

QuickTime™ and a
Photo - JPEG decompressor
are needed to see this picture.



Quality control of ILRS data and products

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JCET/Univ. of Maryland Baltimore County, and
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epavlis@UMBC.edu

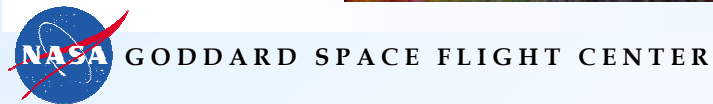
Magdalena Kuzmich-Cieslak

JCET/Univ. of Maryland Baltimore County



ILRS Fall 2007 Workshop

25-28 September 2007 Grasse, France



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Motivation



- **Validation of ILRS data and products**
 - **Important and essential task**
 - **SLR group is the most appropriate for this task**
 - **ILRS analysis can provide information for this task**



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Status (2007)



- ILRS provides QC reports from a number of analyses at various centers, disseminated via SLReport email list
- The ILRS AWG generates reports from its weekly analysis that can be used to evaluate and validate its products and at the same time, give useful feedback on station performance and changes
 - Currently *LAGEOS 1 & 2, ETALON 1 & 2* only
 - In near future, *Starlette* and *Ajisai* to be added
 - More satellites can be considered in the future



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Access via WWW



EVALUATION, VALIDATION AND MONITORING OF ILRS COMBINATION PRODUCTS

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

in.gr - Κεντρική σελίδα UMBC Weather: Live Java Google Earth - Home The Joint C...ology Home EVALUATIO... PRODUCTS Monitoring o...t (NP) Data ILRS Trackin...nt (NP) Data Google GR

 **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
GA	GA
GFZ	GFZ
JCET	JCET
NSGF	NSGF
COMBINATION	COMBINATION

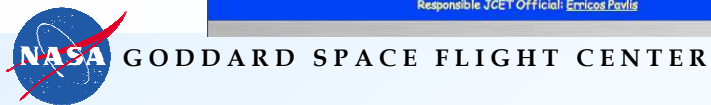
PREVIOUS WEEKS REPORT

RELEASE v4.2

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 International Laser Ranging Service

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"Challenges for laser ranging in the 21st century"
ILRS Fall 2007 AWG Meeting, Grasse, France, 25-28 Sept., 2007

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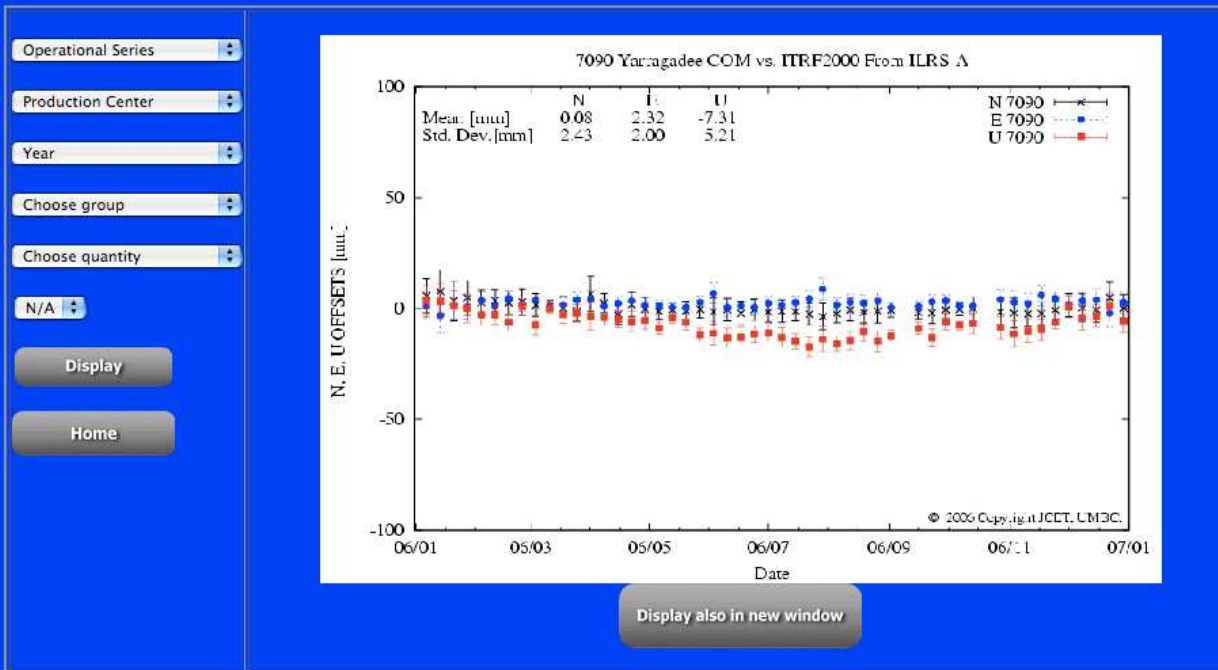


