

DORIS weekly solutions: Status report and open questions

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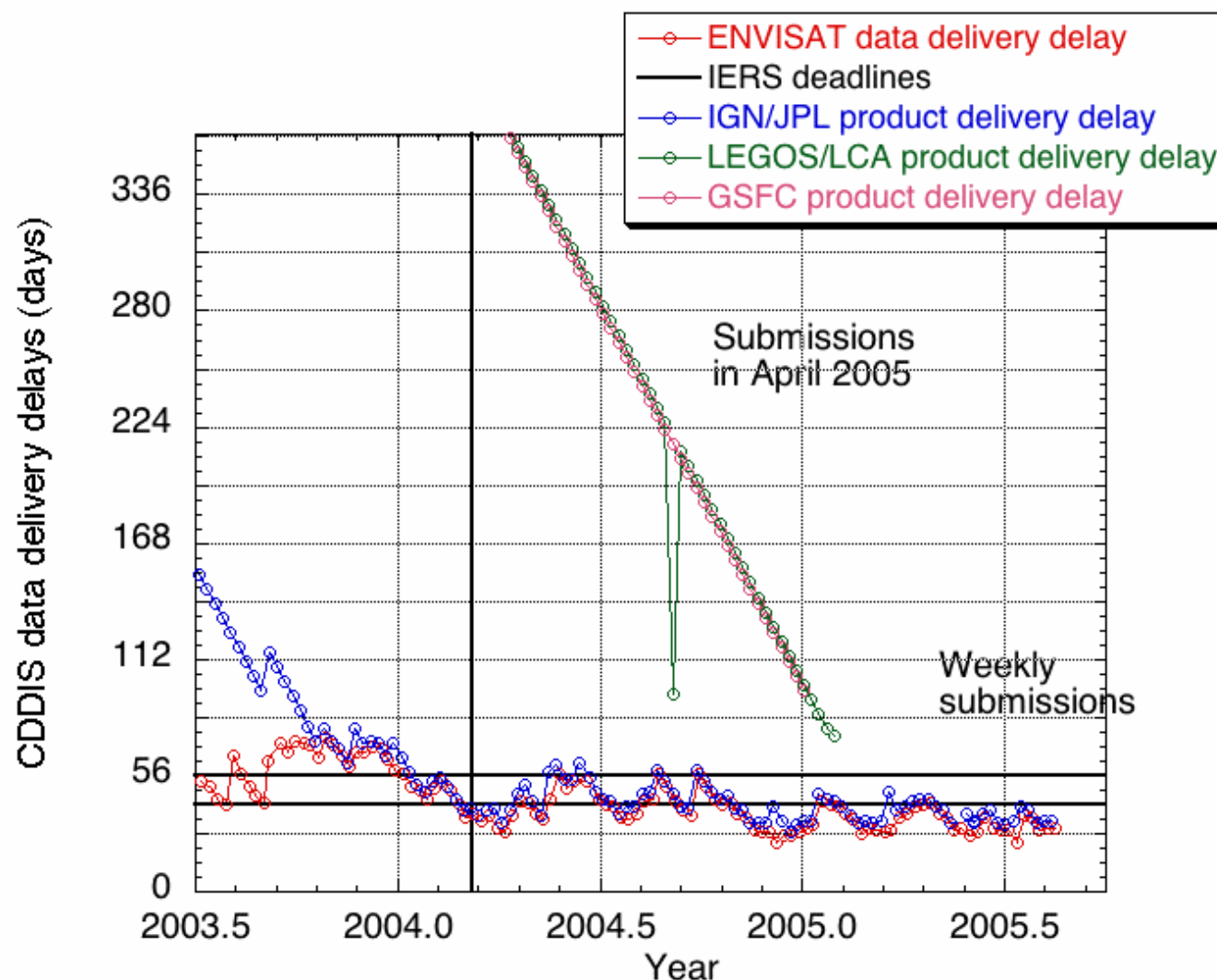
(3) Center for Space Research, University of Texas, USA

