

BOOK OF ABSTRACTS



INTERNATIONAL CONFERENCE ON
WATER, ENVIRONMENT, ENERGY, AND SOCIETY
ICWEES'2018



Table of contents

HONORARY COMMITTEE	5
INTERNATIONAL SCIENTIFIC COMMITTEE	8
LOCAL ORGANIZING COMMITTEE	12
OVERVIEW	13
OBJECTIVES	14
KEYNOTE SPEAKERS	15
THEME 1: WATER RESOURCES	23
Contribution to the modeling in Algeria: using the Discharge -Rainfall relationship	24
Impact of climate change on the hydrological regime in the medium valley of Medjera-Tunisia	25
Groundwater flow and salt transport in Zeuss-Koutine and Jeffara Mio-Plio-Quaternary aquifers (Tunisia)	26
Conception and sizing of an industrial waste water treatment station equipped with biogas digester, UV reactor and reverse osmosis unit	27
Smartphone application for vegetable irrigation scheduling	28
Present Scenario of drinking water in India: Review	29
Water and Environmental Sustainability in Langkawi UNESCO Global Geopark, Malaysia: Issues and Challenges towards Sustainable Development	30
Indicators of soil degradation with increasing age of olive tree plantation in south Tunisia	31
Rural wastewater treatment on a filter bed reconstituted by siliceous sand and swelling clay	32
Contribution to characterization of natural diatomite	33
Evolution of a hydro-agricultural system in the chain of Matmata-Dahar: case of the Zammour Wadi between 1967 and 2017	34
Evaluating the best evaporation estimate model for free water surface in arid region	35
Evaluation of irrigation management, yield, and irrigation water productivity of public area of the Nabhana system	36
Potentiality of Drip Irrigation & Buried Diffuser systems in the control of the soil salinity and yield production improvement in sandy soil of southern Tunisia	37
Use of AquaCrop model for estimating crop evapotranspiration and biomass production in hilly topography	38
Evaluating the hydrological behavior of a Mediterranean catchment under climate change: Application in the Siliana upstream catchment	39
Up-scaling of crop productivity estimations using AquaCrop model and GIS-based operations	40
Two-phase flows in porous media in the presence of dissolved salts	41



Social technologies to guarantee access to water for the rural population living in poverty: the Brazilian experience	42
THEME 2. ENVIRONMENT	43
Studying the evolution of gully erosion in southern Tunisia through aerial photography and sedimentological analyses. The case of Matmata region	44
How to preserve groundwater in arid lands? Case study: Analyzing the water management policies implemented in Yazd province to preserve its groundwater resources	45
Long-term effects of soil and water conservation on selected ecosystem services in Minchet catchment Ethiopian Highlands	46
Fluctuations of the piezometric level and wind accumulations during the Quaternary period in the maritime Jeffara (Southern-East of Tunisia)	47
Effect of the major air pollutants on olive pollen performances	48
Effect of Combined application of organic/mineral fertilizer in soil hydraulic properties	49
The artesian mounds, structuring elements of the Nefzaoua (Tunisia), a threatened ancient landscape heritage	50
High contribution of crop rooting to soil carbon in a semi-arid Mediterranean profile: evidence from stable isotopes and modelling	51
Evaluation of pollutants in industrial areas: Assessment of topsoils quality	52
Periodic (cultivation period) and vertical (depth) effects of excessive fertilizer use (chemical and organic) on soil organic components	53
Relationship between the characteristics of the surface of cultivated soils and wind erosion in the Plain of Jeffara	54
Spectroscopic analysis of humic acids derived from different types of exogenous organic matter	55
Impact of drought and salinity on henna (<i>Lawsonia inermis</i> L.) productivity in South-East of Tunisia	56
Analyse de la vulnérabilité des ressources en eaux souterraines en milieu urbain par la méthode DRASTIC modifiée (DRASTICU) : Cas de la nappe phréatique de Sidi Bouzid	57
Physicochemical adsorption properties of heavy metals by different clay combinations in the context of phosphogypsum storage	58
What is the impact of mineral dust on air quality in southern Tunisia? Analysis of 3 years of PM10 concentration	59
Biochar and Compost Effects on Soil and Rain Water Incubated and On Soil Respiration	60
Etude comparative des amendements sableux dans les oasis de la Nefzaoua	61
Evaluation des performances agronomiques et physiologiques de deux variétés d'orge sous la contrainte saline et azotée	62
A mathematical model for rapid hunting of desiccation-tolerant xeroprotectant-producing microorganisms	63



