CURRICULUM VITAE

Mohammad Asad Hussain, Ph.D. Professor Institute of Water and Flood Management (IWFM) Bangladesh University of Engineering and Technology (BUET) Dhaka-1000, Bangladesh

CONTACT:

Tel: +880-2-55167228-57/7950 | +880 1714390639 E-mail: asadh@iwfm.buet.ac.bd; masadhussain@gmail.com Web: https://iwfm.buet.ac.bd/site/faculty/mohammad-asad-hussain/

EDUCATION

Ph.D. Department of Civil Engineering, The University of Tokyo, Japan, 2006. M.Sc. Engg. (Civil and Environmental), Department of Civil Engg., BUET, 2003 B.Sc. Engg. (Civil) Department of Civil Engg., BUET, 2000.

EMPLOYMENT RECORD

December 2016 - present: Professor, IWFM, BUET November 2010 - December 2016: Associate Professor, IWFM, BUET February 2007 – November 2010: Assistant Professor, IWFM, BUET December 2000 – February 2007: Lecturer, IWFM, BUET

TEACHING

At IWFM, BUET:

- HE 6206: Coastal Disaster Mitigation Engineering
- WFM 6305: Coastal Zone Management
- WFM 6307: Water Control Structures
- WFM 6309: Water Quality Management
- WFM 6202: Remote Sensing and GIS in Water Management
- WFM 5203: Environmental Analysis
- WFM 5204: Survey in Water Resources Projects

At BUET-JIDPUS

- DP 6203: Coastal Water Disaster Mitigation

As part-time faculty:

- EWC 471: Basic Coastal Engineering at Military Institute of Science and Technology (MIST), Bangladesh

VISITING FACULTY / RESEARCHER

October 2012 – April 2014: Visiting Researcher, Department of Civil Engineering, The University of Tokyo, Japan

May 2014 – September 2015: Adjunct Faculty, Department of Civil Engineering, The University of Tokyo, Japan

SELECTED PUBLICATIONS

- Sakib, M.S., **Hussain, M.A.** and Amanat, K.M. (2023) Hydro-structural response of complex elevated pile cap substructures to storm surge impact by smoothed particle hydrodynamics, Ocean Engineering 280 (2023) 114880, doi.org/10.1016/j.oceaneng.2023.114880
- Meng, W., Zhang, K., Liu, H. and **Hussain, M.A.** (2023). "Dynamical characteristics of Amphan and its impact on COVID-19 cases in Bangladesh" Meteorology and Atmospheric Physics (2023) 135:13. doi.org/10.1007/s00703-023-00950-9
- Asik, T.Z. and **Hussain, M.A.** (2022) Comparative numerical simulation of storm surge inundation characteristics along the dynamic east coast of the Meghna estuary in Bangladesh, Coastal Engineering Journal 64(1), 61-82, Taylor & Francis, 2022/1/2, DOI: 10.1080/21664250.2021.1981074
- Azad, A.S.M.A.A., Mita, K.S., Zaman, M.W., Akter, M., Asik, T.Z., Haque, A., Hussain, M.A. and Rahman, M.M. (2018) Impact of Tidal Phase on Inundation and Thrust Force Due to Storm Surge, Journal of Marine Science and Engineering, Vol. 6(110); doi:10.3390/jmse6040110
- Hussain, M.A., Tajima, Y, Hossain, M.A. and Das, P. (2017) Impact of Cyclone Track Features and Tidal Phase Shift upon Surge Characteristics in the Bay of Bengal along the Bangladesh Coast, Journal of Marine Science and Engineering, Vol. 5(51); doi:10.3390/jmse5040052
- Hussain, M. A. and Tajima Y. (2016) Tide-surge interaction at the Bay of Bengal along the coast of Bangladesh, Natural Hazards Vol 86(2), pp. 669-694. DOI: 10.1007/s11069-016-2711-4
- Hussain, M. A., Tajima, Y., Taguchi, Y., Rana, S, Hossain, M. A., Kavinda, and Samarakoon, L. (2014), Investigation of Dynamic Coastal Morphological Features Around the Meghna Estuary using PALSAR Images. Japan Society for Aeronautical and Space Sciences (JSASS), Vol 12(2014), no. ists29.
- Taguchi, Y., Tajima, Y. and **Hussain, M. A.** (2013) Monitoring and Investigation of Dynamic Morphological Change in Meghna Estuary, Journal of JSCE: Hydraulic, Coastal and Environmental Engineering, 69 (2), pp. 636-640.
- Hussain, M. A., Islam, A. K. M. S., Hossain, M. A. and Hoque, M. T. (2012), Assessment of Salinity Distributions and Residual Currents at the Northern Bay of Bengal considering Climate Change Impacts, The International Journal of Ocean and Climate Systems, Volume 3, Number 3, September 2012, Multi-Science Publishing, ISSN 1759-3131.
- Islam, A.S., Bala, S.K. **Hussain, M. A.**, Hossain, M. A. and Rahman, M. M. (2011), Field investigation on the performances of the coastal structures during Cyclone SIDR, Natural Hazards Review, August 2011, Volume 12, Number 3, ISSN 1527-6988, ASCE.
- Haque, M.A., Rahman, M.M., Islam, G.M.T. and Hussain, M. A. (2007) Scour Mitigation at Bridge Piers using Sacrificial Piles, International Journal of Sediment Research. Vol.22, No.1, March 2007, p 49-59.