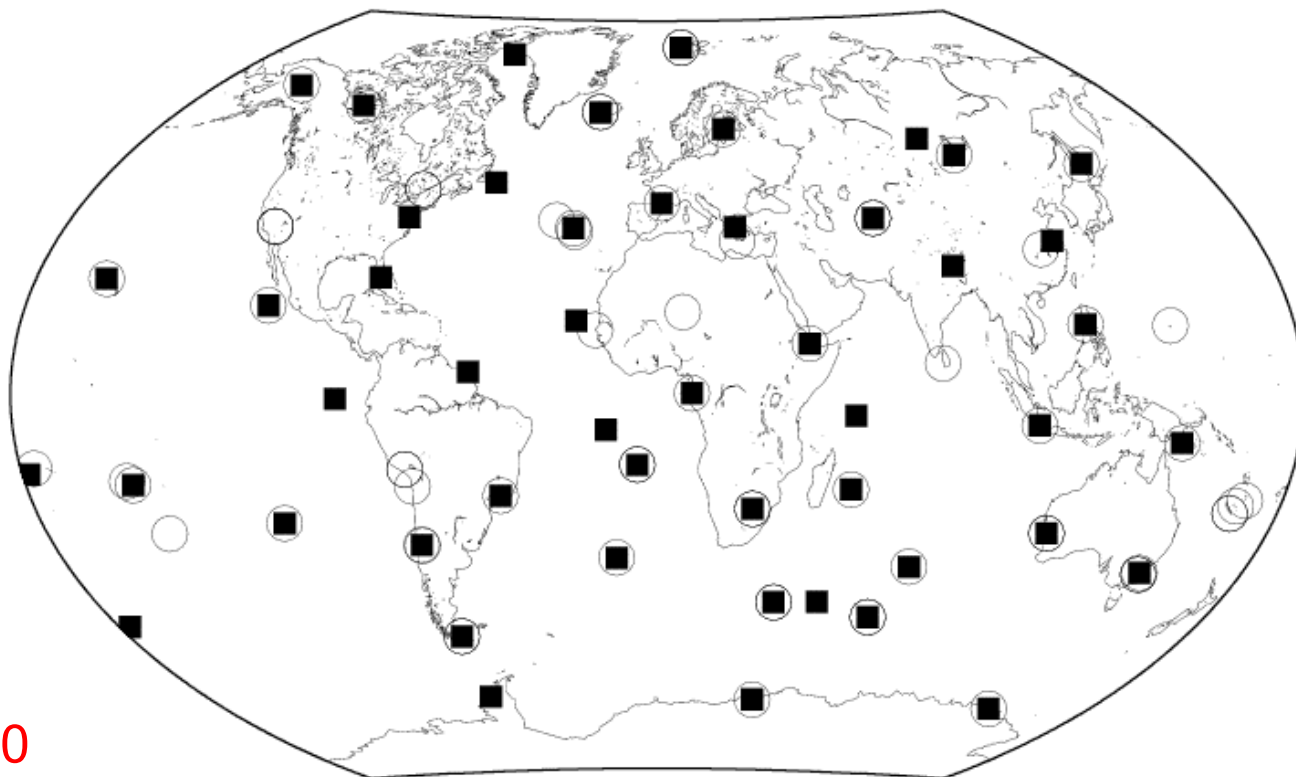
- DORIS weekly solutions availability
- DORIS station-related problems
- DORIS satellite-related problems
- Operational issues and open questions
(for discussion)

at NASA/CDDIS as of Sep 21, 2005

Group	Name	# Files	Latest data	Comment
GSC	WD02	53	Dec 26, 2004	1 year in 2004
IGN	WD04	658	Aug 7, 2004	Free-network
	WD05	658	Aug 7, 2004	ITRF2000
INA	WD04	609	Jun 13, 2004	Same as IGN/JPL
	WD05	609		
LCA	WD12	630	Jan 23, 2005	
SSA	WD01	209	Jan 23, 2005	PPP, no correlations

