

# NKG VLBI Task Force

Status report for the NKG General Assembly 2010

Rüdiger Haas

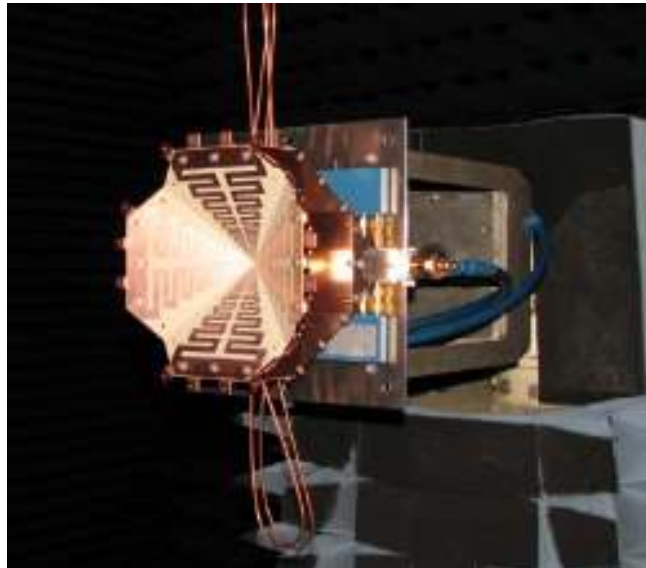
presented by Jan Johansson

# Two meetings

- January 2007 @ Onsala: participants from Metsähovi, Ny-Ålesund, Onsala (and Wettzell), discussed VLBI operations and possibilities for closer collaboration, and involvement in VLBI2010-project
- April 2010 @ Metsähovi: participants from Hønefoss, Metsähovi and Onsala, discussed data analysis and possibilities for closer collaboration

# VLBI2010 efforts

- Development of a cooled VLBI2010 wide-band feed and receiver system covering 2-14 GHz, collaboration between Chalmers antenna group, Onsala, Statens kartverk, Haystack and Vertex



# Fennoscandian-Japanese ultra-rapid UT1-observations

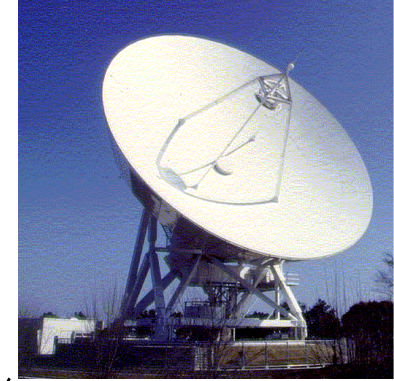
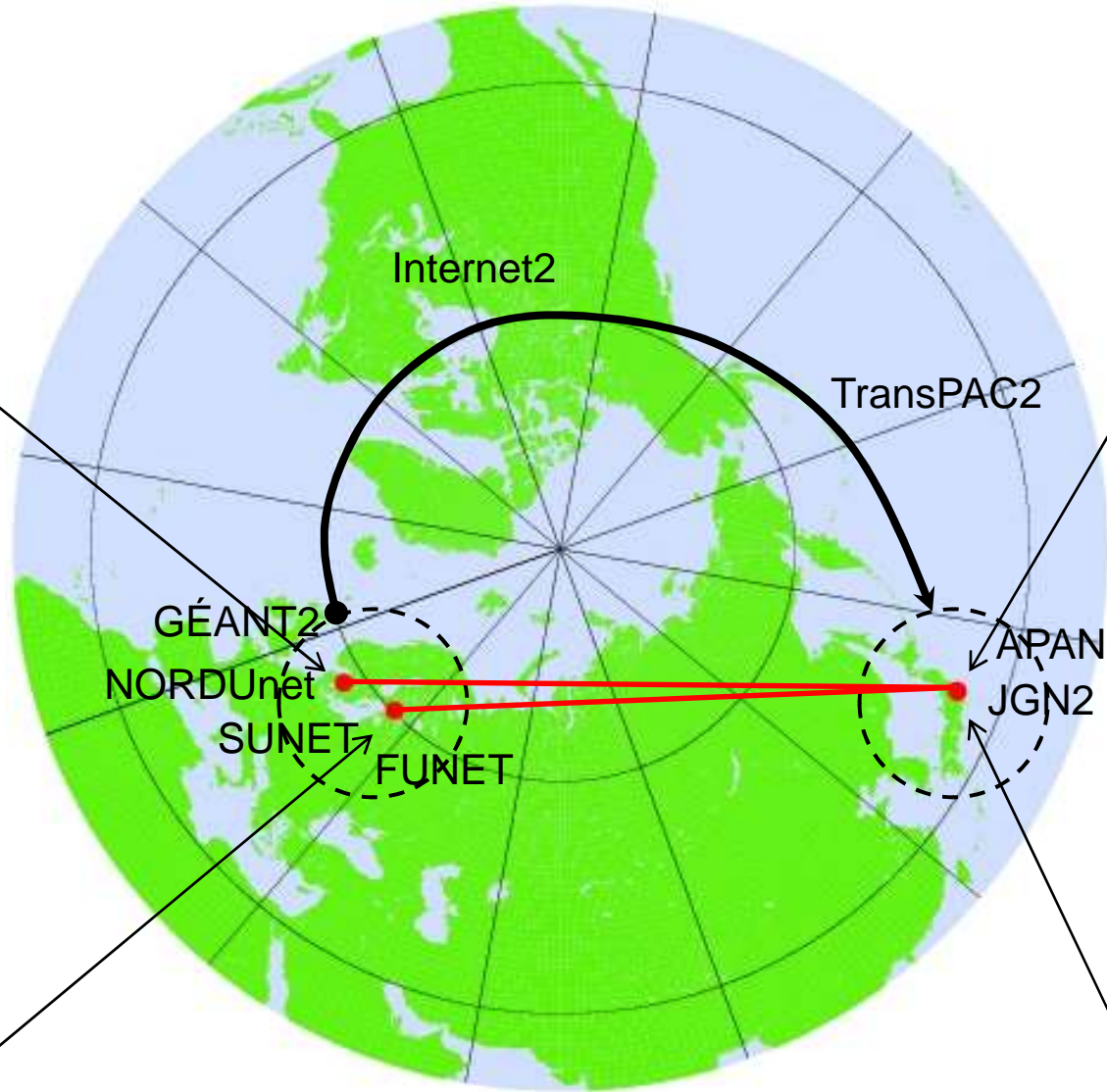
- Started in 2007: collaboration between VLBI groups at Onsala & Metsähovi and Kashima & Tsukuba
- Goal: to achieve very low latency for final UT1-results by using e-VLBI and automated data correlation and data analysis
- About 30 dedicated ultra-rapid experiments (about 1 hour of observations each)
- Different data rates (128 Mbps to 512 Mbps)
- Observations on (almost) parallel baselines