- Hussain, M. A. and Ali, M.A. (2004) Floodplain sedimentation in nutrient and heavy metal transfer in Jamuna and Padma Rivers. Journal of Civil Engineering, The Institute of Engineers, Bangladesh, 32(2), p 87-110.
- Asik, T.Z. and Hussain. M.A. (2024) Numerical Simulation of Surge Characteristics considering Sea Level Rise along the Morpho-dynamic East Coast of The Meghna Estuary in Bangladesh, in: Lecture Notes in Civil Engineering, Vol 394, edited by Yoshimitsu Tajima, Shin-ichi Aoki, Shinji Sato, pp 325-336. DOI: 10.1007/978-981-99-7409-2
- Iqra, N.A., Hussain, M.A. and Khan, M.S.A. (2022) "Impact of Coriolis Force on the Flow Field and Sedimentation in Ideally Shaped Tidal Basins", In book: Water Management: A View from Multidisciplinary Perspectives, 8th International Conference on Water and Flood Management, Springer, March 2022, DOI: 10.1007/978-3-030-95722-3 11
- Hussain, M. A., Hossain, M. A. and Haque, A. (2012), "Hydro-meteorological Impact on Residual Currents and Salinity Distribution at the Meghna Estuary of Bangladesh", Chapter 7, Coastal Environments: Focus on Asian Regions, V. Subramanian (Ed.), Jointly published by Springer Netherlands and Capital Publishing Company India, pp. 88-105, ISBN 978-90-481-3001-6 (print), 978-90-481-3002-3 (online), doi 10.1007/978-90-481-3002-3_7.

AWARD / FELLOWSHIP / SCHOLARSHIP RECEIVED

Monbusho Scholarship (Japan) for pursuing PhD studies at the Tokyo University, Japan, 2003 -2006

University Merit Scholarship for outstanding academic performance at the undergraduate level, Bangladesh University of Engineering and Technology (BUET), Bangladesh, 1995-1999.

SUPERVISION OF COMPLETED/ONGOING GRADUATE RESEARCH WORK

- Climate change impact assessment upon the Hilsa fish migration routes in the Meghna Esturay of Bangladesh, M.Sc. Thesis by Maruf Ahmed (Ongoing)
- Influence of tidal dynamics on nutrient fluctuations along the Pasur River Estuary near the Sundarbans, M.Sc. Thesis by Sheikh Fahim Faysal Sowrav (Ongoing)
- Hindcasting wave climate during selected monsoon depression events appertaining to coastal erosion along the Bangladesh coast, M.Sc. Thesis by Mursalin-Ibn-Mahbub (Ongoing)
- Investigation of nonlinear surge-tide and wave interactions during selected cyclone events along the Bangladesh coast, M.Sc. Thesis by Farhana Khadiza Liana, January 2025.
- Numerical Model Based Investigation of Physical and Hydraulic Factors Controlling Sedimentation in a Selected Tidal Basin in The South-West of Bangladesh, M.Sc. Thesis by Nazeat Ameen Iqra, 2021.

- Impact of Morphological Changes at the Eastern Part of the Meghna Estuary on Storm Surge Considering Sea Level Rise, M.Sc. Thesis by Tansir Zaman Asik, 2021.
- Investigation of tidal impact on nutrient exchange In some coastal rivers in south-west Bangladesh, Post Graduate Diploma Project by Md. Zahurul Islam, 2021.
- Assessment of Soil Salinity and its Impact on Agriculture after the Cyclone SIDR, M.Sc. Thesis by Syed Mohammad Nazim Uddin, July 2009.
- Impact of Bridges and Diversion Channels on Flow Situation in the Titas River Loop, Post Graduate Diploma Project by Abidur Rahman Khan, August 2008.