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$\Delta N - \Delta E - \Delta U$ Example (7090)



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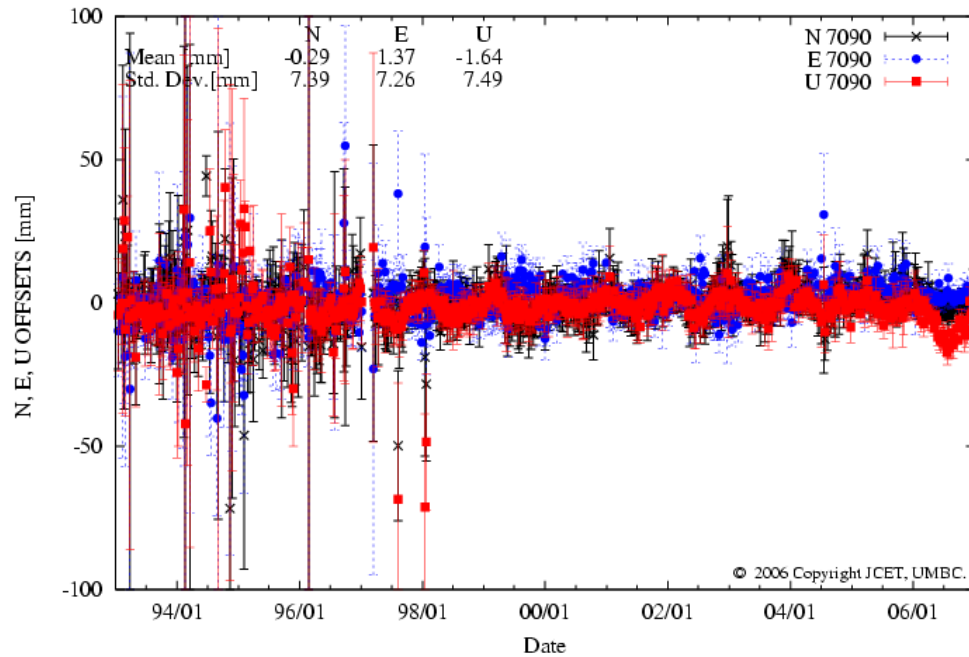


