CONTACT

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ResearchGate

https://www.researchgate.net/profile/Khalid-Biro-Turk?ev=hdr_xprf

Google Scholar

https://scholar.google.com/citations?user=Hry1H38AAAAJ&hl=en

Hobbies and Interests

- Photography
- Travel
- Sport
- Reading

PROFILE

Khalid Biro has extensive experience, covering the different aspects of remote sensing (RS) and Geographic Information Systems (GIS) applications in land use systems assessment, sustainable land use management, water resources and environmental mapping. He obtained his MSc. in Agricultural Engineering from the University of Khartoum, Sudan, in 2004 and a PhD in Geosciences *"Geovisualisation of multi-temporal satellite data for LULC change analysis and its impacts on soil properties in Gadarif Region, Sudan"* from the Dresden University of Technology, Germany in 2011.

Khalid Biro joined the practical capacity building courses in RS and GIS applications for water resources & hydrology organized by the committee on space research (COSPAR) in Brazil 2010 and e-GEOS in Rome, Italy 2011. This experience extended to work as an internship at the Eastern Nile Technical Regional Office (ENTRO) in Addis Ababa, Ethiopia, during 2012. Before joining the Hydraulics Research Center (HRC-Sudan) in 2014, Khalid Biro served as an Assistant Professor at the Department of Agricultural Engineering, University of Gadarif, Sudan. He has been assigned to the University since 2000. Khalid Biro has led and worked in different research projects on applications of RS and GIS for hydrology, water resources management and agriculture in the HRC at national and regional levels. He has some publications in peer-reviewed international journals, conferences and workshops proceedings. Khalid Biro joined the Water Studies Center (WSC), King Faisal University, in October 2016. His main task is to lead research work in the Advanced Spatial Technology Program through RS and GIS technologies to improve water resources management and utilization in Saudi Arabia.

EDUCATION

2008 - 2011	PhD (magna cum laude), Dresden University of Technology, Germany
2002 - 2004	M.Sc. in Agric. Eng., University of Khartoum, Sudan
1993 – 1999	B.Sc. Agric. Eng. (Division 1, Honors), University of Gezira, Sudan

HONORS AND AWARDS

1999	**Senate Council Award for Academic Excellence** Awarded by the Gezira of University, Sudan
2007	**DAAD Scholarship** Awarded by the German Academic Exchange Service (DAAD) for PhD studying in Germany.
2019	**Best Paper Certificate** Awarded by Springer at the 2nd Conference of the Arabian Journal of Geosciences (CAJG).

LANGUAGE SKILLS

Arabic:	Fluent speaking and writing
English:	Very good speaking and writing
German:	Fair

ACADEMIC EMPLOYMENT

Period	Employing Institution (title/position)	Country
Oct 2016 - Present	Water Studies Center, King Faisal University (Assistant Professor)	Saudi (KSA)
Apr 2014 - Sep 2016	Hydraulics Research Center, (Assistant Professor/Senior Researcher)	Sudan
2013	Head Department of Agricultural Engineering, Faculty of Agricultural and Environmental Sciences, University of Gadarif,	Sudan
2012	Department of Agricultural Engineering, Faculty of Agricultural and Environmental Sciences, University of Gadarif, (Assistant Professor)	Sudan
Sep.– Dec. 2012	An intern in the Eastern Nile Planning Model (ENPM) Project. ENTRO, Addis Ababa.	Ethiopia
2008 - 2011	Institute for Cartography, Dresden University of Technology: TU-Dresden, (PhD Student)	Germany
2006 - 2007	Faculty of Community Development and Women Studies, the University of Gadarif (Giving technical training in environment and natural resources conservation)	Sudan
2004 – 2007	Department of Agricultural Engineering, University of Gadarif, (Lecturer)	Sudan
2000 – 2004	Faculty of Agricultural and Environmental Sciences, University of Gadarif (Teaching Assistant)	Sudan

TRAINING, COURSES AND WORKSHOPS

Time	Activity	Place
01 – 31 Jan. 1996	Operating and Adjustment of Agricultural Implements, Department of Agricultural Engineering, University of Gezira.	Sudan
24 – 25 May 2004	Research Methodologies & Data Analysis, Sudan University of Sciences and Technology.	Sudan
10 – 21 Sep 2008	High Mountain Practical for Cartography, Organised by Institute for Cartography, TU-Dresden, Germany.	Austria

