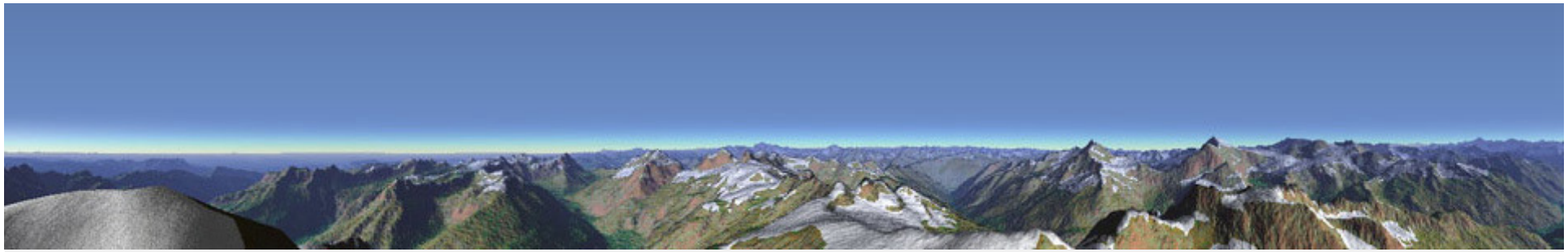

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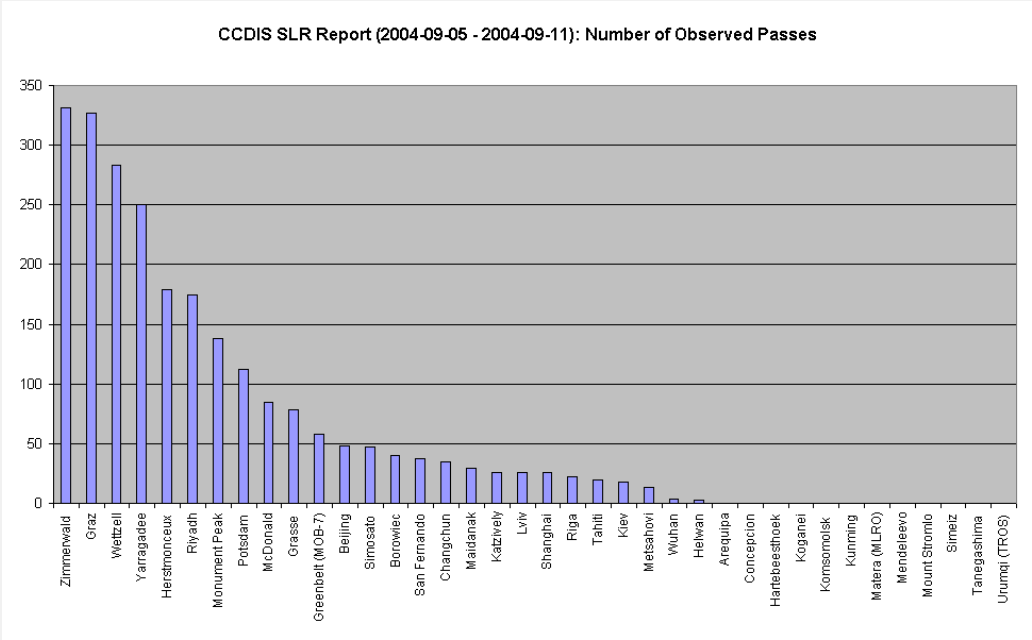
D. Schneider
U. Marti
E. Brockmann
A. Schlatter
B. Vogel
A. Wiget
U. Wild

Bundesamt für Landestopographie
Office fédéral de topographie
Ufficio federale di topografia
Uffizi federal da topografia

EUREF'05: National Report of Switzerland

Fundamental station Zimmerwald

SLR: Co-operation between AIUB and swisstopo, top 10 in the world-wide rating of ILRS, 2 wavelength satellite tracking



