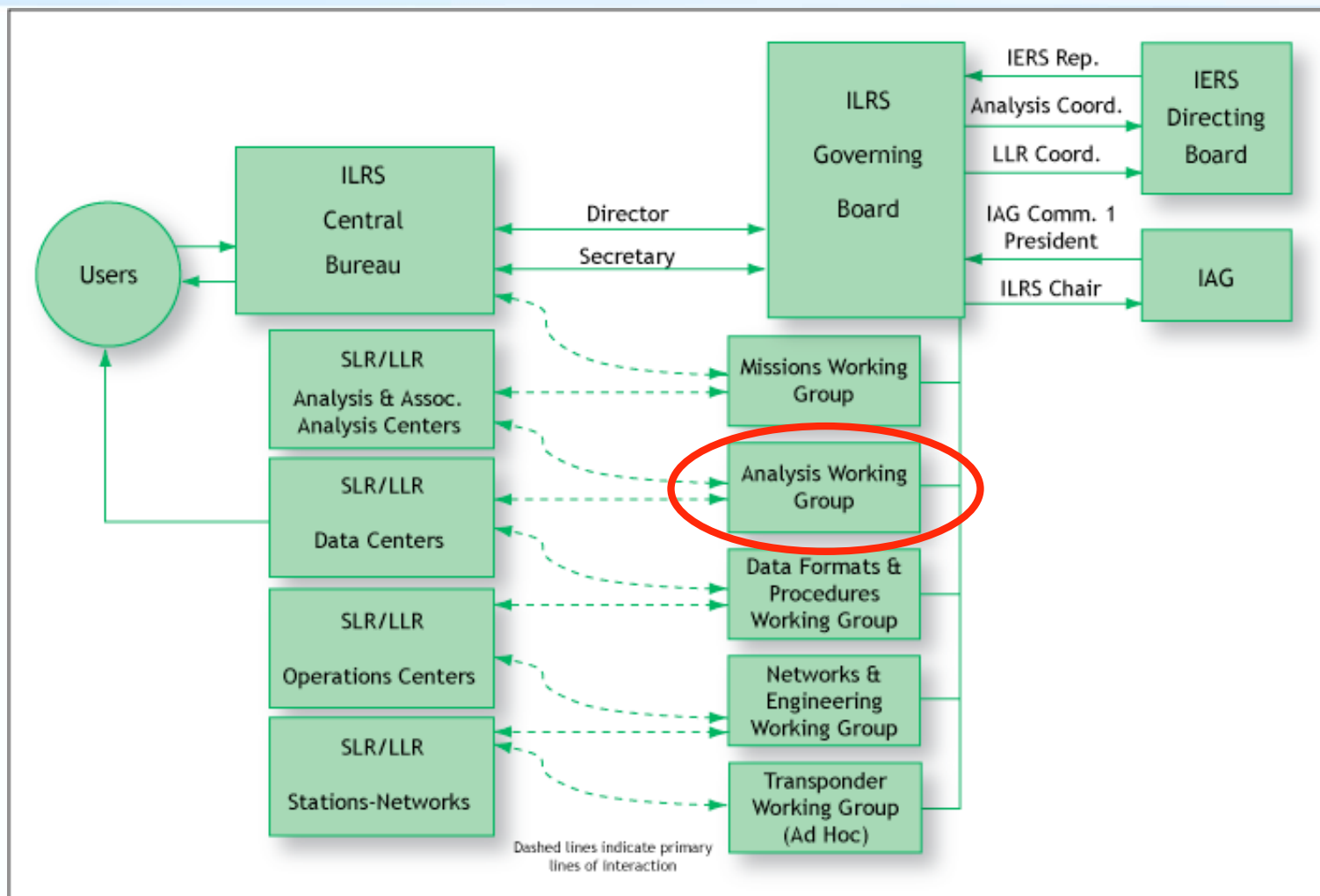


Product Generation and Future: ILRS

Erricos C. Pavlis
ILRS Analysis Coordinator
JCET/UMBC & NASA Goddard

Unified Analysis Workshop 2007
Beach Resort Monterey, 5-7 December, 2007



- **Roles and responsibilities of the AWG:**
 - ✓ Support the SLR Analysis Coordinator
 - ✓ Provide quality control on IERS submissions
 - Ensure data compatibility with other techniques
 - Provide feedback to the Networks and Engineering WG on station/network performance
 - ✓ Support the Missions WG in their analyses
 - Establish and maintain a knowledge base for the analysis community

- The ILRS AWG comprises of eight ACs and two CCs at present:

- ACs :

- ASI, Matera, Italy
- BKG, Bonn, Germany
- DGFI, München, Germany
- GA, Australia
- GFZ, Potsdam, Germany
- GRGS, Grasse, France
- JCET, Baltimore, USA, and,
- NSGF, Herstmonceux, UK

- CCs :

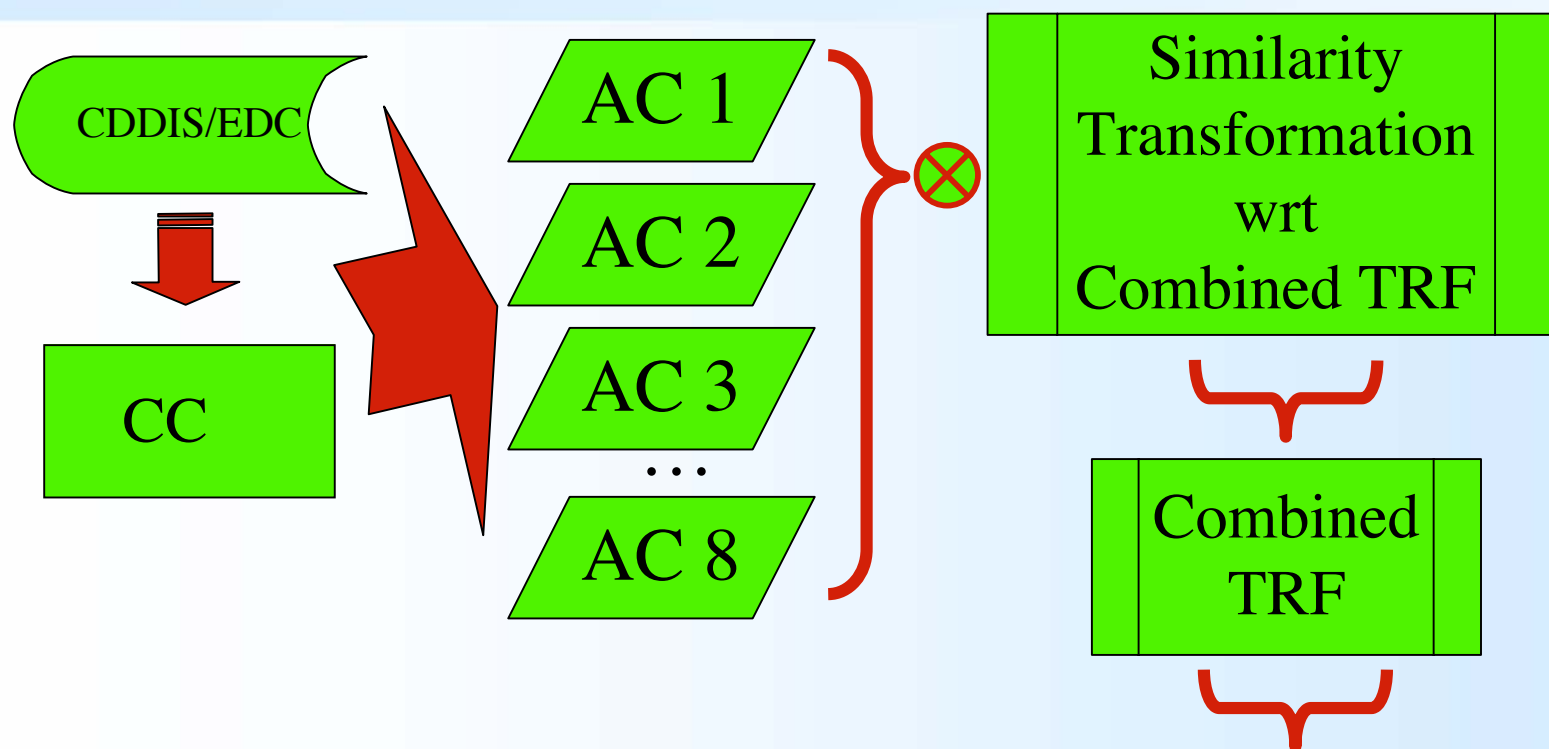
- ASI, Matera, Italy
- DGFI, München, Germany

