ILRS Update for ILRS Governing Board

October 15, 2008

ILRS Central Bureau
NASA GSFC, Greenbelt, MD USA
cb@cddis.gsfc.nasa.gov

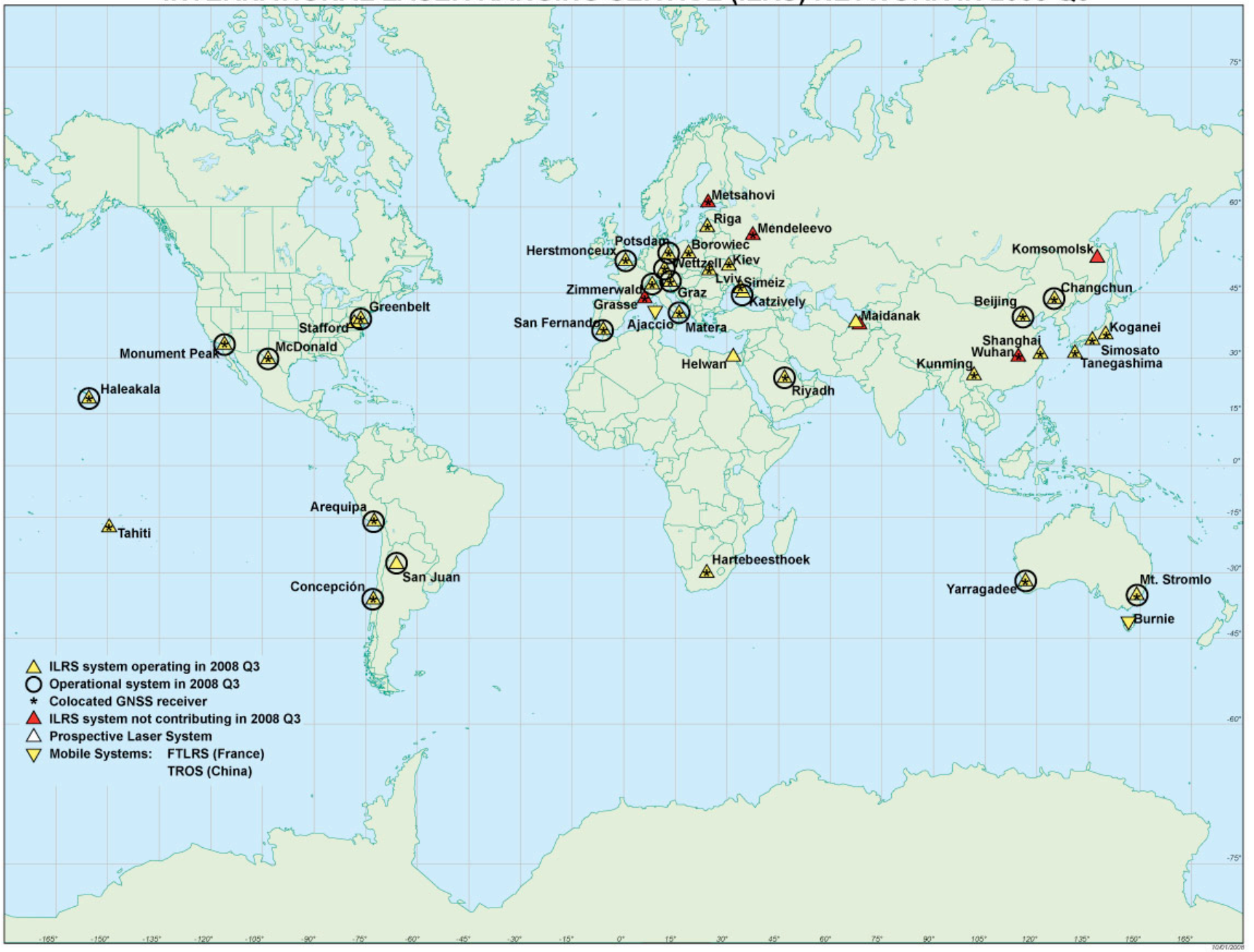
Agenda

1. Opening Remarks (5 min.)	W. Gurtner
2. Review of Elections/Election of GB Chair (5 min.)	M. Pearlman
3. Selection of Working Group Chairs and Co-Chairs (10 min.)	M. Pearlman
4. ILRS Status/Action Items (15 min.)	M. Pearlman
5. Working Group Briefs and Recommendations (5-10 min each)	WG Chairs
✦ Analysis	E. Pavlis/C. Luceri
✦ Missions	G. Appleby
✦ Data Formats and Procedures	W. Seemueller
✦ Networks and Engineering (including Stanford Counter tests)	G. Kirchner
✦ Transponders	J. McGarry
6. Task Force Reports (5 min. each)	
✦ Communications	E. Pavlis
✦ Center-of-Mass Corrections	G. Appleby
7. ILRS Special Issue in Journal of Geodesy (5 min.)	E. Pavlis
8. GGOS Activities (5 min.)	M. Pearlman
9. Current Issues (10 min.)	
✦ Station Performance	M. Pearlman
✦ Coping with Future Satellite Missions	W. Gurtner
10. ILRS Membership in FAGS	M. Pearlman
11. New Business	W. Gurtner/WG Chairs
12. Other Business	W. Gurtner