RESEARCH GRANTS RECEIVED AS PRINCIPAL INVESTIGATOR/ CO-PRINCIPAL INVESTIGATOR

- Spatiotemporal modeling of nutrient cycling through a selected coastal river in the south-west region of Bangladesh (2023-2025), Funded by Research and Innovation Center for Science and Engineering (RISE) internal grant, BUET. PI
- Enhancing Climate Resilience of Coastal Areas of Bangladesh through Nature Based Solutions, (2022-2025), Funded by Global Center on Adaptation. Co-PI
- Numerical Investigation of Non-linear Surge-Tide Interactions in the Bay of Bengal along the Bangladesh Coast (2016-2018), BoG, BUET. PI
- Investigation of sedimentation process and stability of the area around the cross-dams in the Meghna Estuary, (2012-2015) Japan Aerospace Exploration Agency (JAXA), Japan, PI
- Study on Residual Flow in the Bay of Bengal considering future Climate Change induced Hydro-Meteorological Scenarios, (2011-2012), Ministry of Environment and Forestry, Climate Change Trust Fund, (CCTF) Government of Bangladesh. PI
- Numerical Investigation of Residual Currents in the Meghna Estuary, (2009-2010), CASR, BUET. PI

COMPLETED/ONGOING RESEARCH PROJECTS

- Spatiotemporal modeling of nutrient cycling through a selected coastal river in the south-west region of Bangladesh (2023-2025), Funded by Research and Innovation Center for Science and Engineering (RISE) internal grant, BUET (ongoing). [Principal Investigator].
- Enhancing Climate Resilience of Coastal Areas of Bangladesh through Nature Based Solutions, (2022-2025), Funded by Global Center on Adaptation (ongoing). [Co-Principal Investigator].
- Numerical Investigation of Non-linear Surge-Tide Interactions in the Bay of Bengal along the Bangladesh Coast, funded by BUET (June 2016 May 2018). [Principal Investigator].
- Investigation of sedimentation process and stability of the area around the cross-dams in the Meghna Estuary, in collaboration with LGED, Bangladesh; The University of Tokyo, Japan and Asian Institute of Technology, Thailand; funded by Japan Aerospace Exploration Agency (JAXA), (June 2012-May 2014), [Principal Investigator].
- Increasing the Resilience of Agricultural and Aquaculture Systems in the Coastal Areas of the Ganges Delta; Component G4: Assessment of the Impact of anticipated

external drivers of change on water resources of coastal zone, funded by CGIAR Challenge Program on Water and Food, (June 2011-May2014), [Co-Investigator].

- Study on Residual Flow in the Bay of Bengal considering future Climate Change induced Hydro-Meteorological Scenarios, funded by Climate Change Trust Fund of Climate Change Cell under Ministry of Environment and Forest (MOEF), GoB, (June 2011-June 2012) [Principal Investigator].
- High-resolution Regional Climate Change Information for Bangladesh to inform Impacts assessments, Vulnerability indicators and Adaptation policies, funded by DFID (June 2011- August 2012) [Co-Investigator].
- Development of a 3D Hydro-Morphological Model for Rivers, funded by BUET (March 2009-February 2012) [Co-Investigator].
- Tsunami Hazard Assessment in the Coastal Regions of Bangladesh in collaboration with Dhaka University, Geological Survey of Bangladesh (GSB) and Institute of Water Modelling (IWM), (July 2007-June 2010) [Co-Investigator].
- Assessment of Current Disposal Options for Industrial Sludge in terms of Potential Water Quality Impacts and Application of Novel Treatment Methods in Reducing Sludge Content and Toxicity, funded by CASR, BUET (Feb. 2009 Jan. 2010) [Co-Investigator].
- Field Based Applied Research for the Stabilization of Major Rivers in Bangladesh in collaboration with Disaster Prevention Research Institute (DPRI) of Kyoto University, Japan, (Apr. 2007- Mar 2010) [Co-Investigator]
- Numerical Investigation of Residual Currents in the Meghna Estuary funded by CASR, BUET (Feb. 2009 Jan. 2010) [Principal-Investigator]
- Tsunami Vulnerability Assessment of Cox's Bazar District, in collaboration with Dept. of Civil Engg. BUET, funded by CDMP under Ministry of Food and Disaster Management, Government of Bangladesh, 2007-2008. [Co-Investigator]
- Scour Mitigation around Piers and Abutments Using Sacrificial Piles funded by BUET, 2002-2003. [Co-Investigator].
- Hydrological and Morphological Study on Floods in Bangladesh, Topic 1: Investigation of the Mechanism of Floods in Bangladesh, funded by JICA 2000-2004. [Co-Investigator]
- Hydrological and Morphological Study on Floods in Bangladesh, Topic 2: Morphological Behaviour of the Meghna River, funded by JICA 2000-2004. [Co-Investigator]

