

PERSONNEL INFORMATION

Bachir SAKAA



Scientific and Technical Research Center for Arid Areas CRSTRA, Biskra. Algeria

+213 33 73 42 14 +213 671 49 41 85

sakaabachir@yahoo.fr sakaabachir@crstra.dz

https://www.crstra.dz

Sex mal | Date of Birth 16 February 1983 | Nationality Algerian

EDUCATION

Dec. 2020	Research Director at CRSTRA
Oct. 2016	Habilitation Universitaire (Senior Researcher A) in Hydraulics Sciences, Faculty of Science and Technology. University of Biskra www.univ-biskra.dz
June 2013	Ph.D. Doctorat Ès Sciences (Senior Researcher B) in Hydrogeology, Faculty of Earth Sciences. University of Annaba www.univ-annaba.dz
Dec. 2008	Master of Science. Magistère (Attaché de Recherche) en Hydrogeology, Faculty of Earth Sciences. University of Annaba www.univ-annaba.dz
June 2006	Engineer in Hydrogeology, Faculty of Earth Sciences. University of Annaba www.univ-annaba.dz
July 2001	Bachelor's degree in Exact Sciences, High School Al-Jadida. Tamalous, SKIKDA.

PROFESSIONAL SKILLS

Language Proficiency	Arabe	Anglais	Français
	Native language	Good	Good
Managerial Efficiency	- Member in several FNRs and PNRs research projects at CRSTRA (2011-2016) - Member of the Scientific Council of CRSTRA (2015-2019) - Director of Land Degradation Research Department at CRSTRA (2015-2019)		
Work-related Skills	- Laboratory techniques for soil and water characterization and plot-scale experiments - Field work experience on hydrological and hydrogeological campaigns		
Computer Skills	Good mastery of Microsoft Office™ Tools, statistical Tools : STATISTICA et RStudio,....		

ADDITIONAL INFORMATIONS

Publications		
	- Hani, S., Boudibi, S., Bougherira, N., Sakaa Bachir et al. (2024). Integrating geostatistical methods and neural networks for enhanced transmissivity mapping in the heterogeneous Annaba aquifer system (SE Algeria). Model. Earth Syst. Environ. 10, 6279–6291 (2024). https://doi.org/10.1007/s40808-024-02135-8 - Sabrina Ladouali, Okan Mert Katipoğlu, Mehdi Bahrami, Veysi Kartal, Bachir Sakaa, Nehal Elshaboury, Mehdi Keblouti, Hicham Chaffai, Salem Ali, Chaitanya B. Pande, Ahmed Elbeltagi. (2024) Short lead time standard precipitation index forecasting: Extreme learning machine and variational mode decomposition, Journal of Hydrology: Regional Studies, Volume 54, 2024. https://doi.org/10.1016/j.ejrh.2024.101861 Bachir Sakaa, Elbeltagi, A., Boudibi, S. et al. (2022). Water quality index modeling using random forest and improved SMO algorithm for support vector machine in Saf-Saf river basin. Environ Sci Pollut Res 29, 48491–48508 Bachir Sakaa, Samir Boudibi, Hicham Chaffai & Azzedine Hani (2021) Prediction of Effluent Chemical Oxygen Demand and Suspended Solids from a Domestic Wastewater Treatment Plant Using SVM and ANN. In Book: Soft Computing Techniques in Solid Waste and Wastewater Management. Elsevier. DOI: 10.1016/B978-0-12-824463-0.00018-5 S. Boudibi, Bachir Sakaa, Zineeddine Benguega (2021) Spatial variability and risk assessment of groundwater pollution in El-Outaya region, Algeria. Journal of African Earth Sciences 176(6). DOI: 10.1016/j.jafrearsci.021.104135.	