ftp://cddis.gsfc.nasa.gov/pub/doris/products/sinex_series





■ Active stations

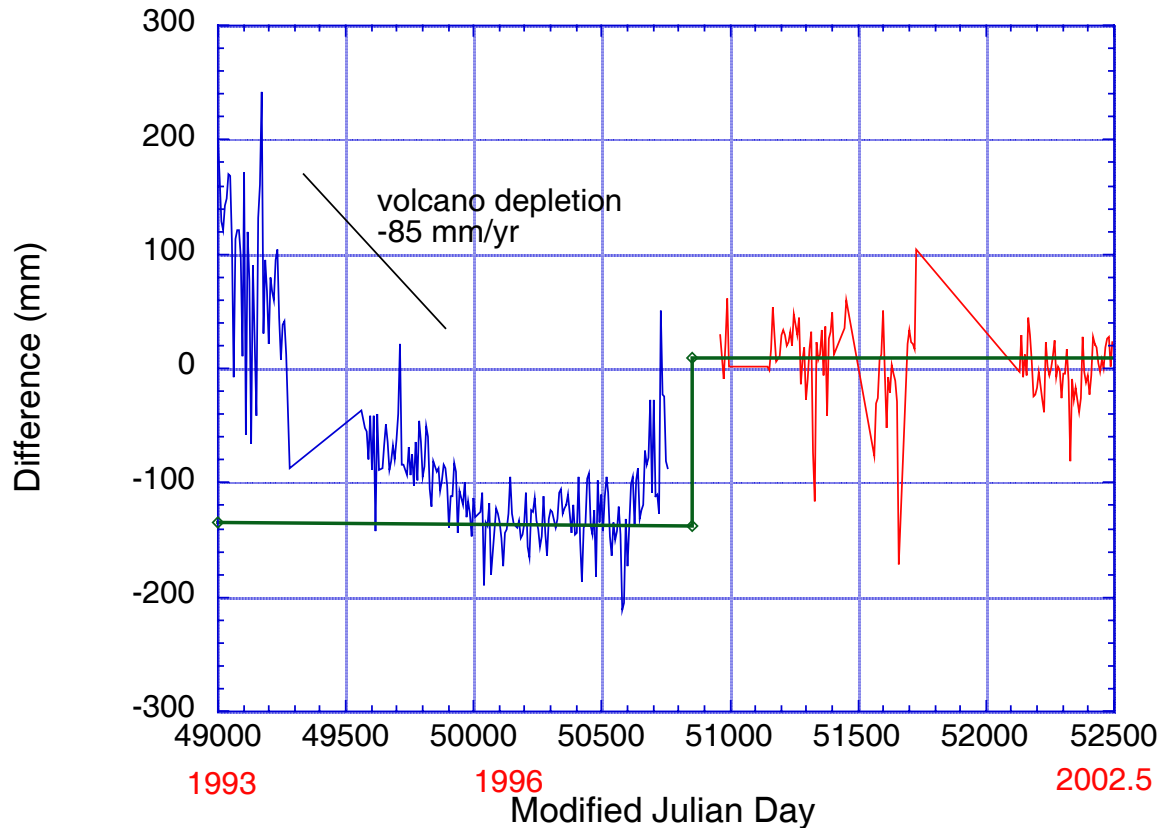
DPOD2000

Quality assessment
for Precise Orbit Determination

P. Willis, J.C. Ries, J. Geodesy, 79(6-7), 2005



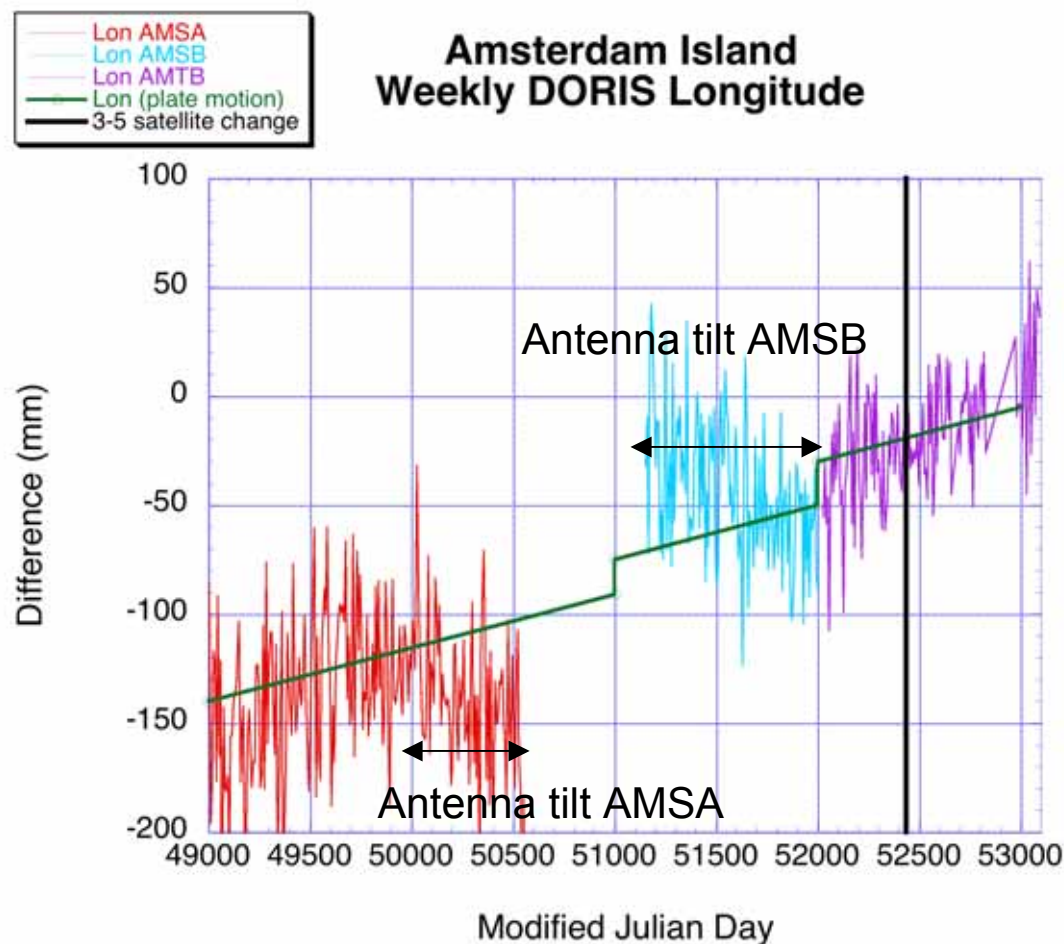
**DORIS Weekly altitude
Socorro Island**



Socorro height changes
due to volcano depletion