GNSS: Permanent GPS (Trimble 4700) and GLONASS (Ashtec Z18, Javad Legacy) tracking

Gravity: Repeated FG5 measurements, permanent tidal gravimeter (ETHZ)

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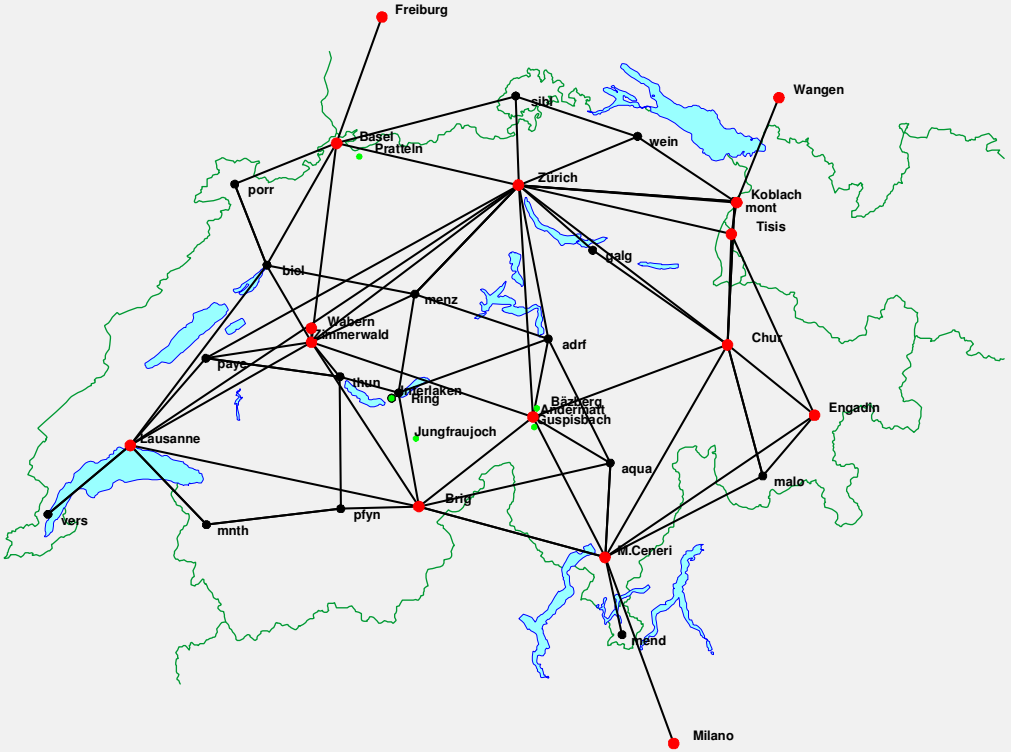
Gravity Field and Geoid

Concept for a new National Gravity Network LSN2004 with FG5 measurements on selected stations (0 order), re-observation of relative gravity (1st / 2nd order), new network adjustment



