

Mitteilungen des Bundesamtes für Kartographie und Geodäsie

International Association of Geodesy

Section 1 - Positioning

Commission X - Global and Regional Geodetic Networks

Sub-Commission for Europe (EUREF)

Publication No. 11, Volume II

European Vertical Reference Network (EUVN)

Final Documentation

Edited by

Johannes Ihde and Martina Sacher

Frankfurt am Main 2002

Verlag des Bundesamtes für Kartographie und Geodäsie

ISSN 1436-3445

ISBN 3-89888-870-3

Adresse des Bundesamtes für Kartographie und Geodäsie

Bundesamt für Kartographie und Geodäsie
Richard-Strauss-Allee 11 - D-60598 Frankfurt am Main - Germany
Telefon +49-69-63 33-1 - Telefax +49-69-63 33-425

Addresses of the Subcommittee

The President

Eng. João Agria Torres
SPUIAGG
Instituto Geofísico D. Luis
Rua Escola Politécnica, 58
P - 1250 - 102 Lisboa
Portugal
Telephone +351-218 40 10 09 / +351-21-3 90 33 11
Telefax +351-21-3 95 33 27
E-mail jatorres@iol.pt

The Secretary

Dipl.-Ing. Helmut Hornik
Deutsche Geodätische Kommission
Marshallplatz 8
D - 80 539 München
Germany
Telephone +49-89 23 031 113
Telefax +49-89 23 031 -283, -100
E-mail hornik@dgfi.badw.de

EUREF homepage

<http://www.euref-iag.org/>

The contents of the Final Documentation is also available in the Internet at

<http://evrs.leipzig.ifag.de>

@ 2002 Bundesamtes für Kartographie und Geodäsie, Frankfurt am Main

ISSN 1436-3445

ISBN 3-89888-870-3

Preface

Since 1995 the IAG Subcommittee for Europe EUREF has taken an active part in the realization of European vertical networks. Two projects were started approximately at the same time: the new adjustment of the United European Levelling Network UELN and the realization of the European Vertical Reference Network EUVN.

This publication concerns the EUVN project, which objective is to combine different types of height-related observations (GPS heights, leveling, tide gauge data) as a contribution to a unified European height system, the European geoid determination, and the monitoring of the sea level variations. EUVN will significantly contribute to a geoid consistent with the existing geodetic reference network EUREF/ETRS89 and the most recent realisation of UELN. According to the goals of the project at each one of the 200 EUVN sites three-dimensional GPS coordinates and the gravity-related heights, derived by leveling to the nearest UELN marker and gravity measurements along the leveling lines, were determined. A number of EUVN sites were placed close to tide gauge bench marks with the proper terrestrial local ties. The preceding adjustment of the UELN was a prerequisite for the EUVN project.

The EUVN working group with their members Josef Adam, Werner Gurtner, Bjorn G. Harsson, Johannes Ihde, Wolfgang Schlüter (chair), and Guy Wöppelmann started with the preparation of the EUVN97 GPS campaign in 1996. The seven-days campaign with simultaneous occupation of 200 sites was one of the largest European and world-wide GPS campaigns.

The final documentation is now available. It is divided into three main sections:

- The first part describes concept, preparation, realization and results of the GPS, leveling, and tide gauge observations of the EUVN project.
- In the second one the results of all these observations are combined in the Table "Compilation of the Numerical Results".
- The last section contains the Station Documentation with all available and useful station-related information.

We would like to thank all members of the EUVN working group, on behalf of the EUREF community, especially its chairman Wolfgang Schlüter as well as Johannes Ihde, for their active, determined and fruitful work. The project could not have been successfully finished without the contributions of the European National Mapping Agencies, universities and numerous other institutions. The colleagues of the data centers and analysis groups for the handling and processing of the GPS, leveling, and tide gauge data contributed with their professional expertise to this exemplary project for scientific and application-oriented work.

Last but not least we warmly thank the Bundesamt für Kartographie und Geodäsie (BKG), formerly the Institut für Angewandte Geodäsie (IfAG), for supporting EUREF in general and especially this important project, with personnel and funds, since its very beginning so efficiently.

Lisbon, Berne; December 2002

João Agria Torres

President of the
IAG Subcommittee for Europe (EUREF)

Wemer Gurtner

Chairman of the
EUREF Technical Working Group (TWG)

Contents

Volume II

EUVN Station Documentation	9
Austria	11
Belgium	17
Bulgaria	23
Croatia	27
Cyprus	35
Czech Republic	37
Denmark	43
Estonia	49
Finland	51
France	63
Germany	75
Greece	89
Hungary	93
Iceland	97
Ireland	101
Italy	105
Latvia	121
Lithuania	127
FYRO Macedonia	131
The Netherlands	133
Norway	137
Poland	151
Portugal	161
Romania	167
Russia	171
Slovakia	173
Slovenia	177
Spain	181
Sweden	193
Switzerland	205
Turkey	213
Ukraine	221
United Kingdom	225