Much of SODA data not
usable for geodesy or
POD

(Willis and Sillard, DORIS
Days, 1998; Cazenave et al.,
GRL, 26(14), 1999)



Later AMSA data and all AMSB data should not be used

(Willis and Bar-Sever, IDS Workshop, 2003; Fagard, DORIS Mails #0114, #0128)

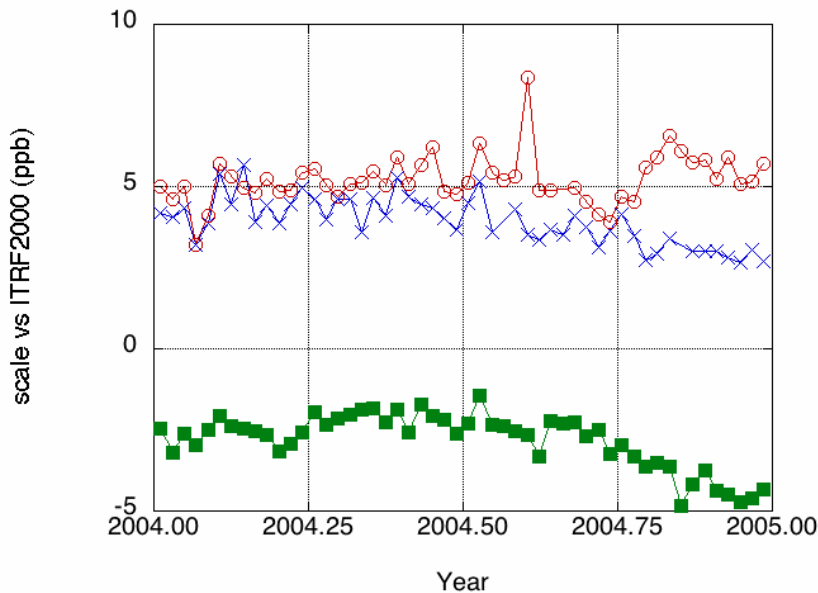
Where to find information concerning DORIS stations?

