

# PANTA RHEI

this issue  
The second Working Document  
of the  
Fourth Framework Programme for  
RTD & D 1994 - 1998

Journal Bulletin for 'Education in Hydrology and Water Management' and 'Training for Water Resources Technology' within the framework of the HUMAN RESOURCES and MOBILITY Programmes of the European Community (EC)

A QUARTERLY BULLETIN

N° 16 - JUNE - 1993

# GLOSSARY

## **BEST**

Building of Extension of Science and Technology network TECHWARE/WHEEL in Central and Eastern Europe (COST-CEEC project).

## **CALWARE**

Computer-Aided-Learning in hydraulics, hydrology and WATER RESOURCES technology, strand Cb project (TECHWARE).

## **CC**

Coordinating Committee of TECHWARE.

## **CEC**

Commission of the European Community.

## **CEEC**

Central and Eastern European Countries.

## **COMETT II**

COMMUNITY action for Education and Training for Technology, the European Community programme on cooperation between universities and industry regarding training in the field of technology (TFHR).

## **COMEX I**

Selected experts in the field of diffusion and valorization of RTD results (DGXIII).

## **COST -CEEC**

Cooperation in Science and Technology with Central and Eastern European Countries, programme of DGXII.

## **CTB**

Coordinating TECHWARE Bureau in Brussels (B).

## **DG**

Directorate-General, administrative unit of CEC (there are XXIII DGs).

## **EC**

European Community (member states : B, D, DK, E, F, GR, I, IRL, L, NL, P, UK).

## **EC**

Executive Committee of TECHWARE.

## **ECTS**

European Community Course Credit Transfer System (ERASMUS)

## **EP**

European Parliament (EC).

## **EFTA**

European Free Trade Association (member states : A, CH, FL, IS, N, S, SF).

## **ERASMUS**

EuROPEAN Action Scheme for the Mobility of University Students (TFHR).

## **ETC**

European Training Courses of TECHWARE.

## **EWA Ring**

JEP (TEMPUS) in the field of Environment, Water and Agricultural soils.

## **FORCE**

FORmation Continue en Europe - Continuing Vocational Training in Europe (TFHR).

## **HCM**

Human Capital and Mobility, sub- programme for Science, Research and Development (DGXII).

## **ICP**

Interuniversity Cooperation Programme (ERASMUS).

## **IP**

Intensive Programme (ERASMUS).

## **JEP**

Joint European Project (TEMPUS).

## **NGAA**

National Grant Awarding Authority providing the grants for student mobility (ERASMUS).

## **PEP**

Personnel Exchange Programme of TECHWARE.

## **RTB**

Regional TECHWARE Bureau.

## **RTD & D**

Research, Technological Development and Demonstration.

## **SAST**

Strategic Analysis for Science and Technology (DG XIII).

## **SG**

Specialist Group for preparing a future TECHWARE

## **SPES**

Student and young graduate Placements for training in European industry of the water environment Sector (TECHWARE).

## **S&T**

Science and Technology

## **STRANDS (COMETT)**

A : Action establishing UETPs.

B : Action for transnational exchanges (students, young graduates, personnel).

C : Joint Training Actions.

D : Complementary measures.

## **TECHWARE**

TECHNOLOGY for WATER RESOURCES, sectoral UETP (COMETT, Strand A) and International Non-Profit-Making Association, with Coordinating Bureau in Brussels (B).

TECHWARE- Italia and TECHWARE-UK are Regional TECHWARE Bureaus (RTB).

The symbol of TECHWARE is the **icosahedron**, associated with water in PLATO's philosophy.

## **TEMPUS**

TransEUROPEAN Cooperation Scheme for Higher Education, the EC-programme for education and training in CEE-Countries (TFHR).

## **TF**

Task Force for a given activity of TECHWARE.

## **TFHR**

Task Force Human Resources, Education, Training and Youth (CEC).

## **UETP**

University Enterprise Training Partnership (COMETT, Strand A).

## **WEEL**

Water Environment European Laboratories, pan-European scientific network of TECHWARE (HCM programme of DGXII).

## **Hydrology**

The logos of the waters, or the science that deals with the waters of the earth, their occurrence, circulation and distribution, their chemical and physical properties, and their interaction with their environment, including their relations to living beings.

## **Water management**

Planned development, distribution and use of water resources, in accordance with predetermined objectives and with respect to both quantity and quality of the water resources.

## **Water resources technology**

The development and application of (new) technologies to increase and improve the supply both in quantity and quality

# EDITORIAL

The future of programmes such as ERASMUS, COMETT, TEMPUS is at stake and 1993 is decisive. It is true that a redundancy exists and a search for a more transparent and more efficient and less bureaucratic approach is welcome. At the other hand, it is also true that these programmes should have started 20 years ago : the Treaty of Maastricht would probably be easier to accept.

The Editor's experience of 4 years coordinatorship for an ERASMUS-ICP and 3 year coordinatorship for a COMETT-UETP shows that the students, the first beneficiaries and the most important target group, are enthusiastic. The many still waiting to participating and the future European student generation would be immensely disappointed if the EC would stop those programmes. It is totally unrealistic to strive towards mobility and exchange programmes funded exclusively by the Member States themselves. The subsidiarity principle is clearly applicable in these matters. That does not mean that the Member States should not take action in a progressive way : additional financial support for those students really motivated and not supported by their parents, positive attitudes of faculties towards academic recognition, improved housing and accommodation, etc...

Let's not forget the language problem : every opportunity to teach, to learn and to use another language should be promoted. This is the best way to enhance the European Union! Here again, the Editor's experience with students is surprisingly positive. A systematic approach like the one which exists in Italy is necessary. Each month of the year starts an intensive language course of 20 hr. a week during one month at the Italian University for Foreigners in Perugia at an affordable registration fee ! Why not introducing this approach in all European countries ?

The second target group of programmes such as COMETT and FORCE are the

employees of enterprises. This target group is as important, and in absolute numbers of course much larger, as the first group. They form the economic backbone and the present economic crisis shows how frail the backbone is. It has been said that continuing education is a life long activity and offers a fulfilling personal life. It has been the immense success of COMETT to set up a structure which allows for a systematic approach in continuing education, notwithstanding the large diversity of economic activities and of cultural traditions. For sure, the COMETT approach is not well known or understood everywhere and a strengthening is necessary of those networks which proved already to be viable. The enterprises recognize the need for continuing education and are willing to get more involved according to a recent study.\*

The Second Working Document (COM (93) 158, Brussels 22 April 1993) for the Fourth Framework Programme is responding to the above concern : RTD+D is clearly linked to education and training. Research in this field is now a theme of the new Framework Programme and a synergy Research/Training is explicitly focused.

The Commission Working Paper entitled "Guidelines for Community Action in the field of Education and Training" (final version, May 1993) is drafted in the same spirit.

The latter paper will be discussed in the next Editorial.

This brings hope for a structured continuation of the **mobility** and **training** programmes.

The Editor

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#### Enclosures :

- SPES
- ETC
- TRITON
- WALLINGFORD

Please post enclosures !

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\* A. Jacquemin and D. Wright. 1993. The European Challenges post-1992. Shaping Factors\* Shaping Actors. Edward Elgar Publ. Ltd. Hampshire, U.K.

# NEWS from ERASMUS

ICP : Interniversity Cooperation Programme "Hydrology and Water Management"  
Coordinator : Prof. A. Van der Beken  
Address : see Editor



ERASMUS

## Interuniversity Cooperation Programme "Hydrology and Water Management"

ICP-92-B-1138/06

The Interuniversity Cooperation Programme "Hydrology and Water Management" has received the acceptance of the proposals submitted on October 31, 1993 for the Academic Year 1993-94 ( period 1 July 1993- 30 September 1994) . Details and allocation of the budget will be discussed at the **next Plenary Meeting LAUSANNE (CH) 27-28 August 1993.**

### Now available : Information Brochure

PREFACE to the second edition

The first edition of this brochure published in Spring 1991 was distributed on 1000 copies. Meanwhile the Interuniversity Cooperation Programme (ICP) "Hydrology and Water Management" was funded on a pluri-annual basis and comprises today some 38 departments or laboratories in 33 universities of 12 European countries. It provided for some 20 student mobilities of a total duration of 120 months during the academic year 1991 - 92 and numerous teaching staff mobilities.

The second edition of this brochure provides updated information about the studies in water-related disciplines organized by the partner universities. Because many interested readers are not well informed about the difference between ERASMUS, COMETT, TEMPUS, HCM, etc. ..., Chapter 3 on " Other Related Programmes and Projects" has been added. Many off the ICP - partners participate in these projects and useful interactions are possible. Indeed, it has been said that the Task Force Human Resources, Education, Training and Youth (TFHR) should strive towards a continuous mobility programme, from undergraduate level up to the professional level, as well in research, in academia as in the enterprises. The link which exists between TFHR and the Directorate General XII for Science, Research and Development let us hope for such a strategy.

## ON YOUR DESK

### ERASMUS / LINGUA ACTION II DIRECTORY 1992/93

Luxembourg, Office for Official Publications of the European Communities, 1992, p. 1592, ISBN 92-826-5206-8, ECU 30.

During the 1991/92 academic year, ERASMUS gave around 63,000 students the chance to study in another EC country and has given birth around 1,800 Interuniversity Cooperation Programmes (ICP's), involving more than a thousand institutions of higher education. In 1992/93, some 86,000 students are eligible for student mobility grants which will enable them to spend part of their studies in another European institution. Like its predecessors, the 1992/93 ERASMUS and LINGUA Action II Directory is an essential information tool on the current situation in the European University Network, which, this year, for the first time, sees the participation of the higher education institutions in the countries of the European Free Trade Association, in addition to those of the EC Member States. The publication also gives the fields of study covered, the types of cooperation financed, a brief description and the means of contacting those who run the programmes. A distinctively novel feature in 1992/93 is an indication of the types of special facilities which are available at institutions of higher education for handicapped students.

## ERASMUS Bureau

70, rue Montoyerstraat 70  
B-1040 Brussels

tel +32-2-2330111  
fax +32-2-2330150  
telex 63508

## ERASMUS ICP

### "Hydrology and Water Management"

New Edition

Name : .....

