 30 days continues
 - Replacement of data older than 30 days in DCs will be made on a case-by-case basis
 - Station should contact CB with reason for replacement
 - Station issues notification email detailing problem
 - Station must ensure that normal point release flag is incremented

INTERNATIONAL LASER RANGING SERVICE (ILRS) NETWORK IN 2008 Q1



ILRS 2008 Q1 Quarterly Report Card (Table 1a, 04/01/2007-03/31/2008)

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	9415	1892	1311	12618	196173	24997	12142	233312	79613	4.8	9.1	9.5
San_Juan	7406	4892	1031	1193	7116	76171	12608	7908	96687	43591	9.1	9.1	12.3
Mount_Stromlo_2	7825	5071	1267	464	6802	66531	12736	3132	82399	32003	3.1	4.3	6.1
Graz	7839	4970	819	547	6336	99137	9154	4573	112864	29919	2.1	3.8	6.2
Zimmerwald_423	7810	4746	999	559	6304	74629	11926	3709	90264	29468	12.1	15.2	17.8
Zimmerwald_846		4676	998	493	6167	73865	13107	2845	89817	28041	26.5	22.4	24.4
Wetzell	8834	4414	1095	506	6015	47823	8360	2169	58352	20853	4.9	12.1	18.1
Changchun	7237	4569	690	651	5910	50771	5661	3499	59931	20398	17.7	16.6	20.7
Herstmoncex	7840	3930	909	426	5265	62411	10797	1875	75083	20741	5.7	9.7	13.2
Riyadh	7832	3721	896	618	5235	46722	7036	3577	57335	22594	10.6	13.9	17.2
Matera_MLRO	7941	2412	752	208	3372	33587	7888	1858	43333	17767	1.4	4.2	5.0
Concepcion_847	7405	2022	1109	227	3358	27223	15056	1682	43961	25147	5.3	10.0	12.5
Concepcion_423		18	3	21	164	11	175	52					
San_Fernando	7824	2820	449	72	3341	41850	3370	380	45600	8951	5.6	12.2	17.3
Beijing	7249	2034	328	216	2578	30439	3181	1674	35294	11576	6.0	31.9	15.3
Monument_Peak	7110	1963	392	139	2494	37555	4097	1219	42871	10836	5.0	13.2	15.8
Arequipa	7403	1991	214		2205	23804	1474		25278	4453	5.4	7.5	7.5
Haleakala	7119	1758	441		2199	27593	5056		32649	8028	5.0	10.4	10.2
Greenbelt	7105	1723	245	76	2044	38605	2414	460	41479	6950	6.0	9.1	10.4
Potsdam_3	7841	1680	308		1988	31943	3549		35492	5832	12.9	15.2	20.2
Hartebeesthoek	7501	1619	322	38	1979	20133	2772	229	23134	6209	4.5	7.4	8.6
McDonald	7080	1363	392	219	1974	15612	3380	897	19889	7295	15.2	13.7	13.4
Katzively	1893	1198	273	82	1553	19782	2304	504	22590	5971	34.6	73.0	54.4
Koganei	7308	690	248	92	1030	10124	2308	997	13429	6850	9.0	12.9	15.3
Maidanak_1	1864	441	189	117	747	5438	1463	497	7398	3231			
Simeiz	1873	495	132	48	675	6110	1156	911	8177	2895		48.6	53.0
Shanghai_2	7821	654	21		675	8012	164		8176	1221	12.0	41.0	27.6
Burnie_Tafe	7370	521	4		525	7192	19		7211	963	5.6	11.7	13.6
Riga	1884	364	82		446	7031	891		7922	1237			
Tanegashim	7358	287	63	76	426	4958	626	586	6170	2805	5.1	5.3	8.1
Borowiec	7811	299	75	4	378	5153	801	14	5968	1252	16.6		13.6
Simosato	7838	159	56		215	2520	607		3127	971			
Lviv	1831	173	20		193	3125	183		3308	464	14.7	56.4	58.9
Kunming	7820	167	9		176	2493	57		2550	345	23.4	35.4	37.1
Helwan	7831	62			62	459			459	36	6.0		

ILRS 2008 Q1 Quarterly Report Card (Table 1b Lunar, 04/01/2007-03/31/2008) (continued)

