Evaluation of TRF2014
Comparison of ITRF2014 and DTRF2014 vs DPOD2008

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TRF2014 EVALUATION

PROCESSING CONTEXT

Impact of the position and velocity coordinates of the DORIS stations from DPOD2008 (DPOD2008 v1.14)**, ITRF2014 and DTRF2014**

Orbits computed:

- DORIS TOPEX orbits (January 1995 to December 1996)
- DORIS SPOT-5 orbits (January 2003 to December 2004)
- DORIS Jason-2 orbits (January 2013 to December 2014)

Available Earth Orientation Parameters only consistent with ITRF2008 (C04 series)

Evaluation of DORIS POST-FIT RMS RESIDUALS and orbit comparison / DPOD2008

DORIS post-fit residuals global and per stations

RMS of radial differences over 2 years

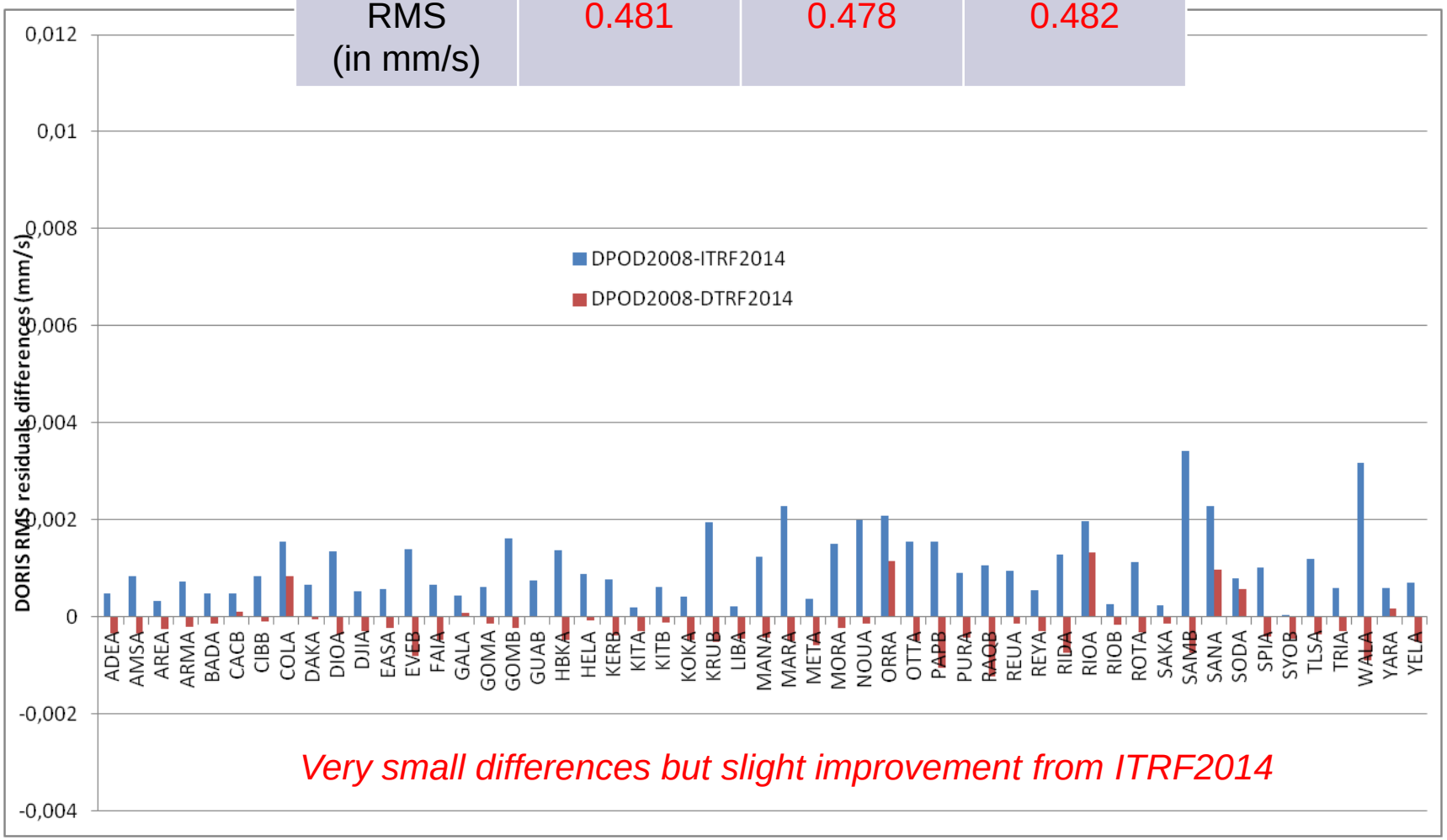
Mean of Z orbit differences over 2 years