- DPOD2000
 - J. Geodesy, 79(6-7), 370-378, 2005
 - NASA/CDDIS: sinex + text (versions 0, and 1)
<ftp://cddis.gsfc.nasa.gov/pub/doris/general/dpod>
- General discussions on IDS Analysis Forum:
<http://listes.cls.fr/www/info/ids.analysis.forum>
- Analysis Coordination: station discontinuities
<http://lareg.ensg.ign.fr/IDS/ITRF2004.html>
- DORIS site logs: installation, collocations, ...
<http://ids.cls.fr/html/doris/sitelog.html>
- DORIS time series: results + plots
<http://ids.cls.fr/html/doris/ids-station-series.php3>

- Unexpected sensitivity of DORIS/Jason oscillator to radiation over the South Atlantic Anomaly
 - P. Willis et al., CR Geoscience, 336(9), 2005
 - J.-M. Lemoine et al., J Geodesy, in preparation
- Error in SPOT4/DORIS preprocessing in 1998 (more later)
 - P. Willis et al., J. Geodesy, in press

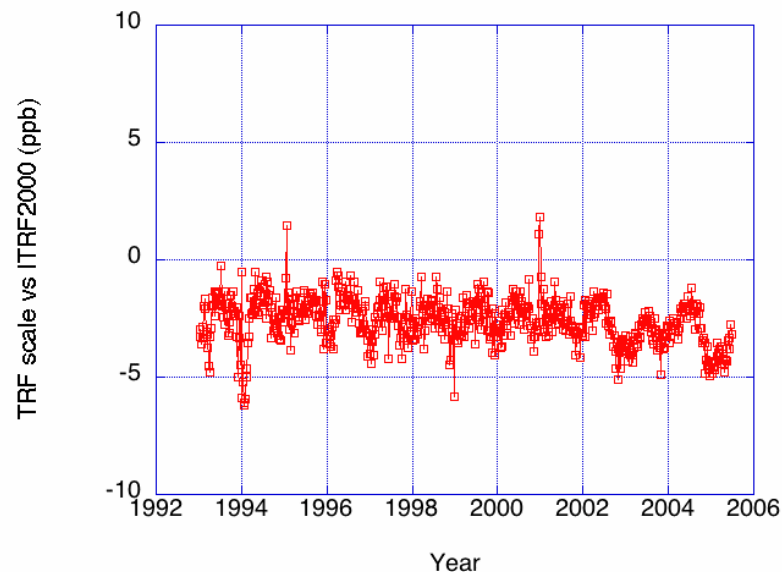
DORIS TRF scale

× scale GSFC allsats
 ■ scale IGN allsats
 ○ scale LCA allsats



TRF Scale Differences
between ACs

—○— IGN/JPL weekly DORIS solution



Long-term stability vs ITRF2000
 Scale = -3.12 ± 0.54 ppb
 Scale rate = -0.075 ± 0.046 ppb/yr

