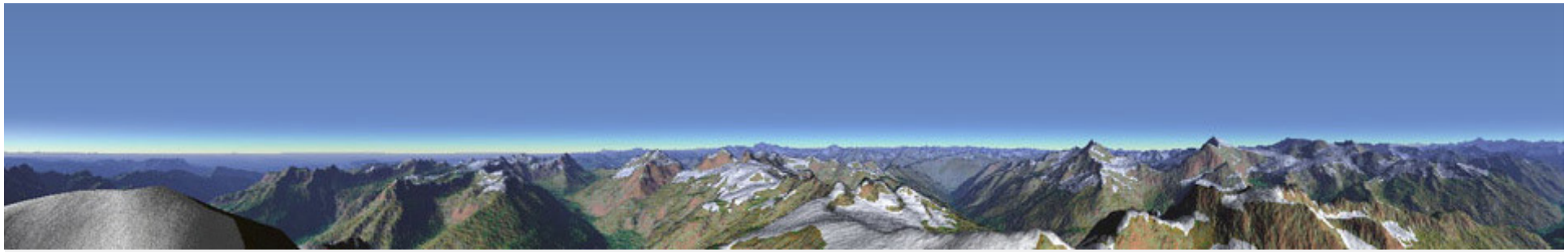

swisstopo

Bundesamt für Landestopografie
Office fédéral de topographie
Ufficio federale di topografia
Uffizi federal da topografia

EUREF LAC Analysis at swisstopo/CODE Using the Bernese Software Version 5.0

S. Schaer, D. Ineichen, E. Brockmann

Outline

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- Increased collaboration between swisstopo and AIUB

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  - EUREF daily/weekly results
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- Listing of most important V5.0 model changes

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- Summary, general comment on V5.0 (→ bugfix patches)

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- Listing of most important V5.0 model changes
- Summary, general comment on V5.0 (→ bugfix patches)
- Outlook regarding upcoming and future model changes

Increased Collaboration Between swisstopo and AIUB (1)

- 1 position (S. Schaer) created at swisstopo, occupied since September 1, 2004

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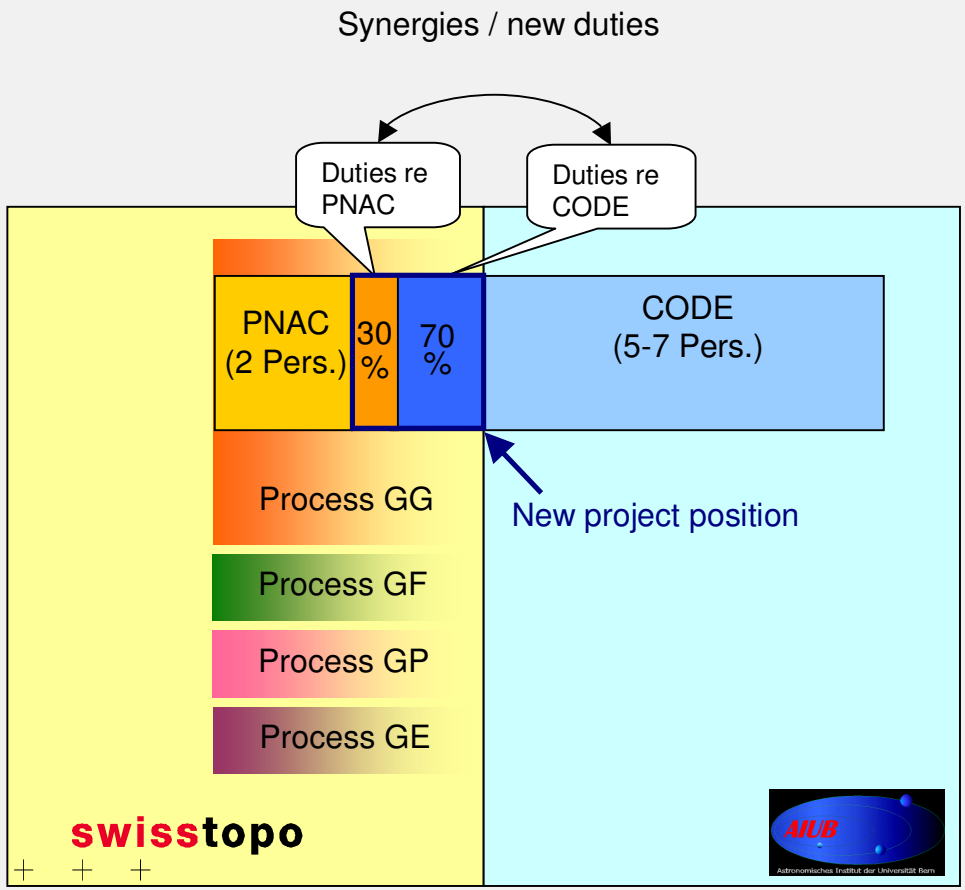
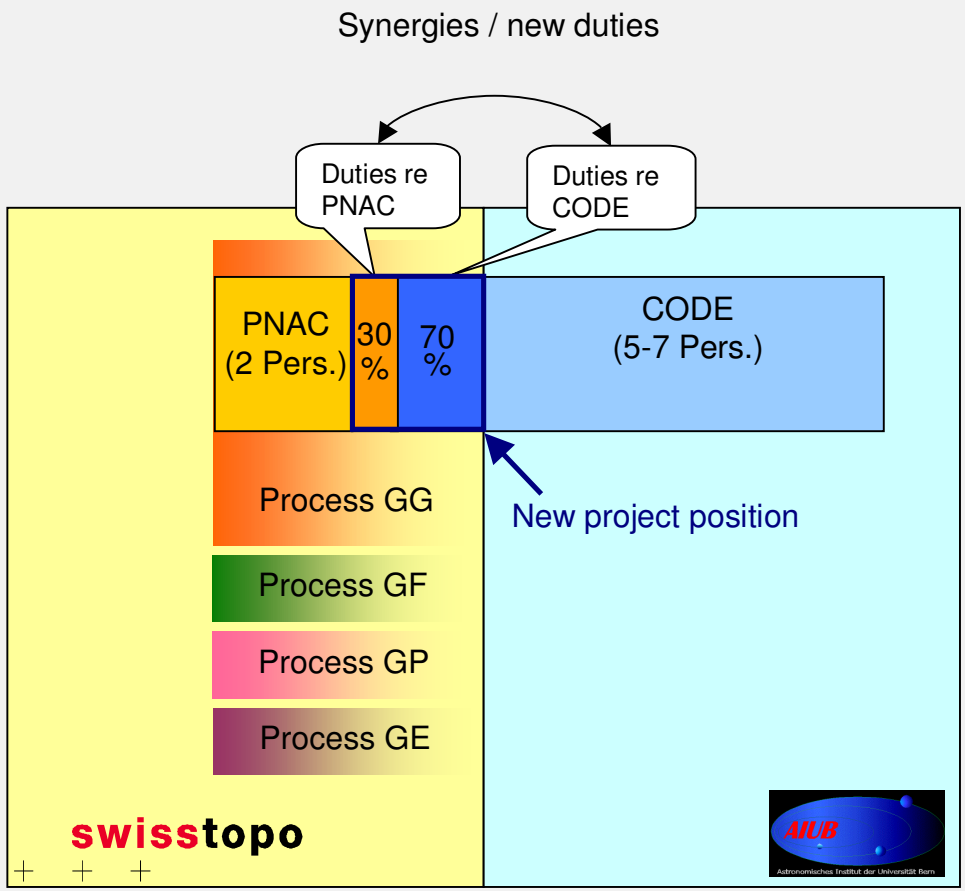


Increased Collaboration Between swisstopo and AIUB (1)

- 1 position (S. Schaer) created at swisstopo, occupied since September 1, 2004

- For swisstopo, a „new“ form of participation at CODE and AIUB, respectively



Increased Collaboration Between swisstopo and AIUB (2)

- … thus gaining **synergies**,
- increasing the transfer of know-how, and
- considerably reducing duplicate work related to routine GNSS data analysis.

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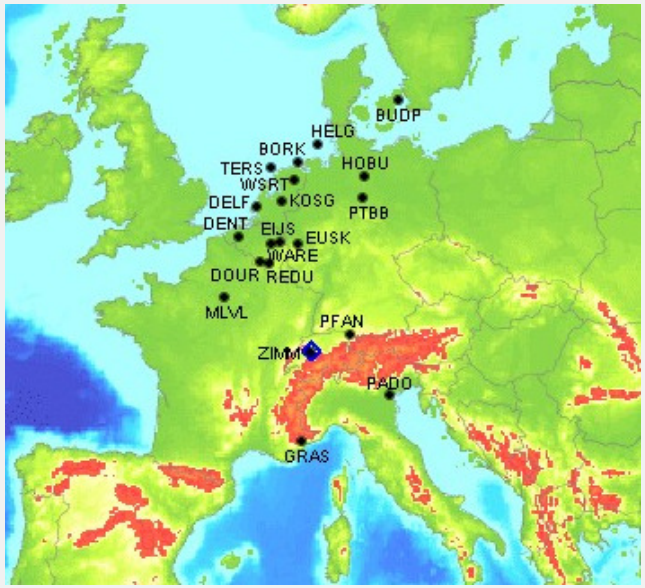
- Also, requests with respect to the Bernese Software in terms of *national* GNSS surveying (and related applications) can be better accounted for.

Increased Collaboration Between swisstopo and AIUB (2)

- … thus gaining **synergies**,
- increasing the transfer of know-how, and
- considerably reducing duplicate work related to routine GNSS data analysis.
- Also, requests with respect to the Bernese Software in terms of *national* GNSS surveying (and related applications) can be better accounted for.
- Technical detail: shared PERL scripts and modules (→ examples), two-way computer alerting, …

LAC Analysis at swisstopo: Transition From Bernese Software V4.2 to V5.0

- EUREF subnetwork considered at swisstopo consists of nominally 24 stations (currently active: 23, included in SINEX files: 21).
- Data processing switched to V5.0 starting with GPS week 1317 (April 3, 2005).
- Six weeks were analyzed in parallel with both versions for validation purposes (weeks 1309-1314 / DOYs 037-078, 2005).
- Selected processing options should be conform with the EPN recommendations.
- Test solutions computed: with tropospheric gradient parameters, low-elevation data.



BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (1)

```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** $******* $******* $******* $******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, orbit, and clock information
# ------------------------------------------
101 POLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ----------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# -------------------------------------------------------------------------
301 SNGDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMBXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# -------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGENAP EUR_TRO           EXPRESS  1 623
632 TROGEN_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```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BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (1)

```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** $******* $******* $******* $******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, orbit, and clock information
# ------------------------------------------
101 POLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ----------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# -------------------------------------------------------------------------
301 SNGDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMBXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# -------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGENAP EUR_TRO           EXPRESS  1 623
632 TROGEN_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```

Weekly analysis sequence

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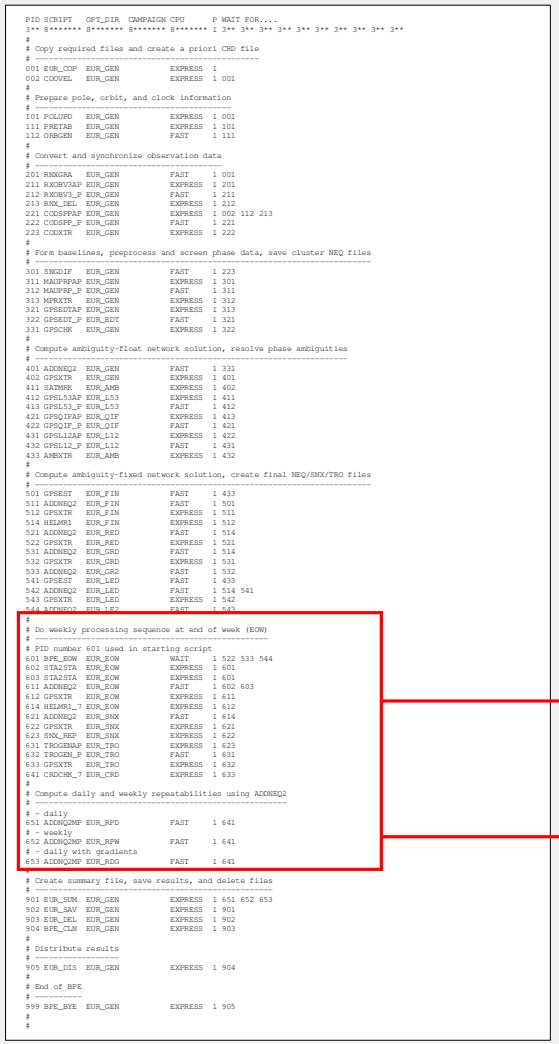
BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (1)



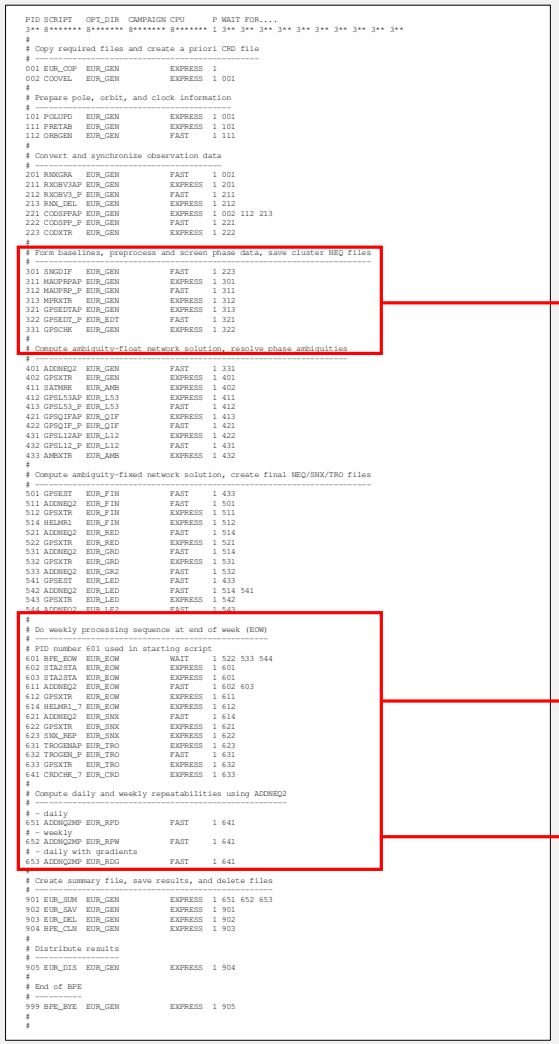
```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** $******* $******* $******* $******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, orbit, and clock information
# ------------------------------------------
101 POLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ----------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# -------------------------------------------------------------------------
301 SNGDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMEXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# -------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGENAP EUR_TRO           EXPRESS  1 623
632 TROGEN_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# -------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```

Weekly analysis sequence

„Repeatability“ checks using ADDNEQ2

swisstopo

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (1)