TRF2014 EVALUATION

TOPEX DORIS post-fit residuals differences global and per station

(DORIS data from January 1995 to December 1996)

TRF	DPOD2008	ITRF2014	DTRF2014
DORIS RMS (in mm/s)	0.481	0.478	0.482



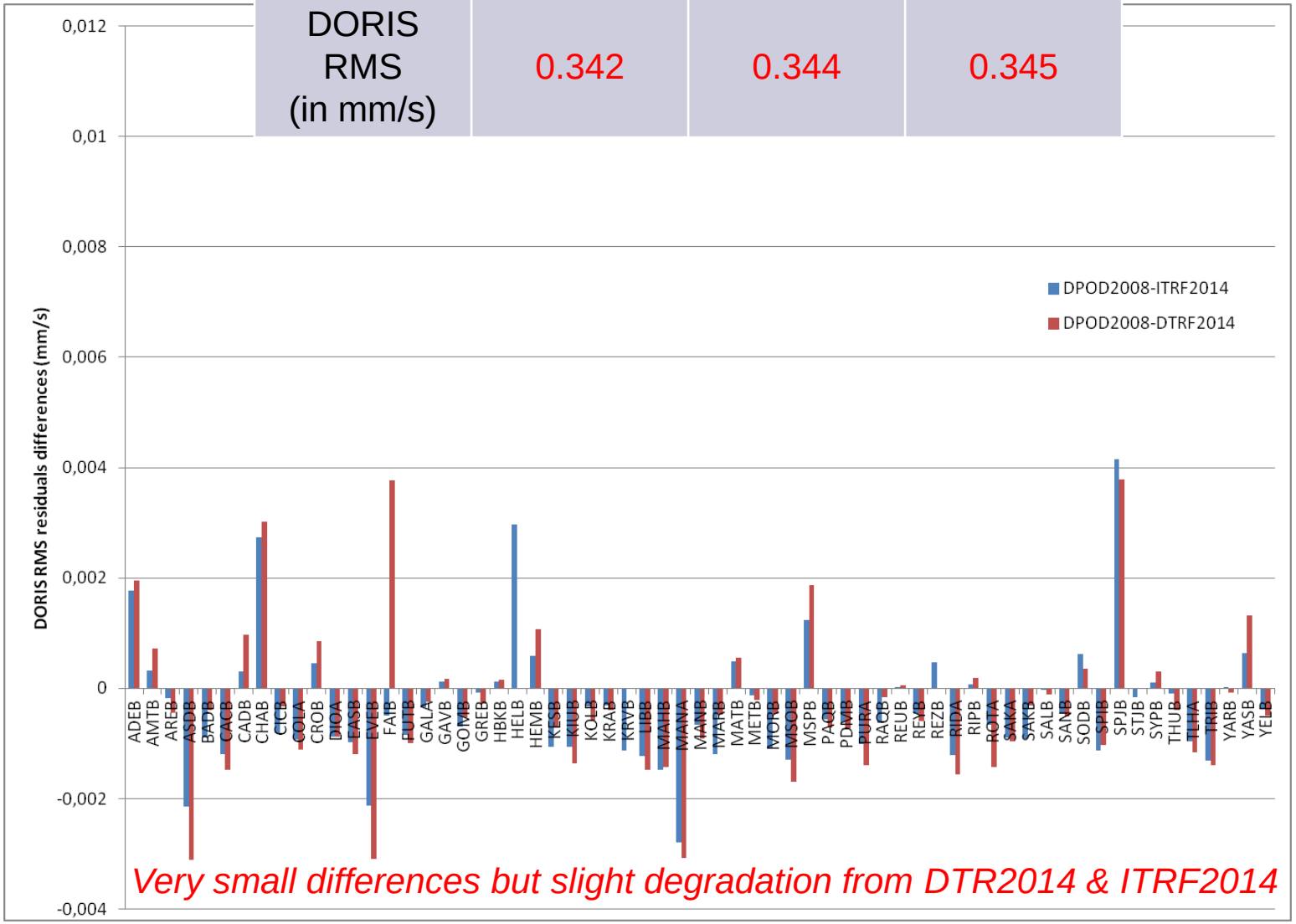
Very small differences but slight improvement from ITRF2014

