



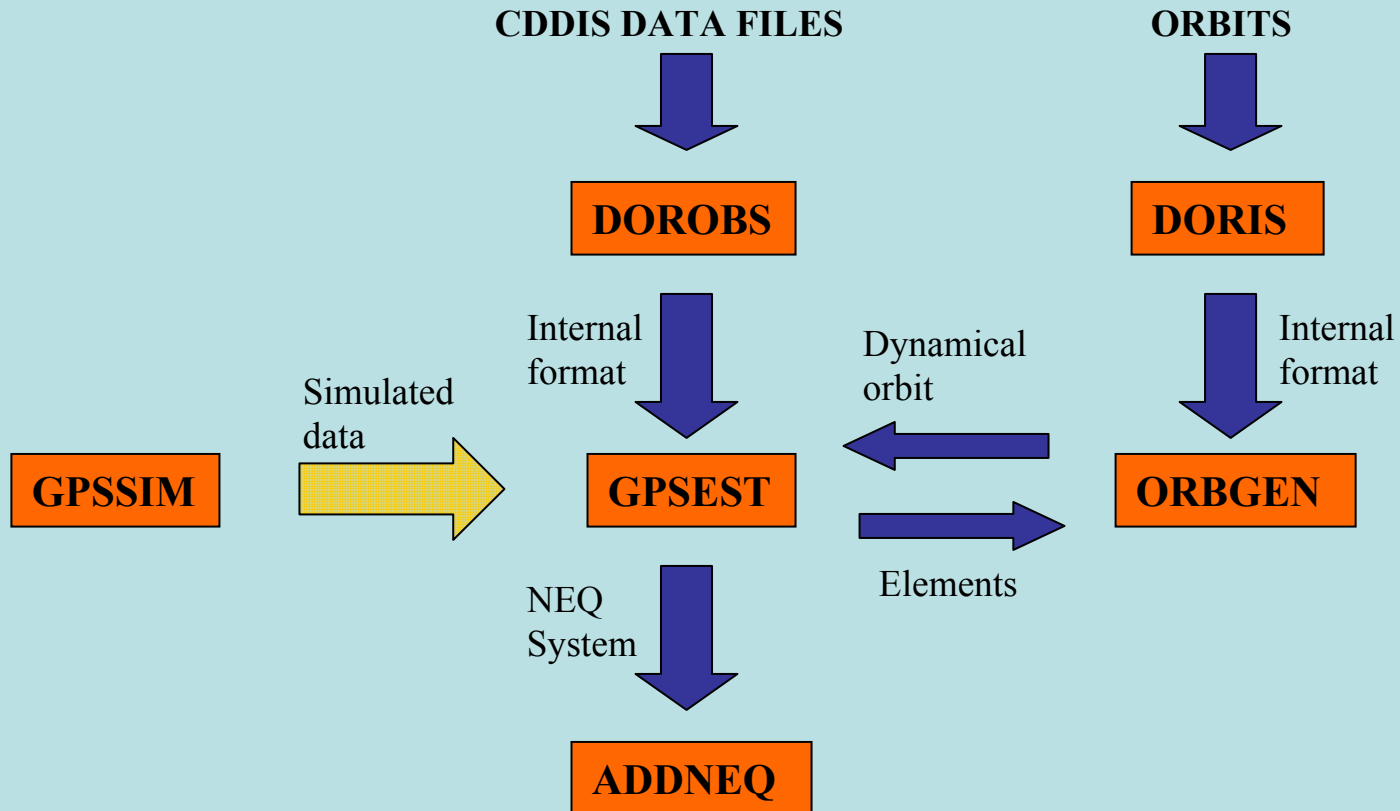
DORIS data processing with Bernese GPS Software at GOPE: tests, initial results and future prospects

