Mostafa Momen

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Civil and Environmental Engineering Department,
University of Houston, Houston, TX 77204

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Professional Preparation

Ph.D. in Civil and Environmental Engineering (Thermo-fluids of Urban & Natural Env.) 2012-2016
Princeton University, Princeton, NJ, US

Ph.D. Exchange Scholar in Mechanical Engineering 2014-2015
Massachusetts Institute of Technology, Cambridge, MA, US

M.A. in Civil and Environmental Engineering 2012-2014
Princeton University, Princeton, NJ, US

B.Sc. in Civil and Environmental Engineering 2008-2012
Sharif University of Technology, Azadi Avenue, Tehran

Appointments

Assistant Professor in Civil and Environmental Engineering 2019-Present
University of Houston, Houston, TX, US

Visiting Scholar in Mechanical Engineering (Center for Turbulence Research) Jul. 2022-Aug. 2022
Stanford University, Stanford, CA, US

Associate Research Scientist in Civil Engineering and Eng. Mechanics Feb. 2018-2019
Columbia University, New York City, NY, US

Postdoctoral Research Fellow in Earth, Energy and Environmental Sciences Jan. 2017-Jan. 2018
Stanford University, Stanford, CA, US

Postdoctoral Research Associate in Civil and Environmental Engineering Nov. 2016-Jan. 2017
Princeton University, Princeton, NJ, US

Honors and Awards

- **Distinguished paper**, spotlighted on the American Geophysical Union's EOS and JGR websites, 2018
- Fellowship for The Data Incubator program, 2017
- Semifinalist for the **Emerging Alumni Scholar's Best Thesis Award** at Princeton University, 2016
- **Gordon Y.S. Wu Fellowship** in Engineering, Princeton University, 2012-2016
- Qualified as an Exceptional Talent of Sharif University and Merit-based Graduate Admission, 2012

Patents

- US patent: "Dynamic Models for Short-Term Wind Energy Forecasting"
  Bou-Zeid, Elie, and Mostafa Momen. 2016. SYSTEM AND METHOD FOR PERFORMING WIND FORECASTING. *WO/2016/160697*, published October 2016.
- Two patents in the national registration office of industrial ownerships on artificial intelligence, Tehran, 2008.

Peer-Reviewed Publications

Students Underlined; # = Postdocs at the University of Houston; * = Corresponding Author(s); *IF* = Impact Factor from Scopus.

1. Matak, L., and **M. Momen***, **2025**: "Enhancing Air Pollution Forecasts in Cities by Characterizing the Urban Heat Island Effects on Planetary Boundary Layers," Atm. Res., **315**, https://doi.org/10.1016/j.atmosres.2025.107923 [*IF* = 4.5]
2. Rezaie, M., and **M. Momen***, **2024** "Characterizing Turbulence Structures in Convective and Neutral Atmospheric Boundary Layers via Koopman Mode Decomposition and Unsupervised Clustering," Phys. Fluids, **36**, https://doi.org/10.1063/5.0206387 [*IF* = 4.6]
3. Khondaker, M.M.H., and **M. Momen***, **2024** "Improving hurricane intensity and streamflow forecasts in coupled hydro-meteorological simulations by analyzing precipitation and boundary layer schemes," J. Hydromet., 25 (8), 1237-1258 https://doi.org/10.1175/JHM-D-23-0153.1 [*IF* = 3.8]
4. Hora, G.S., P. Gentine, **M. Momen,** and M. G. Giometto*****, **2024**: "Physics-informed data-driven reconstruction of turbulent wall-bounded flows from planar measurements," Phys. Of Fluids 36; https://doi.org/10.1063/5.0239163 [*IF* = 4.6]
5. Romdhani, O., L. Matak, and **M. Momen*, 2024** "Hurricane track trends and environmental flow patterns under surface temperature changes and roughness length variations," Weather and Climate Extremes, 43, 100645 https://doi.org/10.1016/j.wace.2024.100645 [*IF* = 8.06]
6. Matak, L., and **M. Momen***, **2023**: "The Role of Vertical Diffusion Parameterizations in the Dynamics and Accuracy of Simulated Intensifying Hurricanes," Bound. Layer Meteorol., 188 (3), 389-418, https://doi.org/10.1007/s10546-023-00818-w [*IF* = 3.48]
7. Li, M.#, J. A. Zhang, Matak, L., and **M. Momen***, **2023**: "The impacts of momentum roughness length on strong and weak hurricanes forecasts: a comprehensive analysis of different surface flux models using weather simulations and observations," Monthly Weather Review, 151 (5), 1287-1302, https://doi.org/10.1175/MWR-D-22-0191.1 [*IF* = 3.34, 3.73 (2021)]
8. Ming, J., Zhang*, J, Li, X., Pu, Z., and **M. Momen***, **2023**: "Observational estimates of turbulence parameters in the atmospheric surface layer of landfalling tropical cyclones," J. Geoph. Res. Atm., 128 (17), e2022JD037768, https://doi.org/10.1029/2022JD037768 [*IF* = 5.0]
9. Romdhani, O., J. A. Zhang, and **M. Momen***, **2022**: "Characterizing the impacts of turbulence closures on real hurricane forecasts: A comprehensive joint assessment of grid resolution, horizontal turbulence models, and horizontal mixing length," J. of Adv. Mod. Earth Sys., 14(9), https://doi.org/10.1029/2021MS002796 [*IF* = 7.9, 8.47 (2021)]
10. **Momen, M.***, **2022**: "Baroclinicity in stable atmospheric boundary layers: Characterizing turbulence structures and collapsing wind profiles via reduced models and large-eddy simulations," Quart. J. Royal Met. Soci., 148(742), https://doi.org/10.1002/qj.4193 [*IF* = 7.36, 7.24 (2021)]
11. Li, Y. and **M. Momen***, **2021**: "Detection of Weather Patterns in Optical Satellite Data via Deep Convolutional Neural Networks," Remote Sensing Letters, 12, https://doi.org/10.1080/2150704X.2021.1978581 [*IF* = 2.58;]