```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** $******* $******* $******* $******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, orbit, and clock information
# ------------------------------------------
101 POLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ----------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# -------------------------------------------------------------------------
301 SNGDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMBXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# -------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGENAP EUR_TRO           EXPRESS  1 623
632 TROGEN_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```

Extended ambiguity resolution sequence

(→ baselines shorter than 100 or 10 km)

Weekly analysis sequence

„Repeatability“ checks using ADDNEQ2

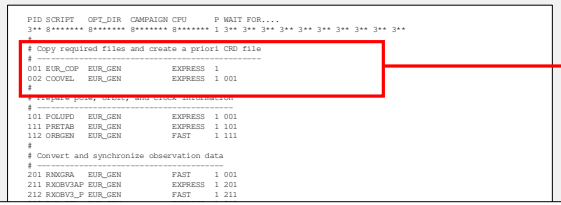
swisstopo

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (2)

```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** $******* $******* $******* $******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, clock, and clock information
# ------------------------------------------
101 PCLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ----------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# -------------------------------------------------------------------------
301 SNGDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMEXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# -------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGENAP EUR_TRO           EXPRESS  1 623
632 TROGEN_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```

Call of preparing PERL scripts:

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Modifications Made (2)

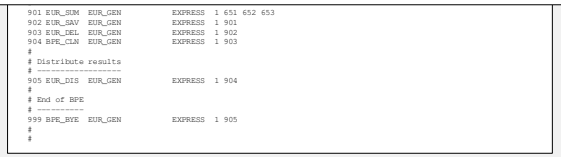


Call of preparing PERL scripts:

```
# Prepare reference files
# -----------------------
  system("$ENV{X}/AUTO/get_gendata.pl");
  system("$ENV{X}/AUTO/copyRef.pl ${dirCrd}.. $crdInf REF$yyssss");

# Prepare orbit/ERP info
# ----------------------
  system("$ENV{X}/AUTO/get_orbdata.pl -t igs -d $ddd -y $yyyy");
  system("$ENV{X}/AUTO/put_orbdata.pl -t igs -c $dirPre -o $b -s $yyssss");

# Prepare daily RINEX data
# ------------------------
  system("$ENV{X}/AUTO/get_obsdata.com -d=$ddd");
  system("$ENV{X}/AUTO/put_data.pl $yy $ssss %EUR $dirRxo");
```



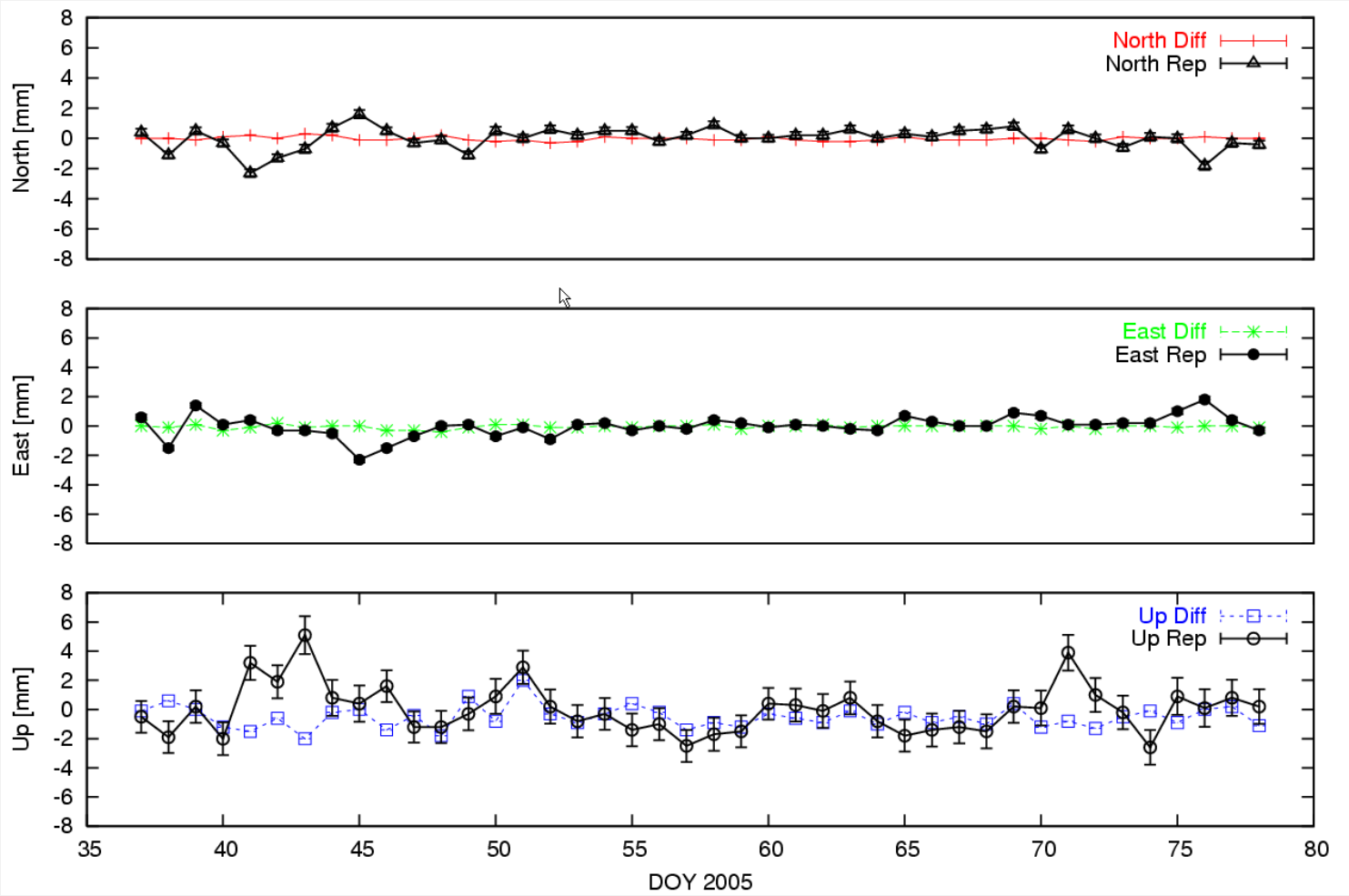
Identical PERL Function for Station Selection, Used at swisstopo and at CODE Side

```
ANDE    %OBS_INT  %AGN       %MET           %agnes
ARDE    %OBS_INT  %AGN       %MET           %agnes
BOR1    %OBS_EXT             %MET  %FIX     %euref/%igs
BORK    %OBS_EXT       %EUR                 %euref
BOUR    %OBS_INT  %AGN       %MET           %agnes
BRST    %OBS_EXT  %AGN       %MET  %FIX     %euref/%igs
BRTZ    %OBS_EXT  %AGN       %MET           %rpg
BRUS    %OBS_EXT             %MET  %FIX     %euref/%igs
BSCN    %OBS_EXT  %AGN       %MET           %rpg
BUDP    %OBS_EXT       %EUR                 %euref
BZRG    %OBS_EXT  %AGN       %MET  %FIX     %euref/%igs
CAGL    %OBS_EXT             %MET  %FIX     %euref/%igs
CHAT    %OBS_EXT  %AGN             %FIX     %rpg
DAVO    %OBS_INT  %AGN       %MET           %agnes
DELF    %OBS_EXT       %EUR        %FIX     %euref
DENT    %OBS_EXT       %EUR        %FIX     %euref
DOUR    %OBS_EXT  %AGN %EUR        %FIX     %euref
EGLT    %OBS_EXT  %AGN       %MET           %rpg
EIJS    %OBS_EXT       %EUR        %FIX     %euref
EPFL    %OBS_INT  %AGN       %MET           %agnes
ETHZ    %OBS_INT  %AGN       %MET           %agnes
EUSK    %OBS_EXT       %EUR        %FIX     %euref
EXWI    %OBS_EXT  %AGN                      %other
FALE    %OBS_INT  %AGN       %MET           %agnes
FCLZ    %OBS_EXT  %AGN             %FIX     %rpg
FHBB    %OBS_INT  %AGN       %MET           %agnes
FLDK    %OBS_EXT  %AGN       %MET           %bev
FREI    %OBS_EXT  %AGN       %MET           %sapos
FRIC    %OBS_INT  %AGN       %MET           %agnes
GENE    %OBS_INT  %AGN       %MET           %agnes
```

Identical PERL Function for Station Selection, Used at swisstopo and at CODE Side