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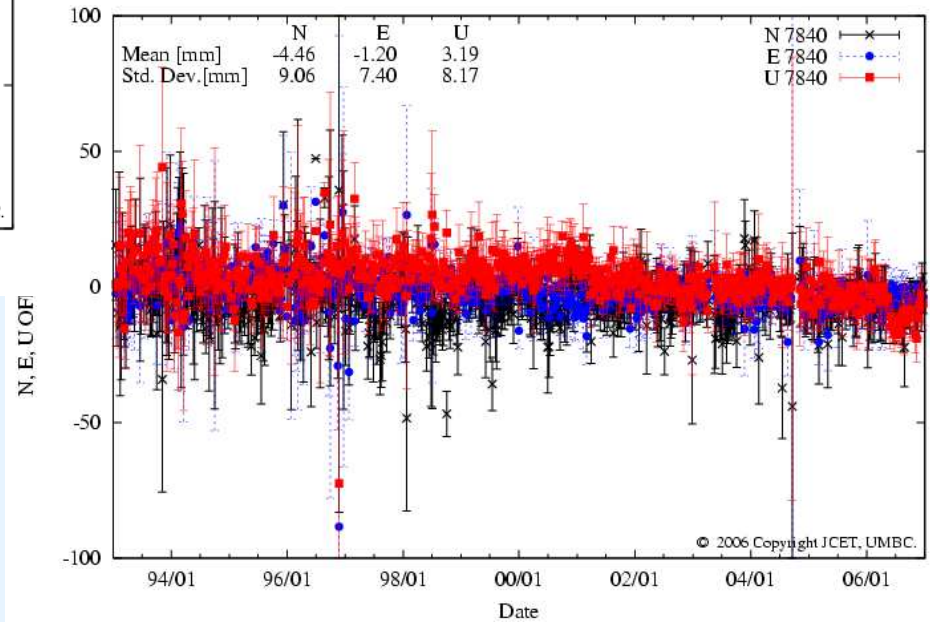
Long-term behavior example



7090 Yarragadee COM vs. ITRF2000 From ILRS-A