01 – 12 Nov 2010	Earth Observation Understanding of the Water Cycle (Over Land and Ocean). Organised by the Committee on Space Research (COSPAR), Fortaleza.	Brazil
25 – 26 May 2011	Using COSMO-SkyMed data with SARscape for Water Resources Applications. Organised by e-GEOS, Rome.	Italy
06 – 07 Sep. 2011	Interferometric Processing with Synthetic Aperture Radar (SAR) Data for Water Resources Management. Organised by the ITT Visual Information Solutions GmbH, Leipzig.	Germany
22 – 24 May 2012	Eastern Nile Planning Model (ENPM) Project: First National Workshop in Sudan. Organised by ENTRO, Khartoum.	Sudan
23 – 27 Sep. 2012	Eastern Nile Planning Model (ENPM) Project: 3rd Regional Workshop. Organised by ENTRO, Mekelle.	Ethiopia
02 – 13 Sep. 2013	Conflict Management and Conflict Transformation. Organised by the Humboldt University, SLE Training for International Development, Berlin.	Germany
16 – 29 Sep. 2013	Increasing Resilience to Climate Change through Sustainable Resource Management. Organised by the Humboldt University, SLE Training for International Development, Berlin.	Germany
01 – 07 June 2014	Flood Mapping Using Remote Sensing. Organised by IWMI, Colombo.	Sri Lanka
11 – 21 July 2016	Enhancing Water Security and Adaptive Capacities in Vulnerable Catchment in East Africa, Moroto.	Uganda
11 – 12 Jan. 2017	KPIs and Benchmarking. Organised by King Faisal University in cooperation with British Council.	KSA
23 – 24 Apr. 2018	International Workshop on Combating Desertification. Organised by the Ministry of Environment Water and Agriculture, Riyadh.	KSA
30 July 2018	Course Design. Organised by King Faisal University, Al-Ahsa.	KSA
28-30 Jan. 2019	Publishing in High Impact International Journals. Organised by King Faisal University, Al-Ahsa.	KSA
20 Aug. 2019	Mind-Mapping and Concept-Mapping and their Use for Academic Thinking and Writing. Organised by King Faisal University, Al-Ahsa.	KSA
21 Aug. 2019	Integrating Information Technology with the Science of Survey Research Methodologies: Conducting Small and Large-Scale Academic/Applied Research. Organised by King Faisal University, Al-Ahsa.	KSA

22 Aug. 2019	Integrating Team-based Learning with Social Media to Support Millennial Learners' Engagement. Organised by King Faisal University, Al-Ahsa.	KSA
25 Aug. 2019	21st Century Skills – What University Instructors can do to Prepare Tomorrow's Workforce. Organised by King Faisal University, Al-Ahsa.	KSA
17 Aug. 2020	Integrating Research into the Curriculum. Organised by King Faisal University, Al-Ahsa.	KSA
25 May 2023	What and Why do teachers need to know about Artificial Intelligence? Organised by King Faisal University, Al-Ahsa.	KSA
17 Dec. 2024	Authorship and Publication Ethics. Part of RDIA: Research Integrity Awareness Program. Organised by Clarivate and King Faisal University, Al-Ahsa.	KSA
16-17 Feb. 2025	Crafting a High-Quality, Publishable Manuscript: Writing Guidelines. Organised by King Faisal University, Al-Ahsa.	KSA
01-07 July 2025	Sustainable Management of Water Resources in Africa. Organised by TU Bergakademi Freiberg, Germany and the University of Johannesburg, South Africa. Funded by the German Academic Exchange Service (DAAD).	South Africa

RESEARCH PROJECTS

Project Title /Fund - Partners	Description
Watershed Management and Groundwater Recharge in the Tekeze-Atbara River Basin (July – Dec. 2014). Funded by the IGAD-INWRMP and the European Union. Joint project with the Mekelle University, Ethiopia.	The study aimed to assess the effects of watershed management on surface runoff and groundwater recharge in the Tekeze-Atbara basin and provide recommendations for sustainable watershed management.
Satellite-based ICT for improved crop production in the Gezira Scheme – Sudan (Oct. 2014 – April 2015). Funded by the Technical Centre for Agricultural and Rural Cooperation (CTA). Implemented by the eLEAF company, the Netherlands, and the HRC, Sudan.	The study aims at setting up a demand-driven irrigation advisory service for farmers in the Gezira irrigation scheme in Sudan that conveys satellite-based information on agricultural water use via mobile phone text messages and a web-portal. The developed tools can monitor field-specific information by measuring nine parameters covering crop growth, moisture, and minerals.

