Operational IDS combinations in preparation for the next ITRF

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Summary

DORIS AWG meetings

SINEX dataset

Weekly validation

Weekly Combinations

ITRF2008 preparation

DORIS Analysis Working Group

- March & June 2008 meetings in Paris

  discussions: standards…

- ACs participation

Geodetic Observatory Pecny (**gop**)	P. Stepanek
Institute of Astronomy, Russian Academy of Sciences (INASAN, **ina**)	S. Kuzin
CNES-LEGOS/CLS (lca)	L. Soudarin, JF Cretaux
Institut Géographique National/ Institut de Physique du Globe de Paris (**ign**)	P. Willis ML.Gobinddass
ESA/European Space Operations Center (ESOC, **esa**)	M. Otten
Geoscience Australia (gau)	R. Govind
NASA Goddard Space Flight Center (**gsc**)	F. Lemoine

- IDS analysis coordination: F. lemoine (+ orbit comparisons)

SINEX Dataset (Nov. 2008)

- *Weekly solutions (station positions, EOPs per day)*
- *Loosely constraints (LC) or Free singular equations (NEQ)*

AC	software	Type	EOPs	Data span	Combin. Status
LCA*	GINS/DYNAMO	LC	Pos	2002-2007	processed
GOP	BERNESE	LC	Pos	2003-2006	processed
INA	GYPSY/OASIS	LC	Pos, rate,UT,LOD	2005-2006	processed
IGN**	GYPSY/OASIS	LC	Pos, rate,UT,LOD	1993-2008	processed
ESOC	NAPEOS	NEQ	Pos & rate	2005-2006	processed
GAU	GEODYN	LC	Pos	2005	remaining pb
GSC	GEODYN	NEQ	Pos	6 weeks	test ok

* nearly routine delivery

** routine delivery (not reprocessed)

Validation : weekly comparisons to ITRF2005

Preparation of the sinex

- *Verification of station identification (dome #, mnemo)*
- *Rejection of perturbing stations at given period*
- *Verification of solution number (breaks)*
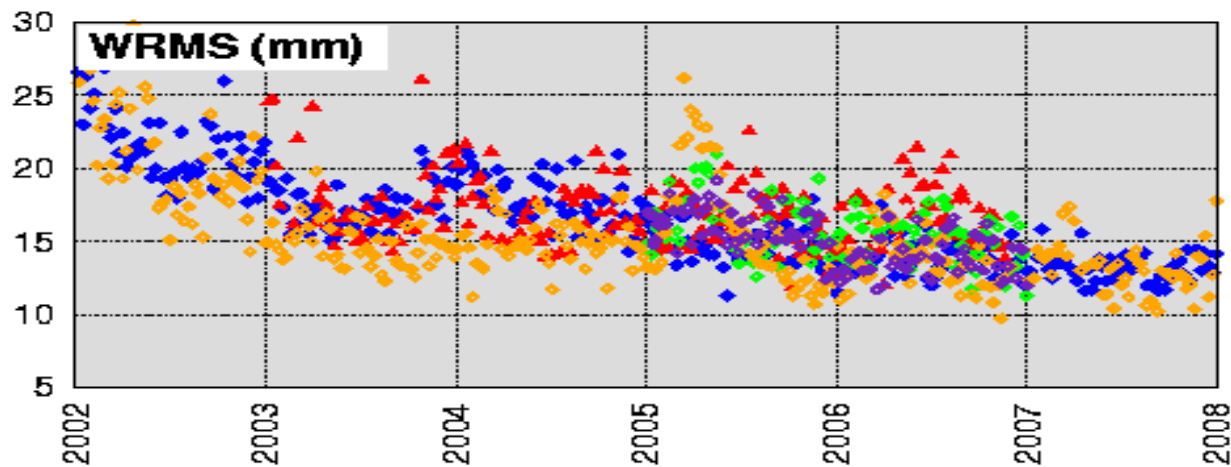- *Projection using minimal constraints*

