

Moroccan Committee of the International Association of Hydrogeologists (CM-AIH) and the Hydraulic Basin Agency of Sakia El Hamra and Oued Eddahab organize in partnership with the Directorate of Research and Water Planning.

4th International Conference GIRE3D

Participatory and Integrated Management of Water Resources in Arid Zones

November 23th-25th, Laayoune – Morocco (Hybrid)

(Time zone in Morocco (GMT+1))

GENERAL PROGRAM

(GMT+1)	GIRE3D : Day (-1) – Wednesday 22 November 2023
09 :00 – 17 :00	<p>WORKSHOPS</p> <p>Link : https://meet.google.com/chx-axgp-ocb</p> <p>Speaker 1 : Aniss Moumen</p> <p>Title : <i>“Bibliometric vs. Systematic Literature Review : process and tools”</i></p> <p>Speaker 2 : El Bouhaddioui Mohamed</p> <p><i>“Scientific Communication and publication”</i></p> <p>Speaker 3 : Soufiane Taia</p> <p><i>“Spatio-temporal processing of hydrological data with Python”</i></p>
	GIRE3D : Day 1 – Thursday 23 November 2023
09 :00 - 09:30	Reception
10:00 – 11:00	<p>Opening Ceremony :</p> <p>Link : https://meet.google.com/gkz-odkt-xtk</p> <p>Directory of Research and Water Planning</p> <p>Directory of Hydraulic Basin Agency of Sakia El Hamra and Oued Eddahab</p> <p>Moroccan Committee of the International Association of Hydrogeologists (CM-AIH)</p> <p>Chairs of GIRE3D</p>
	<p>Opening Conference (HYBRID)</p> <p>Link : https://meet.google.com/gkz-odkt-xtk</p> <p>Dr. El Hassnaoui My Driss (DRPE, Morocco)</p> <p><i>“Stratégie nationale de l'eau à l'horizon 2050 au Maroc”</i></p> <p>Chair : Dr. Sidi El Mokhtar El Kanti</p>
11:00 – 11:30	Coffee Break
11:30 - 12:30	<p>GIRE3D - PARALLEL SESSIONS (FACE-TO-FACE) :</p> <p>Session 1</p> <p>Session 2</p>
12:30 - 14:00	Lunch Break



CM-AIH Water Conference
23-25 Nov 2023, Laayoune, Morocco



المملكة المغربية
ROYAUME DU MAROC



وزارة التجهيز والماء
MINISTÈRE DE L'ÉQUIPEMENT ET DE L'EAU



مركز البحوث المائية
الوطنية للمياه والتكنولوجيا
NATIONAL CENTER FOR WATER RESEARCH AND TECHNOLOGY
MAROC ET OIES 2023/2024

14:00 - 14:30	<p>Conference (HYBRID) Link : https://meet.google.com/gkz-odkt-xtk Dr. Andrea Scozzari (CNR-ISTI, Italy) <i>"Earth observation for groundwater: the importance of remote sensing fundamentals"</i> Chair: Pr. Lhoussaine Bouchaou</p>
14:30 – 16:00	<p>GIRE3D - PARALLEL SESSIONS (FACE-TO-FACE): Part 1 Session 3 Session 4 Session 5</p>
16 :00 – 16 :30	<p>Coffee Break – POSTER SESSION</p>
16 :30 – 18 :00	<p>GIRE3D - PARALLEL SESSIONS (FACE-TO-FACE): Part 2 Session 3 Session 4 Session 4</p>
19:30 - 21 :30	<p>Gala Dinner</p>

(GMT+1)	GIRE3D : Day 2, Friday 24 November 2023
09:00 - 10:30	<p>Conference (HYBRID) Link : https://meet.google.com/gkz-odkt-xtk Dr. Claudio A. Sáez (University of Valparaíso, Chile) <i>"Advances in environmental biotechnology for a cost-effective and sustainable development of the desalination industry"</i> Chair: Pr. Lahcen BENAABIDATE</p>
10:30 – 11:00	<p>Coffee Break</p>
11 :00 – 13 :00	<p>GIRE3D - PARALLEL SESSIONS (FACE-TO-FACE): Session 6 Session 7</p>
13:30 - 15:00	<p>Lunch Break</p>
15:00 - 15:30	<p>Conference (HYBRID) Link : https://meet.google.com/gkz-odkt-xtk Dr. Victor Ongoma (UM6P, Morocco) <i>"The changing climate over Africa: Impacts on Water Resources"</i> Chairs : Pr. Halima JOUNAID</p>
15:30 - 17:30	<p>GIRE3D - PARALLEL SESSIONS (VIRTUAL): Session V1 Link: https://meet.google.com/sjk-tphg-imp Session V2 Link: https://meet.google.com/vha-hwwj-mkf Session V3 Link : https://meet.google.com/udf-rgsb-jzc</p>
	<p>Coffee Break</p>
18:00 – 18:30	<p>GIRE3D - ROUND TABLE Link: https://meet.google.com/gkz-odkt-xtk</p>



