EUREF2005 SYMPOSIUM, VIENNA, AUSTRIA, 1-3 JUNE, 2005

EUVN_DA:
EUREF ACTION for EUVN DENSIFICATION:
STATUS REPORT

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A REMINDER:
WHAT IS EUVN_DA ?

JOINT EFFORT OF THE EUROPEAN NMA's TO ESTABLISH A
DENSE, HOMOGENOUS, 'FREELY AVAILABLE'
GPS/LEVELLING DATABASE RELYING ON THE EXISTING EUVN SOLUTION.

REALIZATION OF THE SUB-DM-ACCURACY
CONTINENTAL HEIGHT REFERENCE SURFACE
CONSISTENT WITH ETRS89 AND EVRS.

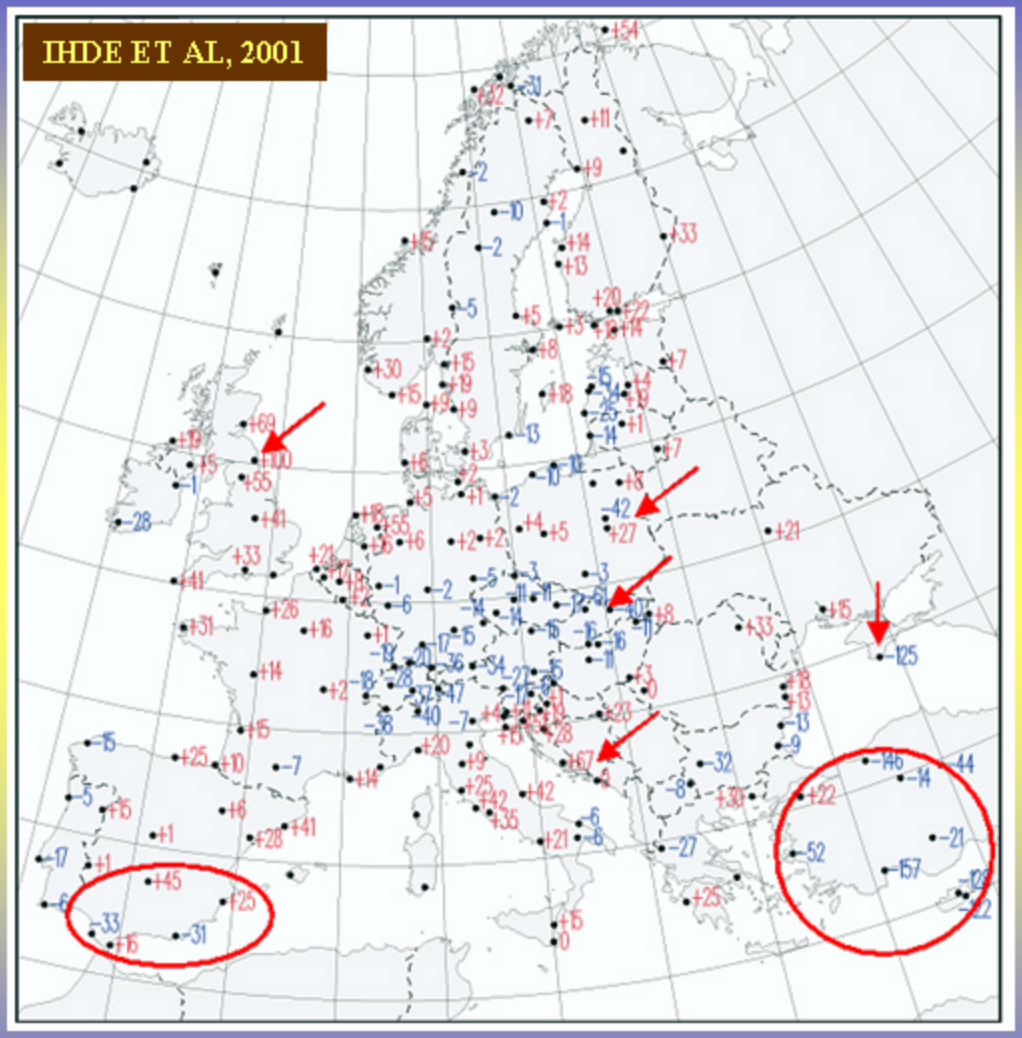
(RESOLUTION #4 DUBROVNIK).