The AWG started its activities in September 1999, with its first meeting held in Florence, Italy

AC Analysis Process

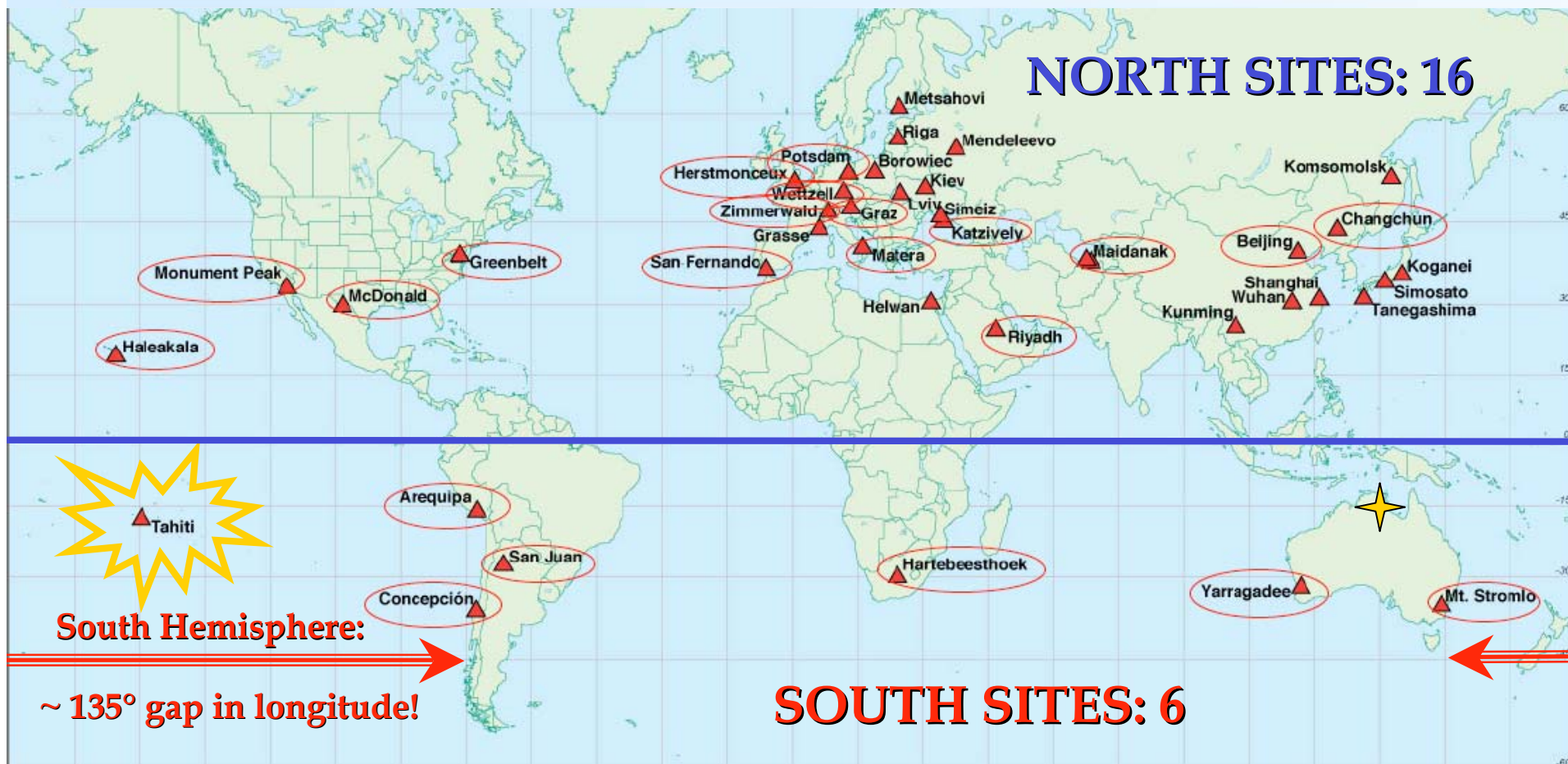


CC Combination Process

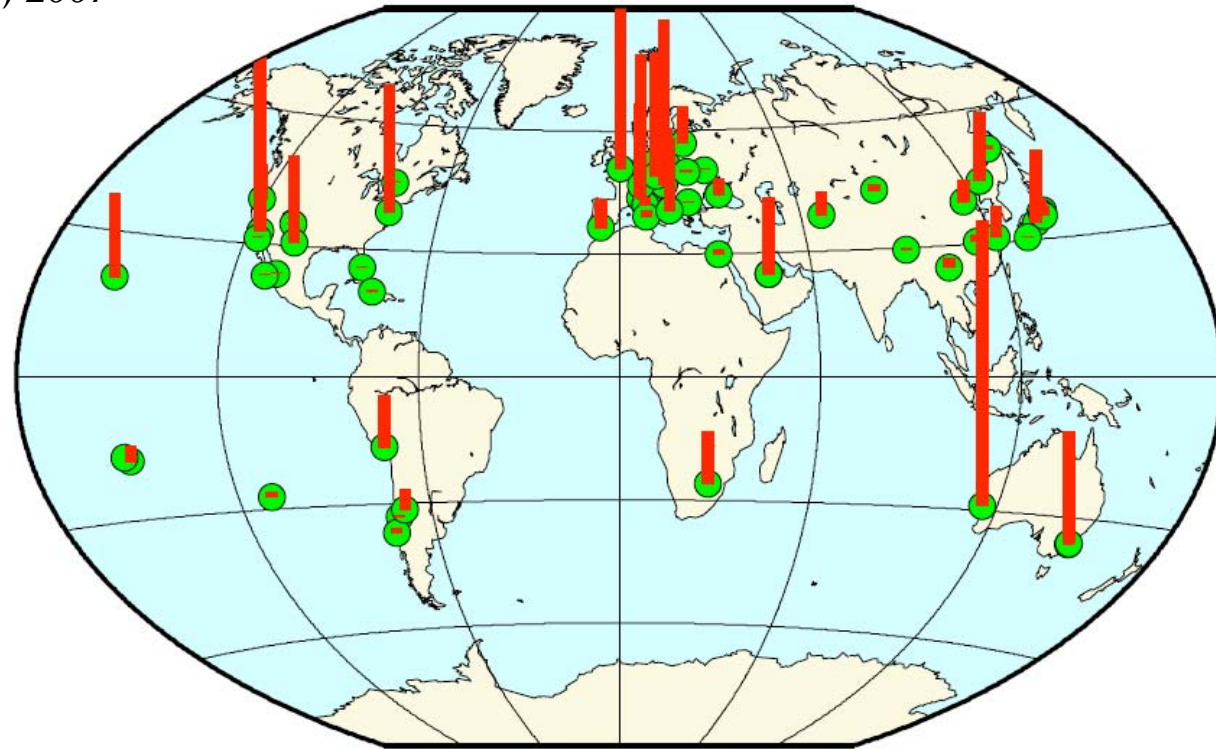


- WEEKLY POS+EOP SINEX for ITRS (loose constraints)
- WEEKLY EOP SINEX for NEOS (fixed datum, SLRF2005)
- WEEKLY SUMMARY REPORT to ACs

- The AWG has identified as items of concern:
 - *The current distribution of the ILRS stations*
 - *The data latency for some key stations*
 - **The quality and consistency of a priori information**
 - **The consistent bias application/estimation by the AC/AAC**
 - **The accuracy of CoM values for each site-s/c configuration**
 - *The compliance of AC/AACs with the IERS Conventions 2003*
 - *The lack of routine access to 3D RT atmospheric delays*