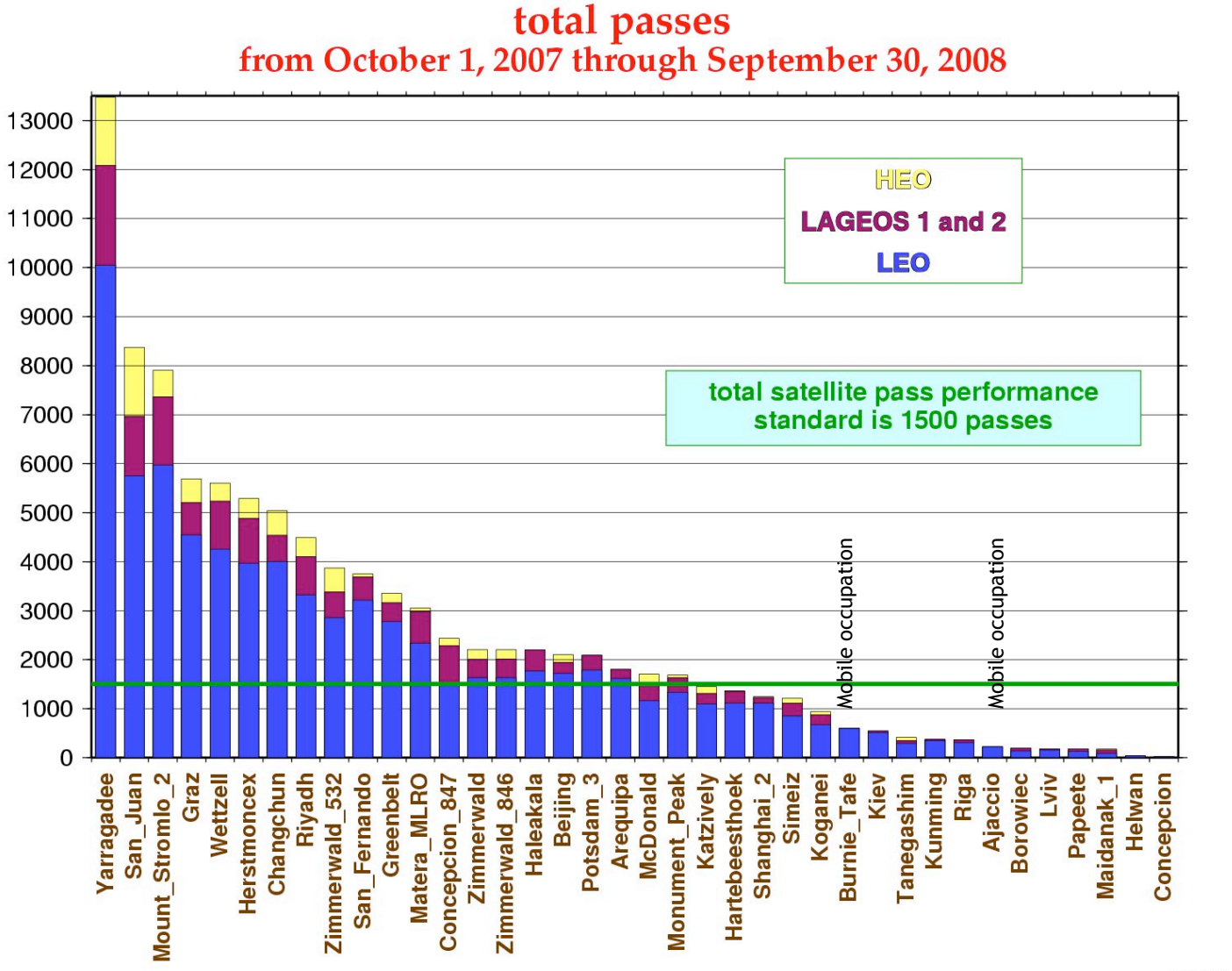
Network Status

- 33 stations regularly providing tracking data in 2008
- Most productive stations are Yarragadee, San Juan, Mt. Stromlo, Graz, Wettzell, Zimmerwald, Herstmonceux, Riyadh, and Changchun
- Newly refurbished Grasse MEO station on-line soon
- Tahiti now operational; meeting with NASA, CNES, and UFP to be held October 20-22, 2008