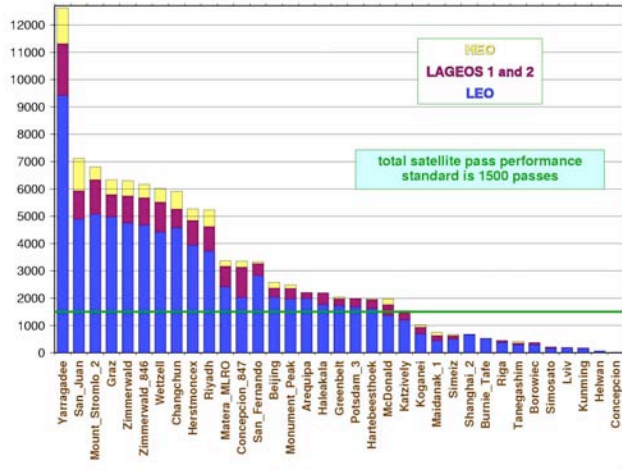
Site Information		Data Information			
Column L1	L2	L3	L4	L5	L6
Location	Station Number	num nights tracking last 12 mon	num npt last 12 mon	num npts last 3 mon	ave npt rms last 3 mon
McDonald	7080	35	72	22	62.3
Matera_MLRO	7941	1	2		

ILRS 2008 Q1 Quarterly Report Card (Table 2, 04/01/2007-03/31/2008)

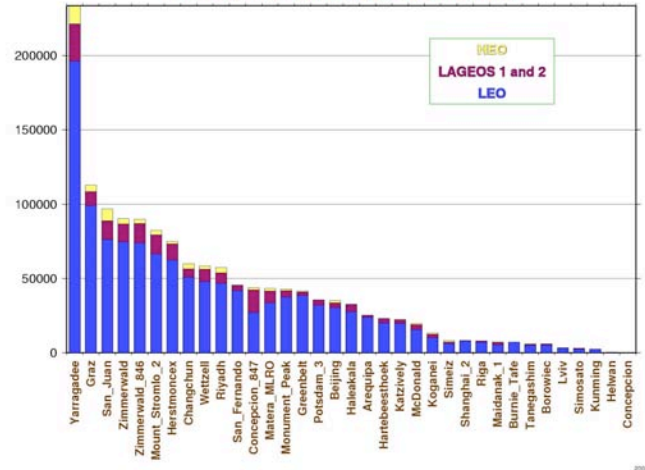
Site Information		DGFI Orbital Analysis				Hitotsubashi Univ. Orbital Analysis				JCET Orbital Analysis				MCC Orbital Analysis				SHAO Orbital Analysis			
Station Location	Station Number	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good LAG NP	LAG NP RMS (mm)	short term (mm)	long term (mm)	% good 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	2.4	21.4	5.9	100.0	1.7	8.4	2.3	100.0	2.8	20.4		99.5	2.1	8.0	2.5	99.2	2.0	15.2	1.3	95.8
San_Juan	7406	4.3	33.5	6.6	100.0	3.0	15.7	11.7	99.6	4.5	19.6		98.3	4.5	20.2	11.7	99.4	3.4	28.2	3.8	94.3
Mount_Stromlo_2	7825	4.7	23.7	7.0	100.0	4.2	10.9	5.9	99.8	4.3	21.6		96.4	4.7	12.1	2.9	92.6	3.5	16.3	2.4	94.7
Graz	7839	1.9	15.2	6.2	100.0	1.4	8.0	1.1	100.0	2.2	17.9		99.7	1.9	7.6	3.0	99.3	1.6	16.2	2.5	95.4
Zimmerwald_423 Zimmerwald_846	7810	2.7	19.1	5.1	100.0	2.7	10.9	2.4	99.9	3.6	10.3		100.0	2.8	5.0	2.6	99.1	3.4	20.2	1.6	94.5
		3.2	8.3	4.4	99.4									3.2	18.6	1.2	92.1				
Wetzell	8834	3.3	28.9	11.1	100.0	3.0	12.1	7.3	100.0	3.5	17.5		99.0	2.9	10.6	2.3	97.0	2.4	18.4	3.6	96.2
Changchun	7237	8.1	35.9	10.6	100.0	7.0	29.5	15.1	99.7	6.2	29.8		87.5	8.3	27.1	6.0	95.4	5.3	26.8	9.5	94.4
Herstmoncex	7840	2.2	17.9	6.0	100.0	1.7	8.9	3.2	100.0	3.4	23.7		99.9	2.4	7.1	2.4	99.2	1.8	15.0	2.5	96.1
Riyadh	7832	3.8	30.2	10.8	100.0	3.3	11.5	10.0	99.6	3.6	20.0		97.4	3.2	18.4	3.9	96.2	3.4	22.0	4.5	95.9
Matera_MLRO	7941	2.6	19.6	12.0	100.0	1.9	10.3	10.9	100.0	3.0	25.0		100.0	2.4	13.2	11.8	99.6	1.9	31.9	13.8	99.1
Concepcion_423 Concepcion_847	7405	2.2	30.8	6.0	100.0	1.4	18.0	5.4	99.9	3.0	15.3		99.8	2.4	18.9	3.3	99.7	2.3	28.8		97.7
San_Fernando	7824	3.7	41.8	14.2	100.0	3.6	19.9	9.4	100.0	4.3	29.3		99.2	4.5	14.8	9.6	99.2	3.8	20.9	10.2	97.0
Beijing	7249	6.8	36.8	28.9	100.0	5.4	18.7	15.0	97.8	5.5	22.2		92.0	7.8	22.4	8.6	97.6	6.0	20.6	7.3	93.0
Monument_Peak	7110	3.7	31.8	11.9	100.0	2.7	11.8	5.1	99.7	2.9	21.3		98.3	2.9	12.1	5.9	96.9	2.7	17.3	3.3	94.6
Haleakala	7119	2.7	31.9	22.0	100.0	2.5	9.7	2.3	99.6	3.1	24.4		96.9	4.1	18.4		99.2	2.9	22.1	11.9	95.6
Greenbelt	7105	2.7	25.5	12.1	100.0	2.1	13.1	3.6	100.0	3.9	17.1		99.2	2.8	17.5	8.3	98.4	1.5	16.0	3.6	93.4
Potsdam_3	7841	5.8	26.9	15.1	100.0	4.1	10.0	7.9	99.9	4.3	15.0		93.7	3.7	9.5	6.9	91.7				
Hartebeesthoek	7501	2.7	32.4	20.5	100.0	2.5	8.0	7.7	100.0	4.2	28.7		100.0	2.8	18.4	8.3	100.0	1.3	34.2	8.0	95.6
McDonald	7080	3.5	37.2	11.9	100.0	3.1	15.3	6.9	99.8	3.3	20.5		100.0	3.1	21.6	7.5	95.7	3.1	16.8	7.0	95.4
Koganei	7308	7.1	31.3	7.6	100.0	5.1	12.7	5.6	99.5	5.5	15.4		92.5	6.8	12.5	2.2	96.0	5.2	25.6	6.5	95.5
Simeiz	1873					74.4	44.8	23.7	98.0	0.5	9.2		-416.7					30.9	35.2	14.5	56.2