Address : .....

.....

.....

requests a copy of the INFORMATION BROCHURE and the POSTER

Date : .....Signature : .....

*Return to the Editor of PANTA RHEI*

## ON YOUR DESK

### Student Handbook

Dr. Ute Braun : A Directory of courses and institutions in higher education for 16 countries not members of the European Community, 2nd edition, Strasbourg, Council of Europe & Deutscher Akademischer Austauschdienst, 1991, p. 362, ISBN 92-871-1960-0, FF 95 (excl. VAT).

This Student Handbook about higher education courses and institutions published by the Council of Europe is designed as a complement to The Student Handbook for the 12 EC member States published by the Commission of the European Community. This completely new edition is aimed at meeting the growing information needs of students and professionals in higher education regarding the educational opportunities available in other European countries. The countries of the European Free Trade Association are covered and, for the first time, comprehensive information is provided on **Czechoslovakia**, **Hungary** and **Poland** reflecting the expanding horizons of the new Europe.

**Available from** : Council of Europe, BP 431 R6, F-67006 Strasbourg, Cedex. Tel : +33-88412000  
Fax : +33-88412781/82/83.

### Dimensions to Evaluation in Higher Education

by Urban Dahllöf, John Harris, Michael Shattock, André Staropoli, Roeland in 't Veld.

London, Jessica Kingsley, 1991, p. 192, ISBN 1-85302-526-7, £22.50.

A report of the IMHE Study Group on evaluation in higher education, this book addresses primary issues in evaluation in an international, a national and a long-term perspective. The opening chapters set the policy frameworks within which the increased emphasis on evaluation must be considered, analyse the contribution of universities to society, and assess the evaluation of research, something which has grown to be a political priority. The book then continues with a reflection on the universally low priority given to the evaluation of teaching, and provides a critique of the measures that are being

used. The final chapter is a report on ways of comparing higher education in the USA with that of competitor nations. Together, these essays demonstrate that arguments about the nature and techniques of evaluation must entail far broader considerations than those often promoted by policy makers. The specific experiences and strengths of each author have been matched with the corresponding topics of the chapters in the book.

#### **Available from** :

Jessica Kingsley Publishers,  
118 Pentonville Road, UK-London N1 9JN.  
Tel : +44-71-8332307  
Fax : +44-71-8372917.

### A History of the University in Europe Vol 1 : Universities in the Middle Ages

Hilde De Ridder-Symoens. Cambridge, Cambridge University Press, 1992, p. 506, ISBN-0-521-36105-02. (Hardback), £60.

This is the first of four volumes comprising A History of the University in Europe. The four volumes aim to cover the development of the university in Europe (east and west) from its origins to its present, focusing not on the history of individual institutions or on universities in each particular country, but on a number of major themes viewed from a European perspective. It is not a history of ideas - but rather an appreciation of the role and structures of the universities seen against a backdrop of changing conditions, ideas and values. The university is the only European institution to have preserved its fundamental patterns and basic social role and functions over the course of the last millennium. This history shows how and why the university grew to encompass the whole of knowledge and most of the world, how it developed an intellectual tradition common to all Europeans, and how it trained academic and professional elite whose ethos transcends national boundaries.

#### **Available from** :

Cambridge University Press,  
The Edinburgh Building, Shaftesbury Road,  
UK-Cambridge CB2 2RU.  
Tel : +44-223-312393  
Fax : +44-223-315052

## INFO

### EUROCASE

EUROpean COuncil of Applied Sciences and Engineering.

Twelve European Academies of Engineering Sciences have founded EUROCASE with a purpose to further the scientific aspects of training and research in engineering.

The founding members are :

ATV (Danish Academy of Technical Sciences), FACTE (Finish Academy of Technology), CADAS (Comité des Applications de l'Académie des Sciences, France), FAST (Federation of Scientific and Technical Associations, Italy), Nederlands Forum voor Techniek en Wetenschap, NTVA (Norwegian Academy of Technical Sciences), Ordem dos Engenheiros (Portugal), Real Academia de Ingenieria (Spain), IVA (Royal Swedish Academy of Engineering Sciences), Swiss Academy of Engineering Sciences, the Royal Academy of Engineering (UK) and Royal BACAS (Belgian Academy Council of Applied Sciences).

#### **The Secretariat of EUROCASE** :

Institut de France, Académie des Sciences  
23 Quai de Conti  
F-75270 Paris Cedex 06, France

### FACE

#### **Framework for Academic Cooperation in Europe**

The FACE Project was launched at the General Assembly of UNICA network of UNiversities from the CAPitals of Europe which was held in Dublin in September 1990.

The idea behind the project is both simple and unique in European Universities. It invites the academic staff of each UNICA university to propose the particular areas of academic interest in which they would like to establish Consortia. Proposals thus generated are then circulated to all the academic staff of our network universities, inviting their participation and in this way new consortia are created.

The uniqueness of the FACE programme thus stems from a number of factors :

- it is an "incubator" for the generation of academic Consortia
- it is not limited to specific subject fields or academic activities
- it nurtures an equal concern for teaching as for research initiatives
- it provides an information node for Consortia

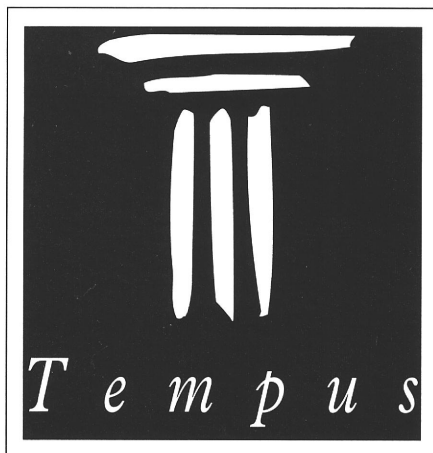
University College Dublin (UCD) has been nominated by UNICA as the Coordinating university for FACE which is, now, carried out with the support of the Commission of the European communities through the ERASMUS Programme.

#### **FACE Secretariat** :

University College Dublin  
Belfield, Dublin 4, Ireland  
Tel : +353-1-7067054 • Fax : +353-1-2694409

# NEWS from TEMPUS

JEP : Joint European Project  
Interniversity Coordinating Forum for East-West Cooperation in the field of Environment, Water and Agricultural Soils" (EWA-Ring)  
Coordinator : Prof. J. Bogardi  
Wageningen Agricultural University • Department of Water Resources • Nieuwe Kanaal 1, NL-6709 PA Wageningen  
tel +31-83-7084829 • fax +31-837084885 • telex 45015



## EWA-Ring Short Intensive Course

### WATER RESOURCE CONSERVATION AND POLLUTION SPREAD CONTROL WITHIN RURAL AREAS

Zielonka Poznań, Poland  
21-26 June 1993

#### Hosts

Agricultural University of Poznań, Research Centre of Agricultural and Forest Environment Studies, Polish Academy of Sciences, Poznań.

#### Organizing and Programme Committee

- Professor J.J. Bogardi, Wageningen Agricultural University - Chairman.
- Professor A. Kedziora, Agricultural University of Poznań.
- Dr. Z.W. Kundzewicz, Research Centre of Agricultural and Forest Environment Studies, Polish Academy of Sciences, Poznań.

#### Contact Person

Dr. Zbigniew W. Kundzewicz  
Research Centre of Agricultural and Forest Environment Studies  
Polish Academy of Sciences  
Bukowska 19, 60-809 Poznań, Poland  
Tel +48-61-456001  
Fax +48-61-43668

#### Aim

Exchange of expertise and experience in management of water resources and control of pollution spread in rural areas in broad, interdisciplinary context. Course of lectures delivered by an international team of specialists representing the theory and practice, universities and doctoral students and academic staff of partners of TEMPUS EWA-RING (22 European universities and one non-university research institute).

#### Structure of the Programme

Part One : Water problems of rural areas - assessment and analysis.

Part Two : Strategies for water resource conservation and pollution spread control in rural areas.

#### List of lecturers

- Dr. R. Anlauf  
Stadtwerke Hannover AG, Germany.
- Dr. R. Blazejewski  
Poznan Agricultural University, Poland.
- Or. J.C. van Dam  
Wageningen Agricultural University, The Netherlands.
- Prof. L. Gottschalk  
University of Oslo, Norway.
- Prof. A. Kedziora  
Agricultural University of Poznań, Poland.
- Dr. Z.W. Kundzewicz

## EC TEMPUS Office

70, rue Montoyerstraat 70  
B-1040 Brussels

tel +32-2-50407  
fax +32-2-5040700

- Research Centre of Agricultural and Forest Environment, Polish Academy of Sciences, Poland.
- Prof. H.P. Nachtnebel  
Vienna Agricultural University, Austria.
  - Prof. J. Marcinek  
Agricultural University of Poznań, Poland.
  - Dr. J. Niemczynowicz  
Lund University of Technology, Sweden.
  - Prof. L. Ryszkowski  
Research Centre of Agricultural and Forest Environment, Polish Academy of Sciences, Poland.
  - Prof. F. de Smedt  
Free University, Brussels.
  - Prof. L. Somlyódy  
IIASA, Austria.
  - Dr. B. Szpakowska  
Research Centre of Agricultural and Forest Environment, Polish Academy of Sciences, Poland.

#### Programme of the courses

##### Monday, 21 June

- Strategy for increasing countryside resistance to environmental threats.
- Cost-effective water quality management strategies in Central and Eastern Europe.
- Conflicts between environmental, social, and economical criteria related to rural areas.

##### Tuesday, 22 June

- Groundwater protection policy of the Hannover public water works.
- Estimating regional nitrate and pesticide leaching.
- Strategies for water conservation and pollution - a Swedish perspective.
- Measurement and modelling of water and solute transport in rural areas.

##### Wednesday, 23 June

- Energy and water fluxes in an agricultural landscape.
- Climatic change and sustainable development of rural areas.
- Pollution spread control within rural areas of Poznan Province : surface waters and groundwater.

