PROCEEDINGS OF
THE INTERNATIONAL CONFERENCE
ON WATER PROBLEMS IN THE
MEDITERRANEAN COUNTRIES

Hüseyin GÖKÇEKÜŞ • Editor

Volume I

NEAR EAST UNIVERSITY
Lefkoşa, Turkish Republic of Northern Cyprus
17 - 21 November 1997
International Conference on Water Problems in the Mediterranean Countries

Hüseyin GÖKÇEKUŞ • Editor

WPMC’ 97
Civil Engineering Department,
Near East University,
Lefkoşa, Turkish Republic of Northern Cyprus.
November 17-21, 1997

Organized and Sponsored by: Near East University

Co-sponsors of Conference:
• The Scientific and Technical Research council of Turkey (TUBITAK)
• Turkish National Committee on Water Pollution Research and Control (SKATMK)
• International Research & Application Center for Karst Water Resources (UKAM)
• International Association of Engineering Geology Turkish National Committee (MJTMK)
• Turkish National Committee on Coastal Zone Management (KAY)
FOREWORD

As being a member of water suffering countries in Mediterranean region, North Cyprus is welcome for an International Conference on Water Problems in the Mediterranean Countries. The conference, held in Near East University, Nicosia, North Cyprus, 17-21 November 1997, brought together more than 300 scientists from 42 countries with different approaches in 182 excellent presentations.

The conference aimed to be honored by specialists, administrators or other interested participants to provide a forum for discussions and exchange of experience and the information of a variety of aspects related to the Water Problems in the Mediterranean Countries. Water resources and hydrology, wastewater management and treatment, surface water and management, groundwater modeling and management, salt water intrusion, water quality, limnology, oceanography, and environmental quality have been discussed in the sessions of the conference.

From the discussions at the conference, it is concluded that the Mediterranean region suffers from an imbalance between the demand for fresh water and its supply. It is to be expected that this imbalance will increase unless certain measures, aiming at the sustainability of the water resources, are implemented. This aim will be served by supplying potable water, monitoring and performance assessment of all water uses, increasing the efficiency of irrigation methods, appropriate use of quality assured models.

It is well known that the never-ending water problems of Mediterranean countries cannot be solved by individual studies. In the face of this, the participants are expressed the wish that such an important initiative should not be isolated but should be repeated in the future with the aim of continuing the collaboration to solve the most urgent water problems. As being the initiative of such an event, we would be very excited and honored to see the succeeding conferences and pleased to support such courageous attempts.

The success of the conference is bounded by the self-sacrificing studies of a large number of people and institutions. Special thanks are given to the members of the technical and organization committee, the scientific committee, the invited speakers, and participants for their invaluable contributions to the first International Conference on Water Problems in the Mediterranean Countries.
21 December 1998, Near East University, Nicosia, North Cyprus.

Assoc. Prof. Dr. Hüseyin Gökçekuş
Chairman
SCIENTIFIC COMMITTEE

Prof. Dr. ALTINBİLEK, D.,
General Director, General Directorate of State Hydraulic Works
Republic of Turkey Ministry of Energy and Natural Resources,
Ankara - TURKEY

Prof. Dr. AL - TURBAK, A.,
Civil Engineering Department, College of Engineering ,
King Saud University, Riyadh - SAUDI ARABIA

Assoc. Prof. Dr. AVCI, C.,
Civil Engineering Department, Boğazici University,
İstanbul - TURKEY

Prof. Dr. BARROCU, G.,
Department of Territorial Engineering,
Sector of Engineering Geology and Geophysics University of Cagliari,
Cagliari - ITALY

Assoc. Prof. Dr. BERNDTSSON, R.,
Department of Water Resources Engineering, Lund University,
Lund - SWEDEN

Prof. Dr. BREUCK, W.,
Head, Laboratory of Applied Geology and Hydrogeology, University of Gent,
Gent - BELGIUM

Prof. Dr. CHENG, A.,
Civil Engineering Department, Delaware University, Newark,
Delaware - USA

Prof. Dr. DAM, J.C. VAN.,
Delft University of Technology,
Delft - THE NETHERLANDS

Prof. Dr. DOYURAN, V.,
Head, Geological Engineering Department, Middle East Technical University,
Ankara - TURKEY

Prof. Dr. EROSKAY, O.,
Geological Engineering Department, İstanbul University,
İstanbul – TURKEY