- FTLRS completed Jason calibration/validation campaign in Burnie, Tasmania; now operational in Ajaccio
- TROS to operate at KASI, Korea for one year tracking campaign in 2008

INTERNATIONAL LASER RANGING SERVICE (ILRS) NETWORK IN 2008 Q3



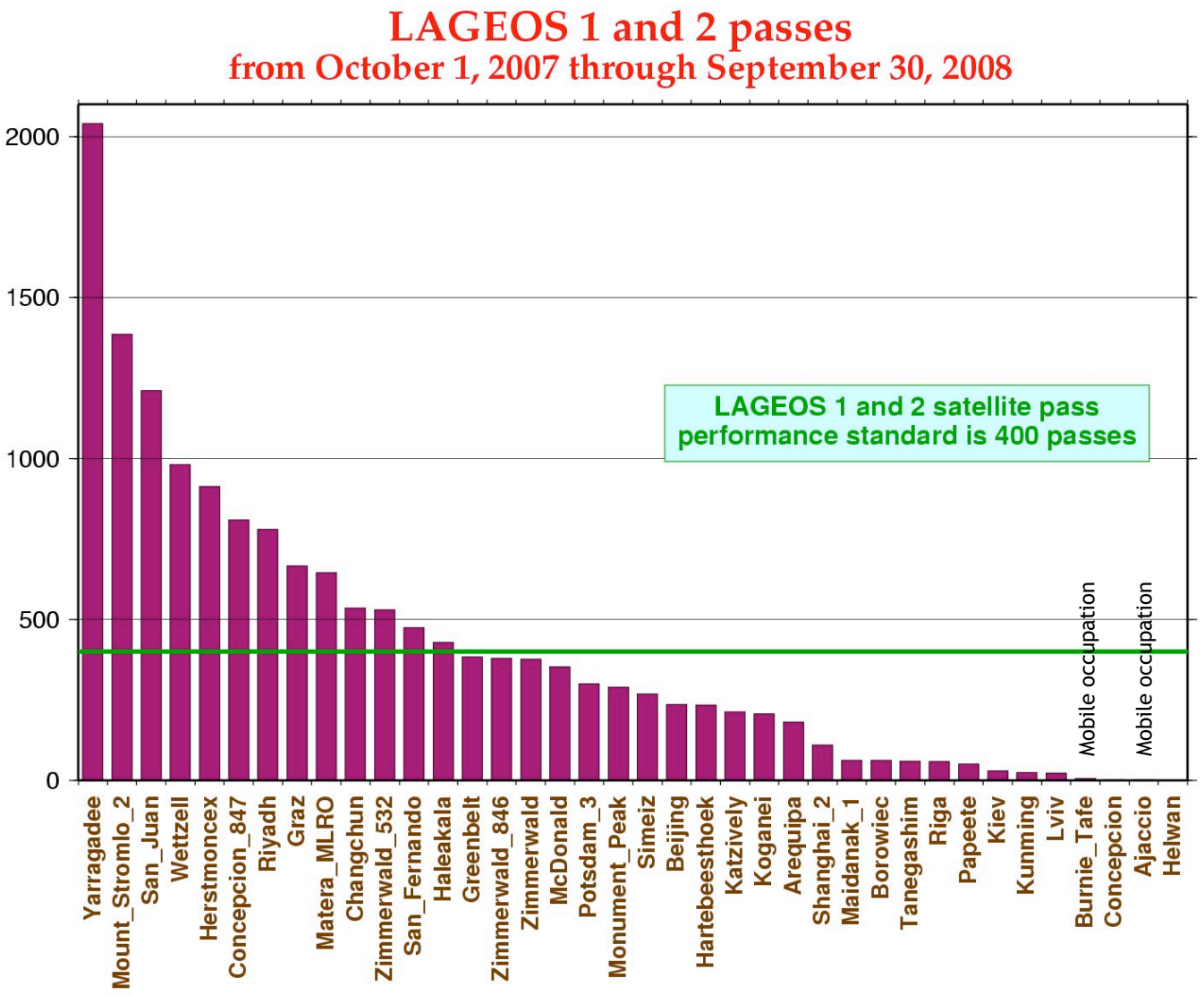
Station Performance
All Satellites (2008Q3)