```
AJAC    %GPS  %OBS                                  %EUR           %001         %igs/%euref
ALBH    %GPS  %OBS      %RAP(4) %FIN %ION %CLK                     %002         %igs
ALGO    %GPS  %OBS %NAV %RAP(4) %FIN %ION %CLK %TIM           %HRD %002         %igs
ALIC    %GPS  %OBS      %RAP(4) %FIN %ION %CLK                _HRD %003         %igs
ALME    %GPS  %OBS                                  %EUR           %001         %euref
ALRT    %GPS  %OBS      %RAP(1) %FIN %ION %CLK                     %002         %igs
AMC2    %GPS  %OBS %NAV %RAP(4) %FIN %ION %CLK %TIM      %HPF %HRD %002         %igs/%timlab
AMUN    %GPS  %OBS      %RAP(0) %FIN %ION %CLK                     %003         %other/%vel
ANKR    %GPS  %OBS      %RAP(4) %FIN %ION %CLK      %EUR           %001         %igs/%euref
AOML    %GPS  %OBS      %RAP(2) %FIN %ION %CLK                     %002         %igs
AREQ    %GPS  %OBS      %RAP(2) %FIN %ION %CLK                %HRD %002         %igs
ARTU    %GPS  %OBS      %RAP(2) %FIN %ION %CLK           %HPF %HRD %001         %igs
ASC1    %GPS  %OBS      %RAP(1) %FIN %ION %CLK           %HPF      %002         %igs
ASPA    %GPS  %OBS      %RAP(1) %FIN %ION %CLK                     %003         %igs
AUCK    %GPS  %OBS      %RAP(1) %FIN %ION %CLK                     %003         %igs
AUTO    %GPS       %NAV                                                         %merged
BAHR    %GPS  %OBS      %RAP(1) %FIN %ION %CLK      %EUR %HPF      %001         %igs
BAKO    %GPS  %OBS      %RAP(4) %FIN %ION %CLK                     %003         %igs
BAN2    %GPS  %OBS                                            %HRD              %hpf
BILI    %GPS  %OBS      %RAP(3) %FIN %ION %CLK                     %002         %igs
BJFS    %GPS  %OBS      %RAP(4) %FIN %ION %CLK                     %003         %igs
BOGI    %MIX  %OBS                                                              %igs/%iglos/%euref/%unused
BOGO    %GPS  %OBS                                  %EUR           %001         %euref
BOGT    %GPS  %OBS      %RAP(2) %FIN %ION %CLK           %HPF %HRD %002         %igs
BOR1    %GPS  %OBS      %RAP(4) %FIN %ION %CLK      %EUR           %001         %igs/%euref/%timlab
BRAZ    %GPS  %OBS      %RAP(2) %FIN %ION %CLK                     %002         %igs
BRDC    %GPS       %NAV                                                         %merged
BREW    %GPS  %OBS                                            %HRD              %hpf
BRMU    %GPS  %OBS      %RAP(2) %FIN %ION %CLK                     %002         %igs
BRST    %GPS  %OBS      %RAP(4) %FIN %ION %CLK      %EUR           %001         %igs/%euref
```

V4.2/V5.0 Daily Differences and Repeatability: Station EUSK (Euskirchen, D)



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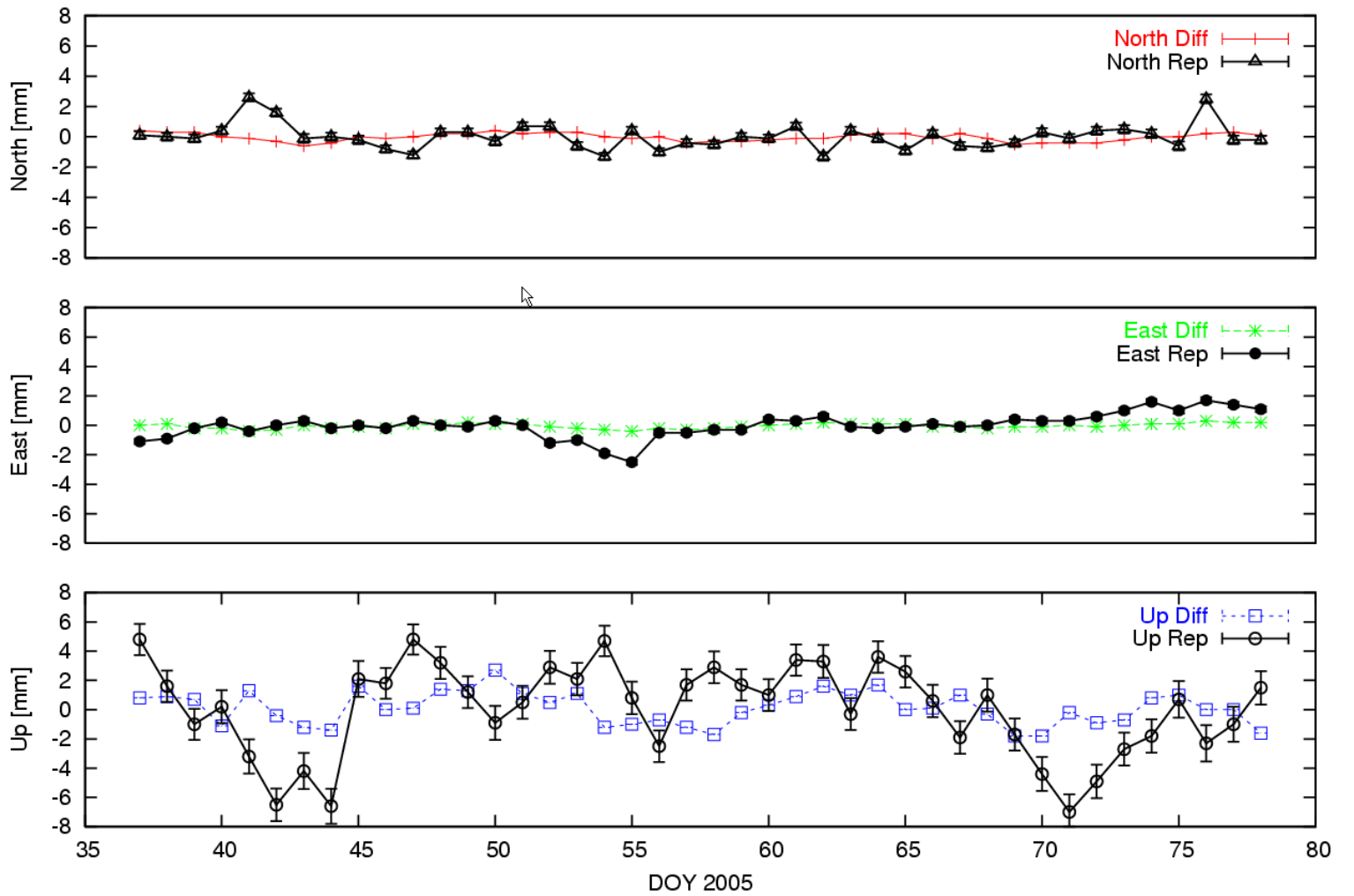
V4.2/V5.0 Daily Differences and Repeatability: Station TERS (Terschelling, NL)



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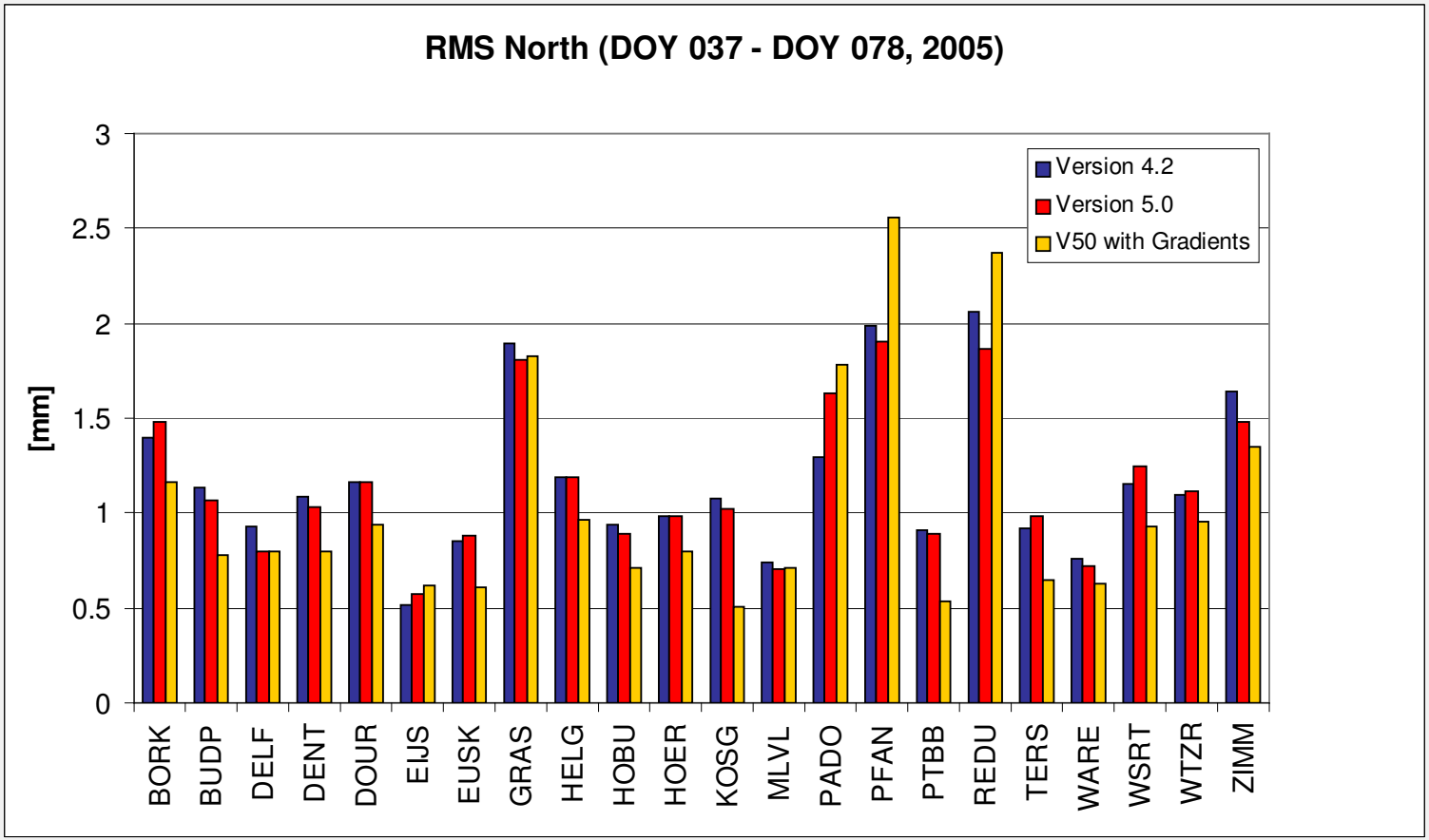
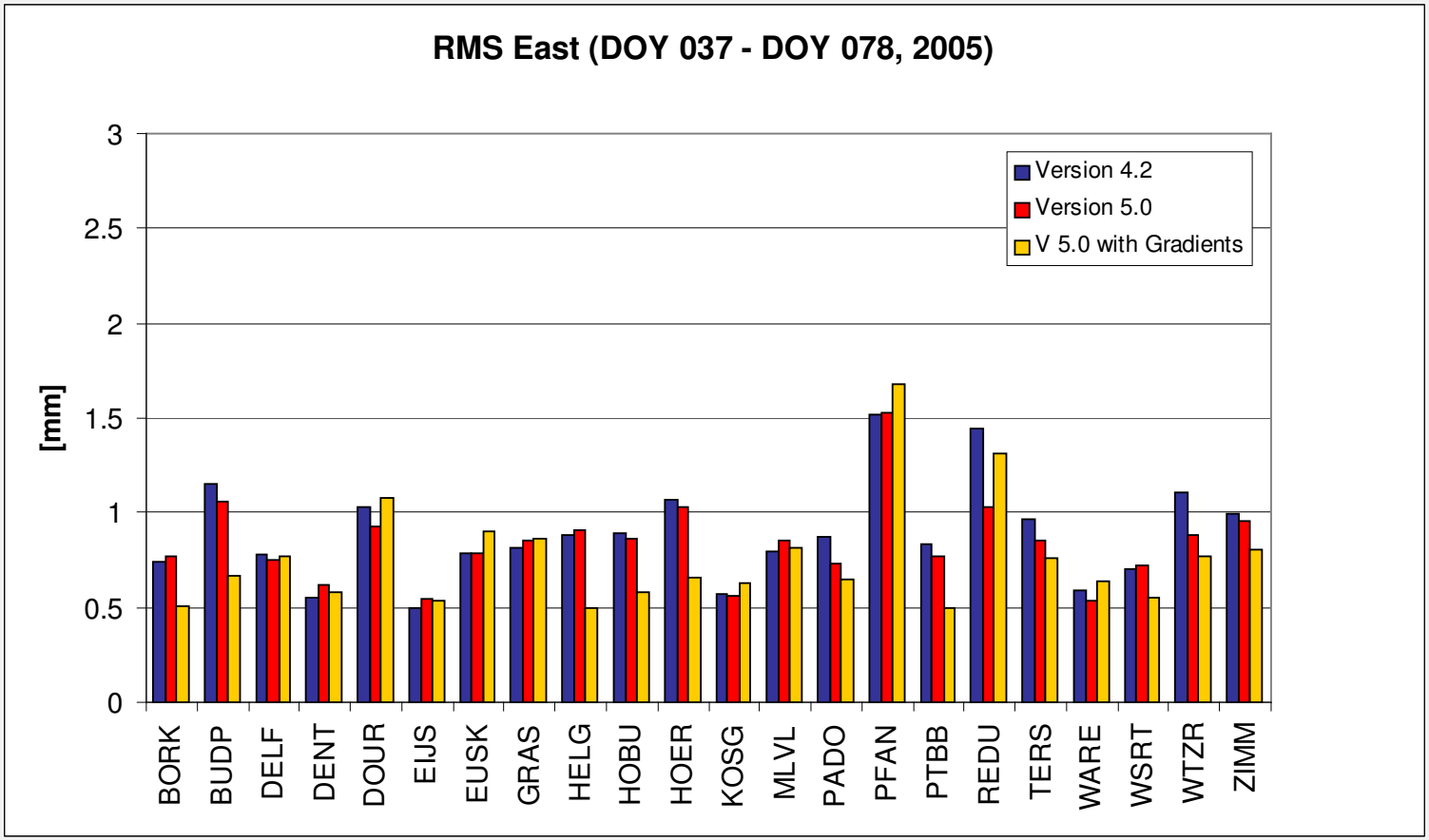
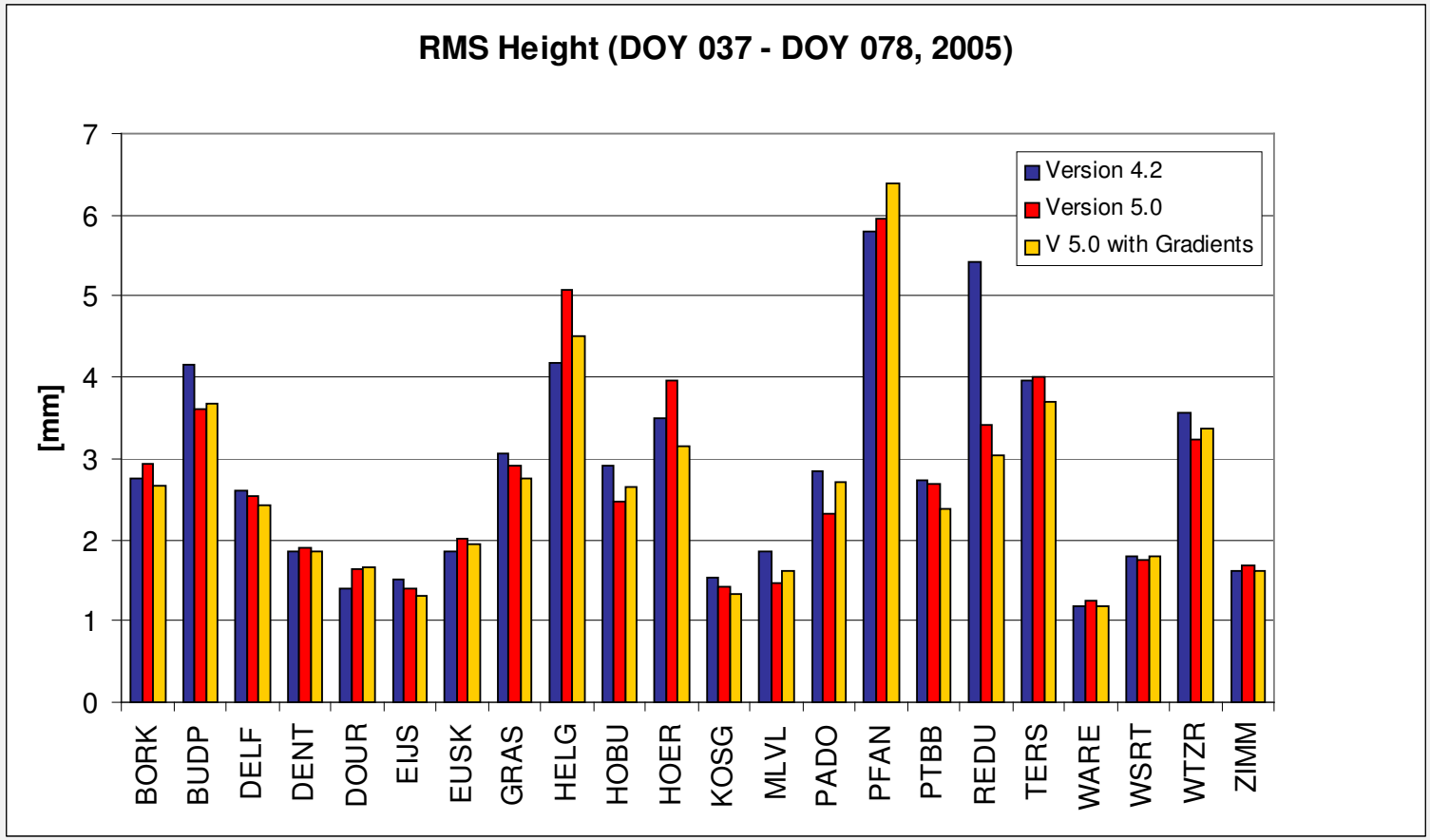
Daily Coordinate Repeatability (North)



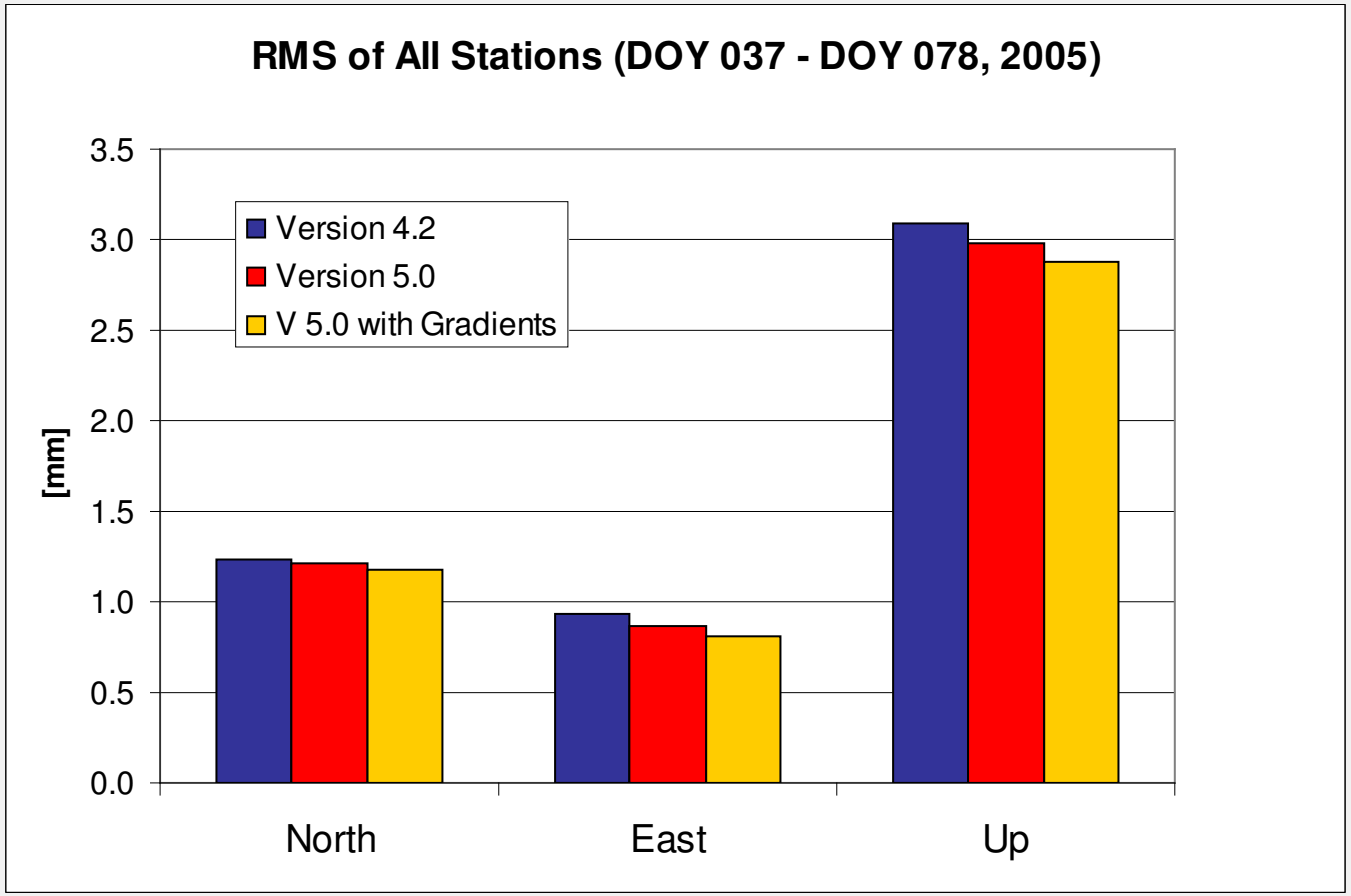
Daily Coordinate Repeatability (East)



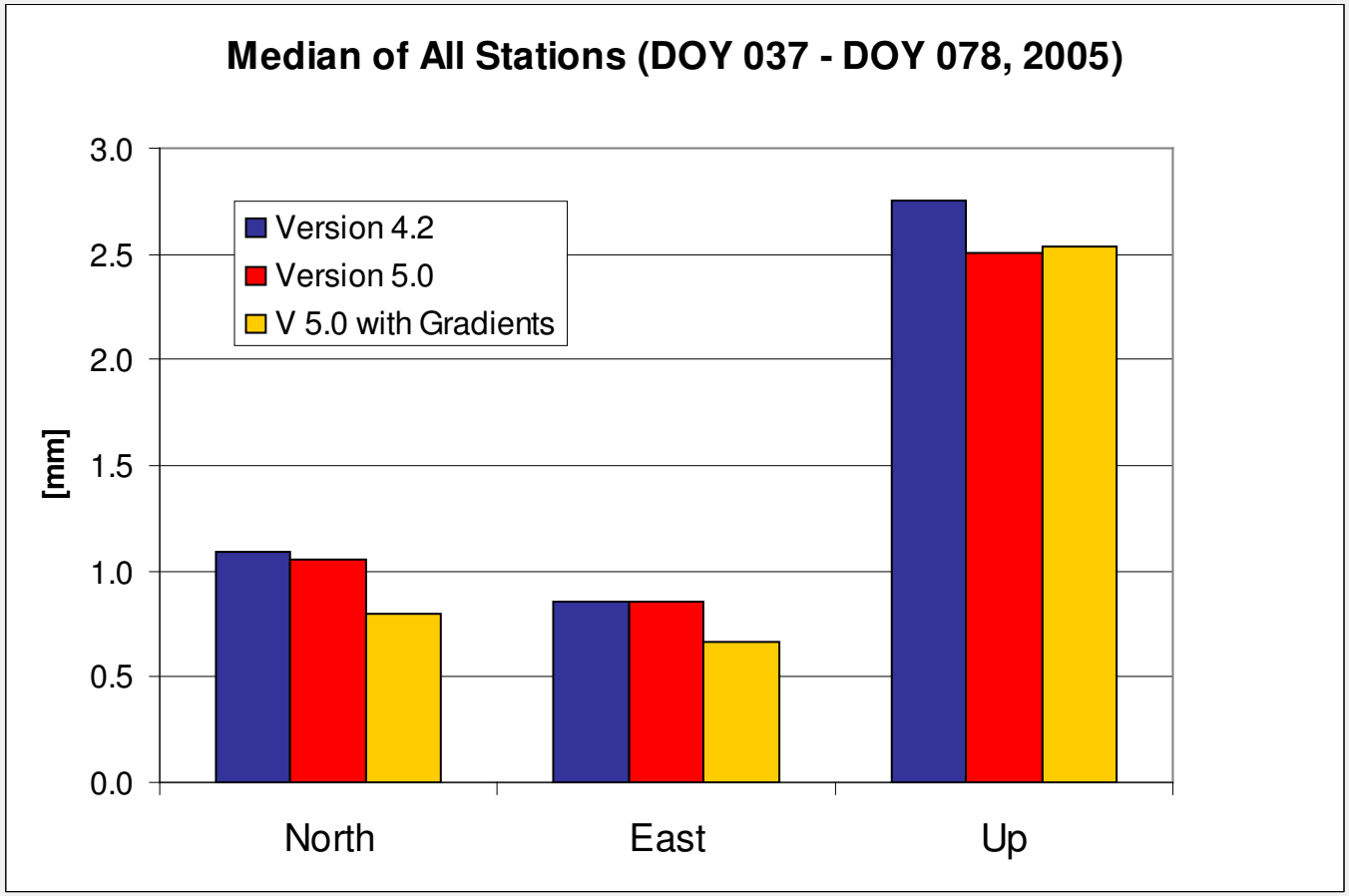
Daily Coordinate Repeatabilitiy (Height)



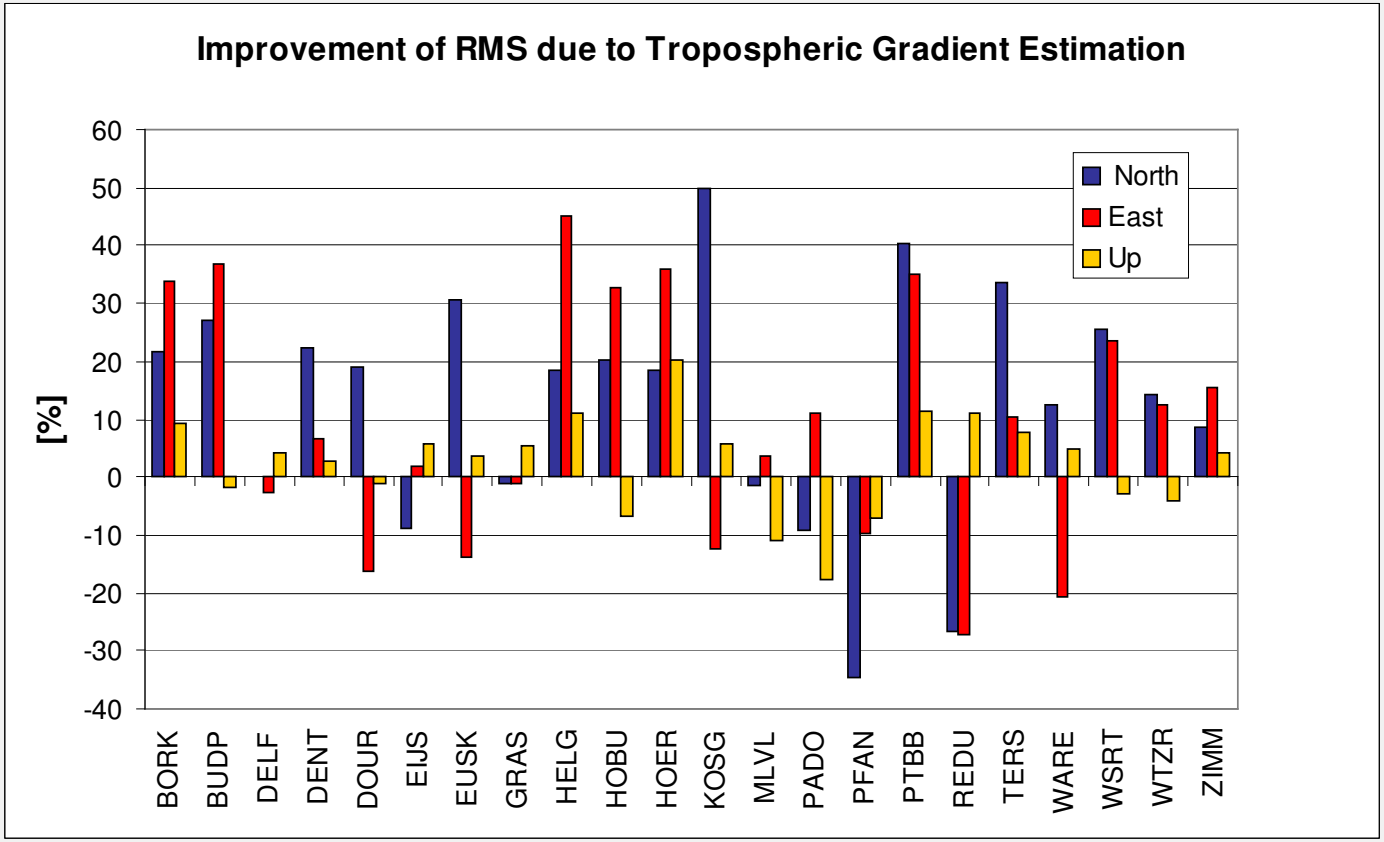
Daily Coordinate Repeatability (RMS)



Daily Coordinate Repeatability (Median)



Improvement of RMS due to Tropospheric Gradient Parameter Estimation



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Comparison of Estimated Coordinates: Helmert Transformation V4.2 (dry) vs. V5.0 (dry/wet)

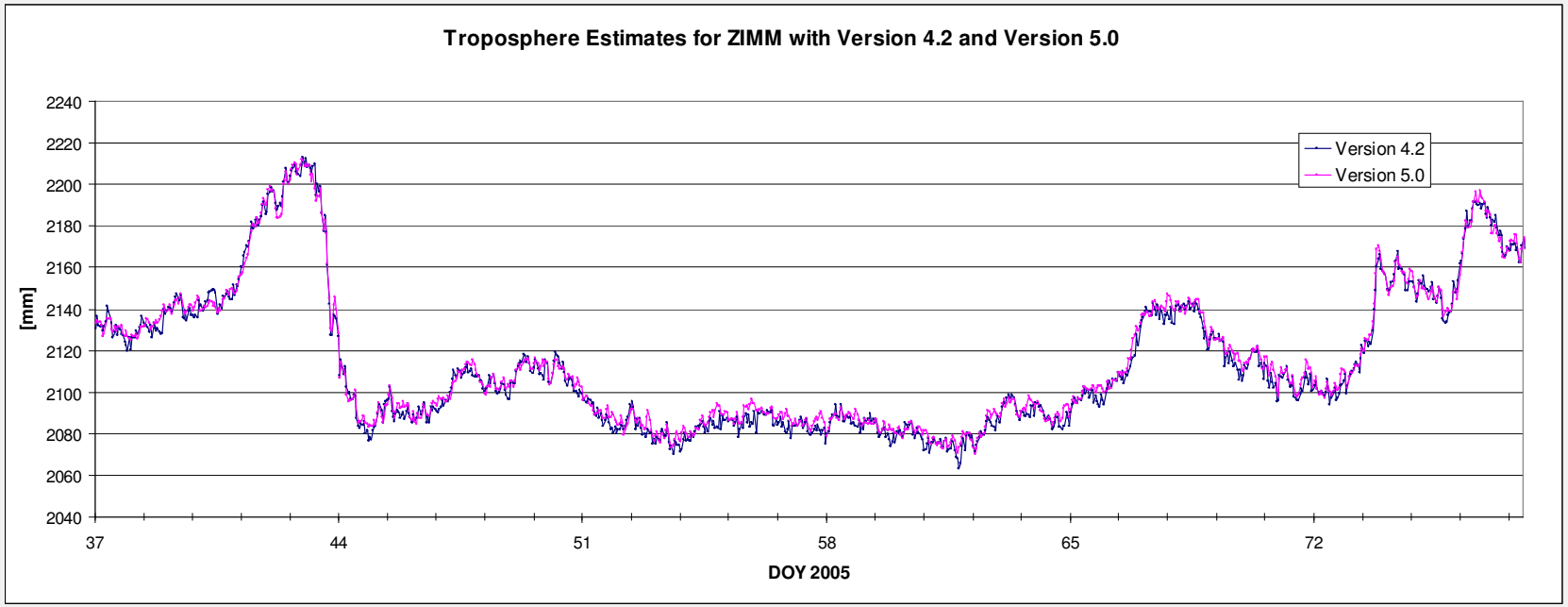