##### Thursday, 24 June

- Notion of ecohydrology in the context of rural areas.
- What has happened to the oaks - a case of study.
- Onsite wastewater disposal systems and their effects on groundwater quality.
- Geographical Information Systems for groundwater quality.
- Matter cycling in agricultural landscape - conceptual modelling.
- Living with droughts.

##### Friday, 25 June

- Hydrological drought analysis.
- Soil as a barrier in pollution control.
- Cycling of elements in agricultural areas.

## TEMPUS JEP 4724-92/1 Postgraduate Study of Water Resources Management and Sanitary Engineering

The project began with academic year 1992/93. It contains Courses, Workshops and Summer Schools for undergraduate and postgraduate students. Organisations which are included in the project are as follows :

1. **University of Ljubljana**, Faculty of architecture, Civil Engineering and Survey, Dept. of Hydroengineering (Slovenia)  
**Contact person** : Assist. Prof. F. Steinmann, **Coordinator**.
2. **Universität der Bundeswehr München**, Fakultät für Bauingenieur und Vermessungswesen (Germany).  
**Contact person** : Univ. Prof. W. Bechteler.
3. **Royal Danish School of Pharmacy**, Department of Chemistry (Denmark).  
**Contact person** : Prof. S.E. Jørgensen
4. **University of Padua**, Faculty of Engineering, Institute of Ind. Chemistry (Italy).  
**Contact person** : Prof. G. Bendoricchio.
5. **University of Ljubljana**, Faculty of Electr. Engineering and Computer Science, Dept. of Artificial intelligence (Slovenia).  
**Contact person** : Prof. I. Bratko.

The topics of the courses are chosen to reflect our (i.e. Univ. of Ljubljana in particular) present needs and/or weak points in our knowledge, experience, and teaching practice. All the topics are chosen with the idea to form a coherent holistic representation of the present acute problems in water resources and environmental management (i.e. understanding their function, modelling, and managing) on the one hand, and on the other hand the courses are expected to give an interdisciplinary, hopefully holistic approach to tackle mentioned problems. The courses are designed to be continued through the three years of the JEP. The first year courses are designed to be basic introductory courses. They will present the up-to-date-problems try to subsequently get deeper into the essence of the particular topic. The second year courses

will give more insight into the background of the processes and give practical hints how to tackle the academic, modelling, engineering, and managing part of the problem. The third year is meant to give the stress to special state-of-the-art- topics, to present them to the participants of the course and to get "hands-on" experience on tackling the problem as a whole. This approach is meant to be the most appropriate also for the audience who will come from communities, governmental organisations, etc.

1. Intensive Short Course in ecological Modelling  
Date : 31.5 - 11.6.1993  
Key lecturers : Prof. Bendoricchio, Prof. Jørgensen.
2. Advanced Water Resources Management  
Date : 29.3 - 3.4.1993
3. Advanced Applications of Artificial Intelligence, Machine Learning, and Qualitative modelling in Water Science.  
Date : Part 1 : 2.3 - 19.3.1993  
Part 2 : 21.6 - 2.7.1993.

### Programme Coordinator :

Franci Steinman  
University of Ljubljana,  
Faculty of architecture, civil engineering  
and Survey.  
Dept. of Hydroengineering  
Hajdihova 28, P.O. Box 579, 61101,  
Ljubljana, Slovenia.  
Tel. : +38-61-154333  
Fax : +38-61-219897.

## TEMPUS JEP Training and education in computational geohydrology

The objectives of this Joint European Project are the upgrading of education, research and consulting capabilities of the Institute of Environmental Engineering, Warsaw University of Technology, in the field of groundwater management and protection.

The partners are :

- Department of Engineering Hydrology, **University College of Galway**, Ireland (Prof. J.E. Nash and Dr. K.M. O'Connor)
- Laboratory of Hydrology, **Free University Brussels**, Belgium (Prof. F. De Smedt)
- Institute of Environmental Engineering, **Warsaw University of Technology**, Poland (Prof. M. Nawalany).

The main achievement for the academic year 1992-1993 is the organisation of a one week training course Numerical Modelling of Groundwater Flow, 17-21 May 1993, in Warsaw. The course contents include lectures on groundwater flow equations and numerical solution methods and practical computer sessions where students will be able to apply existing finite difference and finite element models to real world problems. The course was intended for graduate students from Eastern European countries. The total number of participments was restricted to 20 persons. In the following years the course will be extended to problems of groundwater management and sustainable use, and protection of groundwater reserves.

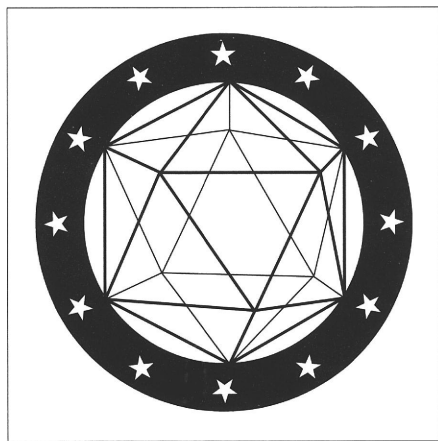
For further details please contact :  
Prof. M. Nawalany,  
Institute of Environmental Engineering,  
Warsaw University of Technology,  
Nowowiejska 20, 00-653 Warsaw,  
Poland.  
Tel/Fax : +48-22-218993.

# NEWS from COMETT

UETP : University Enterprise Training Partnership  
TECHWARE - TECHNOLOGY for WATER RESOURCES

Coordinator : A. Van der Beken  
c/o CIBE-BIWM

70, rue aux Laines/Wolstraat 70, B-1000 Brussels  
Tel +32-2-5188893 • Fax +32-2-5026735



## Improving the relationship between people and technology

This COMETT conference for Members of the European Parliament and industrialists took place in Brussels, March 22nd 1993. The conference provided a forum to discuss:

- the results of COMETT projects and the programmes development. COMETT II is now in its third year of operation and the programme has reached the stage whereby promoters from universities and industry can speak of their experience of the programme and exhibit their training materials.
- the communication concerning European Higher Education - Industry Cooperation: Advanced training for competitive advantage, recently presented by the Commission to the council and the European Parliament. Based largely on the COMETT experience, this document analyses the rationale of university - industry cooperation.

TECHWARE was present and also had a stand for displaying TECHWARE products and for promoting TECHWARE activities. Joanna Maycock from Coordinating TECHWARE Bureau reported: "Thus the overall mood of the conference was to support the COMETT programme and to call for continued funding for UETPs. Indeed there was an overwhelming support for increased and broader based funding for UETPs willing to expand into other fields or projects. The main question raised against COMETT was whether it actually supported new projects or whether it merely gave extra money to existing projects, but it was argued by a number of delegates that the UETPs would not be possible without COMETT, and that the COMETT funding gave a European dimension to projects.

**Ms. Anne André**, MEP (B) defined the European dimension as a political economic and social problem. She argued that COMETT, among others, provided a solution to these problems through education and training. The COMETT programme, and especially the UETP network, is essential to provide day to day management of training and education. She argued that COMETT should, if possible, receive increased funding to strengthen the network, and to provide a broader base of education and training. If increased funding is unavailable, then greater synergy with other projects, such as HCM, should be encouraged.

## Report on Eurascope Seminar "Quality Standards in continuing Education"

IBM, La Hulpe (B) April 29, 1993

**Eurascope** (EUROpean Advanced Short COurses Programme for Engineers) is an organisation which aims to promote and organise high level teaching and training

actions in the field of continuing professional training, in the area of advanced techniques and technologies and also to favour the social advancement of engineers and managers and to increase their contribution to the social, cultural, economic and technological developments at a European level.

This seminar was organised to bring interested parties from all aspects of continuing education together, to discuss how quality in continuing education could be best achieved.

The Seminar took place in three main sessions, firstly there was input from training experts at IBM, followed by participant's presentations, and finishing off with group discussions with the aim of formulating a joint plan of action for achieving quality in continuing education. TECHWARE was an invited participant at this seminar and Joanna Maycock prepared a full report of this seminar, including the transcript of the discussions. It is available, for TECHWARE members, from the CTB.

## ON YOUR DESK

### Guide to European Community Grants and Loans

Tony Reid. Guide to European Community Grants and Loans for commerce, industry, local authorities, academic and research institutions. Newbury, EUROFI, 1992, p. 340, £ 140.

Over the past decade, the guide to European Community Grants and Loans has established itself as the unique definitive reference work on this subject. The Guide is issued on an annual subscription basis and is presented in the form of an elegant loose-leaf binder. Written in straightforward terms, it comprises a basic core of detailed information on all the Community funds and indicates for each scheme: the main objectives; the legislative basis; who is eligible; the levels of funding; deadlines for application; contact points within the EC. In addition to the basic manual, member State supplements are available which provide specific data such as: national contacts; designated regions; examples of past awards. An essential reference manual with regular updates.

**Available from**: Service to subscribers: EUROFI, Guildgate House, Pelican Lane, UK-Newbury RG13 1NX. Tel: +44-635-31900 • Fax: +44-635-37370

## COMETT - TAO Technical Assistance Office

14, rue Montoyerstraat 14  
B-1040 Brussels  
tel +32-2-5138959  
fax +32-2-5139346



## Board of Management and General Assembly of TECHWARE

Tailfer (B), 7 June 1993

### Programme of the Day

- 9.00 Departure by bus from the CIBE/BIWM office to TAILFER (Namur), the Water Treatment Plant on the River Meuse.
- 10.00 Welcome at Tailfer
- 11.30 Board of Management (BM)\*
- 13.00 Lunch
- 14.00 Continuation of BM
- 14.30 General Assembly
- 15.00 Technical Visit
- 17.00 Departure for Brussels

\* All members are invited to attend the BM.

These meetings are followed by the  
**EURO-WORKSHOP, 8-9 June in Brussels**  
including a visit to Antwerp,  
Cultural Capital of Europe 1993.