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18:30 – 19:00	CLOSING CEREMONY Link: https://meet.google.com/gkz-odkt-xtk
<i>(GMT+1)</i>	GIRE3D: Day 3, Saturday 25 November 2023
09:00 - 18:00	GIRE3D - FIELD TRIP Visite du chantier de construction de barrage Sakia El Hamra Visite de la station d'épuration des eaux usées Périmètre Foum El Oued, ASARI, Plage Station de dessalement de l'eau de mer – Municipalité El Marssa Pause-thé traditionnel du Sahara Déjeuner en plein dunes de sable du désert Temps libre, Prise des photos, Profit du silence de la région, Activité (facultative) Vue du coucher de soleil et retour



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Instructions for authors (English version)

- The PPT template to adapt for your oral presentation has been sent to you by email.
- Regarding the presentation language, the participant can choose to present his/her work in Arabic, French, or English (However, abstracts/papers must be only in English).
- Participants should present their work in maximum 15 minutes (communication (10 minutes) and questions. (5 minutes).
- **The moderators of the sessions will ensure the order of participants' appearance. Each participant should respect the allocated time for his/her contribution.**
- For online presentation, avoid sharing your computer screen while others are presenting.
- Session links for remote sessions are mentioned in the program.
- **No program changes can be made. If you have any constraints or unforeseen circumstances, contact the moderators of the sessions to arrange your order of appearance.**
- **The author will not receive its certificate unless his communication is presented.**
- For remote communications, certificates of participation will be sent by email by the end of the event.
- For face-to-face communications and workshops, the certificates will be distributed by the end of the event.

- **All the comments from the moderators during the presentations & the proofreading reports of the papers will be sent to participants after the event. Thus, authors are invited to improve and update their papers before the final submission to the Publisher.**



SESSIONS PROGRAM

(FACE-TO-FACE)

Day 1: Thursday 23
November 2023

Date		Day 1: Thursday 23 November 2023	
Session/Topic	<p align="center">Session 1 (Room 1)</p> <p align="center">Topics: Alternative resources and water technologies: desalination, artificial recharge, wastewater and reuse, collection of rainwater and fog/</p> <p align="center">Water saving in agriculture: new technologies and management strategies</p>		
	<p align="center">Chairs</p> <p align="center">Slimane Dadi, National School of Mines of Rabat, Morocco Salah Er-Raki, Faculty of Sciences and Technologies, Cadi Ayad University, Marrakech</p>		
Hour	Authors	Title	
11:30 - 12:30	1	K. Grimah, A. Nahli & M. Chlaida	Smart water: an innovative approach to integrated water management at the faculty of sciences Ben M'sick (Casablanca, Morocco) in the face of water stress.
	2	J.C. Rodriguez, S. Er-Raki, F. Cruz-Bautista, A. Meddich, J. E. López Avendaño, L. Ech-Chatir & F. Errouh	Water use and carbon sequestration by perennial crops in arid region of Mexico.
	3	C. Elair, K. Rkha Chaham & A. Hadri	Spatio-temporal characteristics of meteorological and agricultural drought indices and their dynamic relationships in the Marrakech-Safi region of Morocco.
	4	Y. Laalaoui, N. EL Assaoui & O. Ouahine	Balancing urban growth and the sustainability of groundwater and agricultural land: case of Berrchid-Settat area.
	5	S. Er-Raki, El. H. Bouras, J. C. Rodriguez, F. Cruz-Bautista, C. Watts, C. Lizarraga-Celaya & A. Chehbouni	Using aquacrop for irrigation and water productivity assessment of table grapes in arid region of Mexico.