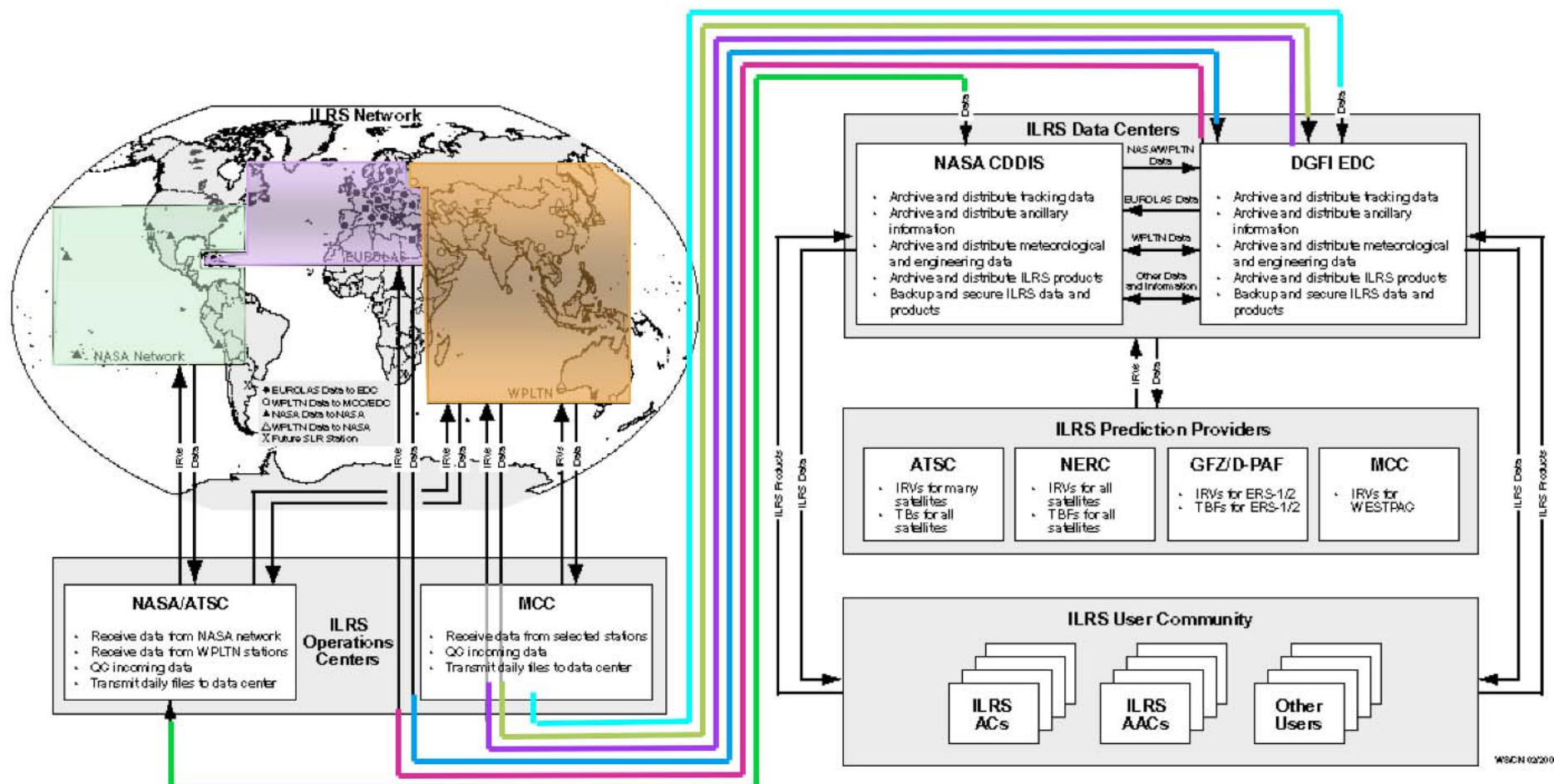


Angermann & Müller, 2007



LAGEOS 1 & 2

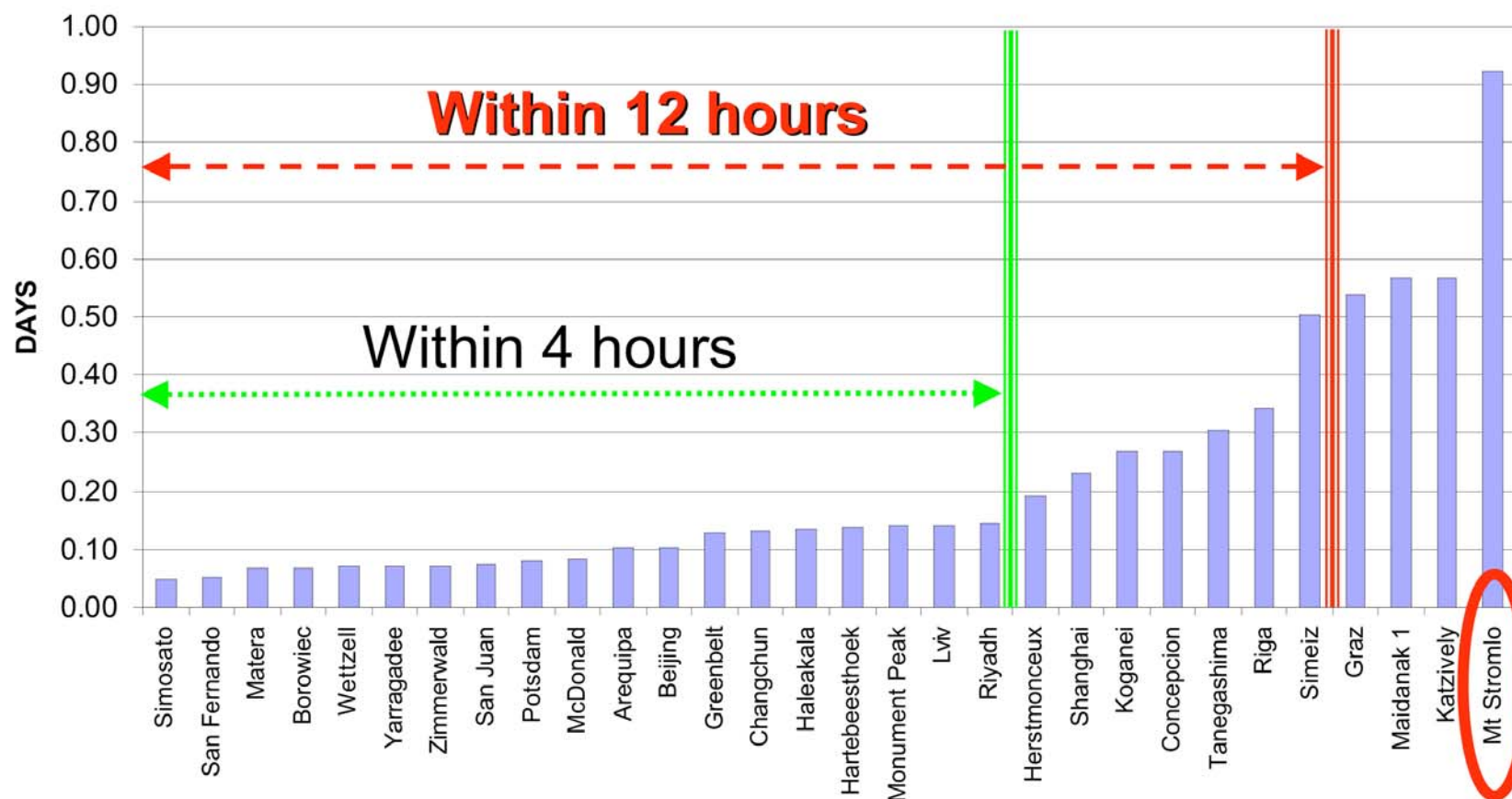
Fig. 1: SLR network stations. The bars show the number of observed normal points from 1993 until 2007.



