



THEMATIQUES

Gestion intégrée des Ressources en
Eau

Qualité des Eaux

Protection de l'environnement

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Arbaoui Abdellah

PROCEEDING

الملتقى الدولي الثاني
للماء و البيئة

2^{ème} Colloque International
sur
l'Eau et l'Environnement
Sidi Fredj : 30 & 31 Janvier 2007

2nd International Conference
on Water and Environment



MELIA



WASAMED

EDITORIAL

The global forecasts on water resources anticipate that the global water and environment crisis will increase on an unprecedented scale in the coming years with a significant increase in water deficit and increasing environmental degradation (pollution of water, depletion of rivers, soil desertification and salinisation, flood and soil erosion, reduction of forest areas, etc...).

Today, it is recognized everywhere that no region will be spared from the impact of this crisis that affects all aspects of life (health, ecosystem, biodiversity etc...).

While the world's population has tripled since 1925, the damage on our environment, are becoming increasingly clear. This situation can be further amplified in 2050 with the increase of the world population from 6 to 9 billion as estimated by demographers. This population growth would not be worrying if we do not consume the resources of our planet faster than they are formed.

The over consumption in Northern countries associated with food pressure in Southern countries cause the premature depletion of soils and natural resources. The effects of our past actions begin to be felt on the different elements of our environment (water, air and soils) which has now changed in alarming proportions.

In Algeria, water is a scarce resource, fragile and unevenly distributed across different areas. Water demand is continuously increasing. Cyclical or structural water shortages are observed. In addition to water resource tensions, we observe the degradation of ecosystem and the biodiversity caused by human activities and amplified by water deficits.

Water and environment have become a primary concern of sustainable development in Algeria; that is why, the Higher National School of Hydraulics as Knowledge Center devotes a large part of its scientific activities to address these issues. The theme of water and environment has already been analyzed in 2004 at the last conference organized by the School. Today's conference addresses a number of additional topics.

Thus, the topics related to mobilization, distribution improvement, water resource use, environmental protection and preservation are strongly present. The issue of the introduction of seawater desalination technologies which is a very interesting idea for the future that can significantly reduce the dependence of water needs on weather conditions, will hold an important place in the works of this conference.

In these proceedings, all the articles selected by the international scientific committee of the conference are published. With a strong hope that the wide dissemination of the document that will be operated by the school, will help decision makers to reverse these trends and ensure a better future for our natural resources.

**Conference Chairman:
Mohamed Saïd Benhafid**

PROGRAMME

ORAL COMMUNICATIONS

TUESDAY, JANUARY 30, 2007

8 :00 AM - 9 :00 AM	Registration
9 :00 AM - 10 :00 AM	Speeches : - Conference Chair (Director of the Higher National School of Hydraulics) - President of the World Water Council - Minister of Water Resources - Minister of Higher Education and Scientific Research
Coffee Break	
Session Chair: Prof. Ferrucci Fabrizio, Prof. Lagha Ahcene. Prof. Touaibia Bénina	
11 :00 AM – 12 :30 PM Plenary sessions	Ministry of Water Resources: Mr. Tahar Aichaoui
	World Water Council: Governor for Algeria : Prof. Mekki Messahel
	Secretary of the International Association of Hydrological Sciences: Dr. Pierre Hubert
	Coordinator of the International Hydrological programme for the Mediterranean basin: IRD. Montpellier. Dr Eric Servat
	The Water Academy - France : Mr. Jean Louis Oliver
	Ministry of Environment and Spatial Planning: Mr. Tahar Tolba MELIA : European Project : Prof. Raphael Rodriguez
Lunch	
Session Chair: Dr Tahar Khettal, Dr Pierre Hubert, Dr Eric Servat,	
02 :15 PM	- Cartographie à très haute résolution du risque-Tsunamis par des méthodes tridimensionnelles de télédétection aérienne et spatiale. - Tsunami and Surge-related coastal hazard mapping in Sri Lanka, by very-high resolution, three-dimensional, airborne and spaceborne Remote-Sensing. <i>Prof. Ferrucci Fabrizio</i> (Italy)
02 :30 PM	- Conception d'un système de pré-alerte des inondations basé sur l'utilisation des technologies spatiales. - Conception of flood early warning system based on the use of space technologies. <i>Saidouni Djalla</i> (Algeria)
02 :45 PM	Guide for drought management. Direstives pour la gestion de la sécheresse. <i>Prof. Iglesias Ana</i> (Spain)
Discussion	
Session Chair: Dr Oliver Louis, Dr Azib Makhoulf	
03 :15 PM	Maintenance intégrée des infrastructures d'assainissement : application au cas de la ville de Souk Ahras. Integrated maintenance of sewer infrastructure: the case of the city of Souk-Ahras. <i>Djebbar Yassine & Abida Habib</i> (Souk Ahras. Algeria)
03 :30 PM	Planification pour une gestion intégrée de la ressource en eau La mise en oeuvre de la Directive cadre sur l'Eau Européenne Illustrations concrètes de gestion de l'eau en France. Planning for a management integrated of the water resource. <i>Pagnac Elisabeth & Mosnier Natacha</i> (France)
03 :45 PM	Développement des scénarios pour les paramètres hydrométéorologiques à Thessaloniki en utilisant les réseaux de neurones artificiels. Development of scenarios for hydrometeorological parameters in Thessaloniki using artificial neural networks. <i>Machairas C., Vafiadis M., Tolika K., Maheras P & Anagno stopoulou</i> (Greece)
04 :00 PM	Approche multi domaine pour les échanges surface subsurface : Application à l'hydrologie de bassins versants et à l'impact du changement climatique. Darcy multi-domain approach for integrated surface/ subsurface hydrologic models: Application to catchment hydrology and impact of climate change. <i>Mouche E & Weill S.</i> (France)
Discussion	
Coffee Break	

Session Chair: Prof. Vafiadis Marios, Prof. Messahel Mekki	
05 :00PM	<p>Sécheresse et gestion des ressources en eau dans le bassin versant de la Mina. Algérie. Drought and water management in the wadi Mina basin. Algeria.</p> <p><i>Achite Mohamed & Touaibia Bénina</i> (Oran. Algeria)</p>
05 :15 PM	<p>Contribution des ortho photos et du système d'informations géographiques (SIG) pour la définition des indicateurs des risques de ruptures des banquettes anti-érosives en semi-aride tunisien. Contribution of the orthophotos and the geographical informationS system (GIS) for the definition of breaches risks indicators of the anti-erosive contours benches in Tunisian semi-arid region.</p> <p><i>Baccari Nouamene., Nasri S., Lamachère J., Boussema M. R & Benmamou Abdallah</i> (Tunisia)</p>
05 :30 PM	<p>Traitement low des eaux usées et impacts de la réutilisation en agriculture. Etudes de cas dans le bassin méditerranéen. Low cost wastewated treatments and reuse in agriculture. Study cases in Mediterranean region.</p> <p><i>Xanthoulis Dimitri., Breuer Antoine & Fonder Nathalie</i> (Belgium)</p>
05 :45 PM	<p>Un modèle triangulaire pour la génération des hyetogrammes synthétiques : cas d'un site de la Tunisie Centrale. A triangular model for the generation of synthetic hyetographs for central Tunisia.</p> <p><i>Ellouze Manel., Abida Habib & Djebbar Yassine</i> (Tunisia)</p>
Discussion	

WEDNESDAY, JANUARY 31, 2007

Session Chair: Prof Toubal Ahmed Cherif, Dr Hassane Mohamed	
8 : 45 AM	<p>Modélisation numérique des écoulements des eaux souterraines et de transport de soluté : Cas de la nappe phréatique de Grombalia. Modelling for simulation of three-dimensional variable-density ground-water flow. <i>Gaaloul Noureddine., Mejed El Heni Mohamed & Mechergui Mohamed (Tunisia)</i></p>
9 :00 AM	<p>Modélisation numérique bidimensionnelle des infiltrations à travers un barrage en terre. Bidimensional numeric modelling of infiltration through earthdam. <i>Bouchelghoum Farid., Kadri Mohamed & Hamidou Mohamed (Biskra. Algeria)</i></p>
Discussion	
Session Chair: Dr Lagha Bouzid Souad, Dr Aouabed Ali, Dr Ammour Fadila	
9 : 45 AM	<p>The effect of temperature on Na⁺ ion treatment in bulk liquid membrane systems. L'effet de la température sur le traitement de l'ion Na⁺ en vrac dans les systèmes de membrane liquide. <i>Altin Süreyya (Turkey)</i></p>
10 :00 AM	<p>Elimination du bleu nylosane en solution aqueuse synthétique par certains matériaux déchets sorbants. Nylosane blue removal from synthetic aqueous solution using certain sorbent waste materials. <i>Benaïssa Hocine (Tlemcen. Algeria)</i></p>
10 :15 AM	<p>Contamination par les micropolluants métalliques des eaux souterraines de la zone mercurielle nord numidique (Azzaba), nord est algérie. Contamination of the underground water by the metallic micropolluants in the northern numidian mercurial zone (Azzaba), north easts Algeria. <i>Benhamza M & Kherici N (Annaba. Algeria)</i></p>
Discussion	
Coffee Break	
Session Chair: Prof. Iglesias Ana, Dr Salah Boualem	
11 :00 AM	<p>Modélisation du taux de perte dans les réseaux d'alimentation en eau potable : Cas du Sud Tunisien. Modelling of the loss rate in water distribution Networks: Case of Southern Tunisia. <i>Gargouri Kamel & Abida Habib (Tunisia)</i></p>
11 :45 AM	<p>Un outil de gestion de la ressource en eau du socle en région semi-aride : Etudes VLF dans les environs de Taffraoute (province de Tiznit, royaume du Maroc). A water resource management tool for basement in semi arid area: VLF study in Taffraoute surroundings (Tiznit province Morocco Kingdom). <i>Mercury Jean Pierre (France)</i></p>
12 :00 PM	<p>Etude des crues dans le bassin hydrologique des la mer noire est en Turquie. Investigation of floods in eastern black sea of Turkey. <i>Onsoy H., Akpinar A., Yuksek O., Komercu M.I & Kankal M. (Turkey)</i></p>
12 :15 PM	<p>Eastern black sea floods : Meteorological and hydrological analysis. Etude hydrologique et météorologique des crues dans le bassin de la mer noire en Turquie. <i>Kankal Murat., Yuksek Ömer., Akpinar Adem & Filiz. M. (Turkey)</i></p>
Discussion	
LUNCH	
Session Chair: Prof. Aïdaoui Abdellah, Prof. Dechemi Nouredine, Dr Bencheikh Le Hocine	
02 :00 PM	<p>Projet de développement socio- économique selon le genre : Tourisme solidaire en Kabylie. Social and economic development project upon gender :Fair tourism in Kabylie. <i>Lavastre Vernet Madeleine (France)</i></p>
02 :15 PM	<p>Application du modèle Pluie – Débit SWMHYMO au bassin versant Janet. Tunisie. Lumped rainfall - Runoff Modelling in Jannet basin. Tunisia. <i>Ayadi Imen., ABida Habib & Djebbar Yassine (Tunisia)</i></p>
02 :30 PM	<p>Les apports atmosphériques dans la région d'Oran (Algérie). Atmospheric input to the Oran (Algeria). <i>Boudjemline Djamel, Bounkhala Naïma & Loÿe-Pilot Marie Dominique (Oran. Algeria)</i></p>

02 :45 PM	The effects of t-groins on giresun- piraziz coast Turkey. Les effets des épis en T sur la côte Giresun-Piraziz. Turquie. <i>Kömiircü Murat, Özölçer İsmail Hakkı İhsan., Akpınar Adem, Kankal Murat, Onsoy Hizir & Yuksek Omer</i> (Turkey)
Discussion	
Session Chair: Prof. Bentahar Fatiha, Dr Bouyoucef Abdellah	
03 :15 PM	Direct carbon dioxide effect in continental river runoff over the past and future climate. L'effet direct du CO₂ sur l'écoulement des rivières dans un climat passé et futur. <i>Alkama R., Ramstein G., Cadule P, Philippon G & Laine A</i> (France)
03 :45 PM	Effects of Industrial and Municipal Solid Waste on Western Black Sea Coast. Effets des déchets solides industriels et municipaux sur la côte occidentale de la Mer noire. <i>Yildimir Y., Ömer F., Çapar R, Ismail H., Özoloçer & Buyuksalih G.</i> (Turkey)
04 :00 PM	المعايير البيئية المؤثرة في اختيار مواقع مناسبة لإنشاء السدود <i>احمدفاضل الجن</i> Djenid Ahmed Fadel (Yemen)
04 :15 PM	Principaux acteurs de la pollution dans l'agglomération de Annaba effets et développements. Principal actors of pollution in the agglomeration of Annaba. Effects and developpements. <i>Mebirouk H & Mebirouk B. F</i> (Constantine. Algeria)
Discussion	
Coffee Break	
Session Chair: Prof. Bentahar Fatiha, Prof. Remini Boualem, Prof. Meddi Mohamed	
04 :45 PM	Etude expérimentale et modélisation de l'oxygène dissous dans un tronçon d'un cours d'eau naturel. Experimental study and modelling of the dissolved oxygen in a section of natural river. <i>Hamchaoui S & Graba M</i> (Bejaïa. Algeria)
05 :00 PM	Réponse du blé dur (<i>Triticum Durum</i> Desf) variete acsad 1107 aux apports de boue résiduaire sous climat semi-aride. Reponse of durum wheat cultivar acsad 1107 to sewage sludge amendment under semi-arid climate. <i>Tamrabet L., Bouzerzour H., Mekhlouf M & Kribaa M.</i> (Oum El Bouaghi. Algeria)
05 :15 PM	Simulation d'une pompe à chaleur à compression assistée de capteurs solaires pour le dessalement de l'eau de mer. Simulation of heat pump assisted by solar collectors for sea water desalination. <i>Douani M., Bouzina N., Rahma F.Z & Tahraoui D.</i> (Chleff. Algeria)
Discussion	
05 :30 PM	Reading of recommendations and conference closing

POSTERS

TUESDAY, JANUARY 30

MORNING

Régionalisation de l'Envasement des Retenues Collinaires : Application aux lacs collinaires de la dorsale tunisienne.

Regionalisation of the sedimentation: application to small dams located on the Tunisia Dorsal.

Ayadi Imen., Abida Habib., Djebbar Yassine & Mahjoub Med Raouf (Tunisia)

Efficacité des aménagements de conservation des eaux et du sol dans un petit bassin versant de semi-aride tunisien.

Effectiveness of water and soil conservation management in a small catchment area of Tunisian semi-arid.

Baccari N., Lamachere J.M., Nasri S & Boussena M.R (Tunisia)

Impact des aménagements hydrauliques sur le ruissellement : cas des micro-bassins expérimentaux de Béni slimane (Médéa).

Impact of Hydraulic installations on the streaming : cas of the micro experimental basins of Beni slimane (Médéa).

Keddar AEK., Touaibia Bénina & Arabi Mourad (Ghardaia. Algeria)

L'eau dans la région hydrographique Cheliff-Zahrez : Adéquation Ressources-Demandes

Water in the hydrographic basin Cheliff – Zahrez : resources – needs adequacy.

Mehaiguen M & Meddi M (Khemis-Miliana. Algeria)

AFTERNOON

De la caractérisation hydrochimique d'un système aquifère sous climat semi-aride : Cas de la plaine de Tebessa.

Hydrochimic characterization of heterogeneous aquifer system under semi-arid climate: Plain of Tebessa Case.

Derias Tarek & Toubal Ahmed (Batna. Algeria)

Biosurveillance Marine.

Marine biomonitoring

Abada Bachira & Saidi amina (CDER. Algiers)

Traitement du rejet des eaux usées au sud algérien : cas de la localité de Ain Louissig.

Protection of environment for the wastewater in the southern : case of Ain Louissig

Bessenasse Mohamed (Blida. Algeria)

La contribution de la boue résiduaire à la fertilité du sol et à la production d'une plante fourragère (Hordium vulgare : variété Jaidor. L).

The contribution of waste mud to the fertility of the ground and the barley yield (Hordium vulgare L.jaidor variety).

Boudjabi S., Kribaa M & Tamrabet L (Tebessa. Algeria)

WEDNESDAY, JANUARY 31, 2007

MORNING

Relation générale au calcul des conduites coulants en charges et à surface libre.