Date	Day 1: Thursday 23 November 2023		
Session/Topic	Session 3 (Room 1) <u>Topic: Water Resources and Climate Change: Adaptation and Resilience.</u>		
Chairs	J.E. Stitou El Messari, Abdelmalek Essaâdi University, Tetouan El Mahdi El Khalki, UM6P, Benguerir		
Hour	Authors	Title	
15:00 - 18:00	1	D. El Hassnaoui	Reconstitution des inondations de 2016 dans le bassin Saquia Al Hamra.
	2	S. Taia, L. Erraioui, Y. Arjdal, J. Chao, B. El Mansouri & A. Scozzari	Predict discharge and snow dynamics in Oued El Abid watershed using remotely sensed snow coverage and swat model.
	3	Y. Jaouhari, L. Stour & A. Agoumi	Climate risk analysis and development of a climate change adaptation plan in the agri-food sector: the case of a citrus unit.
	4	H. El Behja, A. El M'rini, D. Nachite, M. Bouchkara, K. El Khalidi & B. Zourarah	Evaluation of tidal energy potential across different water depth layers in a coastal lagoon: a case study of Khenifiss lagoon (southern Morocco).
	5	S. Gouahi, M. Hssaisoune, M. Ait Elkadi, C. Aglal, M. Qurtobi, M. Nehmadou, B. Bouaakaz, H. Boudhair & L. Bouchaou	Water scarcity challenges and drought resilience in the Souss Massa basin, Morocco.
	6	C. Aglal, M. Hssaisoune, S Gouahi & L. Bouchaou	Socio-economic and environmental impact of the Chtouka desalination plant.
	7	M. El Garouani, H. Radoine, A. Lahrach, H. Jarar Oulidi & M.S Chaabane	Analysis of the effect of climatic variability and increasing water demand on the Saïss aquifer, Morocco.
	8	Y. Ouassanouan, V. Simonneaux, Y. Fakir, M. H. Kharrou, B. A. Hssaine & A. Chehbouni	Long-term reference evapotranspiration assessment: does the era 5land reanalysis dataset have the potential to bridge the gap in ground-based agrometeorological data across a north African basin?
	9	O. Attar, Y. Brouziyne, L. Bouchaou, Y. Ait Brahim, M. Hssaisoune & A. Chehbouni	Sustainable water management in the Souss basin: challenges and strategies for adaptation.
	10	E. M. El Khalki, Y. Trambly, L. Hanich, A. Marchane, A. Boudhar & B. Hakkani	Global precipitation product to evaluate climate change impacts in the Oued El Abid basin, Morocco.
	11	Safae Dafouf, Abderrahim Lahrach, Hassan Tabyaoui, Lahcen Benaabidate	Drought assessment by multi-index based on agmerra and weather station data
	12	M. Gramz, M. Batchi, J. El Bouziani, A. Nafii, M. H. Azagane, A. El-Boukhari & Y. Elharrari.	The impact of climate change on surface water resources in arid zones - the case of the Ykem watershed in the central plateau of Morocco.
	13	M. El Bid	دور الموارد المائية بمنطقة الساقية الحمراء و وادي الذهب في تنمية تربية الابل

Date	Day 1: Thursday 23 November 2023		
Session/Topic	Session 4 (Room 2) Topic: Numerical Modeling, Geo-information, Remote sensing, Geomatics, Artificial Intelligence.		
Chairs	Abdessamad Hadri, UM6P Benguerir, Morocco Naïma El Assaoui, Mohammed V University, Rabat, Morocco		
Hour	Authors	Title	
15:00 - 18:00	1	A. Larabi, M. Jalal El Hamidi & M. Faouzi	Assessing the future climate change impacts on the Fom El Oued groundwater aquifer in Laâyoune, Morocco: a numerical modeling approach.
	2	K. Jamous, S. Malainine, M. Wahbi, H. Nhhala, A. EL Meraoui & M. Maatouk	Planning aquaculture integration in Khenifiss lagoon using remote sensing and GIS.
	3	A. Afquir, A. Saad, S. M. El Kanti, R. Rotz, M. Hssaissoune & Y. Ez-Zaouy	Three-dimensional geological and stratigraphic modeling of the sedimentary coastal aquifer of Dakhla basin, (Southwestern Morocco).
	4	H. Bouyazri & H. Rahali	The application of machine learning approaches to the development of rating curve - case study: Tamgnounte spring (2001/2021) in High-Atlas mountain, Morocco.
	5	H. Ait-Ichou, A. EL Hmadi, M. Hssaissoune, My. Aouragh, H. Ragraoul & L. Bouchaou	Fusing machine learning algorithms and GIS-remote sensing methods for mapping groundwater potential zones: a case study of the Saiss basin in Northern Morocco.
	6	N. El Assaoui & A. Sadok	Impact of climate change on evapotranspiration and its estimation using an integrated approach of remote sensing, artificial intelligence and geomatic (Berrechid area).
	7	Z. Bouhamad, M. Hssaissoune, A. Akasbi, El. Mili & L. Bouchaou	Groundwater mapping using GPI and machine learning models in the Souss upstream: a comparative study.
	8	C. El Hachimi, S. Khabba, S. Belaqziz, B. Ait Hssaine, M. H. Kharrou & A. Chehbouni	Are raw satellite bands and machine learning all you need to retrieve actual evapotranspiration.
	9	R. El Masmoudi, B. El Mansouri & A. Mridekh	Multicriteria characterization of feasibility parameters, type selection, and implementation of seawater intake location along the Moroccan coastline.
	10	N. El Hammouch, S. Harchan, F. Laarej, M. Mourjane, F. EL Hammichi, H. Tabyaoui & A. Lahrach	Cartographie des dépôts éoliens autour de la vallée du Ziz à l'aide des bandes tir d'aster et étude des caractères physico-chimiques et stabilisation de l'érosion des sables.
	11	K. Jamous, S. M. Malainine, M. Wahbi, H. Nhhala, A. EL Meraoui & M. Maatouk	Planning aquaculture integration in Khenifiss lagoon using remote sensing and GIS.

Date	Day 1 : Thursday 23 November 2023		
Session/Topic	Session 5 (Room 3) Topic: Numerical Modeling, Geo-information, Remote sensing, Geomatics, Artificial Intelligence.		
Chairs	Aniss Moumen, Ibn Tofail University, Kenitra Bouabid El Mansouri, Ibn Tofail University, Kenitra		
Hour	Authors	Title	
15:00 - 18:00	1	A. Zerouali, A. Larabi & O. Chafik	Système d'aide à la gestion des prélèvements par couplage sig - modèle mathématique (Modflow) dans la nappe de Berrechid (Maroc).
	2	L. El Mezouary, A. Hadri, M. H. Kharrou, Y. Fakir, A. Elfarchouni, L. Bouchaou & A. Chehbouni	Machine learning and deep learning guided assessment of groundwater reservoir hydrodynamic parameters and geometry: a case study of the El Haouz aquifer.
	3	A. Larabi, H. El Asri, M. Faouzi & M. J. El Hamidi	Numerical modeling of the future climate change impacts on the Ghis-Nekkor aquifer under rcp4.5 and rcp8.5 (Al Hoceima, North of Morocco).
	4	A. Moumen, M. El Bouhaddioui & N. Mejjad	Machine learning and deep learning for water issues in Morocco: a bibliometric study.
	5	M. El Bouhaddioui, A. Moumen & H. Azidane	Groundwater modeling in Morocco: systematic literature review.
	6	A. Chakri, N. Laftouhi, M. Lbnoussina & L. Mandi	Contribution of hydraulic modeling and hydrology to flood prevention and design of engineering structures: case study of a bridge over the oued Ourika – Morocco.
	7	C. Ed. Bouiss & E. N. El Assaoui	GIS and remote sensing coupled with analytical hierarchy process (ahp) for the prevention of landslides: a case study in the Tamdrost watershed, province of settat, morocco.
	9	H. Meziane & N. El Assaoui	Quantification of water erosion using the rusle model in the Mazer watershed, Morocco.
	10	R. Fri, M. Kili, L. Erraioui, S. Taia, J. Chaou, A. Mridekh & B. El Mansouri	Using remote sensing and geographic information system for delineating suitable sites for artificial groundwater recharge: a multi-criteria decision-making approach.
	11	L. Ait Dhmane, J. Moustadraf, M. Rachdane, M. E. Saidi , F. Amraoui & A. Hadri	Assessment of gridded precipitation products in a semi-arid Mediterranean region: case of the Bouregreg watershed, Morocco.



SESSIONS POSTER

(FACE-TO-FACE)

Thursday 23 November

2023

FACE-TO-FACE

Date	Day 1 : Thursday 23 November 2023		
Session/Topic	Session Poster		
Chairs	Mohamed El Bouhaddioui, National School of Mines in Rabat Sidi Mokhtar El Kanti, Hydraulic Basin Agency of Sakia El Hamra Oued-Eddahab Souad Haida, Ibn Tofail University, Kénitra		
		Authors	Title
	1	M. Riggui, Y. Ait Brahim, M. Hssaisoune, H. Boudhair, M. Abioui & L. Bouchaou	Study of the geometry of the Turonian aquifer in the Souss-Massa plain.
	2	A. Rafik, Y. A. Brahim, M. Ouarani, L. Bouchaou & A. Chehbouni.	Stream and groundwater flows simulation using a calibrated swat model: a case study of Iguerounzar catchment in Morocco.
	3	S. Acharki, S. K. Singh, E. V. d. Couto, Y. Arjdal & A. Elbeltagi	Agricultural and meteorological drought indices prediction via machine learning models in a Mediterranean coastal watershed.
	4	Y. Arjdal, A. Mridekh, M. Kili, S.M. El Kanti, S. Acharki, S. Taia & B. El Mansouri	Assessing groundwater resources in the Morocco Mauritanian transboundary aquifer a multidisciplinary approach for sustainable water quality management.
	5	Y. Arjdal, S.M. El Kanti, A. Mridekh, M. Kili, S. Acharki & B. El Mansouri	Preserving the transboundary aquifer: societal impact analysis and realistic strategies for the Morocco Mauritania region.
	6	Y. Arjdal, A. Mridekh, M. Kili, S.M. El Kanti, S. Acharki, S. Taia, H. Echerfaoui & B. El Mansouri	Characterization and hydrogeological implications of the transboundary aquifer complex at Bir Guendouz (southern Morocco).
	7	N. Rhoujjati, Y. A. Brahim, L. Hanich, A. Rhoujjati, A. Rafik, H. Ouatiqi, A. Chehbouni & L. Bouchaou	Unraveling recharge dynamics in semi-arid catchments of the atlas mountains using stable isotopes.
	8	S. Boumakrat	Water origins and agricultural productions under semi-arid conditions: the case of Sefrou province, Morocco.
9	S. Acharki, F. El Qorchi, Y. Arjdal, H. B. Aissa, M. Amharref & A. S. Bernoussi	Assessing the impact of climate and land use change on soil water erosion in the Loukkos watershed, Northwestern Morocco.	
10	M. El Bid	دور الموارد المائية بمنطقة الساقية الحمراء و وادي الذهب في تنمية تربية الابل	

11	F. Z. Mekaoui, A. Sahraoui, N. Brhadda & L. A. Lrhorfi	Evaluation de qualité des eaux de surface du bas de Sebou par une étude physicochimique et microbiologique et l'impact des activités anthropiques et des afflues versant (Oued Beht Et Oued Swaret).
12	H. El Behja, A. El M'rini, D. Nachite, M. Bouchkara, K. El Khalidi & B. Zourarah	An integrated environmental assessment of khenifiss lagoon in southern morocco: a path to sustainable development and conservation.
13	A. El Azhari, Y. Ait Brahim, L. Bouchaou, M. Azhar, I. Karaoui & A. Chehbouni	Assessing the accuracy of reanalysis and satellite-based precipitation products in a data-limited region: a case study in Morocco.
14	S. Acharki, Y. Arjdal, S. Taia, & B. El Mansouri	Long-term spatiotemporal surface water dynamics using google earth engine in southeastern Morocco.
15	S. Acharki, Y. Arjdal & B. El Mansouri	Meteorological drought forecasting via soft computing models in a semi-arid Moroccan perimeter.
16	H. Jamaa, A. El Achheb, K. I. Namr & L. Bouchaou	Etude des mécanismes de recharge des aquifères par le biais de traceurs chimiques et isotopiques : cas de la plaine des Doukkla, Maroc.
17	A. El Basbas, M. EL Bouhaddioui	Machine learning and deep learning for water-resource data: bibliometric study.
18	M. EL Bouhaddioui, A. Mridekh, S. Dadi, H. Azidane & M. Achalhi	Well logging methods in groundwater surveys of complicated aquifer systems: Rharrb basin (NW of Morocco).
19	A. Fekri, M. Benrhanem, A. A. Slimane, A. Aboussaleh & J. Moustadraf	Management of groundwater resources in an arid context: case of hydrogeological units in the Essaouira Morocco region.
20	F. Dimane, Y. El Hammoudani, L. Benaabidate, K. Haboubi, A. Bourjila, C. Benaissa, I. Achoukhi, A. Touzani & H. Faiz	The use of artificial intelligence to optimise water resources: a comprehensive assessment.
21	El.Gh. Tibari, F. Raibi, M. Qurtobi, M. Benmansour, & H. Marah	isotopic and geochemical assesment of thermal waters by hydro-isotopic geochemistry in the middle atlas region of the Sebou basin, Morocco



SESSIONS PROGRAM

(FACE-TO-FACE)

Day 2: Friday 24 November
2023

Date	Day 2: Friday 24 November 2023		
Session/Topic	Session 6 (Room 1) Topic: Quality, Vulnerability and Protection of Water Resources.		
Chairs	Abderrahim El Achheb, Chouaib Doukkali El Jadida University, Morocco Younes Fakir, Cadi Ayyad University, Marrakech		
Hour		Authors	Title
10:30 - 13:00	1	W. El Bouaidi, G. Enaime, Z. Tazart, K. Lazrak, M. Douma, A. Ounas, A. Yaacoubi & M. Loudiki	Response surface methodology optimization of coagulation-flocculation process for water contaminated with cyanobacterial bloom using carpobrotus acinaciformis extracts.
	2	Y. Ez-zaouy, L. Bouchaou, M. Hssaisoune, A. Saad, G. Busico, S. O. Danni, A. Angri, M. Nehmadou & A. Chehbouni	Contribution of geophysics and GIS to mapping seawater intrusion in the Souss-Massa coastal area.
	3	S. Elbouatlaoui, I. Chaouki, R. A. Belakhmima & N. Dkhireche	The effect of type of electrode using on the electrocoagulation process on the vinasse treatment.
	4	A. Guemouria, A. Chehbouni, S. Belaqziz, Y. A. Brahim, El M. El Khalki, D. Dhiba & L. Bouchaou	Analysis of the sustainability of water resources in the Souss-Massa basin using the system dynamics approach.
	5	O. Heddoun, A. A. Lemkademe & M. Benzaazoua	Hydrogeological study of the Beni Amir deposit in the Oulad Abdoun phosphate basin for water management and sustainable mining.
	6	Y. EL Hammoudani, F. Dimane, K. Haboubi, L. Benaabidate, A. Bourjila, C. Benaissa, I. Achoukhi, S. Bouhout, H. Faiz, A. EL Abdouni & C. Haboubi	Overview of the evolution of marine intrusion research from 2000 to 2022.
	7	A. El Achheb, S. El Maliki, N. Mdiker & M. Amar	Contribution of continuous measurements of piezometry and electrical conductivity to the characterization of recharge and salinity of the coastal aquifer of Sidi Moussa.
	8	N. Mejjad, A. Laissaoui & A. Moumen	A review analysis of Moulay Bouselham lagoon water and sediments pollution level within the latest 20 years.
	9	F. El Qorchi, M. Y. Khebiza, A. Karmaoui, S. Acharki	Projection analysis of future drought characteristics in upper Draa catchment (southern Morocco).

	<p>10</p>	<p>A. Zerouali, My.D. Hasnaoui, M. Qurtobi, I. Hilal, H. Marah, M. Benmansour & M. Chanigui.</p>	<p>Utilisation des techniques isotopiques pour la compréhension du fonctionnement et de l'interaction eaux de surface - eaux souterraines en aval du barrage Mohammed v dans le bassin de la basse Moulouya</p>
	<p>11</p>	<p>A. Zerouali, My.D. Hasnaoui, M. Qurtobi, H. Marah, M. Benmansour & M. Amghar.</p>	<p>Contribution To the Refinement of The Balance Sheet of The Souss Aquifer by The Use of Isotopic Techniques</p>

Date	Day 2: Friday 24 November 2023		
Session/Topic	Session 7 (Room 2) Topic: Exploration and exploitation of deep-water resources.		
Chairs	Fouad Amraoui, Hassan II University, Casablanca Mohammed El Bouhaddioui, National School of Mines, Rabat		
Hour	Authors	Title	
10:30 - 13:00	1	A. Ouchbani, L. Abdelkader, A. Abdellatif, S. Slimane, D. Morad	Comparaison de la faisabilité de la tomographie de résistivité électrique dans deux contextes hydrogéologiques différents : cas du sahel des Doukkala Et Fom El Oued de Laayoune.
	2	A. Ouchbani, L. Abdelkader, A. Abdellatif, S. Slimane, D. Morad	Optimizing the hydrogeological borehole site using 3d electrical resistivity tomography: a case study of a desalination station in the Cap Ghir region, Agadir.
	3	A. Elkourchia, M. Boualoul, M. Hilali	Geophysical study and structure mapping for hydrogeological reconnaissance of the Boudenib cretaceous basin Errachidia region, Morocco.
	4	A. Taibou, J. Halima, B. Aimad & F. Amraoui	Electrical resistivity tomography applied to drilling in the deep Guenfouda aquifer, eastern Morocco.
	5	M. Baillal, N. EL Assaoui, A. Sirine & A. Lachqar	Hydrogeological investigation and modeling using tomography, GMS, and geomatics: case of Sidi Ifni site (Western Anti-Atlas).
	6	I. El Aichouni, N. Nabil, S. Rachidi, H. El Hamraoui, B. El Mansouri, O. Souid Ahmed & A. Mridekh	Feasibility study of underground hydrogen storage in aquifers.
	7	A. Logbani, A. Mridekh, M. Killi & B. El Mansouri	Characterization of Plio-Quaternary deposits in the Souk El Arbaa region: integration of surface and subsurface data.
	8	O. Ould Saltana, J. Chao, A. Mridekh & B. El Mansouri	Spatial analysis of fracturing and slope data and impact on the correlation between fracturing, slope and surface water circulation: case of the Romani region.
	9	A. Bouri, A. Mridekh, M. El Bouhaddioui, M. Kili & B. El Mansouri	Analysis of oil drilling log data and prediction of petrophysical parameters in the Rharb basin (NW Morocco).
	10	M. EL Bouhaddioui, A. Mridekh, S. Dadi, H. Azidane, A. El Basbas & M. Achalhi	New interpretation of well logging data for evaluation of complex aquifers in Bel Kciri Sub-Bassin (Morocco NW)

SESSIONS PROGRAM (VIRTUAL)

Day 2: Friday 24 November 2023

Session Virtual 1
Link : https://meet.google.com/sjk-tphg-imp
Session Virtual 2
Link : https://meet.google.com/vha-hwwj-mkf
Session Virtual 3
Link : https://meet.google.com/udf-rgsb-jzc

Date	Day 2 : Friday 24 November 2023		
Session/Topic	Session Virtual 1 (Room 1) Link : https://meet.google.com/sjk-tphg-imp		
Chairs	Lahcen Benaabidate, Sidi Mohammed Ben Abdellah University, Fez Mohamed Hakim Kharrou, UM6P, Benguerir Soufiane Taia, Ibn Tofail University, Kénitra		
Hour	Authors	Title	
15:30 - 17:30	1 M. Benssaou, M. Hssaisoune, H. Boudhair, M. Abioui, M. Benssaou & L. Bouchaou	The aquifers of the western anti-atlas: geological and hydrogeological features.	
	2 R. Ech-Choudany & M. H. Hafid	Impacts of climate change on water resources in the Maghreb: what are the strategies for adaptation.	
	3 F. E. Sghiouer, A. Nahli, H. Bouka, M. Chlaida	Assessment of the effect of drought and anthropogenic liquid pollution on the physico-chemical quality of the waters of Oued Inaouène (Taza, Morocco).	
	4 A. Elfirdoussi, N. El Amrani Paaza & A. Soulaïmani	Hydrogeological characterization of Settat Ben Ahmed plateau aquifer (central Morocco).	
	5 K. Oukaddour, M. L. Page & Y. Fakir	Evaluation of precipitation datasets for drought monitoring in the Tensift basin (Morocco).	
	6 Y. Manyari, M. H. Kharrou, S. Er-Raki, V. Simonneaux & A. Chehbouni	Challenges and advancements in estimating evapotranspiration: a comparative analysis of global products in Central Morocco.	
	7 A. Khettouch, M. Hssaisoune, Y. Ez-zaouy & L. Bouchaou	Drâa complex aquifers: groundwater quality overview toward sustainability.	
	8 Y. Izarif, N. E. Laftouhi & L. Mandi	Hydroclimatic insights and climate change implications in a mountainous region. Case study of Marrakech high Atlas watersheds.	
	9 K. Ibba, S. Er-Raki, J. Kassout, A. Bouizgaren, R. Hadria	Optimizing water productivity for Menara olive cultivar: exploring the impact of regulated and sustained deficit irrigation strategies in Morocco.	
8 A. Sirine & N. El Assaoui	Evaluation de l'érosion hydrique dans le bassin versant d'El Himer a l'aide du modèle EPM, du GIS et google ENGINE.		
9 A. Meskour, J. Ahattab, M. Aachib & M. D. Hasnaoui	Evaluation of the degradation of the Draa oasis to open avenues of reflection for the preservation of water potential and agricultural heritage in the valley.		