12. **Momen, M.***, M. Giometto, and M. B. Parlange, **2021**: "Scrambling and Reorientation of Classical Atmospheric Boundary Layer Turbulence in Hurricane Winds," Geophysical Research Letters, 48, e2020GL091695. https://doi.org/10.1029/2020GL091695 [*IF* = 4.7, 5.58 (2021)]

13. Cheikh, M. I.[#] and **M. Momen***, **2020**: "The interacting effects of storm surge intensification and sea-level rise on coastal resiliency: A high-resolution turbulence-resolving case study," Env. Res. Comm. 2(11), https://doi.org/10.1088/2515-7620/abc39e [*IF* = 3.1]

14. **Momen, M.***, E. Bou-Zeid, M. Parlange, and M. Giometto, 2018: "Modulation of Mean Wind and Turbulence in the Atmospheric Boundary Layer by Baroclinicity," J. Atmos. Sci. 75(11), DOI:10.1175/JAS-D-18-0159.1 [*IF* = 2.83, 3.2 (2021)]

15. Bou-Zeid, E., M. Hansen, M. Hultmark, M. Miller, **M. Momen**, T. Nelson, and R. Socolow, **2019**. "Wind power and wind farms, an energy technology distillate," DOI:10.13140/RG.2.2.17909.40169 Andlinger Center for energy and the environment.

16. Konings, A., and **M. Momen**, **2018**: "Frequency-dependence of Vegetation Optical Depth-derived Isohydricity Estimates," IGARSS 2018, 9045-9047, DOI: 10.1109/IGARSS.2018.8519441 [*IF* = 1.3]

17. **Momen, M.*,** Z. Zheng, E. Bou-Zeid, and H. A. Stone*****, **2017**: "Inertial Gravity Currents Produced by Fluid Drainage from an Edge," J. Fluid Mech. 827, 640-663 DOI: 10.1017/jfm.2017.480 [*IF* = 3.96]

18. **Momen, M.*,** K. Novick, J. Wood, R. Pangle, W. Pockman, N. G. McDowell, and A. Konings, **2017**: "Interacting Effects of Leaf Water Potential and Canopy Biomass on Vegetation Optical Depth," J. Geophy. Res. Biogeo. **122** (11), 3031-3046 https://doi.org/10.1002/2017JG004145 [*IF* = 4.2]

