Cooperation between Stations and Analysts, Status and Future

Horst Müller

Deutsches Geodätisches Forschungsinstitut, München
E-Mail: mueller@dgfi.badw.de

General Aspects

- Station Qualification
  - A station used as *core*-station in the processing must fulfil certain criteria to guarantee the quality and stability of the products
  - Status can change during time
- Coordinate Solutions
  - Weekly generation of station positions and earth orientation parameters (available from ILRS)
  - Time series of station positions
- Bias Estimation
  - Daily bias reports for all Lageos-1/2 passes

DGFI

FGS

Station Qualification

- Data Quality
  - single shot precision
  - *no* systematic errors (no biases, system calibration)
- Reliability
  - certain number of passes per week
  - at least 2 Lageos 1 and 2 passes
  - tracking of most targets
- Stability
  - station should operate for a longer time span

http://geodesy.jcet.umbc.edu/ILRS_QCQA/

EVALUATION, VALIDATION AND MONITORING OF ILRS COMBINATION PRODUCTS

OPERATIONAL SERIES QC/QA

(1993 - Present)

SUMMARY REPORT BY AC

(CURRENT WEEK)

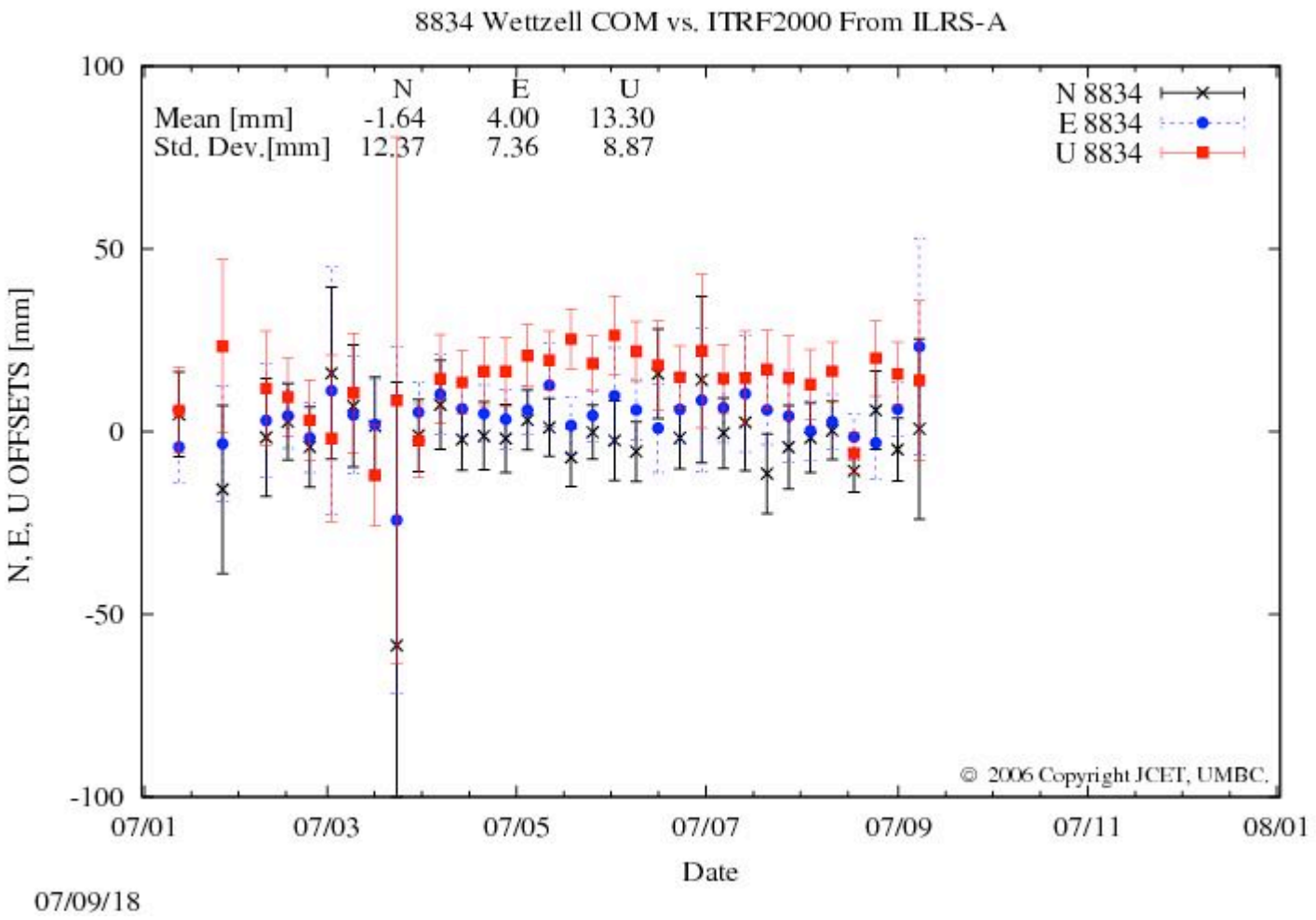
ILRSA	ILRSB
ASI	ASI
BKG	BKG
DGFI	DGFI
GFZ	GFZ
JCET	JCET
NSGF	NSGF
COMBINATION	COMBINATION

