Bundesamt für Kartographie und Geodäsie

# National Report of Germany

*J. Ihde[1], C.-H. Jahn[2], G. Liebsch[1],B. Richter[1], M. Sacher[1],G. Weber[1], H. Wilmes[1]*

*[1] Bundesamt für Kartographie und Geodäsie, BKG, Frankfurt*

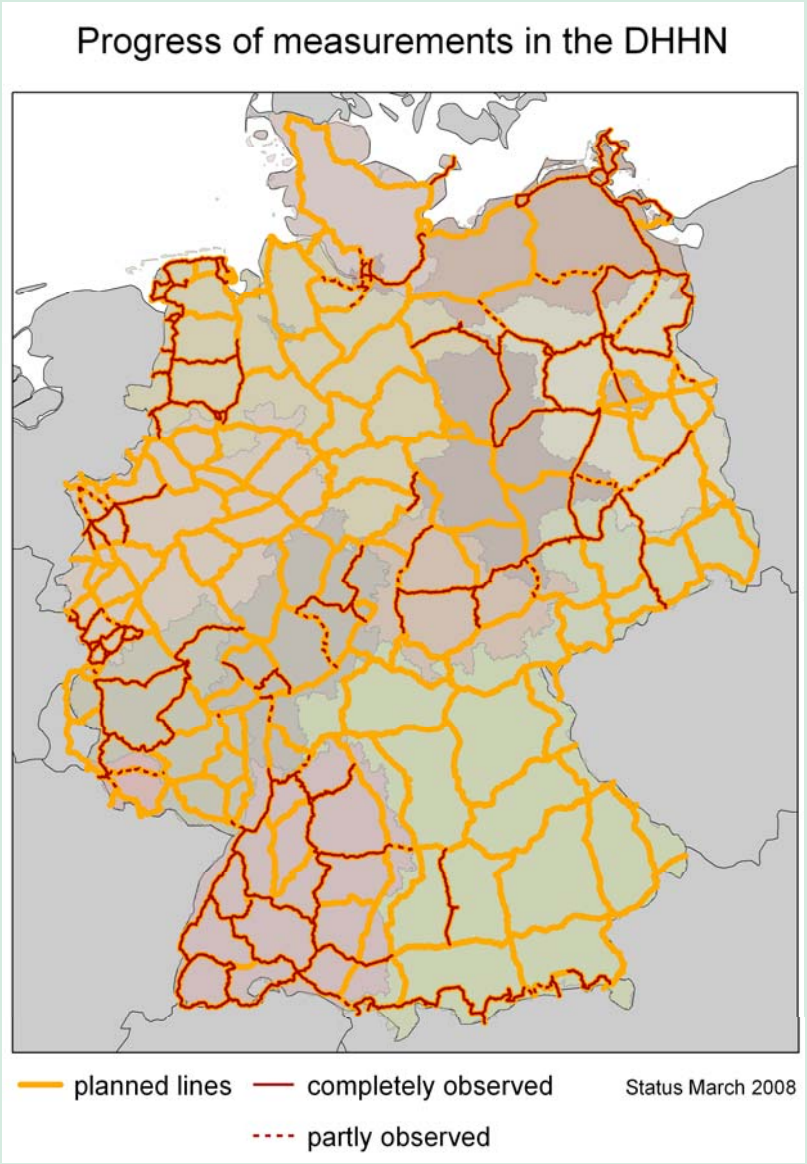
*[2]Arbeitsgemeinschaft der Vermessungsverwaltungen der Länder der Bundesrepublik Deutschland, AdV*

**EUREF Symposium 2008, Brussels**

# Guidelines of Integrated Spatial Reference

- **Nationwide uniform homogeneous network of control stations, consisting on:**
  - Geodetic Fundamental Network (ETRS89/DREF91)
    - objective: realization of 3D spatial reference and integration of spatial reference, physical heigth (1.O.) and gravity (1.O)
    - max. distance of the stations: 30 km
    - maintenance of topicality by permanent or periodical control survey
  - Leveling network 1. O. (DHHN92, DHHN2006-2011)
  - Gravity network 1. O. (DSGN94, DHSN96)
  - Network of RTK Reference Stations (Satellite Positioning Service **SA*POS*®** /DREF91)
- **if necessary: Densification of the control stations by the Federal States**