### services

- water services
- environmental monitoring
- energy services and natural gas distribution

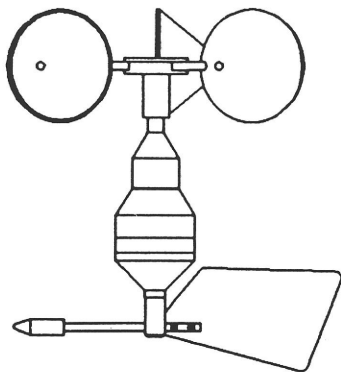
### advanced technology training



STAGE  
SVILUPPO TECNOLOGIE  
ACQUA GAS EUROPA

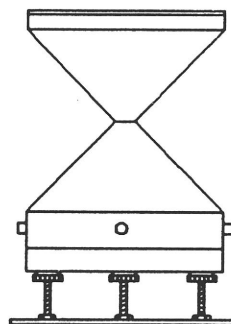
**training centre**

## METEOROLOGICAL & ENVIRONMENTAL MONITORING



### INTEGRATED WIND SPEED AND DIRECTION UNIT

- \* Anodised aluminium construction.
- \* Fast response low-inertia cup assembly.
- \* Dynamically balanced wind vane.
- \* Low-torque potentiometer.
- \* Multiple mounting possibilities.



### ARG100 AERODYNAMIC RAINGAUGE

- \* Rugged low cost design.
- \* Reduces interference with airflow.
- \* Measurement by tipping bucket mechanism.
- \* In widespread use as a weather station sensor.
- \* Can be supplied with an internally fitted datalogger which is of a low power, robust and compact design.

For information pack on all products including weather stations contact:

**ENVIRONMENTAL  
MEASUREMENTS  
LTD**

Unit 4 Ronson Enterprise Park,  
Stoneygate Lane,  
Felling, Gateshead,  
Tyne & Wear, NE10 0HZ, U.K.

Telephone 091 4950107  
International +4491 4950107  
Fax 091 4382761

## EUROPEAN TRAINING COURSES

92-SP 1.5

### **FLOOD HAZARDS IN THE MEDITERRANEAN COUNTRIES : Monitoring Forecasting and Management**

Genova - Italy  
14-16 June 1993

The teaching schedule deals with the following subjects :

- Meteorological forecasting in the mediterranean ambient.
- GIS application in natural hazard assessment and mitigation.
- Remote sensing of cloud systems : satellite and radar techniques for rainfall estimation.  
Multisensor observations.
- Risk perception and warnings.
- Civil protection structural measures for flood hazard mitigation.

92-SP 10.1

### **Computer Aided Design Industrial Piping and Pumping Systems**

Limerick - Ireland  
14 - 16 June 1993

This course aims to examine the use of computer aided learning techniques in the field of advanced water technology. The course is designed for engineers playing a key industrial role in engineering project system design/evaluation/detail economic analysis/commission of the project.

Contact : RTB-UK

92-SP 10.3

### **Combined Sewer Overflows**

Delft - the Netherlands  
16 June 1993

The course will include lectures on : consent standards for storm sewage overflows, design and practise, and storage tanks in sewerage systems.

Contact : RTB-UK

92-SP 2.1

### **Drinking and Wastewater : Network Analysis**

Genoa - Italy  
21-23 June, 1993

This course will introduce several innovative

technologies and methods available to cost effectively manage existing distribution and collection networks that are not fully exploited. The course covers three topics : Network analysis, Optimisation and Main Rehabilitation.

Contact : RTB-I

92-SP 2.4

### **WATER AND ENVIRONMENTAL MANAGEMENT**

#### **Flood Mitigation & Pollution**

Bristol - United Kingdom  
21-25 June, 1993

The content of this course focuses on flood warning, flood forecasting, models and river flood modelling as well as on the rainfall and runoff data used in these computer applications. Data collection, analysis and prediction will be stressed. Special attention is to be given to the hydraulics of river floods, hydraulic structures, and their impact on flooding, stability maintenance and protection of flood banks (with cost/benefit analysis), and the impact of sediment transport on flooding.

Contact : RTB-UK

92-SP 1.1

### **Real Time Control in Urban Drainage**

Wallingford - United Kingdom  
13 - 16 July 1993

This course aims to provide an introduction to the principles of RTC in Urban Drainage. It will include lectures on telemetry systems, simulation models, real time control, operation optimisation and pollution control.

Contact : RTB-UK

92-SP 2.3

### **Coastal Defence**

Bristol - United Kingdom  
13-17 September, 1993

This course is intended for engineers, scientists and managers who wish to be informed about the latest developments in the field of Coastal Defence. It will include lectures and practical experience on a wide variety of topics including : wave generation and prediction; sea defence embankments; off shore breakwaters and the legal, planning and consultation aspects of coastal defence.

Contact : RTB-UK

92-SP.10.4

### **Groundwater Modelling**

Wallingford - United Kingdom  
27 September - 1 October 1993

This short, three-days course is aimed at managers, researchers, and engineers in the water sector who wish to be introduced to the basics of groundwater modelling.

The main themes of the course will be : Principles of Groundwater Modelling, Groundwater management & Groundwater modelling techniques.

Contact : RTB-UK

92-SP 10.2

### **Urban Drainage Modelling in Europe**

Brussels - Belgium  
September 1993

This course will assess the suitability of existing engineering procedures in urban drainage modelling. The course will include lectures on : flow survey and verification, the drainage area plan and EC legislation regarding the wastewater directive.

Contact : RTB-UK

92-SP 10.6

### **Wastewater Treatment for Marketing Personnel**

Stafford - United Kingdom  
Autumn 1993

This course is designed for sales and marketing personnel working for companies who supply equipments and services to Water Companies.

The objective of this course is to ensure that the participants will be able to understand and explain the overall sewage treatment process and the function of the various process elements.

Contact : RTB-UK

SP10.5

### **New Technologies in Port Management**

Venice - Italy  
26 - 28 October 1993

this four-day course is designed as an introduction to the state-of-the-art technologies used in port management. the course includes lectures and practical exercises about : Port management systems, Ship simulation, Crane simulators, Software technology & Vessel ground risk assessment.

Contact : RTB-UK

SP3.3

### **Advance Management of Drinking Water Supply Systems : Water Quality and Treatment Processes**

Genoa - Italy  
27 - 29 October 1993

This course has been successfully run for two years running (1991 & 1992). the course lasts for 3 days, providing the participants with a detailed overview of up-to-date advanced technologies for the management of drinking water supply, intake, transportation and treatment.

The course consists of two components : Water quality (including requirements and treatment processes) & Water supply Management from an operative viewpoint (including multi-source supply, management of a distribution network in emergency conditions, network analysis, leakage search technology, and network rehabilitation).

Contact : RTB-I

SP9.1

### **Surface Water Pollution**

Pavia -Italy  
October 1993

This course will focus on the analysis and simulation of transport and transformation of

contaminants in rivers, lakes and estuaries. Participants will also learn the basic use of the WASP4 (Water analysis simulation Programme) Model. Both theoretical and practical aspects of the model will be considered for Drainage networks and sewer systems. Participants will learn how to use the MUSS Model through practical applications with some case studies.

Contact :: RTB-I

SP3.4

### Advanced Waste Water Treatment and Technologies

Genoa -Italy  
15-17 December 1993

this course is designed as an introduction to waste water treatment processes. The main topics covered in the course are : Characterisation of waste water (organic and inorganic compounds, solid and microbial contents, etc. The application of advanced filtration technology to waste water treatment (removal of colloidal, dissolved and suspended matter)., Biological methods for BOC/COD reduction using aerobic and anaerobic processes & Environmental impact reducing air treatment processes and sludge-handling.

Contact : RTB-I

### EURO-WORKSHOPS on RTD & D for Water Resources Management

Potenza - Italy,  
28-29 June 1993

Wallingford - United Kingdom,  
11-12 October 1993

Each workshop will explain the basics, the methodology, and the advanced reasoning applied in the SAST project No. 6 "RTD for the Supply and Use of Freshwater Resources". The various project reports will also be discussed. The course will also focus on existing and future RTD&D programmes. Finally, the discussions and recommendations of the workshops are intended to finalise a suitable regional policy for the Regional TECHWARE Bureaux (RTBs), and to provide training in the preparation of projects for submission in the Fourth Framework Programme of the EC.

## TECHWARE

### Membership Dues 1993

Decision of the General Assembly of Lisboa, 12 June 1992

- Individual Consultant.....210 ECU
- University, Laboratory or Department of School or non-profit Research Institute .....230 ECU
- Enterprise/Undertaking/Authority (less than 200 employees) .....315 ECU
- Professional or Scientific Association, UETP's, Federation of enterprises.....420 ECU
- Enterprise/Undertaking/Authority (more than 200 employees) .....525 ECU

Apply for membership at one of the TECHWARE Bureaux CTB or RTB.

### FOR ALL FURTHER INFORMATION, please contact :

#### CTB - Coordinating TECHWARE Bureau

c/o CIBE-BIWM  
Wolstraat 7, rue aux Laines, B- 1000 Brussels, Belgium  
tel +32-5188893 • fax +32-25026735  
Bank Accountnumber : ASLK-CGER BANK 005-4323374-76  
P.O. 1436 - Brussels 1, B - 1000 Brussels  
telex 26860 • fax +32-2-139117  
For easy and quick money transfer, use code : 61189SWIFT CGAK BE BB

#### RTB-I - Regional TECHWARE Bureau

c/o AMGA,  
via SS. Giacomo e Filippo 7, I - 16122 Genova, Italy  
tel +39-10-28581 • fax +39-10-2858284

#### RTB-UK - Regional TECHWARE Bureau

c/o HR Wallingford  
Wallingford, UK - OX 10 8BA Oxfordshire, Great Britain  
tel +44-491-835381 • fax +44-491-832233

### TECHWARE EUROPEAN TRAINING COURSES

Edition March 1993

A new summary of all courses is now available and can be ordered free of charge from the CTB. Please fill in and return :

*I request the summary of all course descriptions, free of charge.*

Name : .....

Address : .....