REVIEWER OF INTERNATIONALLY REPUTED JOURNALS

- Ocean Engineering, published by Elsevier
- Tropical Cyclone Research and Review, published by the ESCAP/WMO Typhoon Committee (TC) and the Shanghai Typhoon Institute of the China Meteorology Administration (STI/CMA)
- Journal of Hydrology, published by Elsevier

- Coastal Engineering Journal, published by Taylor and Francis (previously World Scientific Publishing Company) and Japan Society of Civil Engineers
- Natural Hazards, published by Springer
- Journal of Water, Sanitation and Hygiene for Development, published by International Water Association (IWA)
- International Journal of Environment and Waste Management, published by Inderscience Publishers
- Journal of Civil Engineering, published by The Institution of Engineers, Bangladesh

PROFESSIONAL SERVICES

- Member, Scientific Committee, 7th, 8th, 9th and 10th International Conference on Water and Flood Management (ICWFM 2019, ICWFM 2021, ICWFM 2023 and ICWFM 2025), Dhaka.
- Member, Technical Advisory Committee, Long Term Monitoring, Research and Analysis of Bangladesh Coastal Zone (Sustainable Polders Adapted to Coastal Dynamics), Coastal Embankment Improvement Project, Phase-I (CEIP-I), Bangladesh Water Development Board, 2020.
- Member, Technical Advisory Committee, Joint Rivers Commission 2019 to 2021.
- Organizing Secretary. 2nd, 3rd and 6th International Conference on Water and Flood Management (ICWFM), Dhaka 2009, 2011 and 2017.

PROFESSIONAL EXPERIENCE:

- Worked as **Hydrodynamic Modeling Expert** for Dhaka Observatory Group of "Improving Water Security for the Poor" (REACH), Funded by DFID, UK, Timeline: July 2019 June 2023.
- Worked as **Wave Modeler** in "An Investigation on the Causes of Embankment Failure and Recommendations for Sustainable Solutions", Timeline: January 2021 ~ December 2022 (Client: BWDB).
- Worked as **Hydrodynamic and Wave Modeling Expert** for "Development of Master Plan for Payra Port", Timeline: July 2019 ~ June 2021 (Client: Payra Port Authority).
- Worked as Hydrodynamic and Wave Modeling Expert for "Review of Design for BN Naval Base (BNS Shiekh Hasina)", Timeline: October 2019 ~ June 2020 (Client: Bangladesh Navy).
- Worked as Wave Modeler in "Hydrological & Morphological Study and Wave and Storm Surge Impact Assessment on proposed 550m PC/Box girder bridge & Viaduct over Feni River on Sonagazi & Mirsharai Economic Zones Connecting Road Project in Sonagzi/ Mirsharai Upazila, District-Feni/Chattogram", Timeline: October 2019 ~ December 2019 (Client: LGED).

