ARGENTINE NATIONAL GEOGRAPHIC INSTITUTE GNSS PROCESSING CENTER ACTIVITIES

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IGN
INSTITUTO GEOGRÁFICO NACIONAL

IAG 2009 – SCIENTIFIC ASSEMBLY
Geodesy for planet earth 31/08 – 04/09
BUENOS AIRES - ARGENTINA

CENTER OF PROCESSING GNSS NATIONAL GEOGRAPHIC INSTITUTE IGNA

The IGN inaugurated the GNSS IGNA data processing center in March of 2005.

The IGNA processing and combination are accomplished with the scientific software GAMIT/GLOB K.

The IGNA produces “loosely constrained” daily solutions of the SIRGAS-CON-D network.

The IGNA uses the processing and combination parameters specified by SIRGAS, adapted for GAMIT/GLOB K.

The initial task of the IGNA was to tie the Geodesic National Network POSGAR 07 to SIRGAS. The second, and ongoing, task is to provide weekly solutions to SIRGAS.

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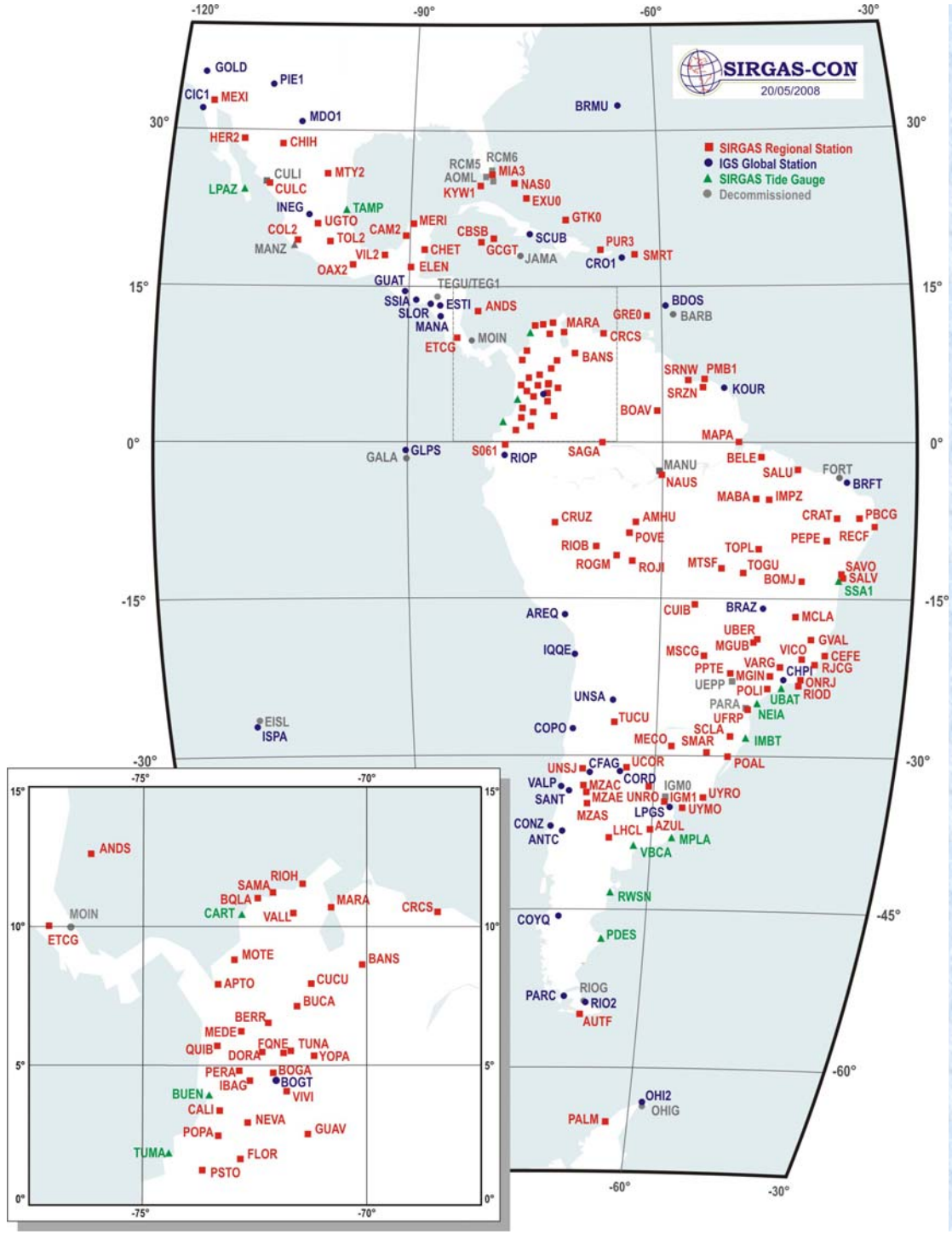

SIRGAS-CON

Continuosly Operating Network

More than 170 Continuous GPS (CGPS) stations.

50 of these CGPS stations are members of the global IGS network

The SIRGAS-CON CGPS stations are contributed by a combination of public and private institutions, universities and businesses.

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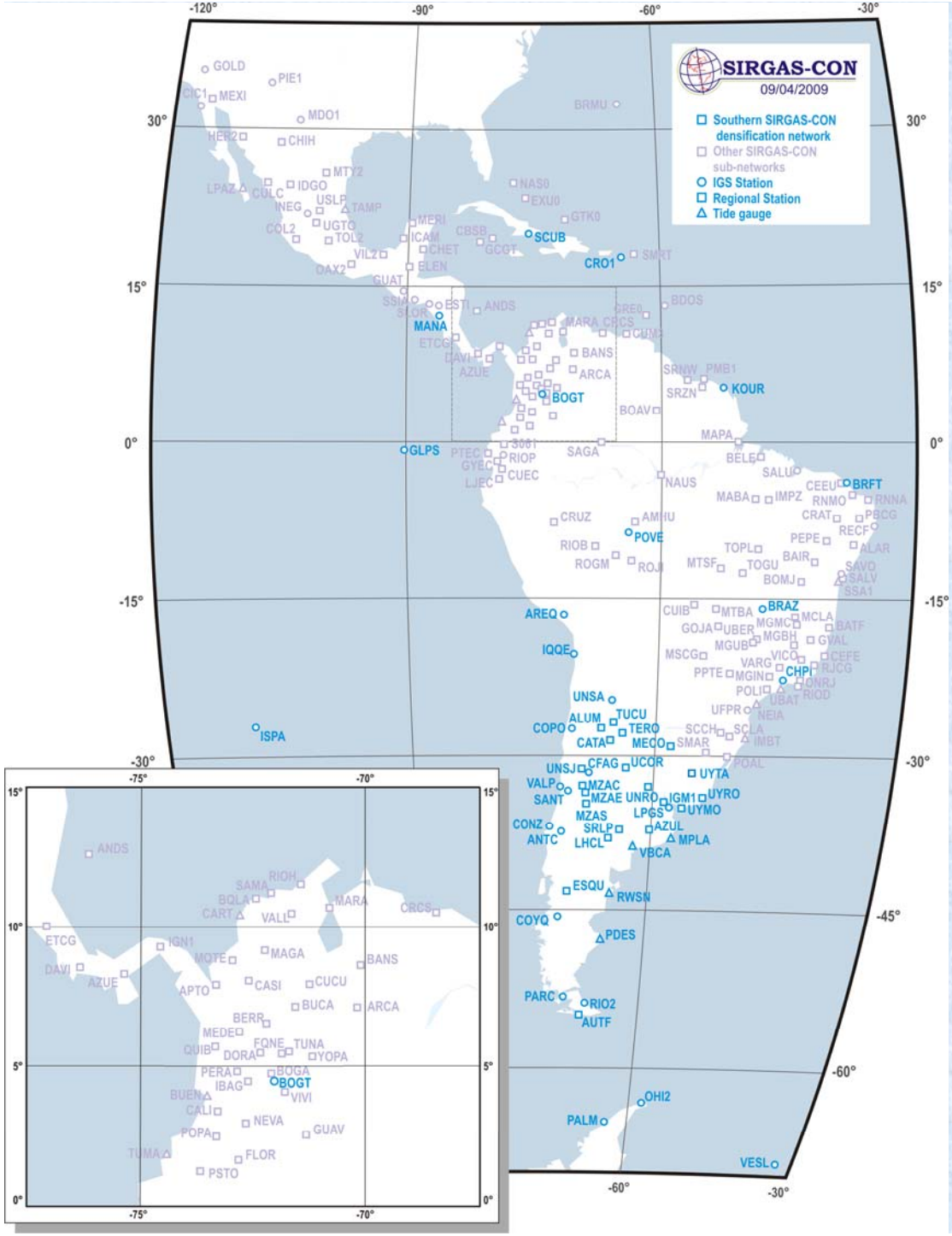

SIRGAS-CON-D SUR

The approximately 45 permanent GNSS stations of the Southern Network (cyan).

A number RAMSAC of stations are under evaluation for incorporation into SIRGAS and not shown.

Processing strategy has been adapted to meet the requirements of SIRGAS.

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RAMSAC

Red Argentina de Monitoreo Satelital Continuo

26 operational permanent GNSS stations.

Interval: 1 sec.
5 sec.
15 sec.

Coming soon: differential corrections through NTRIP Protocol.

