

# Geodesy and VLBI (and Wim!)

“Vreemde eend in de bijt...”

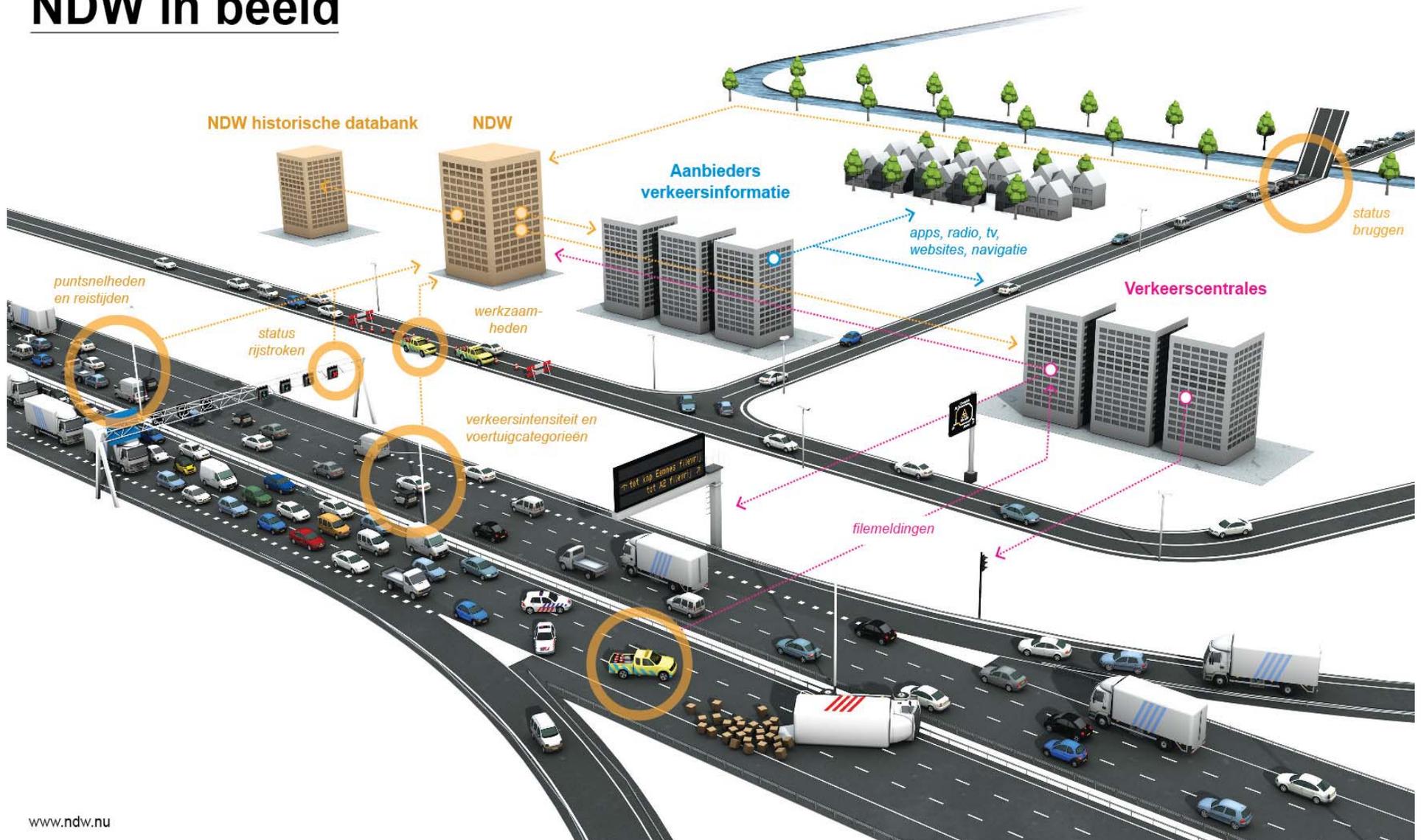
1. Introduction (and Wim)
2. Geodetic VLBI in those days...
3. Geodetic VLBI nowadays...
4. Concluding remarks (and Wim)

