

# Advocating a Precise Point Positioning Service Operated by EUREF

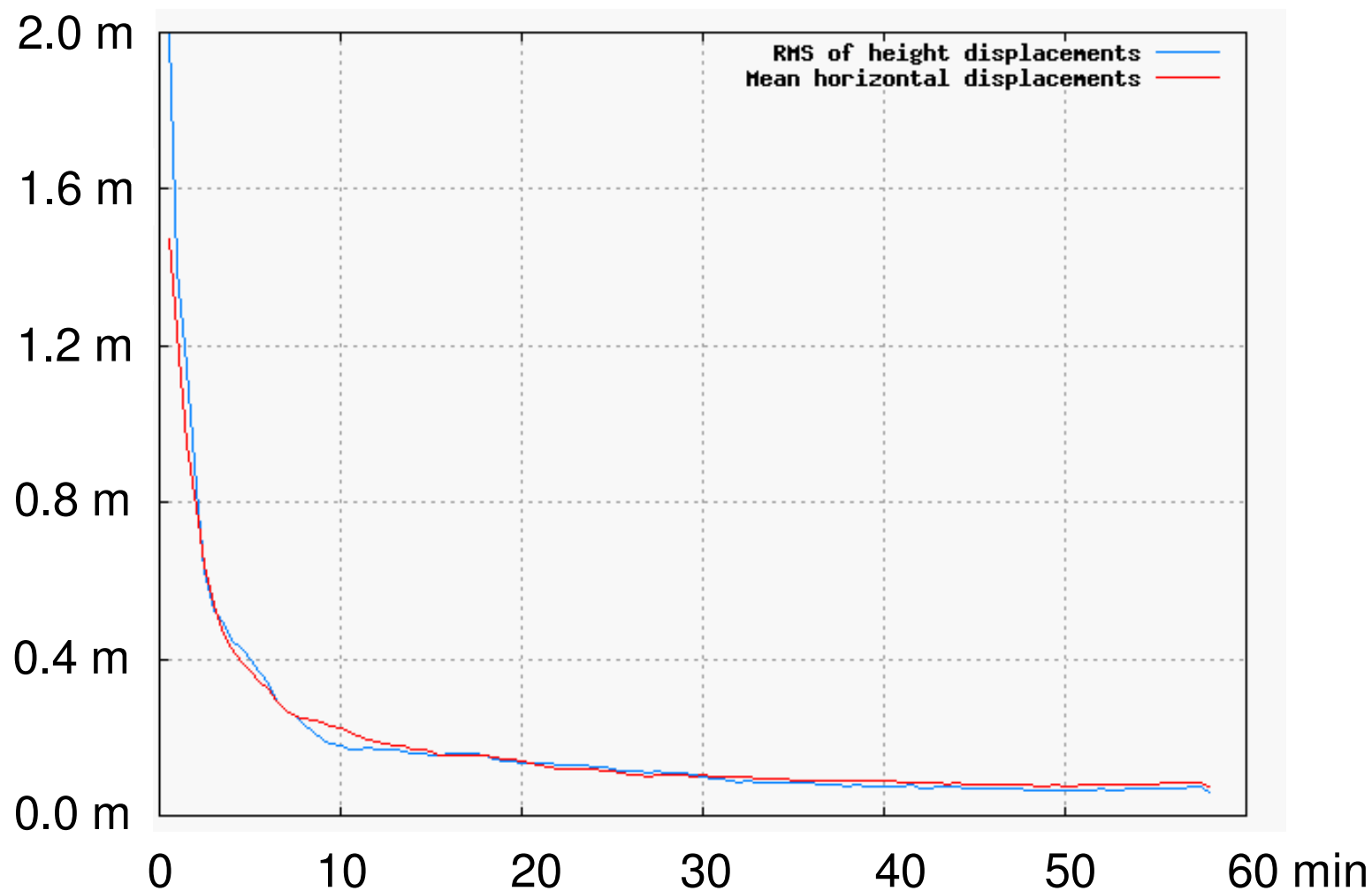
Georg Weber and Wolfgang Söhne  
BKG, Frankfurt, Germany