Note: One third of the stations do not achieve 1500 passes per year

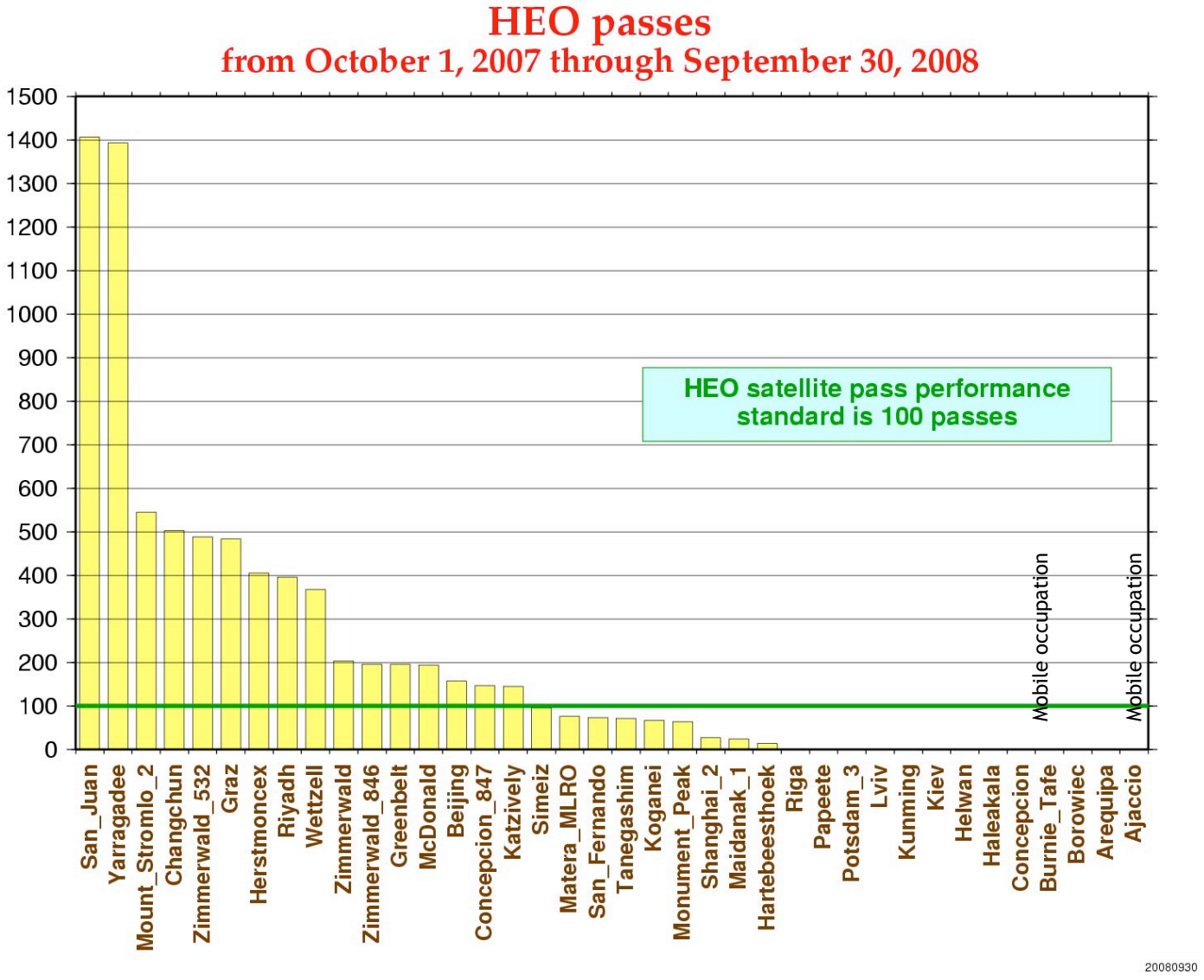
Station Performance

LAGEOS Satellites (2008Q3)