Web site:
www.ign.gob.ar/node/12

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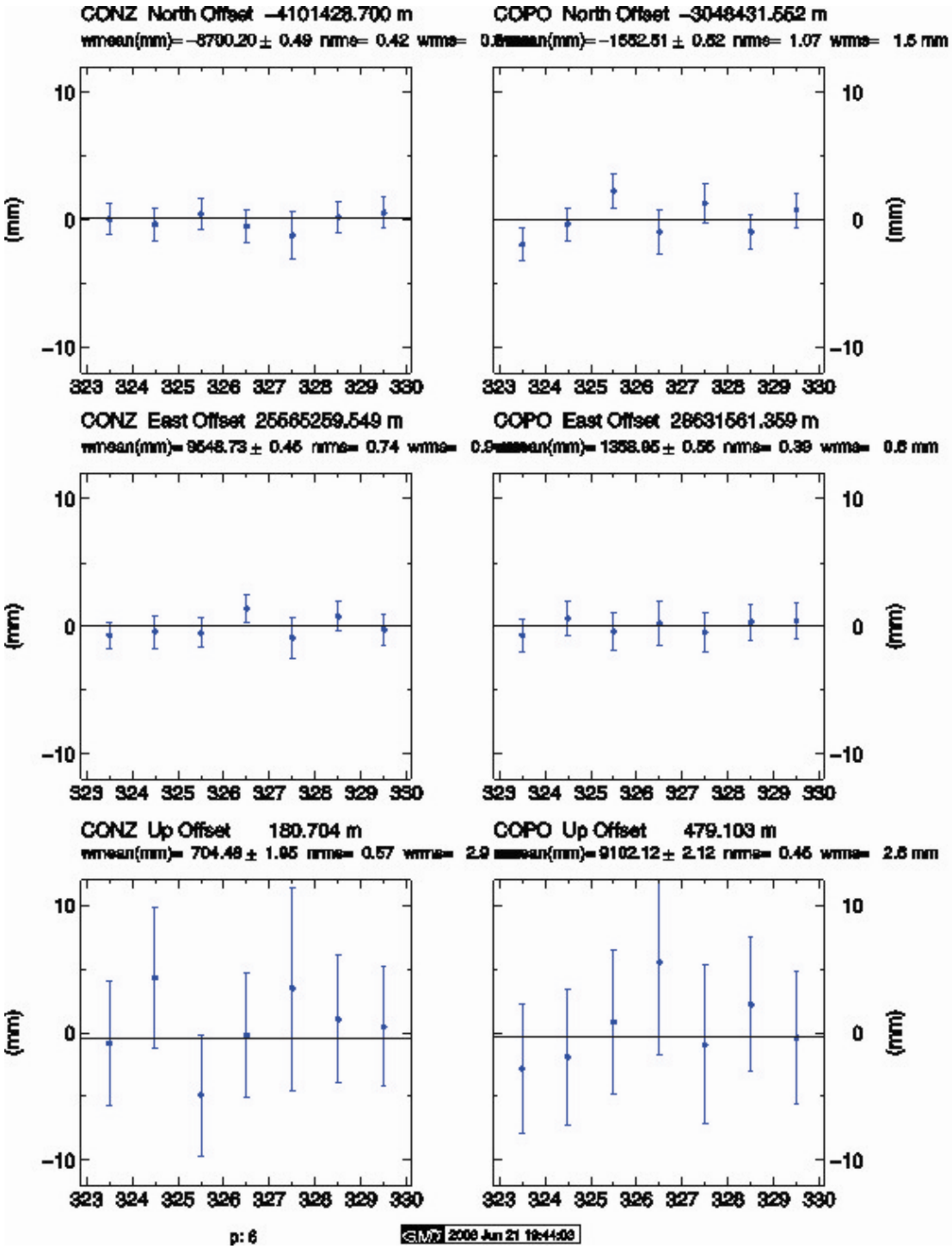

REPEATABILITY OF COORDINATES

Stations CONZ and COPO

Components N, E and U

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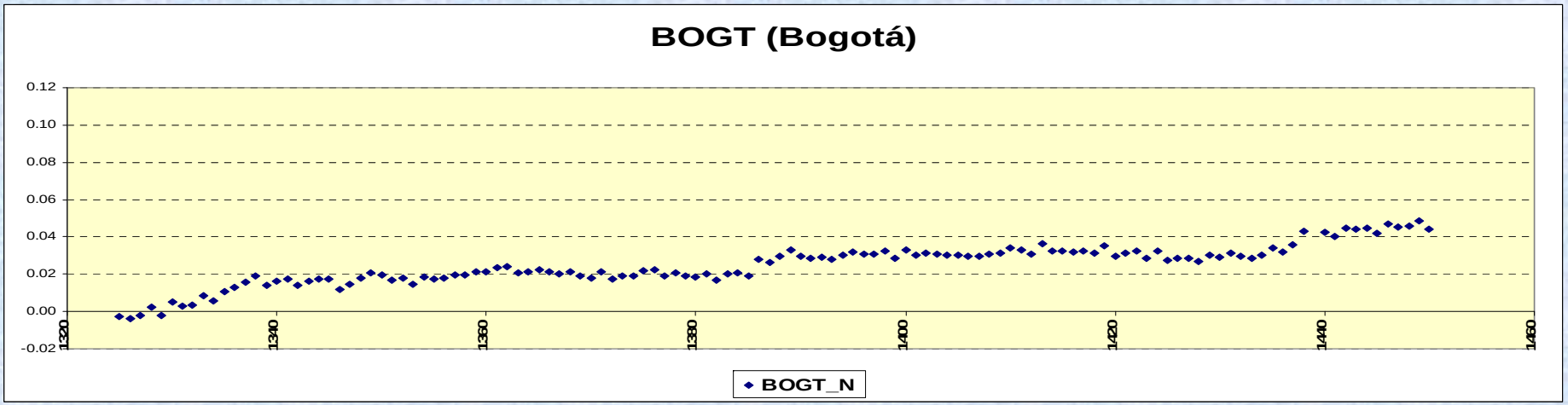
BOGT (Bogotá)
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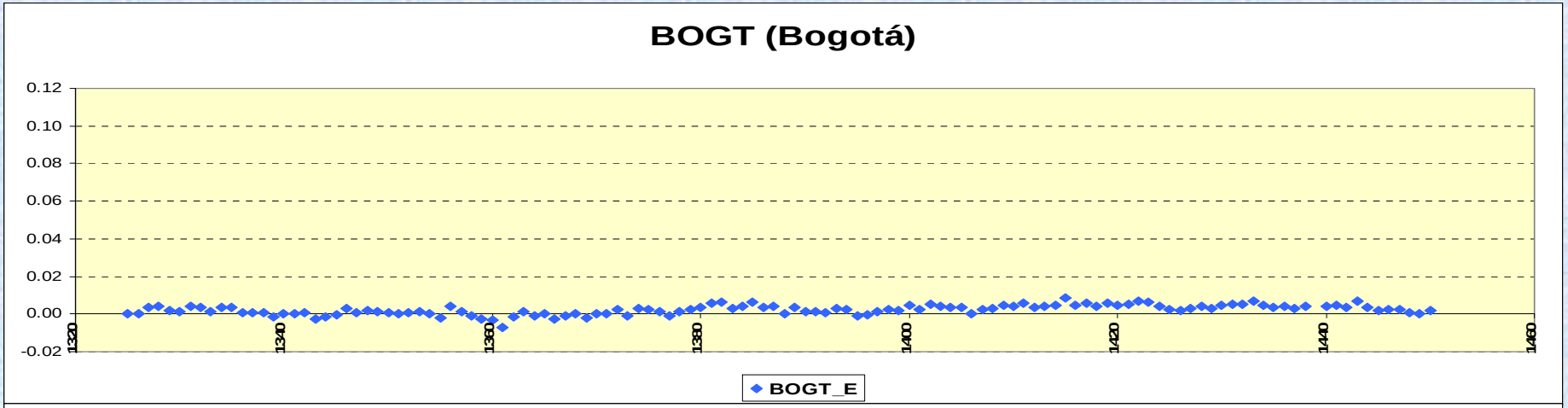
BOGT_N


BOGT (Bogotá)
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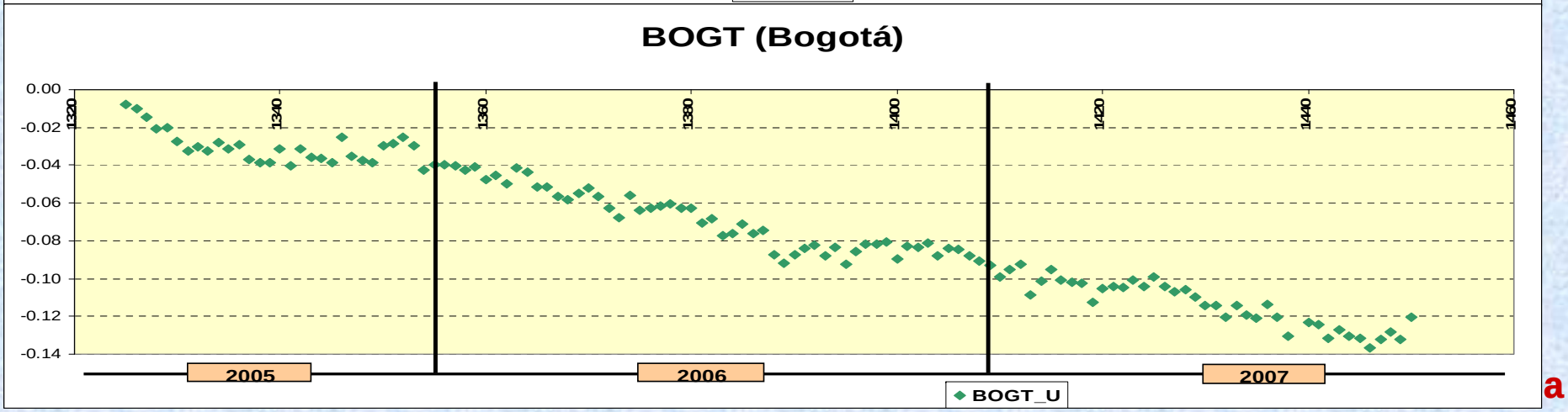
BOGT_E


BOGT (Bogotá)
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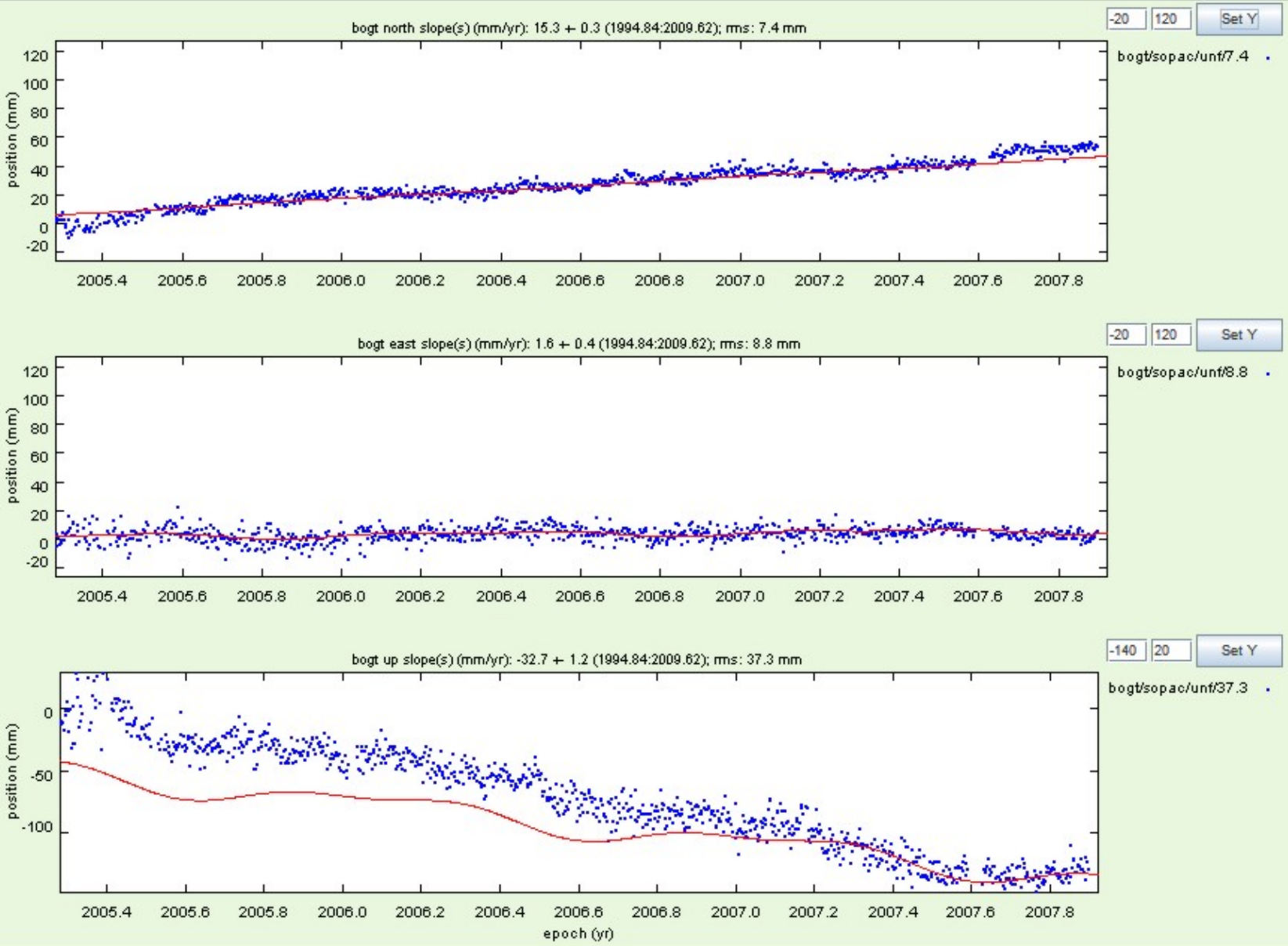
2005
2006
2007
BOGT_U