Wimsym77, Dwingeloo, 6-7 July, 2017

**Frits Brouwer**

**Director National Data Warehouse for Traffic Information**

# NDW in beeld

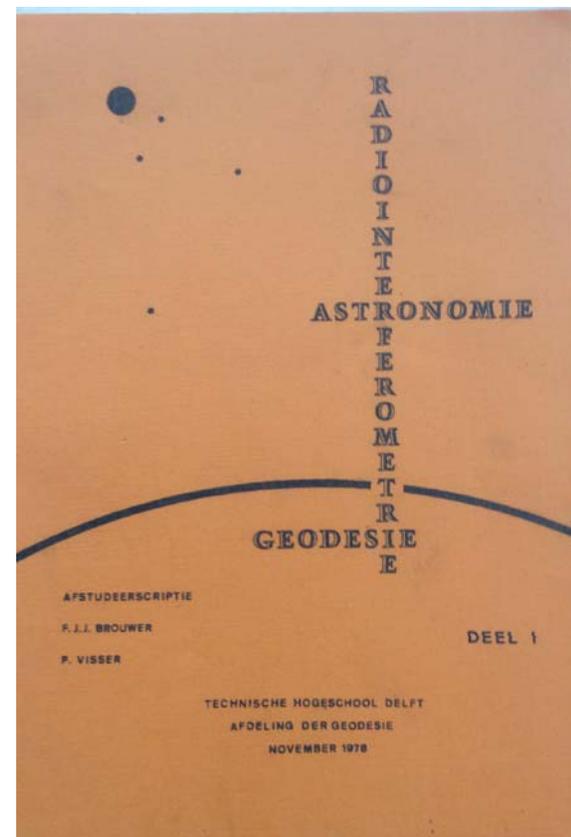
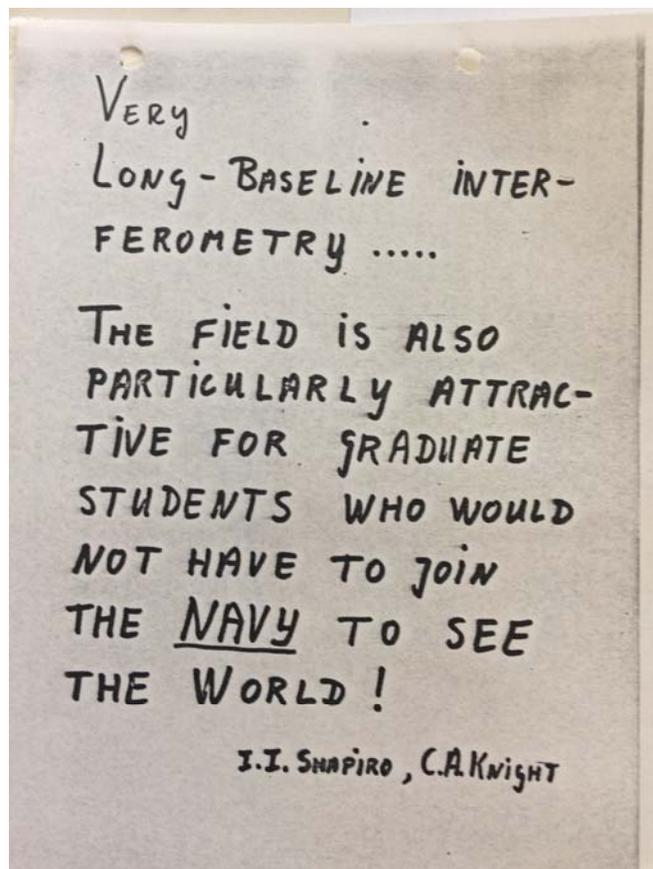