ILRS 2008 Q1 Quarterly Report Card Plots (04/01/2007-03/31/2008)

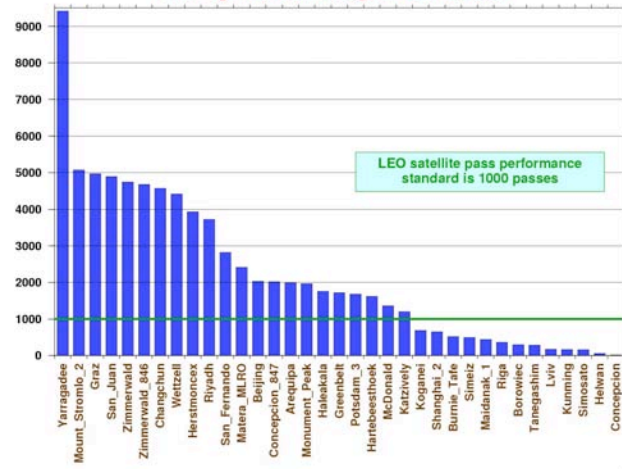
total passes
from April 1, 2007 through March 31, 2008



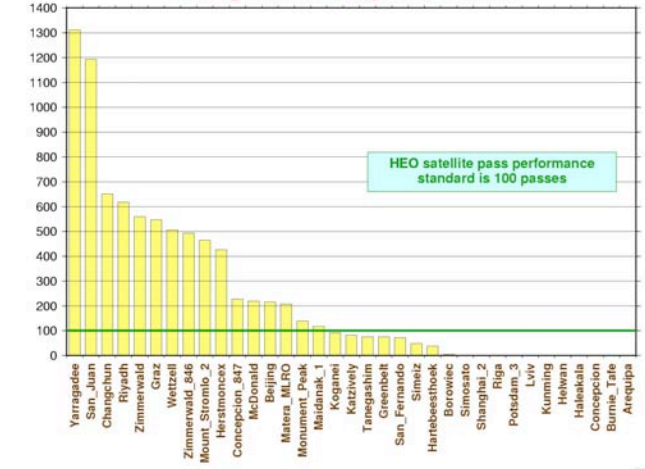
total normal points
from April 1, 2007 through March 31, 2008



