ECGN

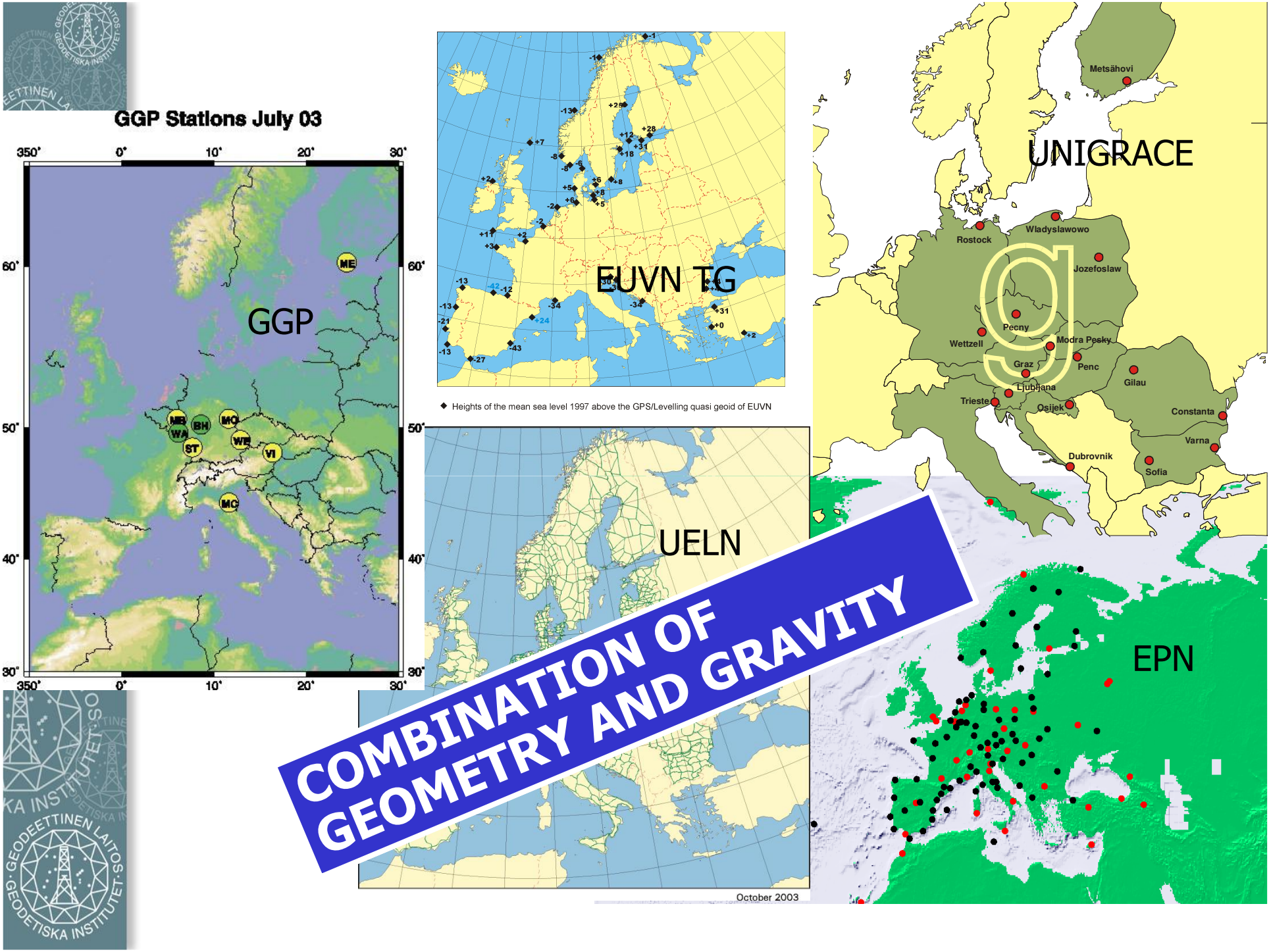
Future?