a

SOPAC Refined Model GPS Site Position Time Series (ITRF2005)

Filter: No | Detrend: No | Residual plot: No | Begin: 2005.4 | End: 2007.8 | Set X

Site: bogt | Layer sites: ALL | Clear | Reset Axes | Print | Help | Site Model Terms



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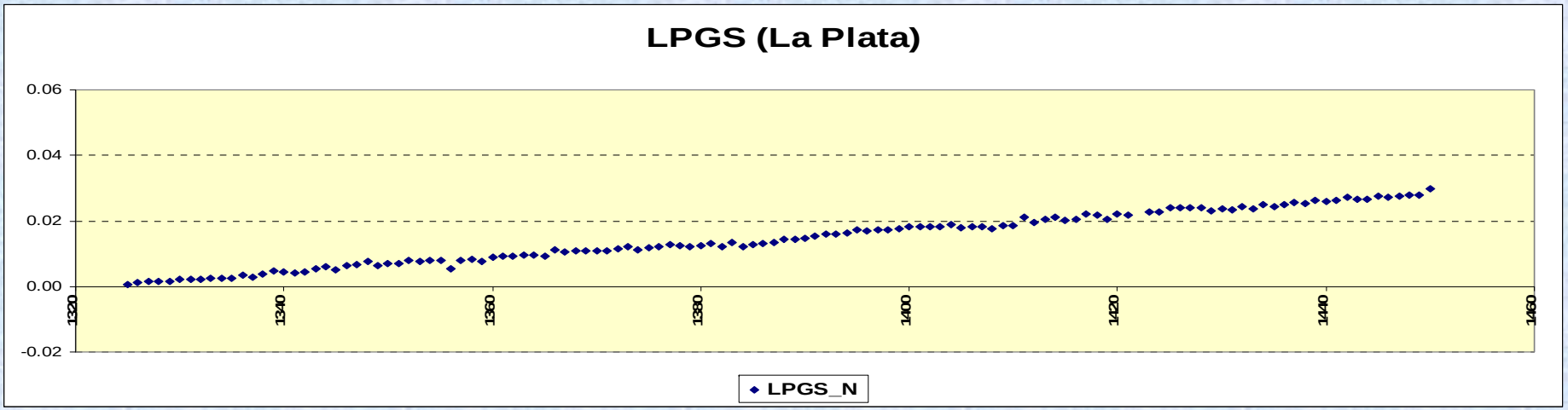
LPGS (La Plata)
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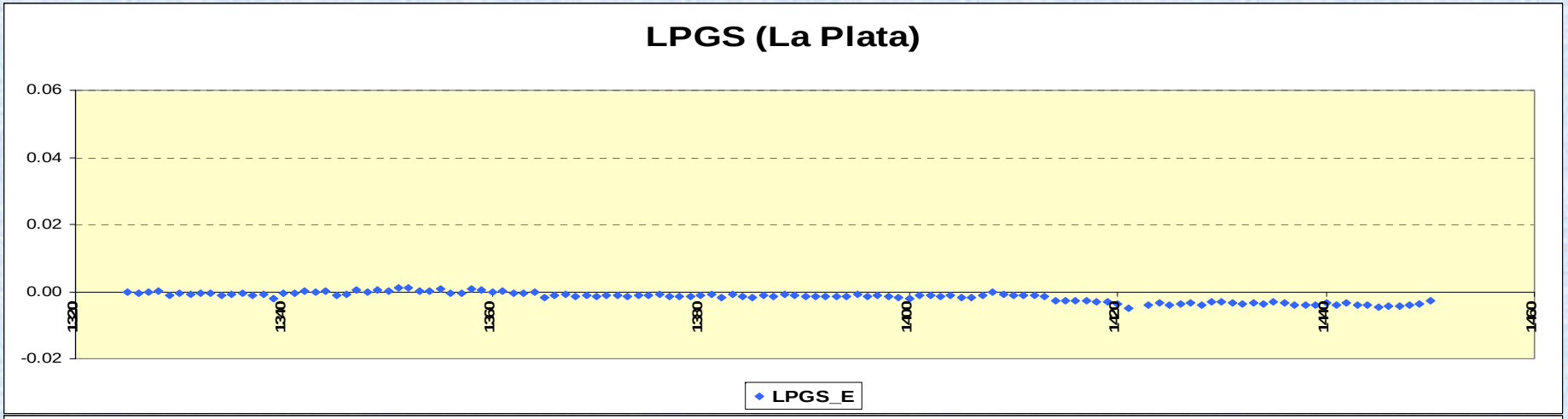
LPGS_N


LPGS (La Plata)
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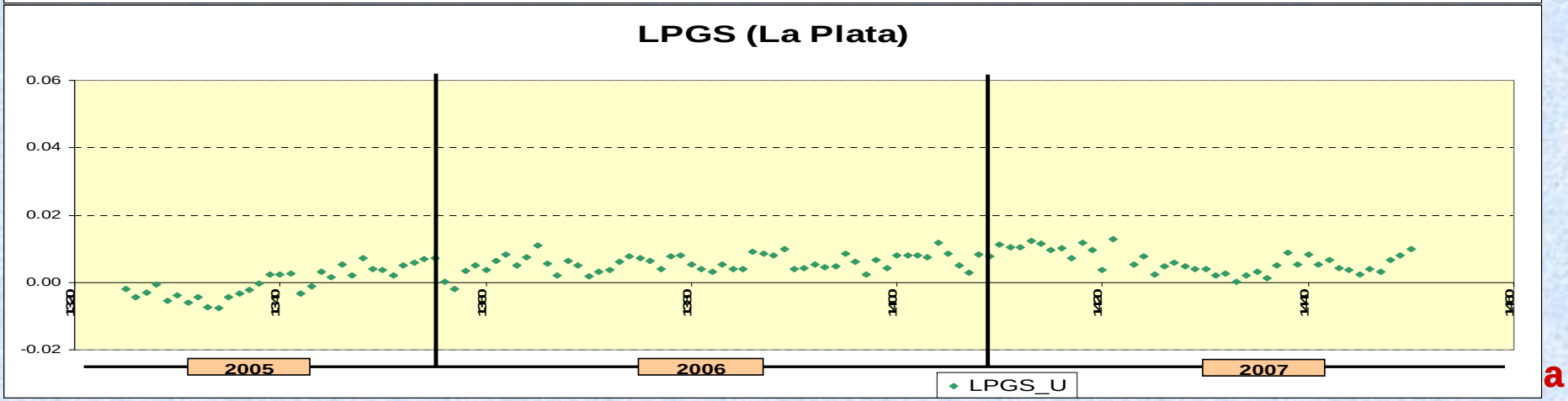
LPGS_E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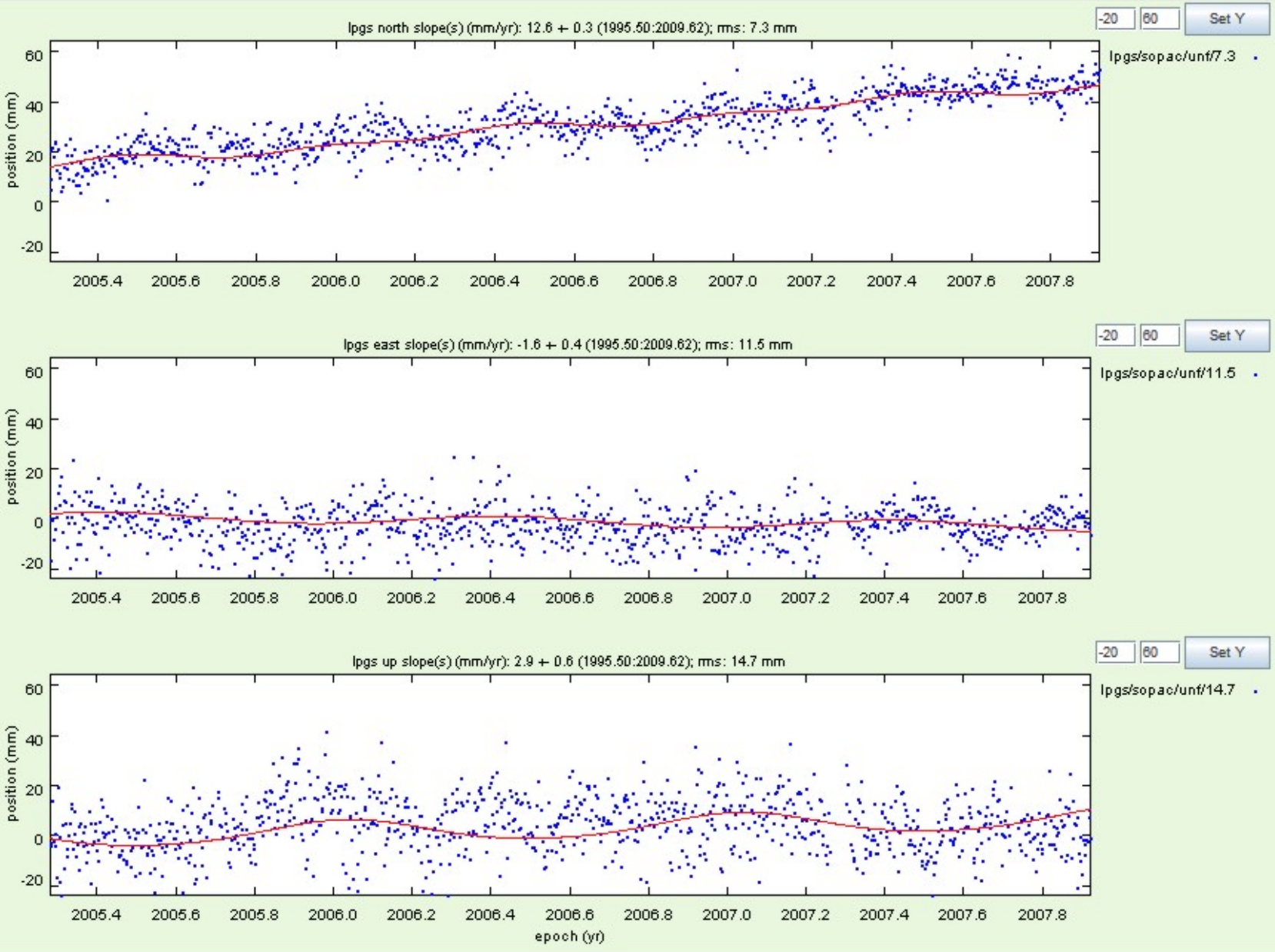
2005
2006
2007
LPGS_U

a

SOPAC Refined Model GPS Site Position Time Series (ITRF2005)