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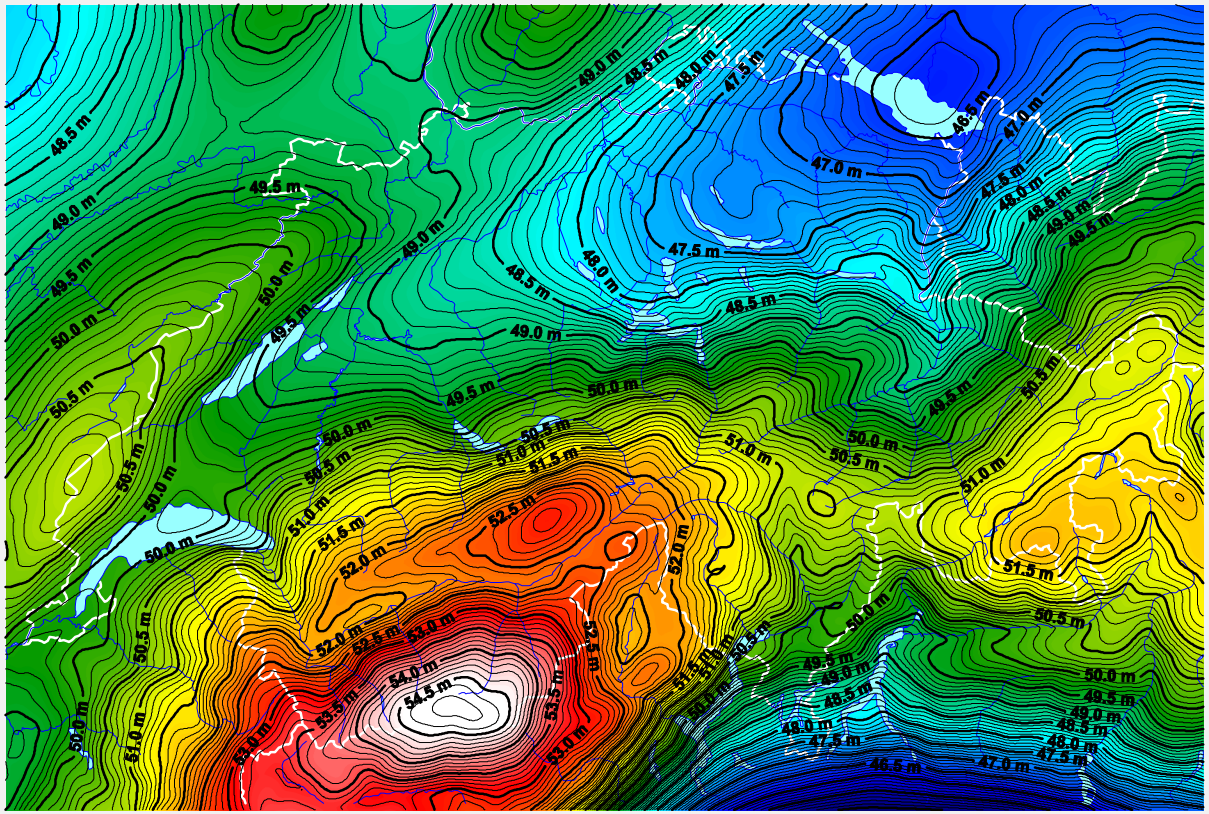
Gravity Field and Geoid

New National Geoid Model CHGeo2004 from gravity, vertical deflections, and GPS/levelling. Models used: Swiss DHM25 (level2), SRTM-3, global geopotential, 3D density model etc.



There is a poster which covers this in detail *[Schlatter et al., 2005]*.