Prof. Dr. ERTUNÇ, A.,
Head, Geological Engineering Department, Çukurova University,
Adana - TURKEY
Dr. McNAUGHTON, E.,
United States Environmental Protection Agency,
San Francisco, CA - USA

Dr. NOLAN, R.
Associate Director, Environmental Science Lab.,
Brooklyn College of the City University of New York, Brooklyn,
New York - USA

Prof. Dr. ORHON, D.,
Chairman, Turkish National Committee on Water Pollution Research and Control & Head of The Environmental Engineering Dept.,
İstanbul Technical University,
İstanbul - TURKEY

Prof. Dr. ORON, G.,
The Water Resources Center,
The Jacob Blaustein Institute for Desert Research,
Ben-Gurion University of the Negev,
Sede-Boker Campus - ISRAEL

Prof. Dr. ÖZHAN, E.,
Civil Engineering Department,
Middle East Technical University and Chairman of MEDCOAST
 Ankara - TURKEY

Prof. Dr. SALİHOĞLU, İ.,
Institute of Marine Sciences, Middle East Technical University, Erdemli – İçel - TURKEY

Prof. Dr. SAYDAM, C.,
Chairman, Earth Marine Atmospherical Sciences and Environmental Researches Grant Group of the Scientific and Technical Research Council,
Ankara – TURKEY

Dr. SEDARATY, A.,
President of Process Dynamics Engineering Ltd,
Ilford - UK

Dr. SHAHIN, M.,
International Institute for Infrastructural, Hydraulic and Environmental Engineering,
Delft - THE NETHERLANDS

Dr. SOULSBY, C.
Department of Geography, University of Aberdeen,
Scotland – UK
Dr. GARAI, G.,
Head, North Budapest Sewage Treatment Plant,
Budapest Municipal Sewerage Company Ltd.,
Budapest - HUNGARY

Prof. Dr. GÖĞÜŞ, M.,
Head, Hydraulic Division, Civil Engineering Department,
Middle East Technical University,
Ankara - TURKEY

Assoc. Prof. Dr. GÖKÇEKUŞ, H.,
Head, Civil Engineering Department,
Near East University,
Nicosia - NORTH CYPRUS

Dr. GUIGUER, N.,
President, Waterloo Hydrogeologic Inc., Waterloo University,
Ontario - CANADA

Prof. Dr. GÜNAY, G.,
General Director, International Research and Application
Center for Karst Water Resources, Hacettepe University,
Ankara - TURKEY

Prof. Dr. GÜLER, E.,
Head, Environmental Science Institute, Boğaziçi University
İstanbul - TURKEY

KANAREK, A.,
Project Director, Mekorot Water Co. Ltd.,
Tel-Aviv - ISRAEL.

Prof. Dr. KARPUZCU, M.,
Vice President, Gebze University,
Kocaeli -TURKEY

Assoc. Prof. Dr. KHATER, A.,
Head, Water Resources Research,
Bahrain Centre for Studies & Research,
Manama - BAHRAIN

Prof. Dr. LEGOVICH, T.,
Center of Marine Research, Rudjer Boskovic Institute,
Zagreb - CROATIA

Dr. LUJAN, C.,
President of HGQ Consultores,
Caracas - VENEZUELLA
Prof. Dr. SPILOTRO, G.,
Dept. of Structural and Geotechnical Eng. and Engineering Geology,
University of Basilicata,
Potenza – ITALY

Prof. Dr. ŞEN, Z.,
Head, Meteorology Department, İstanbul Téchnical University,
İstanbul - TURKEY

Prof. Dr. ŞİMŞEK, Ş.,
Geological Engineering Department, Hacettepe University,
Ankara - TURKEY

Prof. Dr. TULIPANO, L.
Istituto Di. Geologia Applicata e Geotecnica,
Facolta Di Ingegneria, Politecnico Di Bari,
Bari - ITALY

Prof. Dr. TÜRKMAN, A.,
Environmental Engineering Department, 9 Eylül University,
İzmir - TURKEY

Dr. YURTSEVER, Y.,
Department of Research and Isotopes, Division of Physical
and Chemical Sciences, International Atomic Energy Agency,
Vienna – AUSTRIA

Prof. Dr. YÜZER, E.,
Geological Engineering Department, İstanbul Technical University,
İstanbul – TURKEY

Prof. Dr. VERNIER, A.,
Department of Territorial Engineering, University of Cagliary, Cagliary,
Cagliary – ITALY

