

NATIONAL REPORT OF POLAND TO EUREF 2007

Jan Krynski

Institute of Geodesy and Cartography, Warsaw

Jerzy B. Rogowski

Warsaw University of Technology, Warsaw



Symposium of the IAG Subcommittee for Europe
European Reference Frame – EUREF 2007
London, UK, 6-9 June 2007

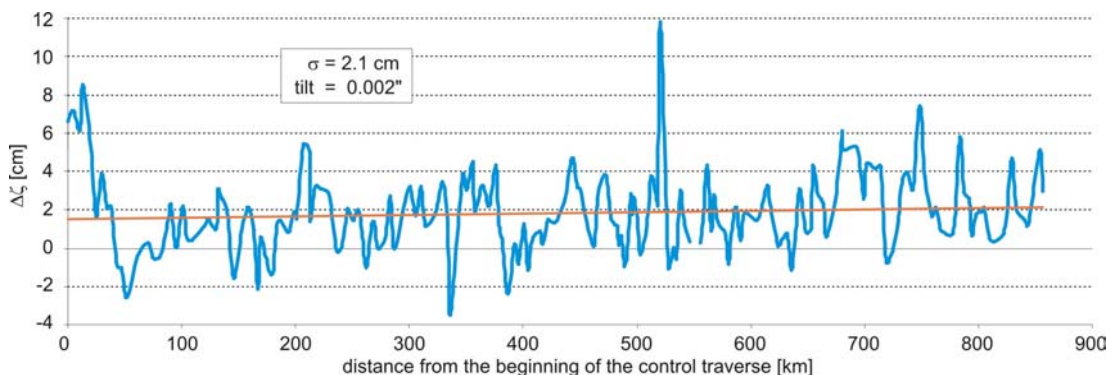
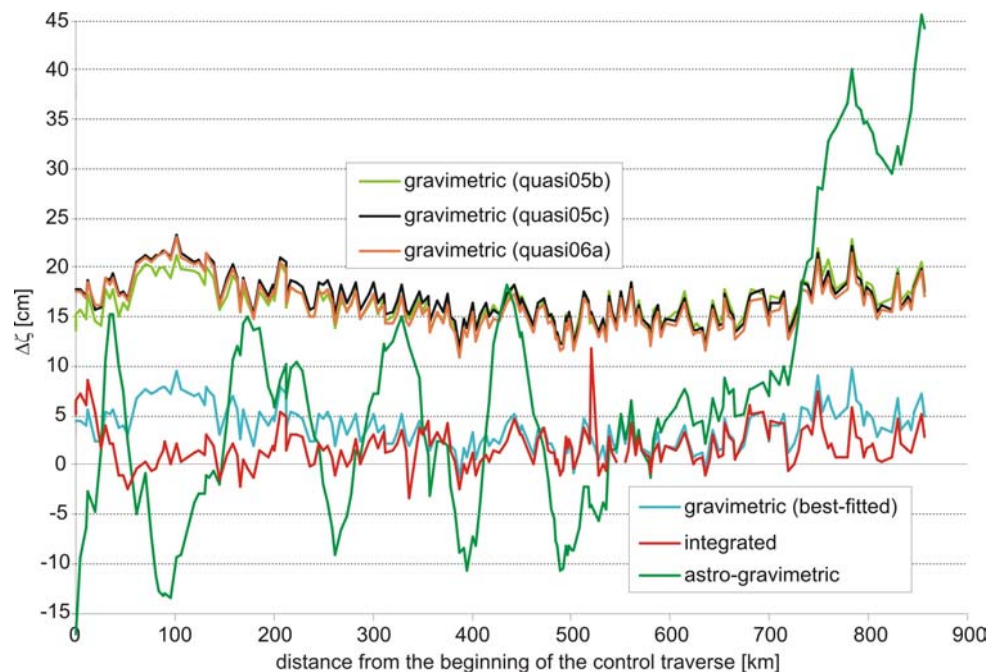


Main geodetic activities at the national level in Poland since 2005

- modelling a **cm geoid model** in Poland,
- maintenance of the national **gravity control**,
- investigations **of vertical crustal movement**,
- operational work of **permanent IGS/EUREF stations**,
- data processing at **Local Analysis Centre at WUT**,
- activity within **EUREF-IP project**,
- GNSS **antenna calibration**,
- monitoring of **ionosphere** and ionospheric storms,
- the **ASG-EUPOS** network in Poland,
- **local GNSS** networks,
- activity in **SLR**.