PREVIOUS WEEKS REPORT

DGFI

FGS

http://geodesy.jcet.umbc.edu/ILRS_QCQA/



http://www.dgfi.badw.de/dgfi/ILRS-AAC/quality/index.html

Station	year	mm	dd	hh	mm		range-bias [cm]	sigma [cm]	prec.est. [cm]	no of observations	edit.	time-bias [microsec.]	sigma
Graz____	2007	8	19	21	25	:	-6.36	4.73	0.18	9	0		
Katsivel	2007	8	23	18	15	:	1.04	5.98	0.66	6	0		
Katsivel	2007	8	24	02	07	:	-3.66	4.63	0.54	7	0		
Maidanak	2007	8	19	17	40	:	-15.97	5.39	3.02	6	0		
Maidanak	2007	8	21	18	06	:	0.25	2.35	3.05	7	0		
Maidanak	2007	8	22	16	17	:	24.54	4.83	5.92	4	0		
Maidanak	2007	8	24	16	21	:	41.62	5.79	3.94	8	1		
Maidanak	2007	8	25	18	25	:	2.59	3.73	2.53	8	0		
Zimm._re	2007	8	19	07	22	:	67.77	6.84	4.84	7	0		
Zimm._re	2007	8	22	06	11	:	-2.21	2.17	0.14	8	0		
Zimm._re	2007	8	23	07	51	:	-1.23	2.24	0.32	23	0		
Zimmerwa	2007	8	19	07	27	:	67.40	6.89	2.02	6	0		
Zimmerwa	2007	8	22	06	11	:	-1.41	2.22	0.24	8	0		
Zimmerwa	2007	8	23	07	52	:	0.45	2.48	0.26	14	0		
Conc_red	2007	8	19	02	02	:	0.93	3.25	0.23	24	0		
Conc_red	2007	8	19	16	15	:	-9.89	4.05	0.26	9	0		
Conc_red	2007	8	20	14	25	:	4.47	6.93	0.35	4	0		
Conc_red	2007	8	22	18	35	:	-9.92	3.63	0.37	12	0		
Wettzell	2007	8	20	01	27	:	-0.26	1.05	0.36	5	0		
Wettzell	2007	8	22	05	55	:	-1.61	2.34	0.37	7	0		
Wettzell	2007	8	22	20	07	:	13.86	7.32	0.31	3	0		
Wettzell	2007	8	23	00	12	:	-3.53	2.75	0.11	6	0		
Wettzell	2007	8	23	04	12	:	-5.57	2.38	0.28	3	0		
Beijing_	2007	8	24	16	30	:	9.52	1.47	1.19	14	0		
Fort_Dav	2007	8	20	17	16	:	9.17	4.04	0.28	3	0		
Fort_Dav	2007	8	21	15	28	:	-3.33	2.13	0.31	7	0		
Monument	2007	8	21	10	54	:	-1.55	2.21	0.27	16	0		
Monument	2007	8	21	15	03	:	-1.46	0.80	0.23	26	0		
Yarragad	2007	8	20	03	14	:	1.39	2.82	0.54	7	0		
Yarragad	2007	8	20	07	23	:	-0.56	4.99	0.16	6	0		
Yarragad	2007	8	20	11	10	:	0.37	0.70	0.28	27	0		