## 1. Wim 2nd Promotor, my PhD on 14 May, 1985



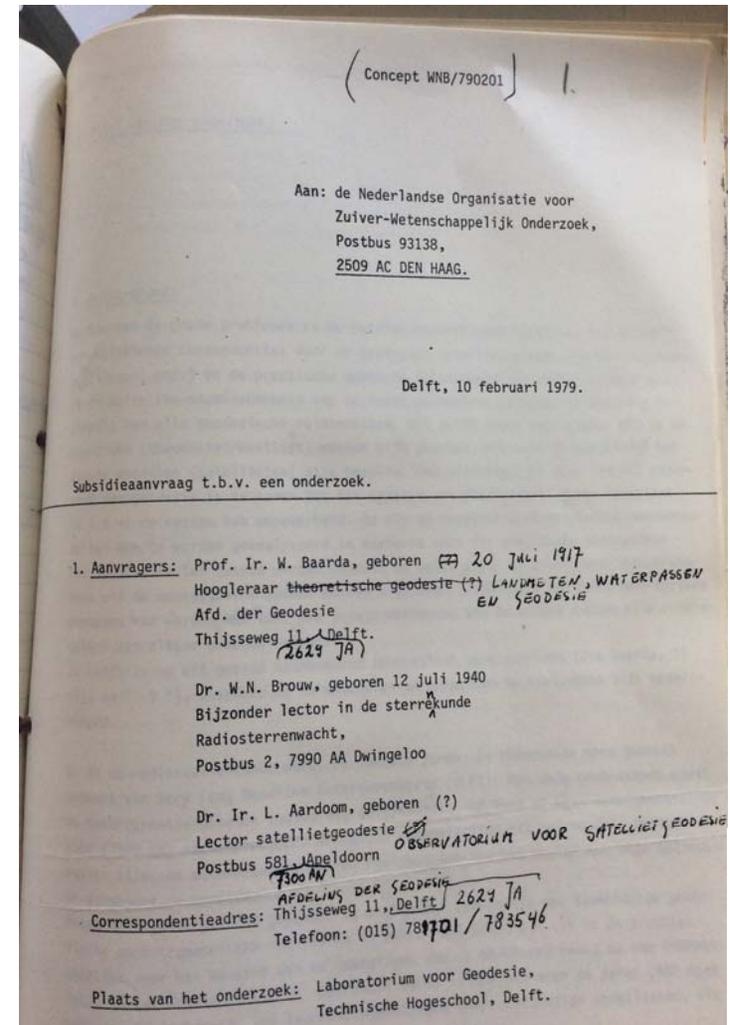
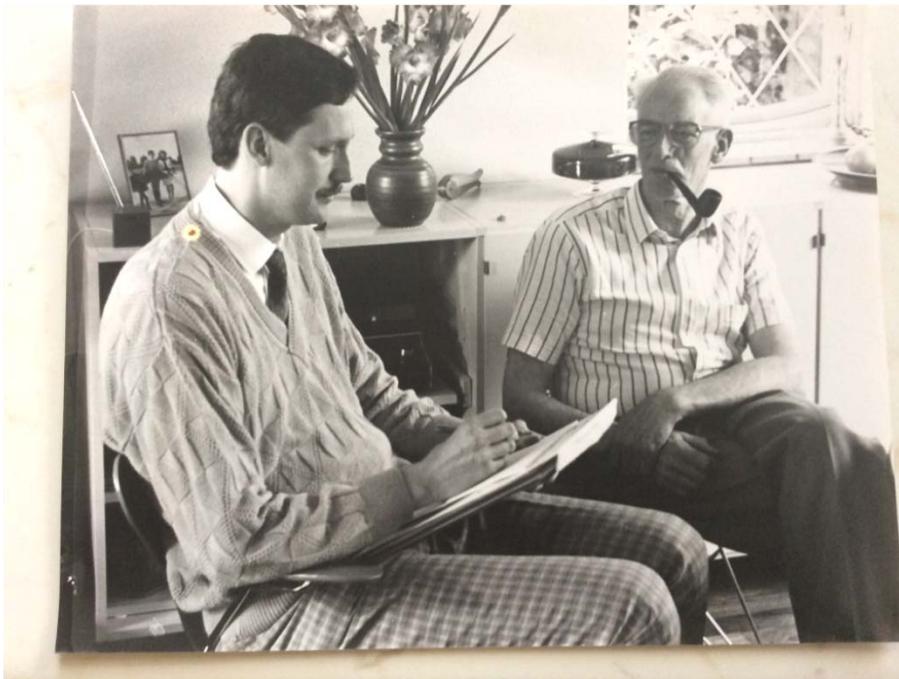
## 2.1 MSc-thesis 1977-78

- *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!