WHY WE NEED DENSIFICATION?

LONG WAVE

-GEOID

-LEVELING



OUTLIERS

- EXCENTRICITY

THE SPARSE EUVN AND THE EGG97 IS NOT ELIGIBLE FOR THE CONTINENTAL SUB-DM HEIGHT REFERENCE SURFACE !

GENERAL EUVN_DA RULES I

NETWORK GEOMETRY: (to minimize workload)

- MEAN SITE SEPARATION : 100-50 km
- POSSIBLY USE EXISTING GPS AND/OR
  LEVELLING MARKERS/MEASUREMENTS
- SPECIAL INTEREST ON "PROBLEMATIC" REGIONS

GENERAL EUVN_DA RULES II

DATA REQUIREMENTS

GPS MEASUREMENTS

- REFERENCE SYSTEM (ETRS89 or ITRFyy - EPOCH)
- OBSERVATION SESSION <24 hours ALSO ACCEPTED !

LEVELLING

- THE EUVN_DA MARKERS SHOULD BE CONNECTED TO UELN (EXISTING MEASUREMENTS MAY BE USED)

DATA SUBMISSION

EUVN/UELN DATA CENTRE - LEIPZIG

- CONSISTENCY CHECK / EVALUATION
- COMPILATION OF NATIONAL SOLUTIONS

GENERAL EUVN_DA RULES III

DATA COLLECTION

ACTION_A DECEMBER 2004

- CLARIFICATION OF PRESENT EUVN DISCREPANCIES
- COLLECTION OF EXISTING GPS&LEVELLING DATA

ACTION_B APRIL 2006

- NEW GPS/LEVELLING MEASUREMENTS
- CREATION OF THE HEIGHT REFERENCE SURFACE (V 0.1)

SUBMISSION FORMS-old

EUREF Technical Working Group
EUVN_DA Working Group

EUVN Densification Action

GPS Data Form

Version 1.0

Page 1 of 1

Date: _____

Station name: _____ 4-char EUVN_DA ID: _____ National site No.: _____

Location: _____ City/area: _____ Country: _____

Responsible agency (full address): _____

_____

Reported by: _____ Telephone: _____ e-mail: _____

EUVN_DA GPS Marker

Official No. of other Networks (e.g. EUREF): _____

GPS Marker Inscription: _____

GPS Marker Identifier : _____

Marker type, monumentation type, foundation: _____

_____

Visibility of satellites above 15 degrees: _____

_____

Possible sources of multipath, electromagnetic noise: _____

_____

GPS Data Section

Date of the GPS campaign: _____ No. of sessions (24 hours): ____

GPS receiver: _____ Elevation cutoff: _____ degree

GPS antenna: _____ Sampling rate: _____ seconds

Processing software: _____ Orbit : _____

3D coordinates and accuracies:

X: _____ Y: _____ Z: _____

_____ _____ _____

Reference frame: _____ Epoch: _____

EUREF Technical Working Group
EUVN_DA Working Group

EUVN Densification Action

Levelling/Gravity Form

Version 1.0

Page 1 of 2

Date: _____

This Form is valid for height difference measurements between GPS Marker and nearest EUVN or UELN Levelling Nodal Point. The information should be compatible with marker information in the GPS Data Form.