	RMS North	RMS East	RMS Height
6 Parameter	0.7 mm	0.2 mm	0.6 mm
7 Parameter	0.1 mm	0.2 mm	0.6 mm

Comparison of Estimated Coordinates: Helmert Transformation V4.2 (dry) vs. V5.0 (dry/wet)

	RMS North	RMS East	RMS Height
6 Parameter	0.7 mm	0.2 mm	0.6 mm
7 Parameter	0.1 mm	0.2 mm	0.6 mm

→Significant scale parameter of +1.7 +/- 0.2 ppb

Troposphere Estimation V4.2/V5.0 (Station ZIMM)



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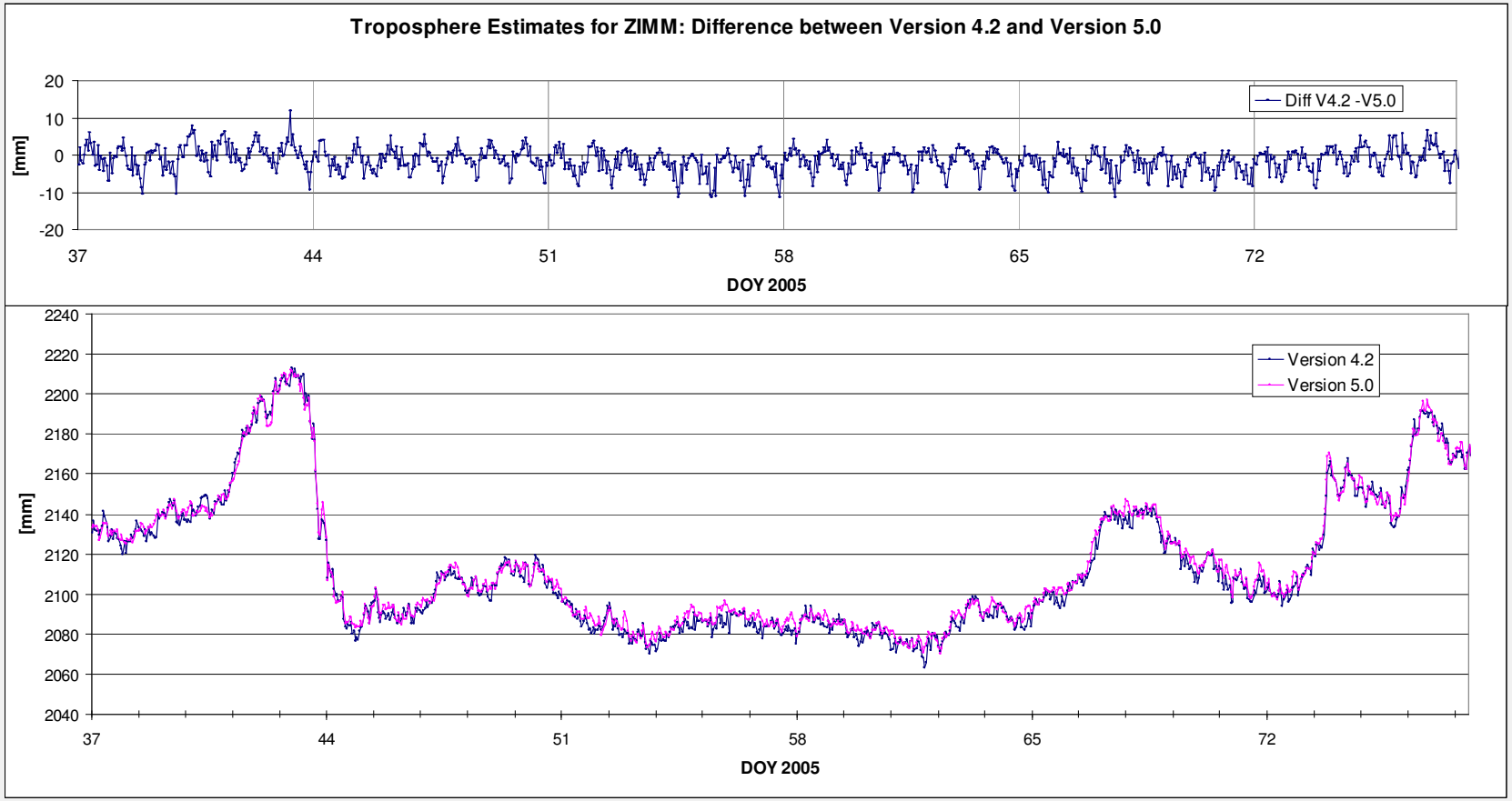
Troposphere Estimation V4.2/V5.0 (Station ZIMM)



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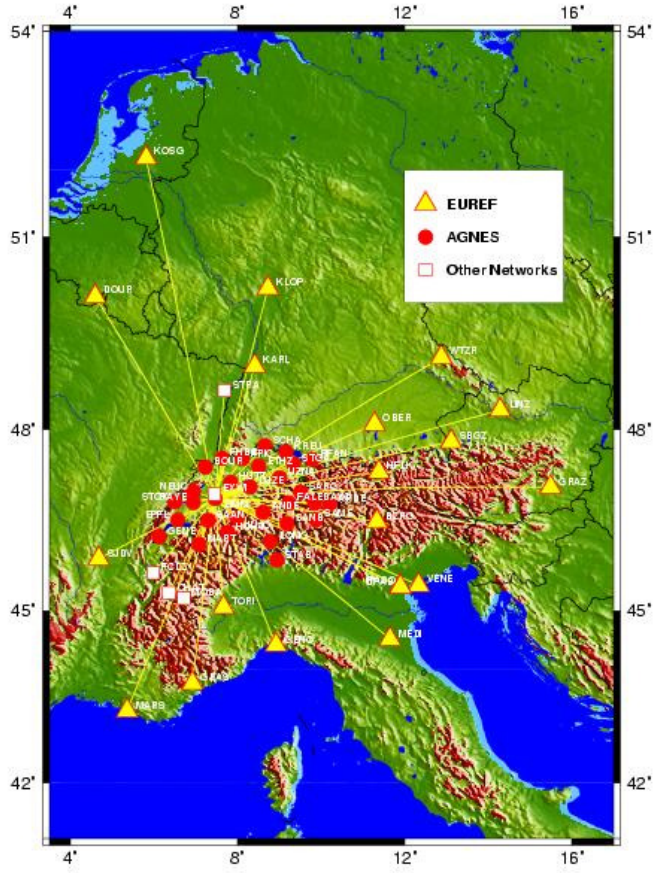
AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Station Network



"AGNES+" network consists of nominally 79 stations (currently active: 75, AGNES: 29)

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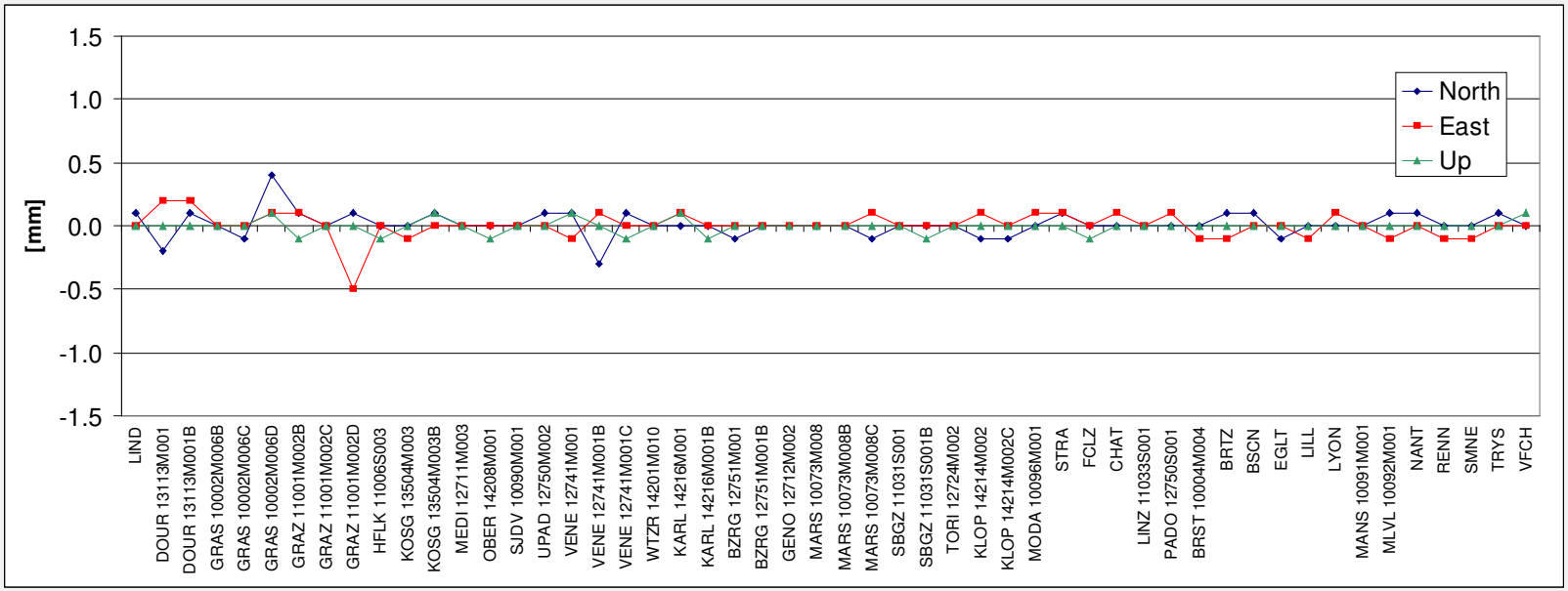
AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Coordinate Differences: ADDNEQ1 vs. ADDNEQ2 (V5.0)



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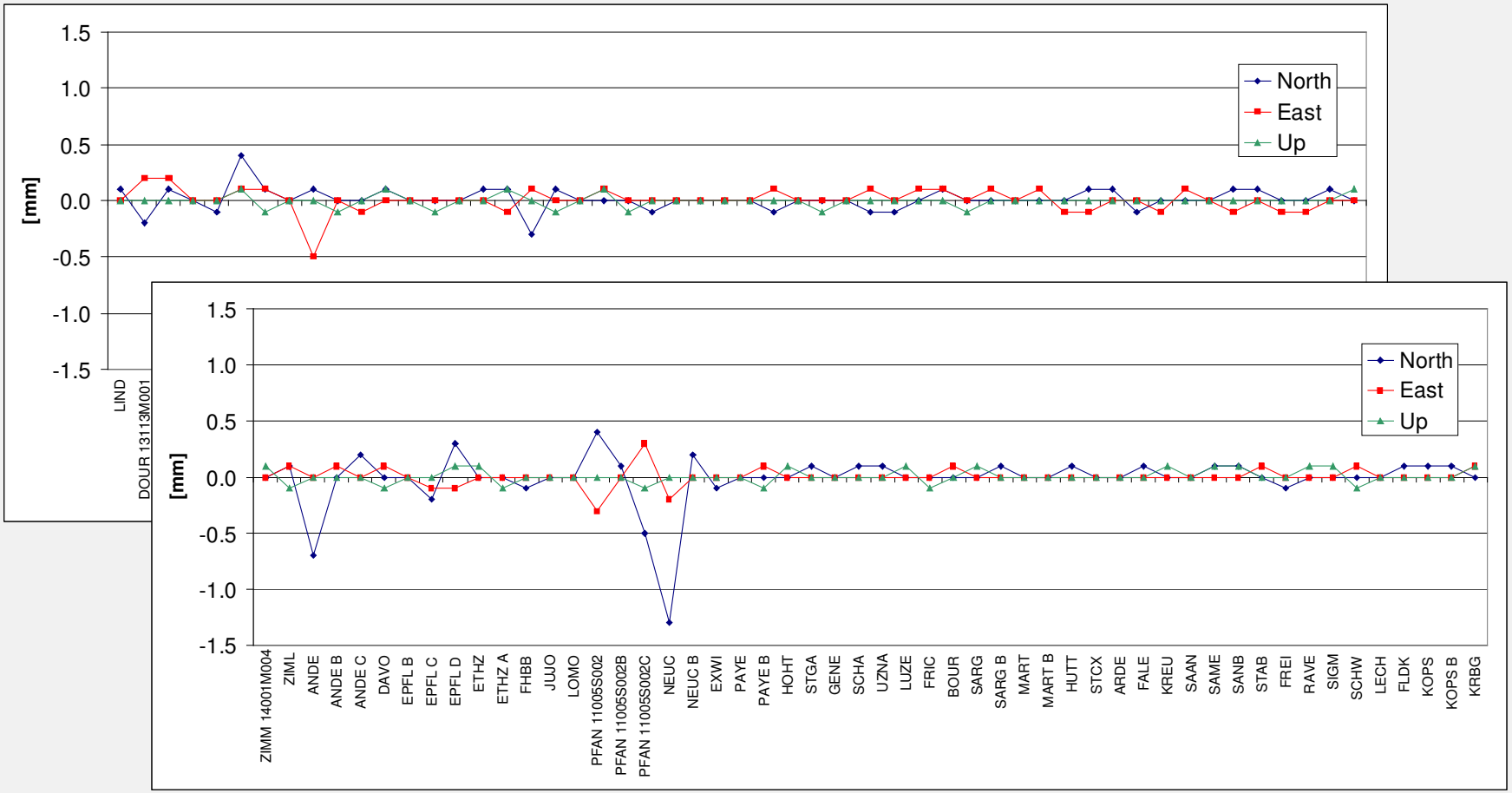
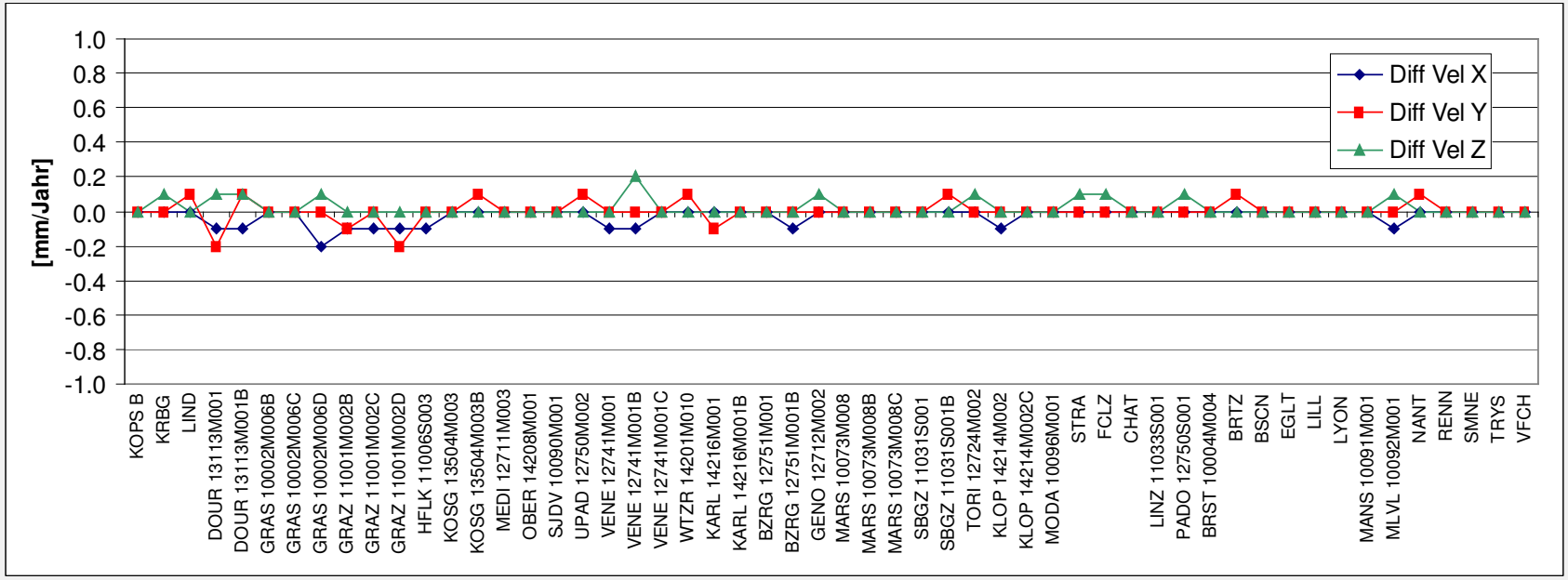
AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Coordinate Differences: ADDNEQ1 vs. ADDNEQ2 (V5.0)

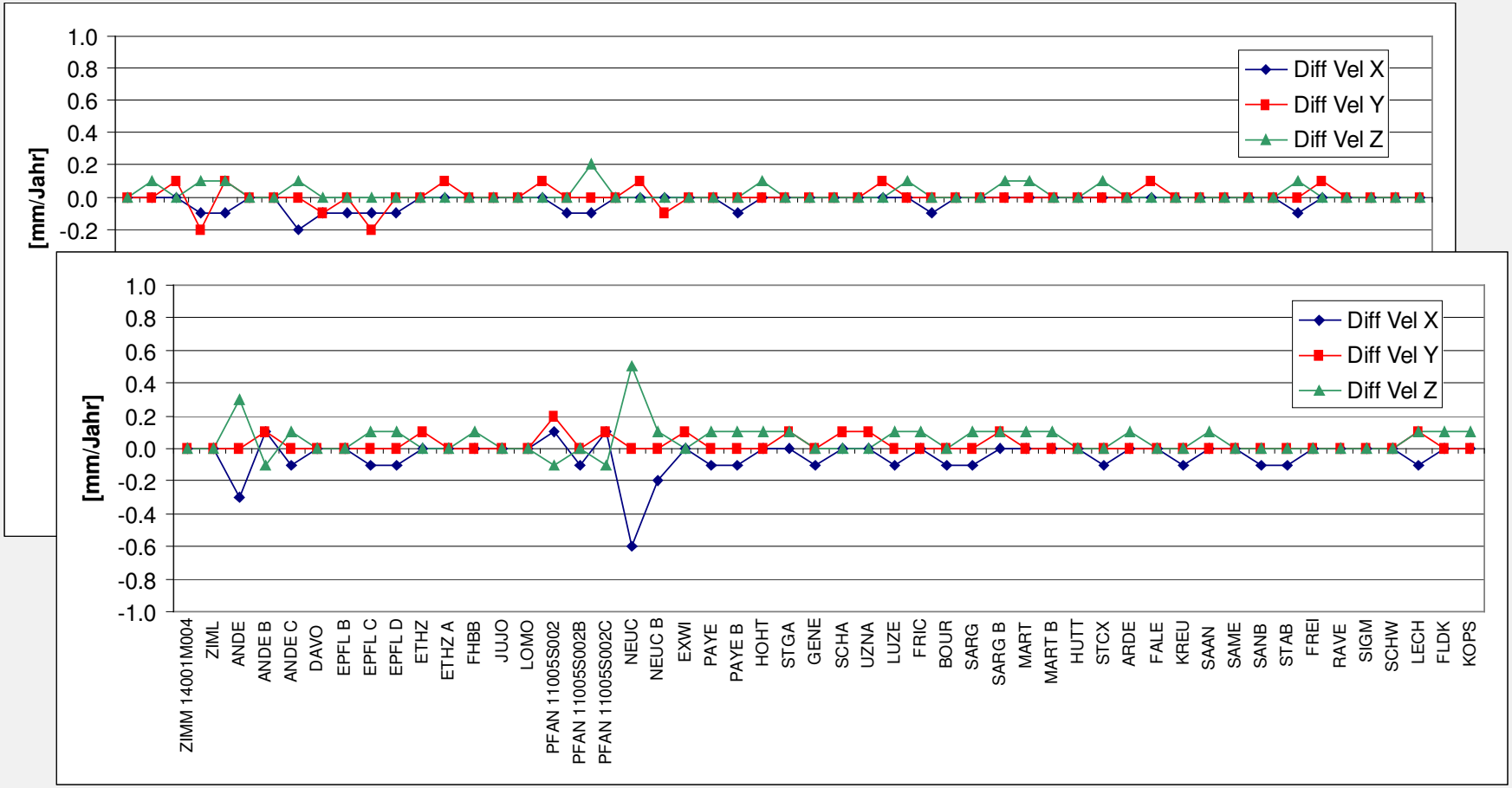


Differences mainly caused by improved relative velocity constraining in V5.0 combination.

AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Velocity Differences: ADDNEQ1 vs. ADDNEQ2 (V5.0)



AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Velocity Differences: ADDNEQ1 vs. ADDNEQ2 (V5.0)



Differences mainly caused by improved relative velocity constraining in V5.0 combination.

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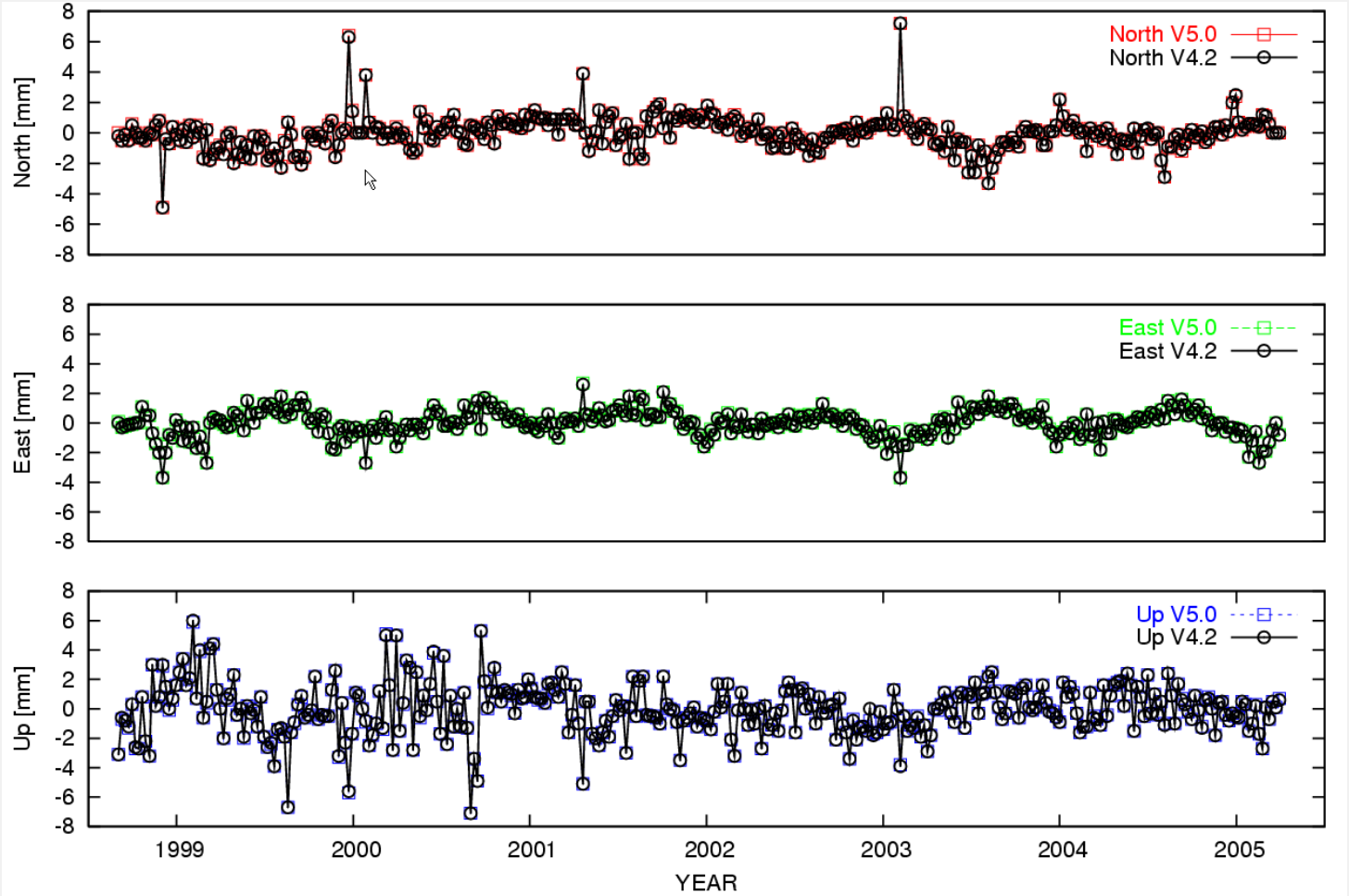
AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Residuals for ETHZ (CH), ADDNEQ1 vs. ADDNEQ2 (V5.0)



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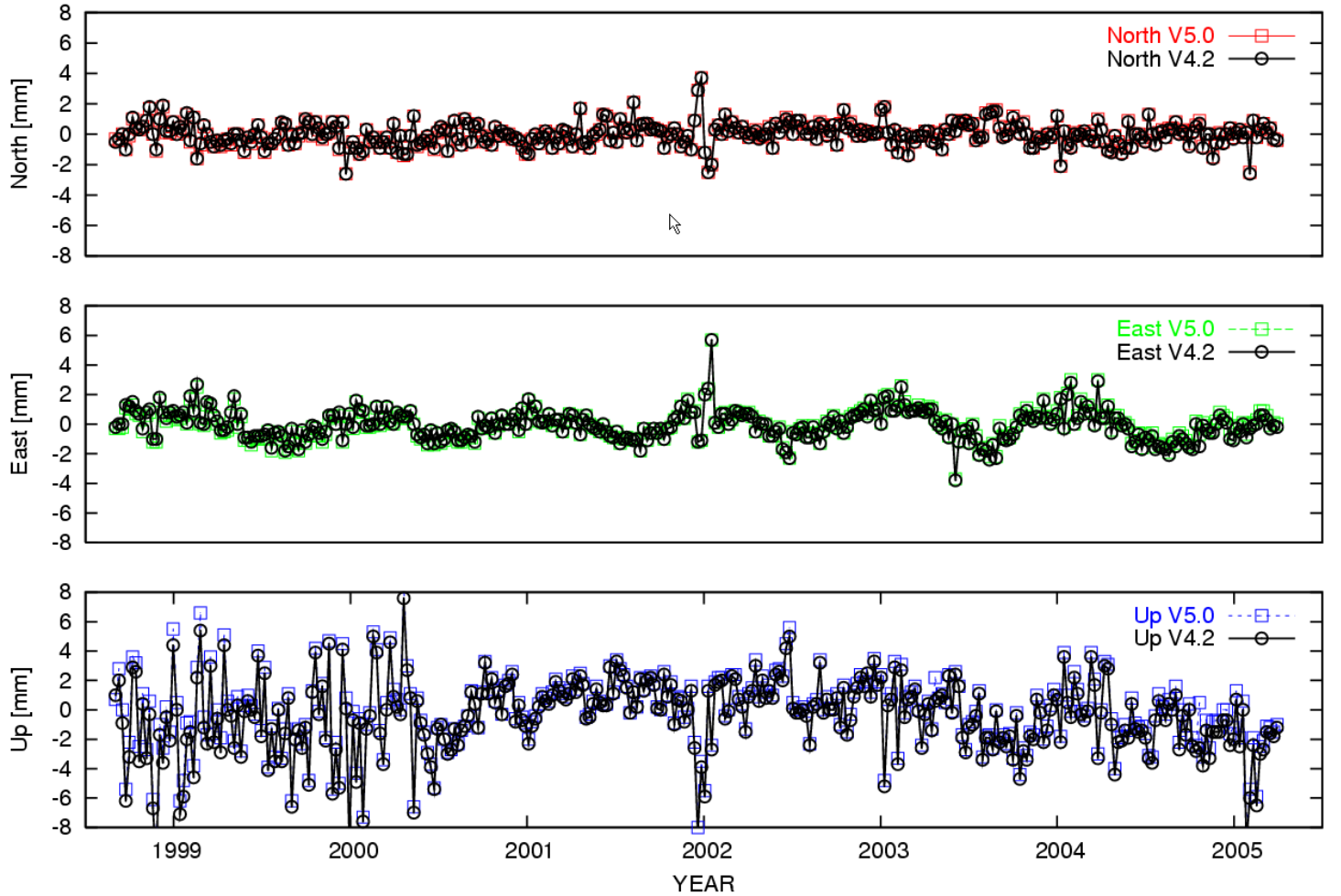
AGNES 7-Year Combination of 350 Weekly ADDNEQ1 (V4.2) Solutions: Residuals for WTZR (D), ADDNEQ1 vs. ADDNEQ2 (V5.0)



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Listing of Most Important V5.0 Model (or Processing) Changes

- IERS 2000 conventions:
  - Earth tides: TIDE96 replaced by TIDE2000 (provided by ROB)
  - Step-2 correction (bug reported in BSW Mail 190, June 15, 2004)
  - Nutation: IAU2000 (old: IAU80)
  - Subdaily pole model: IERS2000 (old: RAY96)
- Ocean loading correction model: GOT00.2 (→ GOT002_EUR.BLQ)
- Tropospheric modeling using *piece-wise linear* functions
- Mapping using dry-Niell in conjunction with wet-Niell MF possible
- Estimation of tropospheric gradient parameters fully supported in ADDNEQ2 (→ deletion of corresponding parameters on NEQ level)
- Consideration of P1-C1 bias values possible (→ CODE.DCB)
- PCV-Information: PHAS_IGS.REL (→ RECEIVER.)
- GNSS data import (using RXOBV3):
  - Consideration of radome codes possible (optionally 16 or 20 char.)
  - Various new useful options in regard to automatic data import
  - Selection of GPS **or** GPS/GLONASS (→ GPSEST)

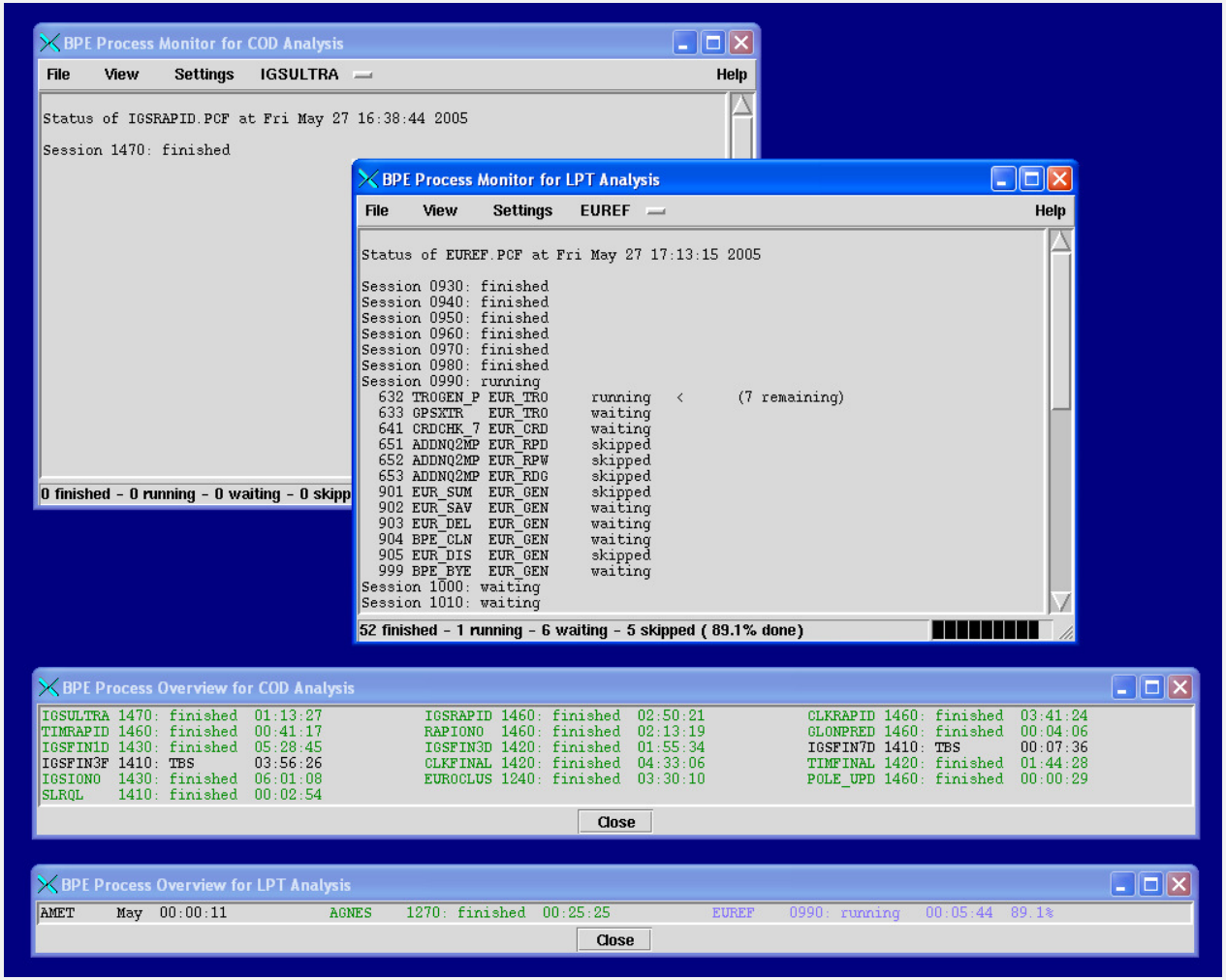
Summary, General Comment on V5.0 (→ Bugfix Patches)

- Differences between V4.2 and V5.0 analysis results are on a negligible level (or may be explained by existing model differences), provided that similar processing/program options are used
- This is definitely a very demanding task in view of the (steadily increasing) complexity of the analysis software.
- To keep the software up-to-date with respect to the V5.0 buglist (made available at www.bernese.unibe.ch) is a *must* for *all* EUREF LACs employing the Bernese Software, particularly in terms of