Onsala (20m)



Metsähovi (14m)



Tsukuba (32m)

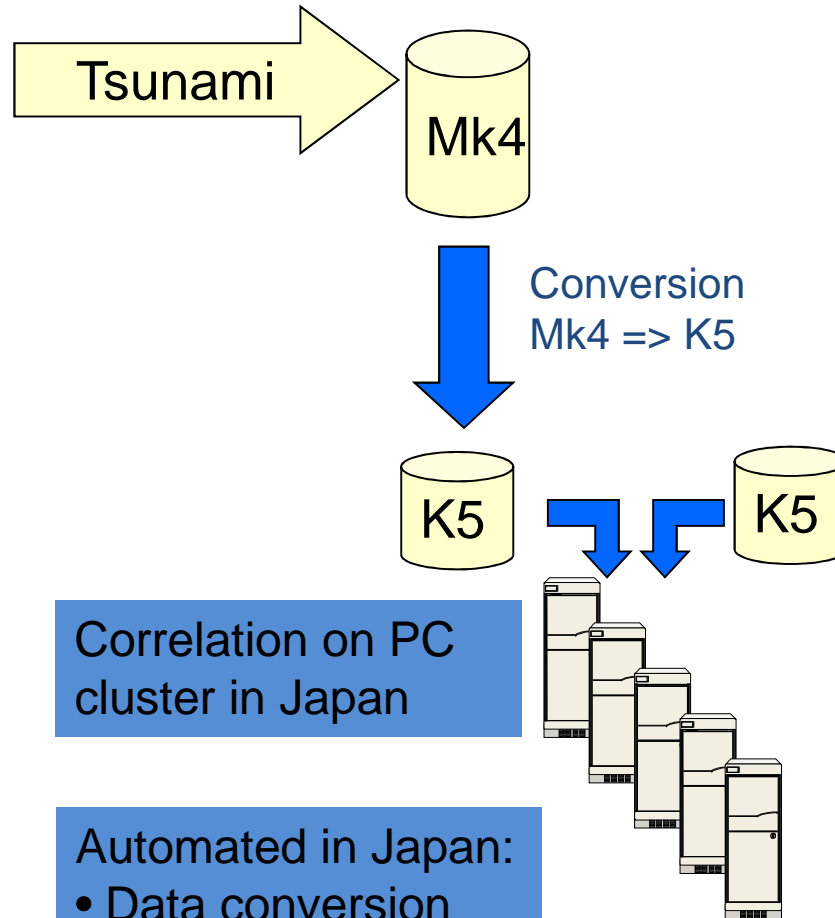


Kashima (34m)

# Example for data acquisition, data transfer and processing



Fennoscandia  
e.g. Onsala



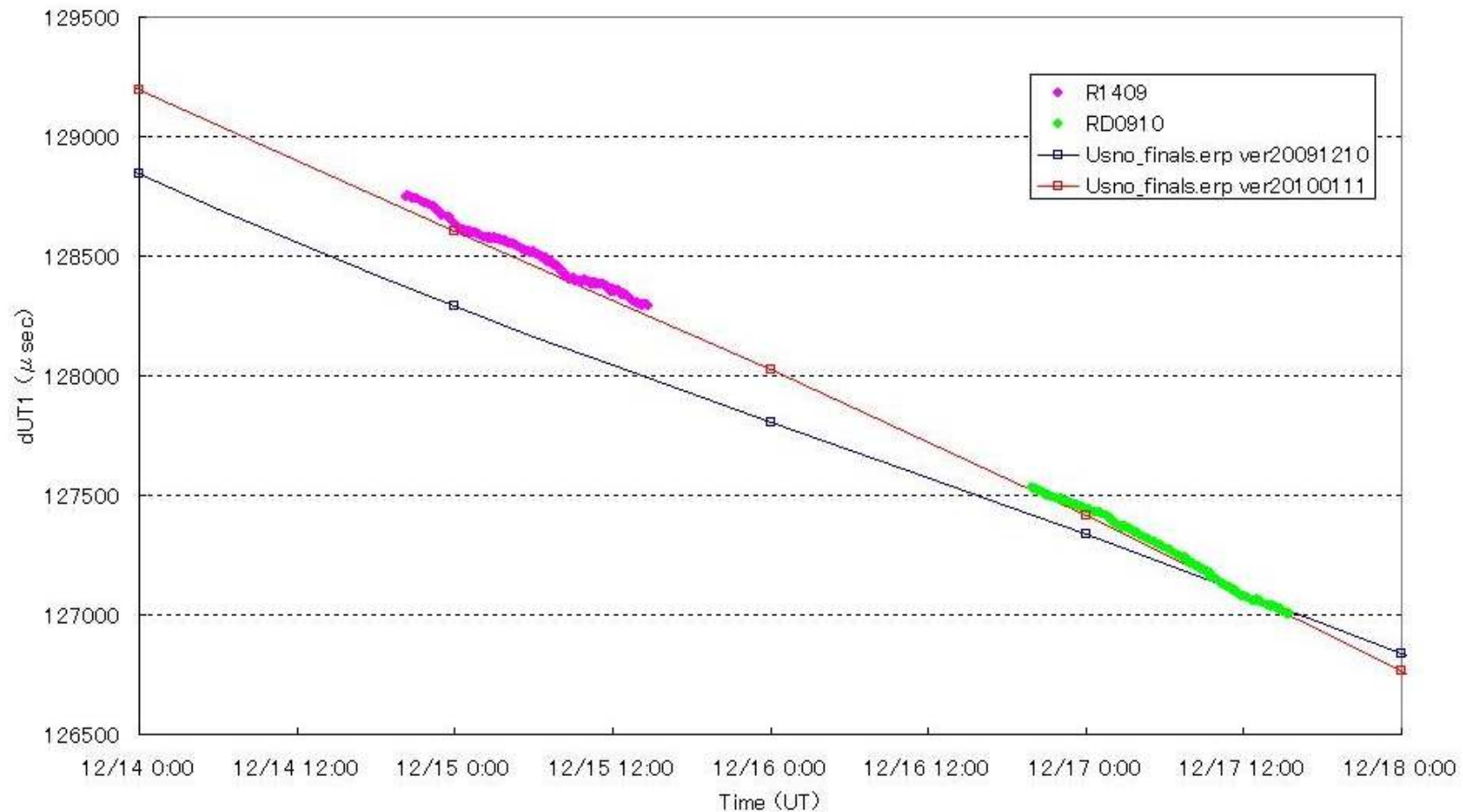
K5/VSSP  
Japan  
e.g. Kashima

# Fennoscandian-Japanese ultra-rapid UT1-observations (cont.)

- World record in February 2008: final results within 4 minutes after 1-hour long observation session ended (!)
- Agreement with final IERS 05 EOPC04 values  $\approx 30 \mu\text{s}$
- Same as "IERS rapid solutions", but much lower latency
- Simultaneous observations on parallel baselines agree  $< 20 \mu\text{s}$
- Indication: higher data rates give reduced formal uncertainties
- IERS very interested to adopt the ultra-rapid concept for the regular intensive sessions, since 2010 implemented for INT-2
- Next step: ultra-rapid UT1-results during ongoing standard 24 hour long IVS-session

# Example: ultra-rapid UT1-results during 24-hour IVS-sessions

dUT1 R1409, RD0910, R1413 and Usno\_finals.erp





# Continued work and future plans:

- Continue preparation for VLBI2010, all Nordic VLBI stations should become VLBI2010-compatible
- Continue ultra-rapid UT1-observations and contribute to IERS rapid products
- Establish contacts and collaboration with potential VLBI-partners south of the Baltic sea
- Outcome of the 2010 meeting at Metsähovi: continued and intensified collaboration, and aim for one dedicated Nordic VLBI session per year using e-VLBI and software correlation e.g. at Metsähovi or Onsala
- Work towards VLBI-observations of GNSS-satellites and/or combination of VLBI and GNSS observations