Station name: _____ 4-char EUVN_DA ID: _____ National site No.: _____

Location: _____ City/area: _____ Country: _____

Responsible agency (full address): _____

_____

Reported by: _____ Telephone: _____ e-mail: _____

(A) EUVN_DA GPS Marker

Official No. of other Networks (e.g. EUREF): _____

Ellipsoidal coordinates in ETRS89:

Latitude : _____ ° _____ ' _____ " Longitude : _____ ° _____ ' _____ "

Gravity value in ms^{-2} _____ Gravity system: _____

Approximate accuracy of gravity in 10^{-5} ms^{-2} (mGal): _____

(B) Nodal Point Marker

Official UELN No. : _____

Marker Inscription: _____

Marker Identifier : _____

Marker type, monumentation, foundation: _____

_____

Ellipsoidal coordinates in ETRS89:

Latitude : _____ ° _____ ' _____ " Longitude : _____ ° _____ ' _____ "

Gravity value in ms^{-2}: _____ Gravity system: _____

Approximate accuracy of gravity in 10^{-5} ms^{-2} (mGal): _____

SUBMISSION FORMS-new

Country:

GPS data details:

campaign date:

session length:

elevation cutoff:

processing software:

National height syst normal/orthometric/other

Related to tide gauge:

UELN nodal point parameters

Station name	**EUVN_DA id.**	**ETRFyy (1) lat** [deg]	**ETRFyy lon** [deg]	**ETRFyy ell. height (2)** [m]	**UELN number**	**national identifier**	**year of leveling**	**coordinates lat** [deg]
	4/5 char.							

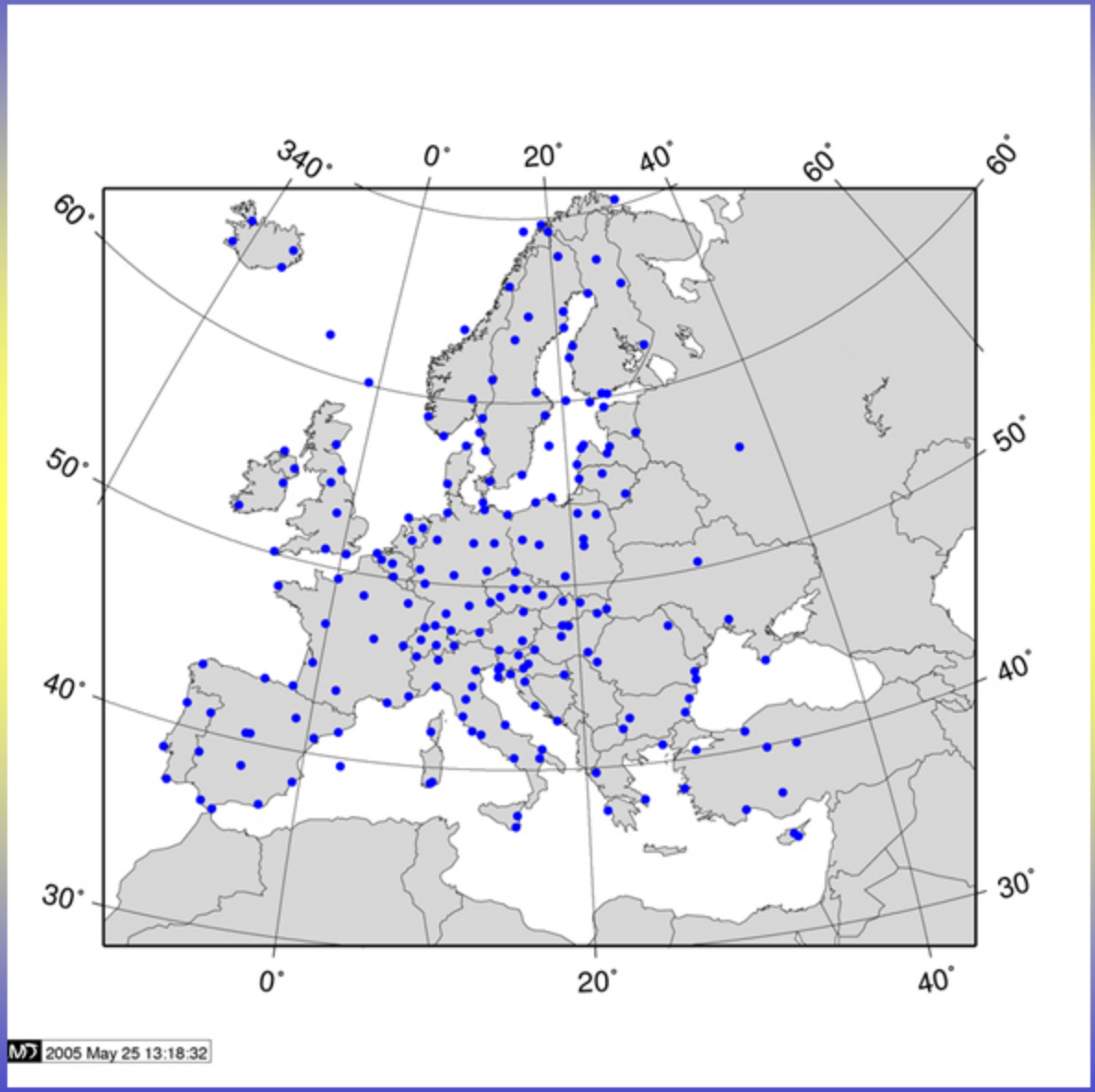
- ... ...