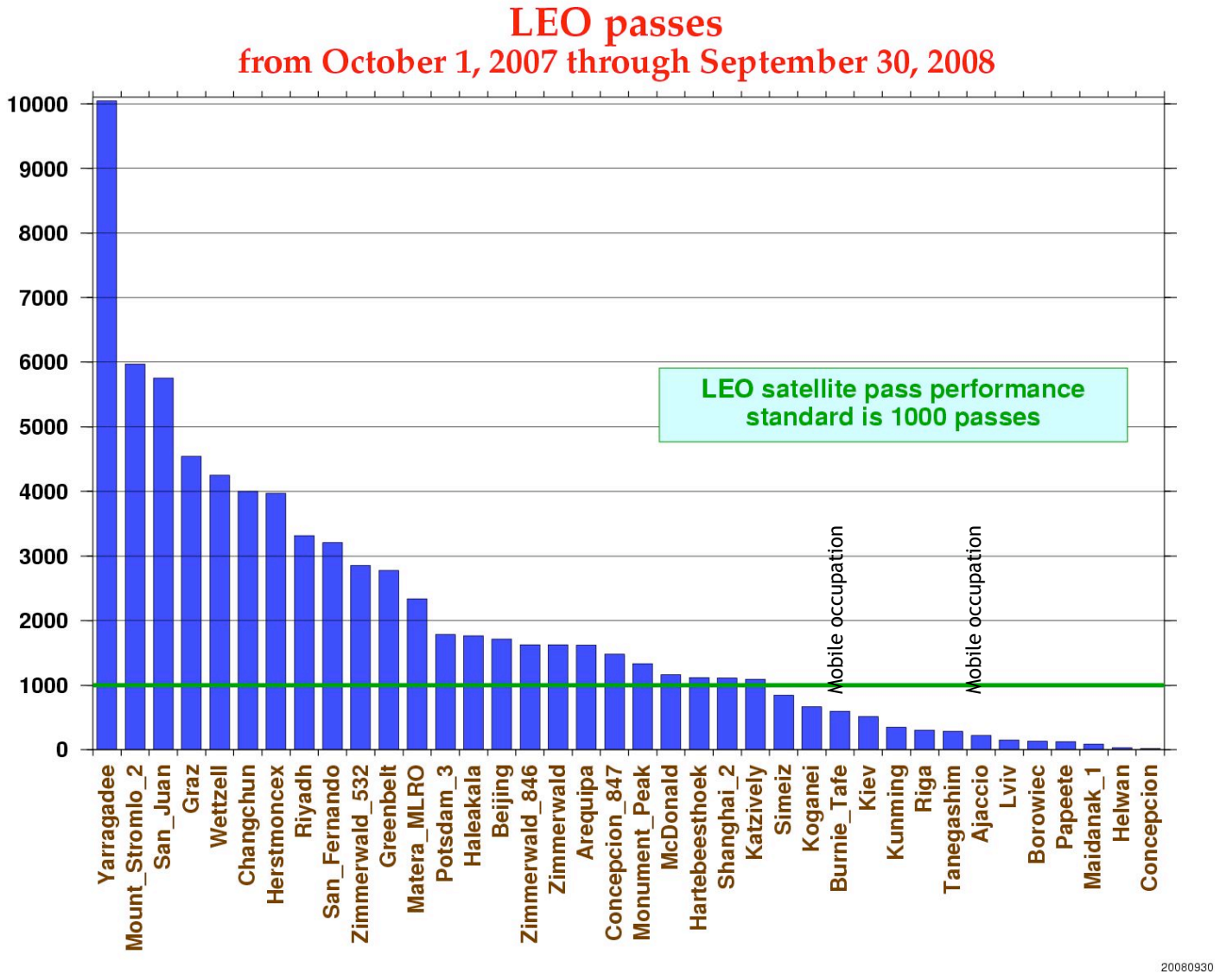


Note: More than half of the station do not achieve 400 LAGEOS