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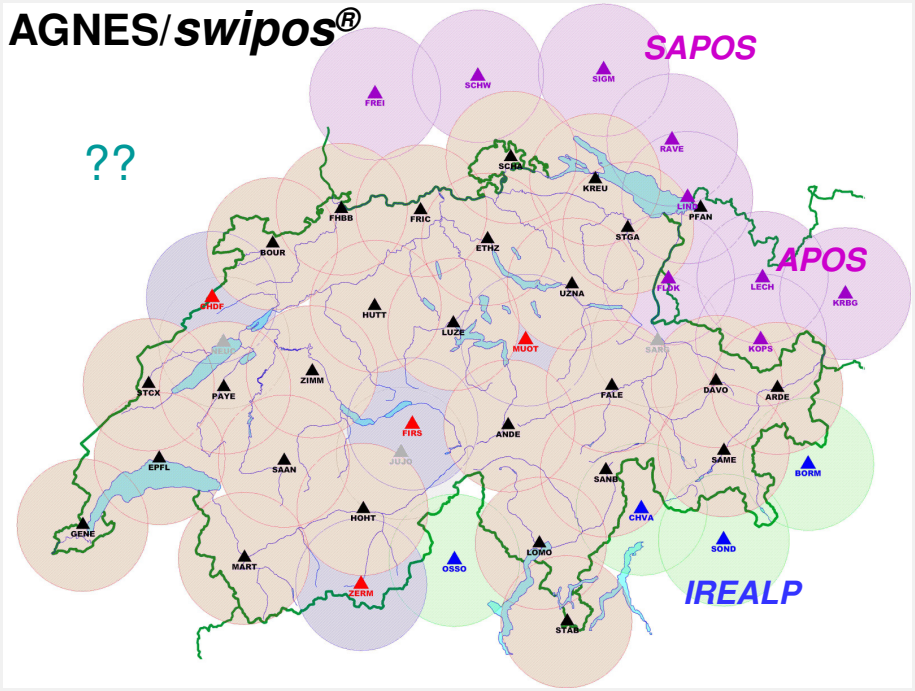
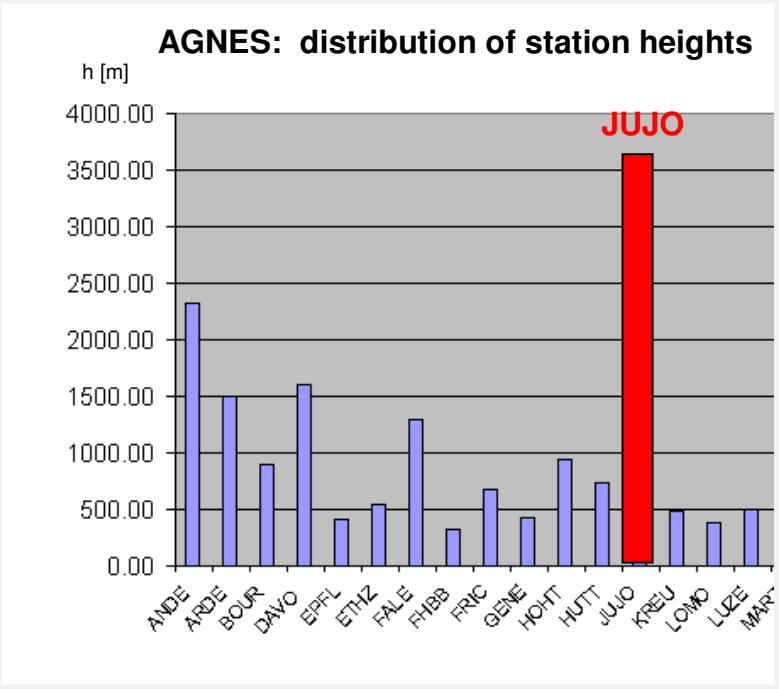
Permanent GPS Network AGNES

- Multi-purpose network (real-time positioning, national reference network, monitoring tectonic movements, collecting ZTD's for atmosphere research)
- Optimization concept (sites on stable ground, extension towards border area to Germany, Austria and northern Italy, replacing Station JUJO for positioning service swipos-VRS)