European Combined Geodetic Network

Objectives of the ECGN as an integrated European Reference System for Spatial Reference and Gravity are:

- Realization of a terrestrial reference system and maintenance of long time stability with an accuracy 10^{-9} for Europe especially in the vertical component
- In-situ combination of space geodesy (GPS) with Earth gravity parameters (gravity, heights)
- Modelling of influences of time depended parameters to TRF (of the solid Earth of the Earth gravity field, the atmosphere, the oceans, the hydrosphere)
- Modelling of terrestrial gravity field components to validate satellite gravity missions
- Geodetic platform in Europe for geo-initiatives (GMES, INSPIRE, GEOSS, GGOS)

~~The ECGN is considered as a European contribution to the IAG's Global Geodetic Observation System (GGOS).~~ At the business meeting of the IGGC at the Gravity and Geoid 2002 Symposium in Thessaloniki the ECGN project as a cross-commission project was approved. The primary concern of the project consists in connecting the height component with the gravity determination while allowing for measuring data that are acquired in the European coastal regions and above adjacent seas.


GGP Stations July 03
GGP
EUVN TG
Heights of the mean sea level 1997 above the GPS/Levelling quasi geoid of EUVN
UELN
October 2003
UNIGRACE
Metsähovi
Rostock
Wladyslawowo
Jozefoslaw
Pecny
Wettzell
Modra Pesky
Graz
Penc
Gilau
Ljubljana
Trieste
Osijek
Constanta
Varna
Dubrovnik
Sofia
EPN
COMBINATION OF
GEOMETRY AND GRAVITY

Techniques

Technique	Objective	Accuracy	Component(s)
VLBI		IAG SERVICE	
SLR		IAG SERVICE	
GNSS		EPN (OK)	
DORIS		IAG SERVICE	
Levelling		UELN (OK)	
Tide gauges		PSML (OK)	
Absolute gravimeters		AG plan + archive (developing)	
Superconducting gravimeters		GGP (OK, IAG PROJECT ??)	
Spring gravimeters		Many sources, partly available	

Meta-databases, data archives, partly available

And…

- ECGN cannot be a general department store to deliver all possible items but we have to concentrate on specific tasks we can do with a limited resources, funding, time…
- ECGN should be based on the existing components, try to strengthen them, use their products
- Identify the key items we need and which should be done within ECGN
- Identify the value added tasks where we need ECGN + "ECGN products"

Back to the roots (?)

- Key words: gravity, heights, levelling,…
- But also… 3-D, connection to geometric network
- Levelling is almost the only continental technique; others are more or less global
- A task to monitoring gravity-related heights and gravity (repeated absolute gravity, superconducting gravimeters, gravity satellites) for the 3-D reference for Europe
- Spatially dense continuous GNSS stations and observed geopotential differences to the UELN

Goals, motivation, tasks

- Short term goals:
  - ECGN as a test field of WHS
  - GRACE and GOCE data usage
  - ”Agrav” database exists and operational
  - Inventory of existing databases and structures, developing them
  - ”ECGN products” inventory
  - Write an updated ”white paper” on ECGN

Tasks for long term ECGN

- Scientific goals;
  - Global change projects, time series
  - Sea level change
  - WHS
  - …
- Network/organization goals
  - Levelling connection to all EPN stations
  - Tide gauge – C-GNSS connection
  - …

Renewal of ECGN

- ✓ **To continue ECGN !**
- ✓ To identify need of different fields of expertise
- ➢ To find people able to do (time, understanding, funding,…) tasks, maintain databases, develop scientific tasks, …
- ➢ ECGN "Steering committee" to establish specific projects/task forces to do tasks
- ✓ To continue/develope exisiting components (EPN, UELN,…)
- ➢ Second call for participation?? Need, form,…?

An example of an application:

Geodetic Observing Systems: tools in observing the Glacial Isostatic Adjustment

Presentation on Thursday, session 5