Network Delivery Record

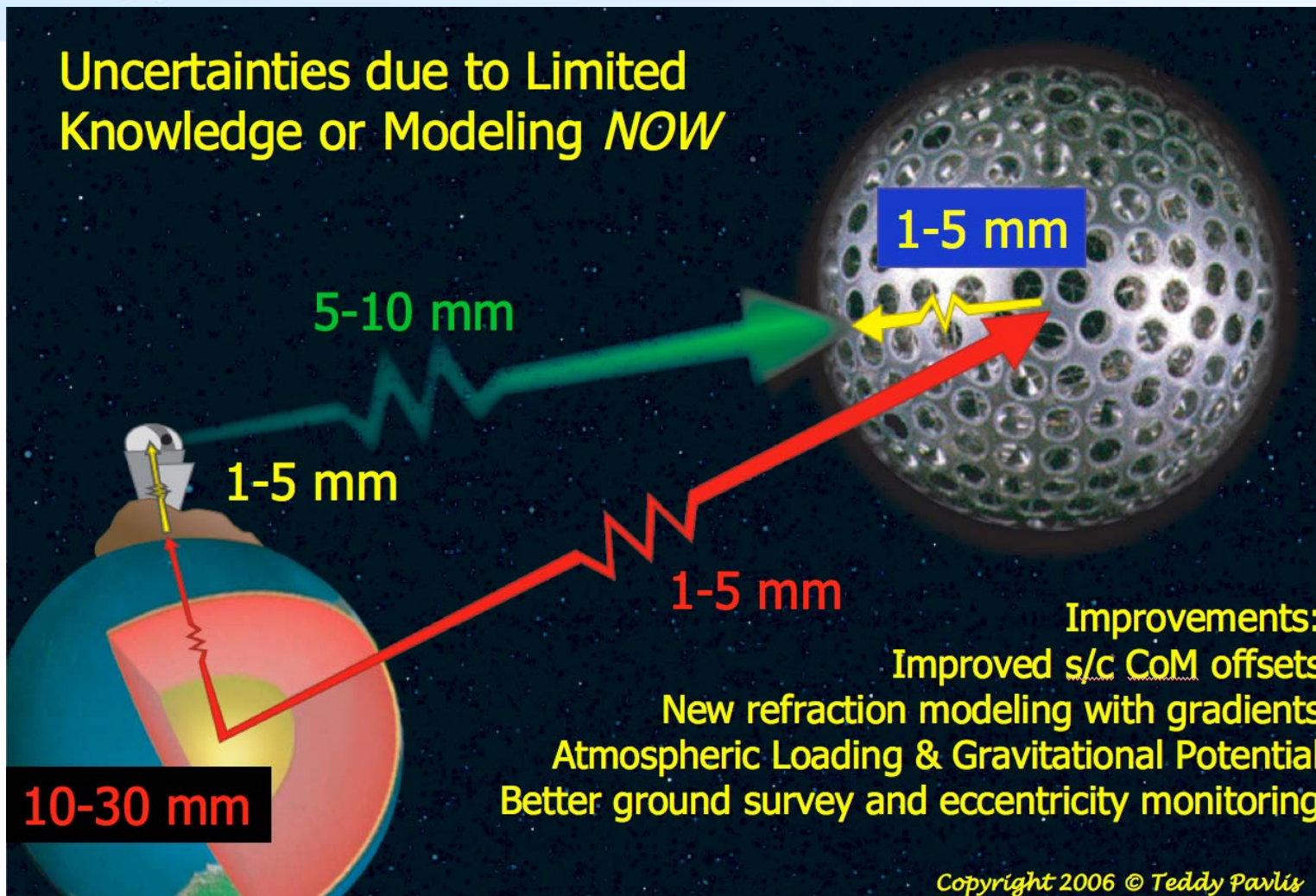
Normal Point Data Latency

April - May 2007



AWG Issues of Concern

Uncertainties due to Limited Knowledge or Modeling *NOW*



The SLRF2005 Ingredients

Benefits from :