Accounting for Nile Waters: connecting investments in large scale irrigation to gendered reallocations of water and labour in the Eastern Nile basin (Jan. 2015 – Dec. 2016). Funded by the Water, Land, and Ecosystems (WLE). Partners are the UNESCO-IHE, the Netherlands; IWMI, and ENTRO.	Inclusive Water Accounting (IWA) is an approach that makes Water Accounting contextually relevant through combining remote sensing images of water and biomass distributions with meanings of these distributions in terms of social and ecological relations. The project was implemented in pilot sites in Ethiopia, Sudan, and Egypt.
Nile Basin Water Resources Atlas. (Sep. 2015 – Mar. 2016) Funded by the Nile Basin Initiative (NBI). Entebbe, Uganda.	The NBI wishes to develop an Atlas for the Nile River Basin to provide well synthesised, interpreted information to their stakeholders and thereby promote evidence-based decision making.
Satellite-Based Water Status Assessment for Date Palm in Al-Hassa Oasis, Saudi Arabia. Funded by the Deanship of Scientific Research, KFU (2019-2021)	Satellite data and biophysical models can provide actual information over the study area and help in optimizing the irrigation water use and monitoring of the date palm.
Monitoring of Groundwater Quality and Water Table in Al-Hassa Oasis. Funded by the Deanship of Scientific Research, KFU (2019-2021).	The water quality and water table will be measured using different techniques. These include on-site direct measurement and sampling.
Jellyfish Bloom Monitoring and Early Warning System in the Eastern Coast of Saudi Arabia, KFU 2022/2023.	The goal of this project is to provide an AI-based system by detecting jellyfish blooms and predicting the probability of jellyfish blooms occurrence in advance, based on oceanic, climatic, physical, and historical data, to avoid significant profit losses.
Determination of the Environmentally Toxic Elements in Soil and Water from Farms Irrigated with Treated Wastewater in Arid Region. Funded by the Deanship of Scientific Research, KFU 2022/2023.	Several environmentally toxic elements will be estimated in soil and waters from farms irrigated with treated wastewater in this study. The study draws a baseline of toxic elements or heavy metals in KSA.

PROVIDED TRAINING COURSES

Time	Training Type	Target Group
May 2014–Apr 2016	Introduction to Remote Sensing & GIS	Open for interest as basic needs for a wide range of disciplines in Sudan.
14-23 Sep 2014	Training on Geographic Information System (GIS) and Remote Sensing (RS) for Watershed Management	The staff of the Watershed Management Project – Sudan

		Component.
18-22 Jan 2015	Introduction to Remote Sensing & GIS	Engineers of the Permanent Joint Technical Committee for Nile Water in Egypt and Sudan.
15-19 Mar 2015	Regional Training Course on: "Sustainably shared a river basin management and groundwater development"	Professional in Water Resources Management from IGAD Countries.
14-18 June 2015	Advanced Course on Remote Sensing & GIS	Engineers of the Permanent Joint Technical Committee for Nile Water in Egypt and Sudan.
14-25 Aug 2016	Tailor-Made Training Course: Water Management in Mega Irrigation Schemes (Irrigation Water Management Using Remotely Sensed Data)	Engineers of the Ministry of Irrigation, Water Resources and Electricity; Engineers of the Gezira Scheme, Sudan.
31 Oct 02 Nov 2021	Modelling of the irrigation network supply system: Designing and scheduling the irrigation water supply network in the farms using the WaterGems program	Engineers of the Saudi Irrigation Organization.
02-06 Oct 2022	An introduction to the surveying Engineering	Engineers of the Saudi Irrigation Organization.
09-13 Oct 2022	Crops water requirement & Modelling of the irrigation network supply system	Engineers of the Saudi Irrigation Organization, Saudi Arabia
14-16 Mar 2023	Crops water requirement & Modelling of the irrigation network using WaterGems program	Engineers of the National Center for Water Efficiency and Conservation

TECHNICAL SOFTWARE Skills

- ERDAS IMAGINE (Remote sensing programme)
- ENVI (Remote sensing programme).
- eCognition Developer (Remote sensing programme).
- SARscape (Remote sensing programme).
- ArcGIS (ArcMap, ArcCatalog, ArcToolbox).
- Statistical Programmes (STATISTICA 8, PASW Statistics 18, MS Excel).
- MS Office, PowerPoint, Corel Paint Shop Pro Photo X2.