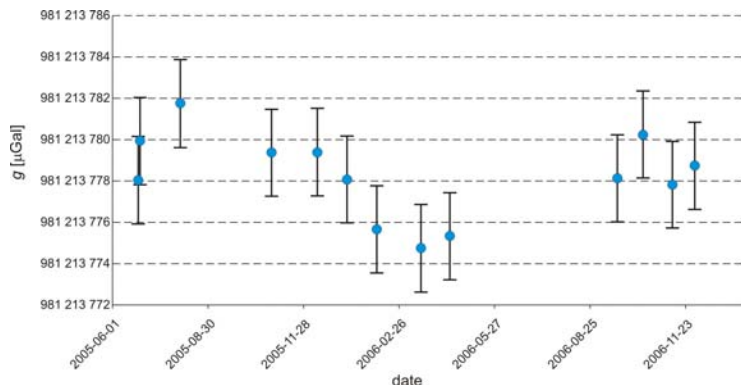
Modelling a cm geoid for Poland

fit of **astro-gravimetric** geoid,
gravimetric quasigeoid,
best-fitted quasigeoid,
integrated quasigeoid
to the **GUGiK 2001** quasigeoid



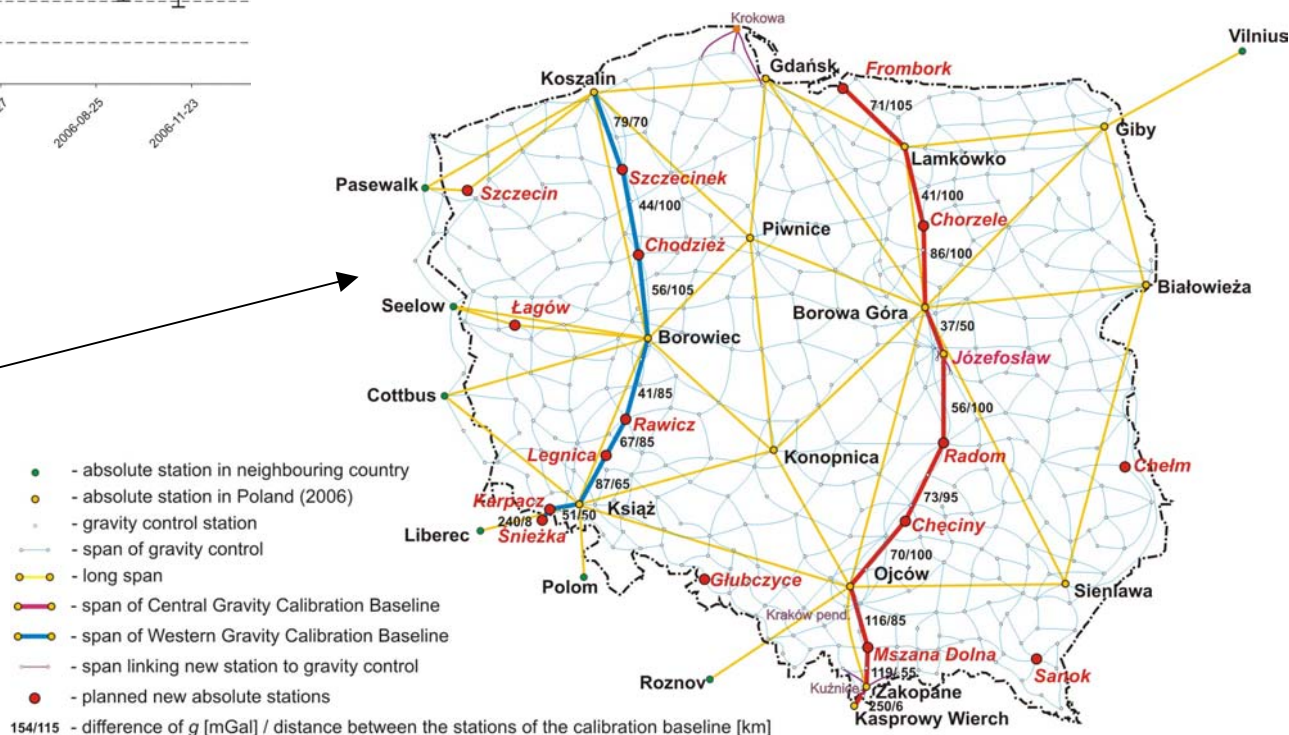
integrated quasigeoid
vs. GPS/levelling traverse

Maintenance of national gravity control



absolute gravity measurements at Jozefoslaw

modernised gravity calibration baseline in Poland (2006 – project)



Operational work of permanent IGS/EUREF stations

EPN stations in Poland (2006):

- Borowa Gora (BOGI)
- Borowa Gora (BOGO)
- Borowiec (BOR1)
- Cracow (KRAW)
- Jozefoslaw (JOZE)
- Jozefoslaw (JOZ2)
- Katowice (KATO)
- Lamkowko (LAMA)
- Wroclaw (WROC)
- Zywiec (ZYWI)



Stations participating in EUREF-IP project:

Borowa Gora (BOGI)
Cracow (KRAW)
Jozefoslaw (JOZ2)
Wroclaw (WROC)



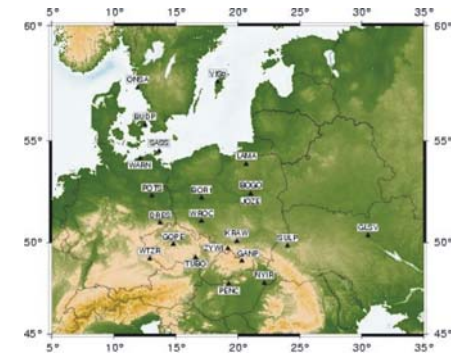
Data processing at LAC at WUT

Data from 58 EPN stations
- routinely processed



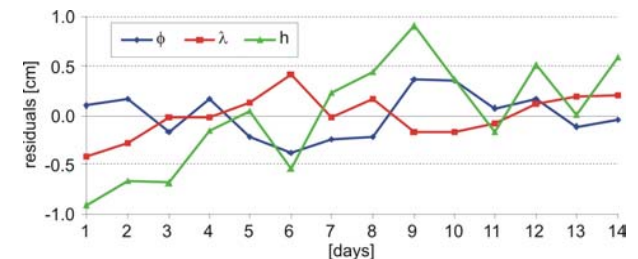
**Fully automatic system for ZTD
estimation in Near Real Time**
- operates since fall 2006

Test NRT campaign stations



OGPSP system of on line GPS data processing
for individual users is accessible by
<http://ogpssp.gik.pw.edu.pl>
since November 2005

Test results of PPP data processing to be
implemented in OGPSP service

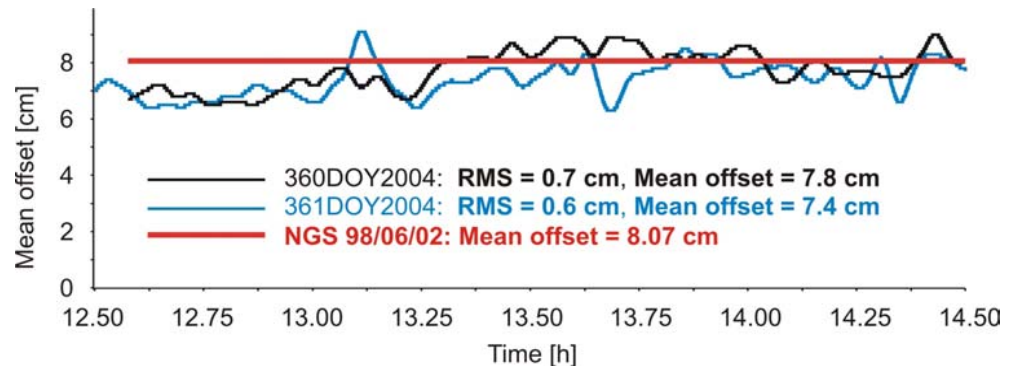


GNSS antenna calibration

The prototype of antenna calibration device tested in Borowa Gora
(*Institute of Geodesy and Cartography, Warsaw; Institute "Metrologia", Kharkiv*)



**Mean offset
determination**



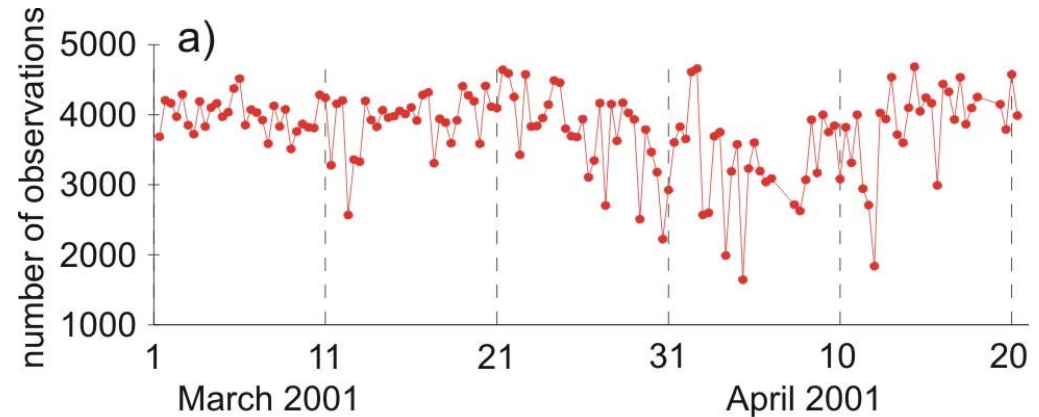
Symposium of the IAG Subcommittee for Europe

European Reference Frame – EUREF 2007

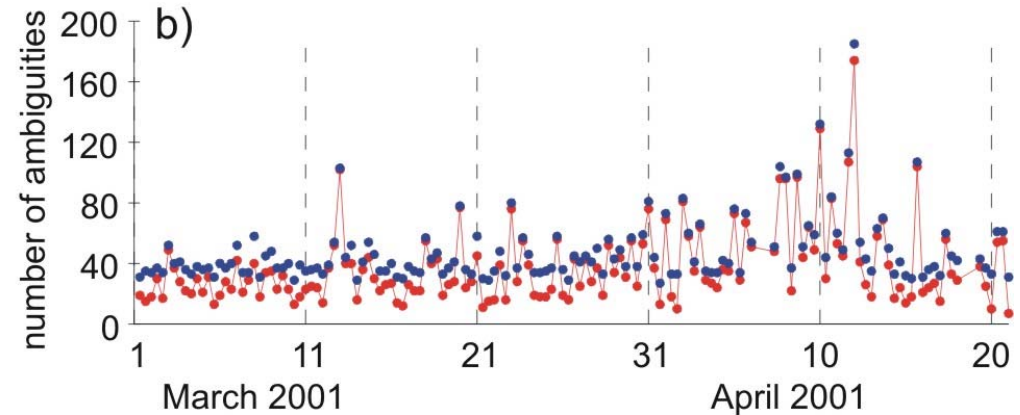
London, UK, 6-9 June 2007

Monitoring ionosphere and ionospheric storms

Total number of observations of double-differences



Total number of all ambiguities (blue circles), and unresolved ambiguities (red circles) for CAS1-MCM4 vector in March-April 2001



Symposium of the IAG Subcommittee for Europe

European Reference Frame – EUREF 2007

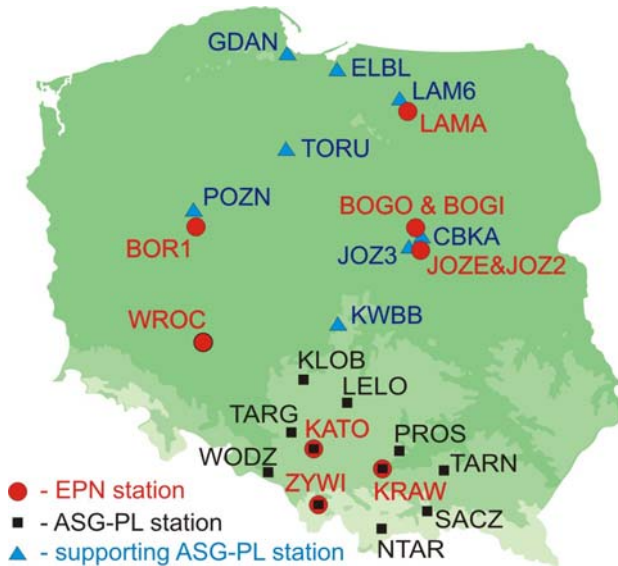
London, UK, 6-9 June 2007

ASG-EUPOS network in Poland

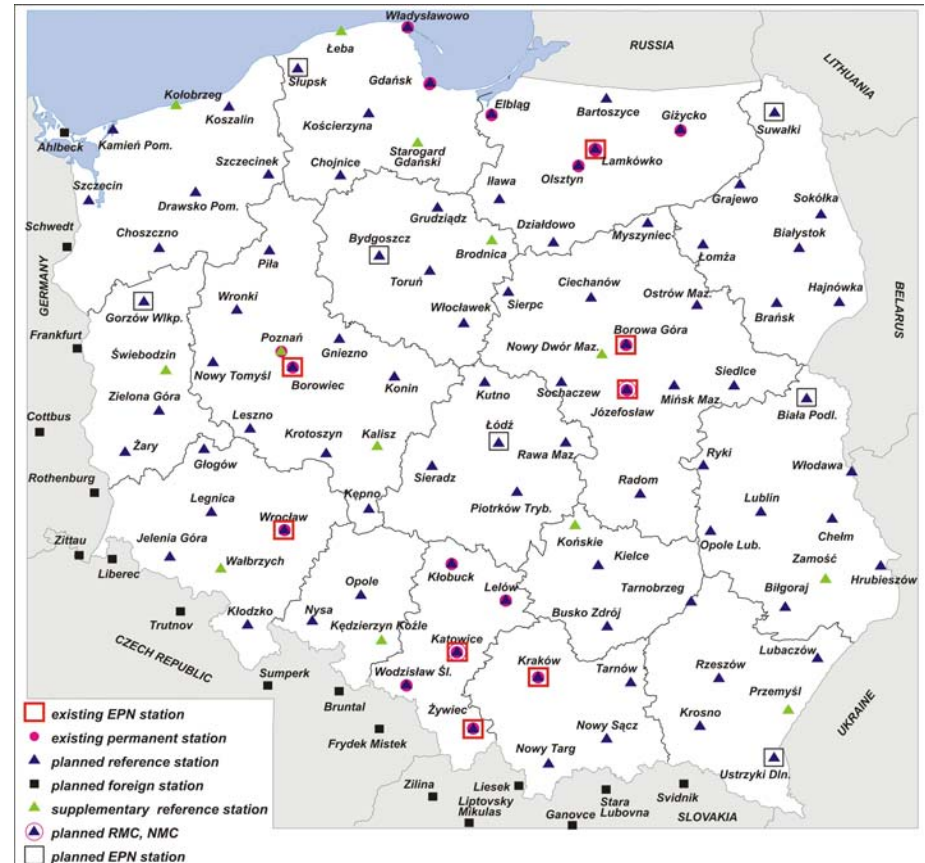
**Polish Active
Control Network
for Upper Silesia
and Malopolska
region operating
in 2007**



ASG-PL stations and collaborating stations (end of 2006)

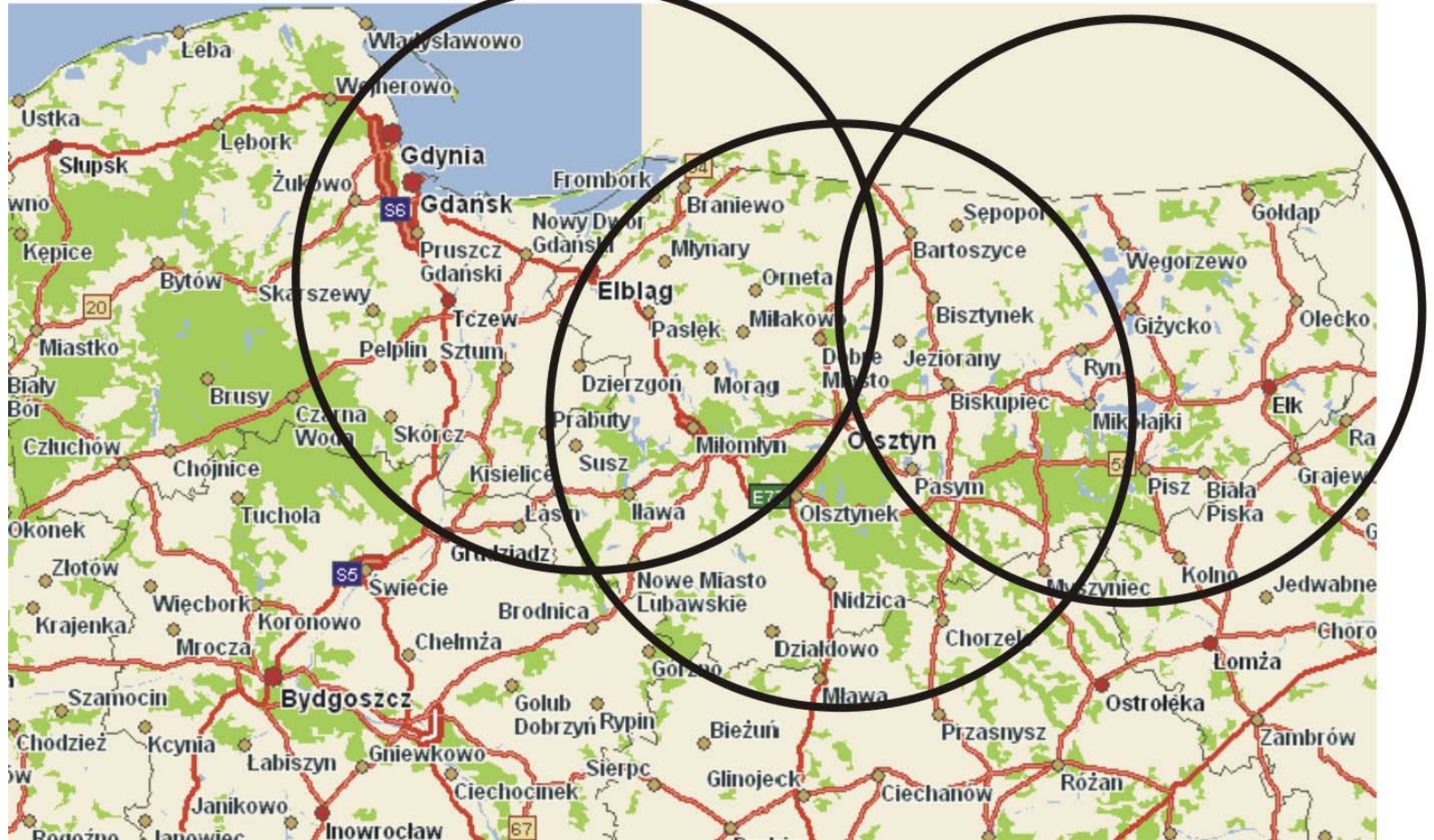


Reference stations (87) of the Polish part of the EUPOS network



Local GNSS networks

Network of 3 reference stations and theoretical range of the DGPS/RTK services in North-East Poland



Symposium of the IAG Subcommittee for Europe

European Reference Frame – EUREF 2007

London, UK, 6-9 June 2007

Satellite Laser Ranging

Borowiec station operates within ILRS and EURULAS

in 2006:

- ~**900 successful passes** of **24 SLR satellites** with the normal point precision of 4 mm and accuracy of 15 mm
- **new transmitting telescope & system for change of the laser beam divergence**
 ➡ GLONASS, Etalon, GPS & GIOVE-A (Galileo) satellites laser ranging
- determination of **satellite spin parameters** of LAGEOS-1, Gravity Probe-B, Ajisai and Etalon
- determination of the **positions and velocities** of all SLR stations for 1999-2004
- determination of **SLR station positions** from Starlette and STELLA satellites
- **orbits calculation** of the low satellites: Starlette, STELLA, CHAMP and Ajisai