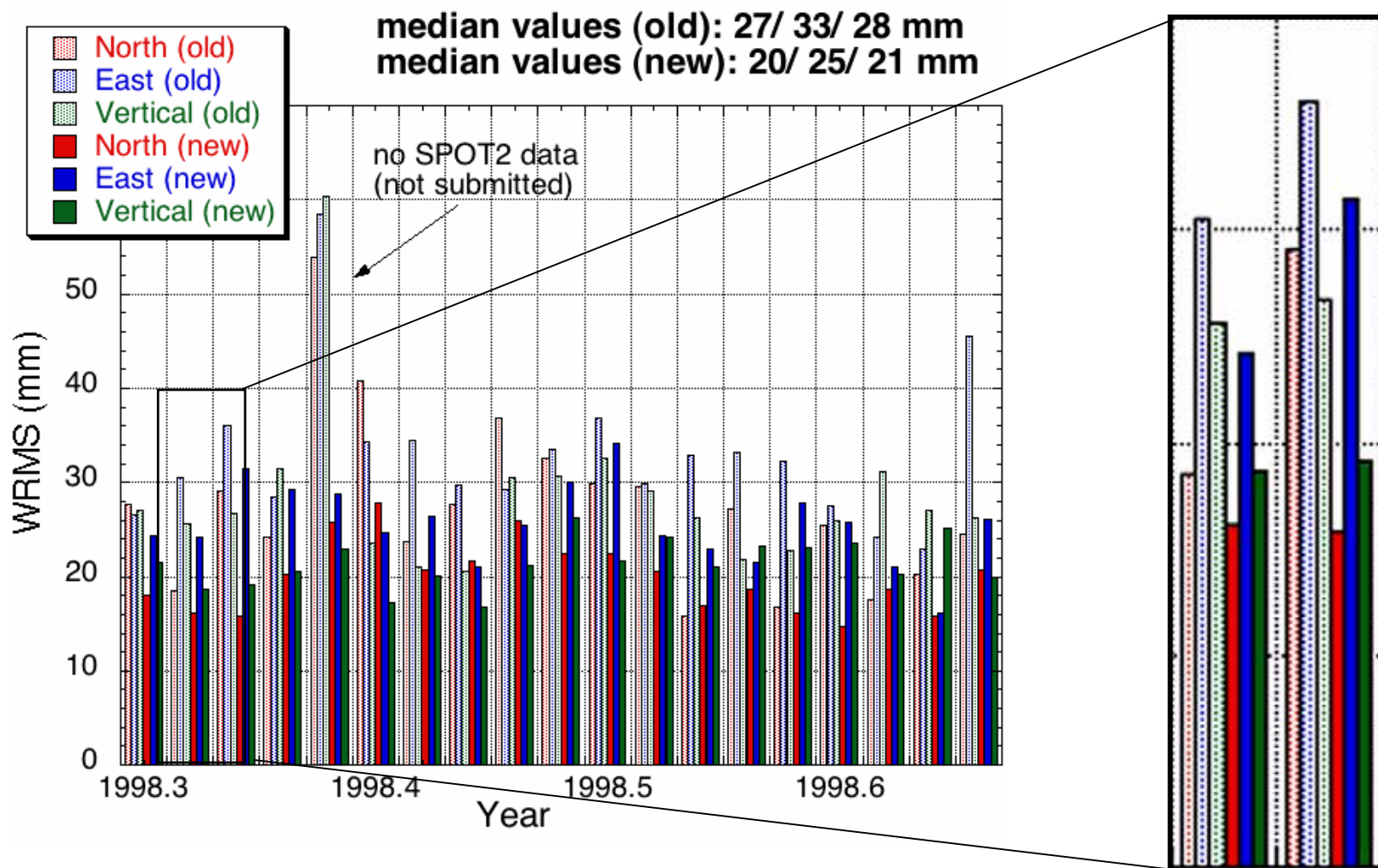
P. Willis, F. Lemoine, L. Soudarin, submitted to IAG Proc., Cairns

Two choices:

- Constant modification of weekly solutions
 - + regular improvement
 - likely inconsistencies (model, processing strategy)
 - likely incompatibility between submitted products
 - reduces confidence that changes are real (for long time series, which DORIS requires for good results, consistency may be more important than chasing the best possible product)
- Keep exactly the same processing
 - + more operational
 - + observed changes are more likely to be real
 - no improvement with time (“better is the enemy of good”)
 - complete reprocessing is very costly

In 1998, recomputing phase center correction for SPOT4

Is it worth resubmitting all 1998 IGN/JPL results?



- Weekly solutions status:
 - 2-3 groups: IGN/JPL + LCA/LEGOS (+GSFC)
 - No combined DORIS solution
- Some problems are similar to other techniques
 - Stations: breaks, annual signals, non-linearity, bad data (no general agreement, yet)
 - Satellites: phase center corrections
 - Strategy: infrequent complete reprocessing vs regular small improvements
- Some problems are different
 - SAA/radiation

THANK YOU!!!

- Next IDS Workshop

Venice, Italy, March 13-18 (2 days), 2005

<http://earth.esa.int/venice06/>