PROFESSIONAL AFFILIATIONS AND SERVICES

Ad-hoc Reviewer

1. Land Degradation and Development – Wiley
2. Remote Sensing – MDPI.
3. Water – MDPI.
4. Agricultural Water Management – Elsevier, ISSN: 0378-3774.
5. Archives of Agronomy and Soil Science – Taylor & Francis.
6. Environmental Systems Research – Springer.
7. Earth Science Informatics – Springer.
8. Environmental Monitoring and Assessment – Springer.
9. Arabian Journal of Geosciences – Springer.
10. The Scientific Journal of the King Faisal University – Basic and Applied Sciences.

Professional Organization Member

- The Sudanese Agricultural Engineers Union. Al Riyadh, Khartoum, Sudan. Since 2002.
- Member of the African Association of Remote Sensing of the Environment (AARSE) since December 2012. Address: 54 Motor Street Westdene, Johannesburg, Gauteng–2092, Republic of South Africa. Website: www.africanremotesensing.org
- The Task Group (TG) on the Group of Earth Observations (GEO) of the Committee on Space Research (COSPAR). C/O Dr. David Halpern, Senior Research Scientist, Jet Propulsion Laboratory, 4800 Oak Grove Drive, MS 233-300, Pasadena, CA 91109, USA. Since 2012.
- The IEEE (Institute of Electrical and Electronics Engineers) - Geosciences and Remote Sensing Society (GRSS) since February 2013. http://www.ieee.org/contactcenter, E-mail: contactcenter@ieee.org

Committee Member

- Member of the Permanent Committee for the Development of Research Centers and Scientific Chairs at King Faisal University (2021-2023).
- Member of the Scientific Committee of the Center for Research Excellence in Palms and Dates, King Faisal University (2020-Present).
- Member of the Scientific Team of the Environmental Expert House - Environmental Protection Unit - King Faisal University (2021-Present).

REFEREES

Former Employer

1. Prof. Adill Eltayeb Shattir Nasir. Dean of the Faculty of Agricultural and Environmental Sciences, University of Gadarif, Sudan. Email: shattiradil@gmail.com. Phone: +249124894602.
2. Prof. Yasir Abbas Mohamed Ali. Former General Director of the Hydraulic Research Center, Ministry of Irrigation and Water Resources, Sudan. Email: y.mohamed@hrc-sudan.sd.

Other Referees

1. Dr. Salih Hamad Hamid Omer. Ministry of Irrigation and Water Resources, Khartoum, Sudan. Email: shhomer@gmail.com. Phone: +249912671468.

2. Prof. Hassan M. Ali-Dinar. King Faisal University, Saudi Arabia. Email: hmadinar@yahoo.com. Phone: +966507101959.
3. Dr. Abdel Moniem Elamin Mohamed. Department of Agricultural Engineering, University of Khartoum, Sudan. Email: moniemame@gmail.com. Phone: +249121083939.

PUBLICATIONS

BOOKS and CHAPTERS

1. **Turk, K.G.B.**, Zeineldin, F.I. (**2024**). Water Security in Saudi Arabia. In: Ahmed, A.E., Al-Khayri, J.M., Elbushra, A.A. (eds) Food and Nutrition Security in the Kingdom of Saudi Arabia, Vol. 1. Springer, Cham. https://doi.org/10.1007/978-3-031-46716-5_4.

2. **Turk, K.,** Zeineldin, F., Aljughaiman, A.S. (**2022**). Mapping and Assessment of Evapotranspiration Over an Oasis in Arid Ecosystem Using Remote Sensing and Biophysical Modeling. In: et al., New Prospects in Environmental Geosciences and Hydrogeosciences. CAJG 2019. Advances in Science, Technology & Innovation. Springer, Cham. https://doi.org/10.1007/978-3-030-72543-3_92.

3. **Khalid G. Biro Turk**, Faisal I. Zeineldin and Abdulrahman O. Alghannam. (**2022**). Mapping and Assessment of Evapotranspiration over Different Land-use/Land-cover Types in Arid Ecosystem, In: Climate Change in Asia and Africa - Examining the Biophysical and Social Consequences, and Society's Responses. IntechOpen. DOI: http://dx.doi.org/10.5772/intechopen.96759.