Diversity of arbuscular mycorrhizal fungi associated with rhizosphere of olive tree (<i>Olea europaea</i> L.) in different arid regions of southern Tunisia	64
Vulnerability to drought-induced embolism of six woody species used for reforestation projects in arid regions of southern Tunisia	65
Impact of composting sewage sludge on sanitary quality of tomato	66
Stimulating the Anti-oxidative response and tomato growth improvement through Silicon and Salicylic acid under Salinity	67
Mesocosm scale study on fluoride mitigation measures in cropping systems	68
Optimization of biodiesel obtained from waste frying oil by heterogeneous enzymatic transesterification	69
Nanofiltration polishing membrane process for fluoride removal	70
Agronomic application of Olive Mill Waste Water: Short-term effect on soil chemical properties and Barley performance under semiarid Mediterranean conditions	71
Etude de l'influence des caractéristiques édaphiques sur les teneurs en métabolites secondaires chez deux variétés de <i>Punica granatum</i> L.	72
The effect of no-tillage practice on soil nitrogen dynamic	73
Revival of an indigenous management system in Southern Tunisia: reintroduction of the «Gdel» in private rangelands	74
THEME 3. ENERGY	75
Hybrid membrane processes for better performances of desalination operations	77
The energy valuation of by-products of palm trees date palms	78
Numerical study of heat transfer and entropy generation of magnetoconvection of nanofluids	79
Revisiting a Rapid assessment of the water–energy–food–climate nexus in watersheds undergoing water stress and energy transitions	80
Feasibility of Seawater Desalination in the case of small and medium farms	81
THEME 4. SOCIETIES AND DEVELOPMENT	82
Productivité de l'eau dans les oasis de la région de Tozeur	83
Measurement of Social-Ecological Systems Resilience in Tunisia: Innovative approach using Tri-capital framework	84
Assessing livelihood vulnerability in Tunisian arid zones	85
Multi-criteria analysis of water harvesting techniques in south east of Tunisia	86
Virtual water flows and water value in Tunisia: a case study of wheat and olive productions	87
Gaming simulation for the sustainability of the dairy sector: the role of trust and cooperation	88
Impact of farmers' background on adoption of soil conservation strategy, Ethiopia	89
Impact of water shortage on the competitiveness of agricultural commodities in Tunisia	91



Assessing water stress under climate change in light of SDG 6.4	92
Interaction between climate change, environmental degradation and human migration in the arid area of Tunisia	94
Carbon emissions caused by woodland fires in the African tropical savannas	96
A soil spectral library for soil quality and erosion assessments using landscape approach	97
Monitoring of the state of coastal oases in Tunisia by MOD13Q1 products (Case of the oasis of Gabes)	98
Mapping Land Use and Dynamics of Vegetation Cover in South-eastern Arabia using the Remote Sensing Technology: The Study Case of Wilayat Nizwa (Oman) from 1987 to 2016	99
Evaluation of land degradation using Geo-Spatial modeling approach: A case study in Koutine watershed (Médénine-Tunisia)	100
Cartography of olive trees in the delegation Zarzis (governorate of Medenine) by Landsat 8 OLI: Impact of climate change	101
Contribution of remote sensing and GIS in land use mapping and water erosion modeling in the Nagueb subwatershed - Case of Medenine governorate	102
The use of AHP within GIS in identifying suitable sites for rainwater harvesting technologies in the wadi Oum Zessar watershed, Tunisia	103
Analysis of Vegetation Response to Climate Variability in Southeast Tunisia Using MODIS Time Series Data	104
Actual evapotranspiration estimation over a semi-arid heterogeneous land surface using coupled remote sensing data with surface energy budget and crop water budget models	105



OVERVIEW

The International Conference on Water, Environment, Energy and Society is being organized jointly by the Institut des Régions Arides, Tunisia, AISECT University, India, and Texas A&M University, USA, from 08 to 11 May 2018 in Djerba Island, Tunisia.

The objective of the ICWEES-2018 is to integrate research, technology and practice, in the fields of Water, Environment, Energy, Sustainability, Health, Management and Society; and bring together Scientists, Academicians, Researchers, Practicing Engineers, Consultants, Planners, Policy Makers, Economists and Social Scientists, Managers, and Leaders from around the world to share their knowledge, skills, experience, and expertise through research papers, case studies, and keynote addresses on, but not limited to, water resources, climate change, ecosystems implications for human health, sustainable land use and eco-cities, integrated resources management, green economy, green energy, cleaner production, planning, disaster management, environmental management, etc. The proposed major themes of the conference will be discussed in parallel sessions to provide opportunities for the delegates from around the world to share their knowledge, skills, experiences, and expertise with focus on water, environmental, energy, and societal challenges facing our planet and the future of our generation. Environmental problems, such as desertification processes, land degradation and rehabilitation, land cover and land use change, climate change, droughts, early warning, and more, are of utmost importance in arid environments where natural resources are scarce and vulnerable.

The conference will include paper presentations describing original work on the current state of research and practices in technologies and systems for characterization, mitigation, soil, water resources, and climate change and prevention, preparation, and response and recovery of disasters. The themes include (but not limited to): water resources, land degradation and management, energy resources and use, environmental issues, related social and economic development, geo-information and space technologies, multi-sensor data collection, information dissemination, and early warning and standardization. Studies in all scales are welcome, a special emphasis will be given to large scale, watershed studies.



INTERNATIONAL CONFERENCE ON
WATER, ENVIRONMENT, ENERGY, AND SOCIETY
ICWEES'2018



OBJECTIVES

- Bring together leading experts, policy makers and organizations, and share latest developments in water, soil and energy resources management under climate change
- Review modern technologies and innovative approaches to be directed in fragile regions for identification, adaptation and mitigation of climate change phenomenon.
- Strengthen exchanges and cooperation in research, development and socio-economic sector for participatory management of soil and water resources and energy



INTERNATIONAL CONFERENCE ON
WATER, ENVIRONMENT, ENERGY, AND SOCIETY
ICWEES'2018



TEXAS A&M
UNIVERSITY®

Revival of an indigenous management system in Southern Tunisia: reintroduction of the «Gdel» in private rangelands

Ouled Belgacem Azaiez, Farah Ben Salem, Mouldi Gamoun, Fethi Gouhis, Mohamed Neffati,
Roukaya Chibani, Ezzeddine Belfekih, and Mounir Louhaichi*

International Center for Agricultural Research in the Dry Areas (ICARDA)

*Corresponding author email: M.Louhaichi@cqi-ar.org

Abstract

To face the negative effects of human pressure and environmental changes, developing grazing management strategies is an important tool for rangeland sustainability in the dry areas. This study aimed at assessing the reintroduction under enhanced arrangements of the indigenous deferred grazing locally named as “Gdel” for the management of private rangelands in southern Tunisia. Under the framework of the IFAD funded project “PRODESUD” and in collaboration with the Office of Pasture and Livestock, 6 rangeland sites subjected respectively to 1 year, 2 years, 3 years rest, 2 sites under light grazing after rest and free grazing (control) were selected in a representative pastoral community of Southern Tunisia. Total plant cover, range production and carrying capacity were determined inside and outside the rested sites. Preliminary findings indicate that two years rest have recorded the highest values for all scored parameters. This was followed by the first-year grazing. The freely grazed site (control) had the lowest values as compared to all other management modes. Perennials are the most dominant in all treatments including the control, but they have the highest cover in the 2nd year rested rangelands. Two years rest constitutes an entirely positive influence and provides three times more forage than three-year rest. Under the three years protection, rest is unlikely to achieve any notable benefits. Two years rest followed by one year grazing is an efficient tool to maintain sustainability of rangelands. Based on these findings, rest-rotation grazing or alternation of short periods of grazing with periods of vegetative rest seems to be more favorable than strict or long-term protection. Such grazing management would be recommended for restoring the degraded rangelands