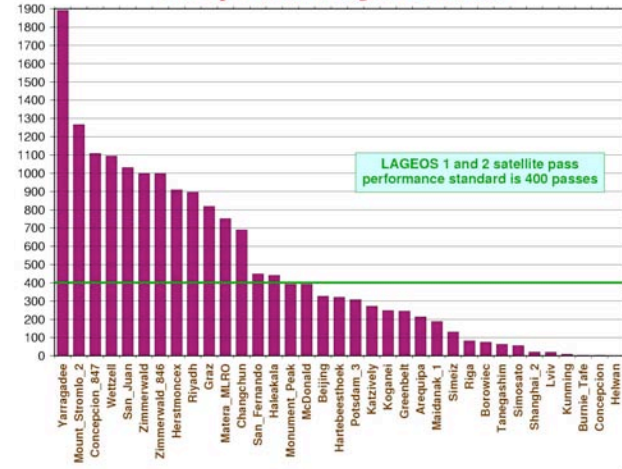
LEO passes
from April 1, 2007 through March 31, 2008



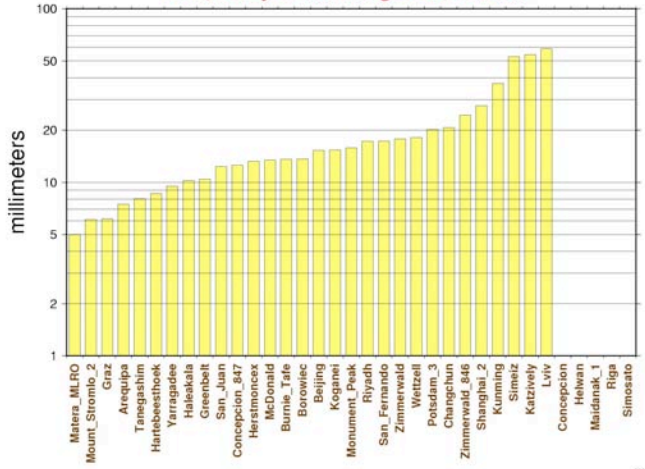
HEO passes
from April 1, 2007 through March 31, 2008