  - ADDNEQ2 (velocity estimation, COV file export, etc.)
  - specific BPE PERL scripts (involving a removal of problem files)
- Provision of *accumulative* bugfix patches is planned
- Status concerning V5.0 software documentation (→ draft version in pdf form available, including tutorial, see www.bernese.unibe.ch)

Outlook Regarding Upcoming and Future Model Changes

- Consideration of „absolute“ GNSS receiver and satellite antenna offset and pattern models (→ ANTEX V1.3 data conversion at AIUB)
- Inclusion of low-elevation data (down to 3 degrees)
- Refinement, or standardization of SINEX data generation step at LACs (→ two-step ADDNEQ2 procedure)
- Estimation of tropospheric horizontal gradient parameters
- Inclusion of GLONASS tracking data (today: 29 GPS plus 14 GLONASS satellites active, 3 permanently marked unusable)
- Consideration of meteo-data-based tropospheric mapping factors
- Correction for atmospheric loading effect
- × „Reprocessing“ capability becomes more and more important (→ consistent time series for station coordinates)

BPE Process Monitoring for swisstopo (LPT) and CODE Routine Analysis



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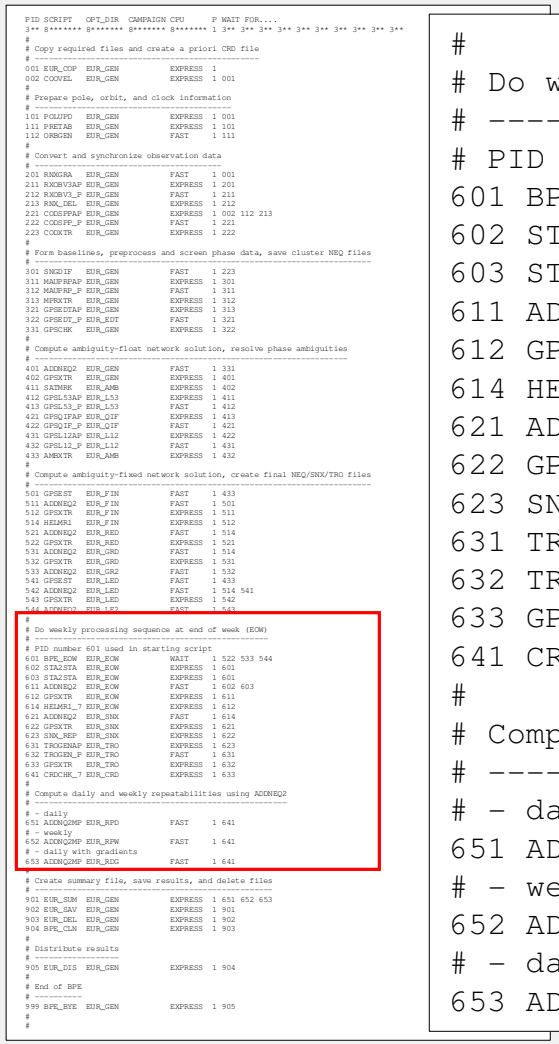
Redesign of EUREF Weekly SINEX Combination Scheme at BKG

- BKG and AIUB/swisstopo are currently in the process of reviewing and redesigning the EUREF SINEX combination scheme
- 2-day visit of Heinz Habrich at AIUB (18-19 April 2005)
- Start to treat „Bernese“ and „non-Bernese“ (specifically ASI and DEO) SINEX contributions in the same manner
- Non-trivial task (→ „dynamic“ weighting strategy)
- 1.5-year combination test run carried out at AIUB (on the basis of EUROCOMB.PCF V5.0/V5.1)

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Weekly Analysis Sequence

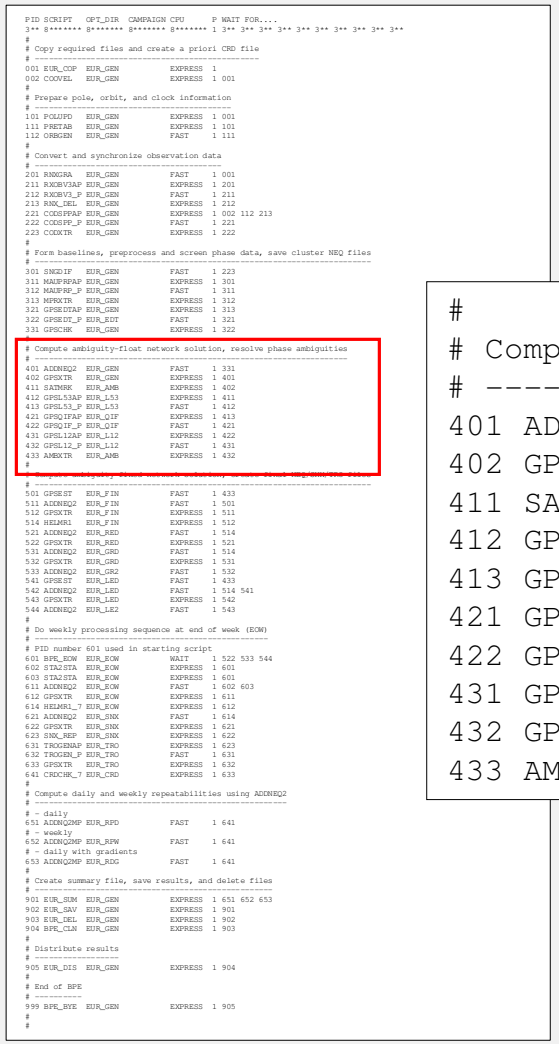
```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** 8******* 8******* 8******* 8******* 1 3** 3** 3** 3** 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ----------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
#
# Prepare pole, orbit, and clock information
# ----------------------------------------
101 POLUPD   EUR_GEN           EXPRESS  1 001
111 PRETAB   EUR_GEN           EXPRESS  1 101
112 ORBGEN   EUR_GEN           FAST     1 111
#
# Convert and synchronize observation data
# ---------------------------------------
201 RNXGRA   EUR_GEN           FAST     1 001
211 RXOBV3AP EUR_GEN           EXPRESS  1 201
212 RXOBV3_P EUR_GEN           FAST     1 211
213 RNX_DEL  EUR_GEN           EXPRESS  1 212
221 CODSPPAP EUR_GEN           EXPRESS  1 002 112 213
222 CODSPP_P EUR_GEN           FAST     1 221
223 CODXTR   EUR_GEN           EXPRESS  1 222
#
# Form baselines, preprocess and screen phase data, save cluster NEQ files
# ------------------------------------------------------------------------
301 SNXDIF   EUR_GEN           FAST     1 223
311 MAUPRPAP EUR_GEN           EXPRESS  1 301
312 MAUPRP_P EUR_GEN           FAST     1 311
313 MPRXTR   EUR_GEN           EXPRESS  1 312
321 GPSEDTAP EUR_GEN           EXPRESS  1 313
322 GPSEDT_P EUR_EDT           FAST     1 321
331 GPSCHK   EUR_GEN           EXPRESS  1 322
#
# Compute ambiguity-float network solution, resolve phase ambiguities
# -------------------------------------------------------------------
401 ADDNEQ2  EUR_GEN           FAST     1 331
402 GPSXTR   EUR_GEN           EXPRESS  1 401
411 SATMRK   EUR_AMB           EXPRESS  1 402
412 GPSL53AP EUR_L53           EXPRESS  1 411
413 GPSL53_P EUR_L53           FAST     1 412
421 GPSQIFAP EUR_QIF           EXPRESS  1 413