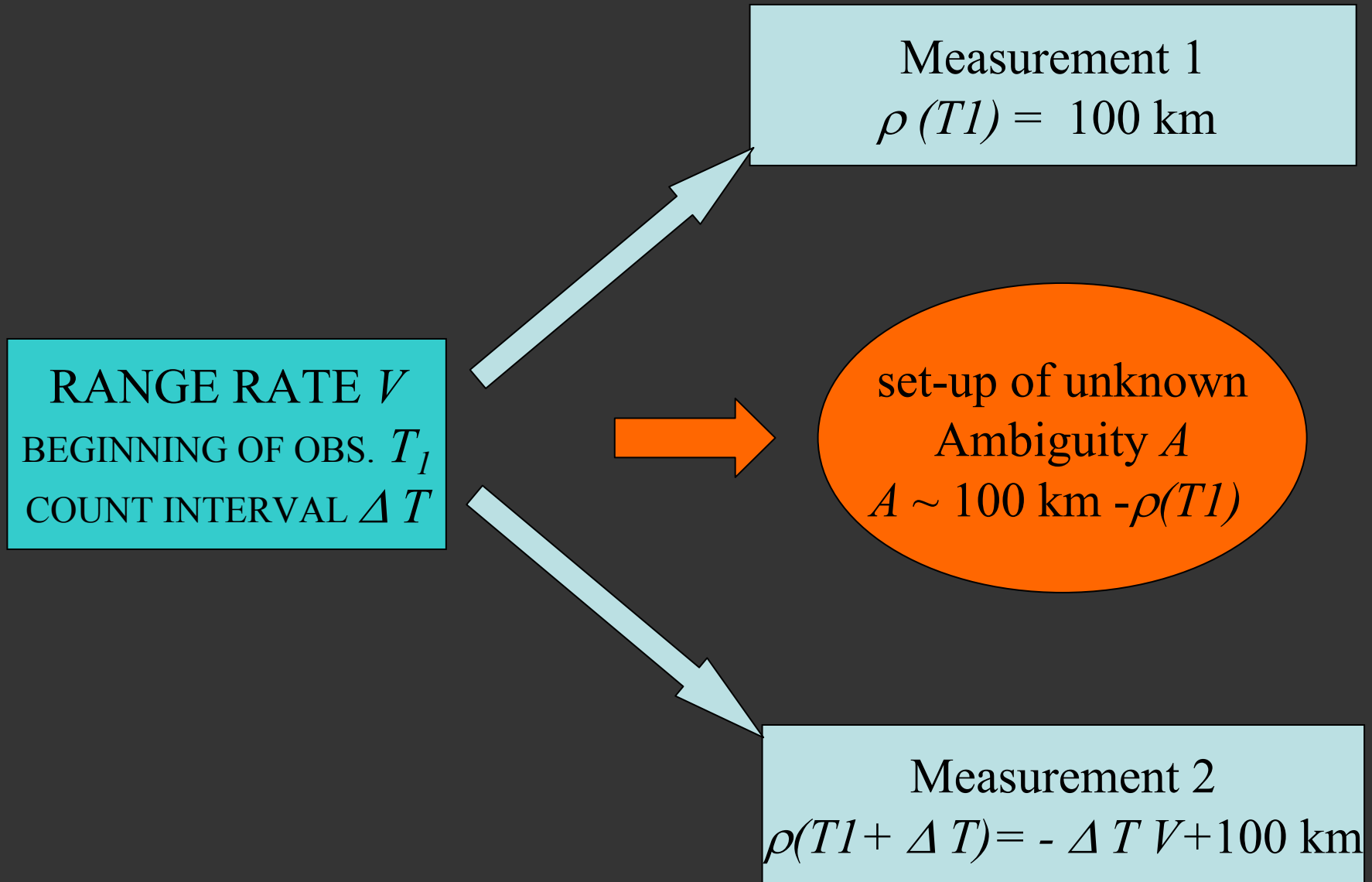
Petr Štěpánek, GOPE, Czech rep.

Urs Hugentobler, AIUB, Switzerland

Karine Le Bail, IGN, France

DORIS in Bernese software





Tests

- **processing with fixed POE orbit (network estimation)**
- **processing with fixed network (orbit estimation)**
- **low constrained solution (network, EOP)**

used data: CDDIS, format 2.1, September 2004

Data processing with fixed orbit

- **CDDIS troposphere corrections or Estimated troposphere**
- **Mutual comparison of monthly mono-satellite solutions: Spots and Envisat 1-2 cm, Spot and Topex 2-3 cm. Higher differences in East component In the case of Estimated troposphere (3 cm, 5 cm in the case of Topex).**
- **Comparison with ITRF2000 CDDIS tropo N 2.8 cm E 2.1 cm U 1,6 cm
Estimated tropo N 3,0 cm E 3.4 cm U 2.3 cm**
- **Scale vs. ITRF2000: Topex -9 ppb, spots around -5 ppb, Envisat -3 ppb**