Prof. Dr. WALRAEVEN, K.,
Lab. Applied Geology and Hydrogeology, University of Gent,
Gent – BELGIUM

Prof. Dr. WARD, R. F.,
Paper Science and Engineering Department, Miami University, Oxford,
Ohio - USA

Prof. Dr. WICHMANN, K.
Technische Universitat, Hamburg - Harburg,
Hamburg – GERMANY
Isotope Technique in Hydrological Modeling of Güvenç Basin,  
H. QAESM, A. GÜNYAKTI and H. D. ALTINBILEK  North Cyprus –Turkey .......................... 123

Sedimentation Problems in Jordanian Dams,  
A. Y. H. MALKAWI and F. A. ABDULLA  Jordan ......................................................... 133

The Dependency Analysis of Annual Peak Flows of Streams in  
Konya Basin,  
N. BUYÜKKARAÇIĞAN and E. KAHYA  Turkey ............................................................... 141

A Study on Vulnerable Flood Areas in the Major Basins of Turkey,  
Z. KULGA  Turkey .................................................. 149

Water Resources and Hydro – Agricultural Development in  
Algeria for Year 2010,  
M. MESSAHEL, B. HADJ- KADDOUR and A. BOUDJADJA  Algeria ........................................ 157

The Possibility of Applying Cloud Seeding Over Cyprus,  
M. TAYANÇ  Turkey .................................................. 165

Present Water Uses and Their Evolution in the Framework of  
National Water Strategy for Albania,  
A.H. SELENICA, Albania .......................................................... 173

Precipitation and Runoff Characteristics of the Kundere Basin in  
Merkez - Edirne,  
S. AKBAY and F. BAKANOĞULLARI  Turkey ......................................................... 181

HYDRAULICS, HYDROLOGY AND HYDROGEOLOGY .................................................. 189

Hydrogeology of Sakaryabası Karst Springs, Turkey,  
G. GÜNAY, M. EKMEKİ, F. GÜVEN, and T. YÜRÜ  Turkey ........................................... 191

Study of the Gas Discharges in the Denizli-Pamukkale Geothermal  
Area (SW Turkey),  
B. AKAN (SELÇUK) and Ş. ŞİMŞEK  Turkey ......................................................... 207

Tag Inadslide triggered by an artesian pressure beneath the unit caliche :  
a case study, Turkey  
F. YILMAZER, and Ö. YILMAZER  Turkey ......................................................... 217

Hydrodynamics of Groundwater Flow in Karstic Aquifers and  
Hydrothermal Effects in the Çüryksu Graben System - Türkiye,  
H.M. ÖZLER  Turkey ......................................................... 225

Hydrogeochemical Observations on Some Springs of the  
Sarribus-Gerrei Mountains in South Eastern Sardinia,  
A. VERNIER, F. ARDAU, M. CASU and E. VERNIER  Italy ........................................... 233
Hydrogeology of the G. ter Mitidja and Plain (Algeria),
M. BENZIADA, and J. MANIA Algeria – France ................................................................. 241

Hydrogeology of the Kirkgözler Springs, Antalya, Turkey,
L. TEZCAN and G. GÜNAY Turkey .......................................................... 261

Distribution of Gypsum Aquifers in Northern Cyprus and Irrigational Usable of High Sulphate and Chloride Bearing Waters,
A. İNCE and M. NECDET North Cyprus ............................................................. 277

Hydraulic Design Considerations for Waste Containment Systems,
C.B. AVCİ, A.ÅKSÖY and E. GUNİM Turkey ...................................................... 283

Water Reservoir Development in North Cyprus,
H. GÖKÇEKUS, C. ATALAR and M. SIDAL North Cyprus ........................................ 293

Morphological Indications of Karst Evaluation in an Eocene Limestone Area, NE Thrace, Turkey,
M. EKMEKÇİ and G. GÜNAY Turkey .............................................................. 311

An Insight Hydrogeology of the West Bank, Palestine,
A.S. ALIEWI, W. WISIAHI, S. HUSARY, S. RIHAN & Q. ABDUL-JABER,
UK- Palestine ............................................................................................................. 319

Hydrogeological Investigation of Uluçnar (Arsuz) Plain,
N. YAVUZ, and A. ERTÜNČ Turkey ........................................................................... 329

Optimization of a Sampling Well Network Based on the Geostatistical Analysis of Hydrochemical Parameters,
V. D’AGOSTINO, G. PASSARELLA, and M. VURRO Italy .................................................. 333

Hydrogeochemical Characterization of Seawater Intrusion in NW Libya,
S. A. SADEG and N. KARAHANOĞLU Libya – Turkey .................................................. 341

Experimental and Mathematical Model of System with Water Pump - Pipe,
A. LONDO Albania ....................................................................................................... 349

WASTEWATER MANAGEMENT AND TREATMENT ................................................... 355

Optimization of Particle Separation in the Primary Treatment Before Coastal Discharges,
H. ODEGAARD Norway .............................................................................................. 357

Operation of Package Treatment Plants in Northern Cyprus,
T. EFE, Z. KIRMIZI, N. ÖZNEL, and M. OKAYGÜN North Cyprus .................................. 371

Wastewater Characterization and Appropriate Treatment Technologies in Coastal Holiday Regions,
S. SÖZEN, E. GÖRGÜN, E. U. ÇOKGÖR, and D. ORHON Turkey ............................. 381
Upgrading Options for Ammonia Removal in Activated Sludge or Trickling Filters, 
M. SARIÖĞLU  Turkey........................................................................................................389

A Comparative Study of Different Types of Wastewater Treatment Plants, Jordan Case, 
M. S. AL-SHERIADEH  Jordan............................................................................................ 395

Sequencing Batch Reactors as an Alternative for Enhanced Biological Phosphorus Removal in Sensitive Coastal Areas, 
R. TAŞLI, N. ARTAN, and D. ORHON  Turkey................................................................. 403

Modelling of Water Treatment Processes the Spectrum of Approaches, 
D. W. HENDRICKS  USA.................................................................................................... 409

Nonlinear Multivariable Predictive Control for a Wastewater Treatment Process, 
F. NEJJARI, A. BENHAMMOU, and B. DAHOU ROUX  Morocco-France............... 435

Oxidation of micropollutants (2,4-D Acid and 2,4-DCP) by Ozone, 
T. TURAN ERTAŞ and I. TALINLI  Turkey...................................................................... 443

Activated Sludge Process Versus Sequential Batch Process, 
Z. KIRMIZI, T. EFE, N. ÖZNEL, and M. OKAYGÜN  North Cyprus.............................. 451

Use of Turkish Fly Ashes in Wastewater Treatment, 
B. BAYAT, O. BAYAT, and B. SARI  Turkey...................................................................... 459

Investigation of Operational Problems and Their Solutions in Nicosia Wastewater Treatment Plant, 
N. ÖZNEL, T. EFE, Z. KIRMIZI, and M. OKAYGÜN  North Cyprus.............................. 467

Assessment of Methane Emissions From Industrial and Municipal Wastewater Treatment Plants in Jordan, 
F. A. ABDULLA and Z. D. AL-GHAZZAWI  Jordan..................................................... 477

Assessment of CH4 Emissions From Sanitary Landfills and Raw Sewage Water Dumping Ponds in Jordan, 
Z. D. AL-GHAZZAWI and F. A. ABDULLA  Jordan..................................................... 485

Evolution of Physical-Chemical Parameters and Helminth Eggs During Wastewater Treatment by Infiltration percolation on Sand in Ben Sergao (South of Morocco), 
O. TOUYER, A. MOUKRIM, and A. ZEKHNINI  Morocco.......................................... 493

Effect of Alkalinity on Volatile Acid Concentrations and Performance of the Anaerobic Reactor, 
G. KANAT  Turkey........................................................................................................... 501

