5th COL Working Group Meeting

Combination at the Observation Level
IERS Working Group

GPS GRGS contribution to the COL campaigns CONT08 and CONT11

CNES/CLS Analysis Center

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cnes
CENTRE NATIONAL D'ÉTUDES SPATIALES

CLS
COLLECTE LOCALISATION SATELLITES

We provides 6 weekly normal equations (grgAADDDpw01.n9)

CONT08 (weeks 1492 1493 1494)

CONT11 (weeks 1653 1654 1655)

Weekly normal equation content:

-X,Y,Z coordinates for all stations: weekly parameters, epoch Wednesday 12:00

-X-pole, Y-pole, UT1UTC: 3h-parameters (piece-wise linear polygon)

-Nutation angles X, Y: 12h-parameters at 00:00 and 12:00

-No rate

-Tropo. parameters for colocated stations: 1 bias /2h + N&E gradients /1d

What's new in our GPS processing?

-added Ray/Ponte model for atm. pressure (up to degree 10)

-3h a priori values of the EOPs (two files provided by Daniel Gambis from Paris Observatory, one for CONT08 campaign and one for CONT11 campaign)

-station displacements due atm. pressure loading S1 and S2

-geocenter motion due to tide loading

-NRO with Lagrangian interpolation

-a priori for tropospheric parameters in NEQs = ZTD

Planned schedule fo IGS processings (early 2013)
(Cf. IGS-ACS mail 837 after SF splinter meeting end 2012)

-Until May: definition of standards
-Mid June-August: initial processing (1994(6?)-2013.3) and tests with IGS
-September-November: finalization of processing and last delivery to IGS

Standards for IGS
(cf. http://acc.igs.org/reprocess2.html)

- To sum up, IERS 2010 standards w/o atm. loading except daily and sub-daily models
Difference= gravity field : Eigen-GL04 annual
-**GPS/GRG processings for IGS are almost in agreement**
(except 2nd order iono and possible use of thrusts antenna model)

Parameters in SINEX for IGS

-**SX/SY/SZ + EOP and EOP rate : daily NEQs**
-Eventually satellites PCV's Offsets (to be implemanted in GINS)

Main characteristics of the processings for IGS

-**GPS only (before week #1460= early 2008) then GLONASS + GPS**
-GINSversion: based on 13_1
-Network: res_gr2 (see last slide)