19. **Momen, M.**, and E. Bou-Zeid*****, **2017**: "Analytical Reduced Models for the Non-stationary Diabatic Atmospheric Boundary Layer," Bound. Layer Meteorol**. 164,** 383-399 DOI: 10.1007/s10546-017-0247-0 [*IF* = 3.48]

20. **Momen, M.***, and E. Bou-Zeid*****, **2017**: "Mean and Turbulence Dynamics in Unsteady Ekman Boundary Layers", J. Fluid Mech. 816, 209-242. DOI: 10.1017/jfm.2017.76 [*IF* = 3.96]

21. **Momen, M.**, and E. Bou-Zeid*****, **2016**: "Large Eddy Simulations and Damped-Oscillator Models of the Unsteady Ekman Boundary Layer". J. Atmos. Sci., 73 (1), 25-40 DOI:10.1175/JAS-D-15-0038.1. [*IF* = 2.83, 3.2(2021)]

Manuscripts Under Review:

22. **Momen, M.***, M. Allouche, and E. Bou-Zeid, **2024**: "The interacting effects of unsteady pressure gradients and static stability in the atmospheric boundary layer," *Submitted to J. of Renewable and Sustainable Energy*.

Proceedings Paper

1. Sabet, F., Y. R. Yi, L. Thomas, and **M. Momen***, **2022**: "Characterizing mean and turbulent structures of hurricane winds via large-eddy simulations," Proceedings of the Summer Program 2022, Center for Turbulence Research, Stanford University, 311-321 https://web.stanford.edu/group/ctr/ctrsp22/v01_Sabet.pdf

Paper Recognitions

- Khondaker, M.M.H., and **M. Momen***, **2024**, J. Hydromet., 25 (8)
    - Highlighted in the NSF's ACCESS Science Stories https://access-ci.org/enhancing-hurricane-forecasts/
    - Highlighted in the Pittsburgh Supercomputer Center's Science Highlights https://www.psc.edu/hurricanes/
    - Highlighted in phys.org, and Microsoft Network news: https://www.msn.com/en-us/weather/topstories/enhancing-hurricane-forecasts-simulations-reveal-reducing-estimates-of-atmospheric-friction-improves-storm-predictions/ar-AA1rkELt

- Li, M.[#], J. A. Zhang, Matak, L., and **M. Momen***, **2023**, Monthly Weather Review, **151** (5), Highlighted Article in the NOAA HRD Website

- Romdhani, O., J. A. Zhang, and **M. Momen***, **2022**, J. of Adv. Mod. Earth Sys, **14**(9) Highlighted Article in the NOAA Scientific Publications Report 2022 and NOAA HRD Website

- **Momen, M.*,** et al., **2017,** J. Geophy. Res. Biogeo. 122 (11)

Selected by AGU's editors and featured as a research spotlight on Eos News & the JGR journal's website https://eos.org/research-spotlights/scientists-probe-water-inside-leaves-via-satellite?utm_campaign

Student Awards and Recognitions

- **1st runner up at University of Houston Energy Hackathon competition**, Ph.D. Candidates **Milad Rezaie** and **Fateme Sabet Sarvestani**, February 2025

- **NSF's Unidata** Summer Internship was awarded to Ph.D. Candidate **Leo Matak,** 2024, https://www.unidata.ucar.edu/community/internship/

- **Travel support funds** were awarded to attend in MIT Energy Conference, and semifinalist in student workshop, Ph.D. Candidates **Milad Rezaie** and **Fateme Sabet Sarvestani**, 2024, https://www.mitenergyconference.org/

Selected Funded Research Grants

- **PI, NSF PDM** (Physical and Dynamic Meteorology) Program: "*Unique Turbulence Dynamics in Hurricane Boundary Layers and Improving Their Parameterizations in Numerical Weather Prediction Models*"

- **PI, Texas Air Research Center** (TARC): "*Determining the impacts of complex urban surfaces on aerosols, convection, and cloud processes via a multi-scale modeling framework*"

- **PI, Center for Turbulence Research** (CTR) at Stanford University: "*Coherent turbulent structures of cyclonic winds in hurricane landfalls via large-eddy simulations*"

- **PI, Texas Ecological Laboratory**: "*Evaluating particulate matter and volatile organic compounds levels over Texas properties and investigating their potential hazards*"