Filter: No | Detrend: No | Residual plot: No | Begin: 2005.4 | End: 2007.8 | Set X

Site: lpgs | Layer sites: ALL | Clear | Reset Axes | Print | Help | Site Model Terms



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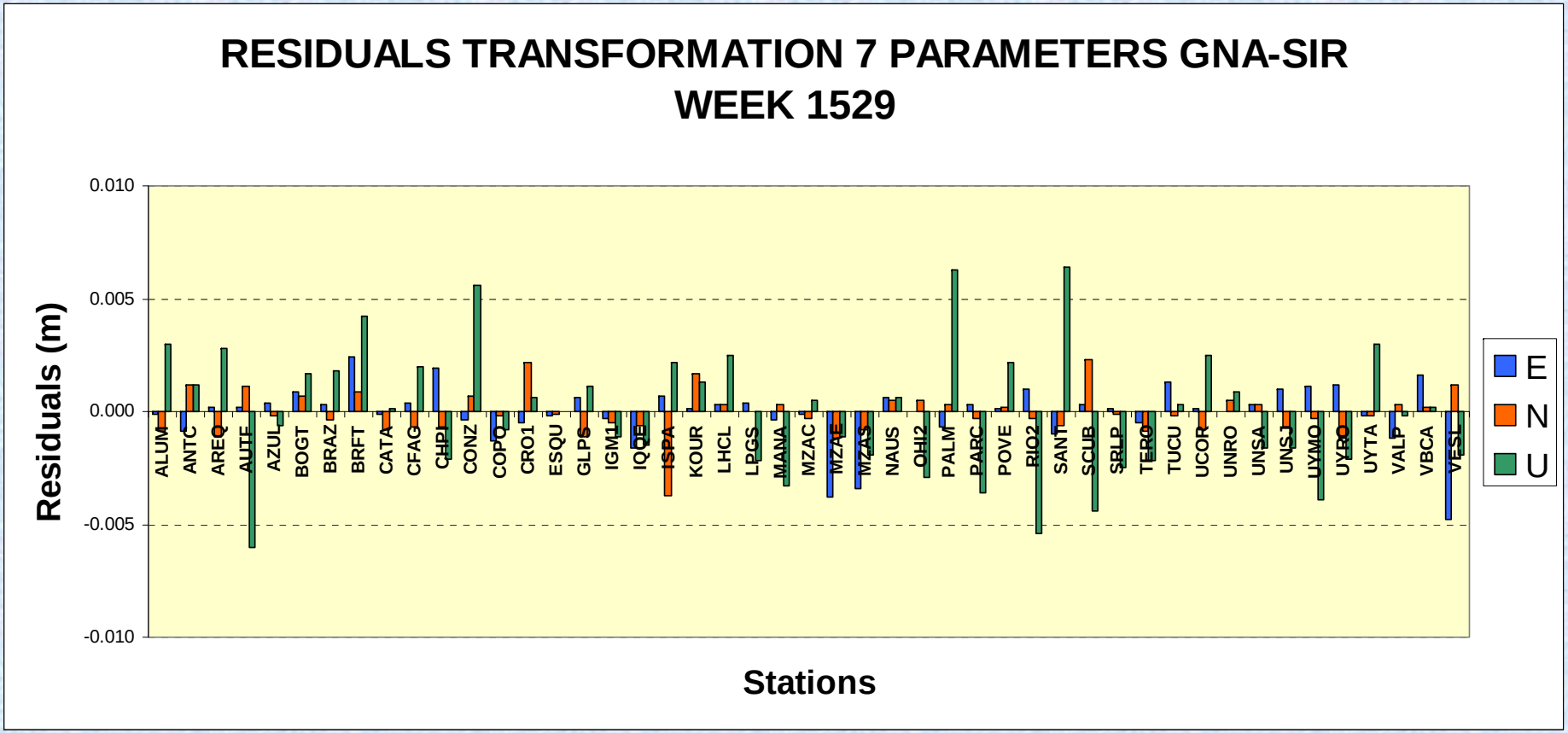
Comparison of GNA and SIR results for the SIRGAS-CON-D-SUR Network



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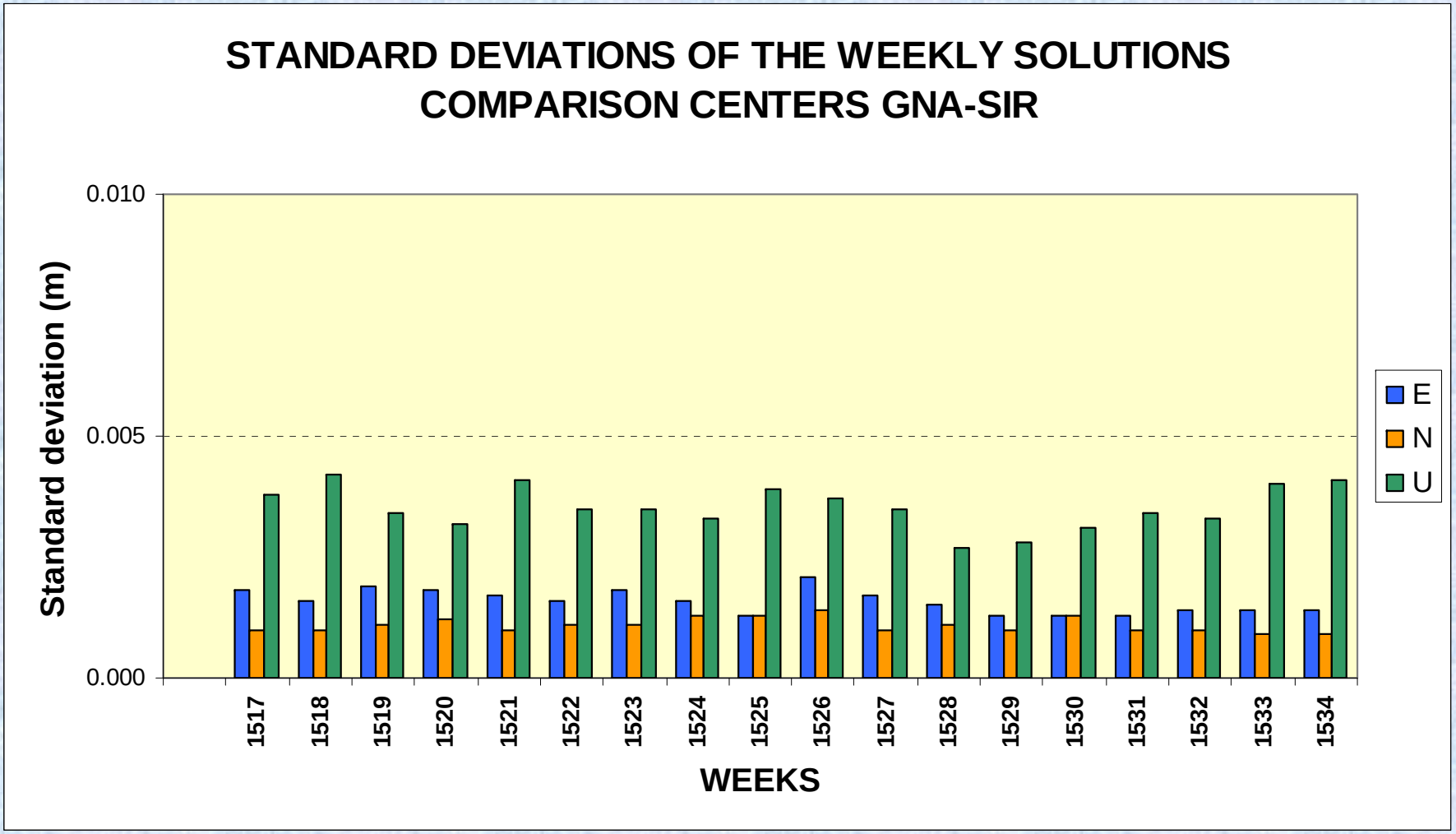
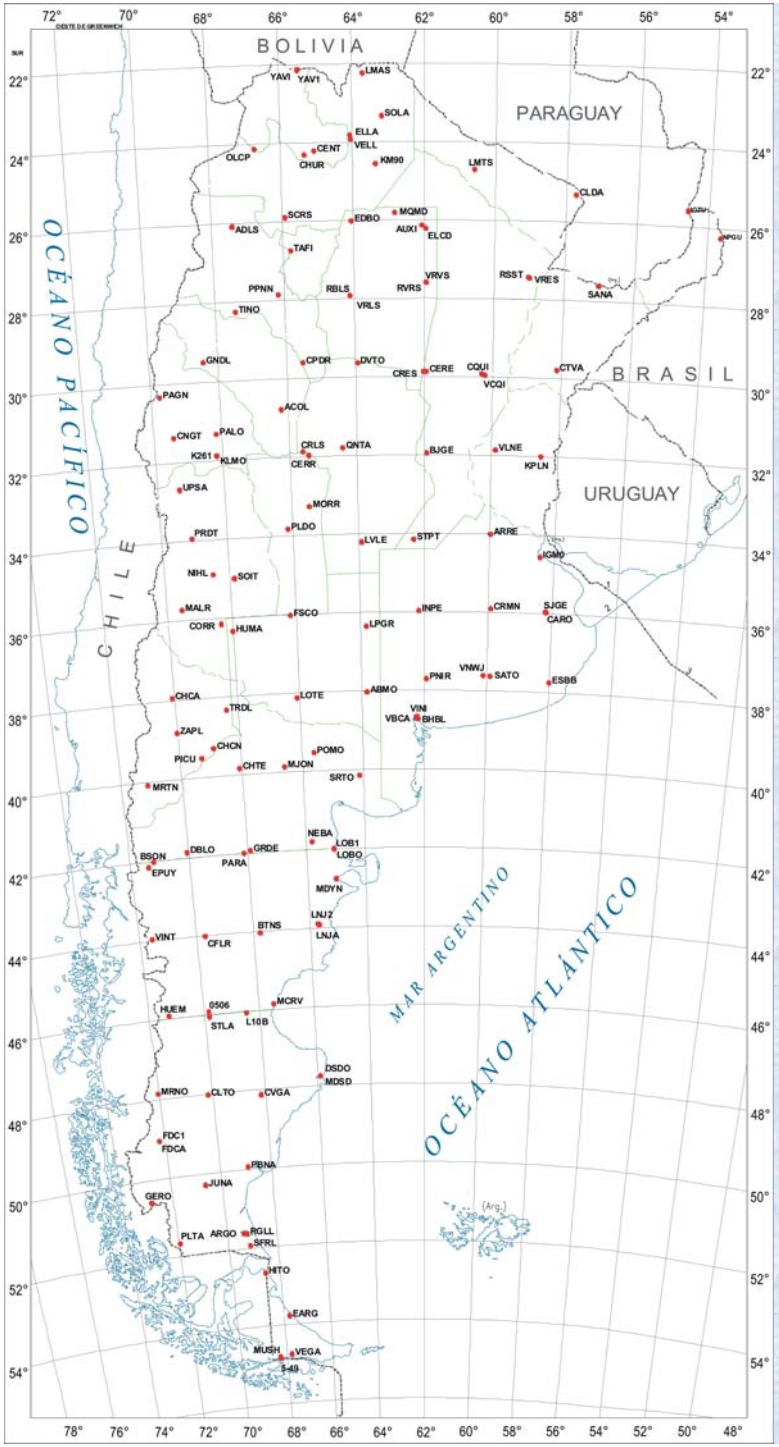
Comparison of GNA and SIR results for the SIRGAS-CON-D-SUR Network



