


## Curriculum Vitae

<b>Name:</b>	Khalid Elnoor Ali Hassaballah	
<b>Place and year of birth :</b>	Sennar, 1975	
<b>Nationality/Nationalities:</b>	Sudanese	
<b>Country of residence:</b>	Sudan	
<b>Employer</b>	Ministry of Water Resources, Irrigation and Electricity (MWRIE) (The Hydraulics Research Center (HRC-Sudan). <a href="http://www.hrc-sudan.sd/">http://www.hrc-sudan.sd/</a>	
<b>Contact address:</b>	The Hydraulics Research Center (HRC) P.O Box 318 -Wad Medani-Sudan.	
– <b>address:</b>		
– <b>telephone:</b>	Mobile Phone: +249 122592797	
– <b>e-mail:</b>	E-mail: <a href="mailto:k.hassaballah@yahoo.com">k.hassaballah@yahoo.com</a> E-mail: <a href="mailto:k.hassaballah@hrc-sudan.sd">k.hassaballah@hrc-sudan.sd</a>	

### A. PROFESSIONAL EXPERIENCE

1. Working experience in full years and months		
Location, Employer, Position, Main duties	Years/when	Number of months
<b>Assignment 1.</b> PhD Research Fellow : UNESCO-IHE Institute for Water Education-Delft/The Netherlands. The research title is “The impacts of land degradation on the Dinder and Rahad hydrology and morphology, and linkage to the eco-hydrological system of the Dinder national park, Sudan”	11/2012 10/2017	60 months
<b>Assignment 2.</b> Watershed management and groundwater recharge in the Tekeze Atbara river basin (WMGR). Technical report submitted to IGAD under the Global Financial COMMITMENT No – FED/2009/021-334, INDIVIDUAL FINANCIAL BUDGETARY COMMITMENT No.- FED/2013/316-594.	07/2014 10/2014	4 months
<b>Assignment 3.</b> Hydrological modelling for upper Atbara basin as part of the Sedimentation and Operation Study for Atbara Dams Complex (SOSADC).	02/2014 06/2014	5 months
<b>Assignment 4.</b> <b>Water Resources Specialist :</b> Eastern Nile Watershed Management Projects/Community Watershed Management Project (CWMP)_Sudan Component/Dinder Local Implementation Unit	10/2010 10/2012	24 months
<b>Assignment 5.</b>	7/2010 – 9/2010	2 months

Research Engineer, <b>Coordinator</b> of the under establishment REGIONAL CENTER ON "CAPACITY DEVELOPMENT AND RESEARCH IN WATER HARVESTING" IN SUDAN, UNDER THE AUSPICES OF UNESCO hosted by the Hydraulic Research Station		
<b>Assignment 6.</b> UNESCO-IHE, The Netherlands MSc Program	10/2008 – 4/2010	18 months
<b>Assignment 7.</b> Part time training courses in water resources management (University of Gezira- Water Management and Irrigation institute)	3/2007 – 9/2008	19 months
<b>Assignment 8.</b> Assistant Research Engineer, <b>team leader</b> for the Water Resource Planning and management consultancy works	4/2006 – 2/2007	11 months
<b>Assignment 9.</b> Training Course in Remote Sensing Technologies & GIS	4/2006	2 weeks
<b>Assignment 10.</b> Geoinformatics course (GIS, GPS and Remote Sensing) applications in Rural Development	2-3/2006	6 weeks
<b>Assignment 11.</b> Assistant Research Engineer, <b>team leader</b> for River morphology studies	7/2004 – 1/2006	19 months
<b>Assignment 12.</b> Design Engineer, Elgash River Training Unit	3/2004 – 6/2004	4 months
<b>Assignment 13.</b> Assistant Research Engineer	11/2003 – 2/2004	4 months
		<b><u>Total 172 months</u></b>

## 2. Employment record, additional to above

Position:	<b>PhD Research Fellow</b>	Duration:	11/2012 – 10/2017
Employer:	HRC- MWRIE	Duty station:	Sudan/Netherlands
Main duties: <b>Assignment 1.</b>	<ol style="list-style-type: none"> <li>1. To obtain better understanding of LULC changes and its impacts on hydrology of Dinder and Rahad River basins.</li> <li>2. To determine the cause of changes if any (on the basis of the result of objective 1).</li> <li>3. To study the interaction between hydrology, river morphology of Dinder river and the ecosystem (Mayas)</li> <li>4. To determine the causes of drought in some Mayas inside the Dinder National Park.</li> <li>5. To predict the future changes in the hydrology and river morphology of the Dinder and Rahad rivers, and the resultant effects on the ecosystem.</li> </ol>		