TRF2014 EVALUATION

SPOT-5 DORIS post-fit residuals differences global and per station

(DORIS data from January 2003 to December 2004)

TRF	DPOD2008	ITRF2014	DTRF2014
DORIS RMS (in mm/s)	0.342	0.344	0.345



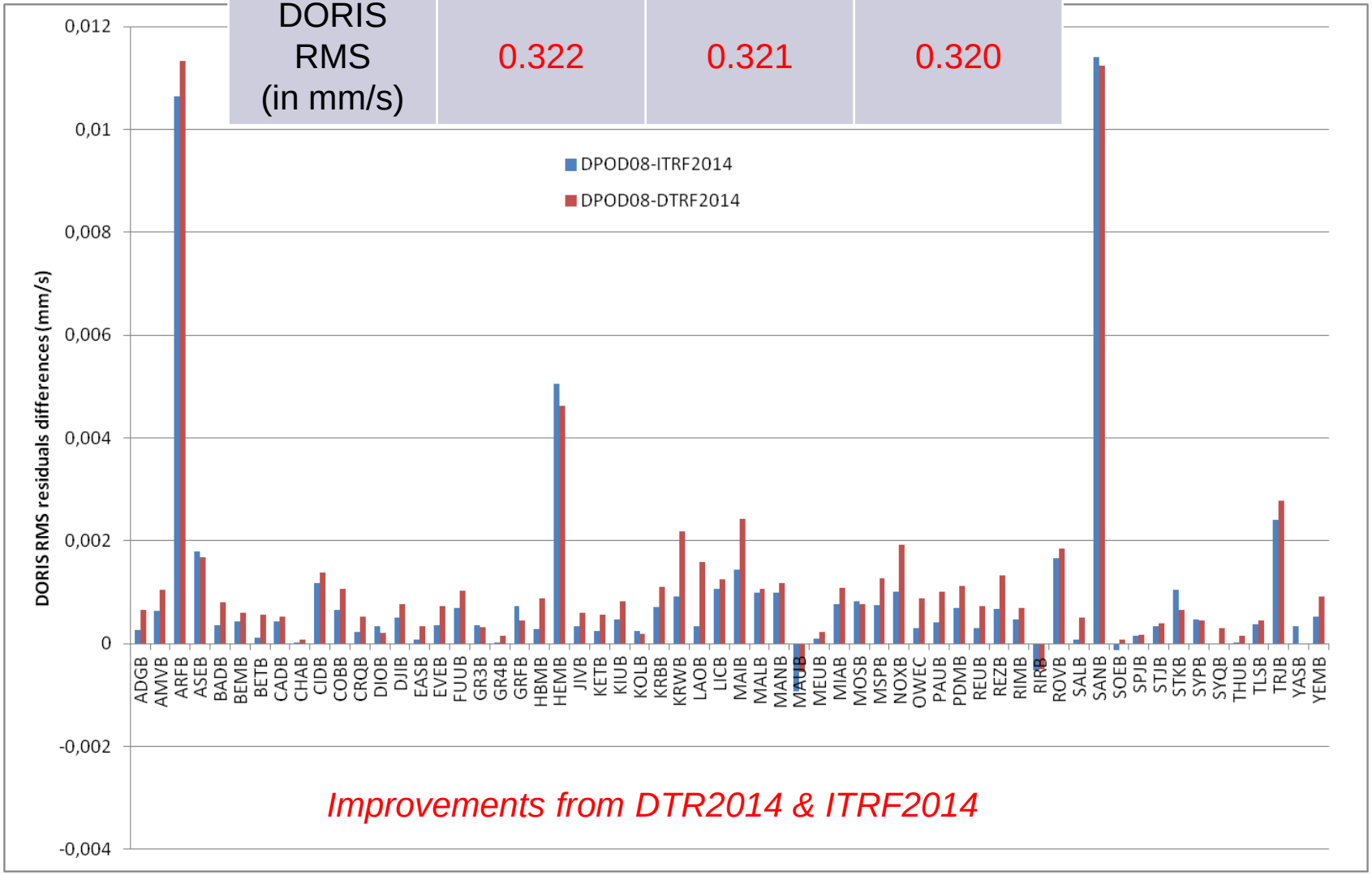
Very small differences but slight degradation from DTR2014 & ITRF2014