Wastewater Treatment and Groundwater Recharge for Reuse in Agriculture-DAN Region Reclamation Project (Shafdan), 
N. ICEKSON – TAL and R. BLANC  Israel.................................................................... 509
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Effect of Waste Product of Fertilizer Factory and Brimstone Plant in Reclamation of Saline – Alkali Soils, M. BEYAZGUL, A. GIRGIN and C. KÖSE Turkey</td>
<td>515</td>
</tr>
<tr>
<td>Bioaccumulation and Distribution of Pesticides and PCB'S in the Marine Environment</td>
<td>521</td>
</tr>
<tr>
<td>SURFACE WATER &amp; MANAGEMENT</td>
<td>529</td>
</tr>
<tr>
<td>World Fresh Water Crisis and the Situation in the Middle East, Z. ŞEN Turkey</td>
<td>531</td>
</tr>
<tr>
<td>Water Resources and Climatic Change in the Middle East, M. SHAHIN The Netherlands</td>
<td>435</td>
</tr>
<tr>
<td>Raising Public Awareness on Wise Use of Water in the West Bank, S. RIHAN, Q. ABDUL-JABER, S.HUSARY, S. WISAIHI &amp; A. ALIEWI Palestine –UK</td>
<td>549</td>
</tr>
<tr>
<td>Water Resources in Jordan, O. DHAIMAT Jordan</td>
<td>557</td>
</tr>
<tr>
<td>Water and Land Resources Potential of Turkish Republic of Northern Cyprus (TRNC), F. TURAN Turkey</td>
<td>561</td>
</tr>
<tr>
<td>Water Productivity in Egyptian Agriculture: Scenarios for More Sustainable Use, M. A. KISHK and J. LUNDQVIST Egypt-Sweden</td>
<td>571</td>
</tr>
<tr>
<td>The Use of Geographic Information Systems in Civil Engineering, N. USUL Turkey</td>
<td>579</td>
</tr>
<tr>
<td>Management of the Great Man Made River Water for Irrigation in Libya, A. GHAZALI, O. A. BASHIR and J. O. EL-SHEIKH ALI Libya</td>
<td>597</td>
</tr>
<tr>
<td>Design of an Optimal Release Mechanism in Surface Waters, M. PIASECKI Lebanon</td>
<td>605</td>
</tr>
<tr>
<td>Interrelation between hydrogeological and geological models: case studies I. YILMAZER and Ö. YILMAZER Ankara – Turkey</td>
<td>613</td>
</tr>
<tr>
<td>Investigation of Flow Structure for Intake Structures on River Bend, H. AGACIOGLU and Y. YUKSEL Turkey</td>
<td>621</td>
</tr>
<tr>
<td>Experimental Investigation of Flow Characteristic Over a Triangular Side Weir on Curved Channel, A. COSAR, H. AGACIOGLU, and S. UC Turkey</td>
<td>634</td>
</tr>
</tbody>
</table>
VOLUME II

WATER SUPPLY

Ancient Water Systems of the Mediterranean-Emphasis on Cyprus.
D. W. HENDRICKS USA ................................................................. 635

Hydroelectric Energy Potential of Turkey and its Development
S. PASIN and H. DOGAN ALTINBILEK
Turkey ................................................................. 665

Water Transportation by Towed Waterbags-Hydraulic Parameters,
D. ÜNSALAN North Cyprus ................................................................. 685

Public Drinking Water and Waste Disposal Issue,
F. R. WARD USA ................................................................. 691

Future Water Supply and Demand Predictions in Saudi Arabia,
A. S. AL-TURBAK Saudi Arabia ................................................................. 701

Models for Water Consumption and Water Unaccounted in Turkey,
H. QASEM, and H. D. ALTINBILEK
North Cyprus-Turkey ................................................................. 715

Results of Disinfection Monitoring of Long Distribution Systems,
J. KRIS, O. CERMAK, M. CERMAKOVA, K. TOTHova and F. BISKUP
Slovakia ................................................................. 723

An Approach to Construct the Boundary of a Groundwater Recharge Area
(Grab) in a Tilted Unit
I. YILMAZER and O. YILMAZER Ankara, Turkey ................................................................. 733

Water Resources for Drinking Water Supply - Protection Against
Pollution and Rehabilitation,
U. ROTT Germany ................................................................. 739

An Overview of the Global Water Issues,
A. R. KHATER Bahrain ................................................................. 755

On the Search of Optimum Management of Istanbul Water Supply
System,
I. DURANYILDIZ, B. ÖNOZ and B. OGUZ Turkey ................................................................. 763

Water Management and Transfers of Technology: Evidence From
the Case of Tunisia,
H. M’HENNI Tunisia ................................................................. 769

GROUND WATER MODELLING AND MANAGEMENT

Groundwater Budget for the Güzelyurt Aquifer (Turkish Republic of
Northern Cyprus) an Example for an Overdraft,
H. GÖKÇEKUŞ, and V. DOYURAN North Cyprus-Turkey ................................................................. 779
Supply Ways of Coasting Aquifer System of Annaba-Bouteldja,
A. HANI, L. DJABRI, J. MANIA and J. MUDRY
Algeria-France ......................................................................................... 789

Groundwater Quality Problems for Domestic Use,
Ş. ABACI Turkey .................................................................................... 799

Assessment of Regional Groundwater System with Pumping
Test in Denizli Plain, Turkey,
H. M. ÖZLER Turkey ................................................................................ 805

Use of Groundwater Three-Dimensional Flow Models For Aquifer
Management and Environmental Impact Assessment: The Example
of a Closed Valley Volcano-Sedimentary Aquifer in Southern Peru,
D. GOMES, N. GUIGUER, R. ROJAS, G. PALZA, O. AVALLOS S. & L. ARAGUAS
Canada – Peru ....................................................................................... 813

Isotopic and Chemical Trends in Chaj Doab Area, Pakistan,
N. AHMAD and Z. SEN Turkey – Pakistan .............................................. 827

Groundwater Utilization for Irrigation Purposes in Arid Regions,
A Case Study,
W. ALI Germany .................................................................................. 835

Groundwater Pollution and Control in İzmir,
A. TÜRKMAN Turkey ................................................................................ 843

Management of Scarce Resources,
A. HAMDY and C. LACIRIGNOLA Italy .................................................. 851

Some Considerations on Finite Element Solution Of The Unsteady
Convection Diffusion Equation and Application on Water Pollution,
S. OSMANI Albania ................................................................................ 863

Growing Demands on the Groundwater Resources and Land Use
in the Perth Metropolitan Area Western Australia and Their
Hydrogeological Implications,
A. Q. RATHUR and S. SHARAFI Australia .............................................. 871

INDUSTRIAL WATER & WASTEWATER MANAGEMENT ......................... 885

Mercury Pollution of the River Nura in Central Kazakhstan,
A. KARAZHANOVA, E. P. YANIN, M. A. ILYUSHCHENKO, T. W.
TANTON and S. HEAVEN Kazakhstan ................................................. 887

Quality Assessment for Leather Tanning Wastewaters,
D. ORHON, E. A. GENCINI, G. YILDIZ and E. AVCI OĞLU Turkey ........... 895

Removal of Heavy Metal Ions From Aqueous Solutions by Chitin:
Kinetic and Uptake Parameters,
H. BENAISSA and P. OZIL Algeria-France .......................................... 903

Industrial Water Processing Technologies and Flow Schemes Improving
Economics and Excluding Environment Contamination,
H. FEVZIYEV, A. A. JAVADOVA and G. H. FEVZIYEVA Azerbaijan .......... 911
S.GLENWRIGHT, and R.J.G. EDYVEAN UK......................................................... 917

Anaerobic Digestion of Organics in Aqueous Phases Obtained from Liquefaction of Cotton Stalk with Acetic Acid and Sodium Hydroxide at 5 MPa, 
F.TANER, F.F ÖZTÜRK, T.ÖNCHEL and A.ÜNYAYAR Turkey........................................ 925

Design of Adsorption Systems for the Treatment of Coloured Aqueous Effluents, 
A. J. SMITH, C. J. WILLIAMS and R. J. G. EDYVEAN UK........................................... 933

Thermochemical Treatment of Sea-Grass with Sodium Hydroxide and Anaerobic Biodegradation of Compounds in Aqueous Phases 
F.TANER, F.F ÖZTÜRK, T.ÖNCHEL and A.ÜNYAYAR Turkey........................................... 941

Extraction and Separation of Ni(II), Cu(II) and Zn (II) on Activated Carbon: Application to Wastewater Treatment, 
Y. BAL, and K.E. BAL Algeria.................................................................................. 949

Pollutant Loads from Industries in Elmah Watershed Area 
F. GERMİRLİ BABUNA, S. MERİÇ and O. TÜNAY Turkey.............................................. 955

Soil Contamination and Plant Growth Depression Under Irrigation with Polluted River Water, 
R. ÇAKIR Turkey................................................................................................. 963

Application of Materials Textile Technic “Aqua-Textiles” for Separation of Polyphasic Fluids, Treatment Waste Water Individual Domestic: The Possibilities and Hydraulic Properties, 
K. E. BAL, and D. SIGLI Algeria, France................................................................. 969

Control of Waste Water Generation in Chemical Processes by Pinch and Mathematical Approach, 
S. CESUR, Z. ÖZÇELİK, Y. ÖZÇELİK, and B. KURYEL Turkey..................................... 977

Investigation of Operational Problems in Wastewater Treatment of Textile Industry, 
N. TÜFEKÇİ, I. TOROZ, M. DURAN and Y. ŞAHİN Turkey........................................ 985