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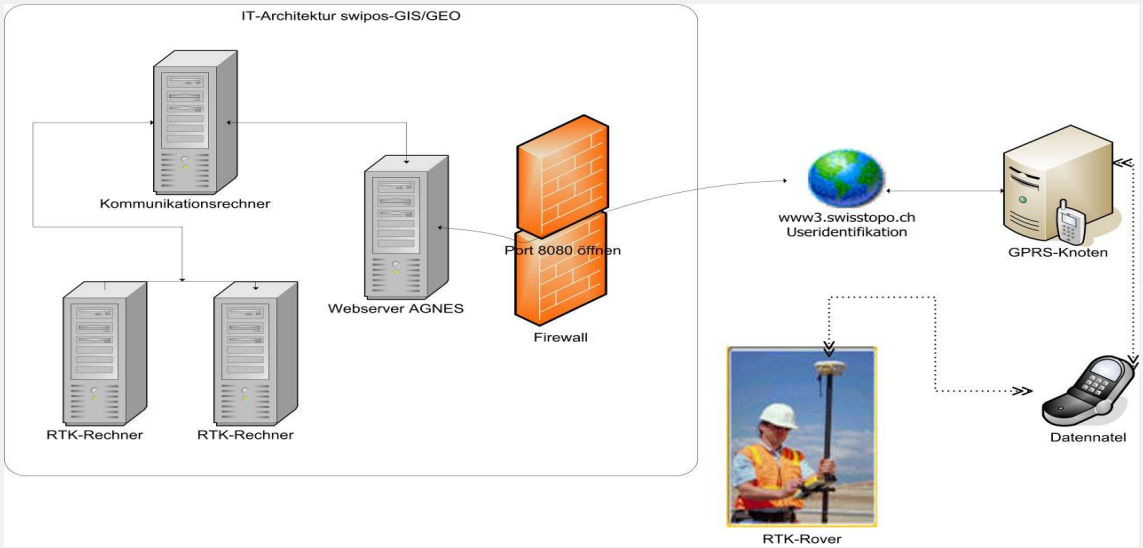
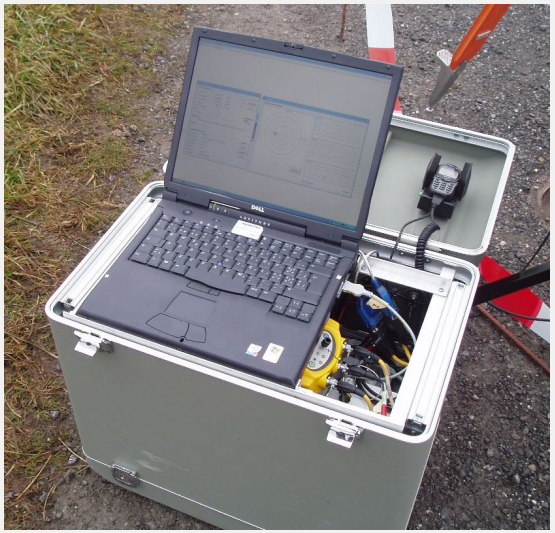
Real time positioning service „swipos“

- New AGNES control center (placed in “demilitarized zone”, secure operation with redundant servers)
- DGPS service swipos-Nav now available free of charge over Internet or GSM (GPRS/NTRIP) replacing FM/RDS
- Precise positioning swipos-GIS/GEO over the Internet (GPRS/NTRIP)
- Integrity monitoring using a device for assessing VRS/RTK





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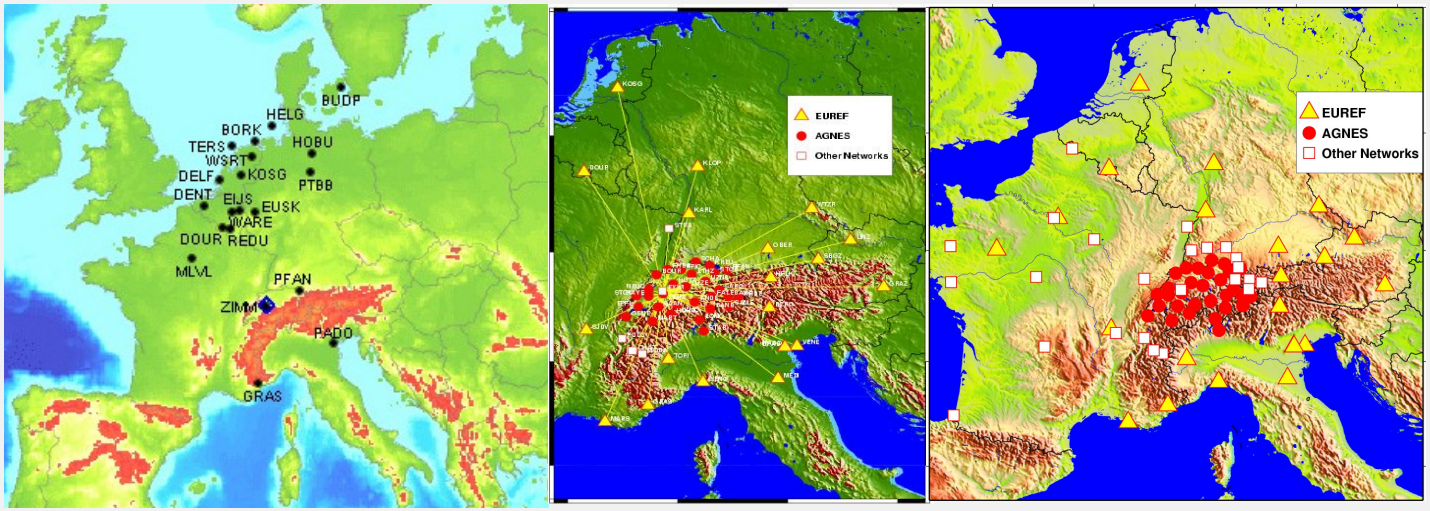
Analysis of permanent GPS networks