passes per year

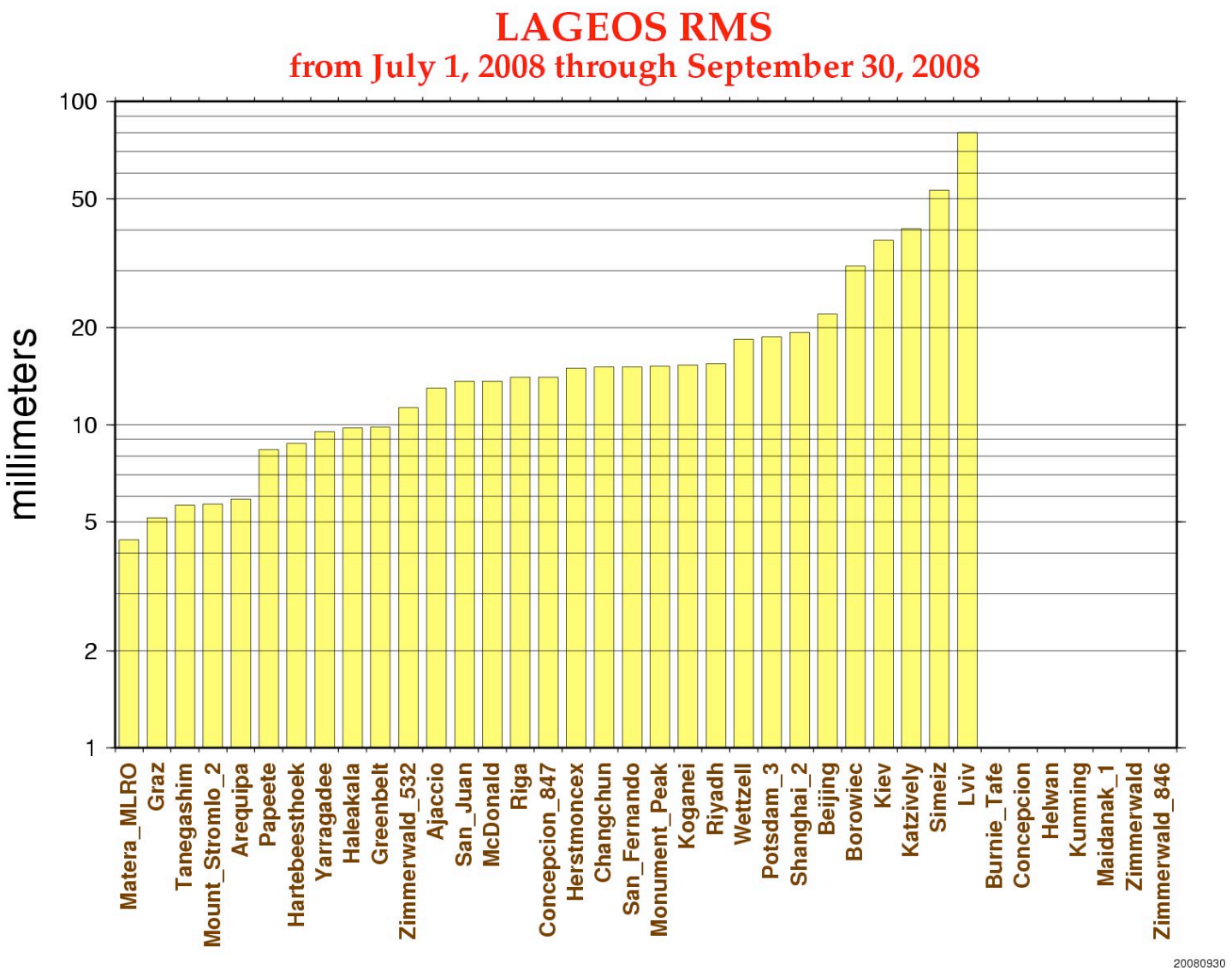
Station Performance
High Satellites (2008Q3)