TRF2014 EVALUATION

Jason-2 DORIS post-fit residuals differences global and per station

(DORIS data from January 2013 to December 2014)

TRF	DPOD2008	ITRF2014	DTRF2014
DORIS RMS (in mm/s)	0.322	0.321	0.320

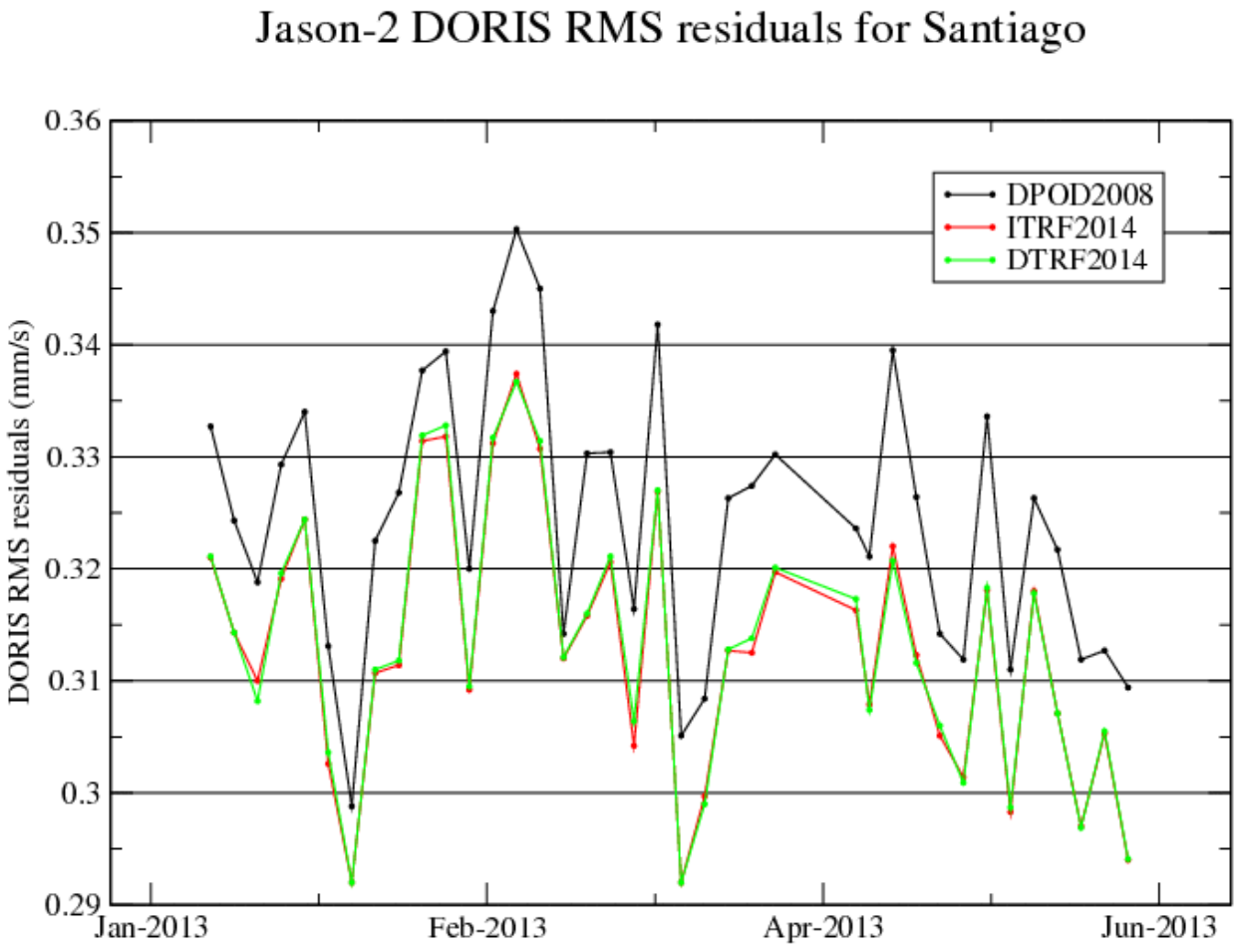


Improvements from DTR2014 & ITRF2014

TRF2014 EVALUATION

Jason-2 DORIS post-fit residuals differences per station

(DORIS data from January 2013 to May 2013)



TRF2014 EVALUATION

ORBIT COMPARISON / DPOD2008

Radial differences and mean Z differences

RMS of radial differences over 2 years

Mean of Z orbit differences over 2 years

DORIS orbits: Jason-2 from Jan. 2013 to Dec. 2014, SPOT-5 from Jan. 2003 to Dec. 2004, TOPEX from Jan.1995 to Dec.1996

Satellite	RMS radial differences (in mm)		Mean Z differences (in mm)	
	ITRF2014 –DPOD2008	DTRF2014-DPOD2008	ITRF2014 –DPOD2008	DTRF2014-DPOD2008
JASON-2	1.31 (std 0.2)	1.71 (std 0.3)	0.08 (std 0.9)	-1.68 (std 0.9)
SPOT-5	1.89 (std 0.5)	1.78 (std 0.6)	-3.57 (std 0.8)	-3.14 (std 1.2)