4. **Khalid Biro**. (**2012**). Geovisualisation of Multi-Temporal Satellite Data for Land-use/Land-cover Change Analysis and its Impacts on Soil Properties in Gadarif Region, Sudan. PhD thesis. TUD Press, Verlag der Wissenschaften GmbH. Bergstr. 70 | D-01069 Dresden, Germany. ISBN: 978-942710-61-9.

PEER-REVIEWED JOURNAL ARTICLES

1. Tawfik, R.; **Turk, K.G.B**.; Alomair, M.; Sidahmed, S.; Alqurashi, R.M.; Ebrahim, A.; El-Kafrawy, M.; Hamad, S.; Al-Karablieh, E. Enhancing Treated Wastewater Reuse in Saudi Agriculture: Farmers' Perspectives. **(2025)** Sustainability, 17, 7633. https://doi.org/10.3390/su17177633.

2. Ahmed, S.M.; **Turk, K.G.B.**; Dinar, H.A. The Performance of Irrigation Schemes in Sudan Affected by Climate Variability and the Grand Ethiopian Renaissance Dam. (**2025**). *Agronomy*, *15*, 110. https://doi.org/10.3390/agronomy15010110.

3. Cao Y, **Turk K**, Bibi N, Ghafoor A, Ahmed N, Azmat M, Ahmed R, Ghani MI and Ahanger MA. (**2025**). Nanoparticles as catalysts of agricultural revolution: enhancing crop tolerance to abiotic stress: a review. Front. Plant Sci. 15:1510482. DOI: 10.3389/fpls.2024.1510482.

4. **Khalid G. Biro Turk**. Wetlands in Saudi Arabia: Review of the Environmental Impacts of Al-Asfar Lake. (**2025**). *Polish Journal of Environmental Studies*. Accepted.

5. Shamseddin M. Ahmed, Hassan A.Dinnar, Adam E. Ahmed, Azharia A. Elbushra and **Khalid G. Biro Turk**. A Deeper Understanding of Climate Variability Improves Mitigation Efforts, Climate

Services, Food Security, and Development Initiatives in Sub-Saharan Africa. (**2024**). Climate, 12, 206. DOI: org/10.3390/cli12120206.

6. Zeineldin, F.I.; **Turk, K.G.B.**; Elmulthum, N.A. Modified Surface Drip Irrigation and Hydraulic Barrier Impacts on Soil Moisture and Water Productivity for Tomatoes in a Greenhouse. (**2024**). Water, 16, 2926. DOI: org/10.3390/w16202926.

7. Abdul Ghafoor, Hayfa Habes Almutairi, Munthir Almoslem, Saifullah, **Khalid Turk**, Muhammad Munir, Faisal Zeineldin, Shafaqat Ali. Assessment and Modeling of the Vulnerability of Regional Aquifers to Anthropogenic Perturbations. (**2024**). *Journal of Ecological Engineering*, 25(7), 398–409. DOI: https://doi.org/10.12911/22998993/189233.

8. **Turk K.G. Biro**, Alsanad Mohammad A. (**2023**). Estimation of water consumption and productivity for wheat using remote sensing and SEBAL model: A case study from central clay plain Ecosystem in Sudan. *Open Agriculture*, 8: 20220230. DOI: https://doi.org/10.1515/opag-2022-0230.

9. **Turk K.G. Biro**, Alghannam A. O., Zeineldin F. I. (**2023**). Monitoring of Hourly Carbon Dioxide Concentration under Different Land Use Types in Arid Ecosystem. *Open Life Sciences*, 18: 1–15. DOI: https://doi.org/10.1515/biol-2022-0534.

10. **Turk K.G. Biro,** Zeineldin F. I. and Yousef Alkhamis. (**2023**). The Environmental Impacts of Wetland Areas in Saudi Arabia: The Case Study of Al-Asfar Lake, Review and Prospects. Preprint.org. Doi: 10.20944/preprints202310.0574.v1.

11. **Khalid Turk**, Faisal Zeineldin and Abdullah S. Aljughaiman. (**2021**). Mapping and assessment of evapotranspiration over an oasis in arid ecosystem using remote sensing and biophysical modelling. *Arabian Journal of Geosciences*, 14:2052. DOI: org/10.1007/s12517-021-08415.