Cimbaro - Lauría



POSGAR 94

(Posiciones Geodesicas Argentinas)

Argentine geodetic network

- **Measurement campaigns, 1993 and 1994.**
- **127 points with ~200 km spacing.**
- **Processed with commercial software.**
- **referred to WGS 84, epoch 1993.8**

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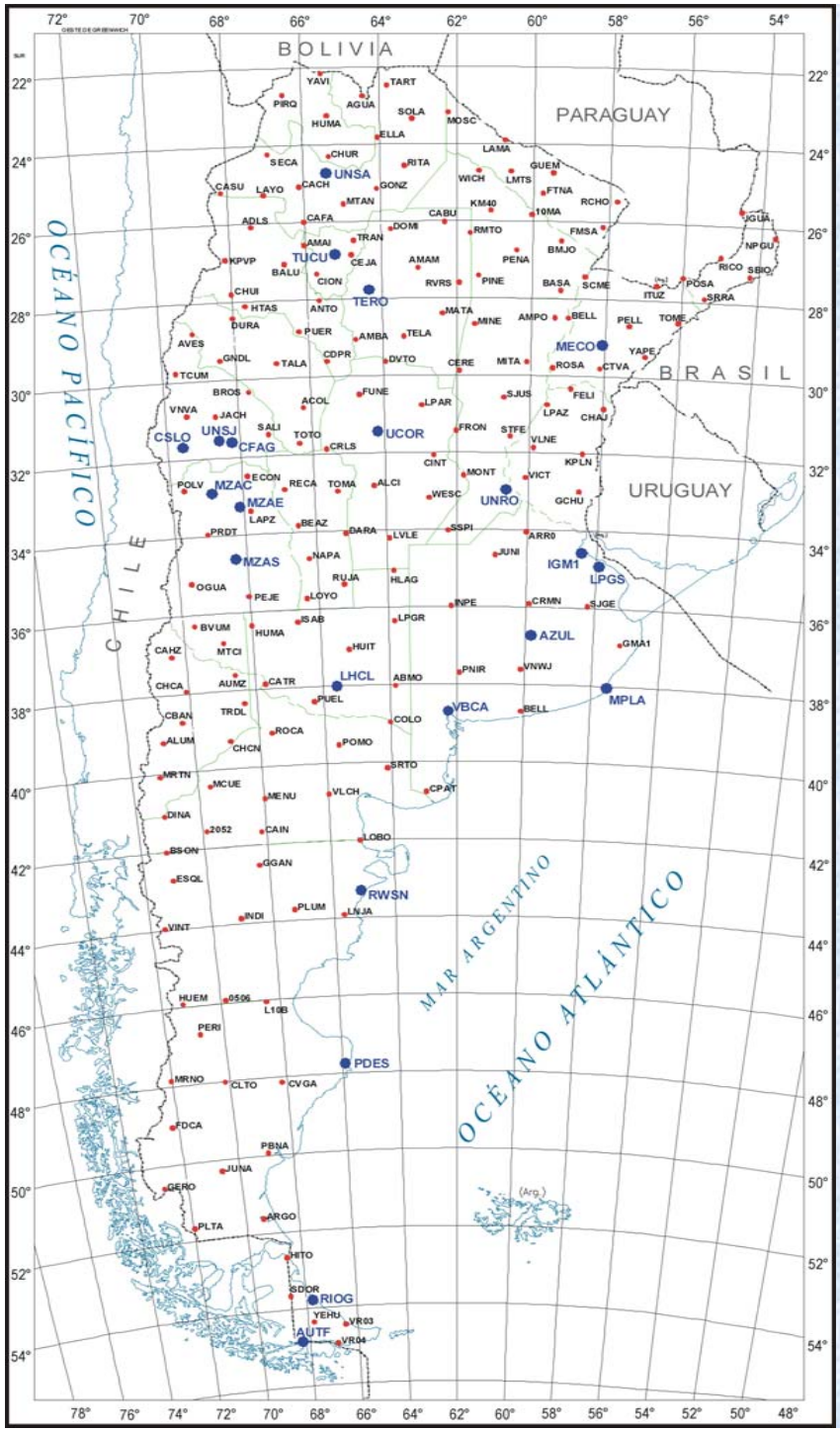

FRAME RAMSAC-POSGAR 07

New Argentine Geodetic Network

Introduces a number of permanent, continuos GPS stations to POSGAR.

178 points of POSGAR 07 measured for 36 hs.

Frame ITRF2005 (IGS05), epoch 2006.632.

Tied to SIRGAS-CON, with SIRGAS solution (DGF08P01)