- Worked as **Principal Investigator** in the research project on "Numerical Investigation of Non-linear Surge-Tide Interactions in the Bay of Bengal along the Bangladesh Coast", Funded by BUET, Timeline: June 2016 December 2018.
- Worked as **Wave Modeler** in "Feasibility Study and Detailed Design for Development of Jetties and infrastructure at Mirsarai and Sandwip at Chittagong, Subrang-Jaliar Dwip at Teknaf and Sonadia Dwip at Cox's Bazar", Timeline: July 2018 ~ June 2019 (Client: BIWTA).
- Worked as Wave Modeler in "Mathematical Model Study for assessing the impact of proposed BSRM jetty construction near Sandwip channel and the impacts of crossdams on the reclaimed land in Mirsarai area", Timeline: March ~ June 2012 (Client: BSRM).
- Worked as **Modeling Expert** in "Flood vulnerability study at the proposed Aga Khan school site and impact assessment of proposed construction on the surrounding areas", Timeline: January ~ December 2016 (Client: Shatotto Architects)
- Worked as **Hydraulic Modeler** in "Hydrological & Morphological Study and Environmental Impact Assessment (EIA) of Proposed 18 (Eighteen) Road Bridges over Different Rivers in Bangladesh under Construction of Large Bridge on Upazila and Union Road Project", Timeline: June 2010 ~ May 2011 (Client: LGED).
- Worked as **Hydrologic Modeling Expert** in "Hatir Jheel Development Project", Timeline: January ~ June 2008 (Client: RAJUK).
- Worked as **Mathematical Modeling Expert** in "Development of Mathematical Model for the Research on the Effect of Bandalling on River Flow and Morphology, Client: River Research Institute, Bangladesh", Timeline: January 2007 ~ June 2008 (Client: RRI).
- Worked as **EIA Specialist** in "Hydrological & Morphological study and Environmental Impact Assessment of 275m long Bridge on Jagannathganj Ghat Bazar to Guakhara Damodarpur Road, Sharishabari Upazila, Jamalpur District", Timeline: October 2019 ~ December 2019 (Client: LGED).
- Worked as **EIA Specialist** in Hydrological and Morphological study and Environmental Impact Assessment including Bathymetric & Topographical Survey of a large Bridge under Bhanga Upazila, Faridpur District, Timeline: October 2019 ~ December 2019 (Client: LGED).
- Worked as **EIA Specialist** in "Feasibility study with ESIA for resuscitation of Ichamoti River in Pabna District", Timeline: July 2018 ~ June 2019 (Client: BWDB).
- Worked as **EIA Specialist** in "Feasibility Study for Flood Control, Drainage and Irrigation System at Gowainghat in Sylhet District", Timeline: July 2018 ~ June 2019 (Client: BWDB).
- Worked as **EIA Specialist** in "Feasibility study with ESIA for resuscitation of Ichamoti River in Pabna District", Timeline: July 2018 ~ June 2019 (Client: BWDB).
- Worked as **EIA Specialist** in "Feasibility Study for Flood Control, Drainage and Irrigation System at Gowainghat in Sylhet District", Timeline: July 2018 ~ June 2019 (Client: BWDB).
- Worked as **EIA Specialist** in "Feasibility Study in terms of Hydrological and Morphological Study and Environmental Impact Assessment (EIA) including

topographical survey of proposed one No. of Bridge at Borobaisdia-Kachiaburia Bazar Road (Road ID no. 578583025) at Ch.7720m over the Darchira river in Rangabali Upazila of Patuakhali District", Timeline: January ~ April 2018 (Client: LGED).

- Worked as **EIA Specialist** in "Hydrological & Morphological Study and Environmental Impact Assessment (EIA) for Planning and Designing of Proposed 38 (Thirty-Eight) Road Bridges over different rivers Under Construction of Large Bridge on Upazila and Union Road Project", Timeline: June 2011 ~ July 2012 (Client: LGED).
- Worked as **EIA** Specialist in "Hydrological & Morphological Study using mathematical model and EIA for the Baniachong-Nabigonj Road and Sutki Bridge under Road Division Habigonj", Timeline: January ~ March 2012 (Client: RHD).
- Worked as **EIA Specialist** in "Hydrological & Morphological Study and Environmental Impact Assessment (EIA) of the Proposed Road Bridge Over Teesta River at Kaligonj Upazila of Lalmonirhat District", Timeline: June 2010 (Client: LGED).
- Worked as **EIA Specialist** "Hydrological & Morphological Study and Environmental Impact Assessment (EIA) of Proposed 4 (Four) Road Bridges over different rivers of Greater Khulna District Under Union Infrastructures Development Project (UIDP)", January ~ June 2010 (Client: LGED).
- Worked as **GIS Expert** in "Development of a Base Document in the Backdrop of Climate Change Impacts: Characterizing Bangladesh Country Settings", Timeline: January ~ June 2007 (Client: Climate Change Cell, Department of Environment).

PROFESSIONAL AFFILIATIONS:

- Member, Institute of Engineers, Bangladesh (IEB), M25477.
- Life Member, National Oceanographic and Maritime Institute (NOAMI)

ADMINISTRATIVE POSITION

- Director, Institute of Water and Flood Management, BUET, March 2024 to date.
- Assistant Provost (January 2008 September 2012): Sher-e Bangla Hall, BUET