Subnetwork	Availability	Application
EUREF Subnetwork	100 % daily	Referenzrahmen Europa
AGNES + EUREF Subnetwork	100 % daily	Referenzrahmen Schweiz
AGNES + Teilnetz EUREF	98 % hourly	numerical weather prediction

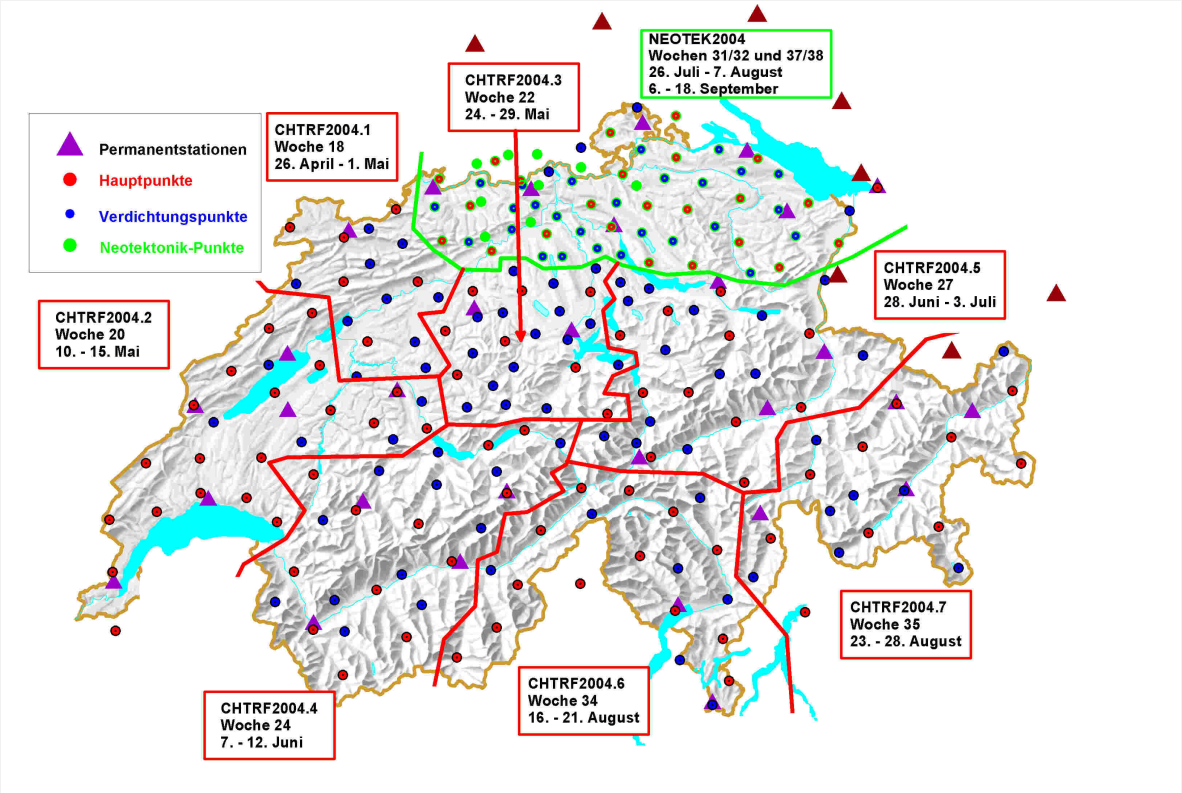


There is a paper which covers this in detail *[Schaer et al., 2005]*.

GPS Meteorology: European collaboration in research projects COST-716,TOUGH

National Reference Frames

Re-observation of the GPS reference network LV95 in 2004 ->CHTRF2004 (more than 288 stations, including 60 control points of the monitoring net-work “Neotektonik Nordschweiz”)