	<p>6. To find out the optimum solutions to manage the ecosystem to mitigate the impairment impacts of the hydrology and morphology of the river into the DNP ecosystem and vice versa.</p> <p>7. To predict the future changes in the DNP ecosystem accompanied by the coupled future changes in both rivers hydrology.</p> <p>8. To find out the most advantageous solutions to manage the systems in the DNP to mitigate the severe effects of hydrology, river morphology and ecosystem into each other.</p>		
Position	<b>Modelling advisor and supervisor</b>	Duration	07/2014 -10/2014
Employer:	HRC-MWRIE	Duty station:	Wad Medani, Sudan
Main duties: <b>Assignment 2.</b>	The objective of the study is to addresses the effects of watershed management on surface runoff and ground water recharge in the Tekeze Atbara basin using grid-based-PCRaster Python hydrological model and provides recommendations for sustainable watershed management.		
Position	<b>Modeller</b>	Duration	02/2014 - 06/2014
Employer:	HRC- MWRIE	Duty stations:	HRC Sudan and Deltares Delft, The Netherlands
Main duties: <b>Assignment 3.</b>	The objective of the study is to addresses the soil erosion on surface runoff in the upper Atbara basin and to quantify the sediment load in Atbara River using grid-based-PCRaster Python hydrological model and provides solutions for sustainable watershed management. This was a joint project between HRC-Sudan, Deltares and UNESCO-IHE from the Netherlands.		
Position:	<b>Water Resource Specialist</b>	Duration:	10/2010 – 09/2012
Employer:	Eastern Nile Watershed Management Project (ENWMP) Sudan Component	Duty station:	Dinder, Sudan
Main duties: <b>Assignment 4.</b>	<p>The main <b>responsibilities</b> include the following:</p> <ul style="list-style-type: none"> <li>• Perform hydrological analyses, rainfall-runoff modeling, hydraulic modeling, floodplain modeling and flood hazard/vulnerability/risk mapping.</li> <li>• Undertake analysis of general physical conditions of the selected watersheds in terms of soil structure, water resources, gradient of the land etc and advise accordingly on the best watershed management practices to be fallowed.</li> <li>• Assist/participate in the design and construction of soil and water conservation structures such as check dams, terraces, small irrigation schemes, water harvesting structures etc..</li> <li>• Review and advice on technical specification and engineering designs prepared by consultancy firms ( or any other entity ) and participate in reviewing technical sections of the tender documents</li> <li>• Develop frameworks including questionnaires, checklists, tool kits and other appropriate tools for collecting information on water resources development and field activities.</li> <li>• Coordinate with local NGO, other team members, and community people/organizations for providing necessary technical inputs, field surveys, data collection and compilation.</li> </ul>		

	<ul style="list-style-type: none"> <li>• Participate in technical audits</li> <li>• Participate in and organize training programs for local entities on proper operation and maintenance of watershed management facilities including, but not limited to, SWC structures (terraces, check dams, gabions etc), water harvesting structures (ponds, diversion canals etc.) small scale irrigation schemes etc.</li> <li>• Design and conduct training on water use in small-scale irrigation schemes</li> <li>• Contribute to the technical strengthening water committees (if there are any) and ensure maintenance of the irrigation schemes and of access to water, including the drinking water supply and sanitation schemes;</li> <li>• Develop a systematic database to store and process information on water resources and water supply of the villages;</li> <li>• Assist in the preparation of TOR for subcontracts for expansion of IWM systems, as well as monitoring the execution of these subcontracts;</li> <li>• Prepare periodic progress reports, as per the M&amp;E guideline, in the area under his/her responsibility;</li> <li>• Visit the selected locations/ sites of the project implementation in different localities, conduct field surveys, collect information and relevant data, and compilation of information to generate results.</li> <li>• Co-ordinate with team members and local partner in organizing dissemination workshops, conferences, symposiums and other similar events from the engineering point of view.</li> <li>• Perform field and desk study for structural and non-structural flood control measures.</li> <li>• Assist project coordinator in various aspects of project works.</li> </ul>		
Position	<b>Coordinator</b> , regional center on "capacity development and research in water harvesting" in Sudan.	Duration:	7/2010 – 9/2010
Employer:	HRC- MWRIE		
Main duties:  <b>Assignment 5.</b>	<p>The <b>main objective</b> is to attain food security, poverty alleviation and minimize conflict over resources through research, capacity development and information networking activities in the field of rain water harvesting at the local, national and regional levels. As such it will contribute to the achievement of UNESCO's strategic objectives and inter-sectoral activities.</p> <p><b>The specific objectives are to:</b></p> <ul style="list-style-type: none"> <li>• Develop the human and technical research capacity in water harvesting in Sudan and the region.</li> </ul>		

	<ul style="list-style-type: none"> <li>• Promote scientific research on water harvesting and its implementation at national and regional levels and create synergy mechanism with relevant national and regional water harvesting institutions.</li> <li>• Establish and reinforce regional network in water harvesting by taking the necessary cooperative arrangements, strengthening local capabilities, including indigenous practices and foster increased bilateral cooperation between regional institutions through joint research and training programs among scientists of the region to ensure mobility of researchers and greater accessibility to information and new technologies; and organize, facilitate and disseminate the water harvesting database.</li> <li>• Tap the vast rainfall resources and human potential in Sudan and the region as a whole and harvest these resources for the well being of the people and for the economic development of the region.</li> <li>• Generate and provide scientific and technical information on training in water harvesting in the region that would allow the formulation of sound policies and legislations leading to sustainable and integrated water resources management at the local, national and regional level.</li> <li>• Contribute to the efficient and sustainable use of the water through comprehensive studies and proper design and implementation of water harvesting projects.</li> <li>• Develop and enhance simple water harvesting techniques based on sound basic and applied research.</li> <li>• Generate manuals and toolboxes for the design, implementation and operation of water harvesting projects, including different techniques, storage ponds, small dams, soil water management practices, and the like.</li> </ul>		
Position	<b>MSc student in water science and engineering/Hydroinformatics</b>	Duration:	10/2008 – 4/2010 (18 months)
Employer:	HRC- MWRIE		
Main duties: <b>Assignment 6.</b>	<p><i>Master degree in Water Science and Engineering</i>, specialization <b>Hydroinformatics</b> at UNESCO–IHE Institute for Water Education/Delft/the Netherlands. The title of the thesis is “<i>Model-Based optimization of Downstream Impact During filling of a New Reservoir: Case study of Roseires/Mandaya Reservoirs on the Blue Nile</i>”.</p> <p>The main objective of the study, was to find an optimum solution for the trans-boundary water resources problem between Ethiopia and Sudan on the Blue Nile River, and to maximize the shared benefit for both countries.</p>		

Position:	<b>Researcher</b>	Duration:	3/2007 – 9/2008 (19 months)
Employer:	HRC- MWRIE	Duty station:	Wad Medani
Main duties: <b>Assignment 7.</b>	To study, and gain some knowledge on the Agroclimatology, Soil-water relation, soil conservation, flow in open channel, crop water requirements, flow measurement & control structures at the Water Management and Irrigation Institute.		

Position:	<b>Researcher</b>	Duration:	4/2006 – 2/2007 (11 months)
Employer:	HRC- MWRIE	Duty station:	
Main duties: <b>Assignment 8.</b>	<ul style="list-style-type: none"> <li>○ field and office data collection;</li> <li>○ data processing, validation and analysis;</li> <li>○ documentation and findings reporting</li> </ul>		

Position:	<b>Researcher</b>	Duration:	4/2006 (2 weeks)
Employer:	HRC- MWRIE	Duty station:	Khartoum
Main duties:	To study the application of GIS and Remote Sensing technique on water harvesting and catchment delineation		
<b>Assignment 9.</b>			

Position:	<b>Researcher</b>	Duration:	2-3/2006 (6 weeks)
Employer:	HRC- MWRIE	Duty station:	NIRD, India
Main duties:	To study the application of GIS and Remote Sensing technique on water harvesting and catchment delineation in rural development (National Institute of Rural Development (NIRD) – Hyderabad- India).		
<b>Assignment 10.</b>			

Position:	<b>Researcher</b>	Duration:	7/2004 – 1/2006 (19 months)
Employer:	HRC- MWRIE	Duty station:	Wad Medani,Sudan
Main duties:	Participating in the ongoing researches at HRS, such as: River morphology studies, water harvesting, water resource planning and managements...		
<b>Assignment 11.</b>			

Position:	<b>Designer</b>	Duration	3/2004 – 6/2004 (4 months)
Employer:	HRC- MWRIE	Duty station:	Kassala,Sudan
Main duties:	Elgash River training Unit, embankments designer		
<b>Assignment 12.</b>			

Position:	<b>Researcher</b>	Duration:	11/2003 – 2/2004 (4 months)
Employer:	HRC- MWRIE	Duty station:	Wad Medani.Sudan
Main duties:	Participating in the ongoing researches at HRS, such as: River morphology studies, water harvesting, water resource planning and managements...		
<b>Assignment 13.</b>			

## B. LIST OF ATTENDED REGIONAL CONFERENCES/WORKSHOPS AND TRAINING IN THE NBI REGION DURING THE LAST 6 YEARS:

- 1- Regional training course on “Economic Valuation Tools for Wetlands Ecosystems Management” 14<sup>th</sup>-18<sup>th</sup> December, 2015 Nairobi, Kenya
- 2- The international conference on “Contemporary Evolution of African Floodplains and Deltas” Conference”, Dar Es Salaam, Tanzania, 27 to 30 May 2014.
- 3- The international conference on “New Nile Perspectives- Scientific Advances in the Eastern Nile Basin Conference”, Khartoum, Sudan, from 6-8 May 2013.
- 4- Training Course and knowledge sharing workshop on “Ecosystems in IWRM” from 15th-19th October, 2012, Kampala, Uganda.
- 5- Summer school in IWRM in Addis Ababa, Ethiopia from 19-24 September 2011.

## C. EDUCATION (Excluding short term and non-relevant education)

Educational establishment	Duration of studies	Degree and Graduation Year	Main Subjects
UNESCO-IHE	10/2008 – 4/2010	MSc in Water Science and Engineering, 2010	Hydroinformatics
University of Sinnar	1996 - 2002	BSc in Civil Engineering Grade V.Good Honours 2 <sup>nd</sup> Div.1	General

#### D. LANGUAGE ABILITIES

Language	Mother tongue	Basic level 1 or 2	Intermediate level 3 or 4	Advanced level 5 or 6
Arabic	√			
English				√

#### E. OTHER SPECIFIC INFORMATION (Personal skills etc)

##### Research areas of interest:

- **Generally:**
  - Hydrology and water resources modelling
  - Integrated Water Resources Planning and Management.
- **Specifically:**
  - Hydrology and water resources;
  - Integrated water resources planning and management;
  - Sedimentation and reservoirs operation simulation/Optimization;
  - River flood management
  - Modelling theory and practice: building water system model
  - Data driven modelling and computational intelligence.
  - River basin management.
  - Groundwater Modelling.
  - GIS-GPS & Remote Sensing Applications in Rural areas.

##### Modelling experience:

- Wflow PCRaster Python-based hydrologic model for Rainfall Runoff modelling.
- MATLAB for solving differential equation, data analysis and statistical analysis, programming, optimization, graphical user interfaces and running external programs.
- Software Development in Pascal. Delphi rapid application development environment.
- SOBEK 1D 2D and HEC-RAS for river flood modelling.
- NSGA II for solving optimization problems.
- MODFLOW for groundwater modelling; contaminant transport through advection and diffusion.
- MIKE-BASIN for river basin management.
- MIKE-SHE, and HEC-HMS for Catchment modelling.
- mDSS4 for decision support system.
- Microsoft Office skills: WORD, EXCEL, POWERPOINT.
- GIS and Remote Sensing applications.

##### Programming experience:

- Python
- MATLAB
- PCRaster

## **F. CONFERENCE/SESSION ORGANIZATION**

2013 Organizer (together with others) of the first International conference on New Nile Perspective 6-7 May, Khartoum, Sudan. Chairman of the Communications, Visa, Travels and Accommodation committee.

## **G. SCIENTIFIC EXPERIENCES**

Journal reviewer for: Hydrology and Earth System Sciences (HESS) and Water Resources Management.

Research reviewer Internal ongoing research at HRC

Proposal reviewer Proposals by HRC staff

## **H. MEMBERSHIPS**

- Sudan Engineering Society (MSES)
- Sudan Engineering Council (MSEC)
- NBI/DSS Network National Member
- Representative of the UNESCO-IHE Sudan Alumni

## **I. PUBLICATIONS**

### **Papers:**

1. Hassaballah, K., Mohamed, Y., Uhlenbrook, S., and Biro, K.: Analysis of streamflow response to land use land cover changes using satellite data and hydrological modelling: case study of Dinder and Rahad tributaries of the Blue Nile (Ethiopia/Sudan), Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-128, in review, 2017.
2. Hassaballah, K., Mohamed, Y., and Uhlenbrook, S.: Investigation of the long-term variations in hydro-climatology of the Dinder and Rahad basins and its implications on ecosystems of the Dinder National Park, Sudan, Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-407, 2016.
3. Khalid Hassaballah, Y.A.Mohamed and Stefan Uhlenbrook.: Maximizing the use of satellite data and hydrological modelling for streamflow prediction: Case study of Dinder and Rahad rivers (tributaries of the Blue Nile/Sudan). Proceedings the first Conference on Civil Engineering, Merowe, Sudan, 2016.
4. Khalid Hassaballah, Y.A.Mohamed and Stefan Uhlenbrook.: The long-term trends of the hydroclimatic variables in the Dinder and Rahad River Basin (Blue Nile, Abbay). Proceedings the New Nile Perspectives Conference, Khartoum, Sudan, 2013.
5. Hassaballah, K., Jonoski, A., Popescu, I., Solomatine, D.: Model-Based Optimization of Downstream Impact during Filling of a New Reservoir: Case Study of Mandaya/Roseires Reservoirs on the Blue Nile River. Water Resources Management, 1-21, 2011.



## Book chapters:

- 1- Hassaballah, K., Y. A. Mohamed and S. Uhlenbrook.: The Mayas wetlands of the Dinder and Rahad: tributaries of the Blue Nile Basin (Sudan). The Wetland Book: II: Distribution, Description and Conservation. C. M. Finlayson, G. R. Milton, R. C. Prentice and N. C. Davidson. Dordrecht, Springer Netherlands: 1-13, 2016.

## Technical Reports:

1. Y. Mohamed, K. Biro, M. Zaroug, K. Hassaballah and M. Kabier (2015). Watershed management and groundwater recharge in the Tekeze Atbara river basin (WMGR). Technical report submitted to IGAD under the Global Financial commitment No-FED/2009/021-334, individual financial budgetary commitment No.- FED/2013/316-594.
2. Heynert et. Al. (2015). Sedimentation and Operation Study for the Atbara Dam Complex (SOSADC). A report submitted to Dams Implementation Unit (DIU), reference No. 1209249-000-ZWS-0024, 2015.
3. Khalid E.A. Hassaballah (2011). Assessment of water resources in Dinder National Park. technical report submitted to the Eastern Nile Watershed Management project (ENWMP) Sudan component, November 2011.
4. Khalid Elnoor Ali Hassaballah (2010). Model-Based Optimization of Downstream Impact during Filling of a New Reservoir: Case Study of Mandaya/Roseires Reservoirs on the Blue Nile River. MSc. thesis, IHE Delft, the Netherlands.
5. Younis A. Gismalla, Khalid E. Hassaballah (2008).The Sediment monitoring programme- 2006. HRS Tech. Report, Wad Medani – Sudan, June 2008.
6. Younis A. Gismalla, Khalid E. Hassaballah (2008). The Sediment monitoring programme- 2007. HRS Tech. Report, Wad Medani – Sudan, August 2008.
7. Younis A. Gismalla, Yasir Salih and Khalid E. Hassaballah, (2007). Investigation of a Pump Site for Kassab Agricultural Project – The Blue Nile. HRS report, July 2007.
8. Mhamed. B. Abdalla, Khalid E. A. Hassaballah (2007). Bathymetric Survey of Roseires Reservoir. Ministry of Irrigation and Water Resources, Tech. Report, February 2007.
9. Younis A. Gismalla, Yasir Salih and Khalid E. Hassaballah (2006). Investigation of a Pump Sites for El Mellaha Group – The White Nile Schemes. HRS report, July 2006.

## J. CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any wilful misstatement described herein may lead to disqualification or dismissal, if engaged.

Signature:



Date: 23/03/2017