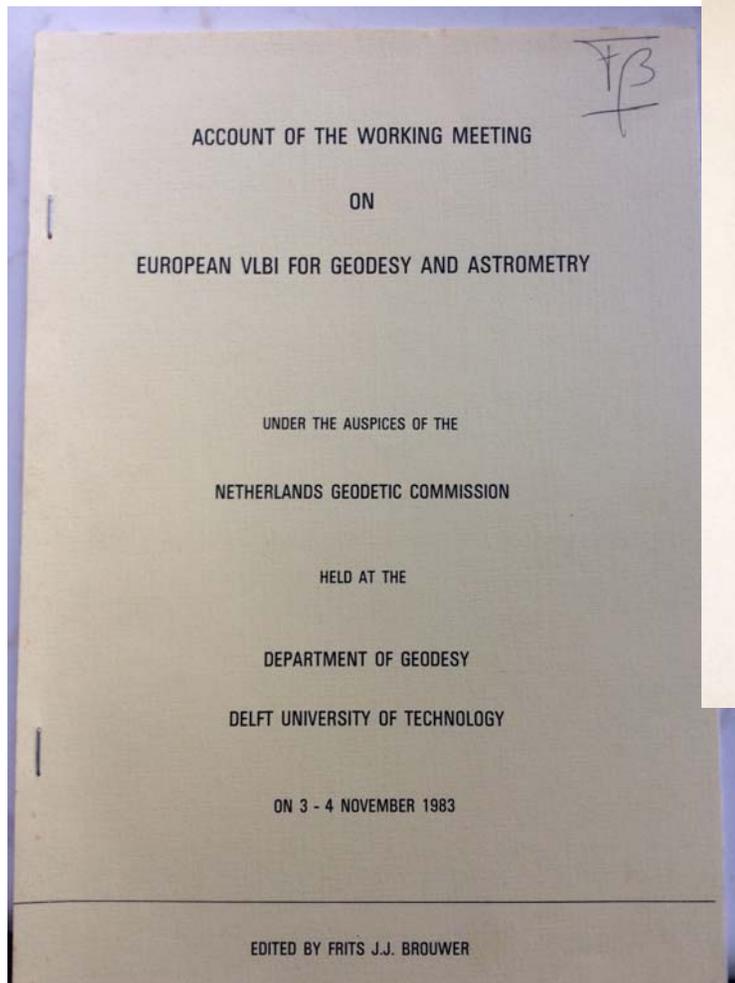


## 2.3 Objectives of PhD research

- *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...”



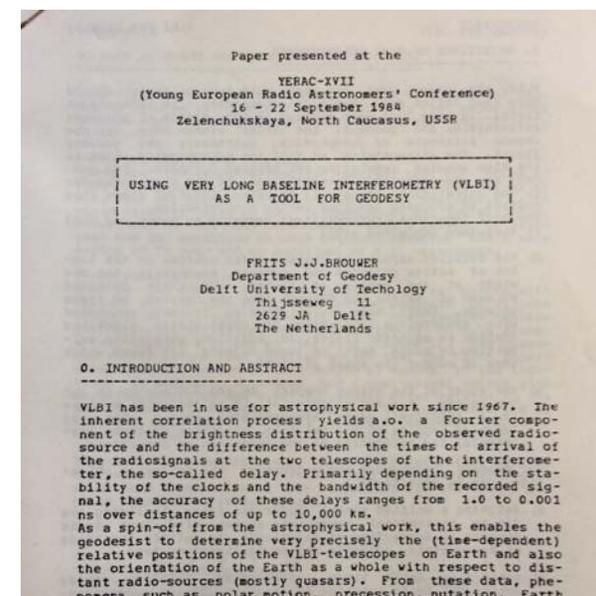
X (Wim)

X (James Campbell, Bonn)

X (Richard Schilizzi)

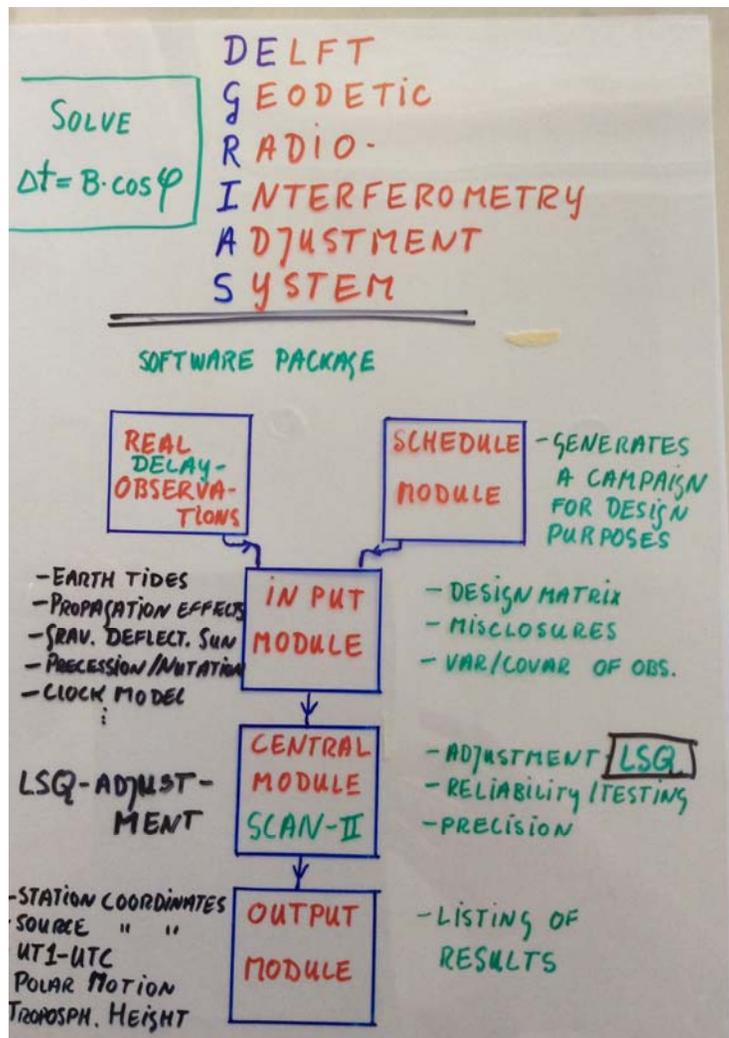
## 2.5 YERAC Meeting Sept. 1984 in Zelenchukskaya

- *The only geodesist present (ever?)*
- *'Sold' the subject as 'calibration' for astronomical VLBI!*





## 2.5 YERAC Meeting Sept. 1984 in Zelenchukskaya (3)



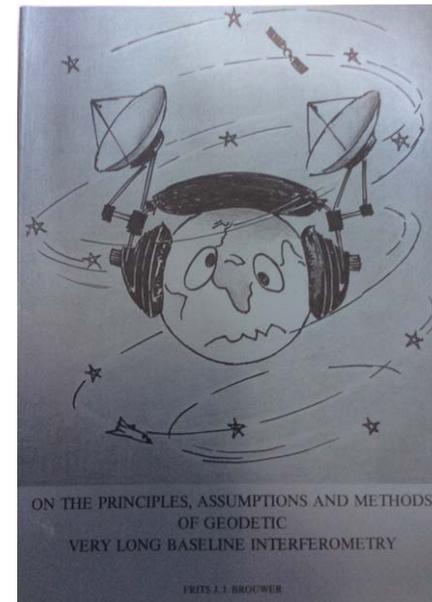
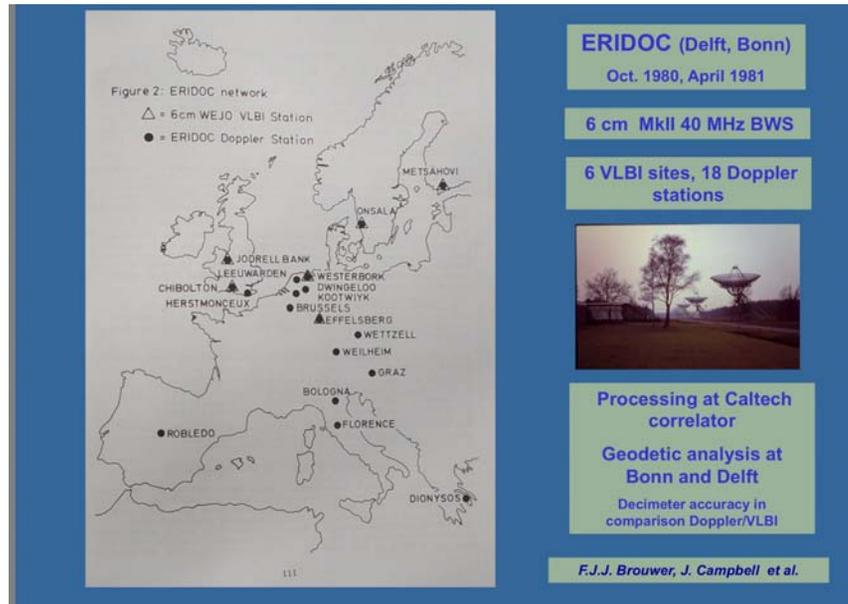
### CONCLUSIONS / Burdakov

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 !!!

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

AND SECONDLY :

## 2.6 Data-analysis campaigns and PhD thesis



Wim  
/

**VLBI in NEDERLAND**

Zes meetcampagnes met Westerbork in kader European VLBI Network (EVN)

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



## 3.1 Geodetic VLBI nowadays... (on a world scale)



### International VLBI Service for Geodesy & Astrometry

Home News

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

#### The objectives of IVS are

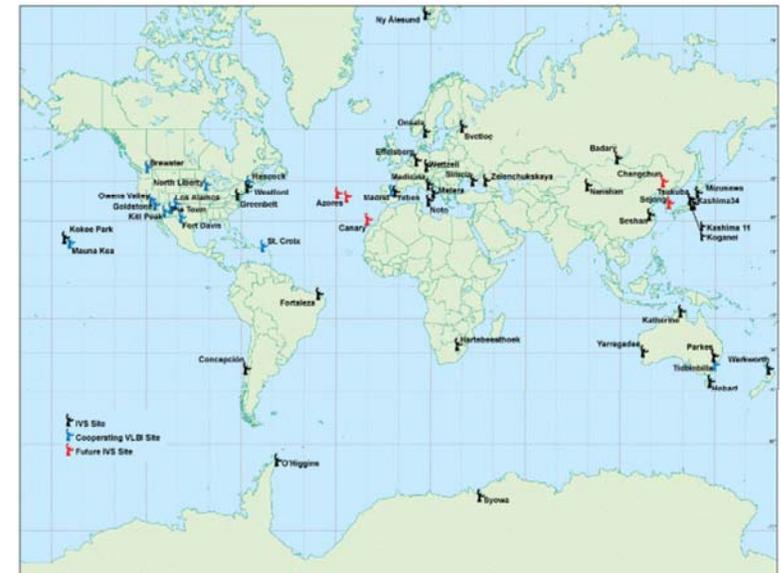
- to provide a service to support geodetic, geophysical, and astrometric research and operational activities;
- to promote research and development activities in all aspects of the geodetic and astrometric VLBI technique; and
- to interact with the community of users of VLBI products and to integrate 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](http://www.ivscc.gsfc.nasa.gov)

## 3.2 Geodetic VLBI nowadays... (on a European scale)

### European VLBI Group for Geodesy and Astrometry

- *The EVGA: European VLBI Group for Geodesy and Astrometry*

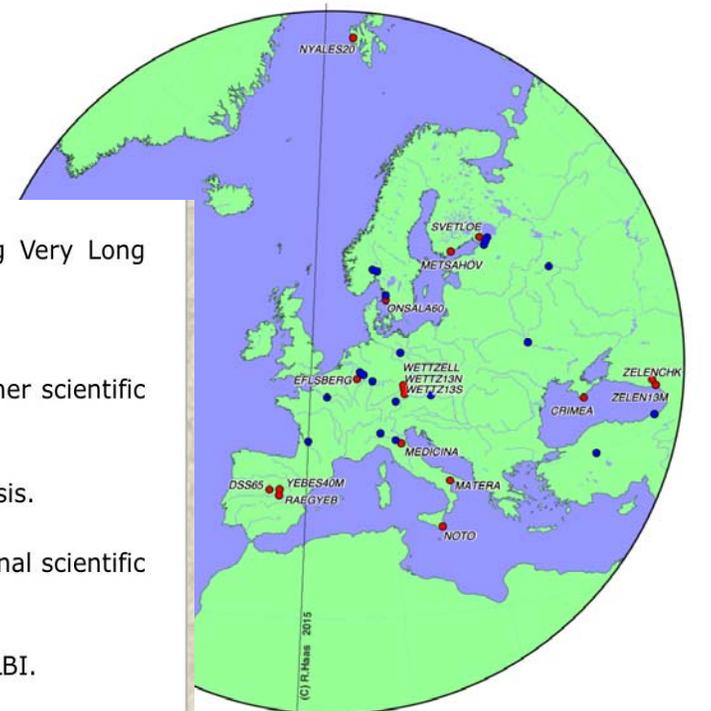
The EVGA as a subgroup of IVS is a group of European scientists working in or supporting Very Long Baseline Interferometry (VLBI) for geodetic and astrometric applications.

The EVGA seeks to

- foster the use of European VLBI resources for deriving high quality reference frames and other scientific results.
- form a link between the different European VLBI components from observations to data analysis.
- promote and represent European geodetic and astrometric VLBI within the broader international scientific communities.
- provide and archive information and scientific results of European geodetic and astrometric VLBI.
- organize regular working meetings.
- 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.