# Real-time PPP Standardization

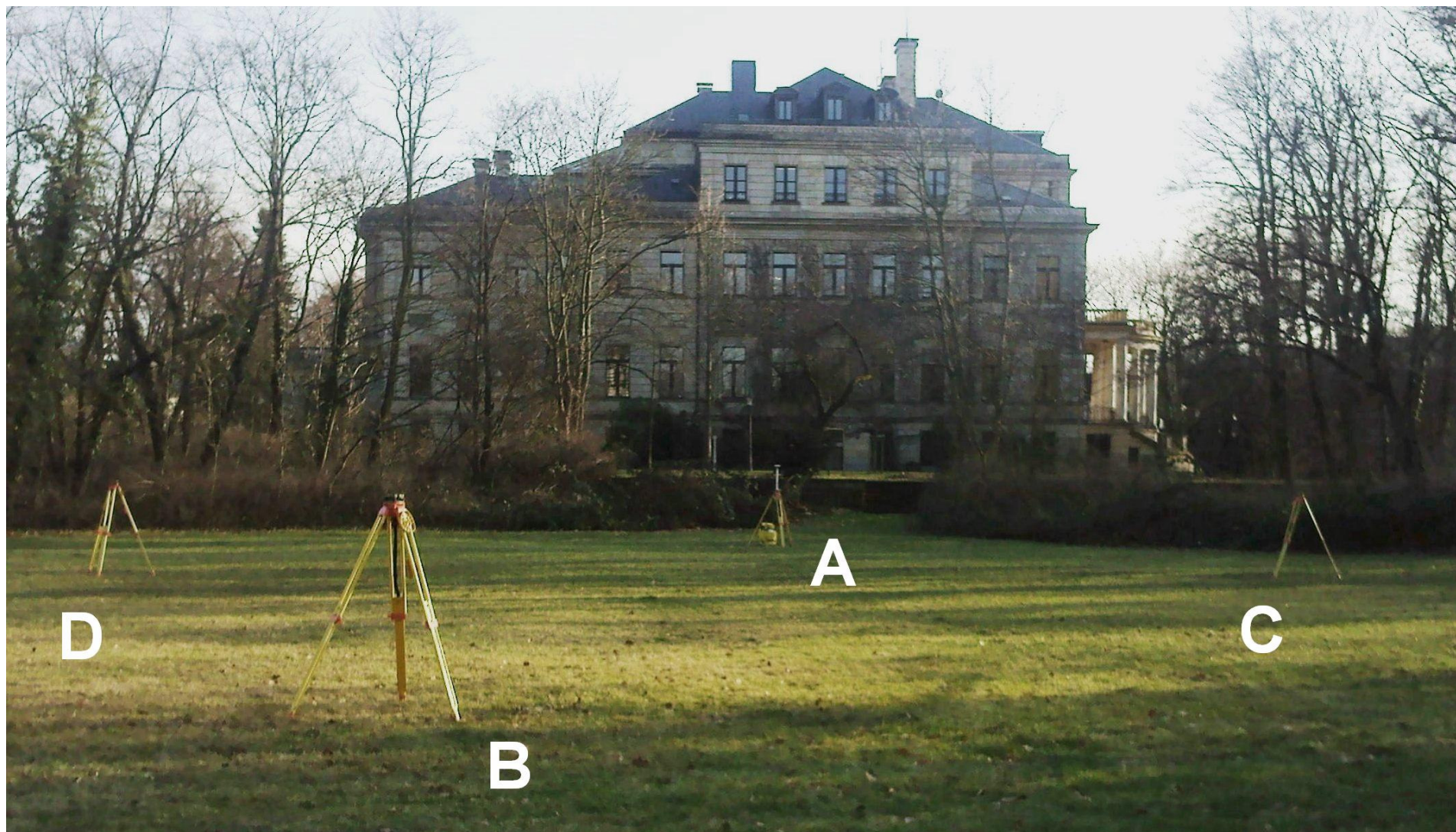
- 19 May 2011: „State Space Representation“ messages (Step-1, orbits, clocks, code biases) became RTCM Recommended Standard
- Vendors likely to extend receiver firmware so that SSR messages can be used for PPP