Per week comparison to ITRF

- *at epoch of the solutions*
- *7 param. Transf.*
- *rejection of high residual stations*

IGN/LAREG CATREF combination software
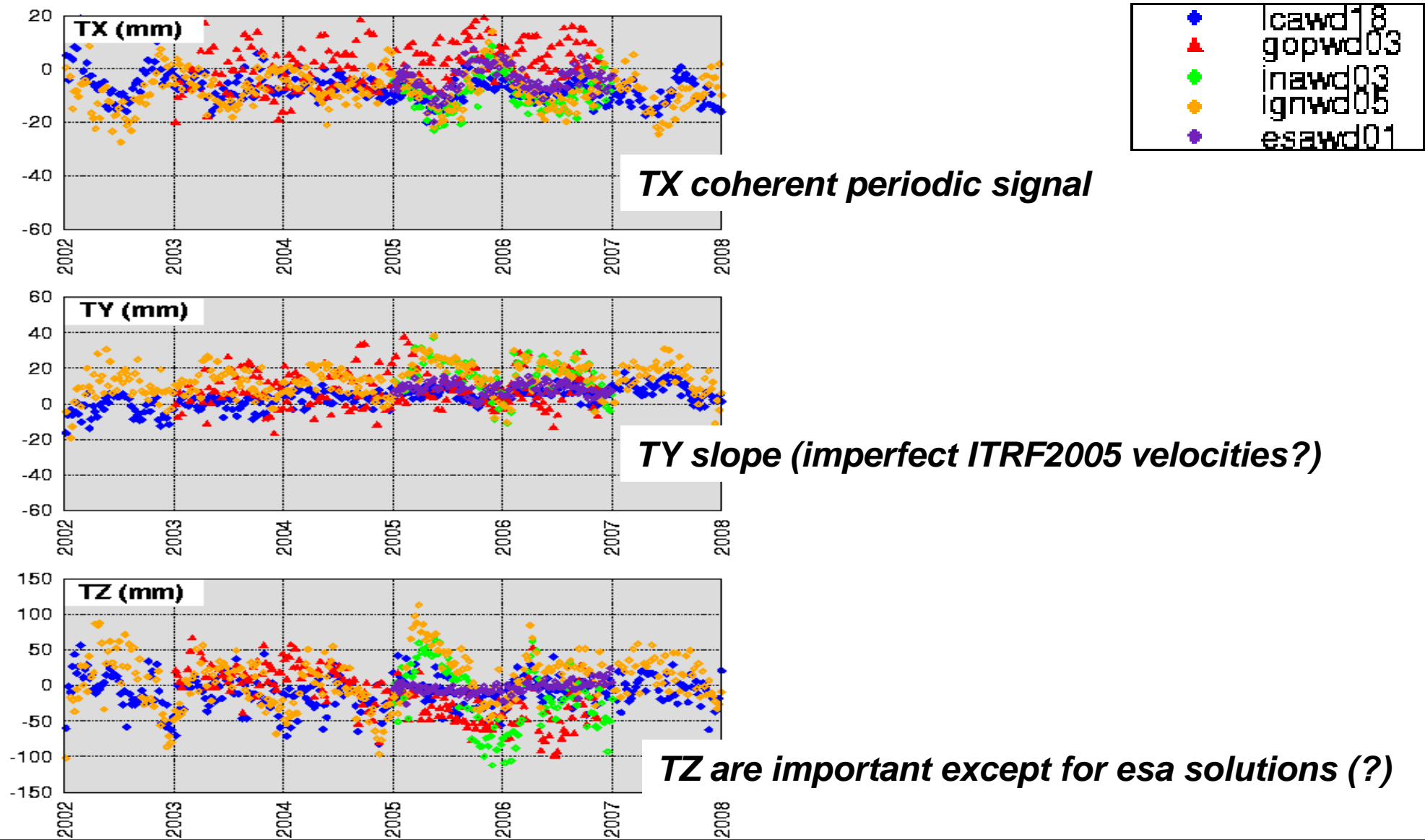
ITRF2005 Weekly Comparisons