12. Faisal Zeineldin, **Khalid Biro**, Abdulrahman O. Alghannam. (**2021**). Influence of Natural and Artificial Soil Conditioners on Water Holding Capacity and Hydraulic Conductivity of Sandy Soils. *International Journal of Food Science and Agriculture*, 5(2), 219-227. DOI: http://dx.doi.org/10.26855/ijfsa.2021.06.003.

13. **Khalid Biro** and Abdullah S. Aljughaiman. (**2020**). Land use/Land cover Assessment as Related to Soil and Irrigation Water Salinity over an Oasis in Arid Environment. *Journal of Open Geosciences*, 12(1): 220-231. DOI: https://doi.org/10.1515/geo-2020-0103.

14. **Biro**, **K.**, Zeineldin, F., Al-Hajhoj, M. R. and Dinar, H. (**2020**). Estimating Irrigation Water Use for Date Palm Using Remote Sensing Over an Oasis in Arid Region. *The Iraqi Journal of Agricultural Sciences*, 51(4), 1173-1187. DOI: https://doi.org/10.36103/ijas.v51i4.1096.

15. **Khalid Biro**, Faisal Zeineldin, Mohammed Refdan Al-Hajhoj. (**2019**). Satellite-Based Water Status Assessment for Date Palm in Al-Hassa Oasis, Saudi Arabia. *International Journal of Water Resources and Arid Environments*, 8(1): 61-69.

16. Hassaballah, K., Mohamed, Y. A., Uhlenbrook, S. and **Biro**, **K.** (**2017**). Analysis of streamflow response to land use land cover changes using satellite data and hydrological modelling: the case study of Dinder and Rahad tributaries of the Blue Nile (Ethiopia/Sudan). *Hydrology and Earth System*, 21, 5217-5242. DOI: ttps://doi.org/10.5194/hess-21-5217-2017.

17. **Biro, K.**, Pradhan, B., Suleiman, H. & Buchroithner, M. (**2013**). Exploitation of TerraSAR-X data for land use/land cover analysis using object-oriented classification approach in the African Sahel

area, Sudan. *Journal of Indian Society of Remote Sensing* (ISRS), 41(3): 539–553. *Published online 24 November 2012*, DOI: 10.1007/s12524-012-0230-7.

18. **Biro, K**., Pradhan, B., Buchroithner, M. & Makeschin, F. (**2013**). Land Use/Land Cover Change Analysis and its Impact on Soil Properties in the Northern Part of Gadarif Region, Sudan. *Land degradation & development*, 24:90–102. *Published online 18 April 2011 in Wiley Online Library (wileyonlinelibrary.com*) DOI: 10.1002/ldr.1116.

CONFERENCE PAPERS

1. **Khalid Turk** and Mohammed Alsanad (**2023**). Assessment and Mapping of Soil & Water Salinity under Different Land Use Systems in Arid Environment. Mediterranean Geosciences Union (MedGU) Annual Meeting, 27-30 November, Istanbul, Turkey. (Accepted).

2. **Khalid G. Biro Turk (2022).** Monitoring Desertification Processes Using Remote Sensing and Biophysical Modelling. The 1st International Conference on Food Security and Environmental Sustainability. 7-9 March, 2022 – King Faisal University, Saudi Arabia.

3. **Khalid G. Biro**, Abu Obieda B. Ahmed and Yasir A. Mohamed. (**2021**). Estimation of water consumption and productivity for wheat using remote Sensing and SEBAL model under modern irrigation system in Sudan. 6th Nile Basin Development Forum (NBDF). Webinars will commence from March 9 to April 29, 2021. https://www.eventleaf.com/nbdf#. WF1: Tools, approaches, and technologies to understand and enhance a state of water productivity to gain in food and nutrition security. Session Summary Available On: https://www.youtube.com/watch?v=tQqi35SBczc.

4. **Khalid Biro**, Faisal Zeineldin and Mohammed Refdan Al-Hajhoj. (**2019**). Satellite-Based Assessment of Water Status for Date Palms in Al-Hassa Oasis, Saudi Arabia. Conference Proceeding of the 8th International Conference on Water Resources and Arid Environments. 22 – 24 January 2019, Riyadh, Saudi Arabia.

5. Zeineldin, F. I., **Khalid Biro**, M. R. Al-Hajhoj. (**2018**). Impacts of Artificial and Natural soil Conditioners on Water Holding Capacity and Hydraulic Conductivity of Sandy soils. Proceedings of the European Conference on Agricultural Engineering AgEng. 560-567.