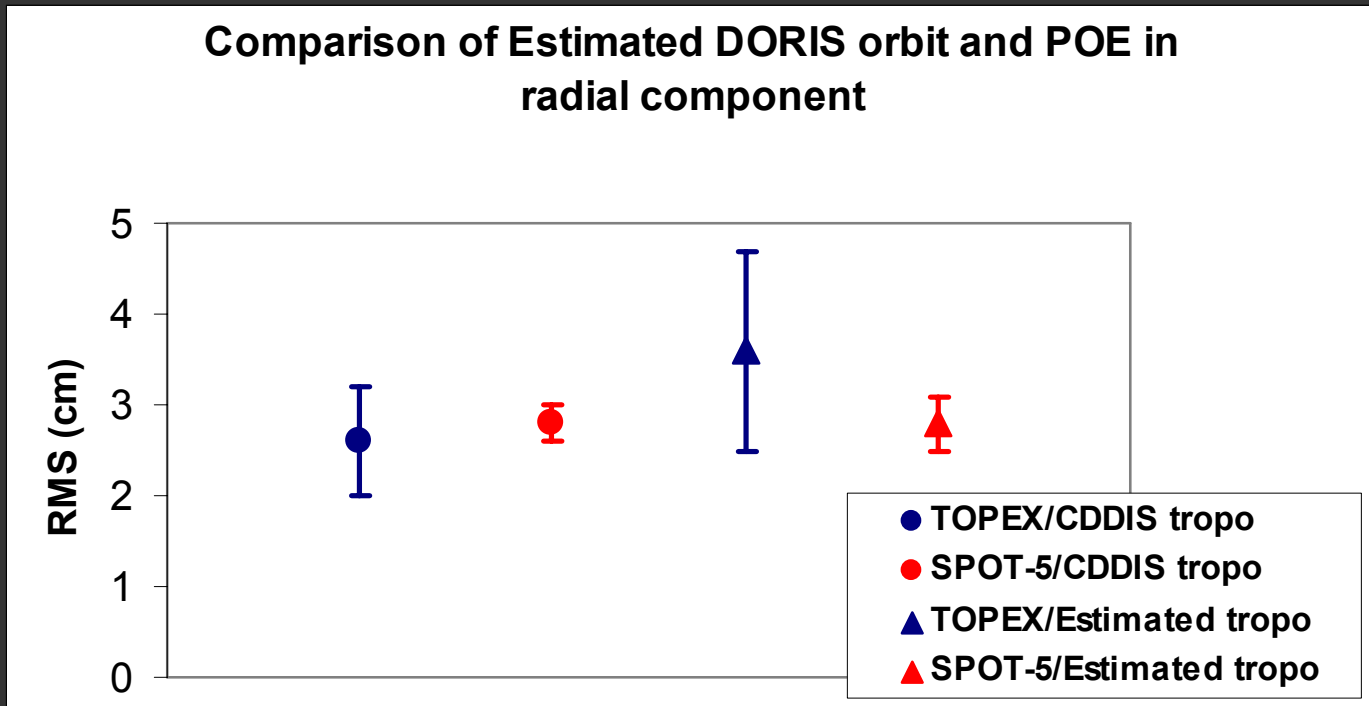
Orbit estimation

- Fixed network
- Troposphere - CDDIS corrections X estimated
- Reduced dynamical (GPS) model
- No exact models for non-conservative forces
- 9 Empirical parameters (3 constant + 6 harmonic)
- Stochastic parameters (set per 15 min, constraints $\sim 10^{-5}$ m/s)