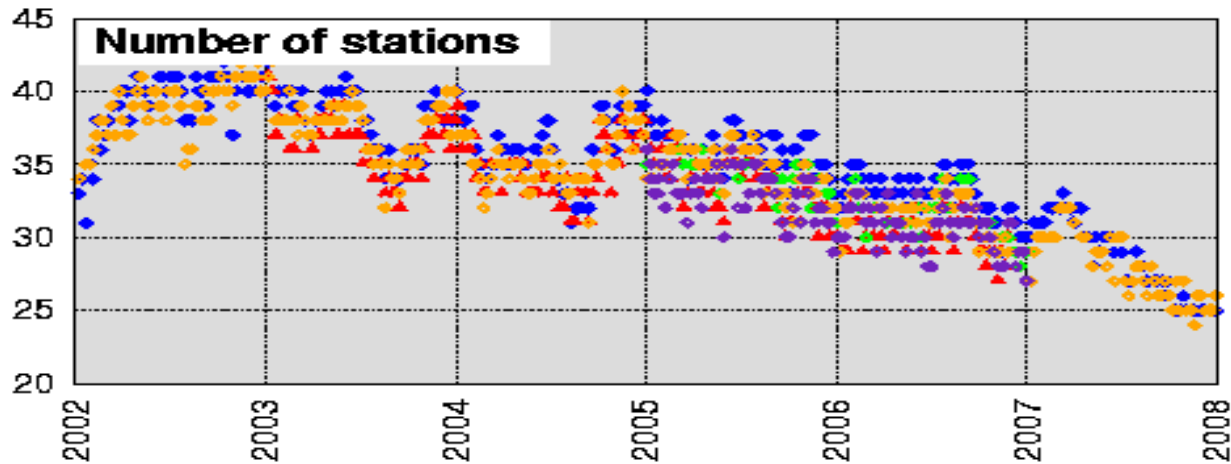
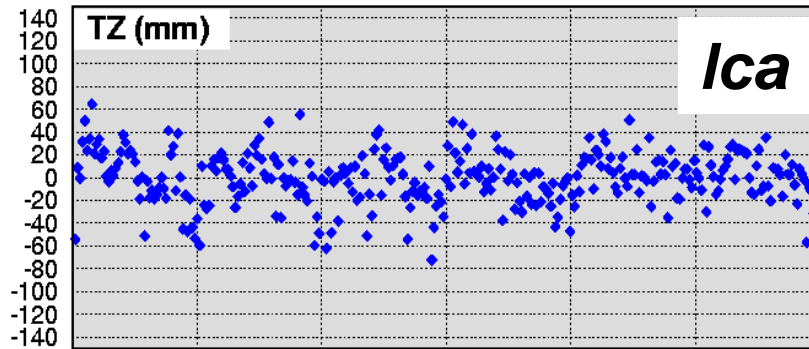*(common stations with ITRF2005) DORIS stations network changes*
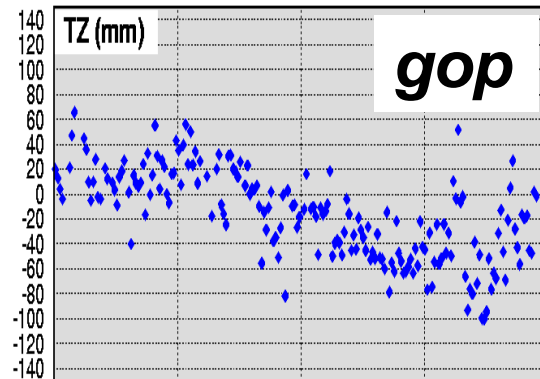
WRMS: 10-18 mm after 2005