- **PI, UH DOR** (Division of Research) High Priority Area Research Seed Grants: "*A Model-Data Fusion Framework for Improved Forecasting of Hurricane Flood Inundation Extents: Coupling Hydrometeorological Weather Model Predictions with Satellite Imagery*"
- Co-PI, Data Science Institute (Columbia): "*Tracking Air Pollutants and Reconstructing 3D Scalar Fields from 2D Satellite Images via Machine Learning*"

Funded High-Performance Computing Proposals

- **NSF's** National Center for Atmospheric Research **(NCAR)**: "*Improving Hurricane Turbulence and Boundary Layer Parameterizations in Numerical Weather Prediction Models*" Computational & Information Systems Laboratory (UHOU0002)

PI **10,000,000 Core-hours + 10 TB of Campaign Storage** Oct. 2023

- **NSF** Advanced Cyber infrastructure Coordination Ecosystem: Services & Support (**ACCESS**): "*Improving Hurricane Turbulence Parameterizations in Weather Models*" Accelerate ACCESS allocation (EES230054)

PI **3,000,000 Credits** Estimated value: $35,000 Sep. 2023

- **NSF** Extreme Science and Engineering Discovery Environment (XSEDE) Resources: "*Turbulence Structure in Hurricanes and its Impacts on Urban Environments*"

Co-PI **106,454 Node-hours** Estimated value: $27,635 Dec. 2018

Invited Talks and Seminars

- Georgia Institute of Technology, School of Earth and Atmospheric Sciences, EAS Seminar Series, "*Hurricane Turbulence Dynamics and its Impacts on Improving Hydro-Meteorological Forecasts*," February 2025
- Princeton University, Department of Civil and Environmental Engineering, Departmental Seminar, "*Hurricane Turbulence Dynamics in Numerical Simulations*," January 2024
- Invited Talk in American Meteorological Society's 24th Symposium on Boundary Layers and Turbulence, "*Baroclinicity and Stability in the Atmospheric Boundary Layer: Characterizing Their Interacting Effects via Large-Eddy Simulations and Reduced Models (Invited)*," Denver, USA, January 2023.
- Rice University, Department of Mechanical Engineering, Seminar Series, "*Predictive Fluid Mechanics Models of Complex Environmental Flows*," September 2021.
- Carnegie Mellon University, Department of Civil and Environmental Engineering, "*Reduced Predictive Models of Complex Environmental Flows*," March 2018.
- University of California, Berkley, Department of Mechanical Engineering, Berkley Fluid Seminar, "*Reduced Models of Environmental Flows*," September 2017.
- University of Pittsburgh, Department of Civil and Environmental Engineering, "*Dynamics of Environmental Flows*," April 2017.
- Massachusetts Institute of Technology, Department of Mechanical Engineering, Multidisciplinary Simulation, Estimation, and Assimilation Systems (MSEAS) Seminar, "*Large-eddy simulations and mean and turbulence dynamics in unsteady Ekman flows*," June 2015.