TOPEX	2.8 (std 0.5)	6.71 (std 0.6)	-4.8 (std 1.0)	-12.7 (std 1.2)

RMS of radial differences over 2 years

➢ *The orbits are very close*

Mean of Z orbit differences over 2 years

➢ *Z-offset is correlated to Tz Helmert parameter differences*

The results are similar when we use EOP C04 series aligned to ITRF2008 and aligned to ITRF2014 (from ftp://hpiers.obspm.fr/iers/eop/eopc04_14/eopc04_IAU2000.62-now)

Conclusions

DORIS post-fit residuals differences global and per station / DPOD2008

Improvements from DTR2014 & ITRF2014 for Jason-2 (2013-2014)
Very small differences for SPOT-5 (2003-2004) but slight degradation from DTR2014 & ITRF2014
Very small differences for TOPEX (1995-1996) but slight improvement from ITRF2014

Orbit Comparison wrt DPOD2008 orbit

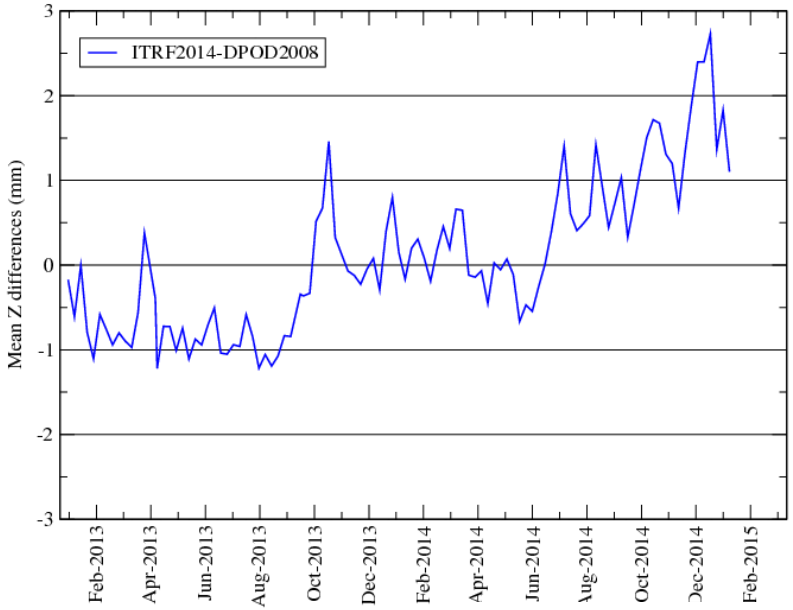
RMS of radial differences over 2 years
➢*The orbits are very close*
Mean of Z orbit differences over 2 years
➢*Z-offset is correlated to Tz Helmert parameter differences*

