

National Report of the Netherlands

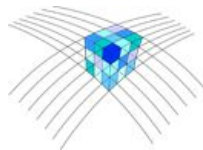
EUREF 2012, Saint Mandé, 6 – 8 June 2012

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Anton Kösters (Rijkswaterstaat)

8 June 2012



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Rijkswaterstaat



TU Delft
Delft University of Technology

Geodetic Infrastructure of the Netherlands

- National Geodetic Infrastructure by :
Cadastre, Min. of Infrastructure and Environment, Navy, Delft University
- Common projects
 - AGRS operation, control & maintenance
 - 1st order gravity measurements
 - Vertical Reference Frame for the Netherlands
Mainland, Wadden Islands and Continental Shelf
 - INSPIRE coordinate transformation reference

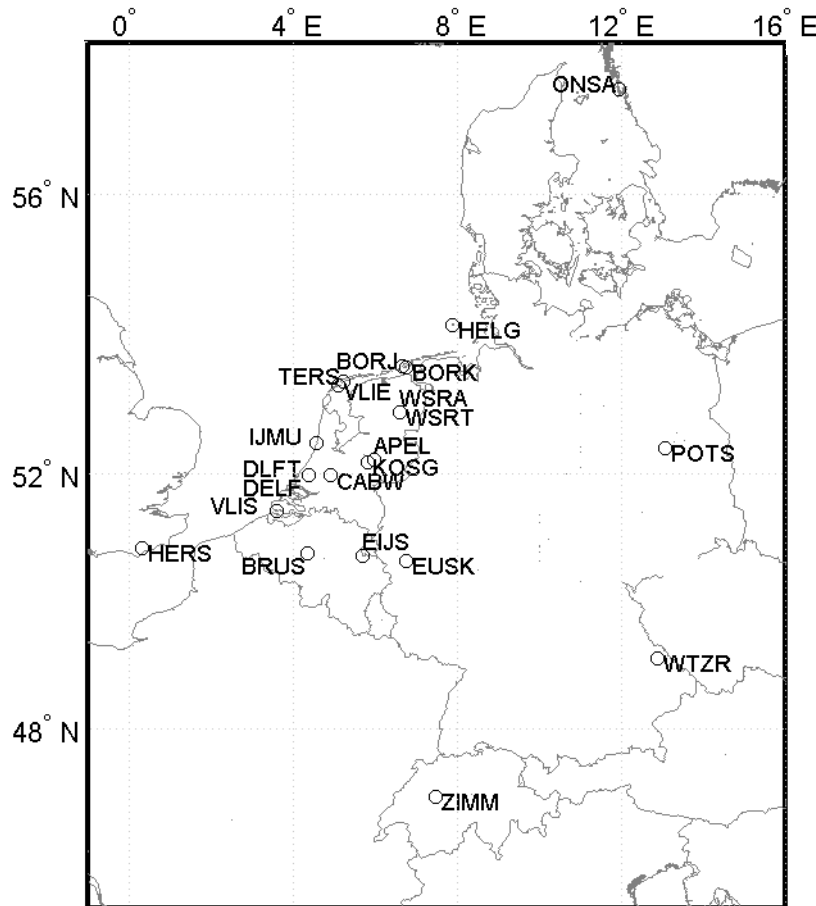
Active GNSS Reference System

9 primary stations

- IGS stations DELF, KOSG and WSRA
- Kootwijk (KOSG) in bad shape
- 5 stations co-located with tide & river gauges



Multi year analysis (1)



- Reprocessing 1995-2011
 - IGS repro1 products
 - BSW 5.0
- Focus on height change
 - Ø Homogeneous archive
 - Ø **Trends** (velocities) sub-mm/yr σ
 - Ø No reliable statement about datum (NAP) change

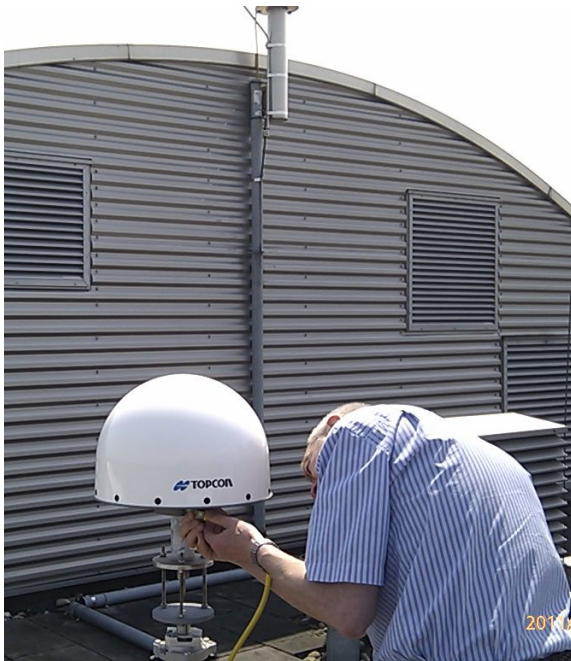
Multi year analysis (2)

Strange behaviour of co-located antennas:

ETRF2000(R05)	vN	vE	vU	σ vN	σ vE	σ vU
Station	mm/yr	mm/yr	mm/yr	mm/yr	mm/yr	mm/yr
DELF	-0,15	-0,57	-0,19	0,02	0,01	0,03
DLFT	-0,41	-0,39	-1,23	0,04	0,03	0,10
WSRA	0,61	-0,62	-0,03	0,01	0,01	0,03
WSRT	0,64	-0,66	0,43	0,01	0,01	0,05



Introduction of navXperience antenna



Topcon TPSCR.G3



navXperience VXP3G+C

National levelling NAP

combination of techniques

- Underground markers will be placed in the vicinity of all AGRS stations to ensure a reliable vertical reference.
- Continuation of yearly absolute gravity measurements, in cooperation with TUDelft, for monitoring height reference changes.
- Investigation into the use of Interferometric synthetic aperture radar (InSAR) to determine subsidence areas and monitor vertical reference points. Use of Compact Active Transponders (CAT's)

Cut back on the maintenance of GPS base points

Stable points (± 100 of 400) only visually checked



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InSAR

Compact Active Transponder (CAT)

Test setup at IJmuiden



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Thank you for your attention