Combination at the Observation Level
IERS Working Group

IERS COL-WG project
GRGS COMBINATION CENTRE

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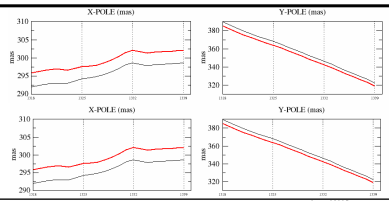
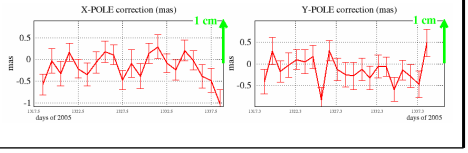
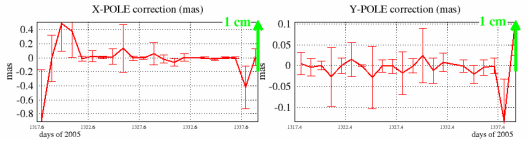
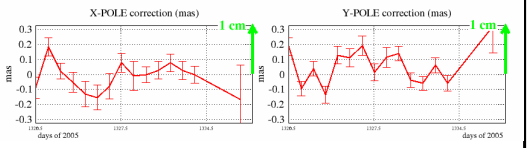
Pole coordinates AIUB

GPS **daily**	Tropospheric parameters reduces: **BIAS XPO : 4.211 mas** **BIAS YPO : -5.547 mas** Tropospheric parameters fixed: **BIAS XPO : 3.490 mas** **BIAS YPO : -3.962 mas**
SLR **weekly**	**Continuity constraints on** **Pole coordinates corrections** **σ=3cm** **WRMS XPO = 322 uas** **WRMS YPO = 312 uas**

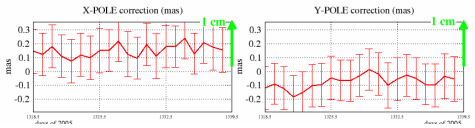
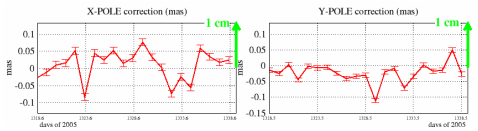
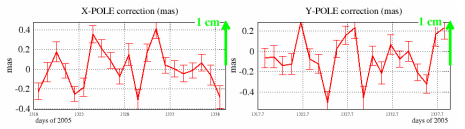




Pole coordinates DGFI

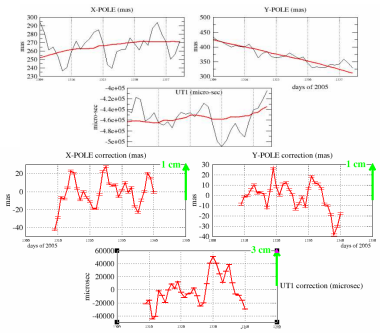
SLR **weekly**	Range bias reduced (RBIAS), STAY 14001S007 eliminated XPO, YPO, UT at 20080823 and at 20080901 eliminated due to instability. Continuity constraints on Pole coordinates Corrections: σ=2cm UT & Stations held fixed to their apriori **WRMS XPO = 15 uas** **WRMS YPO = 4 uas** 
VLBI **daily**	Continuity constraints on Pole coordinates Corrections: σ=2cm UT & Stations held fixed to their apriori **WRMS XPO = 82 uas** **WRMS YPO = 107 uas** 

Pole coordinates ESOC

DORIS + SLR **weekly**	Tropospheric parameters reduced: **BIAS XPO : 1.5 mas** **BIAS YPO : -0.75 mas** Continuity constraints on Pole coordinates corrections **σ=2cm** **WRMS XPO = 158 uas** **WRMS YPO = 88 uas** 
GNSS + SLR **weekly**	Continuity constraints on Pole coordinates corrections **σ=2cm** **WRMS XPO = 43 uas** **WRMS YPO = 37 uas** **Pole coordinates apriori ESOC ≠ C04** 
SLR **weekly**	Continuity constraints on Pole coordinates corrections **σ=2cm** **WRMS XPO = 179 uas** **WRMS YPO = 205 uas** 

Pole coordinates GFZ

	GNSS+SLR daily
XPO, YPO, **UT-UTC** 2pt/d at 00h and 24h STAX, STAY, STAZ 1pt/d at 12h	EOP & Station coordinates estimated simultaneously, Continuity constraints on Pole coordinates corrections **σ=2cm** **Station Stabilization = 50cm** **WRMS XPO = 15.6 Mas** **WRMS YPO = 13.3 Mas**



ftp://hpiers.obspm.fr/iers/eop/grgs/GRGS/solutions/

Pole AIUB solutions with DYNAMO
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1596 nov 30 15:05 Pole.SLR.AIUB.54688_54709.2.readme