SALT WATER INTRUSION..................................................................................... 993

Simulation of Sea-Water Intrusion Into Inhomogeneous Media: Layered Aquifers and Subsurface Barrier, 
M. G. KHUBLARYAN, A. P. FROLOV, I. O. YUSHMANOV and O. N. VELICHKINA Russia................................................................. 995

Salt Water Intrusion and Artificial Recharge Modelling in the Coastal Aquifers System of Capoterra (Southern Sardina), 
G. BARROCU, M.G. SCIABICA, G. URA, A. CORTIS, and E. VERNIER Italy.............. 1001
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors/Institutions</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt Water Intrusion into Microtidal Estuaries and Environmental Consequences. The Algerian Example,</td>
<td>H. PAUC France</td>
<td>1009</td>
</tr>
<tr>
<td>Salinization of Groundwater in Mediterranean Coastal Aquifers of Morocco,</td>
<td>K. WALRAEVS, N. EL HALIMI, A. CHAOUNI ALIA, A. LAMRINI, E. BEEUWSAERT and W. DE BREUCK Belgium</td>
<td>1021</td>
</tr>
<tr>
<td>Modelling of Seawater Intrusion in the Coastal Carbonate Mesozoic Aquifer of Murgia (Puglia Southern Italy), Ensuing Deep Recharge With Treated Waste Water,</td>
<td>G. SPILOTRO and F. CAPORALE Italy</td>
<td>1029</td>
</tr>
<tr>
<td>WATER RECLAMATION &amp; REUSE</td>
<td></td>
<td>1037</td>
</tr>
<tr>
<td>Utilization of Wastewaters for Agricultural Irrigation Purposes,</td>
<td>E. ERENLER and E. AVCIOGLU Germany-Turkey</td>
<td>1039</td>
</tr>
<tr>
<td>The Estimation of the Nonreturnable Consumption of Water in Irrigation Agriculture,</td>
<td>N. A. SHUMOVA Russia</td>
<td>1047</td>
</tr>
<tr>
<td>Irrigation Applications in Southeastern Anatolian Project (GAP),</td>
<td>A. ATAÇ and F. VOLKAN Turkey</td>
<td>1055</td>
</tr>
<tr>
<td>Comprehensive Considerations in Effluent Reuse for Crop Irrigation,</td>
<td>G. ORON, L. GILLEMAN, M. SALGOT, C. CAMPOS, and L. KATS Israel-Spain</td>
<td>1063</td>
</tr>
<tr>
<td>Ground Water Quality Degradation in Coastal Aquifers, Case Study:</td>
<td>M. MESSAHLE, A. BOUDJADJA, B. HADJ-KADDOUR and R. M. KHOULI Algeria</td>
<td>1071</td>
</tr>
<tr>
<td>The Equipment for Desalination of Sea Water Through Reverse Osmosis,</td>
<td>N. PERIDE and T. POPA Romania</td>
<td>1081</td>
</tr>
<tr>
<td>The Use of Vortical Ejectors in Desalination Equipment,</td>
<td>T. POPA, and K. Ö. İZET Romania</td>
<td>1085</td>
</tr>
<tr>
<td>Application of Solar Stills for the Purification of Sea Water at North Cyprus Environment,</td>
<td>M. A. YÜKSELEN Turkey</td>
<td>1089</td>
</tr>
<tr>
<td>Multi Effect Solar Desalination,</td>
<td>M. M. MISELLATI, S. A. ALGARYANI and A. A. HOWARS Libya</td>
<td>1095</td>
</tr>
<tr>
<td>A Feasibility Study on the Desalination of Sea Water in the Turkish Republic of Northern Cyprus,</td>
<td>D. IBRAHIM UK</td>
<td>1103</td>
</tr>
</tbody>
</table>
The Influence of the Specific Weight of the Sea Water Concerning the Ship Stability,
M.CHIŢU-GREŢI and R. ZAGAN Romania ....................................................... 1111

WATER QUALITY .................................................................................. 1119

About the Water Demand in North Cyprus,
H. GÖKÇEKUŞ North Cyprus ................................................................. 1121

The 1996 Protocol Amending the London Dumping Convention 1972,
J.J. RUIZ Spain .................................................................................... 1135

Land - Based Sources Pollution: Recent Legal Trends for the Mediterranean Sea Area,
M. BADANES Spain .............................................................................. 1139

A Comprehensive Mathematical Model for Coastal Water Pollution Studies,
L. HAPOĞLU-BALAS, and E. ÖZHAN Turkey ........................................... 1149