- S. Boudibi, **Bachir Sakaa**, Zineeddine Benguega, H Fadlaoui, N Bouzidi (2021) Spatial prediction and modeling of soil salinity using simple cokriging, artificial neural networks, and support vector machines in El Outaya plain, Biskra, southeastern Algeria. Acta Geochimica. DOI: 10.1007/s11631-020-00444-0
- **Bachir Sakaa**, Nabil Brahmia, Hicham Chaffai & Azzedine Hani (2020) Assessment of Water Quality Index in Unmonitored River Basin using Multilayer Perceptron Neural Networks and Principal Component Analysis. Desalination and Water Treatment. doi: 10.5004/dwt.2020.26108
- **Bachir Sakaa**, Hicham Chaffai & Azzedine Hani (2020) ANNs approach to identify water demand drivers for Saf-Saf river basin. Journal of Applied Water Engineering and Research. doi: 10.1080/23249676.2020.1719220
- S. Boudibi, **Bachir Sakaa**, Antonio Jesus Zapata-Sierra (2019) Groundwater Quality Assessment Using GIS, Ordinary Kriging and WQI in an Arid Area. Ponte Academic Journal. Vol. 75 No. 12/1. doi: 10.21506/j.ponte.2019.12.14
- A. Noui & **Bachir Sakaa** (2018) The non-rectilinear spillway dug symmetrically and the rectilinear spillway (experimental study). J. Fundam. Appl. Sci., 10(2), 58-66.
- S. Boubelli, H. Chaffai, **Bachir Sakaa** (2018). Hydrogeochemical characterization and assessment of the quality of surface waters. Journal of Biodiversity and Environmental Sciences. Vol. 12, No. 2, p. 168-178
- S Merdas, A Menad, T Mostephaoui, **Bachir Sakaa** (2018). Plant community structure and diversity under grazing gradient in arid Mediterranean steppe of Algeria. Metr Environ Sci 8, 4329-4338.
- T. MOSTEPHAOUI, R. BENSAID, **Bachir Sakaa**, S. MERDAS (2017). Apport des statistiques spatiales et les SIG dans la caractérisation des sols gypseux dans une région aride : cas d'el Hidjeb –Biskra. Courrier du Savoir. N°22, 2017, pp.103-112
- **Bachir Sakaa**, Mostefaoui T. Merdas S, H Chaffai, A Hani, L Djabri (2016). The application of ANNs and multivariate statistical techniques to characterize a relationship between total dissolved solids and pressure indicators: a case study of the Saf-Saf river basin, Algeria. Desalination and Water Treatment
- **Bachir Sakaa**, B Nouar, C Hicham, H Azzedine, D Larbi (2015). Application of GR2M for Rainfall-Runoff Modeling in Kébir Rhumel Watershed, North East of Algeria. World Applied Sciences Journal 33 (10), 1623-1630
- **Bachir Sakaa**, H Chaffai, A Hani (2013). The use of Artificial Neural Networks in the modeling of socioeconomic category of Integrated Water Resources Management (Case study: Saf-Saf River Basin, North East of Algeria), Arab J Geosci 6:3969–3978. DOI 10.1007/s12517-012-0654-y.
- T Mostephaoui, S Merdas, **Bachir Sakaa**, M Hanafi (2013). Cartographie des risques d'érosion hydrique par l'application de l'équation universelle de pertes en sol à l'aide d'un système d'information géographique dans le bassin versant d'El hamel (Boussaâda) Algérie. Numéro spécial, Journal algérien des régions arides
- **Bachir Sakaa**, Hicham Chaffai, Badra Aoun Sebaiti, Azzedine Hani (2013). The modeling of response indicators of integrated water resources management with artificial neural networks in the Saf-Saf river basin (N-E of Algeria) Rev. Sci. Technol., Synthèse 26: 75 – 85(2013).
- **Bachir Sakaa**, Hicham Chaffai, Badra Aoun Sebaiti, Azzedine Hani (2013). The modeling of response indicators of integrated water resources management with artificial neural networks in the Saf-Saf river basin (N-E of Algeria) Rev. Sci. Technol., Synthèse 26: 75 – 85(2013).

Conferences & Seminars		
	▪ Ladouali S, Sakaa Bachir and H Chaffai: Artificial Intelligence-based model for Drought Prediction using Standardized Precipitation Index: Application for Hodna basin river. 7th The International Aegean Conferences on Natural & Medical Sciences April 26- 27, 2023 / Izmir, Turkey ▪ Ladouali S, Sakaa Bachir and H Chaffai: The Application of Random Forests and the Analysis of Drought Index Time series to Forecast Drought for Elkantara Station. The 7th International Izmir Economics & Business Administration Congress held on May 17-18, 2023 / Izmir, Türkiye, organised by Yaşar University and IKSAD Institute ▪ Ladouali S, Sakaa Bachir and H Chaffai: Drought Index Forecasting using ARIMA Models in The Hodna River Basin, the 3rd International Black Sea Modern Scientific Research Congress held on March 23-24, 2023/ Samsun, Turkey. ▪ Ladouali S, Sakaa Bachir and H Chaffai: Drought Forecasting Using Support Vector Machine and Time Series of Drought Index for the Station OF M'Sila. 5th international Istanbul Current Scientific Research Congress, July 9-11, 2023 / Istanbul Turkey. ▪ Ladouali S, Sakaa Bachir and H Chaffai: The Application of Extreme Learning Machine to Forecast the Drought Index for Msaad Station (Hodna Basin). The 1st International Conference on Climate Change &	