# Real-time PPP - Convergence

Horizontal and Vertical Displacements



# Real-time PPP Test - Scenario





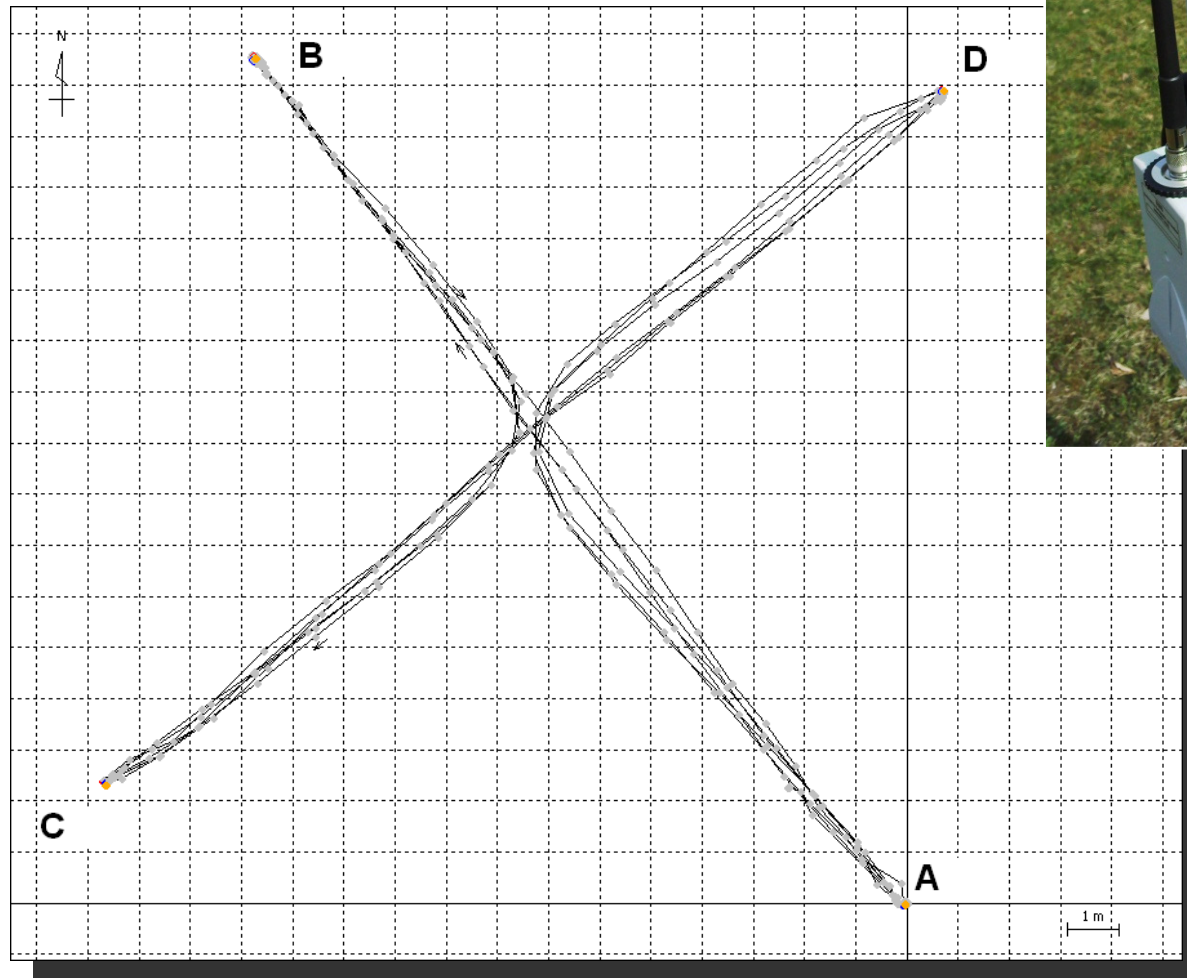
# Real-time PPP Test

Leica GRX1200 GGPRO

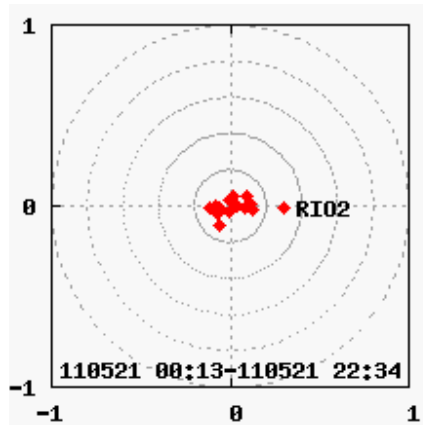
Siemens Mobile Phone

Sending RTCM to [www.igs-ip.net](http://www.igs-ip.net)