There is a paper which covers this in detail *[Brockmann et al., 2005]*.

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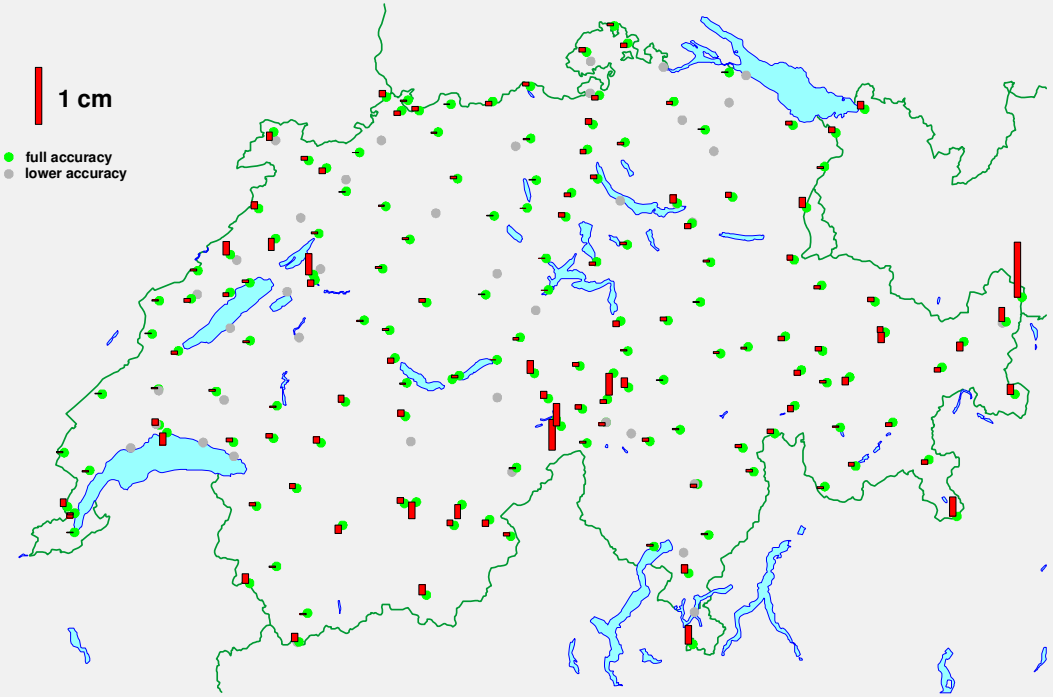
National Reference Frames

- New Swiss National Height Reference Frame “LHN95”: Final kinematic adjustment of levelling (and gravity) data (1903 – 2004) and release.
- Combination of GPS heights with orthometric heights will be possible on the cm level (Swiss Plateau) and >5 cm (Alps) by using "CHGeo2004".



There is a poster which covers this in detail *[Schlatter et al., 2005]*.