422 GPSQIF_P EUR_QIF           FAST     1 421
431 GPSL12AP EUR_L12           EXPRESS  1 422
432 GPSL12_P EUR_L12           FAST     1 431
433 AMBXTR   EUR_AMB           EXPRESS  1 432
#
# Compute ambiguity-fixed network solution, create final NEQ/SNX/TRO files
# ------------------------------------------------------------------------
501 GPSEST   EUR_FIN           FAST     1 433
511 ADDNEQ2  EUR_FIN           FAST     1 501
512 GPSXTR   EUR_FIN           EXPRESS  1 511
514 HELMR1   EUR_FIN           EXPRESS  1 512
521 ADDNEQ2  EUR_RED           FAST     1 514
522 GPSXTR   EUR_RED           EXPRESS  1 521
531 ADDNEQ2  EUR_GRD           FAST     1 514
532 GPSXTR   EUR_GRD           EXPRESS  1 531
533 ADDNEQ2  EUR_GR2           FAST     1 532
541 GPSEST   EUR_LED           FAST     1 433
542 ADDNEQ2  EUR_LED           FAST     1 514 541
543 GPSXTR   EUR_LED           EXPRESS  1 542
544 ADDNEQ2  EUR_LE2           FAST     1 543
#
# Do weekly processing sequence at end of week (EOW)
# --------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW  EUR_EOW           WAIT     1 522 533 544
602 STA2STA  EUR_EOW           EXPRESS  1 601
603 STA2STA  EUR_EOW           EXPRESS  1 601
611 ADDNEQ2  EUR_EOW           FAST     1 602 603
612 GPSXTR   EUR_EOW           EXPRESS  1 611
614 HELMR1_7 EUR_EOW           EXPRESS  1 612
621 ADDNEQ2  EUR_SNX           FAST     1 614
622 GPSXTR   EUR_SNX           EXPRESS  1 621
623 SNX_REP  EUR_SNX           EXPRESS  1 622
631 TROGRAP EUR_TRO            EXPRESS  1 623
632 TROGRA_P EUR_TRO           FAST     1 631
633 GPSXTR   EUR_TRO           EXPRESS  1 632
641 CRDCHK_7 EUR_CRD           EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP EUR_RPD           FAST     1 641
# - weekly
652 ADDNQ2MP EUR_RPW           FAST     1 641
# - daily with gradients
653 ADDNQ2MP EUR_RDG           FAST     1 641
#
# Create summary file, save results, and delete files
# ---------------------------------------------------
901 EUR_SUM  EUR_GEN           EXPRESS  1 651 652 653
902 EUR_SAV  EUR_GEN           EXPRESS  1 901
903 EUR_DEL  EUR_GEN           EXPRESS  1 902
904 BPE_CLN  EUR_GEN           EXPRESS  1 903
#
# Distribute results
# ------------------
905 EUR_DIS  EUR_GEN           EXPRESS  1 904
#
# End of BPE
# ----------
999 BPE_BYE  EUR_GEN           EXPRESS  1 905
#
#
```

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Weekly Analysis Sequence



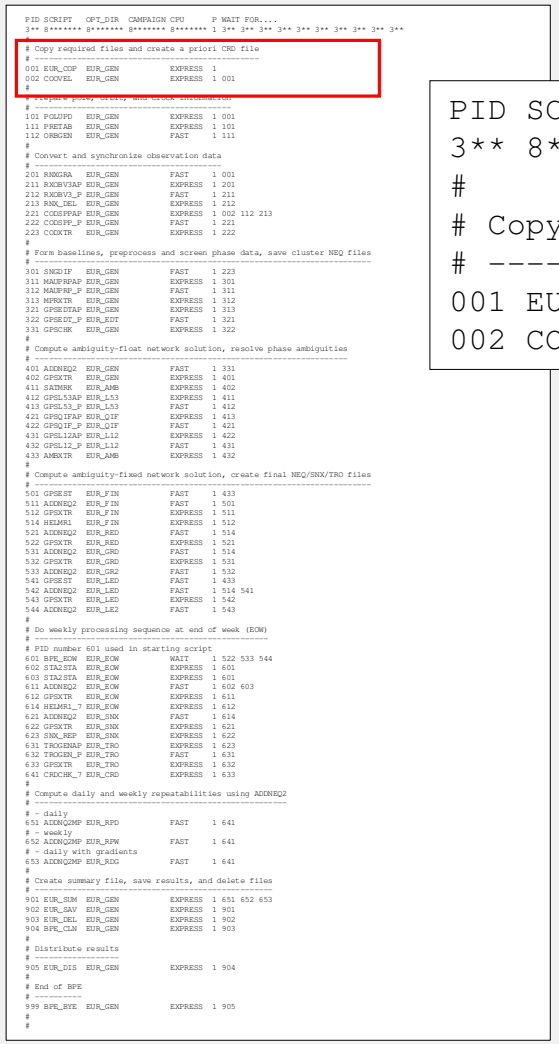
```
#
# Do weekly processing sequence at end of week (EOW)
# -------------------------------------------------
# PID number 601 used in starting script
601 BPE_EOW   EUR_EOW            WAIT     1 522 533 544
602 STA2STA   EUR_EOW            EXPRESS  1 601
603 STA2STA   EUR_EOW            EXPRESS  1 601
611 ADDNEQ2   EUR_EOW            FAST     1 602 603
612 GPSXTR    EUR_EOW            EXPRESS  1 611
614 HELMR1_7  EUR_EOW            EXPRESS  1 612
621 ADDNEQ2   EUR_SNX            FAST     1 614
622 GPSXTR    EUR_SNX            EXPRESS  1 621
623 SNX_REP   EUR_SNX            EXPRESS  1 622
631 TROGENAP  EUR_TRO            EXPRESS  1 623
632 TROGEN_P  EUR_TRO            FAST     1 631
633 GPSXTR    EUR_TRO            EXPRESS  1 632
641 CRDCHK_7  EUR_CRD            EXPRESS  1 633
#
# Compute daily and weekly repeatabilities using ADDNEQ2
# ------------------------------------------------------
# - daily
651 ADDNQ2MP  EUR_RPD            FAST     1 641
# - weekly
652 ADDNQ2MP  EUR_RPW            FAST     1 641
# - daily with gradients
653 ADDNQ2MP  EUR_RDG            FAST     1 641
```

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Ambiguity Resolution Scheme