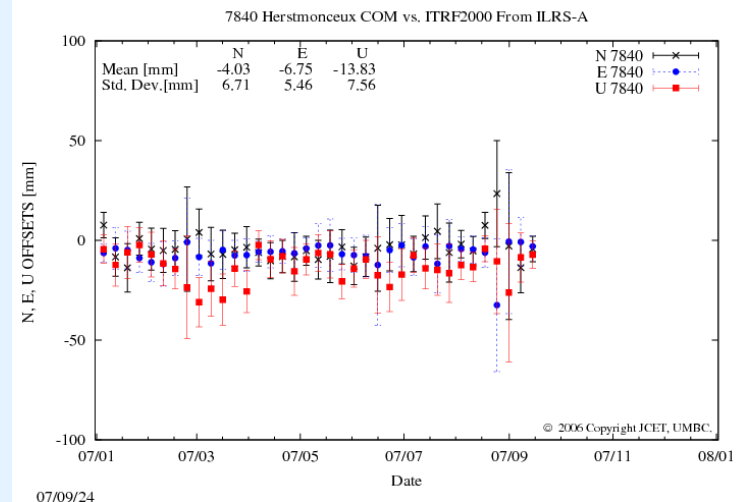
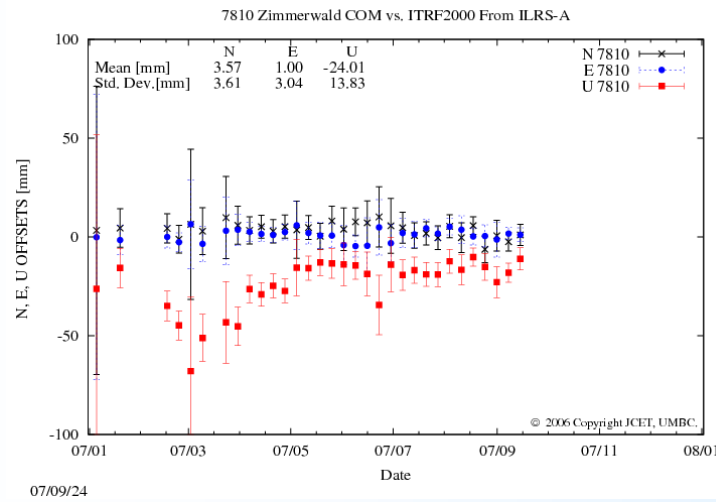
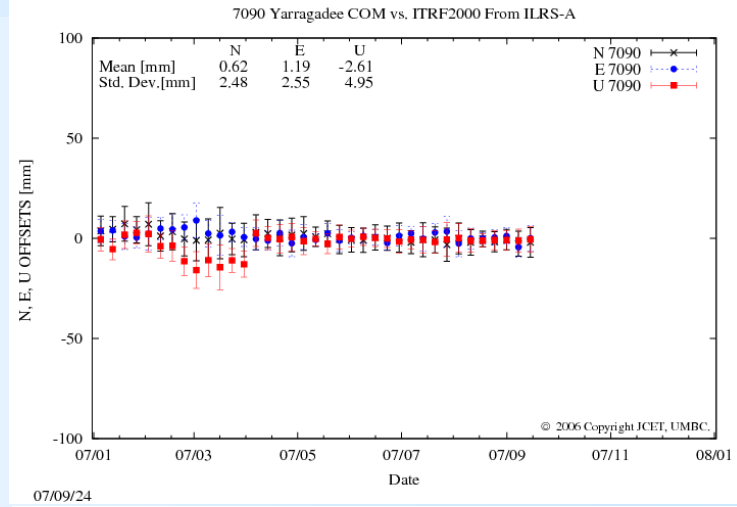
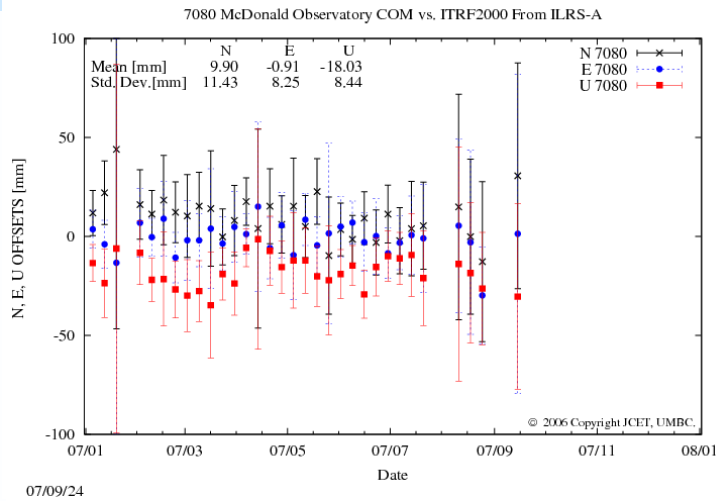