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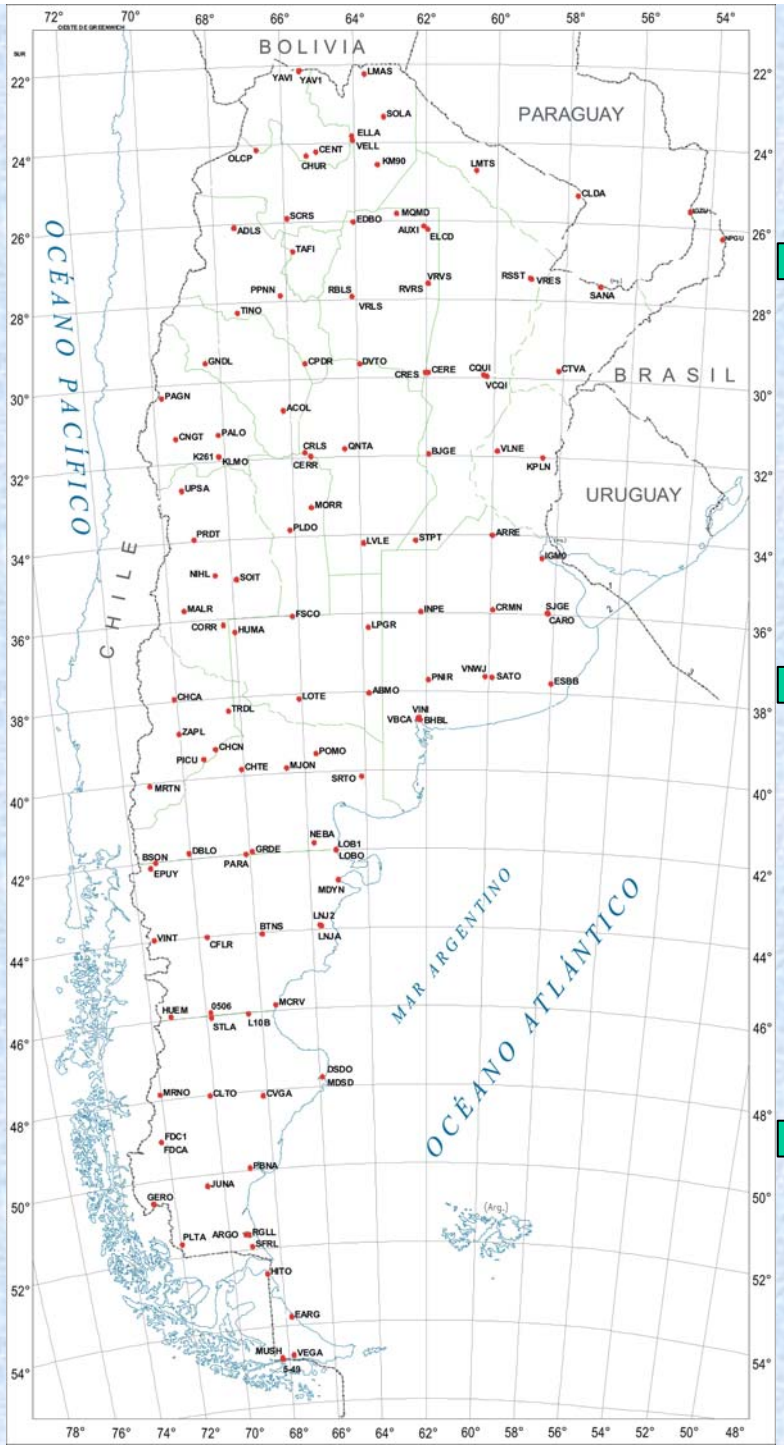
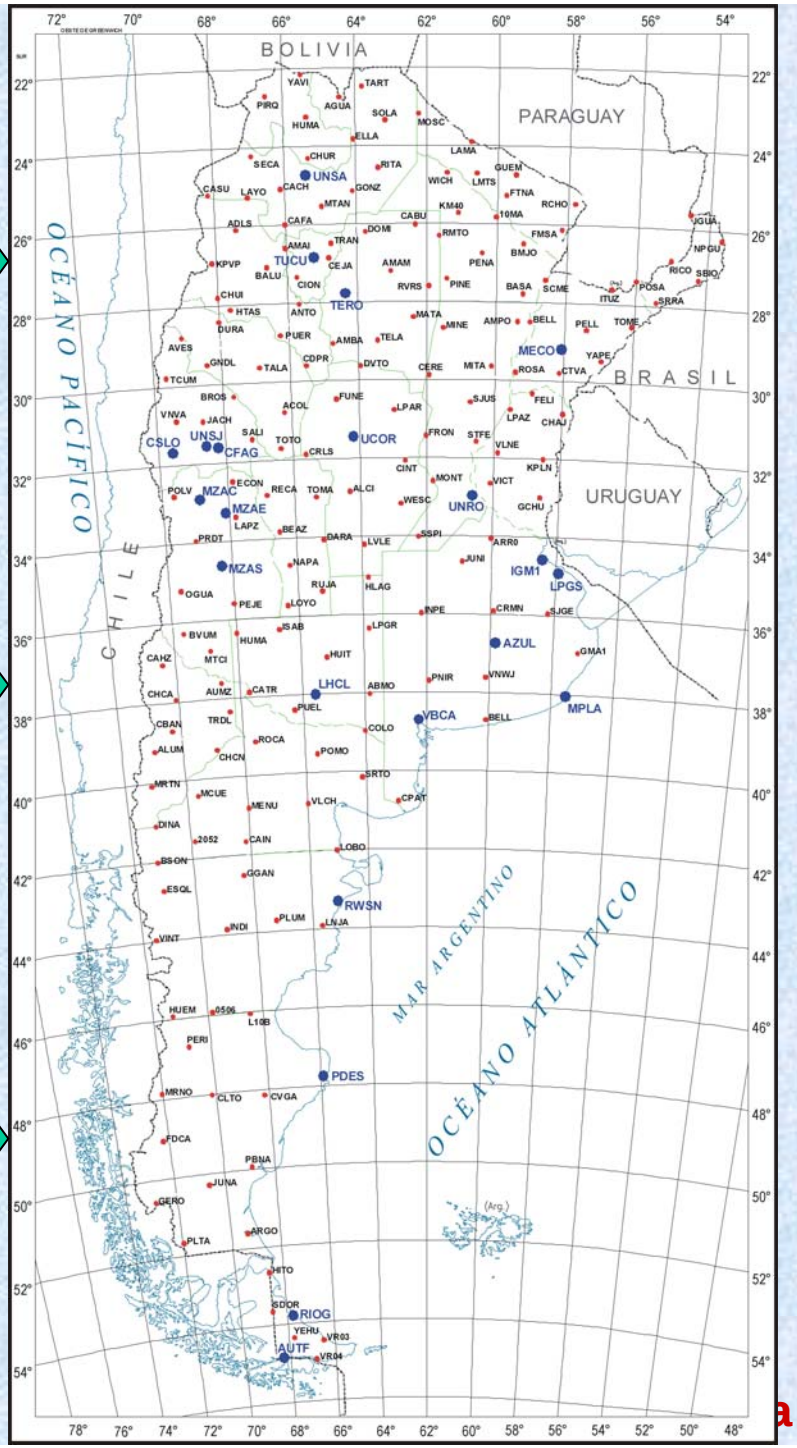
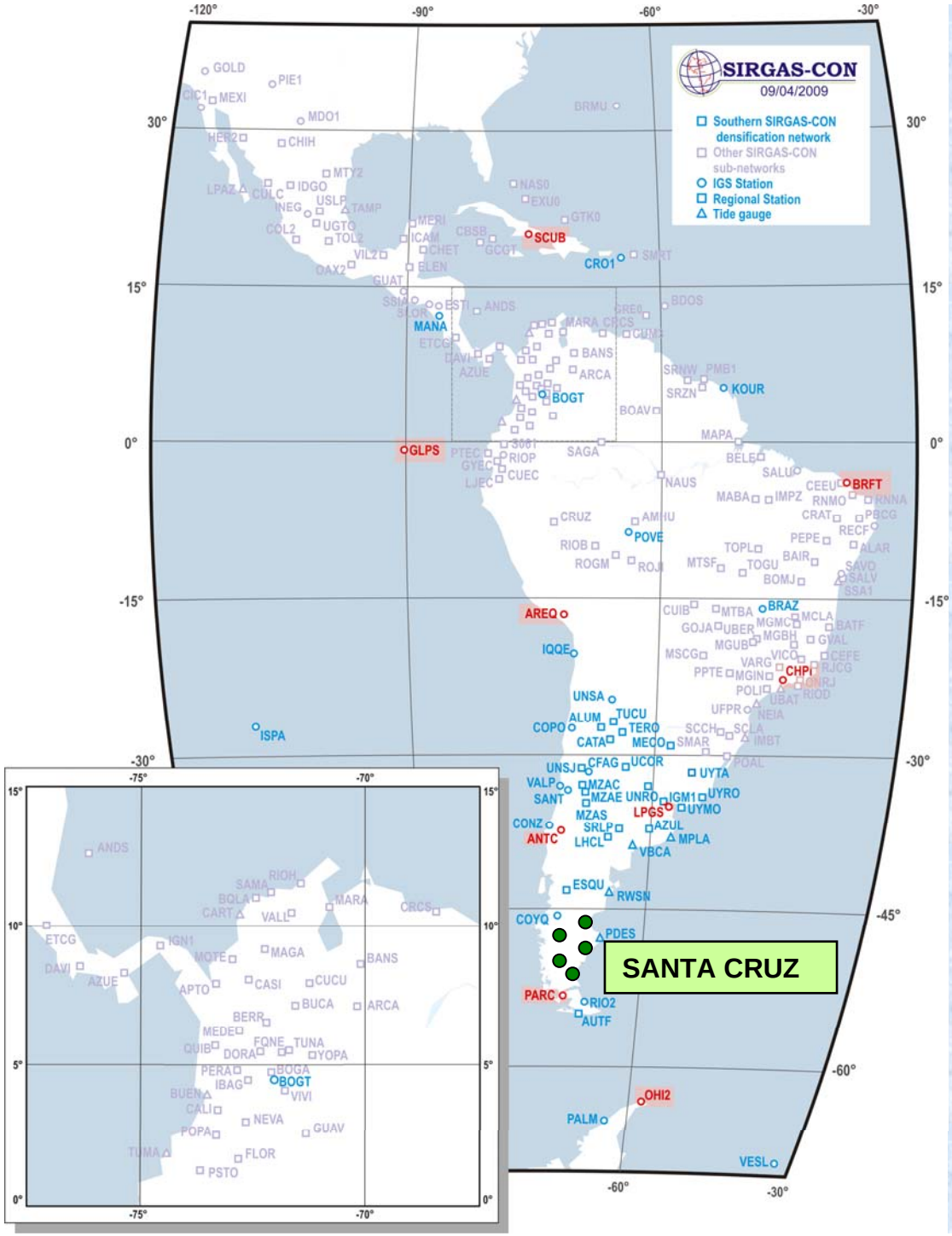
POSGAR 94 – WGS 84





POSGAR 07 – ITRF 05

auría



POSGAR 07 TO SIRGAS ADJUSMENT

The permanent IGS GNSS stations (in red) were used to adjust the POSGAR campaign to SIRGAS using GLOB K.

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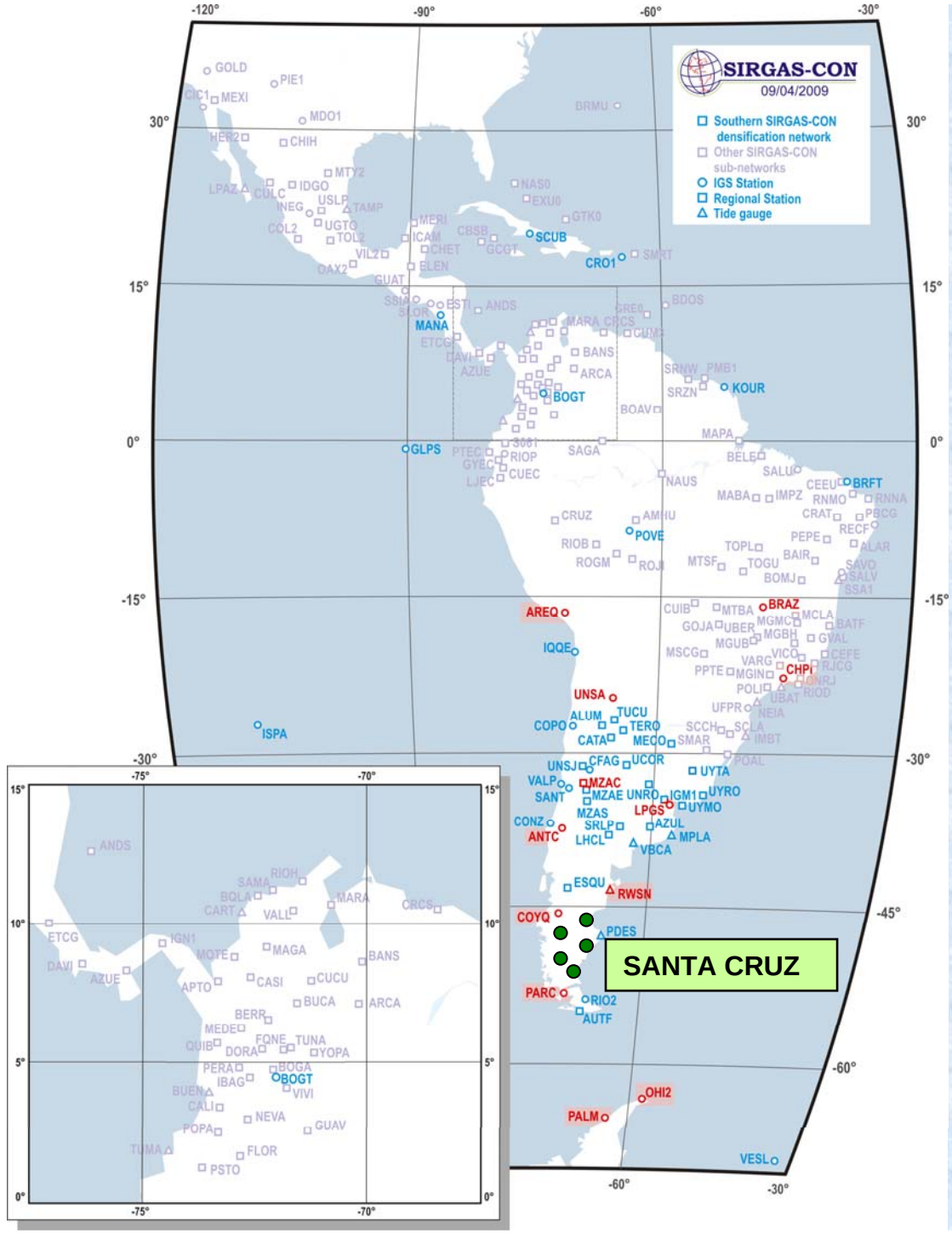

Transformation parameters

The IGS GNSS permanent stations (in red) were used to transform between the provincial campaign solutions (example in green) and POSGAR 07 (time 2006.632).