Prevention of Offshore Pollution in the Mediterranean Sea,
V. BOU Spain ...................................................................................... 1157

Pollution of Water
H. ATUN North Cyprus ........................................................................ 1169

Water Quality Modeling and Management of Nilüfer River,
A. PALA Turkey .................................................................................. 1173

Turkish Laws Related with Coastal Zones and Their Implementations,
A. NURAY Turkey .............................................................................. 1187

LIMNOLOGY OCEANOGRAPHY COASTAL PROCESSES
AND ENVIRONMENTAL QUALITY .................................................. 1195

Oceanography of the Cilician Basin,
I. SALIHOĞLU and A. YILMAZ Turkey .................................................. 1197

Water Conservation Programmes in the Eastern EQS1.3 Section of İzmit-Kocaeli Industrial Zone,
S. AYBERK, M. TÜRKEL, A. KABATEPE and K. OKTÖR Turkey .............. 1207

Health State of Agadir Bay Ecosystems Evaluated by the Biomarkers of Pollution,
MOUKRIMA. BOUHAIMI, A. LAGHBOURI and A. ZEKHNINI Morocco ... 1211

Nutriments Water Pollution of the Oued Seybouse and the Guelma,
Boucheqouf and Annaba Aquifers (Eastern Algeria),
L. DJABRI, J. MANIA, D. MESSADI, A. HANI and
S. BENHARKAT Algeria – France .......................................................... 1225
Towards a Clean Izmit Bay,
E. MORKOÇ, O. S.OKAY, L. EGEBEL, V. TÜFEKÇİ, H.TÜFEKÇİ
& T. LEGOVICH Turkey-Croatia .................................................. 1237

Optimum Control of Eutrophication in the Izmit Bay,
T. LEGOVICH Croatia .......................................................................... 1245

Environmental Evaluation of a Highly Urbanized and Industrialized
Catchment area: A Case Study from Turkey,
A. TANIK, B. BELER BAYKAL and E. GÖNENÇ Turkey .................... 1249

Morphological Effects on Coastal Environment,
Y. YÜKSEL, E. ÇEVİK, Y. ASAR and T. BOSTAN Turkey .................. 1259

Contamination Problems in Coastal Aquifers,
Ö. M. YAVAT Turkey .......................................................................... 1265

Coastal Pollution by Polynuclear Aromatic Hydrocarbons (PAHs)
in the Eastern Mediterranean,
F. TELLI KARAKOÇ, A.F. GAINES, D. PHILLIPS, G. YÜREGİR
and İ. SALIHİOĞLU Turkey ................................................................. 1273

Coral Growth in Terms of Dynamic Systems,
Z. KIZNER and L. VAKY Israel ............................................................ 1281

Algal and Microbial Variation in Lakes of Cordoba (Argentina),
C. RODRIGUEZ, M. MARCINI, A. WEYERS, M. ALCANTU
and C. PROSPERI Argentina ............................................................... 1285

Design Aspects for the Sea Outfall of Mersin City-Turkey,
M. ÖĞUZ and H. MUHAMMETOĞLU Turkey ........................................ 1291

Periodicity and Toxin Production by Cyanobacteria in an
Argentinian Lake,
R. D'ANGELO, A. RUIBAL CONTI, D. LERDA and C. PROSPERI
Argentina ............................................................................................ 1299

Evaluation of Domestic and Agricultural Quality of the
Güzelyurt Groundwater Basin (Turkish Republic of Northern Cyprus),
H. GÖKÇEKÜS, and V. DOYURAN Turkey ........................................... 1305

Nitrate Concentration in Groundwater in the Northern West Bank,
A. MADEI and M. HADDAD Palestine ................................................ 1315

Chemical Assessment of the Groundwater Pollution of the Shallow
Aquifer of the Northern West Bank,
Q.H.ABDUL-JABER, S.HUSARY, S.WISHAIH, S.RIHAN &
A. ALIEWT Palestine – UK ............................................................... 1323

Solutions for a Coast Under Threat,
A. TERFOUS, A. BOUANANI and M. BENSLIMANE Algeria .................. 1337

Water and Wastewater Treatment by Natural Systems
LAKCA, H. BAYHAN, D.A. ALTAY and S. ÖVEZ Turkey ..................... 1343

CONCLUSION AND RECOMMENDATIONS
OF WPMC’97 CONFERENCE .................................................................. 1351