	Environmental Management: Mitigation Challenges for Sustainable Development, ICCCEM-01, December 05-07, 2023, Biskra, Algeria. ▪ Ladouali S, Sakaa Bachir and H Chaffai: Drought index modelling using different AI Models, Hodna basin as case study. The 1st International Conference on Climate Change & Environmental Management: Mitigation Challenges for Sustainable Development, ICCCEM-01, December 05-07, 2023, Biskra, Algeria. ▪ Sakaa Bachir: Applications of machine learning Techniques in environmental sciences. International Pluridisciplinary PhD Meeting IPPM'23. 2nd Edition. University of Oued Souf December 11-13, 2023. ▪ Nabil Brahmia, Aziz Zeddouri, Salah Chaab & Bachir Sakaa (2019) Geomorphometric and rainfall analysis of middle Seybouse watershed using remote sensing and GIS techniques. International seminar of hydrogeology and environment SIHE 2019 ; Univ. D'Ouargla, du 15 au 17 octobre 2019 ▪ Bachir Sakaa & al (2018) The Artificial Neural Networks approach to model Soil Solution Electrical Conductivity in Arid Area: A Comparative study. Séminaire international Agrosem II, Univ. de Biskra, du 9 à 10/12/2018 ▪ Merdas S., Mostephaoui T., Kouba Y., Bachir Sakaa (2018) Natural resources in steppe rangeland of Algeria, do we need more protection? Séminaire international Agrosem II, Univ. de Biskra, du 9 à 10/12/2018 ▪ Bachir Sakaa & Nabil Brahmia (2018) Prévision de l'Indice de Qualité de l'Eau à l'aide d'un Perceptron Multicouche. 1^{ier} Séminaire Maghrébin sur l'Eau et l'Environnement dans les Zones Arides, Univ. D'Ouargla, du 23 au 25 avril 2018. ▪ Noui Abderrahmane & Bachir Sakaa (2018) Experimental comparison between thick-walled spillways and spillways with dug. 5th International Symposium on Dam Safety, Istanbul, Turkey October 27-31, 2018 ▪ Merdas S, Hanafi M T, Sakaa B, Mostefaoui T, Kouba Y, Salemkour N, Menad A (2015): The impact of livestock grazing on plant species composition and diversity in arid steppe of Algeria. The 12th European Dry Grassland Meeting (http://www.edgg.org/edgg_meeting_2015.html). University of Mainz 22-25 May 2015 ▪ Bachir Sakaa (2014) : La désertification : Causes, Effets et impact. Célébration de la journée mondiale de la lutte contre la désertification et la sécheresse 17/05/2014 CRSTRA-Biskra. ▪ Bachir Sakaa, Brahmia N, Hani A (2010) : La modélisation des variables sources de pollution dans le cadre de Gestion Intégrée des Ressources en Eau. 1^{ier} Colloque international sur 1^{er} Colloque international sur La Géologie du Sahara algérien : Ressources minérales, en hydrocarbures et en eau le 5.6.7/12/2010 à l'université d'Ouargla.	
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Member in Various Research Project Program

- **2009-2012**: Member of the **FNR** Project entitled "The Green Dam and Desertification, Towards a Land Restoration Model in the Hodna Basin."
- **2013-2015**: Member of the **PNR** Project entitled "Contribution to the Ecological Assessment of the Impact of the Construction of the Green Dam in Two Pilot Areas in Batna-M'Sila."
- **2013-2016**: Member of the **FNR** Project entitled "Characterization of Desertification Indicators and its Impact on the Environment in the Hodna Basin."
- **2017-2020**: Member of the **Technological Development Project** No. 03/CRSTRA/DGRSDT/2017 entitled "Decision-making Tool for Sustainable Exploitation of Arid Steppe Rangelands, AIDEX."
- **2021-2025**: Member of the **FNR** Project entitled "Flood Risk in the Area of Biskra: Study, Cartography and Mitigation."



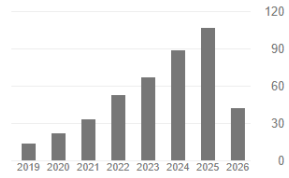
Sakaa Bachir

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 FOLLOWING

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Co-authors [EDIT](#)

-  **Hicham CHAFFAI**
Université Badji Mokhtar Annaba... >
-  **Azzedine HANI**
Professeur Hydrogéologie, Unive... >
-  **Boudibi Samir**
Centre de Recherche Scientifiqu... >
-  **Merdas Saifi**
Territory Planning Research Cen... >
-  **mostephaoui Tewfik**
Directeur de recherche >

☐	TITLE	CITED BY	YEAR
☐	Water quality index modeling using random forest and improved SMO algorithm for support vector machine in Saf-Saf river basin B Sakaa, A Elbeltagi, S Boudibi, H Chaffai, ARMT Islam, LC Kulimushi, ... Environmental Science and Pollution Research 29 (32), 48491-48508	169	2022
☐	Spatial prediction and modeling of soil salinity using simplecokriging, artificial neural networks, and support vector machines in El Outaya plain, Biskra, southeastern Algeria S Boudibi, B Sakaa, Z Benguega, H Fadlaoui, NB Tarek Othman Acta Geochimica, https://doi.org/10.1007/s11631-020-00444	44	2021
☐	cartographie des risques d'érosion hydrique par l'application de l'équation universelle de pertes en sol à l'aide d'un système d'information géographique dans le bassin versant ... T Mostephaoui, S Merdas, B Sakaa, MT Hanafi, MT Benazzouz Journal Algérien des Régions Arides 12 (1), 131-147	39	2013
☐	Spatial variability and risk assessment of groundwater pollution in El-Outaya region, Algeria S Boudibi, B Sakaa, Z Benguega Journal of African Earth Sciences 176, 104135	29	2021
☐	Plant community structure and diversity under grazing gradient in Mediterranean steppe of Algeria M Saifi, T Mostephaoui, B Sakaa Journal of Materials and Environmental Science 8, 12	28	2017
☐	Application of GR2M for rainfall-runoff modeling in Kébir Rhumel Watershed, north east of ...	22	2015