ITRF2005 Weekly Comparisons : TRANSLATIONS

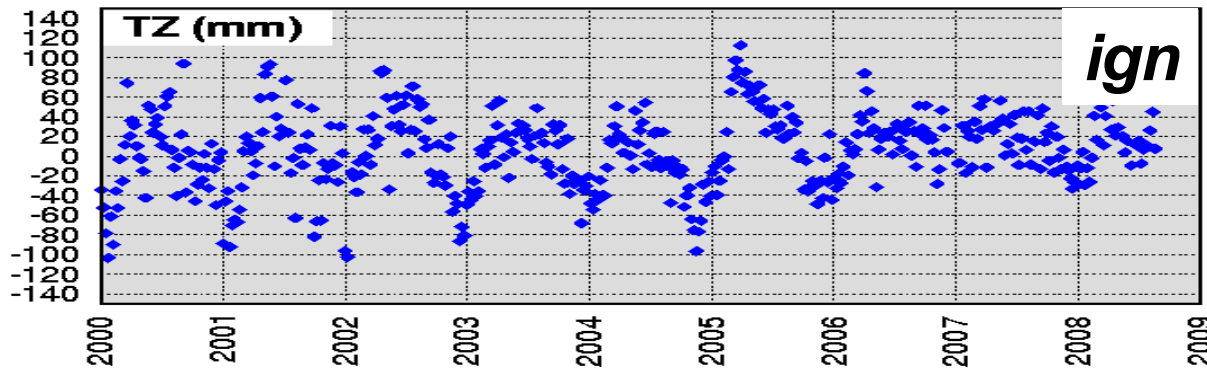*TX coherent periodic signal*

TY slope (imperfect ITRF2005 velocities?)

TZ are important except for esa solutions (?)

TZ: different behaviour

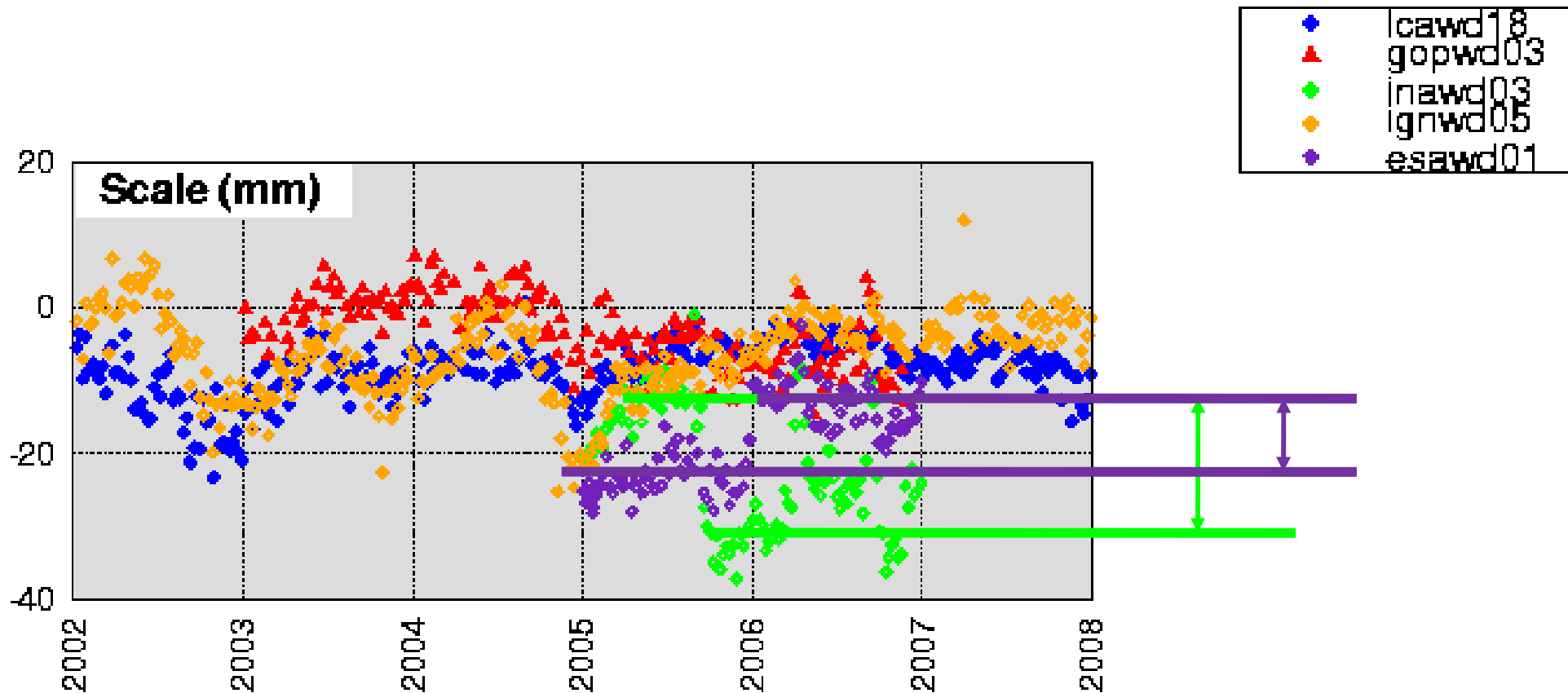

lca — No tendency

gop — Negative slope

ign — Annual term, Sightly positive slope

ITRF2005 Weekly Comparisons : SCALE

ina (Sept 05) & esa (01/06) : > 15 mm discontinuities

Under investigation by analysts

Scale discontinuities

Inasan
  configuration files (satellite model, ENVISAT)
  15°elevation cutoff (more data between 10-15 deg fo r SPOT5 & ENVISAT
  after the "SCALE jump")

ESA/ESOC
 *TZ ~ 0 : remaining constraint?*
  perhaps in NEQ construction

Weekly Combinations vs ITRF2005

IDS/ITRF2005 datum : *sub-network with best σ (pos < 1 cm, vel < 2 mm/yr)*

Per week combination

- *Datum propagation at epoch of the solutions*
- *7 param. Transf.*
- *extraction from the datum of the stations that are not in the solutions*
- *new 7 param. Transf.*
- *rejection of high residual stations (check of min. number of stations per AC)*
- *iteration with application of variance factors for weighting*