Red dots and European analysis centers (blue dots) for geodetic and astrometric VLBI.

*Sorry to say, now  
no Dutch  
participation!*



## 3.3 Geodetic VLBI nowadays... (on a European scale)

- *Regular meetings!*

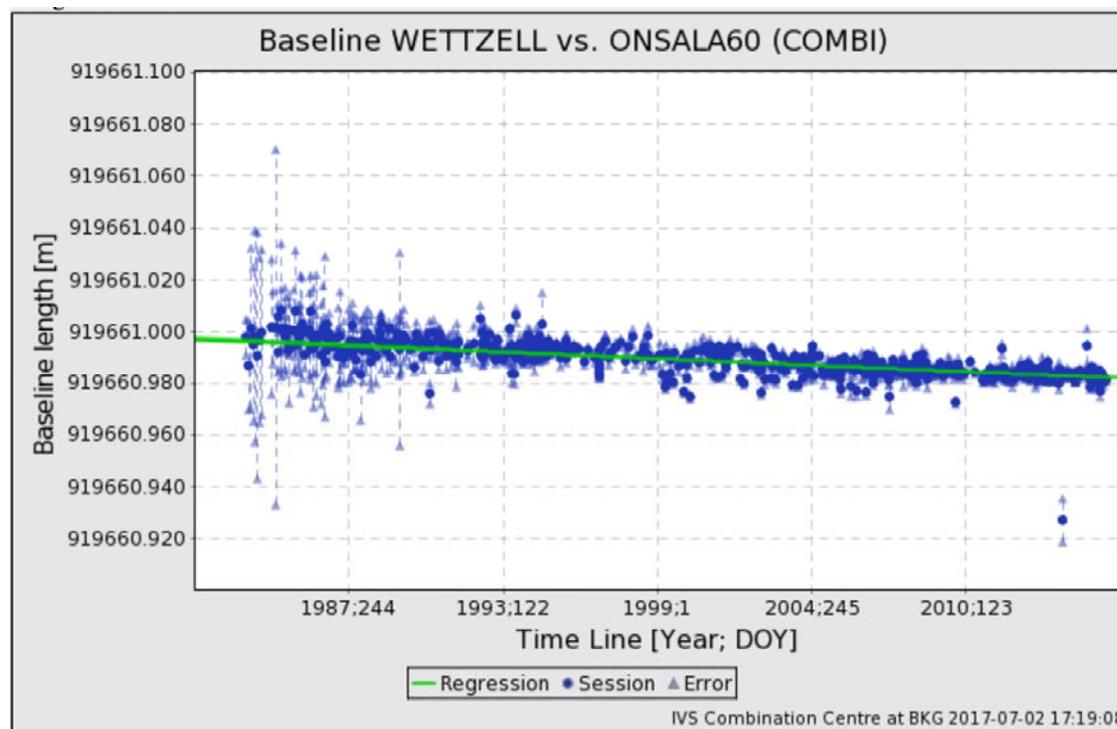
*And results: 0.5 mm/yr shorter*

23rd European VLBI Group for Geodesy  
and Astrometry Working Meeting

14-19 May 2017  
Göteborg, Sweden

Information

May 11, 2017

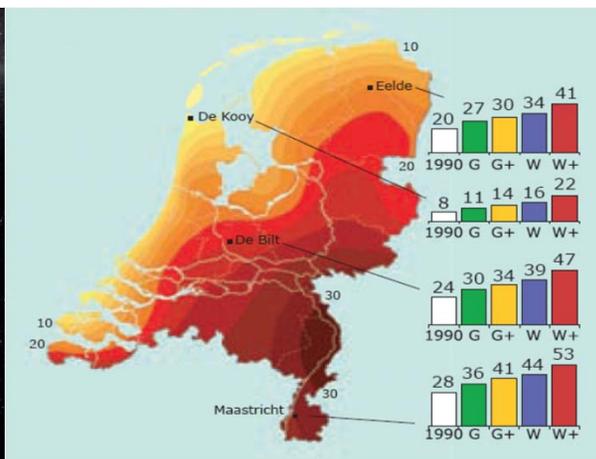


*NB Delft meeting in 1983 was the 3rd!*

*See: [www.EVGA.org](http://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!



TM3DAM analysis  
18-09-02 00utc

KNMI/ESA