GPS-height residuals of the combined adjustment CH-CGN2004 (orthometric heights LHN95, Geoid CHGeo2004, GPS-Network CHTRF2004)

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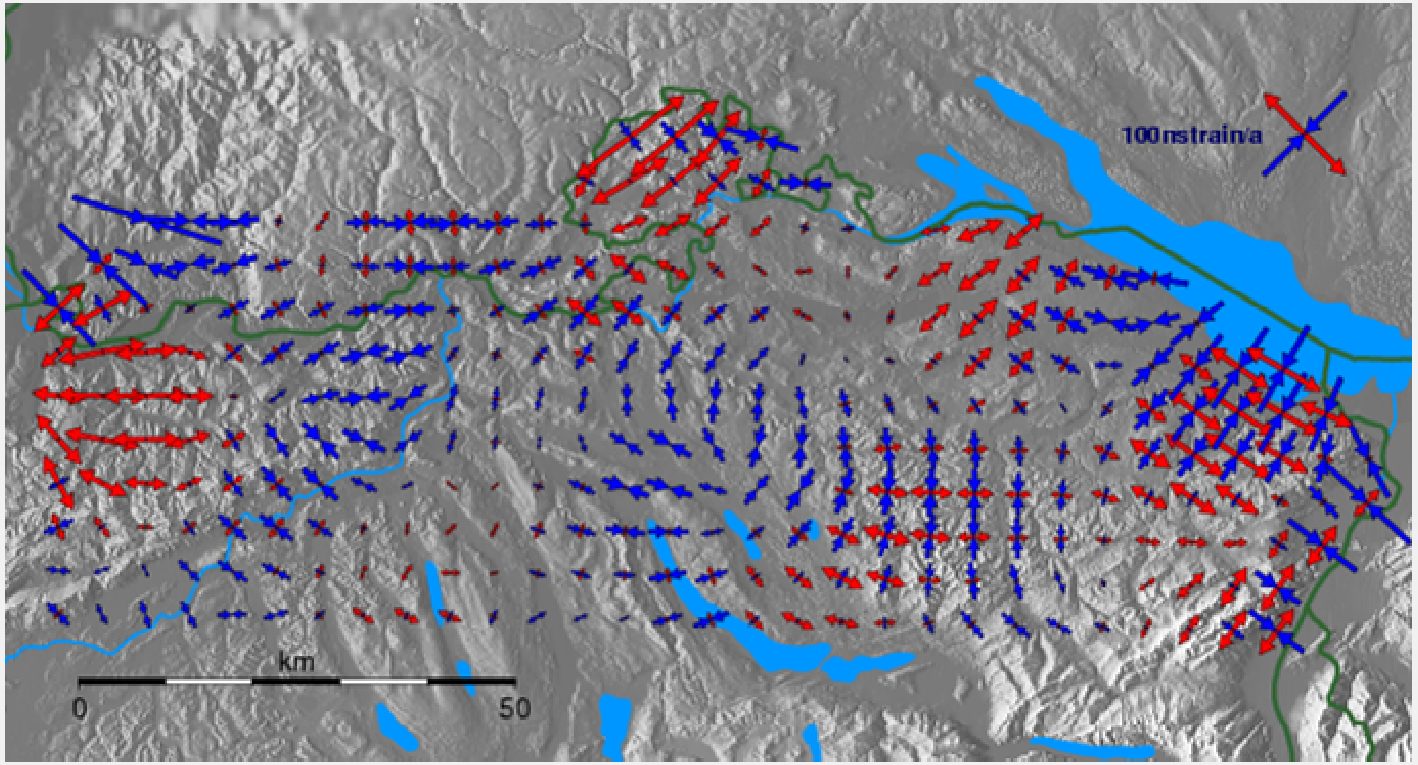
Current projects

Swiss-4D: Kinematic analysis of geodetic observations (repeated levelling, GPS permanent / epoch data) for the investigation of tectonic deformation.



Strain rates in NE Switzerland

Courtesy of GGL ETH Zürich