GRG/GPS : Contribution to COL for ITRF

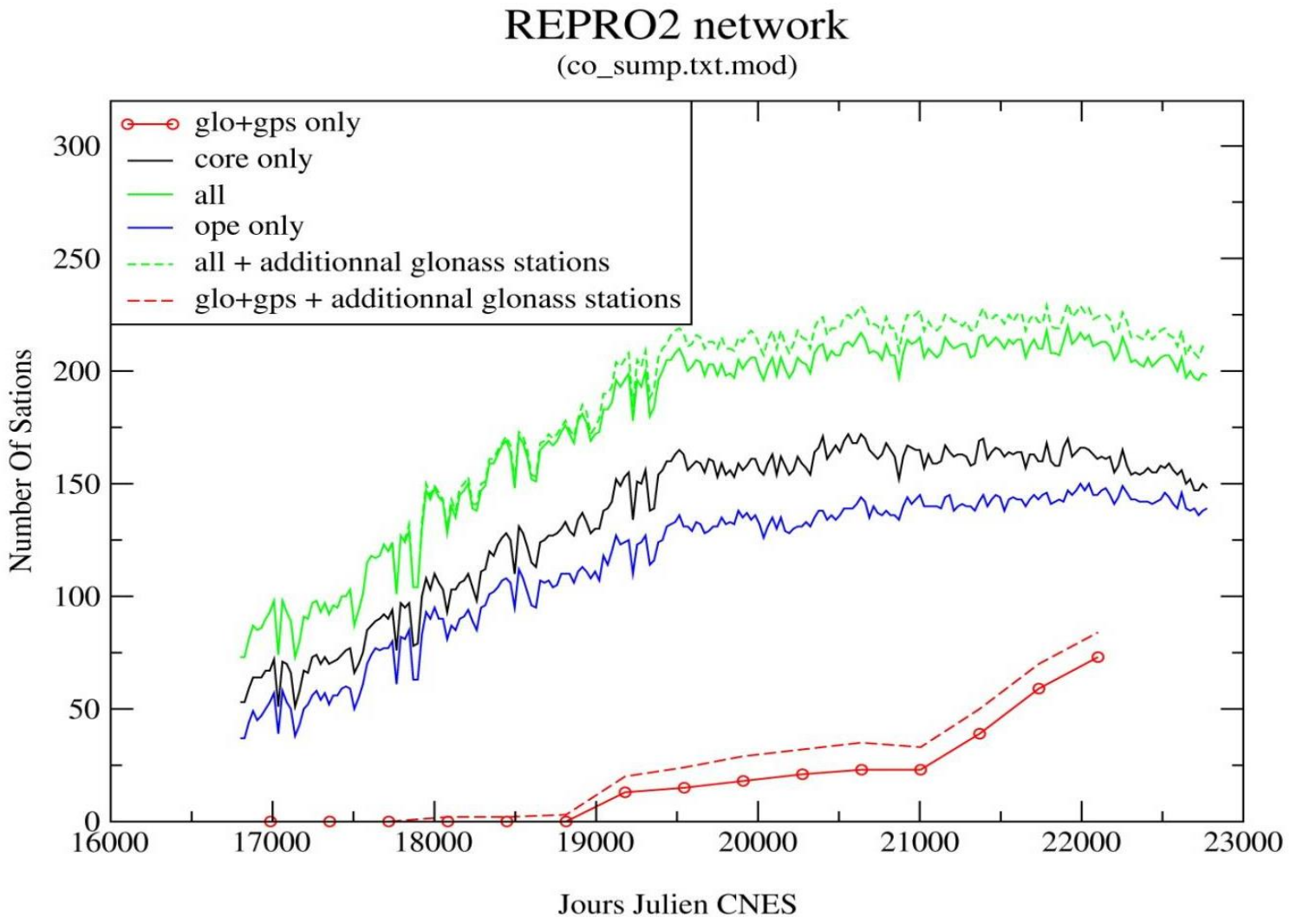
Only one processing for COL and IGS

Only the reduction step will be different for IGS and COL

COL GPS NEQs content

Parameters	SINEX IGS	NEQ COL
EOP	Daily values at 12 h + Rate	
Stations	(SX/SY/SZ) 1 /day for network « res_gr2 »	
Nutation		12h
Troposphere		ZTD (1/2h) + gradients for a sub-network (colocated sites) based on network res_gr2
PCVs	TBC	
Estimated volume (compressed) TOTAL	3 Mo / day 21 Go	15 Mo / day 100 Go

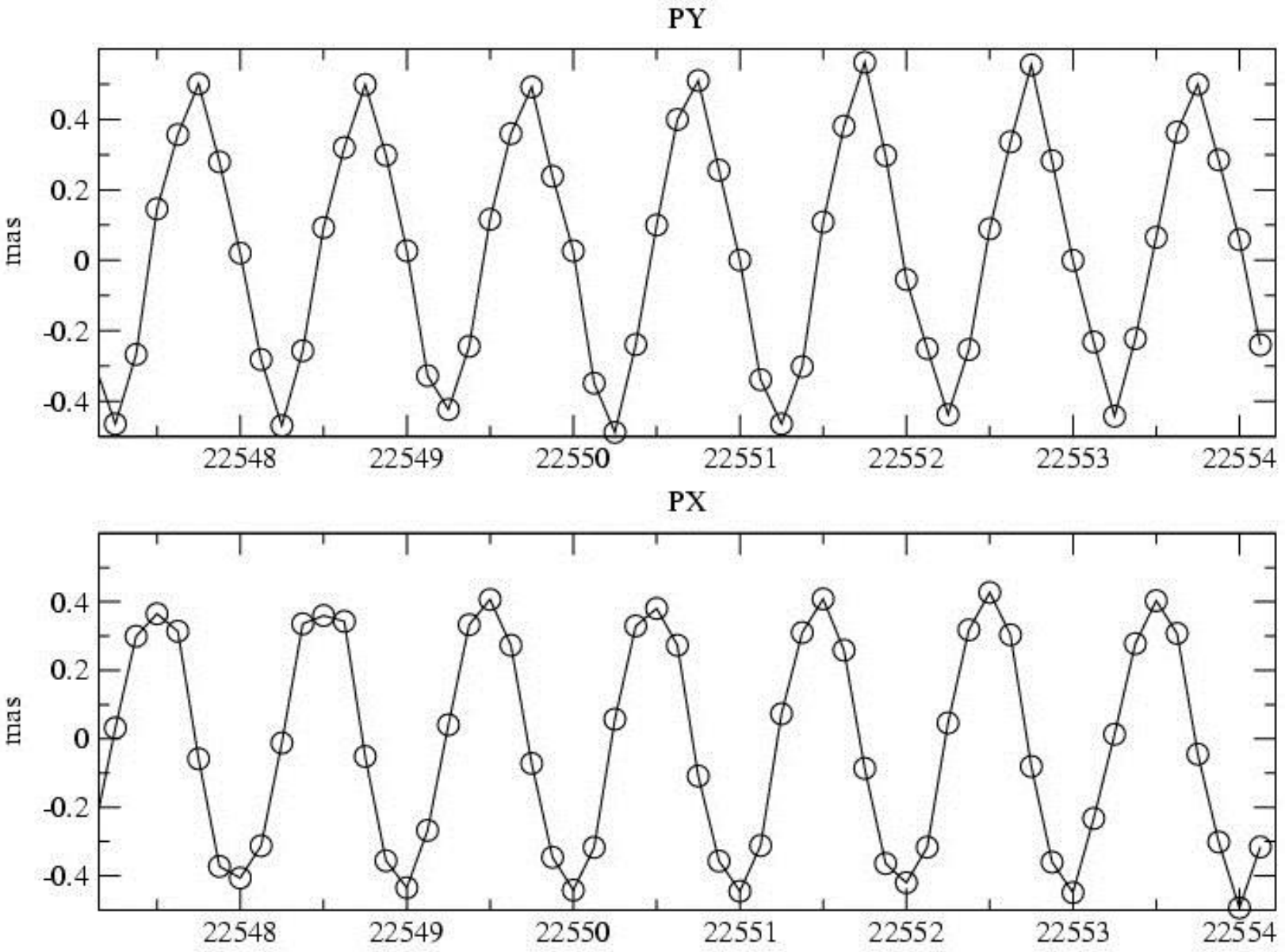
REPRO2 (1996 – 2012) GLONASS and GPS
215 stations maximum



BACK SLIDES

When network and 3h-Xp/Yp solved, with UT1 and nutation fixed, Xp/Yp estimates shows differences to initial series of the order of a few 100 uas at the 1 day period (see next slide).

Contains diurnal retrograd terms as expected due to the correlations with the orbital period of GPS satellites.
Should be stabilized when combined with other techniques.


GRG_COL / GPS_Seul (Solution pole 3 heures)
PY
mas
0.4
0.2
0
-0.2
-0.4
22548
22549
22550
22551
22552
22553
22554
PX
mas
0.4
0.2
0
-0.2
-0.4
22548
22549
22550
22551
22552
22553
22554