Weekly Combinations (2003-2007)
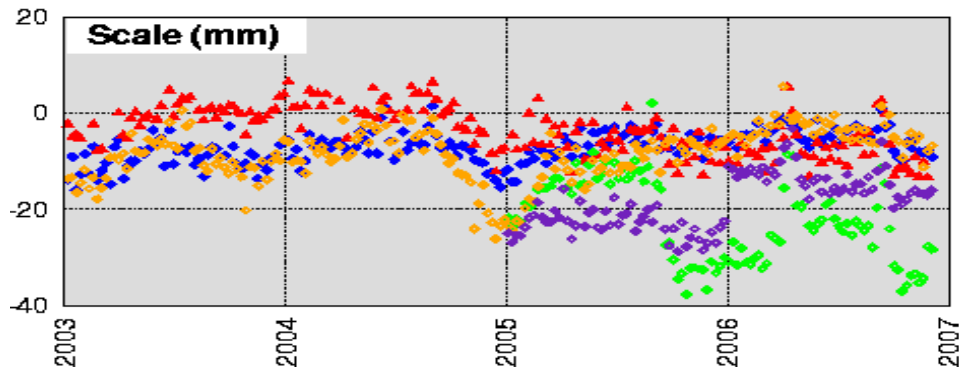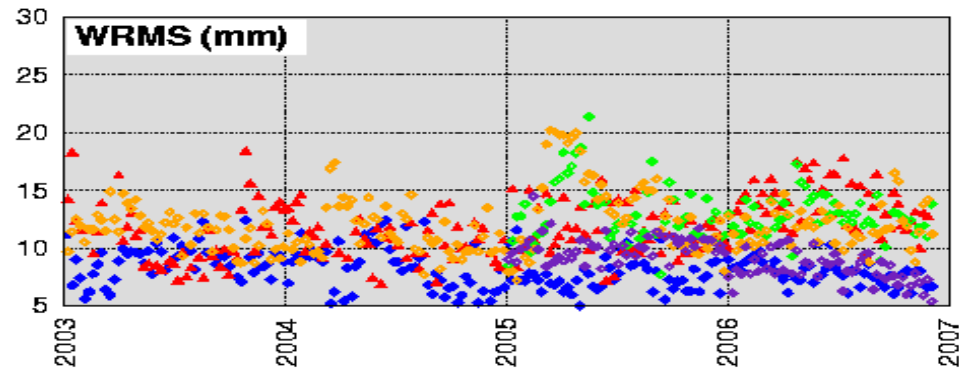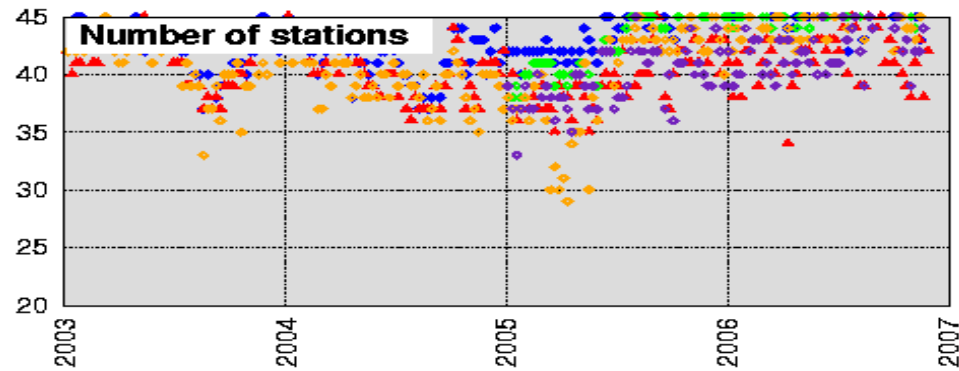
With most recent submissions (last week!)

Applied thresholds on residuals:
30 cm classical, 7 normalized
(to be optimized)

What is missing in ITRF2005?

New sites:
MIAB, SCRB, MALB, NOWB, RIKB, BETB, CRPB, KETB, AMUB, YEMB, TLSB…

Same site, new stations with velocity constrainst & local ties:
LICB/LIBB, DIOB/DIOA, ARFB/AREB, HBMB/HBKB
AMTB/AMU, KESB/KETB, CROB/CRPB, YELB/YEMB,TLHA/TLSB…

Ties missing in ITRF2005:
KESB/KERB and HELA/HELB
AMTB/AMU, KESB/KETB, CROB/CRPB, YELB/YEMB,TLHA/TLSB

Periods not to be used (in addition to ITRF2005 discontinuities):
MATB (10/01/2006-1/05/2006)
DJIB (1/07/2000-26/06/2006)
ASDB (?-Fev-2007)
PDMB (07/2007-10/2007)…

…

Preparation for ITRF2008

Nov 2008 call for participation : *submissions until 10 Feb. 2009*

IDS ACs plan (end of year) :
- *lca   : 1993-2001 (new Envisat proc., pb with atm. Loading not requested)*
- *gop   : 1998-2007*
- *lna   : 2002-2007 at least (scale pb?)*
- *lgn   :   ? (drag estimation, GIPSY/OASIS 5.0, complete reprocessing)*
- *esa   : 1998-2008 (scale pb?)*
- *[gau   : investigation on remaining problems – Not a in orbit restitution]*
- *[Univ. Of Newcastle (P. Moore) welcome]*

DORIS technique weekly combined solutions?
- *procedures are ready (CATREF software)*
- *thresholds on residual elimination have to be discussed with analysts (asap)*
- *preferable if weekly solutions could be delivered before end of year*

More contribution for ITRF2008 than for ITRF2005!