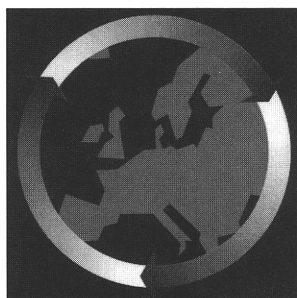
Return to : Coordinating TECHWARE Bureau c/o CIBE-BIWM • 70, rue aux Laines-Wolstraat 70, B-1000 Brussels  
Fax : +32-2-5026735

# HUMAN CAPITAL AND MOBILITY

Pan-European Scientific Network : WEEL - Water Environment European Laboratories  
(subnetwork of TECHWARE)

Coordinator : Prof. F. Siccardi

Università di Genova, Istituto di Idraulica - Via Montallegro 1, I - 16100 Genova, Italy  
tel +39-10-3532496 • fax +39-10-3532481



## WEEL

The coordinator of proposal No. ERB4050PL921686 **Water Environment European Laboratories**, Prof. F. Siccardi has finally received at the end of April the contract negotiation forms and the working programme documents for inclusion in the contract. These forms are being distributed among the participants of WEEL and an updated version of the work programme of WEEL is now prepared. The preliminary actions of the coordinator facilitates all these preparations and WEEL does hope to start its activities in September 1993. This first **transnational mobility scheme for young researchers at the post-doctoral level in the water sector** is a challenge and the experience will help in preparing a continuation in 1994-1995 and beyond.

### Official Partners of WEEL

- A** Universität Wien
- B** Katholieke Universiteit Leuven  
Université de Liège  
Vrije Universiteit Brussel  
Ministère de l'Environnement et de la Santé Publique, Bruxelles
- F** Centre National de Recherche Scientifique, Grenoble  
Laboratoire d'Hydraulique de France, Eycherolles
- GR** Aristotle University of Thessaloniki
- I** Università di Genova  
Università di Firenze  
Azienda Municipalizzata Gas E Acqua, Genova  
Centro di Ricerca e Formazione per il Controllo dei Sistemi Idrici, Cagliari CISE  
Società Assistenza Tecnologia Reti  
Università di Salerno  
Università di Pavia  
Water Resources Research and Documentation Centre, Perugia
- P** Laboratório Nacional de Engenharia Civil, Lisboa
- UK** HR-Wallingford  
University of Bristol  
Sheffield City Polytechnic  
University of Lancaster  
University of Newcastle upon Tyne  
University of Reading  
University of Surrey

## HUMAN CAPITAL and MOBILITY CEC - DG XII

75, rue Montoyerstraat 75  
B-1040 Brussels

tel +32-2-2955369  
fax +32-2-2963307

## BEST

Building of Extension of S&T network  
TECHWARE/WEEL in  
Central and Eastern Europe

The Coordinator of WEEL got at the end of March a letter about the possibility of financing the participation of organizations and/or scientists of Central and Eastern Europe in projects of the Community Research Programmes.

### Eligible countries

Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia.

The Information Package and Application Form are available from the following

### CONTACT POINTS :

- ALBANIA** **MR. J. THERESKA**  
Committee for Science and Technology  
Mine Peza 4, Al-Tirana, Albania  
Tel 3554232083 Fax 3554232083
- BULGARIA** **MR. I. SCHOPOV**  
Institute of Polymers  
Academy of Sciences  
Acad. G. Bontchev, 103-A  
BG-1113 Sofia, Bulgaria  
Tel 3592707377 Fax 3592707523
- CZECH REPUBLIC** **MRS. Alena SPEJCHALOVA**  
Department of International Relations  
Ministry of Education, Youth and Sports  
Karmelitska 7  
CS 118 12 Prague 1, Czech Republic  
Tel 4225193379 Fax 4225193790
- ESTONIA** **Mr. A. PURGA**  
Ministry of Foreign Affairs  
Ravala 9, Suur Ameerika 1  
EE-0100 Tallinn, Estonia  
Tel 3722445737 Fax 3722771677
- HUNGARY** **MR. G. SERFOZO & MR. B. DAJKA**  
Ministry of Culture and Education  
Szalay utca 10-14  
H-18884 Budapest V, Hungary  
Tel 3611530600 Fax 3611225935  
**MR. B. MURANYI / OMF**  
Martinelli tér, 8  
H-1374 Budapest, Hungary  
Tel 3611184402 Fax : 36126620556
- LATVIA** **MR. Andrejs SILLINS**, Secretary General  
Latvian Academy of Sciences  
Turgeneva Str. 19, LV-1524 Riga, Latvia  
Tel 3712211405 Fax 3712228784
- LITHUANIA** **MRS. K. JURGIENIENE**  
Lithuanian Agency for Higher Education  
Research & Development  
Government of the Republic of Lithuania  
Gedimino pr. 1, Lithuania  
Tel 3702226270 Fax 3702614829
- POLAND** **MR. B. ROKOSZ**  
Komitet Badan Naukowych  
Ul Wspolna 1/3  
PL-00921 Warszawa 53, Poland  
Tel 4826288586 Fax 4826283534  
**MRS. E. KOLANOWSKA**  
Ministry of National Education  
Foreign Relations Department  
AL. I. Armii Wojska Polskiego 25  
PL-00-918 Warszawa, Poland  
Tel 4822292483 Fax 4822292483
- ROMANIA** **MR. Mircea SBARNA**  
Ministry of Research and Technology  
International Cooperation Department  
Street General Berthelot 30, Sector 1  
RO-70738 Bucharest, Romania  
Tel 4013120140 Fax 4013121410
- SLOVAK REPUBLIC** **MRS. Zuzana MIKULOVA, PhD.**  
S&T Policy Department  
Section of Science and Technology  
Ministry of Education and Science of the  
Slovak Republic  
Hlboká 2  
CS-813 30 Bratislava, Slovak Republic  
Tel 427496572 Fax 427491036
- SLOVENIA** **MR. Albin BABIC**  
Ministry of Science and Technology  
Slovenska 50  
61000 Ljubljana, slovenia  
Tel 3861111107 Fax 3861124140

## Fourth Framework Programme RTD & D 1994-1998

A second Commission working document (ref. COM(93)158, Brussels 22 April 1993) has been distributed to National Authorities. It follows the first working document of October 1992 (COM(92)406) and takes note of the conclusions of Edinburgh, the world evolution and the comments and recommendations with respect to the first document (see PANTA RHEI No. 14, September 1992, p. 15).

Five guiding principles are put forward :

### 1. Reinforced selectivity.

The four Actions remain the same :

- **RTD** and Demonstration
- **Cooperation** with third countries and international organisations, • **Dissemination** and optimization of results,
- **Training** and **mobility** of researchers. The first action (RTD & D) is limited to 7 themes instead of 15 in the 3rd Framework Programme. Two new themes are included : research for a European transport policy and socio-economic research.

### Themes RTD & D (first action)

1. Information and communication technologies
2. Industrial technologies
3. Environment
4. Life sciences and technologies
5. Energy
6. Research for a European transport policy
7. Socio-economic research

While the so-called "generic technologies" for multisectoral applications are focused, concentration and integration are also applied in order to reduce the research domains from 54 to 28. Hence, under **Theme 3. Environment** only two domains (5 in the earlier document) are maintained :

- **the natural environment, its quality and the global change**
- **the innovating technologies for the protection of the environment**

The concept of "sustainable development" is introduced.

**Water resources management** is considered as one of the 10 priority problems. The need for a multidisciplinary and integrated approach is stressed and a major Community support is announced within the world efforts for **global change research** and **world watch**.

In the second domain, a reinforcement of links with the EUREKA programme is proposed.

Although **water resources management** is one of the ten priority problems recognized in this document, one does not find a clear notion about the "generic technology" character of an integrated approach in water systems and a.o. international river basin management. For instance, the link with **Theme 1 : Information and communication technologies** could be clearly made (see e.g. the Japanese approach since 1985 : FRICS - Foundation of River and basin Integrated Communication Systems. The "clean river" could become as "generic" as the "clean car". *"Water resources management is no longer a prerogative of one discipline or one sector. It is cross-sectoral and comprehensive in nature and it must be part of a broader, regional economic development strategy that takes into account other sectoral dimensions - agriculture, manufacturing, energy, population growth and health issues - so that ecosystem-based water management can be sustained"*.

Alfred M. Duda, Senior Water Resources Management Specialist, World Bank. Ref. Environment Bulletin, Vol. 5 - No. 2, Spring 1993, p. 7.

**Water resources management** has also a strong link with **Theme 2 : Industrial technologies**, much more than the second domain in Theme 3 infers.

Obviously, it is also linked to **Theme 6: Research for a European transport policy**. All reasons for supporting the EURO-WORKSHOPS of **TECHWARE !**

JOIN THE TECHWARE EURO-WORKSHOPS for preparing the Fourth Framework Programme.

If you missed the ones in Lisbon (5-6 April) or Brussels (8-9 June), don't miss the one in POTENZA (Italy), 28-29 June or in WALLINGFORD (UK), 11-12 October 1993.

### Target Audience

**Contact** : RTB-I c/o AMGA, RTB-UK, c/o HR-Wallingford.

Tel : +44-491-835381

Fax : +44-491-832233

see addresses on page 11

### 2. Integration of national, Community and European actions.

Science policy research, operations research and decision techniques will be developed under theme 7 with a strong link to Action 4.

### 3. Synergy between research and training.

The economic and social development relies not only on labour and capital : **knowledge, skill and transfer** of knowledge and skill are as important. Training will be incorporated in the RTD & D projects and horizontal activities will be reinforced under action 4. Moreover, Theme 7 of Action 1 will encompass a.o. research on education and training. Continuation of education and training programmes such as COMETT, ERASMUS ... is foreseen.

### 4. Flexibility.

Efforts will be made to adjust the framework programme to the scientific and technological needs.