http://aiuli3.unibe.ch:8000/slr/summary_report.txt

```
                    ILRS Combined Range Bias Report
                    ********************************

                  2007-09-06 00:00 UT - 2007-09-19 00:00 UT

                  Compiled by:  SLR Observatory Zimmerwald
                  Date        :  2007-09-20 12:30 UT
                  E-Mail      :  Werner.Gurtner@aiub.unibe.ch

-------------------------------------------------------------------------------
7090 YARL Yarragadee                    DGFI       MCC        HIT-U      SAO
                          sc   wl     rb  pr     rb  pr     rb  pr     rb  pr
-------------------------------------------------------------------------------
7090 2007-09-06 00:18 L1  532     20   3      5   4      5   3
7090 2007-09-06 03:12 L2  532     -5   1     14   3     22   4
7090 2007-09-06 04:04 L1  532     34   2     32   2     76   2
7090 2007-09-06 07:34 L2  532     43   2      4   2     23   2
7090 2007-09-06 11:07 L2  532    -27   4      3   3      4   2
7090 2007-09-06 16:03 L1  532     -3   2      8   2      3   2
7090 2007-09-08 04:42 L1  532    -24   2    -14   2     -5   4
7090 2007-09-08 07:56 L2  532    -55   1      3   1      1   1
7090 2007-09-08 11:21 L2  532      8   3    -27   1     -3   2
7090 2007-09-08 16:50 L1  532      2   2     12   2     12   1
7090 2007-09-08 20:29 L1  532    162   6     13   3      7   2
7090 2007-09-08 23:50 L1  532    107   6      1   2      0   1
......
......
7090 2007-09-17 23:55 L2  532      0   5                -5   2
7090 2007-09-18 01:45 L1  532      1   0                 3   0
7090 2007-09-18 04:49 L2  532     41   2                16   2
7090 2007-09-18 05:07 L1  532     -6   2                14   2
7090 2007-09-18 12:55 L2  532     39   2                -5   2
7090 2007-09-18 13:53 L1  532     -8   1                 7   1
7090 2007-09-18 17:18 L1  532      6   1                 2   1
-------------------------------------------------------------------------------
7090 Average              532      5   3      3   2      4   1
-------------------------------------------------------------------------------
```