EUVN_DA point levelling parameters

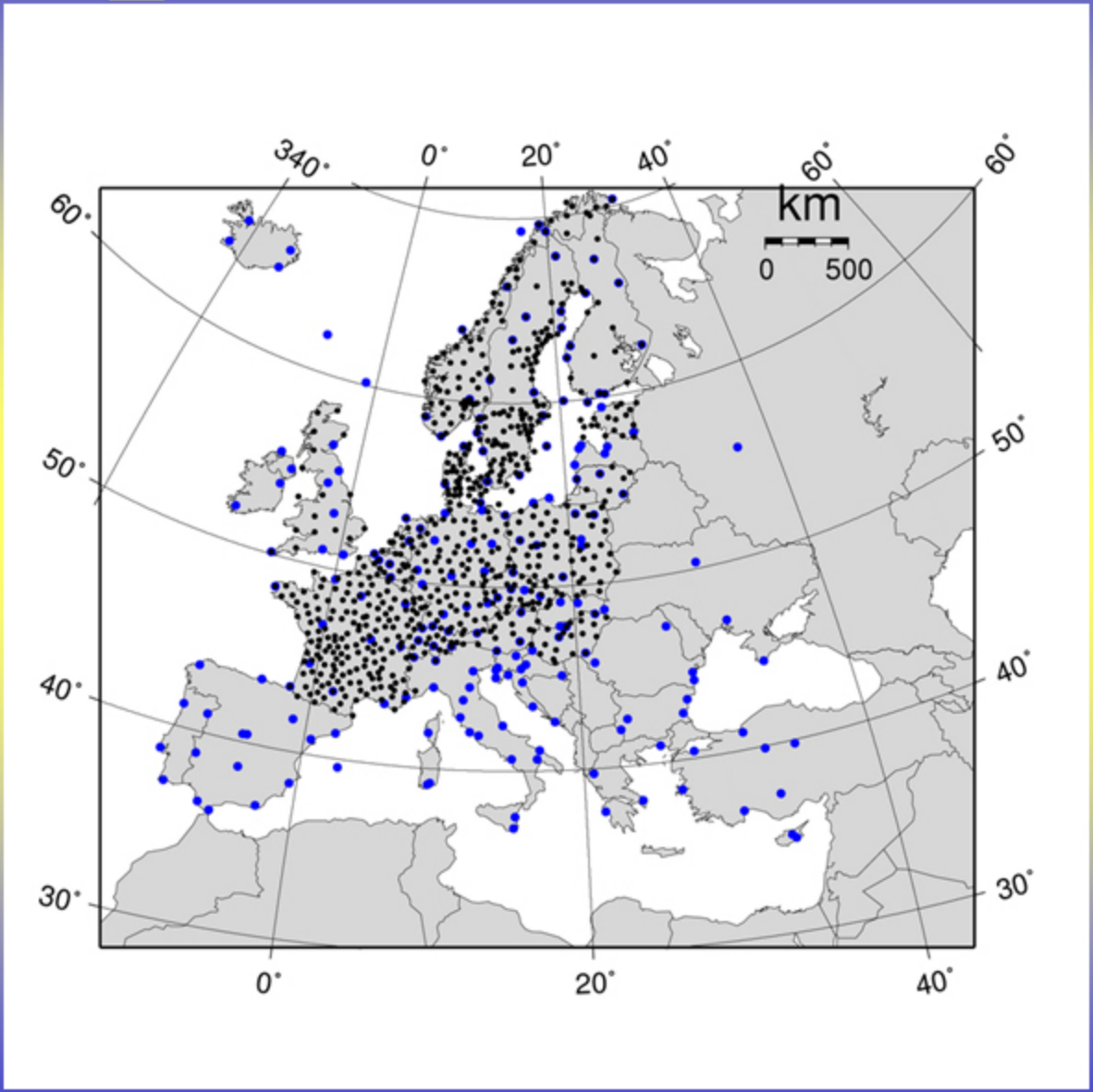
lon [deg]	**gravity IGSN71** [mgal]	**geopotential of the nodal point** [GPU]	**UELN-EUVN_DA distance** [km]	**EUVN_DA point gravity** [mgal]	**UELN-EUVN_DA geopotential difference** [GPU]