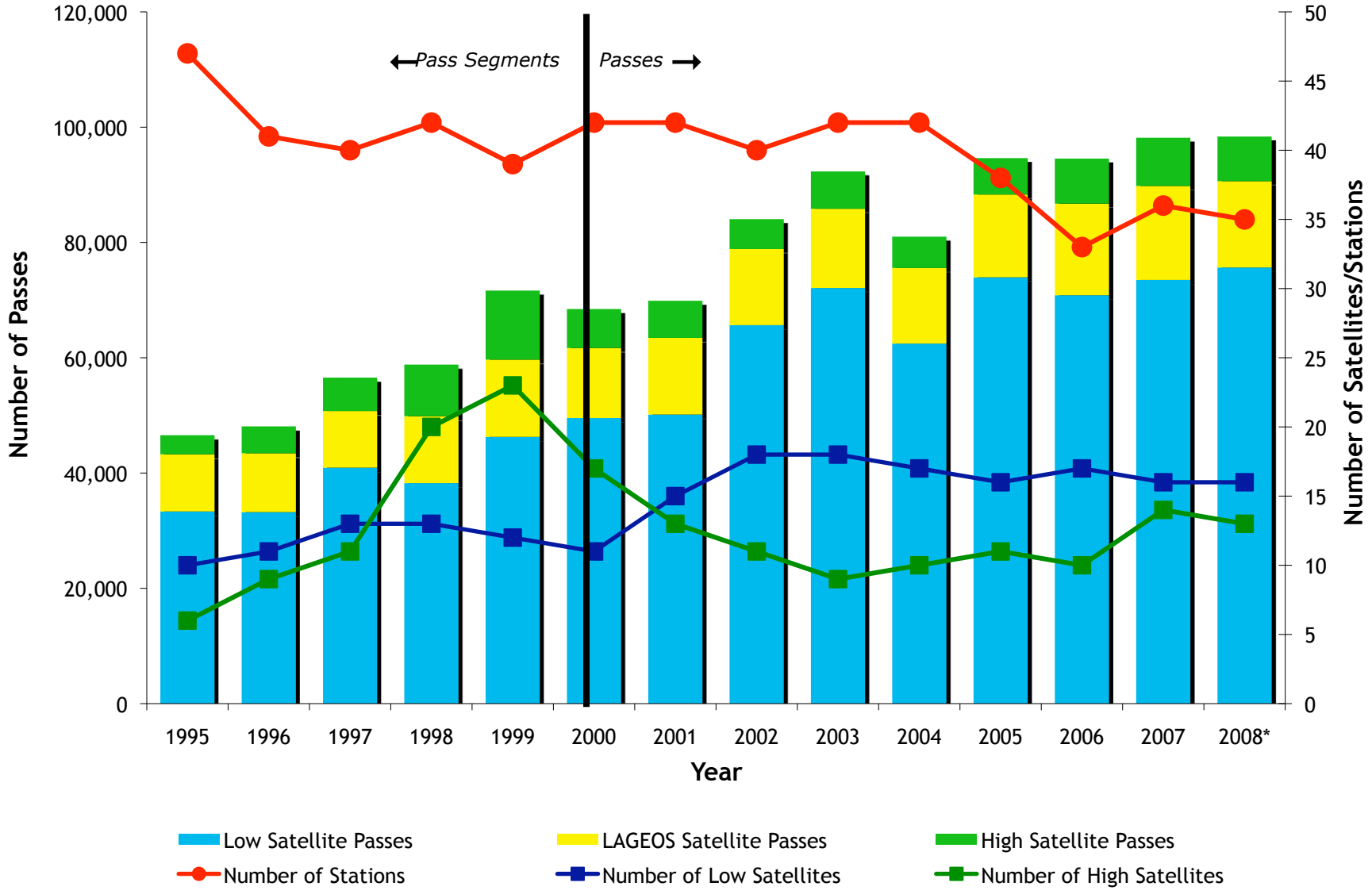
Station Performance
Low Satellites (2008Q3)



Station Performance
LAGEOS RMS (2008Q3)



Annual Data Yield



*Note: 2008 totals based on 9 months of data prorated to full year for comparison purposes

Mission Developments

- Supporting 27 missions and lunar tracking
- GIOVE-B launched on April 27, 2008; first intensive tracking campaign now underway
- ANDE-Passive re-entered in May 2008; a few stations were able to track down below 300 km (good omen for GOCE)
- Two-month campaign on GPS-35 and -36 completed; GPS-35 will soon be decommissioned
- COMPASS-M1 mission support request submitted on 09/24/2008
- ILRS GB approved support for GOCE (gravity field); scheduled for launch on October 5 (may slip due to some launch vehicle issues)
- OICETS campaign scheduled for October 2008-February 2009
- QZS-1 (test for Japanese Navigation satellite system) approved for ILRS tracking; launch in 2009
- LRO launch now scheduled for early 2009
- New Mission Support Request form under review by ILRS CB

2008 GPS Campaign

(21-Mar-2008 through 31-May-2008)

Site Name	Station	Start Date	End Date	Number Passes	Number Normal Pts.	Number Minutes
Beijing	7249	25-Mar-08	25-Mar-08	1	3	15
Changchun	7237	24-Apr-08	31-May-08	4	16	80
Graz	7839	25-Mar-08	31-May-08	33	278	1,390
Greenbelt	7105	25-Mar-08	05-May-08	2	4	20
Herstmonceux	7840	27-Mar-08	22-May-08	23	73	365
Katzively	1893	05-May-08	05-May-08	1	6	30
Koganei	7308	27-Mar-08	31-Mar-08	2	9	45
Matera	7941	14-Apr-08	14-Apr-08	1	6	30
McDonald	7080	14-Apr-08	30-May-08	12	54	270
Monument Peak	7110	28-Mar-08	15-Mar-08	4	9	45
Mount Stromlo	7825	01-Apr-08	29-May-08	13	49	245
Riyadh	7832	25-Mar-08	12-May-08	19	94	470
San Juan	7406	25-Mar-08	29-May-08	52	322	1,610
Simeiz	1873	23-May-08	24-May-08	2	50	250
Tanegashima	7358	26-Mar-08	18-May-08	20	103	515
Wettzell	8834	13-Apr-08	15-May-08	18	79	395
Yaragadee	7090	25-Mar-08	28-May-08	41	146	730
Zimmerwald	7810	19-Apr-08	13-May-08	15	61	305
Totals:	18 stations			263	1,362	6,810

Network tracking averaged 33 passes/week

Meetings

- November 11-15, 2008: Ocean Surface Topography Science Team (OSTST) and IDS Workshops, Nice France
- December 15-19, 2008: Fall AGU, San Francisco CA
  - December 14, 2008: GGOS Steering Committee Meeting
  - December 17, 2008: GGOS Ground Networks and Communications WG Meeting
- April 19-24, 2009: EGU General Assembly, Vienna Austria
- August 31-September 04, 2009: IAG Scientific Assembly, Buenos Aires Argentina
- 2011: IUGG General Assembly, Melbourne Australia

Action Items

- **Vienna, Austria (April 16, 2007):**
  - Draft an ILRS retroreflector standard for GB action. (Pearlman) *(assigned 04/2007; done)*
- **Grasse, France (September 28, 2007)**
  - Randy Ricklefs 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 (Ricklefs) *(assigned 09/2007; done)*
- **Vienna, Austria (April 14, 2008)**
  - G. Bianco and V. Luceri will provide MLRO range bias correction tables and document the system's problems in 2007 for the ILRS Web site and SLRMail. (Bianco, Luceri) *(assigned 04/2008; done)*
  - The editorial board will develop a table of contents for the ILRS special issue for the Journal of Geodesy. *(assigned 04/2008)*
  - The CB will contact the other two stations to ascertain their interest in participating in Stanford Counter testing. *(assigned 04/2008)*
  - The ILRS must provide input material for the NRC Committee. *(assigned 04/2008; done)*

ILRS Membership in FAGS

- Federation of Astronomical and Geophysical Data analysis Services (FAGS)
- H. Drewes (on behalf of IAG/IUGG) has requested ILRS apply for membership to FAGS
- Current IAG services in FAGS: IERS, IGS, IVS, PSMSL, BGI, ICET
- Provides endorsement from International Council for Science (ICSU) to services and data systems
- In near future, FAGS and World Data Centers (WDC) will merge into World Data System (WDS)
- IUGG would like IAG services to apply for membership to FAGS prior to final approval of WDS
- IUGG approves applications to FAGS; has indicated that applications from existing IAG Services will be approved
- Requires representation at yearly meetings
- May require FAGS representation on ILRS Governing Board (=> update of Terms of Reference)

NGSLR Developments

- Have ranged to most LEOs, both LAGEOS satellites, as well as GLONASS-95 with eyesafe 2khz laser.
- Have ranged to many LEOs, both LAGEOS satellites, GLONASS and ETALON with LRO laser (still not GPS).
- Point-ahead problems have been resolved - we expect to start daylight ranging shortly.
- Issues with ground calibrations have delayed start of co-location with MOBLAS-7. We now expect co-location to happen December 2008.
- Two full-time operators are onboard but are currently spending much of their time at MOBLAS-7.
- Need to complete the process of requesting entry into ILRS (i.e., filling out the logs).
- Closed-loop tracking is still being worked in background. Highest priority is co-locating.

LRO-LR Developments

- LRO launch is now late April 2009.
- Call for participation received 2 formal responses: Zimmerwald and Herstmonceux. Both stations have been accepted by the selection committee. Hopefully response memo will have gone out to both stations by the time these notes are read.
- Wettzell is expected to turn in a formal response.
- Matera and Mt Stromlo may turn in responses to the "Call". Have had discussions with both but still unclear.
- There are potential damage issues to LOLA with all of the stations (except for Herstmonceux) which must be discussed with each station.
- Predictions (CPFs) will be provided by GSFC. Data from stations must be delivered in CRD format. Go/NoGo flag provided by the mission will be in ILRS specified form and function.
- Stations that are ranging to LRO synchronously will be provided with routines to make use of the LRO clock and LOLA earth window information.
- We are working on an "upgrade" to the MOBLAS systems which will allow MOB-5 and MOB-6to participate in LRO-LR.
- Real-time LRO-LR website is up and has been tested with spacecraft. End-to-End testing with NGSLR, LOLA, LOLA-SOC and LRO was performed in late August.
- Hope to have several tests with all participating stations in late 2008 and early 2009.