```
#
# Compute ambiguity-float network solution, resolve phase ambiguit
# ------------------------------------------------------------------
401 ADDNEQ2   EUR_GEN            FAST      1 331
402 GPSXTR    EUR_GEN            EXPRESS   1 401
411 SATMRK    EUR_AMB            EXPRESS   1 402
412 GPSL53AP  EUR_L53            EXPRESS   1 411
413 GPSL53_P  EUR_L53            FAST      1 412
421 GPSQIFAP  EUR_QIF            EXPRESS   1 413
422 GPSQIF_P  EUR_QIF            FAST      1 421
431 GPSL12AP  EUR_L12            EXPRESS   1 422
432 GPSL12_P  EUR_L12            FAST      1 431
433 AMBXTR    EUR_AMB            EXPRESS   1 432
```

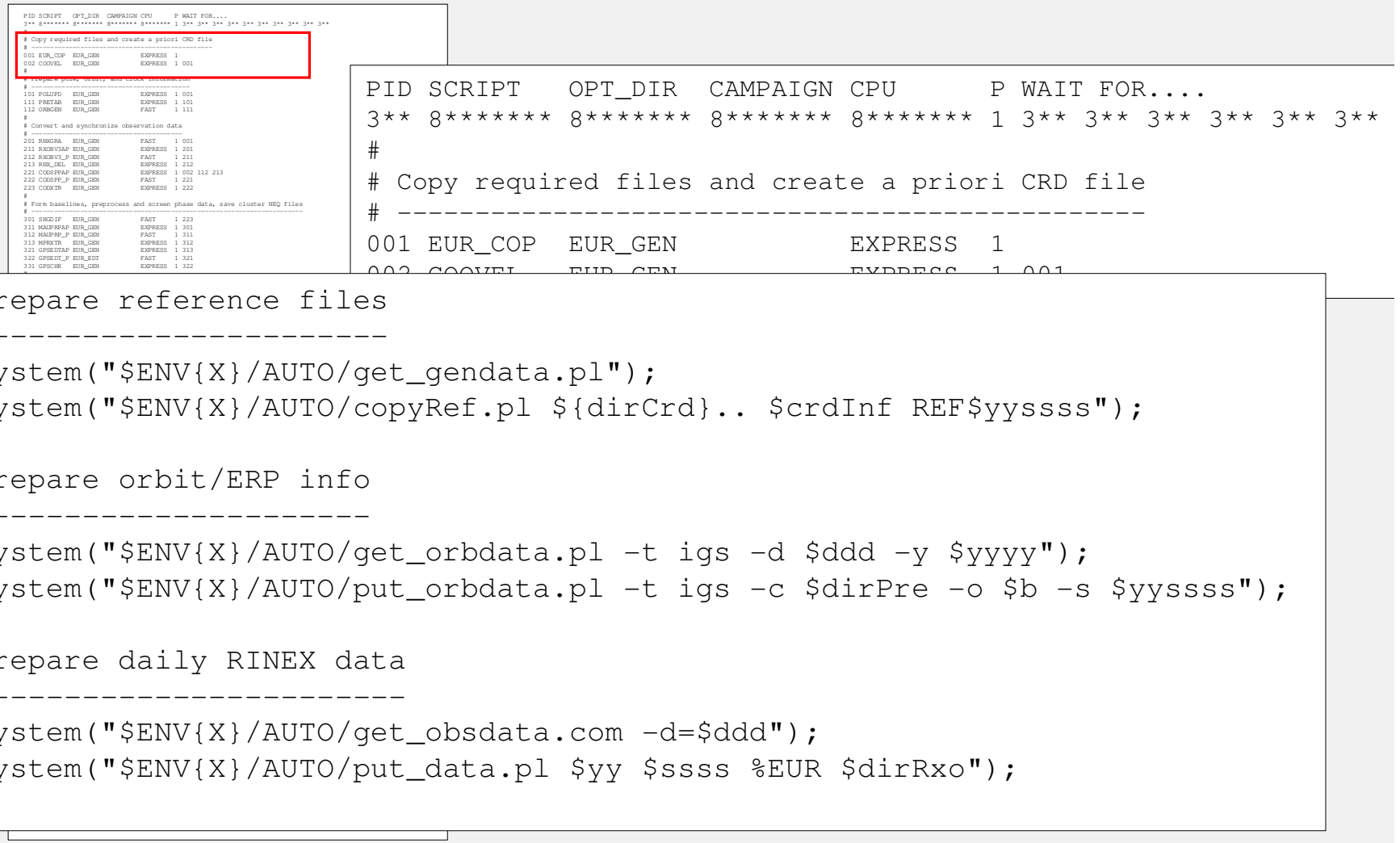
BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Preparing PERL Scripts