7840 Herstmonceux COM vs. ITRF2000 From ILRS-A



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Short-term behavior example



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Weekly Report of AC & CC



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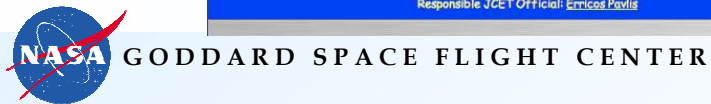
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Long-term behavior example



ASI REPORT
FOR WEEK 070915
FROM ILRSA



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New Station Bias Report + ...



JCET

```
# @070809
# @Date span: 070722 - 070729
# @contact epavlis@umbc.edu
# @website http://geodesy.jcet.umbc.edu/
# @version 1.0
#
```

each line contains:

```
#
# STA ID           = site name
# YY/MM/DD HH:MM  = pass starting time
# SAT              = satellite name (L1: LAGEOS1; L2: LAGEOS2; E1: ETALON1; E2:ETALON2; S1: STARLETTE; A1: AJISAI)
# GOOD OBS        = number of accepted normal points
# RAW RMS         = residual RMS before editing & bias estimation
# PREC EST        = post-fit scattering rms
# RANGE BIAS      = estimated range bias
# RANGE BIAS SIGMA = estimated range bias sigma
# TIME BIAS       = estimated time bias
# TIME BIAS SIGMA = estimated time bias sigma
# PASS DUR        = pass duration
# EDIT OBS        = number of bad normal points
# CALIB+ MEAN     = mean Applied System Delay (ILRS FR format cols 97-104)
# CALIB SDEV      = mean System Calibration Method (ILRS FR format cols 126)
# CALIB SHIFT+    = mean Root Mean Square (ILRS FR format cols 111-114)
# STPASS RMS      = mean Pass RMS (ILRS FR format cols 58-64)
# TEMP            = mean surface temperature [K]
# HUM             = mean relative humidity of surface %
# PRES           = mean pressure [hPa]
# WLEN            = wavelength [nm]
# SCH             = System Change Indicator (ILRS FR format cols 127)
# SCI             = System Configuration (ILRS FR format cols 128)
# DRF             = Data Release Flag (ILRS FR format cols 130)
# ELEVATION MAX   = maximum elevation for pass [degrees]
# ELEVATION MIN   = minimum elevation for pass [degrees]
#
```

#1864 Maidanak 12340S002

#	STA ID	YY/MM/DD	HH:MM	SAT	GOOD	RAW	PREC	RANGE	RANGE	TIME	TIME	PASS	EDIT	CALIB+	CALIB	CALIB++	STPASS	TEMP	HUM	PRES	WLEN	S S D	ELEVATION			
#					OBS	RMS	EST	BIAS	BIAS	BIAS	BIAS	DUR	OBS	MEAN	SDEV	SHIFT	RMS	[K]	%	[hPa]	[nm]	C C R	MAX	MIN		
#						[mm]	[mm]	[mm]	SIGMA	[us]	SIGMA	[min]		[mm]	[mm]	[mm]	[mm]					H I F	[degrees]			
#	18645401	7/07/22	16:27	L1	7	29.8	25.7	-16.3	12.2	-4.6	2.8	12	0	21416	E	0	0	P	44	285.1	58.0	732.0	532.0	0 0 0	33.8	30.8
#	18645401	7/07/22	16:27	L1	7	29.8	25.7	-16.3	12.2	-4.6	2.8	12	0	21416	E	0	0	P	44	285.1	58.0	732.0	532.0	0 0 0	33.8	30.8
#	18645401	7/07/23	16:53	A1	6	13.9	11.0	-8.5	8.9	1.3	3.6	3	3	21413	E	0	0	P	82	287.1	50.0	732.0	532.0	0 0 0	68.2	53.1
#	18645401	7/07/23	18:37	L1	4	55.4	35.1	-25.6	8.2	-3.5	2.7	15	2	21412	E	0	0	P	88	287.1	50.0	732.0	532.0	0 0 0	52.4	32.2
#	18645401	7/07/23	18:37	L1	4	55.4	35.1	-25.6	8.2	-3.5	2.7	15	2	21412	E	0	0	P	88	287.1	50.0	732.0	532.0	0 0 0	52.4	32.2
#	18645401	7/07/24	15:58	A1	4	11.4	11.4	-0.6	10.6	-5.0	4.1	4	6	21415	E	0	0	P	104	287.1	41.0	734.7	532.0	0 0 0	54.6	45.6
#	18645401	7/07/24	17:11	L1	6	21.5	7.9	-25.1	10.9	2.6	2.8	10	0	21415	E	0	0	P	49	287.1	41.0	734.7	532.0	0 0 0	38.7	34.0
#	18645401	7/07/24	17:11	L1	6	21.5	7.9	-25.1	10.9	2.6	2.8	10	0	21415	E	0	0	P	49	287.1	41.0	734.7	532.0	0 0 0	38.7	34.0

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Summary



- ILRS AWG maintains new web-based QC/QA tool for ACs/CCs as well as stations
- Updated with WEEKLY products every Thursday (soon more frequently)
 - Yearly graphs for near-term performance of several estimates (NEU, XYZ, etc.)
 - Long-term performance since 1993
- Pass-by-pass bias report for all sites and L 1 & 2, E 1 & 2, and Starlette and Ajisai