Date	Day 2: Friday 24 November 2023		
Session/Topic	Session Virtual 2 (Room 2) Link : https://meet.google.com/vha-hwwj-mkf		
Chairs	Aniss Moumen, Ibn Tofail University, Kénitra Halima Jounaid, Hassan II University, Casablanca Nezha Mejjad, CNESTEN, Rabat		
Hour	Authors	Title	
15:30 - 17:30	1	R. El Moumen, M. Hssaisoune & L. Bouchaou	Comparison of Mcdm methods and hydrodynamic modeling to flood hazard mapping in semi-arid area.
	2	S. Bouziane, B. Aghoutane, A. Moumen, A. Sahlaoui & A. El Ouali	Enhancing precipitation prediction in the Ziz basin: a comprehensive review of traditional and machine learning approaches.
	3	S. Mohafid, L. Stour & A. Agoumi	Spatiotemporal siltation patterns in Moroccan dam reservoirs: a geographic information system (GIS) approach.
	4	S. Naciri & A. EL Alaoui	Managerial agility and digital transformation of hydraulic basins: a case study of the Guir hydraulic basin agency.
	5	A. Ahdidou, A. Saad & Y. Ez-Zaoui	Contribution of GIS to the study of erosion sensitivity in the Souss basin: the case of the Aoulouz and Mokhtar Soussi dams.
	6	J. Abdullahi, A. Tahsin, M. I. Yesilnacar, A. I. Karabulut & O. Daramola	Assessment of climate change impact on precipitation using machine learning based statistical downscaling method.
	7	A. Abdenour, M. Sinan, B. Lekhlif & O. Belloulid.	A GIS based approach for assessing water body change in a mountain wetland: case of Dayet Awwa, Morocco.
	8	A. El Garouani & M. Msaddek	The effect of land use/land cover change on the hydrological process in the upper watershed of Oum Er Rabia, Morocco.
	9	J. Abdullahi, A. Tahsin, M. I. Yesilnacar & A. I. Karabulut	Coupling feature extraction approach with block-oriented nonlinear dynamic models for water quality index prediction.
	10	A. I. Issaka, M. Killi, J. Chao, A. Mridekh & B. El Mansouri	Modélisation numérique de l'intrusion saline de la nappe de Fom El Oued.
	11	S. Moutia, M. Sinan & B. Lekhlif	Are droughts becoming more severe or longer in Morocco based on the Standardized Precipitation Evapotranspiration Index for 1979-2022?

Date	Day 2: Friday 24 November 2023		
Session/Topic	Session Virtual 3 (Room 3) Link : https://meet.google.com/udf-rgsb-jzc		
Chairs	J.E. Stitou El Messari, Abdelmalek Esaadi University Ismail Hilal, CNESTEN, Rabat		
Hour	Authors	Title	
15:30 - 17:30	1	L. Tebaa, Z. Tazart, M. Douma, K. Mouhri & M. Loudiki	Effect of carvacrol microspheres on microcystis toxic blooms in aquatic ecosystems: mesocosm application trial under semi-natural conditions.
	2	A. Banouar & A. Bouslihlim	Integrated water resource management in the decision-making of large firms in Morocco: case of Managem Group (Hydraulic Basin of Tensift al Haouz).
	3	A. EL Djiri, I. Etebaai, M. Taher, S. El Moussaoui, H. El Talibi & H. C. Dekkaki	Impacts des eaux de surface de l'arrière-pays sur le littoral de la baie d'Al-Hoceima (Rif Central, Maroc).
	4	S. Saghiry, D. Loudyi & O. Laassilia	Interbasin water transfer in Morocco, challenges and perspectives.
	5	S. El Arroufi & A. Baguare	Water and the territorialization of SDG 6 in the Meknes prefecture.
	6	S. Oudmine. D. Boudad & M. Ajerame	Gestion participative de l'eau : fondement clé pour une société durable.
	7	S. Azzouzi, M. Khamar, A. Nounah & E. Cherkaoui	Effect of cadmium on fenugreek germination parameters.
	8	S. Bouk, L. Bennani, M. Elkouali & A. Abourich	Porous ceramic from phosphogypsum and natural phosphate for wastewater treatment.
	9	C. Nessah, A. EL Hmadi, A. Lahjouj, E. M. EL Faleh & K. Bouhafa	Impact of nitrogen fertilization on soil nitrate concentrations in an onion field in the Saiss basin.
	10	A. Sahraoui, F. Z. Mekaoui & M. Ouhssine	Heavy metal characterization of dewatered sludge from the Kénitra wastewater treatment plant (Morocco) for agricultural use.
	11	A. Alitane, A. Essahlaoui, A. V. Griensven, S. Eisenreich, N. Essahlaoui, A. Elaaraj & A. Essaied	Trace elements geochemistry and quality assessment of springs water in the semi-arid region, Morocco.
	12	H. Boutracheh, A. Moumen	Current research priorities on fog harvesting as a clean water resource: a bibliometric approach.
	13	Sanae Ajbar El Gueriri, Imane Bakkali,	assessing environmental impacts of a landfill and recovery center on water quality in tangier, morocco: a study of microbiological and

	<p>Fouad El Mansouri, Faysal Achemlal , Jamal Brigui</p>	<p>metallic contamination in surface and groundwater sources</p>
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