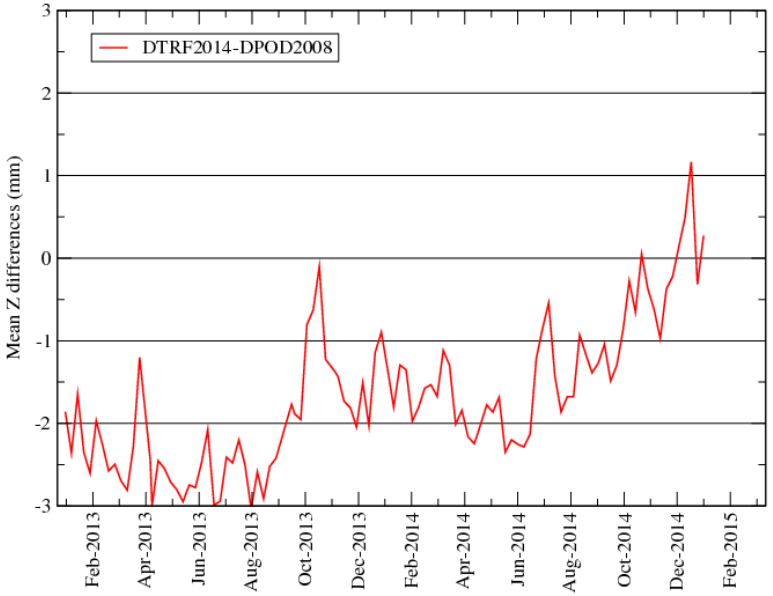
The results are similar when we use EOP C04 series aligned to ITRF2008 and aligned to ITRF2014 (from ftp://hpiers.obspm.fr/iers/eop/eopc04_14/eopc04_IAU2000.62-now)

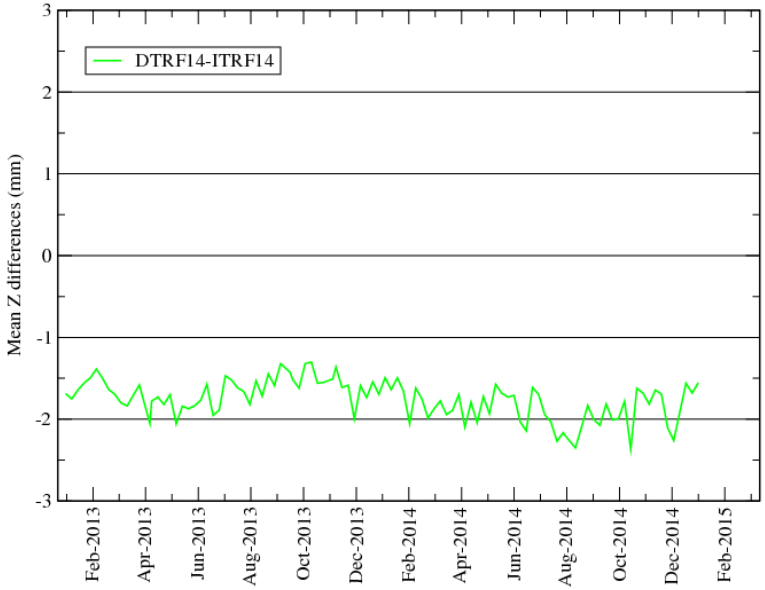
TRF2014 EVALUATION

ORBITCOMPARISON / DPOD2008

Jason-2 Mean Z orbit differences over 2 years (Jan. 2013 to Dec. 2014)