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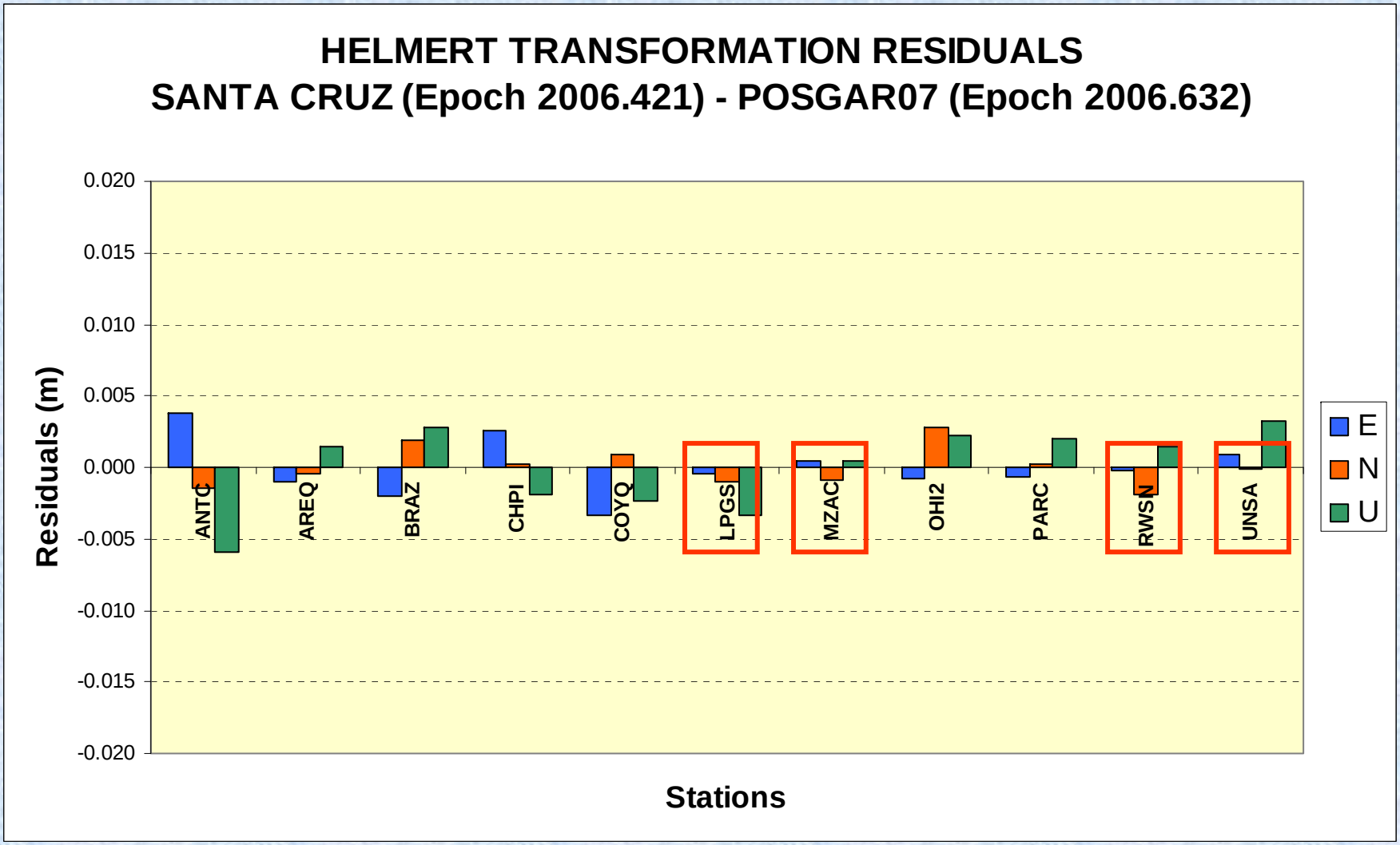
Helmert transformation residuals
Santa Cruz (epoch 2006.421) – POSGAR07 (epoch 2006.632)



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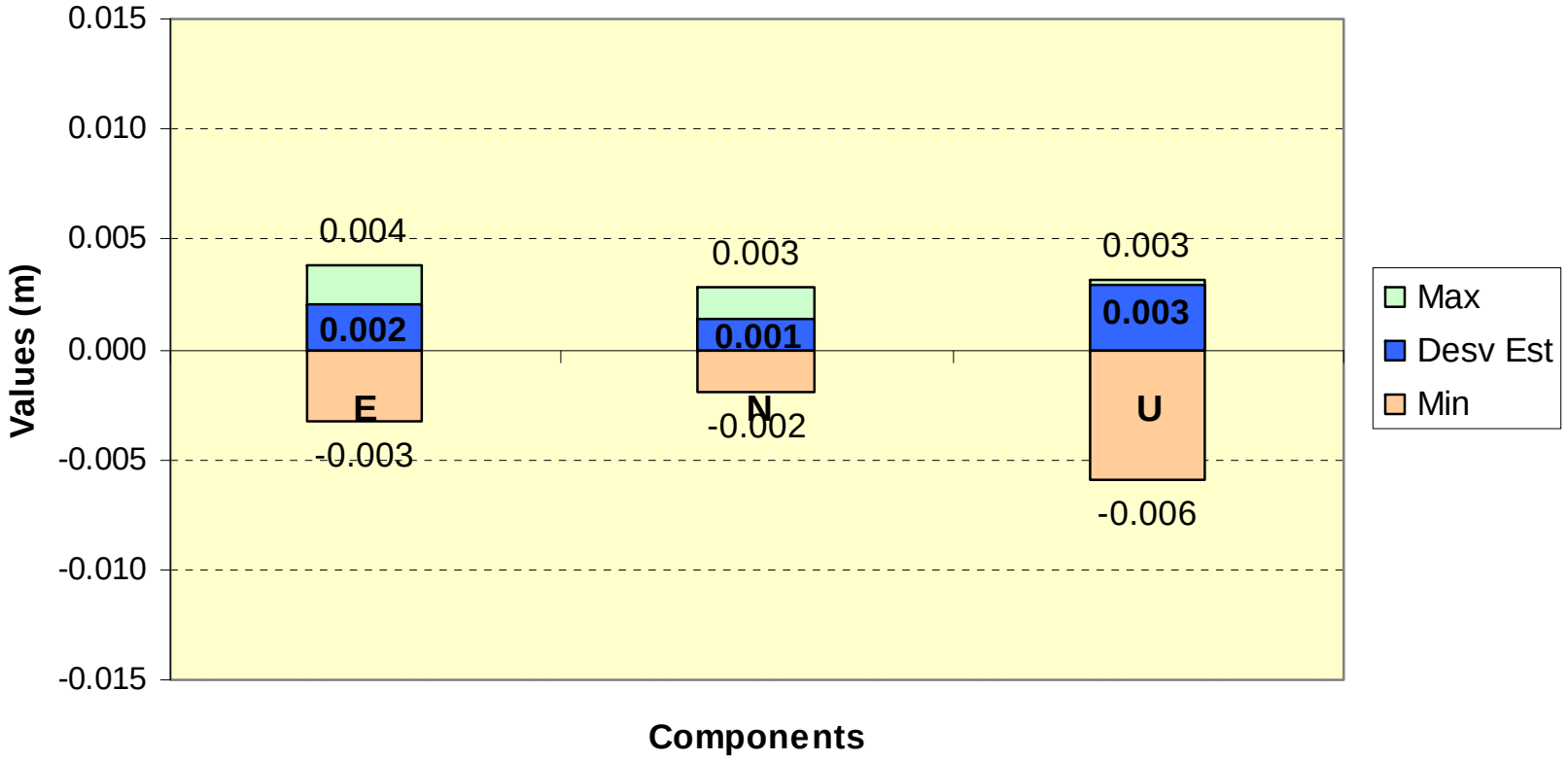
STATISTICS OF THE TRANSFORMATION PARAMETERS - SANTA CUZ PROVINCE



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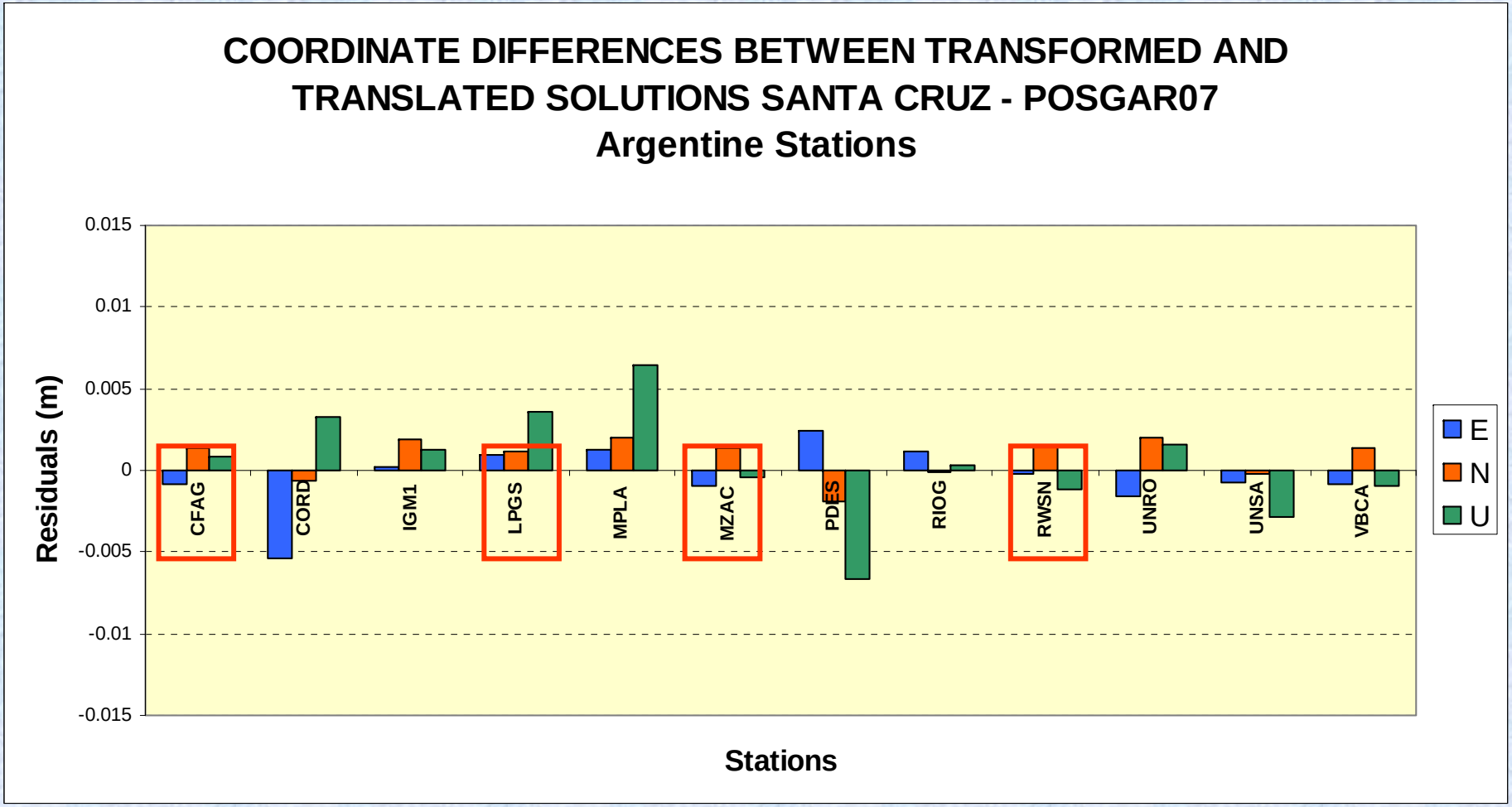