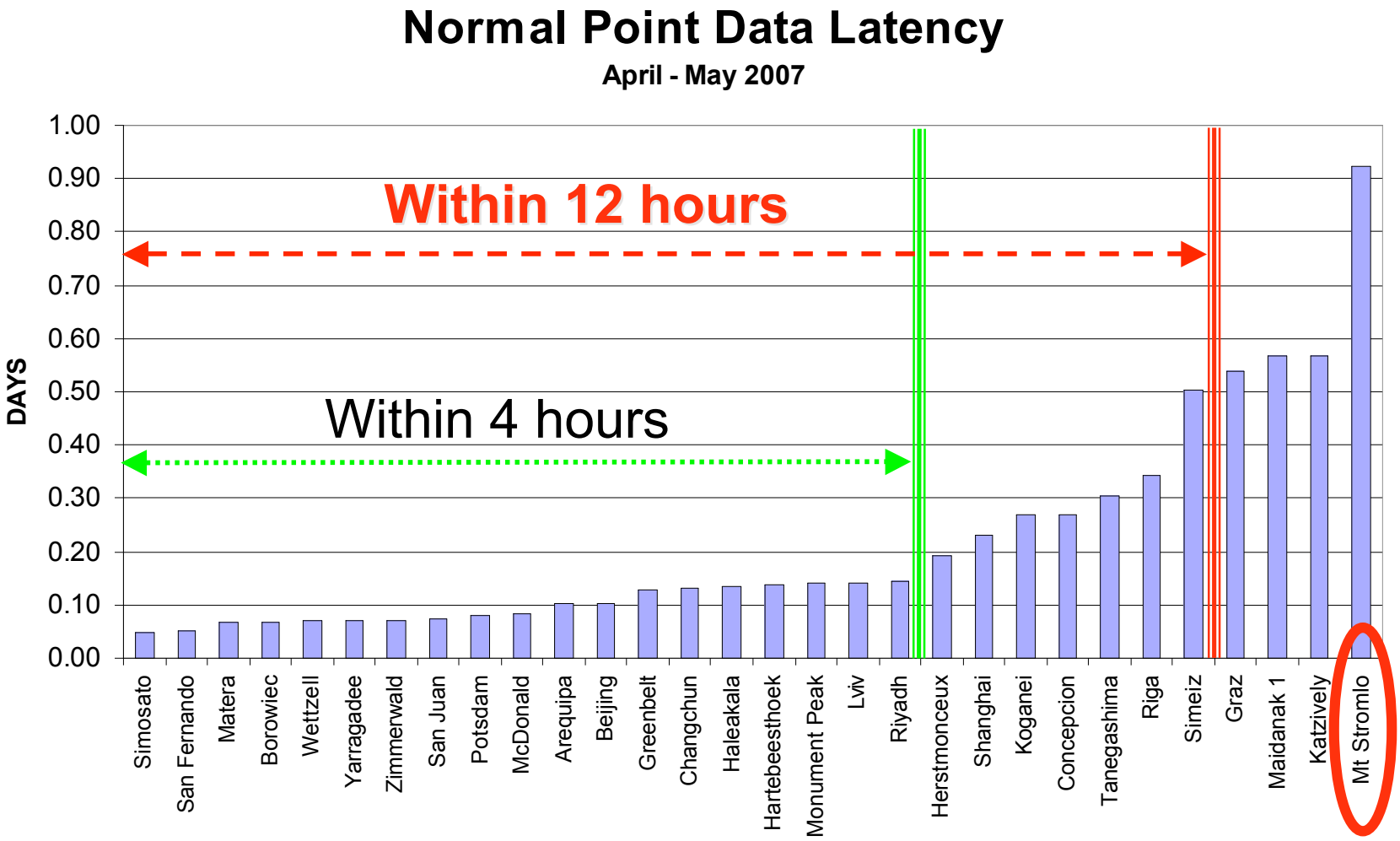
http://aiuli3.unibe.ch:8000/slr/summary_report.txt

			DGFI		MCC		HIT-U	
1864	Average	532	-18	15	-10	35	-45	21
1873	Average	532	5704	29	267	71	5723	72
1884	Average	532	59	6	7	7	16	4
1893	Average	532	-19	13	10	7	12	10
7080	Average	532	91	3			18	3
7090	Average	532	8	2	2	2	4	1
7105	Average	532	-4	1	21	1	9	1
7110	Average	532	18	3	-14	2	0	1
7119	Average	532	1	3			-1	2
7237	Average	532	23	6	13	1	36	5
7249	Average	532	98	9	7	8	-33	5
7308	Average	532	-3	2			11	2
7358	Average	532	71	4			25	1
7403	Average	532	-24	3	5	6	33	4
7405	Average	847	-2	2	-2	2	3	1
7406	Average	532	2	3	-6	3	-9	2
7501	Average	532	2	1	1	3	-5	1
7810	Average	846	-5	4	-7	3	-1	3
7810	Average	423	0	3	1	3	8	2
7824	Average	532	43	3	5	3	2	2
7825	Average	532	17	6	-6	4	-3	7
7832	Average	532	-2	3	-16	2	-7	2
7839	Average	532	0	1	-4	2	-8	1
7840	Average	532	0	2	9	3	6	1
7841	Average	532	7	7			-26	3
7941	Average	532	-19	2	-6	2	-23	1
8834	Average	532	-22	3			-21	3

Daily submission of earth orientation parameters

- Requirements
  - Short time spans between tracking and data delivery
  - Quick response on detected tracking problems
  - Closer contact between analysts and stations
- Advantage
  - stations get a quicker feedback
  - analysts get better results

Network Delivery Record



Conclusion and Outlook

- Presently there is only a loose contact between stations and analysts. Mainly through ILRS Web pages or meetings.
- The ILRS/AWG has some products which may help to improve the quality of tracking data
- Stations should try to shorten the time span between tracking and delivery
- The AWG will help stations to keep data quality
- New products require closer cooperation