علاقة عامة لحساب الأنابيب ذات سيلان مضغوط و حر

Lakehal Moussa & Achour Bachir.

(Biskra. Algeria)

Réponse dynamique aux facteurs naturels et anthropiques de la frange côtière allant de Hammam-lif à Solymar (Tunisie)

Dynamic response of natural and anthropogenic factors of the shore fringe from Hammam-lif to Solymar (Tunisia)

Medhioub Samir & Abida Habib

(Tunisia)

Surface water pollution in west black sea coastal region: A Case Study in Zonguldak City and Its Surrounding Province (Turkey)

Pollution des eaux de surface en région côtière de la mer noire occidentale: Une étude du cas de la ville de Zonguldak et sa province environnante (Turquie)

Yilmaz Gonca, Altin Ahmet, Yildirim Yilmaz & Özolçer İ

(Turkey)

CONFERENCE CLOSING

People's Democratic Republic of Algeria
Ministry of Higher Education and
Scientific Research •
Higher National School of Hydraulics
(Arbaoui Abdellah)

Second Circular

للماء و البيئة
سيدي فرج: 30- 31 يناير 2007

2nd International Conference
on Water and Environment
Sidi Fredj : January, 30 & 31 2007



Under the patronage of :

- The Minister of Higher Education and Scientific Research;
- The Minister of water resources;

The **Higher National School of Hydraulics**
Arbaoui Abdellah



Organizes the
2nd International Conference on
Water and Environment
and has the pleasure to invite you to participate.

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Dr. Souad Lagha Bouzid. Algeria
Dr. Jean Louis Oliver. France
Dr. Noureddine Mezza. Algeria
Dr. Boualem Salah. Algeria
Dr. Eric Serval. France

Themes

- I. Integrated Management of Water Resources
 - 1.1 Water Supply and Sanitation;
 - 1.2 Irrigation and Drainage;
 - 1.3 Coastal management;
 - 1.4 Management of natural disaster;
 - 1.5 Mobilization and Transfer;
 - 1.6 Water conservation.
- II. Water quality
 - 2.1 Treatment — Purification;
 - 2.2 Reuse of wastewater and drainage water;
 - 2.3 Desalination of sea water and brackish water.
- III. Protection of the environment
 - 3.1 Pollution;
 - 3.2 Marine intrusion.

With the Participation of



Higher National School of Hydraulics

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RECOMMENDATIONS

After two full days, where 57 selected communications were presented, on the whole issue of water and environment, both nationally and internationally, a very enriching discussion led to the following recommendations:

Water is a natural resource whose access is a fundamental right for every human being. It is also a strategic element at the heart of most of the current conflicts.

- Given the evolution and the likely climate changes, it is necessary to set up a deep rehabilitation of our society water culture;
- An appropriate update of the existing resources and actual needs for a growing economy is necessary to develop a plan for integrated water management, allowing a real time decision making in a sustainable and participatory manner;
- Scientifics must always be involved in major water projects and address the real problems in the analysis of the contingency of the water sector, as stated in the opening address of the Minister of Water Resources;
- Scientifics have a pedagogical role and must disseminate their research for a better water education (health and fight against wastage);
- For more accurate knowledge of the water cycle and to refine the diagnoses of its variability and the climate changes that affect it, it is necessary to continue and increase the efforts of its observation (quantity and quality) ;
- For a sustainable management, it is imperative to create a reliable database, and make it available to any user;
- The rapid development of systems and techniques of diverse and massive data acquisition, and the increase of the existing transfer tools require particular attention on the technical and scientific quality of calculation, evaluation and interpretation methods;

- It is recommended that there should be a harmonization of the aspects of modelling and forecasting using means of ground control and earth observation from space;
- To maintain sustainable development, we must use new approaches incorporating any ecosystem changes related to desertification and greenhouse gas emissions.
- The world scientific community must play an important role at the forthcoming World Summit on sustainable development and the next World Water Forum (Istanbul 2009), to make globalization an instrument of sustainable development by raising global awareness on desertification and its impacts on climate change.
- On the proposal of the conference chairman and Director of the Higher National School of Hydraulics, the next conference scheduled for 2008, will be devoted to the problem of desertification.