Geodesy and VLBI (and Wim!)
“Vreemde eend in de bijt…”

1. Introduction (and Wim)
2. Geodetic VLBI in those days…
3. Geodetic VLBI nowadays…
4. Concluding remarks (and Wim)

Wimsym77, Dwingeloo, 6-7 July, 2017

Frits Brouwer
Director National Data Warehouse for Traffic Information
NDW in beeld
1. Wim 2nd Promotor, my PhD on 14 May, 1985
2.1 MSc-thesis 1977-78

- **Together with Peter Visser: What is VLBI and what can it mean for Geodesy?**
- **Result:** Some simulations what kind of precision and reliability can be reached in a European geodetic VLBI-campaign.
2.2 ZWO-application PhD-grant succesful

- Professor Baarda (Geodesy, Delft)
- Wim: a member of Netherlands Geodetic Commission (KNAW)
- Wim wrote first draft of ZWO-application!
2.3 Objectives of PhD research

- Determine the precise relation between the relevant geodetic and astrometric quantities;
- Develop a theoretical model for the (geodetic) observables;
- Complement the latter with a stochastic model, to be able to assess precision and reliability of the final geodetic results;
- Carry out observations in the European VLBI-network, including Dwingeloo and Effelsberg, to verify the models.
2.4 Meeting Nov. 1983 in Delft “EU VLBI for Geodesy…”

ACCOUNT OF THE WORKING MEETING
ON
EUROPEAN VLBI FOR GEODESY AND ASTROMETRY

UNDER THE AUSPICES OF THE
NETHERLANDS GEODETIC COMMISSION

HELD AT THE
DEPARTMENT OF GEODESY
DELFT UNIVERSITY OF TECHNOLOGY

ON 3 - 4 NOVEMBER 1983

EDITED BY FRITS J.J. BROUWER

X (Wim)  X (James Campbell, Bonn)
X (Richard Schilizzi)
2.5 YERAC Meeting Sept. 1984 in Zelenchukskaya

- The only geodesist present (ever?)
- ‘Sold’ the subject as ‘calibration’ for astronomical VLBI!
2.5 YERAC Meeting Sept. 1984 in Zelenchukskaya (2)
2.5 YERAC Meeting Sept. 1984 in Zelenchukskaya (3)

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Conclusions / B.: Bogorod

1) Geodetic VLBI provides a calibration of the interferometer; any observatory may therefore, depending on its available observing time, feel free to join the European working group for geodetic / astrometric VLBI !!!

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1) Геодезические VLBI дают возможность калибровки астрономического интерферометра; все, кто заинтересован могут, таким образом присоединиться к этим работам!

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And secondly:
2.6 Data-analysis campaigns and PhD thesis

ERIDOC (Delft, Bonn)

6 cm Mkl 40 MHz EWS

6 VLBI sites, 18 Doppler stations

Processing at Caltech correlator
Geodetic analysis at Bonn and Delft
Decimeter accuracy in comparison Doppler/VLBI

VLBI in NEDERLAND
Zes meetcampsies met Westerbork
in kader European VLBI Network (EVN)

WEJO- 1 Okt. 1980
WEJO- 2 April 1981
WEJO- 3 Dec. 1981
WEJO- 4 Dec. 1982
Giaf / VLBI - 1 Juni 1987
Giaf / VLBI - 2 Okt. 1987

Mk- 2

Mk- 3
3.1 Geodetic VLBI nowadays… (on a world scale)

International VLBI Service for Geodesy & Astrometry

IVS is an international collaboration of organizations which operate or support Very Long Baseline Interferometry (VLBI) components.

The objectives of IVS are

- to provide a service to support geodetic, geophysical, and astrometric research and operational activities;
- to promote research and development activities in all aspects of the geodetic and astrometric VLBI technique; and
- to interact with the community of users of VLBI products and to integrate VLBI into a global Earth observing system.

The service aspect of IVS is meant to serve both outside users and the geodetic and astrometric community itself. Both the contributors and users of data will be served.

IVS provides data and products for the scientific community. Some of the products are

- a terrestrial reference frame (TRF),
- the international celestial reference frame (ICRF), and
- Earth orientation parameters (EOP).

All IVS data and products are archived in data centers and are publically available for research in related areas of geodesy, geophysics and astrometry.

see: www.ivscc.gsfc.nasa.gov
3.2 Geodetic VLBI nowadays… (on a European scale)

- The EVGA: European VLBI Group for Geodesy and Astrometry

The EVGA as a subgroup of IVS is a group of European scientists working in or supporting Very Long Baseline Interferometry (VLBI) for geodetic and astrometric applications. The EVGA seeks to:

a) foster the use of European VLBI resources for deriving high quality reference frames and other scientific results.

b) form a link between the different European VLBI components from observations to data analysis.

c) promote and represent European geodetic and astrometric VLBI within the broader international scientific communities.

d) provide and archive information and scientific results of European geodetic and astrometric VLBI.

e) organize regular working meetings.

f) support the respective education and training efforts.

The EVGA consists of its members who elect a chairman and a secretary. Chairman and secretary are elected for a term of 4 years each.

The EVGA consists of all European IVS associated members and is also open for membership to any scientist affiliated to a European institution involved in geodetic and/or astrometric VLBI. EVGA membership of the latter commences and ends with written notice to the EVGA Secretary.
3.3 Geodetic VLBI nowadays… (on a European scale)

- Regular meetings!

And results: 0.5 mm/yr shorter

NB Delft meeting in 1983 was the 3rd!

See: www.EVGA.org
4. To conclude…

- Hope you have some idea of four decades of geodetic VLBI
- Thanks, Wim, for bringing astronomy in my working life:
  - As a research manager at Triangulation Service of Cadastre and Survey Department of Rijkswaterstaat: GPS and Remote Sensing
  - As director of KNMI: climate research and Earth Observation (NSO, (TROP)OMI, iSPEX,…)
  - Only for NDW not yet; maybe self driving cars?!
- Also many thanks, personally, for who you are!
- I wish you all the best, in good health!