Topex, Jason - radial

Spots, Envisat - radial, along track, out of plane

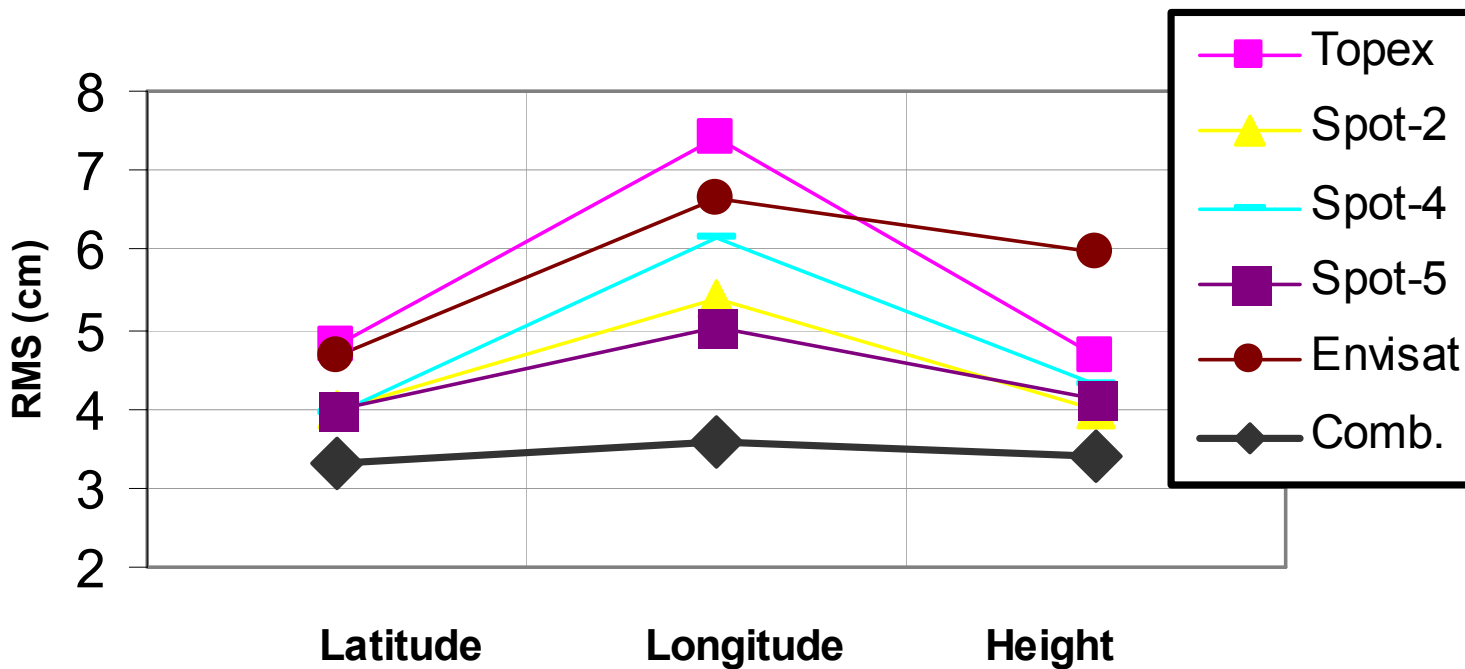
Comparison with POE



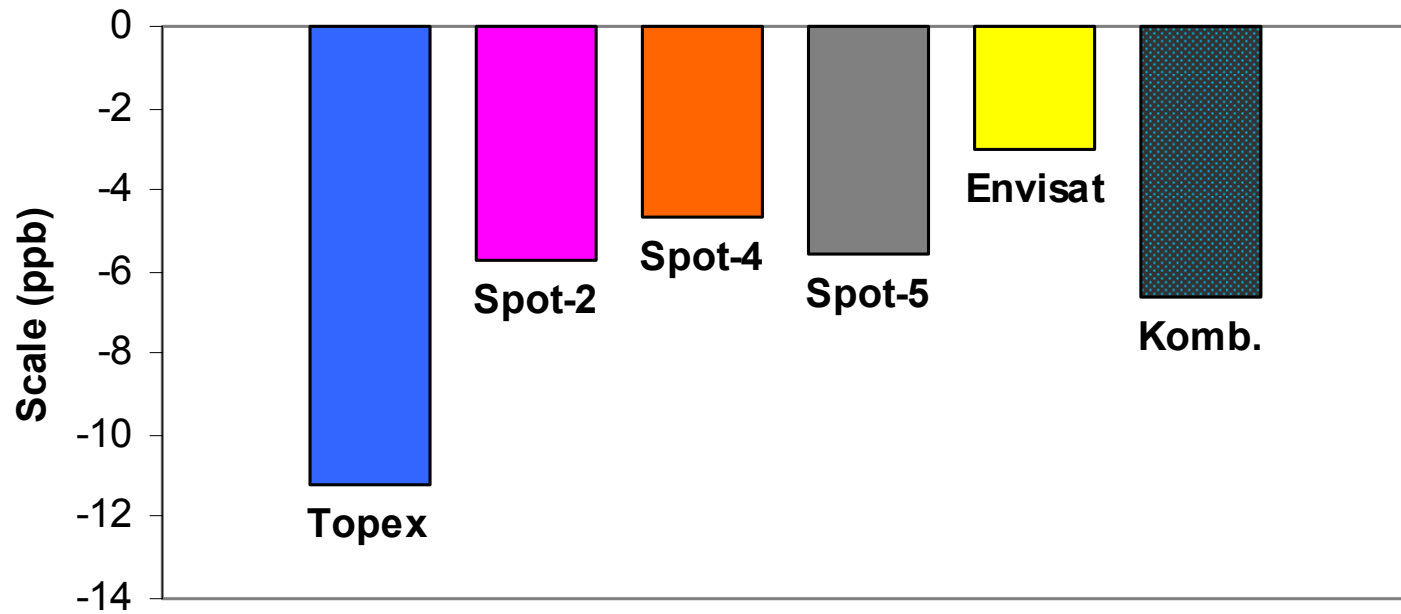
Low constrained solution

- 3 weekly solutions
- 5 satellites (except Jason)
- 10 m network constraints, ITRF2000 apriori
- comparison with corresponding IGN/JPL and LCA solutions
- Estimated: Network, Xpole, Ypole
- Preliminated: Orbit, Beacon frq. offset, Troposphere ZTD