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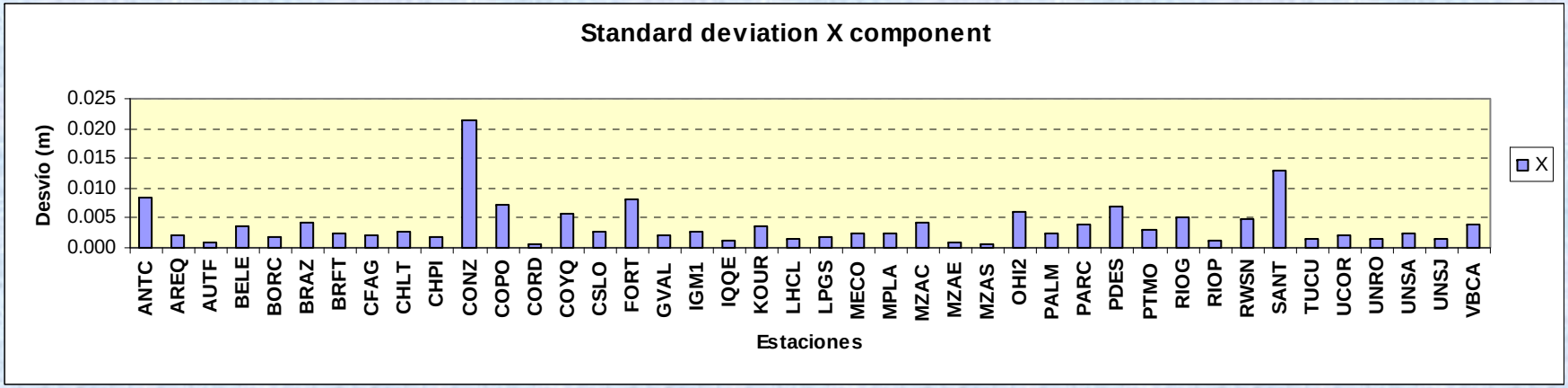

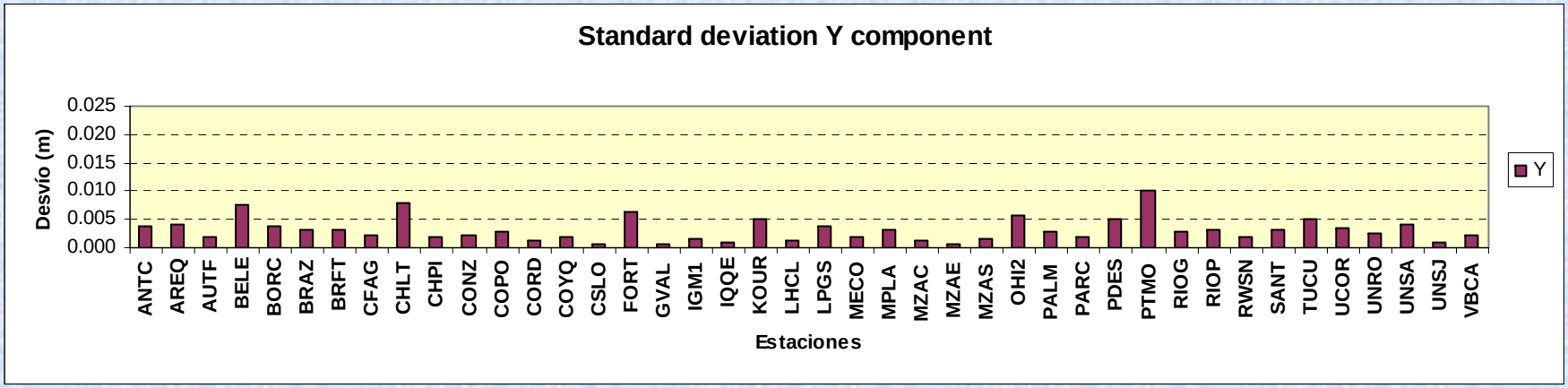

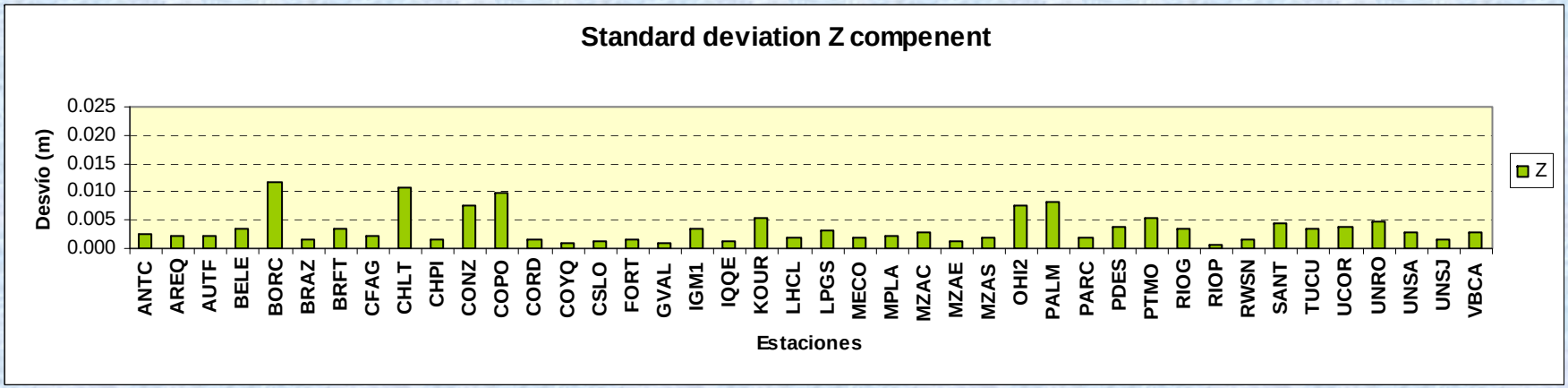

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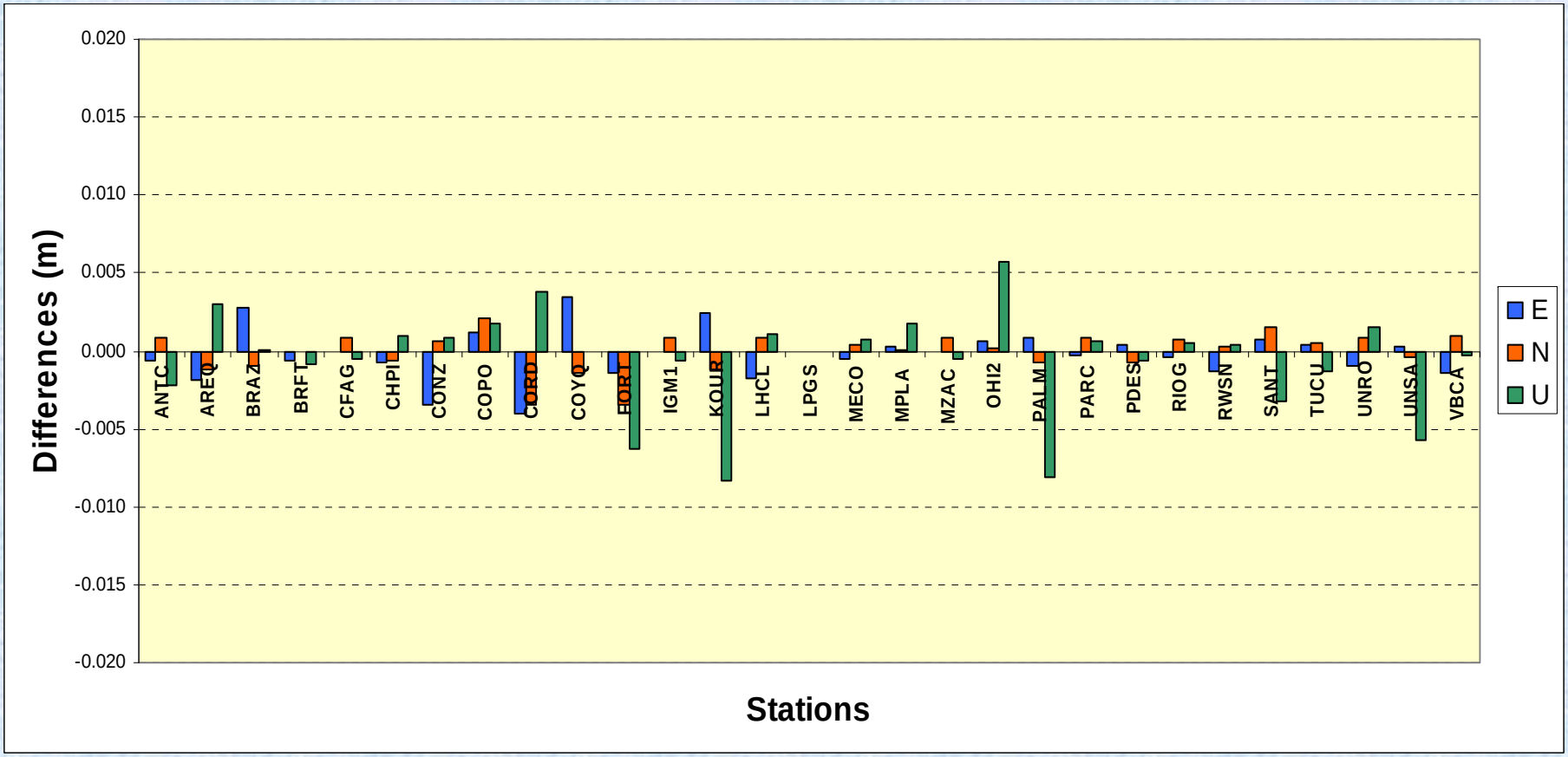
Average coordinate differences transformation vs translation (epoch 2006.632)



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Conclusions

- We have contructed a new, homogeneous, geodetic reference frame for Argentina, POSGAR 07, that is tied to SIRGAS and ITRF05 (IGS05).

- We are working to become an official SIRGAS processing center.

- We are continuing to develop RAMSAC.

Thank you for your attention !!!

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