2486 nov 30 12:18 Pole.GNSS.AIUB.55688_55709.1.dat
1875 nov 30 14:25 Pole.GNSS.AIUB.55688_55709.1.readme

Pole DGFI solutions with DYNAMO
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Pole ESOC solutions with DYNAMO
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Pole GFZ solutions with DYNAMO
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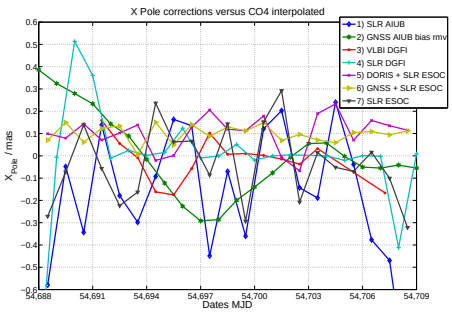
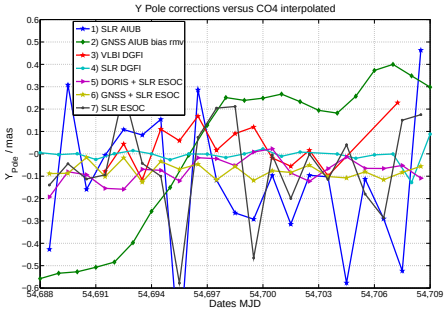
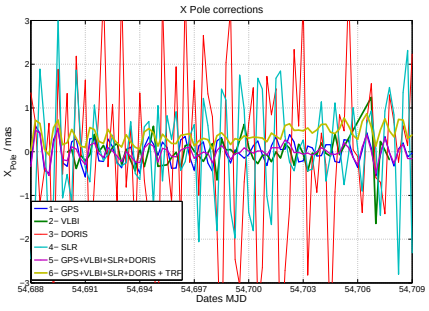
X & Y pole corrections versus C04 series

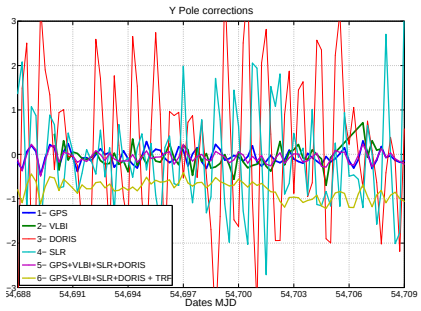




		X correction Mean µas	X correction WRMS µas	Y correction Mean µas	Y correction WRMS µas
1	AIUB SLR	-144.5	281.5	-124.6	294.6
2	AUIB GNSS	4212.1	175.1	-5549.4	327.2
3	DGFI VLBI	9.7	84.8	13.4	87.5
4	DGFI SLR	-2.4	21.6	-0.2	5.8
5	ESOC DORIS + SLR	106.0	75.3	-74.4	54.0
6	ESOC GNSS + SLR	98.8	36.8	-77.6	31.9
7	ESOC SLR	-42.7	158.2	-52.7	200.7

GRGS X & Y pole corrections versus C04 series at 6h interval





	Technique	Weighted Mean	Weighted RMS
X_Pole / µas	1- GPS	-10.3	160.6
	2- VLBI	-17.2	188.9
	3- DORIS	31.5	1484.7
	4- SLR	-25.7	855.2
	5- Combined	-10.0	165.6
	6- Combined +TRF	379.8	185.0

	Technique	Weighted Mean	Weighted RMS
Y_Pole / µas	1- GPS	-60.3	116.8
	2- VLBI	-91.7	174.2
	3- DORIS	262	1098.2
	4- SLR	-193	799.7
	5- Combined	-66.8	106.2
	6- Combined +TRF	-794	211.48

statistics results with combination

	DGFI GPS + VLBI	ESOC GNSS+SLR + DORIS+SLR	GRGS GPS + VLBI + DORIS + SLR
X-Pole mean	169 as	100.0 uas	428 uas
X-Pole WRMS	920 mas	99.9 uas	428 uas
Y-Pole mean	61 as	61.0 uas	817 uas
Y-Pole WRMS	1679 mas	61.2 uas	817 uas

MAO & GRGS X & Y pole corrections comparison versus C04 series at 1d interval over 2008

From Lytvyn Mykhailo -MAO- & C. Bizouard -GRGS