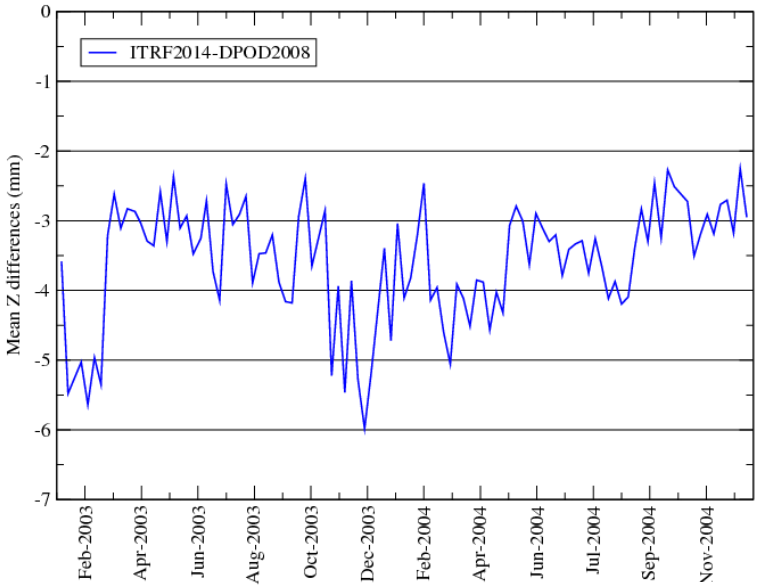


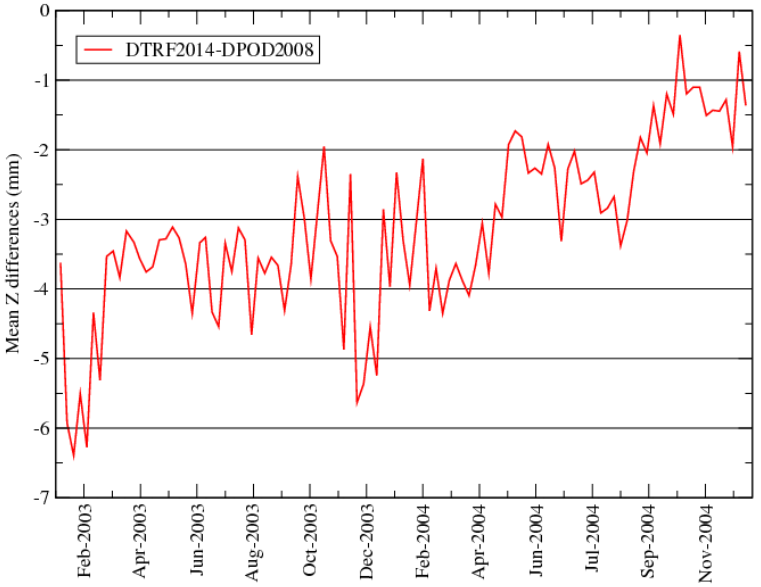


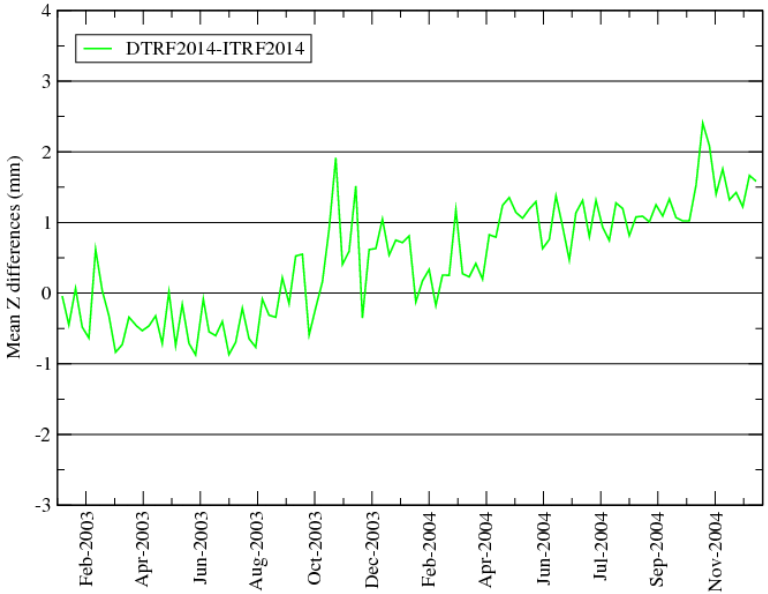
TRF2014 EVALUATION

ORBITCOMPARISON / DPOD2008

Spot-5 Mean Z orbit differences over 2 years (Jan. 2003 to Dec. 2004)







TRF2014 EVALUATION

ORBITCOMPARISON / DPOD2008

TOPEX Mean Z orbit differences over 2 years (Jan. 1995 to Dec. 1996)