ITRF2000

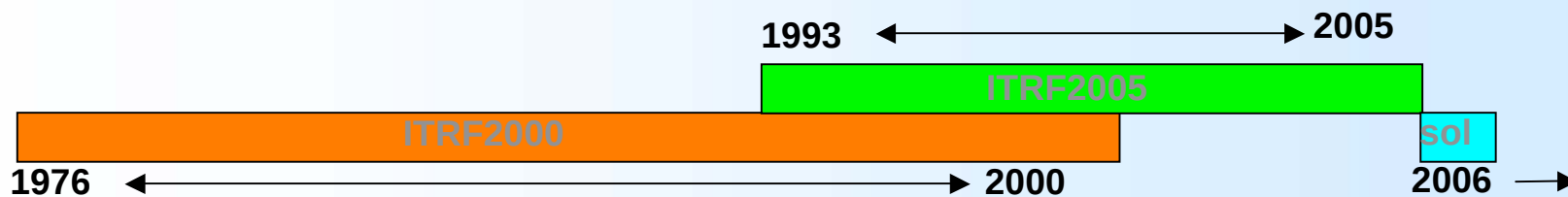
- Pre-1993 sites

ITRF2005 rescaled

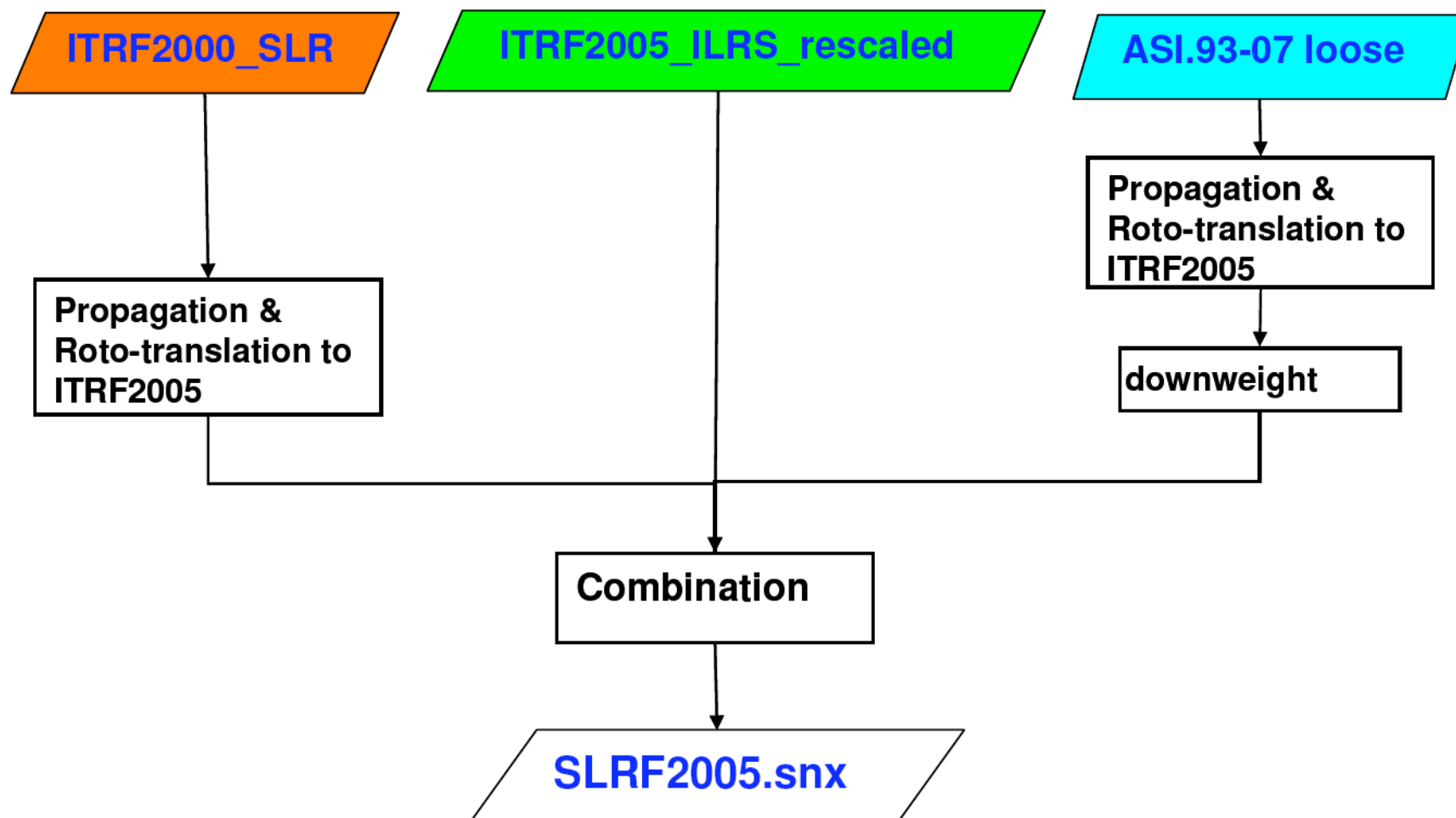
- New models, better estimates
- New sites up to 2005

Updated
solution

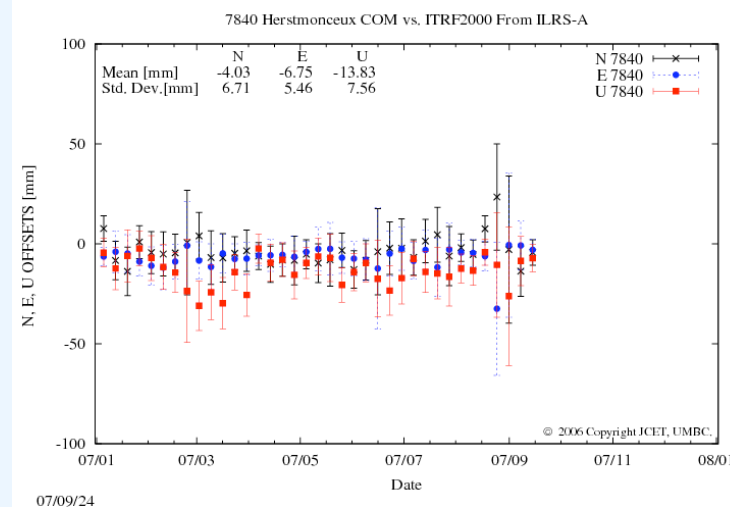
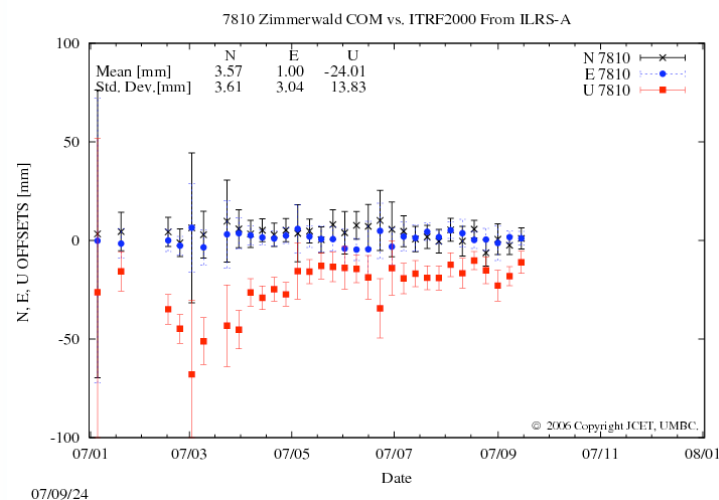
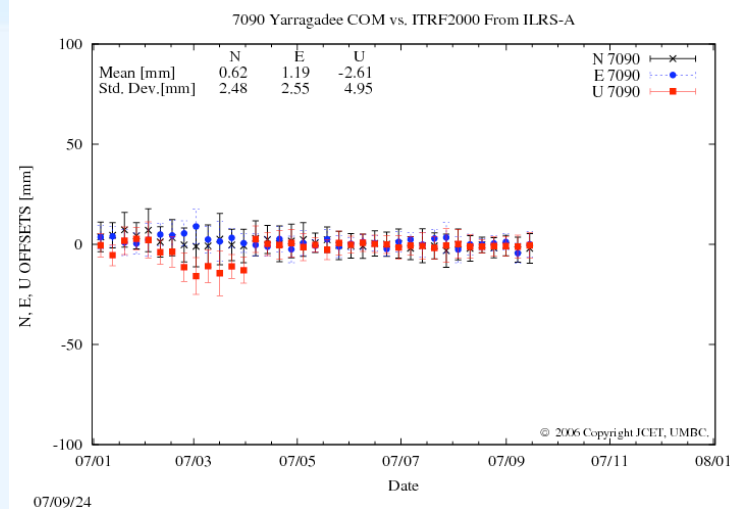
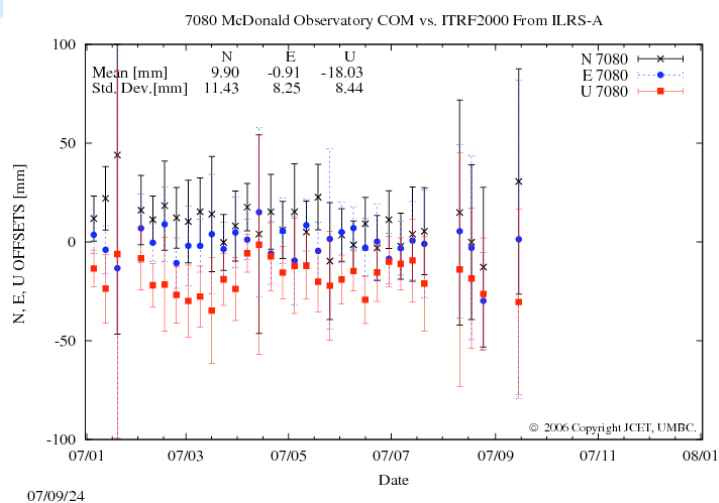
- New sites since 2006



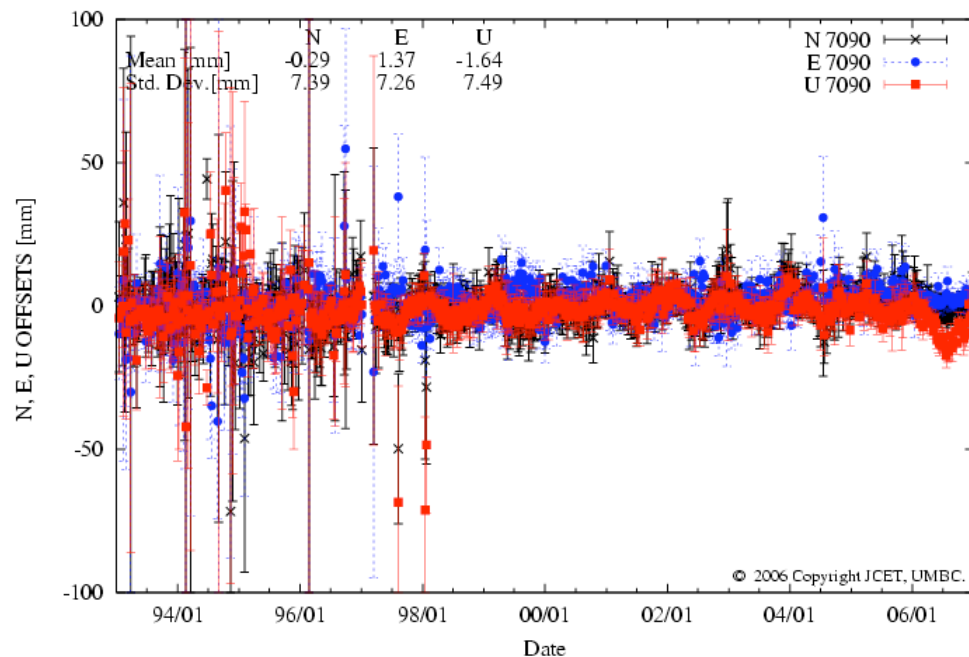
The SLRF2005 TRF



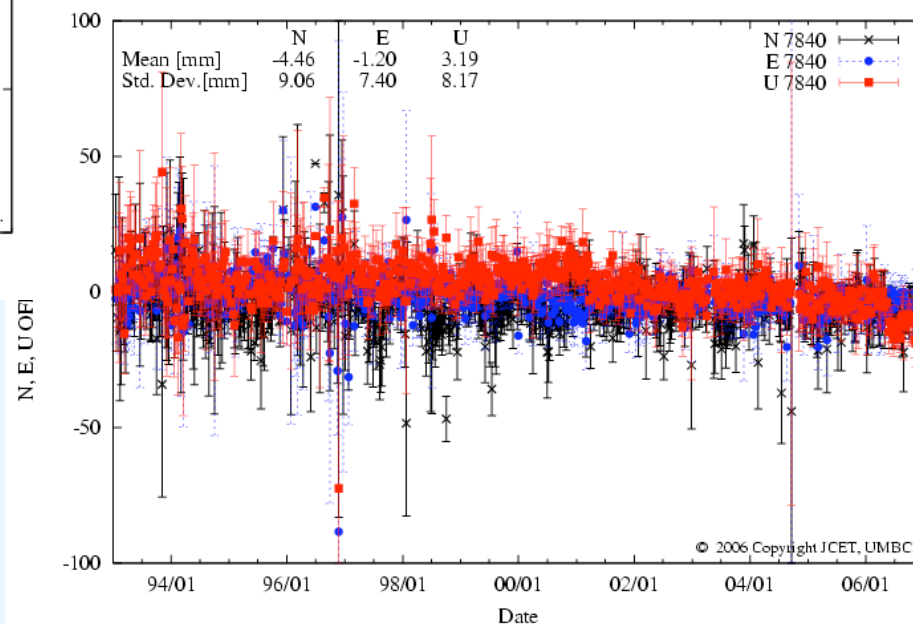
Short-term behavior example



7090 Yarragadee COM vs. ITRF2000 From ILRS-A



7840 Herstmonceux COM vs. ITRF2000 From ILRS-A



QA/QC of ILRS Products - 1

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...nology 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

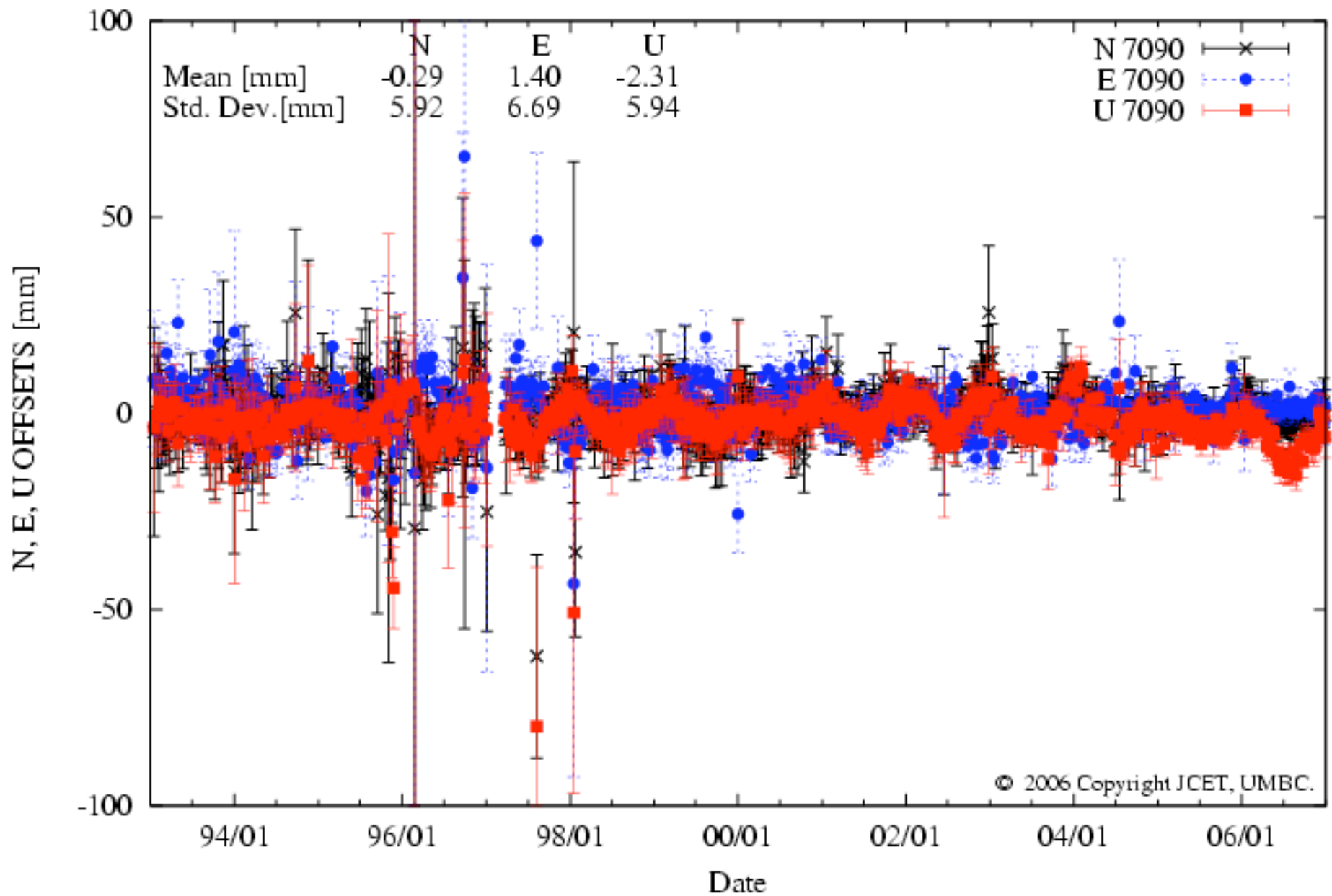
RELEASE v4.2

 **UMBC**
AN HONORS UNIVERSITY IN MARYLAND



Responsible JCET Official: [Emilio Pavlis](#) Last modified date: Monday 24, September, 2007
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Send us your comments

7090 Yarragadee JCET vs. ITRF2000 From ILRS-A

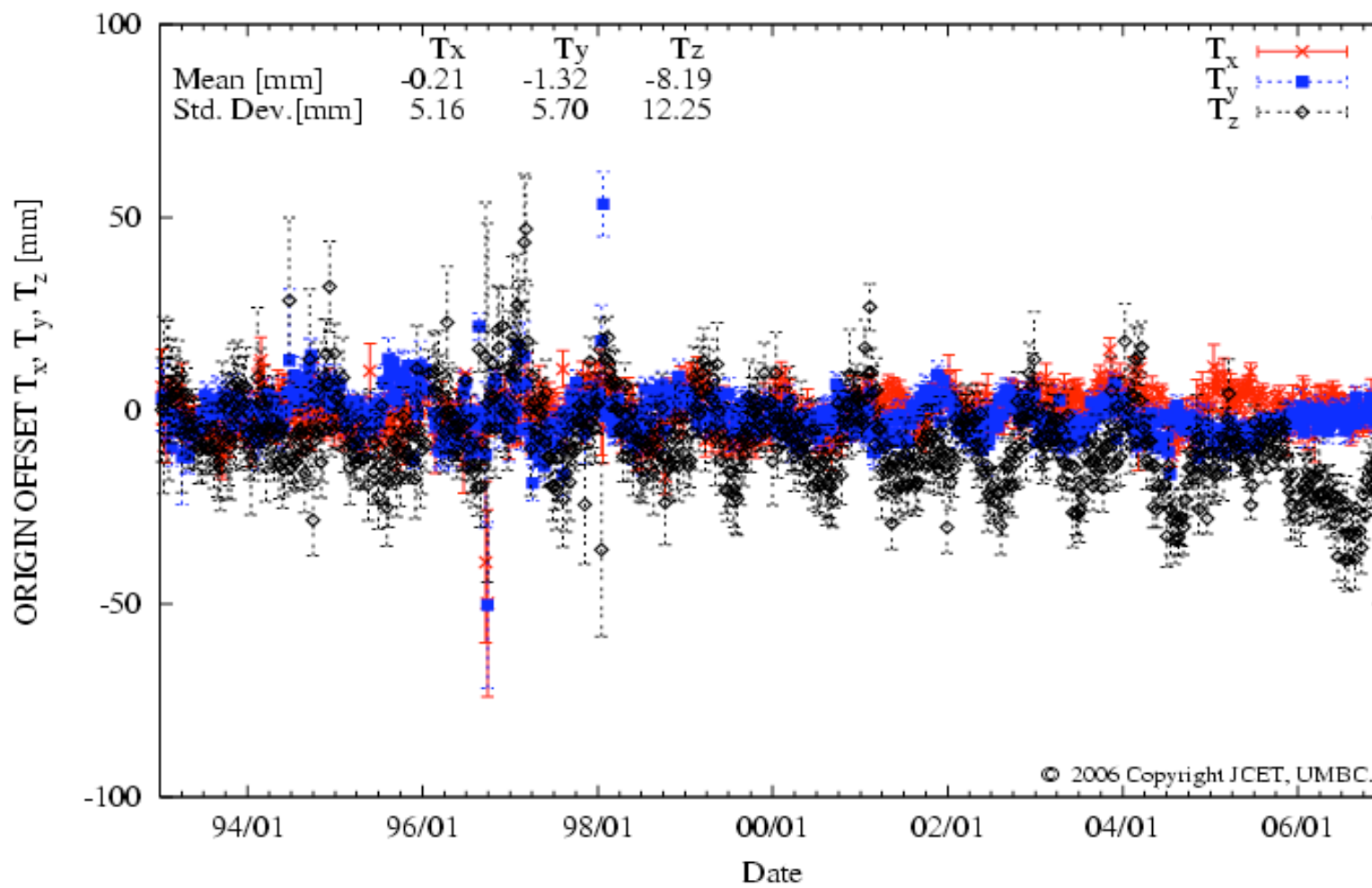


07/06/25



QA/QC of ILRS Products - 3

JCET vs. ITRF2000 From ILRS-A



ASI vs. ILRS-A ILRS-A

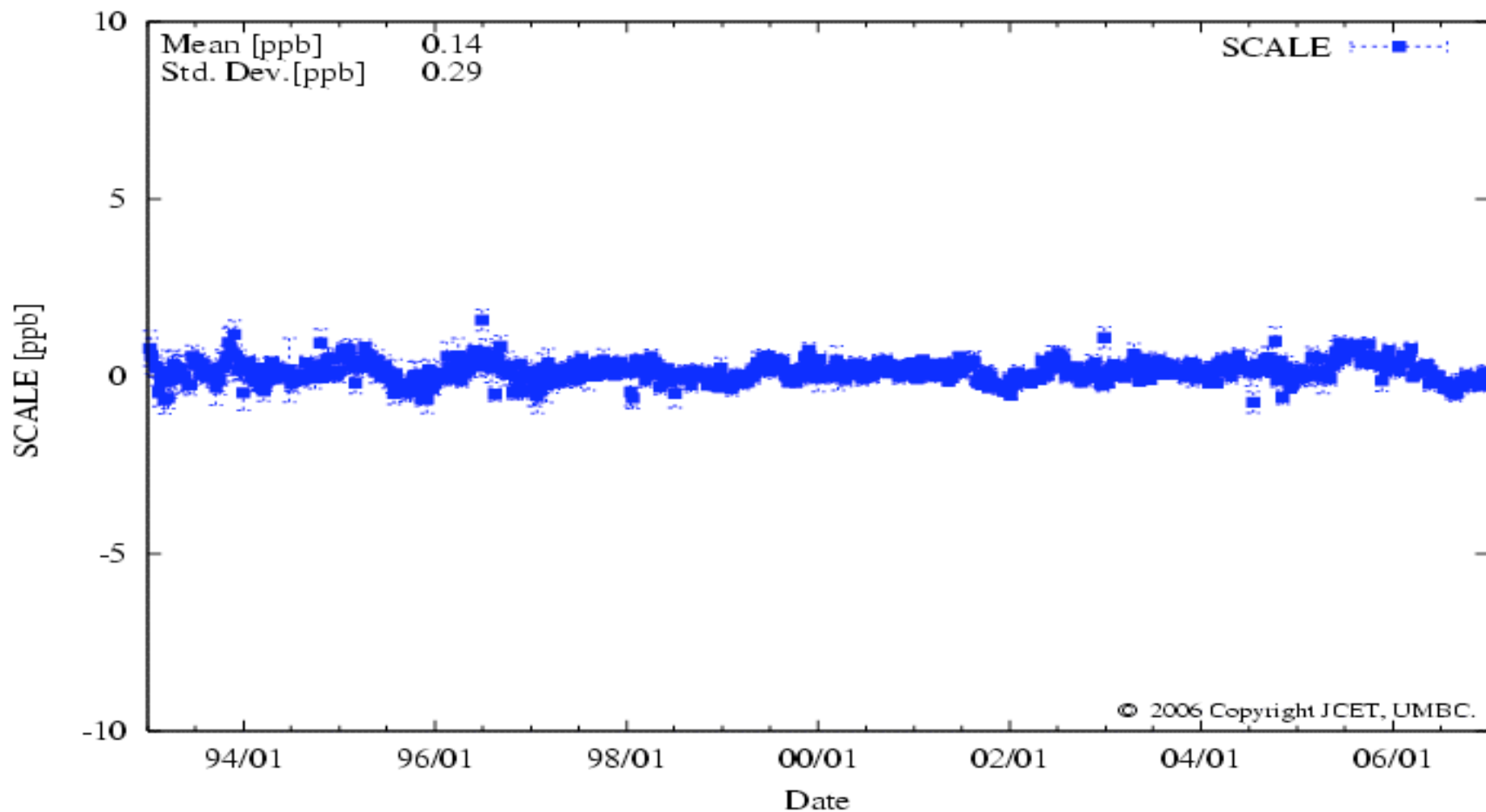


Table 1. Scatter of similarity transformation parameters w.r.t. ITRF2000 for successive weekly ILRS solutions for 2006 (offsets in mm, scale in ppb).

		Tx	Ty	Tz	Scale
Individual	ASI	3.8	3.1	8.5	1.2
	BKG	4.0	1.6	2.4	0.6
	DGFI	4.7	3.9	9.0	0.8
	GFZ	4.2	2.7	6.9	0.9
	JCET	3.0	2.2	7.1	0.9
	NSGF	6.1	7.3	12.0	1.4
Combination	ILRS-A	2.8	2.2	6.5	0.5

Table 8 – EOP daily residuals with respect to EOPC04 for ILRSA and ILRSB

	ILRSA		ILRSB	
	WMEAN	WRMS	WMEAN	WRMS
EOP-X (mas)	-0.055	0.153	0.020	0.175
EOP-Y (mas)	0.193	0.153	0.244	0.197
LOD (ms)	0.003	0.047	-0.003	0.054

- The ILRS AWG delivers:
 - Standard products to IERS only (so far):
 - $\text{SINEX}_{\text{POS+EOP}}$, $\text{SINEX}_{\text{EOP}}$, SP3C Orbit Files (soon)
- ILRS needs to expand this (short) “customer” list
- SLR has the unique advantage (for now) with respect to GPS and VLBI, being able to deliver products within ~1 hour of data delivery
- Possibilities:
 - Near-realtime product(s):
 - ≈ EOP (x_p , y_p and LOD)
 - ≈ Weekly-averaged ITRF-origin-to-geocenter vector
 - ≈ Daily “station health” report (“bias monitoring”)
 - ≈ Orbits (SP3C)
 - Other items can be delivered if desirable (“daily” SINEX?...)