# DHHN 2006-2011 - Modernization of the 1.Order leveling network

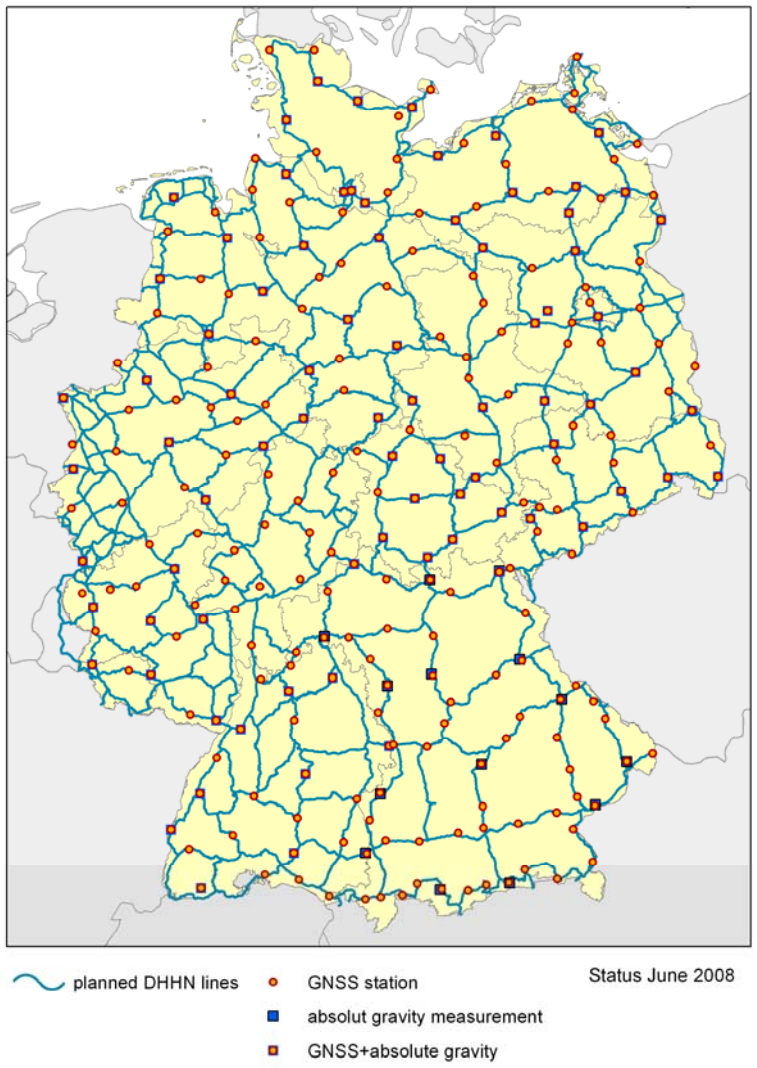



## Leveling network combined with GNSS and Absolute Gravity

- Measurements between 2006-2011
- 21 000 km leveling planned
- March 2008: 7 600 km have already been measured (36%)
- 250 GNSS stations
- 100 absolute gravity stations

Bundesamt für Kartographie und Geodäsie

# DHHN – Height network combined with gravity and geometry




- 250 GNSS stations
  - Observation in May/June 2008
  - 34 surveying crews
  - 18 sessions
  - 2 X 24 h observation
  - 2 receiver types (17 LEICA, 17 TRIMBLE)
  - individual robot controlled calibration of all antennas+near field
  - uniform technical equipment
  - aim: precision position < 2 mm, height < 5 mm
  - 2 analysis centers (different software)
  - GNSS stations will be part of the Geodetic Fundamental Network
- 100 Absolute Gravity stations
  - Observation planned for 2008/2009

# FS Wettzell – Contribution to the Global Geodetic Reference System


- International VLBI Service for Geodesy and Astrometry (IVS)
- Replacement of old 20m-radiotelescope by a modern twin-telescope - planning is completed
- International Laser Ranging Service (ILRS) – observing of distances to satellites 365 days a year
- New laser ranging system is established – observation nearly automatically
- Optimizing of the previous system for distance measurements to the moon and high flying GNSS satellites