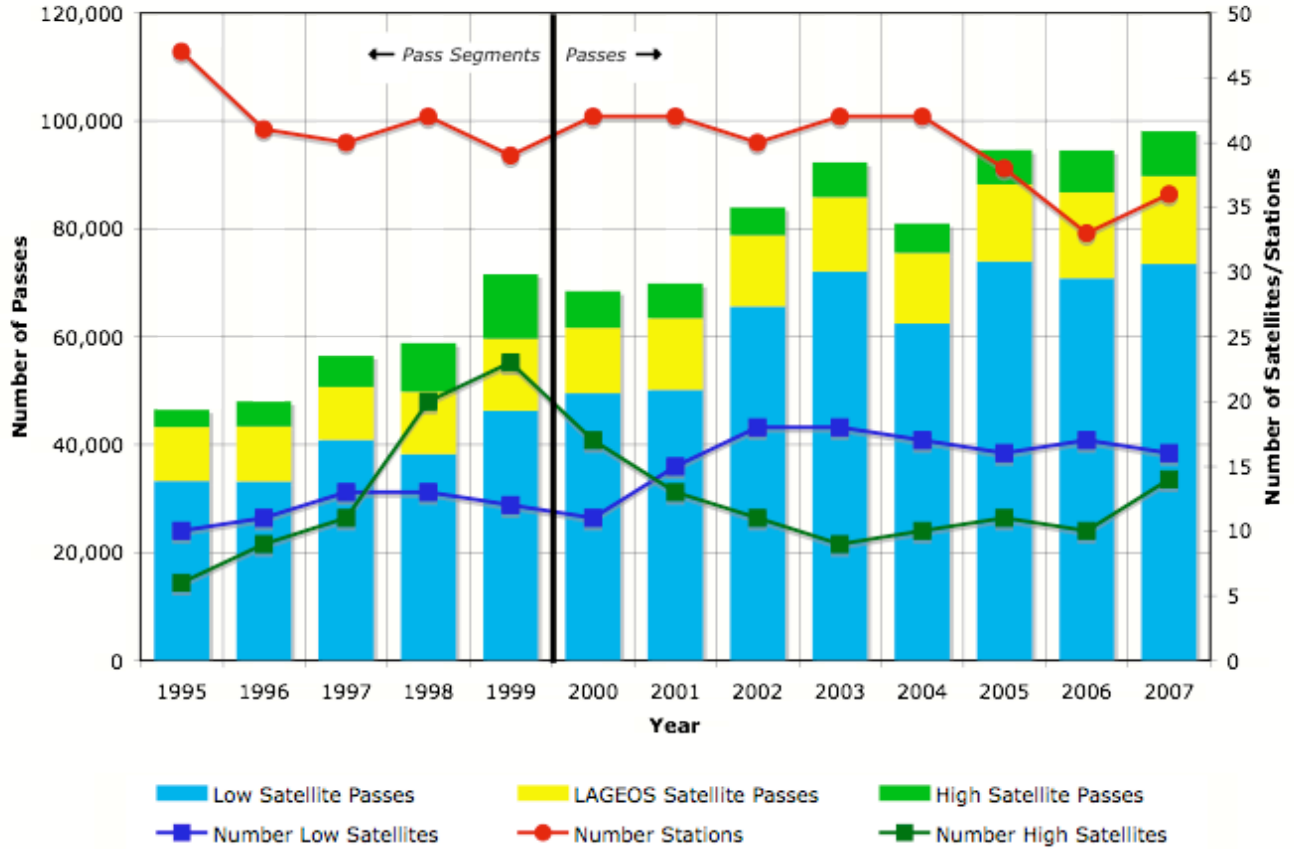
LAGEOS 1 and 2 passes
from April 1, 2007 through March 31, 2008



LAGEOS RMS
from January 1, 2008 through March 31, 2008



Global SLR Data Volume History (1995-2008)



Daily Station Status Report As of April 09, 2008

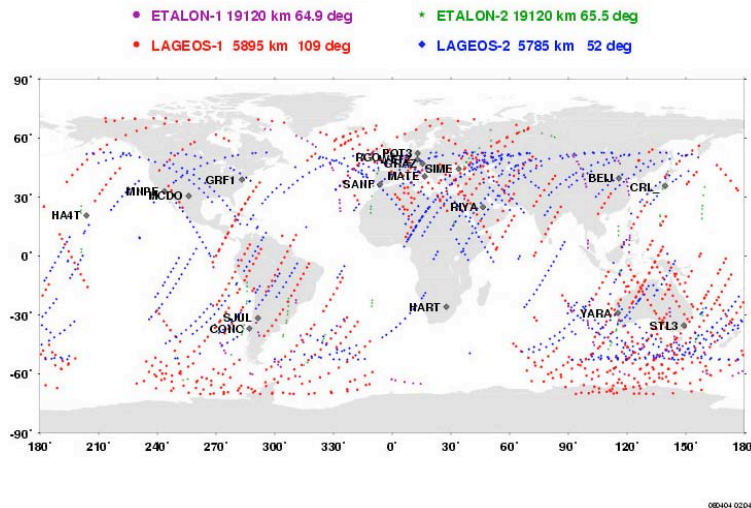
From <http://aiuli3.unibe.ch:8000/slr/daystatus.y08>:

DOY	Date	BURF	CONL	HERL	MATM	POT3	SFEL	TEST	WETL	YARL	ZIML
071	11-Mar-2008	OUT	OUT	OPER		OPER	OPER		OPER	OPER	DOWN
072	12-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
073	13-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
074	14-Mar-2008	OPER	OUT	OUT	OPER	OPER	OPER		OUT	OPER	DOWN
075	15-Mar-2008	OPER	OPER	OUT		OUT	OPER		OPER	OPER	DOWN
076	16-Mar-2008	OPER	OPER	OUT		OPER	OPER		OPER	OPER	DOWN
077	17-Mar-2008	OPER	OPER	OUT	OPER	OPER	OPER	OUT	OUT	OPER	DOWN
078	18-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER	OUT	OPER	OPER	OPER
079	19-Mar-2008	OUT	OPER	OPER	OPER	OPER	OPER	OPER	OPER	OPER	DOWN
080	20-Mar-2008	OPER	OPER	OPER	OPER	OPER	OUT		OPER	OPER	DOWN
081	21-Mar-2008	OPER	OPER	OPER	OPER	OUT			OPER	OPER	DOWN
082	22-Mar-2008	OPER	OPER	OPER	OUT	OUT			OPER	OPER	OPER
083	23-Mar-2008	OPER	OPER	OPER		OPER			OPER	OPER	OPER
084	24-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
085	25-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
086	26-Mar-2008	OPER	OPER	OPER		OPER	OPER		OPER	OPER	DOWN
087	27-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	OPER
088	28-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
089	29-Mar-2008	OPER	OPER	OPER		OPER	OPER		OPER	OPER	OPER
090	30-Mar-2008	OPER	OPER	OPER		OPER	OPER		OPER	OUT	DOWN
091	31-Mar-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
092	01-Apr-2008	OUT	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
093	02-Apr-2008	OUT	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
094	03-Apr-2008	OPER	OPER	OPER	OUT	OPER	OPER		OPER	OPER	DOWN
095	04-Apr-2008	OPER	OPER	OPER		OPER	OPER		OPER	OPER	OPER
096	05-Apr-2008	OPER		OPER		OUT	OPER		OPER	OPER	DOWN
097	06-Apr-2008	OPER		OPER		OPER	OPER		OPER	OPER	DOWN
098	07-Apr-2008	OPER	OPER	OPER	OPER	OPER	OPER		OPER	OPER	DOWN
099	08-Apr-2008	OPER	OPER	OPER	OPER	OPER	OUT		OPER	OPER	DOWN
100	09-Apr-2008	OUT	OPER	OPER	OPER	OPER	OUT		OUT	OPER	DOWN

Plot of Data Used in Products As of April 09, 2008

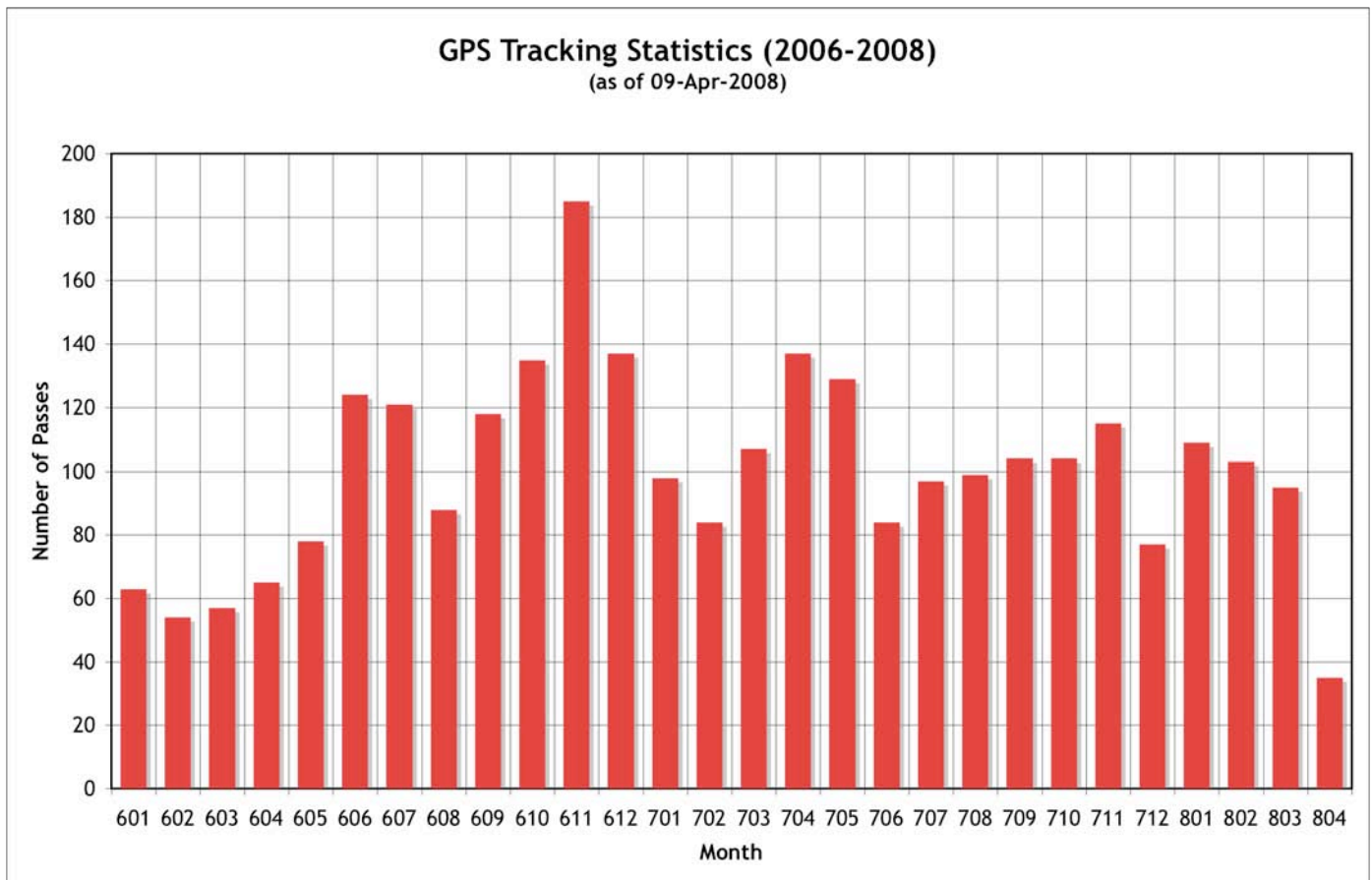
From http://ilrs.gsfc.nasa.gov/products_formats_procedures/products.html:

SLR data used in the ILRS pos+eop product
from 20080323 0 hr through 20080329 24 hr



GPS Tracking Campaign Status March 25 – April 08, 2008

Site Name	Sta.	Start Date	End Date	No. Passes	No. Obs.
Beijing	7249	01-Jan-08	25-Mar-08	3	16
Changchun	7237	01-Jan-08	13-Mar-08	33	189
Concepción	7405	03-Jan-08	06-Mar-08	10	55
Graz	7839	07-Feb-08	06-Apr-08	24	198
Greenbelt	7105	31-Jan-08	25-Mar-08	3	8
Herstmonceux	7840	05-Jan-08	09-Apr-08	25	85
Katzively	1893	13-Feb-08	13-Feb-08	1	4
Koganei	7308	06-Jan-08	31-Mar-08	5	30
Monument Peak	7110	28-Mar-08	28-Mar-08	1	3
Mount Stromlo	7825	05-Jan-08	08-Apr-08	13	36
Riyadh	7832	02-Mar-08	03-Apr-08	15	85
San Juan	7406	02-Jan-08	09-Mar-08	95	568
Tanegashima	7358	18-Jan-08	07-Apr-08	17	96
Wetzell	8834	11-Jan-08	06-Mar-08	7	24
Yarragadee	7090	06-Jan-08	08-Apr-08	88	303
Zimmerwald	7810	21-Jan-08	23-Jan-08	2	6
Totals	16 stations			342	1,706



ILRS Satellite Tracking Priorities March 2008

1. Priorities decrease with:
 - a. increasing orbital altitude; and
 - b. increasing orbital inclination (at a given altitude).
2. Priority of some satellites may then be increased to intensify support for:
 - a. active missions (such as altimetry);
 - b. special campaigns (such as IGLOS); or
 - c. post-launch intensive tracking phases; and
3. Some slight reordering may be done to give higher priority missions with increased importance to the analysis community.

Priority	Mission	Sponsor	Altitude (km)	Inclination (degrees)	Comments
1	TerraSAR-X	Infoterra/DLR/ GFZ/CSR	514	97.44	
2	GRACE-A, -B	GFZ/JPL	485-500	89	Tandem mission
3	CHAMP	GFZ	429-474	87.3	
4	GFO-1	US Navy	790	108.0	Altimetry/no other tracking technique
5	Envisat	ESA	796	98.6	Tandem with ERS-2
6	ERS-2	ESA	800	98.6	Tandem with Envisat
7	Jason-1	NASA/CNES	1,350	66.0	
8	ANDE-RR Passive	NRL	400	51.6	
9	Larets	IPIE	691	98.2	
10	Starlette	CNES	815-1,100	49.8	
11	Stella	CNES	815	98.6	
12	Ajisai	NASDA	1,485	50	
13	LAGEOS-2	ASI/NASA	5625	52.6	
14	LAGEOS-1	NASA	5850	109.8	
15	Beacon-C	NASA	950-1,300	41	Upgraded from campaign to ongoing mission (Jan-02)
16	Etalon-1	Russian Federation	19,100	65.3	
17	Etalon-2	Russian Federation	19,100	65.2	
18	GLONASS-99	Russian Federation	19,100	65	Replaced GLONASS-87 on 01/12/2007
19	GLONASS-95	Russian Federation	19,100	65	Replaced GLONASS-84 on 08/26/2005
20	GLONASS-102	Russian Federation	19,100	65	Replaced GLONASS-89 on 04/05/2007
21	GPS-35	US DoD	20,100	54.2	
22	GPS-36	US DoD	20,100	55.0	
23	GIOVE-A	ESA	29,601	56	