```
PID SCRIPT   OPT_DIR  CAMPAIGN CPU      P WAIT FOR....
3** 8******* 8******* 8******* 8******* 1 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP  EUR_GEN           EXPRESS  1
002 COOVEL   EUR_GEN           EXPRESS  1 001
```


swisstopo

BPE V5.0: EUREF.PCF Derived From RNX2SNX.PCF – Preparing PERL Scripts



```
PID SCRIPT    OPT_DIR   CAMPAIGN CPU       P WAIT FOR....
3** 8******* 8******* 8******* 8******* 1 3** 3** 3** 3** 3** 3**
#
# Copy required files and create a priori CRD file
# ------------------------------------------------
001 EUR_COP   EUR_GEN             EXPRESS   1
002 COOVEL    EUR_GEN             EXPRESS   1 001
```

```
# Prepare reference files
# -----------------------
  system("$ENV{X}/AUTO/get_gendata.pl");
  system("$ENV{X}/AUTO/copyRef.pl ${dirCrd}.. $crdInf REF$yyssss");

# Prepare orbit/ERP info
# ----------------------
  system("$ENV{X}/AUTO/get_orbdata.pl -t igs -d $ddd -y $yyyy");
  system("$ENV{X}/AUTO/put_orbdata.pl -t igs -c $dirPre -o $b -s $yyssss");

# Prepare daily RINEX data
# ------------------------
  system("$ENV{X}/AUTO/get_obsdata.com -d=$ddd");
  system("$ENV{X}/AUTO/put_data.pl $yy $ssss %EUR $dirRxo");
```