### 5. Financial resources.

13.1 billion ECU are targeted as follows :

	MECU
First activity	10.925
Subdivision	
Theme 1	3.900
Theme 2	1.800
Theme 3	9700
Theme 4	1.325
Theme 5	2.325
Theme 6	280
Theme 7	125
Second activity	790
Third activity	600
Fourth activity	785

## INFO from EUROPE

### EUCC - European Union for Coastal Conservation

The European Union for Coastal Conservation (EUCC) is an international organization which aims to promote nature conservation and wise use of European coastal environments. It includes scientists, managers, government bodies and nature conservation organizations in 30 countries, who interact to provide a cohesive approach to the protection and management of European coastal systems. Secretariat : P.O. Box 11059, NL-2301 EB Leiden, the Netherlands.  
Tel +31-71-122900/123952  
Fax +31-71-124069

### Towards the preparation of a digitized European river network and catchment boundary map

A consistent digitized European map containing information about the drainage network and catchment boundaries of European rivers does not exist. Several users within Commission services as well as the European Environment Agency Task Force (EEA-TF) of DG XI of the European Commission need such a map. Therefore the Task Force and the GISCO group at EUROSTAT have taken a joint initiative to study the feasibility of producing such a map from the existing or planned mapping activities in European countries. For further information, contact : M.H. Cornaert, CEC Directorate General Environment, Nuclear safety and Civil Protection  
DG XI - Task Force  
"European Environment Agency"  
200, rue de la Loi  
B-1049 Brussels, Belgium

## INFO from JAPAN

*"One who controls rivers governs the country" (Chinese proverb)*

- The River Bureau of the Ministry of construction has published a nice booklet on activities of the River Bureau and the situation of the rivers in Japan (address : River bureau, 2-1-3 Kasumigaseki Chiyoda-ku, Tokyo).
- RIVERS and JAPAN

A Magazine on rivers is a beautiful new Magazine published by FRICS - **Foundation of River and basin Integrated Communication Systems**. The foundation aims at collecting, processing and dissemination information on rivers and basins, and thus reduces flood damage and contributes to better and reasonable use of rivers.

### The role of Education and Training in the Internationalization Process of Japanese Companies

Mari Suvanto. Reports on the Education and Training systems of Japanese companies in Japan and the United Kingdom  
Published by the International Association for Continuing Engineering Education, IACEE. Espoo 1993, ISBN 952-9789-00-9. Price : US\$35.00 for non-members, US\$ 18.00 for members. TECHWARE is a member of IACEE.

## INFO from LATIN AMERICA

### CATHALAC

CATHALAC is the acronym for "Centro del agua del Trópico Húmedo de América Latina y el Caribe" or in English : "Water Center for the Humid Tropics of Latin America and the Caribbean". The Center has been established under the auspices and with the co-operation of the UNESCO International Hydrological Programme (IHP). The effort was undertaken on the instigation of a broad range of scientists working in humid tropical hydrology, who felt there was an urgent need to co-ordinate the efforts of ongoing research projects and put them into an international perspective as well as to make the results available to a wide audience.  
CATHALAC will serve as an administrative focal point for Latin America and the Caribbean in the area of training, research and technology transfer in the field of water resources and the environment, with especial emphasis on problems and issues related to humid tropics. The most important aspect of CATHALAC is that it will provide the mechanisms by which expertise within the region may be shared and developed. This knowledge is not intended to be limited to technical experts,

but will be equally important to planners and decision-makers upon whom the development of the region is so keenly dependent. To ensure that CATHALAC is firmly embedded in the hydrological community of Latin America and the Caribbean, scientific and administrative guidance will be provided by representatives of the IHP National committees in the region. Operations of CATHALAC began in 1993 under an agreement between the Republic of Panama and UNESCO.  
Address : Director CATHALAC  
P.O. Box 873372  
Panama 7, Republic de Panama

## INFO from USA

### GREEN Global Rivers Environmental Education Network

One of the major objectives of the global Rivers Environmental Education Network (GREEN) is to provide the opportunity and infrastructure to link teachers, students, administrators, and relevant professionals in river education programs. GREEN is designed to help improve water quality of rivers, and therefore the quality of life of people that depend on those rivers for



domestic, agricultural and industrial needs. It is also a dream that the GREEN process will foster greater cross-cultural sensitivity, and

encourage participants to acknowledge and respect different ways of thinking, feeling, and responding to water quality issues.

**Contact** : The University of Michigan School of Natural Resources  
430 East University, Dana Building  
Ann Arbor, Michigan 48109-1115  
Tel +1-313-764-5171  
Fax +1-313-936-2195

# CALENDAR

RN →

See reference number for corresponding addresses - page 17

## JUNE 1993

**12** JUNE 1993  
Delft (NL)  
**TECHWARE ETCourse**  
**SP10.3**  
Combined Sewer  
overflows.

**12** 10 JUNE  
Harrogate (UK)  
Seminar  
Detention Storage in  
Urban Drainage

**32** 10 JUNE-09 JULY  
Moscow (Russia)  
International Higher  
Hydrological  
Course. The  
hydrological  
background of the  
rational use of water  
resources.

**16** 13-15 JUNE  
Aalborg (DK)  
Conference  
Cooperation between  
higher education and  
industry - the experience  
of COMETT.

**11** 14-16 JUNE  
Genova (I)  
**TECHWARE ETCourse**  
**SP1.5**  
Flood hazards in the  
Mediterranean  
countries: Monitoring  
and forecasting  
management.

**12** 14-16 JUNE  
Limerick (IRL)  
**TECHWARE ETCourse**  
**SP10.1**  
Computer Aided  
Design. Industrial Piping  
and Pumping Systems.

**1** 14-18 JUNE  
Davis, California (USA)  
Flood Plain Hydrology :  
HEC-1 Microcomputer  
Applications.

**12** 15-16 JUNE  
Wallingford (UK)  
Introductory Course on  
Estuary Hydraulics.

**12** 16 JUNE  
Delft (NL)  
**TECHWARE ETCourse**  
**SP10.3**  
Combined Sewer  
Overflows.

**43** 18 JUNE  
Marseille (F)  
Les Nouveaux Outils  
Pédagogiques pour  
l'Enseignement  
Supérieur.

**53** 18-25 june  
Antwerpen (B)  
Course  
Koelwater en Milieu  
**1** 21 JUNE  
Davis, California (USA)  
Courses on HEC water  
engineering simulation  
models. Floodplain :  
How is it defined ?

**11** 21-23 JUNE  
Genoa (I)  
**TECHWARE ETCourse**  
**SP2.1**  
Drinking and  
Wastewater : Network  
Analysis.

**12** 21-25 JUNE  
Bristol (UK)  
**TECHWARE ETCourse**  
**92-SP2.4**  
Flood Mitigation.&  
Pollution.

**2** 21-25 JUNE  
Cagliari (I)  
HYDROCONTROL Courses  
Sprechi, perdite e  
metodi do  
contenimento.

**14** 21-26 JUNE  
Poznan (PL)  
Training Seminar EWA-  
Ring.  
Water resources  
conservation and  
pollution spread control  
within rural areas.

**12** 24 JUNE  
Wallingford (UK)  
Seminar  
River catchment  
management and  
planning

**35** 24JUNE-3 JULY  
Maastricht (NL)  
Courses  
• An introduction to the  
administration of  
international education.  
• Administration and  
policy development in  
international education.  
• Policy development in  
international education.

**11** 28-29 JUNE  
Potenza (I)  
**TECHWARE EUROWORKSHOP**  
**92-SE1**  
RTD & D for Water  
resources Management.

28 JUNE-2 JULY  
Delft (NL)  
Short Course  
Modelling of Flow and  
Contaminants in the  
Subsoil.

## JULY 1993

**55** 05-07 JULY  
Birmingham (UK)  
Training course  
Applied Groundwater  
Modelling.

**36** 02-17 JULY  
Flagstaff (USA)  
Course  
Introduction to higher  
education in the U.S.

**2** 05-09 JULY  
Cagliari (I)  
HYDROCONTROL Courses  
Gestione delle  
emergenze :  
manutenzione e scorte.

**37** 05 JULY-24 SEPT  
Leuven (B)  
Training course in  
computer application for  
irrigation.

**12** 13-16 JULY  
Wallingford (UK)  
**TECHWARE ETCourse**  
**SP1.1**  
Real time Control in  
Urban Drainage.

**52** 19-21 JULY  
Chicago, IL, USA  
Workshop  
Water Distribution  
Modeling.

**2** 19-23 JULY  
Cagliari (I)  
HYDROCONTROL Courses  
Normativa e tecnologie  
di trattamento per il  
reimpiego e lo  
smaltimento delle acque  
reflue.

**51** 19-31 JULY  
Sunderland (UK)  
Training course  
The Applications of  
Ecotoxicology in the

Monitoring, Regulation  
and control of Marine  
Pollution.

## AUGUST 1993

**37** 02 AUG-24 SEP  
Leuven (B)  
Training course.  
Computer application in  
irrigation and drainage  
design.

**37** 02 AUG-24 SEP  
Leuven (B)  
Training course.  
Application of remote  
sensing and GIS in land  
and water  
management.

**54** 9-13 AUGUST  
London (UK)  
Summer School  
Project Management.  
the Critical Skills and  
Techniques.

**54** 16 AUGUST  
London (UK)  
Seminar  
Managing your Project  
Managers.

**52** 16-18 AUG  
Seattle, WA, USA  
Workshop  
Water Distribution  
Modeling.

**20** 16AUG-26NOV  
Wageningen (NL)  
32nd International Post-  
Graduate Course on  
land Drainage

**22** 27-28 AUG  
Lausanne (CH)  
**ERASMUS-ICP**  
Hydrology and Water  
Management Plenary  
Meeting.

**42** 30 AUG-1 SEPT  
St Andrews (UK)  
Coastal and estuarine  
pollution : biology and  
management.

**23** 30 AUG-03 SEP  
Dublin (IRL)  
8th World Conference  
on Co-Operative  
Education.

**19** 30 AUG-10 SEP  
Wien (A)  
Post-Graduate Course

**Note** : In view of PANTA RHEI's objectives, this calendar includes only educational and training or related activities in the field of water and HUMAN RESOURCES and MOBILITY.

These announcements are made free of charge.

Advertising of other activities such as Conferences, are welcome. See rates on page 19.

Please contact the Editor.

Geographic Information Systems

**38** 31 AUG  
Tokyo (Japan)  
Seminar on continuing education for capacity building in hydraulic and water resources engineering.