6. Hassaballah, K., Mohamed, Y. A., Uhlenbrook, S. and **Biro**, **K.** (**2017**). Assessing the Impact of Land Use Land Cover Change on Streamflow Response: Case Study of Dinder and Rahad, Ethiopia/Sudan. The 5th Nile Basin Development Forum, 23-25 October 2017, Kigali, Rwanda.

7. **Khalid Biro**, Modathir Zaroug, Khalid Elnoor, Mohey Eldin Kabeer, and Yasir A. Mohamed. (**2014**). Watershed Management and Groundwater Recharge in the Tekeze-Atbara River Basin. IGAD Water Dialogue Forum, 8 – 10 December 2014. Nairobi, Kenya.

8. **Khalid Biro**, Igbal Salah., Ageel Bushara, Mohamed Ali and Yasir Salih. (**2014**). The Impact of Climate Change on Crop Productivity in the Eastern Nile Basin of Sudan. 4th Nile Basin Development Forum (NBDF), 6 – 7 October 2014. Nairobi, Kenya.

9. **Khalid Biro** and Biswajeet Pradhan. (**2014**). Exploitation of GeoEye-1 Data for Land Use/Land Cover Analysis Using Object-Based Image Analysis in the Eastern Nile Basin of Sudan. 40th COSPAR (Committee on Space Research) Scientific Assembly, 2–10 August 2014. Moscow, Russia.

10. **Khalid Biro**. (**2014**). Mapping Land Use Change Using Multi-Sensor Satellite Data in the Eastern Nile Basin of Sudan. Welcome to Africa, Scientific Cooperation Network on Climate Change Adaptation: Proceedings from the Workshop, 4 – 12 March 2013, Khartoum/El-Obeid, Sudan. pp: 179-191. ISBN 978-3-942934-03-9. www.tu-dresden.de/forst/w2a

11. Ahmed Alhuseen, Holger Leonhardit, **Khalid Turk**. (**2012**). Detecting Sprawl of Gadarif City – Sudan. (Remote Sensing – Pilot Study). Proceedings of the Electronic International Interdisciplinary Conference (EIIC 2012), 03 – 07 September 2012. Published by: EDIS - Publishing Institution of the University of Zilina, Slovak Republic. Pages: 679 – 681. ISBN: 978-80-554-0551-3.

12. **Biro, K.**, Pradhan, B., Suleiman, H. & Buchroithner, M. (**2012**). Evaluation of TerraSAR-X data for land use/land cover assessment using object-oriented classification approach in the African Sahel area, Sudan. 9th International Conference of the *African Association of Remote Sensing of the Environment* (AARSE), 29 October – 02 November 2012. El-Jadida, Morocco.

13. Abualgasim, M. R., Csaplovice, E. and **Biro, K.** (**2011**). Mapping and Monitoring Land-Cover/Land-Use Change in the Gash Agricultural Scheme (Eastern Sudan) Using Remote Sensing. Tropentag 2011, Conference on International Research on Food Security, Natural Resource Management and Rural Development "Development on the margin". ETH University of Bonn, October 5 – 7, 2011. Bonn, Germany.

14. **Biro, K.**, Pradhan, B., Buchroithner, M. & Makeschin, F. (**2010**). The Effects of Different Land-use Types on Soil Compaction and Infiltration Rates in the Dryland Vertisols of the Gadarif Region, Sudan. Tropentag 2010, 14 – 16 September 2010. Zurich, Switzerland.

15. **Biro, K.**, Pradhan, B., Buchroithner, M. & Makeschin, F. (**2010**). Use of Multi-temporal Satellite Data for Land-Use/Land-Cover Change Analyses and its Impacts on Soil Properties in the Northern Part of Gadarif Region, Sudan. Proceedings of the 30th EARSeL Symposium, May 31– June 3, 2010. UNESCO Headquarters, Paris, France.

16. **Biro, K.**, Pradhan, B. & Buchroithner, M. (**2009**). Delineation of Cultivated Land Use Area Using Multi-Sensor Satellite Data: A Case Study from Gadarif Region, Sudan. In: 3rd Workshop of the *European Association of Remote Sensing Laboratories* (EARSeL) Special Interest Group on Land Use and Land Cover, 25 – 27 November 2009. Bonn, Germany.

Date: 3rd September 2025 Signature: