

Current position: Postdoctoral Fellowship and lecturer, Department of Civil and Environmental Engineering, Faculty of Engineering, NTNU, Trondheim, Norway.
and
Digital content manager of IAHR Scandinavia YPN

Date of Birth: 7th of July 1988

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1. EDUCATIONAL & ACADEMIC BACKGROUND

Postdoctoral Fellowship (Norway)	Department of Civil and Environmental Engineering, Faculty of Engineering, Norwegian University of Science and Technology (NTNU), Norway. 2020 Supervisor: Prof. Nils Ruther
Sabbatical Leave (Germany)	Department of Civil and Hydrodynamic, School of Engineering, Technical University of Munich (TUM), Germany. 2016 Supervisor: Prof. Michael Manhart
PhD (Iran-Germany)	Department of Civil and Environmental Engineering, School of Engineering, Shiraz University, Shiraz, Iran. 2013-2018. Score: 17 from 20. Thesis: Investigating the efficiency and accuracy of discharge estimation in open channels based on water level data alone and confirmation of results at different spatial scales. Grade: Excellent Supervisor: Prof. Mohammad Javad Abedini Advisors: Prof. Alireza Keshavarzi & Prof. Nasser Talebbeydokhti
MSc (Iran)	Department of Hydraulic Structure, School of Water Engineering, Shahid Chamran University, Ahwaz, Iran. 2011-2013. Score: 18.2 from 20. Thesis: Effect of Sediment Load from Main Canal on Sedimentation Pattern at River Confluence. Score: 20 from 20. Supervisor: Prof. Mahmood Shafai-Bajestan. Advisor: Prof. Manoochehr Fathi-Moghadam
BSc (Iran)	Department of Water Engineering, School of Agriculture, Razi University, Kermanshah, Iran. 2007-2011. Score: 16.25 from 20. Thesis: Experimental Investigation of Flow in Stepped Spillways. Score: 20 from 20. Supervisor: Dr. Rasool Ghobadian

2. Work experience

- Postdoctoral fellow and university lecturer
NTNU, Norway Sep. 2020 - Now
- Civil engineer, hydrology and hydraulics
Haseb Karaji Consulting Engineering Company, Iran Oct. 2018 - Sep. 2020
- Civil engineer, hydrology and hydraulics
Parab Fars Consulting Engineering Company, Iran Oct. 2016 - Sep. 2018
- Doctoral student / Researcher
Shiraz University, Iran/ TUM, Germany Sep. 2012 - Sep. 2018

3. LANGUAGE

Persian: Native/ **English:** C2/ **Norwegian:** B2-C1/ **Arabic:** A2/ **German:** A1.

4. RESEARCH INTERESTS

Experimental, field, and numerical works of Sediment and Flow Hydraulic, River Engineering, Hydraulic and Hydropower Structures, Climate change, Intelligent Systems and Soft Computing Models, Data processing and Machine learning, Remote Sensing, etc.

Eager to be an expert in Eco-hydraulic and Coastal engineering.

5. SUPERVISED

1. Bhandari S. (2021). 2D numerical simulation of sediment flushing in a hydro power reservoir. MSc thesis, NTNU, Trondheim, Norway (with Profs. Ruther N. and Bihs H.).
2. Mirzaahmadi A. (2022). 3D numerical modeling of a river confluence – movable bed implications. MSc thesis, NTNU, Trondheim, Norway (with Profs. Ruther N. and Bihs H.).
3. Vaz Baltazar J. (2021). Physical and numerical modeling of application of vanes at open channel junction. Ph.D. thesis, Tecnico Lisboa, Portugal-- ongoing
4. Gebreegziabher M. (2023). Using LiDAR and drone data in hydraulic modeling, Master thesis, NTNU, Trondheim, Norway (With Prof. Knut Alfredsen)—ongoing

6. Committee member/ reviewer of thesis

1. Shrestha K. (2021). 3D CFD Simulation of bed and suspended load in a hydropower reservoir- Finding the best position of a sediment bypass tunnel intake. MSc thesis, NTNU, Trondheim, Norway.
2. Bello M. (2022) 2D numerical modeling of hydraulics and sediment in a reservoir. MSc thesis, NTNU, Trondheim, Norway.
3. Shrestha R. (2022) 2D Numerical modeling of sediment diversion in a river bend. MSc thesis, NTNU, Trondheim, Norway.

7. ACADEMIC AWARDS AND HONORS

- **28.06.2022** visiting two dam safety projects of **Statkraft** named Follsjø and Gråsjø dams
- **2020-2022** Member of board committee and Digital Content Manager of IAHR Scandinavia YPN, Trondheim, Norway.
- **Spring & Autumn 2016** Attended as a research guest (or Ph.D. candidate guest/sabbatical leave) at the Technical University of Munich (TUM), **Germany** (High ranking university in Germany and the world).
- **Spring 2015** Selected as **first place** in terms of the average score in the **PhD**
- **Autumn 2013** **Rated 21 in the Ph.D. entrance national exam.**
- **Autumn 2013** Selected as **second place** in terms of the average score in **MSc**
- **2011 to 2012** **A member of the brilliant talents** office of Shahid Chamran University of Ahwaz
- **Autumn 2011** Selected as **second** place in terms of the average score in **BSc**
- **2008 to 2010** Chairman of Water Engineering Scientific-Technical Association of Razi University, Iran.
- **2009 to 2010** Editor, Editorial board member, and managing editor of some student-scientific journals or magazines such as Baran (rain), Noon va Ghalam, etc. of Razi University, Iran.
- **Autumn 2010** Selected as the **first** rank in the great competition of coding and providing the water engineering software
- **Autumn 2010** Selected as the top (best) student of the Razi University

8. EXPERT REVIEWER & EDITOR

1. Journal of Hydro-environment Research, Elsevier (ISI).
2. The 5th International Conference on Civil Engineering and Urban Planning (CEUP 2016), August 23-26, 2016, Xi'an, China
3. Journal of Scientia Iranica (ISI).
4. Ain-Shams Engineering Journal (ASEJ), Elsevier
5. Journal of Sediment Research, Elsevier.
6. The International Journal of River Basin Management (JRBM), Published on behalf of IAHR. Taylor & Francis
7. Ocean Engineering, Elsevier.
8. Journal of Acta Geophysica, Springer.
9. Journal of Hydrology, Elsevier.
- Guest editor of the special issue of Water journal at MDPI about: "Extreme Hydrological Events and Water Resources Management under Climate Change."

9. Experience from examinations

- Sensor for the oral and final exam of TVM 5160 Sediment management for hydropower structures-Master (NTNU)- Autumn 2022.
- Sensor for the oral and final exam of TVM 5160 Sediment management for hydropower structures-Master (NTNU)- Autumn 2021.
- Sensor for the re-sit exam TVM 5125 Hydraulic Design (NTNU)- Spring 2021
- Sensor for the project works, presentations, and oral exam of TVM 5160 Sediment management for hydropower structures-Master (NTNU)- Autumn 2021.

10. TEACHING EXPERIENCE

Abbreviation: Norwegian University of Science and Technology, Norway (NTNU); Technical University of Munich, Germany (TUM); Razi University (RU); Shahid Chamran University (SCU); Jondi Shapoor Univesity of Medical Science, Ahwaz (JSU); Payam Noor University of Shiraz (PNU); Apadana University (AU); Shiraz University (SU); Graduate Teacher Assistances (GTA).

Starting date**Course, level, and university**

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|----------------------|--|
| ➤ Autumn 2023 | TVM 5160 Sediment management for hydropower structures-Master (NTNU) |
| ➤ Spring 2023 | TVM 4155 Numerical modeling and hydraulic-Master (NTNU) |
| ➤ Autumn 2022 | TVM 5160 Sediment management for hydropower structures-Master (NTNU) |

- **Autumn 2021** TVM 5160 Sediment management for hydropower structures-Master (NTNU)
- **Autumn 2019** Fluid Mechanics; Hydraulic and laboratory- BS and Master (PNU)
- **Spring 2018** Fluid Mechanics for Civil Engineering- BS and Master (PNU)
- **Spring 2016** Hydraulic & laboratory for *Master students* (TUM: best university in Germany and top ranking in the world).
- **Spring 2015** Fluid Mechanics for Civil Engineering, Fluid Mechanics for Project Management, Hydraulic of Open Channels and Laboratory, Concrete Technology (PNU), Statics (AU)
- **Autumn 2014** Fluid Mechanics for Civil Engineering, Fluid Mechanics for Project Management, Hydraulic of Open Channels and Laboratory, Concrete Technology (PNU); Advance River Engineering for Ph.D. students (SU)
- **Spring 2014** Fluid Mechanics for Civil Engineering, Fluid Mechanics for Project Management, Hydraulic of Open Channels and Laboratory, Concrete Technology (PNU); Hydraulic structures for MSc students (SU)
- **Autumn 2013** Fluid Mechanics for Civil Engineering, Fluid Mechanics for Project Management (PNU); Advance River Engineering for Ph.D. students (as GTA in SU)
- **Spring 2013** Fluid Mechanics for Civil Engineering, Fluid Mechanics for Project Management (PNU)
- **Autumn 2012** Hydraulic Laboratory (SU)
- **Spring 2012** Fluid Mechanics (SCU)
- **Autumn 2011** Hydraulic structures (SCU); Fluid Mechanics (JSU)
- **Spring 2011** Water Engineering Software's (RU)

11. PUBLICATIONS

11.1 PATENT

- **Winter 2011** Design of Water Engineering software, which is named BEHAB or QBWATER, related to quality and quantity of irrigation water. #203558. Informatics Council of the Ministry of the interior, Tehran, Iran.
- **Winter 2011** Design of Concrete Mix Design software which is named BEHTON. #203559. Informatics Council of the Ministry of the interior, Tehran, Iran.

11.2 JOURNAL PUBLICATIONS

1. Bhandari S., **Balouchi B.** (corresponding author), Ruther N., Bihs H. (2022). 2D numerical simulation of sediment flushing in a hydropower reservoir. (writing process).
2. Mirzaahmadi A., **Balouchi B.** (corresponding author), Ruther N., Bihs H. (2022). Evaluation of level-set method on 3D numerical modeling of morphodynamic of a channel confluence. (writing process).

3. **Balouchi B.** (corresponding author), Ruther N., Valerie Anne Schwarzwälder K. (2022). Comparison of various numerical models for simulation of flow and sediment pattern of a braided river: a case study of Devoll river, Albania. (writing process).
4. **Balouchi B.** (corresponding author), Shafai Bajestan M., Ruther N., Rahmanshahi M. (2022). Experimental investigation of flow pattern over a fully developed bed at a 60° river confluence. *J. of Acta Geophysica*, 70, 2283–2296.
5. Rahmanshi M., Tavakol M., and **Balouchi B.** (2022). Simulation of flow around collocated bridge Piers with pile cap. *J. of Irrigation and Drainage Engineering*, ASCE. (under review).
6. **Balouchi B.**, Abedini M.J. (2019). System identification and subsequent discharge hydrograph estimation in waterway corridors based on water level data alone — Unsteady flow condition, *J. of Hydrologic Eng.*, ASCE, Vol. 24, No. 10, DOI: 10.1061/(ASCE)HE.1943-5584.0001848.
7. **Balouchi B.**, Abedini M.J., Manhart M. (2018). A simulation-optimization technique to estimate discharge in open channels based on water level data alone—Gradually Varied Flow condition, *IJSTC Journal*, Springer, Vol. 43, No. 8, pp. 1-15, DOI: 10.1007/s40996-018-0149-5.
8. **Balouchi B. (corresponding author)**, Rakhshanderoo G.R. (2018). Using physical and soft computing models to evaluate discharge coefficient for combined weir gate structures under free flow condition. *IJST Journal*, Springer. <https://doi.org/10.1007/s40996-018-0117-0>
9. Amini N., **Balouchi B. (corresponding author)**, Shafai Bejestan M. (2017). Reduction of local scour at river confluences using collar. *J. of sediment research*, Elsevier, Vol. 32, No. 3, pp.364-372, DOI: 10.1016/j.ijsrc.2017.06.001.
10. **Balouchi B.**, Nikoo M.R. Shafai Bajestan M., Dehghani M. (2016). Application of support vector machine models and generalized regression neural network in estimating maximum scour depth at river confluences under live-bed condition. *J. of Civil Engineering of Ferdowsi University of Mashhad*. In Persian.
11. **Balouchi B. (corresponding author)**, Dehghani M., Nikoo M.R. (2015). Study of land-use change induced by Karkhe dam construction using satellite images and maximum likelihood classification method. *J. of Water Resources*. In Persian.
12. **Balouchi B. (corresponding author)**, Nikoo M.R. and Adamowski J. (2015). Development of expert systems for the prediction of scour depth under live-bed conditions at river confluences: Application of ANNs and the M5P model tree. *J. of Applied soft computing* (**IF=6.7), Vol:34, pp. 51-59.
13. **Balouchi B. (corresponding author)**, Shafai Bajestan M. (2012). The effect of bed load on maximum scour depth at river confluence. *Ecology, Enviromental and Conservation journal*, Vol:18, No.:1, pp. 157-164.
14. **Balouchi B. (corresponding author)**, Zinivand M. (2012). Experimental investigation on discharge coefficient for combined structure of weir-gate under flood conditions. *J. of Water and Soil Knowledge*, Vol.: 22, No.: 2, pp. 151-164. In Persian.
15. **Balouchi B. (corresponding author)**, Shafai Bajestan M. (2011). Effect of sediment load from main canal on maximum scour depth at river confluence. *J. of Irrigation and Water Engineering*, Vol: 2, No.:5, pp. 1-14. In Persian.

16. Balouchi B. (2009). Hydraulic structures and pisciculture: fish way. J. of Sonboleh, Vol: 2, No.:179, pp. 45-47. In Persian.

11.3 CONFERENCE PAPERS

1. **Balouchi B.**, Rüther N., and Valerie Anne Schwarzwälder K. (2023). Temporal Analysis of the Braided River Index by Satellite Images. 40th IAHR World Congress "Rivers - connecting mountains and coasts", 21-25 August 2023. Vienna, Austria.
2. **Balouchi B.**, Rüther N., Mirzaahmadi A., and Valerie Anne Schwarzwälder K. (2022). 2D depth_averaged numerical modeling of a braided river morphodynamics. 7th IAHR Europe Congress Innovative Water Management in a Changing Climate, September 2022, Athens, Greece.
3. **Balouchi B.**, Mirzaahmadi A., Rüther N., and Bihs H. (2022). 3D CFD modeling of bed changes at a laboratory channel confluence, River Flow 2022 eleventh international conference on fluvial hydraulics, November 2022, Kingston and Ottawa, Canada.
4. **Balouchi B.**, Rüther N., Shafaei Bejestan M., Valerie Anne Schwarzwälder K., and Bihs H. (2021). 2D numerical simulation of shallow water and bedload transport in channel confluences by considering the non-hydrostatic pressure, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-9799, <https://doi.org/10.5194/egusphere-egu21-9799>.
5. **Balouchi B.** and Abedini M.J. (2018). Simulation-optimization method for predicting discharge in open channels with unknown roughness: M₂ profile of gradually varied flow. 12th National Civil Conference. In English.
6. **Balouchi B.** (2016). presentation on: "Discharge estimation based on water level data alone". IGSSE Seminar: Hydromechanik – 2016, TOPIC: Porous Media and turbulent flow, 16.2. - 19.2.2016 in Spitzing, Germany.
7. **Balouchi B. (corresponding author)** and Shafai Bajestan M. (2012). Investigation the effect of discharge and sediment ratios on maximum scour depth at river confluences. Proceeding of *The First International Conference on Dams & Hydropowers*, Tehran, Iran. P. 99. 8-9 Feb, In Persian.
8. **Balouchi B. (corresponding author)** and Zinivand M. (2012). Comparing the discharge coefficient between two combined weir-gate structures. Proceeding of *The First International Conference on Dams & Hydropowers*, Tehran, Iran. P. 123. 8-9 Feb, In Persian.
9. **Balouchi B. (corresponding author)** and Shafai Bajestan M. (2012). Effect of densimetric Froude number and sediment discharge on maximum scour depth at river confluence. Proceeding of *the 5th Conference on Watershed Management and, Soil and Water Resources Management*. Kerman, Iran. P. 171, In Persian.
10. **Balouchi B. (corresponding author)** and Ghobadian R. (2012). Computer program of complete concrete mix design in optimal water management. Proceeding of *the 4th Conference on Iran Water Resources Management*. Tehran, Iran, In Persian.
11. **Balouchi B. (corresponding author)** and Zinivand M. (2012). Investigation of the effect of gate size on flow passing in combined sharp crested triangular weir-gate. Proceeding of *the 4th Conference on Iran Water Resources Management*. Tehran, Iran, In Persian.

12. **Balouchi B.** (2011). Computer program of optimal management of irrigation and water quality parameters. Proceeding of the 3rd National Conference on Irrigation and Drainage Management. Ahwaz, Iran. P. 383, In Persian.
13. **Balouchi B.** (2008). Investigation of efficiency of slit check dam in the mountainous region of Versilia. Proceeding of the 2nd Conference on Research Finding and Natural Resources, Kurdistan, Iran. P. 209, In Persian.

12. WORKSHOPS AND CERTIFICATIONS

- **August 2023** Towards more sustainability hydraulic structures
- **October 2021** Research leadership course, 2 days, NTNU, Trondheim, Norway.
- **Feb. 2021** SedNet-Navigating a Changing Climate online Workshop: Sediment management opportunities to address the climate change challenge
- **Jan. 2021** cross-sectoral ISIMIP and PROCLIAS online Workshop organized by the ISIMIP core team at PIK
- **July 2016** Scientific workshop: High performance computing for water related hazard, Three days workshop on Flood Simulation in Bavaria, Germany, LRZ center, Munich, **Germany**.
- **Jun 2016** Participation at the lecture entitled “English Grammar Compact” by P. Jansen, April-Jun 2016, Technical University of Munich, **Germany**.
- **Jun 2016** Participation at the lecture on “Introduction to Critical Thinking and Science Writing” by T. Schrier, summer semester of 2016, Technical University of Munich, **Germany**.
- **Jun 2016** Completed the A1. German course by S. Winkler, April-July 2016, Technical University of Munich, **Germany**.
- **March 2016** Workshop on MGLET and its applications, Technical University of Munich (TUM), **Germany**.
- **March 2016** Participate in the selected group who visited the Hydraulic laboratory at the University of Federal Armed Forces in Neubiberg, **Germany**.
- **Feb. 2016** IGSSE Seminar: Hydromechanik – 2016, TOPIC: Porous Media and turbulent flow, 16.2. - 19.2.2016 in Spitzing, **Germany**.
- **April 2015** MSRT (MCHE) English certification. Score: 66/100. (without any study)
- **Nov. 2012** Shiraz University English qualify certification for Ph.D. (without any study)
- **Jan. 3 to Feb. 19, 2012** Mike 11 software. Technical and Professional Institute of Rahnama Farda Khozestan.
- **Nov. 1, 2011** Workshop on how to search and retrieve information in electronic full-text journal databases. Library of School of Water Engineering of Shahid Chamran University.
- **May 4, 2011** Workshop of the 4th Iran Water Resources Management Conference: Application of GIS in Water Resources Engineering Studies. Amirkabir University of Technology (Tehran Polytechnic).
- **Feb. 2004** Junior certification of English, Navid educational group. Shiraz, Iran.

13. Projects

1. Modelling weir adjustments in the Lærdal River. (2022-2023). NTNU, Trondheim, Norway.
2. EU. DIRT-X project: Evaluating sediment Delivery Impacts on Reservoirs in changing climate and society across scales and sectors. (2020-2023). NTNU, Trondheim, Norway.
3. EO data for improved physical process understanding as well as numerical modeling in the field of fluvial geomorphology and sediment yield production. (2021-2023). NTNU, Trondheim, Norway.
4. 3D numerical modeling of a river confluence – movable bed implications. (2021-2022). NTNU, Trondheim, Norway.
5. 2D numerical simulation of sediment flushing in a hydropower reservoir: Binga dam. (2021) NTNU, Trondheim, Norway
6. Flood mapping of the urban area and total watershed of Shiraz city and Fars province; for Fars Watershed Institute. (2020). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
7. Design of water transmission pipeline from Shiraz wastewater treatment plant to an industrial factory. (2019). Farassan company, Shiraz, Iran.
8. Study and Design of hydraulic structures for watershed conservation and river training of Hygher dam catchments, Firuzabad; for Fars Watershed Institute. (2019-20). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
9. Meteorology and hydrology study of Safarood and Poshtkooch Basht for Kerman watershed institute., (2018-19). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
10. Cooperated on the meteorology and hydrology study; and also study and design of some small dams; for Bushehr and Fars Watershed Institute. (2018-19). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
11. Meteorology study of two different projects entitled “Breeding Hunting birds” and “Rangeland protection” for Fars and Kohgiluyeh and Boyer-Ahmad Watershed Institute, respectively. (2018-19). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
12. Cooperated on the study and design of a project titled “Collecting and disposing of surface water for zone 7 of Shiraz City”, for Shiraz municipality. (2018-19). Haseb Karaji Consulting Engineering Company, Shiraz, Iran.
13. Cooperated on the study and design of the project titled “Bahoosh Dam”; for Bushehr Water Institute, Parab Consulting Engineering Company, Iran, 2017-2018 (design of hydraulic structures, special kind of culvert, etc.).
14. Cooperated on the study and design of hydraulic structures of the project titled “Khaez Dam”; for Bushehr Water Institute, Parab Consulting Engineering Company, Iran, 2017-2018 (design of hydraulic structures, special kind of culvert, etc.).
15. Worked theoretically and practically with High-Tech flow and/or velocity measurement instruments such as electromagnetic, laser, ultrasonic, and Prandtl tubes; and their corresponding software in *Germany* and Iran.
16. Cooperated on the study and design of hydraulic structures of the project titled “Artificial recharge”, for Yasooj Water Institute, Parab Consulting Engineering Company, Iran, 2016 (design of hydraulic structures, reservoirs, hydrology, etc.).

17. Cooperated in the preparing a research report titled "Evaluation of initial salinity and alkaline leaching and improve the salinity and alkaline conditions in surface irrigation"; for Khuzestan Water and Power Authority, November, 2015.
18. Cooperated in preparing a research report titled "Value engineering of Gareen dam of Nahavand"; for the Water Institute of Hamedan, Iran, 2014.
19. Cooperated on the study and design of a project titled "Artificial recharge", for Zabol Water institute, Iran, 2016 (design of hydraulic structures, reservoirs, hydrology and etc.).

14. Software knowledge

- ❖ Working experience with REEF3D::SFLOW, REEF3D::CFD, Visual Basic, Hec-Ras, Hec 4, Smada, Arcview GIS, QGIS, Mseep, Winseep, Epanet, Cropwat, Agwat, Netwat, HLW, Autocad, Land (civil-3D), GWW, SAS, Lusas, Plaxis, Geoslope, Microstation, Surfer, HEC-HMS, Mike 11, GSLIB, Flow-3D, Matlab, ENVI, and etc.
- ❖ Ready to have experience with waterGEMS, OpenFOAM, SWMM, etc.

15. Driving license

- ❖ Iranian driving license B, since 2006.
- ❖ Norwegian driving license B, since 2021.

Last updated in July 2023