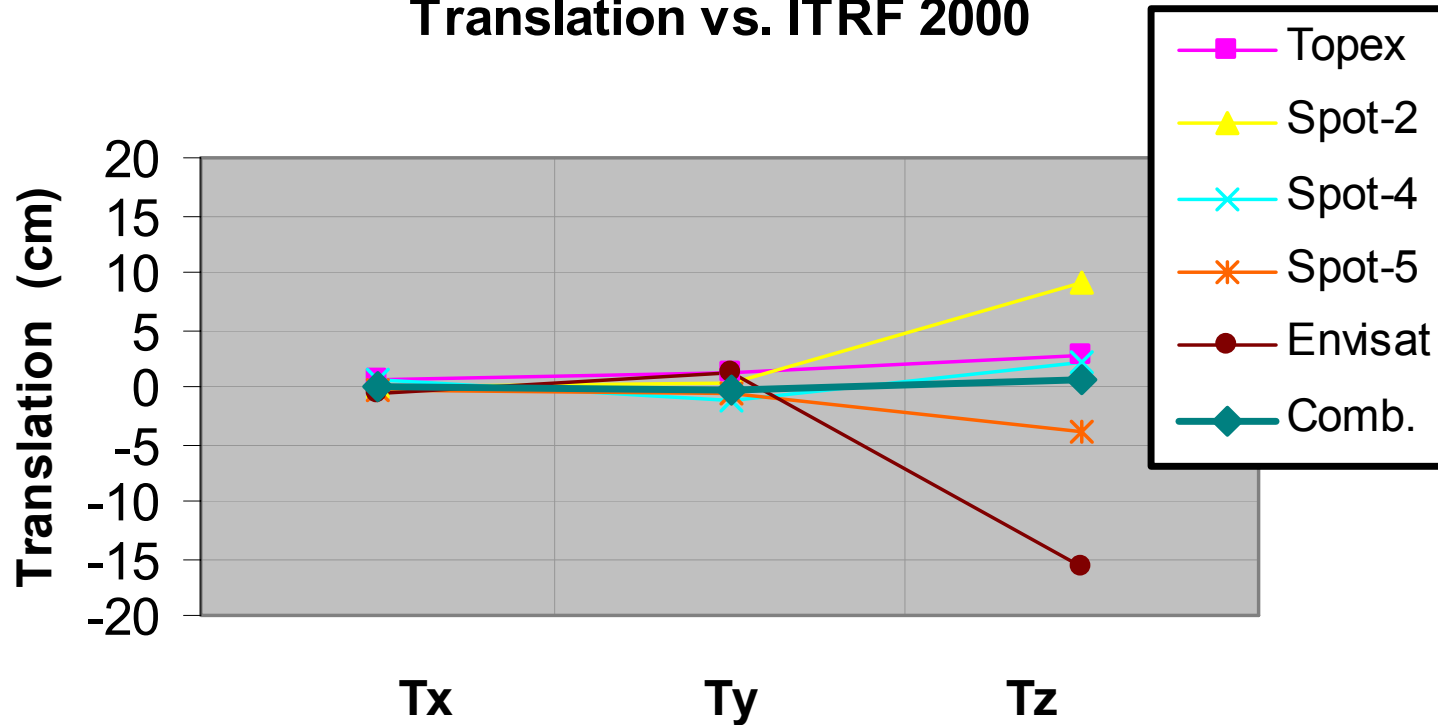
Coordinates comparison with ITRF 2000



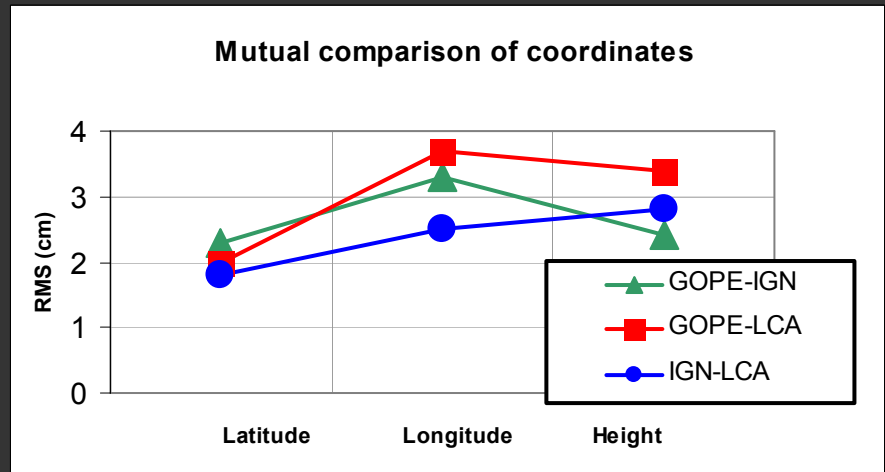
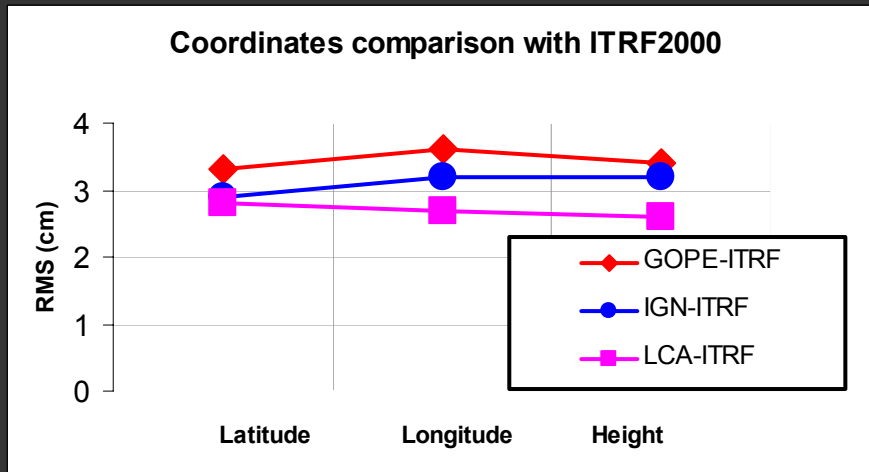
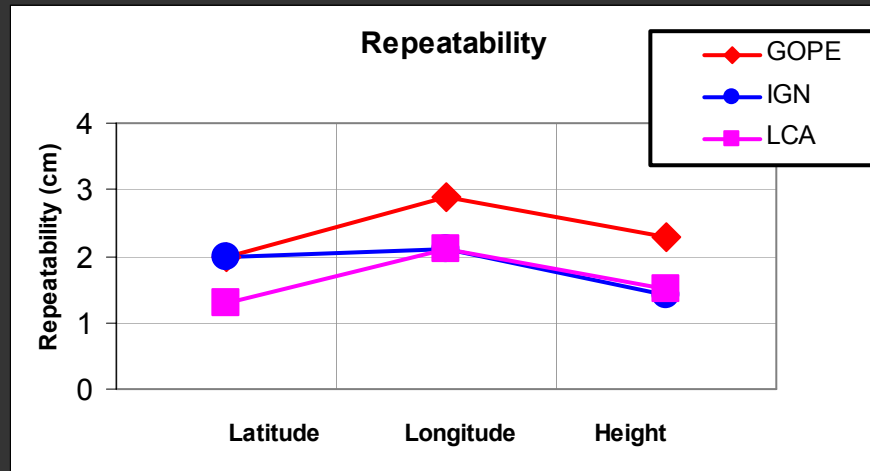
Scale vs. ITRF 2000



Translation vs. ITRF 2000

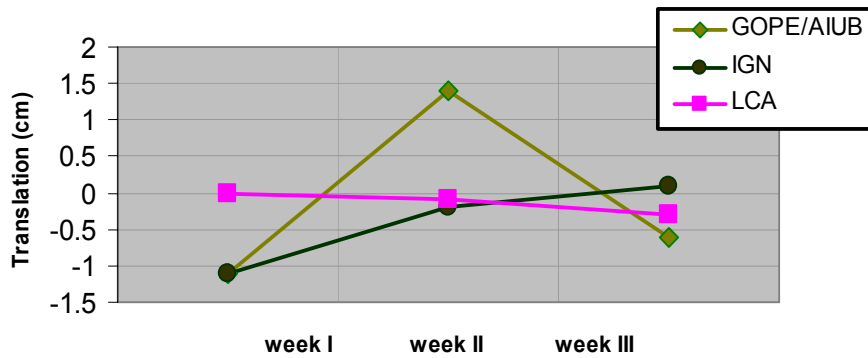


Comparison of the network estimation results with current IDS results

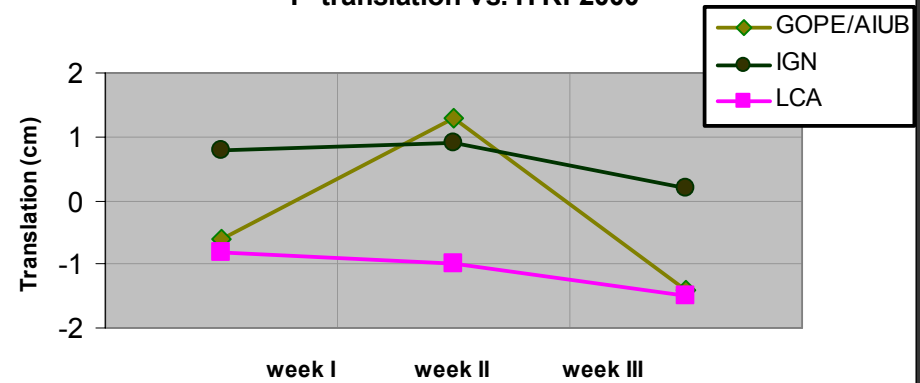


Translations vs. ITRF2000

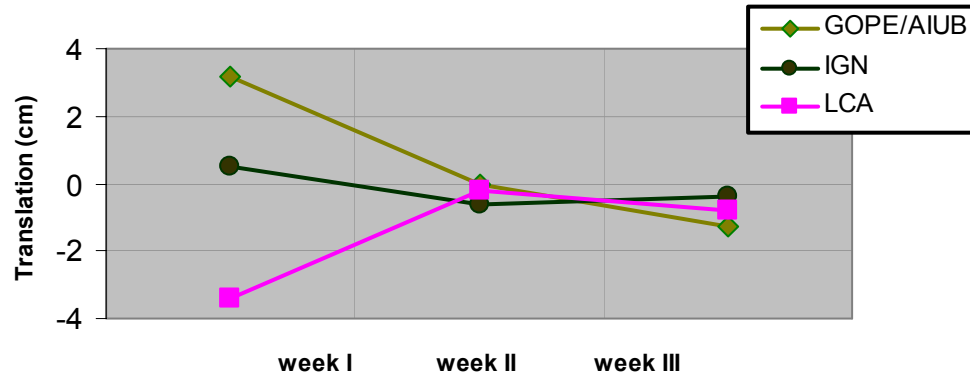
X- translation vs. ITRF2000



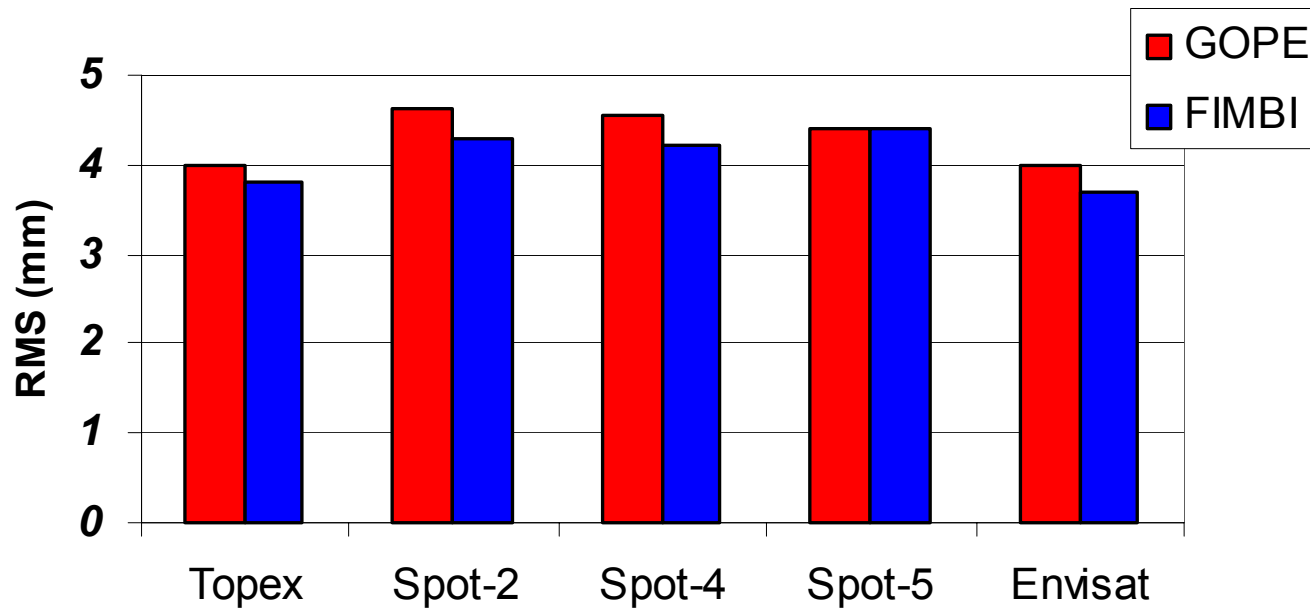
Y- translation vs. ITRF2000



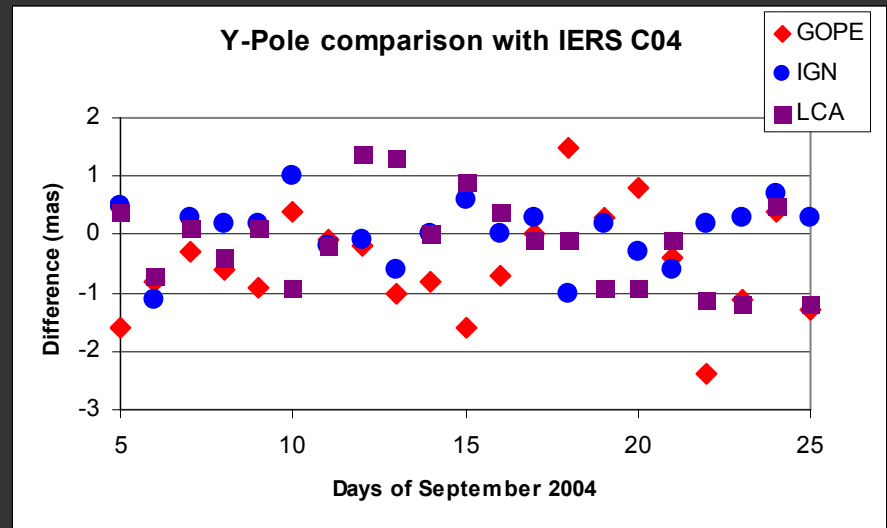
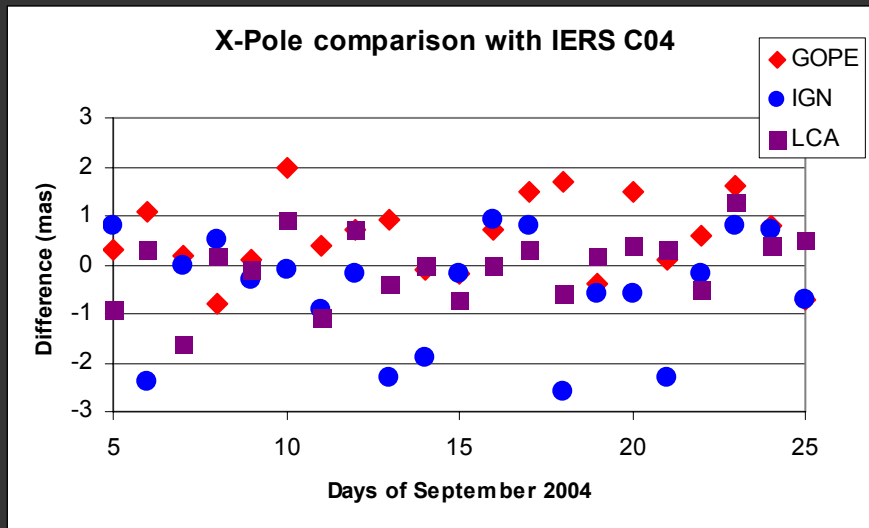
Z- translation vs. ITRF2000



A posteriori RMS of observations



Comparison of the pole estimation results with current IDS results



Outlook

- **Several technical steps**
- **Semi-automatic data processing**
- **Processing of longer data time-series**
- **Routine data processing, weekly and/or monthly solutions.**
- **Orbit model improvement**