**34** 31 AUG-17 SEP  
Southampton (UK)  
Short Course  
Development and the Environment.

### SEPTEMBER 1993

**22** SEPT ANNUALLY  
Brussels (B)  
Interuniversity Postgraduate Programme in Hydrology.

**12** AUTUMN 1993  
Stafford (UK)  
**TECHWARE ETCourse**  
**92-SP 10.6**  
Wastewater Treatment for Marketing Personnel.

**21** SEPT 1993  
Brussels (B)  
**TECHWARE ETCourse**  
**92-SP 10.2**  
Urban Drainage Modelling in Europe.

**23** SEP ANNUALLY  
Edinburgh (UK)  
Glasgow, Scotland (UK)  
Msc Course for Water Engineers  
Water Resources Management & Engineering.

**57** 01-03 SEP  
Reykjavik (ISL)  
Conference  
Quality and Productivity in Software Development.

**47** 02 SEPT-20 DEC  
Computer Conference  
**TECHWARE-TRITON** Course  
Integrated urban runoff Distance Education.

**46** 06-07 SEPT  
La Seu d'Urgell (E)  
Crues torrentielles et inondations : montagne et régions méditerranéennes.

**4** 06-11 SEPTEMBER  
Portugal  
COMETT Advanced Education Course  
Evaluation of impacts and priority settings in environmental management.

**25** 06-11 SEPTEMBER  
The Hague (NL)  
15th International Congress on Irrigation and Drainage :Research and training programs and their influence on institutional management performance.

**42** 06-16 SEPT  
Oxford (UK)  
Science, technology and society, appropriate science education for the 21st century

**12** 13-17 SEPTEMBER  
Bristol (UK)  
**TECHWARE ETCourse**  
**92-SP2.3**  
Coastal Defence.

**2** 13-17 SEPTEMBER  
Cagliari (I)  
HYDROCONTROL Courses  
Strumenti di misura, di regolazione e di controllo.

**24** 20-24 SEPTEMBER  
Lodz (PL)  
2nd East-West Congress on Engineering Education  
Enhancing Engineering Education Research.

**12** 20-24 SEPTEMBER  
Wallingford (UK)  
Short course on Hydrometry.

**12** 27 SEPT-1 OCT  
Wallingford (UK)  
**TECHWARE ETCourse**  
**92-SP10.4**  
Groundwater Modelling.

**34** 27 SEPT-15 OCT  
Southampton (UK)  
Short Course  
Effective Irrigation Management

**12** 28-29 SEPT  
Wallingford (UK)  
Short Course  
Timeseries Rainfall for Urban Drainage Models.

### OCTOBER 1993

**5** OCTOBER ANNUALLY  
Silsoe Bedford (UK)  
MSc courses in Water Irrigation Engineering.  
• Soil and Water Engineering.  
• Irrigation Water Management.  
• Environmental Water Management.  
• Community Water Supplies.

**39** OCTOBER ANNUALLY  
Coimbra (P)  
Msc Course  
Hydraulics and Water Resources.

**11** OCTOBER 1993  
Pavia (I)  
**TECHWARE ETCourse**  
**SP9.1**  
Surface Water Pollution.

**25** 06 OCTOBER  
Budapest (H)  
Seminar of the IWSA Foundation for the Transfer of Knowledge  
Continuing education needs for Integrated Water Resources, World-Wide.

**2** 11-15 OCTOBER  
Cagliari (I)  
HYDROCONTROL Courses  
Sistemi di automazione e di teleoperazione.

**12** 11-12 OCTOBER  
Wallingford (UK)  
**TECHWARE EURO-WORKSHOP**  
**92-SE1**  
RTD & D for Water Resources Management.

**12** 21 OCTOBER  
Harrogate (UK)  
Seminar  
Road drainage.

**11** 26-28 OCTOBER  
Venice (I)  
**TECHWARE ETCourse**  
**SP10.5**  
New Technologies in Port Management.

**11** 27-29 OCTOBER  
Genoa (I)  
**TECHWARE ETCourse**  
**SP3.3**  
Advanced Management of Drinking Water Supply: Water Quality and Treatment Processes.

### NOVEMBER 1993

**26** NOVEMBER '92  
Bangkok, Thailand  
Pre-conference short course : Environmentally Sound Water Resources utilization.

**3** 10-12 NOVEMBER  
Singapore  
International Conference on Engineering Education '93.

**12** 11 NOVEMBER  
Wallingford (UK)  
Seminar  
Computer aided learning

for the water industry

**2** 15-19 NOVEMBER  
Cagliari (I)  
HYDROCONTROL Courses  
Telerilevamento, elaborazione di immagini e sistemi informativi territoriali.

**48** 15-19 NOVEMBER  
Delft (NL)  
Environmental Training in Engineering Education.

**58** 20-25 NOV  
Acquafredda di Maratea (I)  
European Research Conference.

**50** 22-24 NOV  
Paris (F)  
International Workshop Bromate and Water Treatment.

**12** 23-25 NOV  
Wallingford (UK)  
Introductory Course  
River hydraulics and Hydrology.

**54** 29 NOVEMBER  
London (UK)  
Seminar  
Managing your Project Managers.

**20** 29 NOV-17 DEC  
Wageningen (NL)  
International Course  
Microcomputer Applications in Land Drainage.

### DECEMBER 1993

**35** 02-04 DECEMBER  
The Hague (NL)  
5th Annual Conference  
Europe and beyond.

**12** 9 DECEMBER  
Wallingford (UK)  
Seminar  
Validation of technical software for the water industry.

**2** 13-17 DECEMBER  
Cagliari (I)  
HYDROCONTROL Courses  
Gestione delle emergenze : manutenzione e scorte.

**11** 15-17 DECEMBER  
Genova (I)  
**TECHWARE ETCourse**  
**SP3.4**  
Advanced Waste Water Treatment and Technologies.

### 1994

**52** 10-12 JAN  
Orlando, FL, USA  
Workshop  
Water Distribution Modeling.

**49** 10 JAN-10 FEB  
Southampton (UK)  
Wageningen (NL)  
International Course  
Computer Applications in Irrigation.

**19** 24 JAN-04 FEB  
Wien (A)  
Post-Graduate Course  
Geographic Information Systems.

**40** FEBRUARY ANNUALLY  
Adelaide (Australia)  
MSc, MengSc, MEng, MAppSc Courses  
Joint Universities' Masters Program in Hydrology and Water Resources.

**41** 01-04 FEBRUARY  
Khartoum (Sudan)  
International Conference on Efficient utilization & Management of Water Resources in Africa.  
Education and Training of Water Users.

**27** 29 AUG-02 SEPT  
Prague (PL)  
International Workshop  
Post-graduate hydrology education.

**42** 12-16 SEPTEMBER  
Birmingham (UK)  
Remote Sensing and GIS in Urban Waters (UDT '94). Education and Training Tools.



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See reference number for corresponding activity

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- 2** HYDROCONTROL, Centro di Ricerca e  
Formazione per il Controllo dei  
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Tel&Fax :+39-401512/401195
- 3** Intl Conference on Engineering  
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Kent Ridge Crescent,  
Singapore 0511  
Tel : +65-7755822  
Fax : +65-7730924
- 4** Technical Research Centre of Finland  
Non-Waste Technology Research  
Unit/COMETT Project  
Attn. Mr. Rabbe Thun, PO Box 205  
SF-02151 Espoo, Finland
- 5** Cranfield Institute of Technology,  
Silsoe College  
Silsoe Bedford MK45 4DT England  
Tel : +44-5255-860428  
Fax : +44-525-861527
- 6** School of Earth Sciences  
The University of Birmingham  
Mr. David Lerner  
Edgbaston  
UK-Birmingham 515 2TT  
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- 7** EERO Training Centre, PO Box 182  
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Safety and Reliability  
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N-7034 Trondheim  
Tel : +47-7-597053  
Fax : +47-7-592896
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Water Sciences Division  
7, Place de Fontenay  
F-75352 Paris 07  
Tel : +33-1-45684006  
Fax : +33-1-45675869
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Via S.Giacomo e Filippo 7  
I-16122 Genova, Italy  
Tel +39-10-28581  
Fax +39-10-2858284
- 12** TECHWARE - RTB UK  
c/o HR Wallingford  
Howbery Park, Wallingford  
Oxfordshire OX108BA, UK  
Fax : +44-491-832233
- 13** EDEN, Miss Kerry Mann  
PO Box 92, Milton Keynes  
UK - MK7 6DX  
Tel : +44-908-652468  
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Fax : +31-8370-84885
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Tel : +45-33-925436/42  
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The Society for Computer  
Simulation, European Office  
University of Ghent  
Coupure Links 653  
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University, MS 38677, USA  
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Dept. of Geoinformation  
Dr. Karen Kemp  
Gusshausstrasse 27-29, A-1040 Vienna  
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Dpt. of Electrical Engineering  
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Division of Water Resources Engineering  
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Prof. P. Kovar  
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Fax : +795-7-959395326
- 33** M.A.I. ENGREF, L. Duckstein  
19, Ave. du Maine  
F-75732 Paris CDX15
- 34** Institute of Irrigation Studies  
University of Southampton  
Miss L. Horley, Highfield  
UK-Southampton SO9 5NH  
Tel : +44-703-677519  
Fax : +44-703-593728
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International Education  
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Fax : +31-206209406
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- 37** Center for Irrigation Engineering  
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Fax : +33-76514260
- 47** Pia Hansen  
Dept. of Environmental Engineering  
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Fax : +4444-21-41143971
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Tel : +354-1-694924  
Fax : +354-1-28801
- 58** Dr. J. Hendekovic  
European Science Foundation  
1, quai Lezay-Marnésia  
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## ON YOUR DESK

### STOP DISASTERS - Newsletter

The United Nations

International Decade for Natural Disaster Reduction  
Published by the Osservatorio Vesuviano  
In co-operation with the IDNDR secretariat  
Palais des Nations, CH-1211 Geneva, Switzerland  
Participants in the IDNDR, at all levels of disaster management, receive STOP Disasters. IDNDR actions include legislation, engineering and structural projects, aerospace and telecommunications applications, computer modelling and digital hazard mapping.