Lunar Tracking Priorities

Priority	Retroreflector Array	Sponsor	Altitude (km)
1	Apollo 15	NASA	356,400
2	Apollo 11	NASA	356,400
3	Apollo 14	NASA	356,400
4	Luna 21	Russian Federation	356,400
5	Luna 17	Russian Federation	356,400

Remaining Governing Board Action Items

EGU, Vienna Austria (April 26, 2005):

1. CB will contact the IAG Outreach to suggest that the IAG make its participants aware of the issue of service recognition issue in publications, papers, reports, and presentations.
 - IGS, IVS, ILRS, and IDS continue to work on a joint activity to:
 - Jointly request that the IAG take positive action (Web site notice, messages to the community, etc) to activate its community;
 - Consider contacting relevant journals and journal referees to help enforce this citation.
2. CB will check if the local ties have been measured for the Riyadh and Changchun SLR stations. *(Done)*
 - Survey activity under consideration in Riyadh in conjunction with a possible DORIS installation
 - Surveys at Riyadh and Changchun must still be completed
3. A subgroup of technology and science representatives should write a white paper on the future vision for SLR. *(assigned 04/2005)*
4. Appleby will provide station signal strength regimes to the CB for placement in the site logs with perhaps a separate table automatically updated/extracted and linked to the CoM pages on the ILRS Web site. The information is not in the site log now so the format will have to be modified. *(assigned 04/2005)*
5. Review data analysis/station feedback capabilities within the ILRS. *(assigned 04/2005)*
 - DGFI will propose a procedure to incorporate inputs from analysis groups, assess quality of stations, provide feedback to the station on a best-possible epoch station position and velocity (to be included in the site log, by the station), and report on plans in Canberra
 - ASI will use the combination results to develop a review process and develop a simple report that gives an overview of (LAGEOS) data production and their use for the pos+eop product, for submission to stations and managers *(Noomen, Luceri, Gurtner)*.

Eastbourne UK (October 10, 2005):

1. Examine the eccentricity files to see if they could serve as a source for the list of key information. *(Noomen) (assigned 11/2005)*
2. Consolidate the presentations to Geoscience Australia into a 1 hour talk *(assigned 11/2005)*

Vienna, Austria (April 16, 2007):

1. Draft an ILRS retroreflector standard for GB action. *(Pearlman) (assigned 04/2007)*

Grasse, France (September 28, 2007)

1. Randy Rinklefs and the Data Formats and Procedures WG will draft an implementation plan for the CRD format for review at the EGU meeting in Vienna in April 2008 *(Rinklefs) (assigned 09/2007)*

GGOS Ground Networks and Communications Working Group

(Joint Meeting with IERS Working Group 2)

Seminar Room (SEM124) - 3rd floor.
Vienna University of Technology
Institute of Geodesy and Geophysics
Advanced Geodesy (128-1)
Gusshausstr. 27-29, 1040 Wien
April 16, 18:00 - 21:30 hours

Agenda

1. Update on GGOS – What’s happening
2. Simulation activities to scope the future network
 - a. John Ries - bias and center-of-mass offset issues, impact on the TRF
 - b. Scale
 - c. Chopo Ma/Dan MacMillan – VLBI simulations
 - d. Erricos Pavlis – SLR Simulations and combination simulations
3. Ground Survey/inter-system vector measurement activity – Chopo Ma
4. Progress on GNSS retroreflectors – Mike Pearlman
5. Five minute Services briefs
 - a. IVS – Chopo Ma
 - b. ILRS – Mike Pearlman
 - c. IDS – Frank Lemoine
 - d. IGS – ??
 - e. IGFS – Steve Kenyon
 - f. IERS – Chopo Ma
6. Anything else?

Sandwiches, refreshments and drinks will be served at a modest charge.