INTEGRATION OF THE EPN AND THE DENSE NATIONAL PERMANENT NETWORKS

REPORT OF THE REFERENCE FRAME COORDINATOR

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TASKS OF THE EPN REFERENCE FRAME COORDINATOR

- PROVIDE UP-TO-DATE CUMULATIVE EPN POSITION AND VELOCITY SOLUTION (15 WEEKS UPDATE RATE)
- CONTRIBUTION TO ADVISORIES, GUIDELINES ON THE OPTIMAL USE OF REFERENCE SYSTEM REALIZATIONS
- CONTRIBUTION TO THE ETRS89 MAINTENANCE ON REGIONAL AND NATIONAL LEVEL
- EPN DENSIFICATION EXPLOITATION OF THE DENSE NATIONAL GNSS NETWORKS FOR THE BETTER REALIZATION OF ETRS89

EPN DENSIFICATION / HISTORY

- IAG Working Group on Regional Dense Velocity Fields, 2007-2011
 - collection and integration of "local" cumulative solutions
 - inhomogeneities, inconsistencies
- EUPOS Combination Centre ECC 2009
 - combination of weekly SINEX solutions from national commercial permanent networks
 - successful pilot to prove the concept
 - kernel of the recent integration
- IAG Working Group 'Unified Dense Velocity Fields' 2011-2015
 - continental extension of the ECC-combination
 - EUREF2010 symposium resolution #4
 - Letter to NMCAs still under preparation!

THE STRATEGY

- COLLECTION AND PREPARATION OF NATIONAL LONG TERM WEEKLY SINEX SOLUTIONS
 - SINEX testing ("compatibility", constraints, quality)
 - SINEX CLEANING: outlier and offset detection, elimination
 - soln harmonization with EPN

• COMBINATION WITH EPN WEEKLY SINEX

- EPN as reference
- CATREF / MC approach
- Handling of different software products (GAMIT, GIPSY ...)
- same reference network as for EPN cumulative
- RESULTS / PRODUCTS
 - cleaned national SINEX solutions,
 - position and velocity estimates in ITRFyy/IGSyy/ETRFyy,
 - Main input to the EPN WG on Deformation Modeling
 - time series plots

BENEFITS

USER / PROVIDER SIDE

- independent tests of the national SINEX solutions,
- cleaned and "internationalized" (site naming) SINEX back to the user for own purposes,
- the combined solution is freed from occasional reference frame definition weaknesses,
- decreased network effect,
- high quality ETRS89 positions to test the national realization (EB),
- push forward the scientific analysis and use of the national GNSS production networks,

COMMUNITY SIDE

- creation of an absolutely homogeneous, dense ETRS89 velocity field,
- steps forward to the better realization of ETRS89, and
- possible extension of ETRS89 over the non-stable part of Europe (EPN WG)

SITES AVAILABLE AS OF TODAY



DATA AVAILABILITY - MAY-2013

- ASG Poland EST Estonia GGI Latvia GKU Slovakia SGO Hungary AMON Austria Austria (reg) : 1107 - 1734 MON Bulgaria BUL Czech R : 1565 - 1721 CZE UPA SGN C-Europe (p) : 1106 - 1734 CEGRN CEGRN
- : 1482 1701 repro started
 - : 1448 1723
 - : 1461 1720
 - : 1408 1705
 - : 1400 1730 repro done
 - : 1470 1720

 - : 1434 1720 daily GAMIT

 - Italy (Padova) : (1422) 1623 1735
 - France (glo) : 1200 1700 more
 - C-Europe (c) : 1994 2009 biannual
 - campaigns

TECHNICAL ISSUES TO BE SOLVED

CURRENT STATUS: MIXED (ATX) solutions are used! IGS05 CONVERSION TO IGS08 (FROM GPSweek 1632) Individual calibrations are not affected! IGS tool should be extended

IGS08 to IGb08 (week 1709) CAGZ, MDVJ - JPSREGANT_DD_E / SD_E)

LOG FILE DATABASE MAINTENANCE!!!

EPN is OK ESDB (EUPOS Station Database)

individual STA files

SITE NAMING (4CHAR, DOMES NUMBERS)

VERIFICATION OF ANALYSIS STRATEGY (constraints)

epn05.atx to epn08.atx change

WLOC_18999M001 (CLEAN)



Sat Jun 2 22:40:20 2012

NATIONAL AND COMBINED TIME SERIES

CNNS_10089M001 (CLEAN)



ESTIMATED VELOCITIES horizontal



ESTIMATED VELOCITIES vertical



SUMMARY

- WELL IMPROVING COVERAGE AND OPERABILITY
 - SOME COUNTRIES NEED OFFICIAL INVITATION
 - COUNTRIES WITH STATES
- ISSUES
 - ATX INHOMOGENEITY
 - POSITION CORRECTION OR
 - REPROCESSING (EPN AND NATIONAL)
 - DIFFERENT LENGH OF DATA AVAILABILITY
- VERY PROMISING PRODUCTS
 - CLEANED, HOMOGENIZED NATIONAL SINEX FILES
 - ETRS89 POSITIONS (NATIONAL CONTROL)
 - VELOCITY FIELD FOR MODELING

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ALL EUROPEAN COUNTRIES ARE CORDIALLY INVITED!