## POSITION WANTED

**Vermeulen Hendrik** (23), agricultural engineer with specialisation agricultural constructions and water management is looking for a job, preferably in the sector of agricultural water management (Belgium or abroad). **Experience** : 6 months training in the groundwater research group of the National Laboratory of Civil Engineering (LNEC), Lisbon, Portugal. **Languages** : Dutch, English, Portuguese, French, German. Due to military service only available from February '94 onwards.

**Contact** : Hendrik Vermeulen, Okkedries 7  
B-8573 Tiegem. Tel : +32-56-688814

## STUDENT OPPORTUNITIES

### The Royal Academy for Overseas Sciences announces the annual Contest 1995.

Fifth question :

Study of water transfers towards drought stricken regions : analysis of criteria for project definition, a.a. Climatological, hydrological, technological, socio-economical and political aspects.

Deadline for submission : May 1, 1995.

**Contact** : Secretariat of the Academy  
Defacqzstraat 1, Box 1, B-1050 Brussels, Belgium  
Tel : +32-2-5380211 • Fax : +32-2-5392353

## VACANCY

### THE WORLD BANK

announces the following vacancies :

- **Sanitary Engineer**

Infrastructure Operations Division. Occidental and Central Africa Department. African region.

- **Sanitary Engineer**

Infrastructure : Energy operations Division. Latin America and the Caribbean region.

- **Water Resources specialist**

Environmentally sustainable Development Division - Technical Department. African Region.

**Contact** : Ms. E. Lemoine, The World Bank  
66. Avenue d'Iéna, F-75110 Paris  
Tel : +33-1-40633052 • Fax : +33-1-40693065

### HEAD, MOROCCO COUNTRY PROGRAM

#### The International Irrigation Management Institute

is seeking a Resident head for its Country Program in Morocco to be responsible for the development and implementation of collaborative field research projects; strengthening linkages with national agencies; and helping develop new projects (including seeking additional donor funding).

Candidates should have 10 years experience in multidisciplinary research in irrigation management in an arid or semiarid environment, part of which should be in a developing country (other than home country) and some of which should be resident experience in North Africa. They should also have demonstrated research experience related to irrigation management; excellent communication skills in French and English (Arabic would be an advantage); a capacity for leading and interacting with multidisciplinary teams; an advanced degree in a discipline related to irrigation management; and experience in interacting effectively with government and donor bureaucracies.

**Contact** : International Recruitment Consultant  
(Ref. No. 601 ML), IIMI, P.O. Box 2075,  
Colombo, Sri Lanka • Fax : 941-566854

To advertise your vacancies,  
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NEXT COPY DEADLINE :  
1 August 1993

## FRACTALS

### THE DROP OF WATER

*A Fairy Tale by Hans Christian Andersen*

I suppose you know what a magnifying glass is - a sort of round eye-glass that makes everything a hundred times bigger than it is ? If you take it and hold it in front of you and look at a drop of water out of the pond, you can see any number of strange-looking creatures that you would otherwise never see in the water; yet, sure enough, there they are. It looks rather like a plateful of shrimps hopping about among each other; and they are so ferocious that they tear off each other's arms and legs, buttocks and thighs - though, in spite of that, they are quite pleased and cheerful in their own way.

Now there was once an old man whom everybody called Creepy-Crawly, because that was his name. He always would have the best of everything and, if other means failed, then he got what he wanted by magic.

Well, one day he sat holding his magnifying glass in front of him and looking at a drop of water that came from a puddle in the ditch. Goodness, what a lot of creeping and crawling there was ! Hundreds of little creatures were all hopping around and tugging at each other and eating each other.

"Really it's quite repulsive," said old Creepy-Crawly. "Can't they be made to live in peace and quiet and to mind their own business ?" and he puzzled and puzzled, but it all came to nothing, and so he was forced to use magic. "I must colour them to make them stand out more clearly," he said; and he poured the merest drop of red wine into the drop of water. But it was witch's blood, the very finest kind at twopence a drop. Then all those weird little creatures turned pink all over; they might have been a whole townful of naked savages.

"What have you got there ?" asked another old magician who hadn't got a name - and that was just what made him so distinguished. "Well, if you can guess what it is," said Creepy-Crawly, "I'll make you a present of it. But it isn't easy to find out, if you don't know."

And the magician who hadn't got a name took a peep through the magnifying glass. It looked exactly like a whole town where everybody was running about without anything on. It was horrible; but still more horrible was the sight of people pushing and elbowing each other, wrestling and wrangling, snapping and snarling. Those at the bottom should be on top, and those at the top should be down at the bottom. "Look there ! His leg is longer than mine. Pooh ! Away with it ! And here's a chap with a little pimple behind his ear; a harmless little pimple, but it hurts him, and it shall hurt him still more." And they slashed at it and pulled him about, and then they ate him for the sake of the little pimple. Another was sitting there as still as any maiden might, wanting nothing but peace and quiet; but the maiden had to come forward and be pulled and tugged, till finally they ate her right up ! "That's extremely funny," said the magician.

"Yes, but what do you make of it all ?" asked Creepy-Crawly. "Have you any idea what it is ?

"It's plain enough," said the other. "It must be Copenhagen or some other big city, for they're all alike. A big city, anyway."

"It's ditch-water," said Creepy-Crawly.

**Reference** : Fairy Tales, Volume 1 by H.C. Andersen, translated from the original Danish text by R.P. Keigwin. Published by Hans Reitzels Forlag, Flensteds Forlag, Odense, Denmark, 1986, pp. 253-256

The Editor acknowledges the kind help of Mr. Claus Hagebro of I. Krüger Consult AS for sending this **FRACTAL**.

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(in ECU)

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- Courses, workshops, meetings (in calendar format)

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classified

- positions wanted .....6
- positions available .....8
- courses, workshops, meetings, conferences .....10
- services, supply .....12

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- full page .....1200
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- octavo page .....150

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### PANTA RHEI

A quarterly information bulletin edited on behalf of the partners in the field of hydrology, water management and water resources technology. It is published with the financial support of the European Community within the framework of its HUMAN RESOURCES and MOBILITY programmes and distributed free of charge. The present distribution is 2,000 copies. Issues are published in September, December, March and June.

### OBJECTIVES OF PANTA RHEI

An efficient and continuous way of communication among all ERASMUS, COMETT, TEMPUS, HCM and COST-CEEC partners, both active and prospective, and among students and training participants with interest in water related fields.

Service to the

- ICP-Interuniversity Cooperation Programme "Hydrology and Water Management"
- JEP-Joint European Project : "Interuniversity Coordinating Forum for East-West Cooperation in the field of Environment, Water and Agricultural Soils (EWA-Ring)"
- UETP-University Enterprise Training Partnership: TECHWARE - TECHnology for WAtER REsources.
- TECHWARE-WHEEL-BEST pan European scientific network "Water Environment European Laboratories"

Dissemination of activities or proposals of partners, in particular,

- transnational exchanges of students, young graduates and staff
- joint development of full curricula or specific training tools
- crash or intensive courses
- analysis of training needs

Information about other water related training activities, including research training.

Promotion of a European dimension in the field of water-related education and training.

### "panta rhei"

#### all things are in constant flux

It is an axioma of Heraclitus (c.540-c.480 BC), Greek philosopher of Ephesus, quoted by Plato. Heraclitus is also known for illustrating the persistence of unity through change by the analogy of the river : "Upon those who step into the same river different and ever different waters flow down".

EDITOR

#### A. Van der Beken

IUPHY - Interuniversity Postgraduate Programme in Hydrology.  
Vrije Universiteit Brussel  
Pleinlaan 2, B-1050 Brussels, Belgium  
Tel +32/2/6413021  
Fax +32/2/6413022  
E-mail : hydr @ vub.ac.be.

CO-EDITORS

J.J.Bogardi, Wageningen, The Netherlands

E. Cabrera, Valencia, Spain

P. Hubert, Paris, France

P. Jacobsen, Lyngby, Denmark

J. Kindler, Warszawa, Poland

J.P. Lobo Ferreira, Lisboa, Portugal

P.E. O'Connell, Newcastle upon Tyne, U.K.

F. Siccardi, Genova, Italy



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Information Bulletin for 'Education in Hydrology and Water Management' and 'Training for Water Resources Technology' within the framework of the HUMAN RESOURCES and MOBILITY Programmes of the European Community (EC)

Bulletin d'information pour 'l'Enseignement de l'hydrologie et de la gestion de l'eau' et la 'Formation aux technologies des ressources en eau' dans le cadre des programmes Ressources Humaines et Mobilité de la Communauté Européenne.

Informationsblad om 'Uddannelse og efteruddannelse i tekniske emner knyttet til vand' indenfor EF's rammeprogrammer om Menneskelige Ressourcer og Mobilitet.

Boletín de información sobre 'Educación en hidrología y gestión de agua' y 'Formación práctica en tecnologías de recursos de agua' en el marco de los programas de la Comunidad Europea de Recursos Humanos y Movilidad.

Informatie bulletin voor 'Onderwijs en waterbeheer' en 'Opleiding voor technologie van de watervoorraden' in het raam van de programma's Menselijk Potentieel en Mobiliteit van de Europese Gemeenschap.

Bolletino informativo riguardante: 'Studio dell'Idrologia e Gestione delle Risorse Idriche' e 'Corsi di formazione sulle tecnologie delle Risorse Idriche', nell'ambito dei Programmi della Comunità Europea sulle Risorse Umane e la Mobilità

Informationsbulletin für 'Unterricht in der Hydrologie und Wasserverwaltung' und 'Ausbildung für die Technologie des Wasservorrates' im Rahmen der Programme Menschliches Potential und Mobilität der Europäischen Gemeinschaft.

Információs közlemény az Európai Közösség Emberi Potencial és Mobilitás programjainak keretében 'hidrológia es vizgazdalkodás oktatashoz', továbbá 'vízkészlet technológia kiképzéshez'.