PPP with BNC

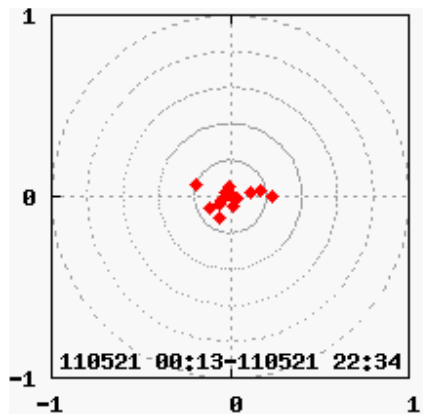


## Combination

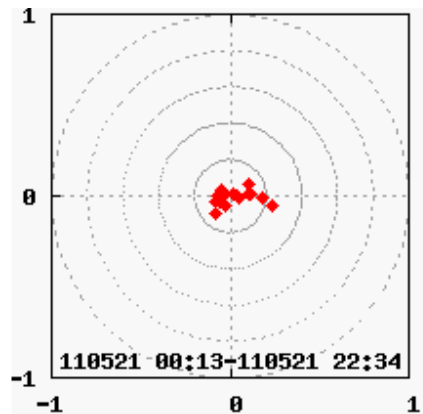


# Real-time PPP using IGS Orbit/Clock Products

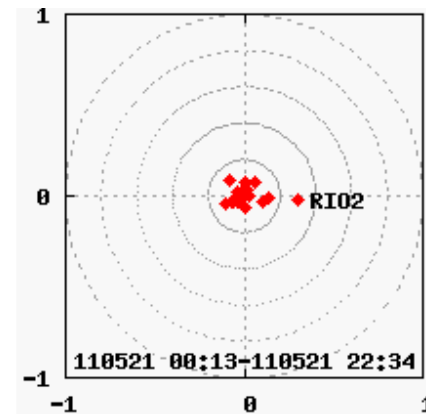
### BKG



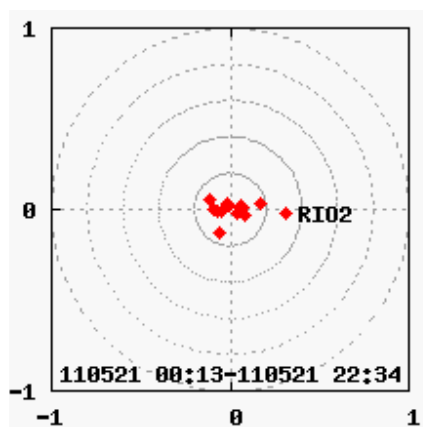
### CNES



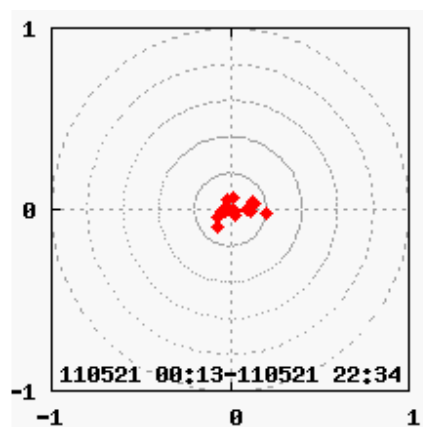
### DLR



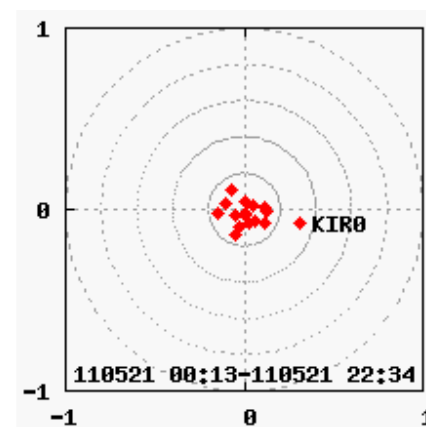
### ESA



### GFZ



### GMV



# Coming

- SSR Step-2: Messages for ionosphere (VTEC) and receiver phase biases
  - Requires EUREF
- SSR Step-3: Messages for instantaneous cm positioning, STEC ionosphere, troposphere, satellite phase biases
  - Requires EUREF plus national, regional, and local networks
  - PPP-RTK (or augmented PPP)

# PPP-RTK over Network RTK ?

- Network RTK: “One Stop Shop” solutions
  - Occasionally using a few selected reference coordinates from EUREF & IGS
- PPP-RTK: Continuously stacking information from independent solutions/services from
  - Global network (IGS)
  - Continental networks (EUREF)
  - National networks
  - Regional/local networks



# EUREF – A European PPP Service Provider ?

- Change current balance in efforts for
  - Making the reference system (post processing, mm), and
  - Providing access to the reference system (real-time, cm)
- Cooperate in PPP-RTK with National Mapping Agencies

# What to do?

- Attract contributions from European Real-time Analysis Centers like BKG, DLR, ESA, GFZ, GMV, Geo++
- Establish PPP Working Group as part of the Real-time Analysis Project?
- Establish reliable infrastructure for a European PPP combined product at decimeter level

# What to do, cont'd

- Help with access to real-time PPP software
- Promote national PPP-RTK test beds
- Argue for interoperability between emerging European regional/national PPP-RTK services

Thank you

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