. . .

EUVN station distribution

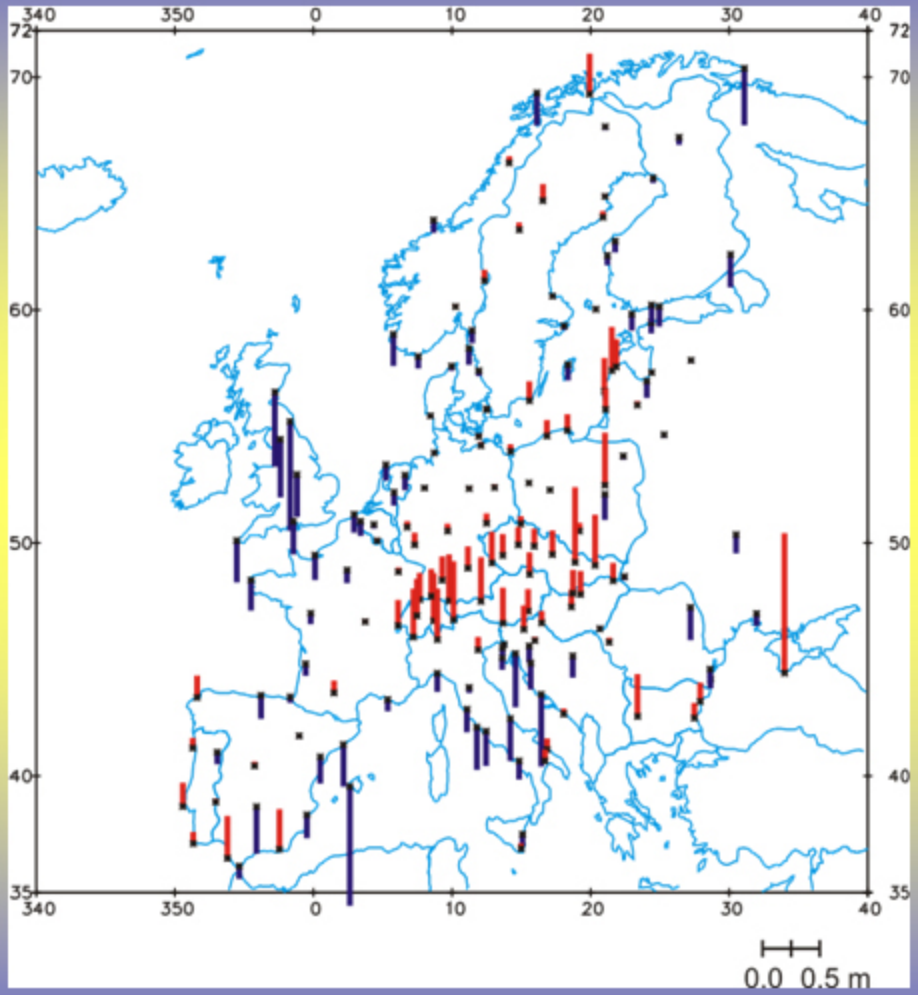


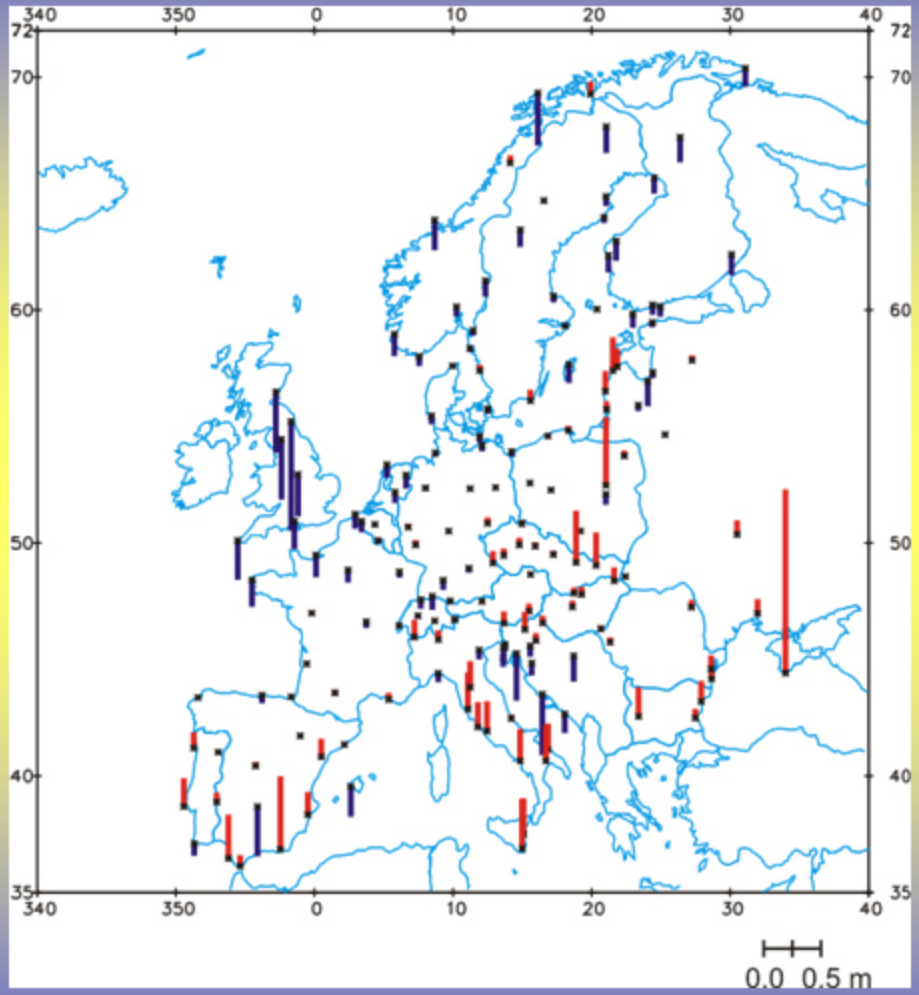
EUVN_DA station distribution



IMPROVEMENT IN GEOID ACCURACY

EUVN/EGG97 and EUVN/EIGEN GRACE02S COMPARISON





RMS: 0.26 m 0.23 m

COMPUTED BY H.DENKER