Selected Recent Conference Presentations and Proceedings

1. Sabet, F., and **M. Momen**, 2024 "Hurricane Boundary Layer Dynamics using Large-Eddy Simulations: Impacts of Rotation and Waves" American Geophysical Union's Annual Fall Meeting, Washington, D.C., https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1579994
2. **Momen, M.**, M.M.H. Khondaker, and L. Matak, 2024 "The Effects of Boundary Layer Dynamics and Intensity Improvements on Hydro-Meteorological Forecasts of Hurricanes" American Geophysical Union's Annual Fall Meeting, Washington, D.C., https://agu.confex.com/agu/agu24/meetingapp.cgi/Person/1496555
3. Matak, L., and **M. Momen**, 2024 "Urban Heat Island Effects on Planetary Boundary Layers and Pollutant Dispersion in Cities" American Geophysical Union's Annual Fall Meeting, Washington, D.C., https://agu.confex.com/agu/agu24/meetingapp.cgi/Paper/1580189
4. **Momen, M.**, 2024 "Mean and Turbulence Dynamics in Hurricane Boundary Layers". Bulletin of the American Physical Society, 77th Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, Utah. https://meetings.aps.org/Meeting/DFD24/Session/ZC26.8
5. Rezaie, M., and **M. Momen**, 2024 "Detecting Coherent Turbulence Structures in Planetary Boundary Layers via Koopman Mode Decomposition and Data-Driven Methods". Bulletin of the American Physical Society, 77th Annual Meeting of the APS Division of Fluid Dynamics, Salt Lake City, Utah. https://meetings.aps.org/Meeting/DFD24/Session/L39.9
6. Matak, L., and **M. Momen**, 2024 "Enhancing Air Quality Forecasts in City Environments: Characterizing the Impacts of Boundary Layer and Urban Schemes in Numerical Weather Prediction Models," 104th Annual Meeting, American Meteorological Society, Baltimore, MD. https://ams.confex.com/ams/104ANNUAL/meetingapp.cgi/Paper/432377
7. Khondaker, M. M., and **M. Momen**, 2024 "Improving Hurricane-induced Flood Forecasts using Coupled Hydro-Meteorological Models," 104th Annual Meeting, American Meteorological Society, Baltimore, MD. https://ams.confex.com/ams/104ANNUAL/meetingapp.cgi/Paper/432703
8. **M. Momen**, and L. Matak, 2024 "Evaluation of Eddy Diffusion Adjustments on Improving Hurricane Simulations in Weather Forecasting Models," 104th Annual Meeting, American Meteorological Society, Baltimore, MD. https://ams.confex.com/ams/104ANNUAL/meetingapp.cgi/Paper/431563
9. **Momen, M.**, L. Matak, and M. Li#, 2023 "The Role of Turbulence and Roughness Length Parameterizations in Improving Major Hurricane Simulations in Weather Forecasting Models," ASCE Engineering Mechanics Institute Conference, Atlanta, GA. https://www.emi-conference.org/program
10. Rezaie, M., and **M. Momen**, 2023 "Data-Driven Characterization of Coherent Turbulence Structures in Atmospheric Boundary Layers," 103rd Annual Meeting, American Meteorological Society, Denver, CO. https://ams.confex.com/ams/103ANNUAL/meetingapp.cgi/Paper/416487
11. Matak, L., and **M. Momen**, 2023 "The Impacts of Vertical Diffusion Parameterizations on Intensifying Hurricane Simulations," 103rd Annual Meeting, American Meteorological Society, Denver, CO. https://ams.confex.com/ams/103ANNUAL/meetingapp.cgi/Paper/415851
12. Hora, G.S., C. Vondrick, P. Gentine, **M. Momen,** M. G. Giometto, 2022 "Reconstruction of 3D turbulent flow fields from 2D images using deep learning," AGU Fall Meeting, Chicago, IL

13. **M. Momen** "Coastal resiliency under extreme storm surges and floods: A multi-scale numerical study," Texas Floodplain Management Association Annual Conference, Houston, March 2022

14. Li, M.[#], and **M. Momen**, 2022: "The Impact of Wind–Wave Interactions on Real Hurricane Simulations Accuracy in Numerical Weather Prediction Models," 31st Conference on Weather Analysis and Forecasting, https://ams.confex.com/ams/102ANNUAL/meetingapp.cgi/Paper/393791

15. Romdhani, O., J. A. Zhang, and **M. Momen**, 2022 "Joint Assessment of Grid Resolution, Turbulence Models, and Horizontal Mixing Length Impacts on the Accuracy and Dynamics of Real Hurricane Forecasts" 31st Conference on Weather Analysis and Forecasting, https://ams.confex.com/ams/102ANNUAL/meetingapp.cgi/Paper/393958

16. **Momen, M.**, M. Giometto and M. B. Parlange, 2019 "Large-eddy simulations of hurricane boundary layers and scrambling of coherent turbulence structures" AGU Fall Meeting, San Francisco, 2019.

17. Ghanam, K, **M. Momen, M.** and E. Bou-Zeid "Effects of thermal winds on the structure and similarity of the atmospheric surface layer" Bulletin of the American Physical Society, 71st Annual Meeting of the APS Division of Fluid Dynamics, Atlanta, GA, 2018.

18. **Momen, M.**, E. Bou-Zeid, M. Giometto and M. B. Parlange "Exploring the Impact of Baroclinicity and Stability on the Atmospheric Boundary Layer". 23rd Symposium on Boundary Layers and Turbulence (BLT), American Meteorological Society, Oklahoma City, OK, 2018.

19. **Momen, M.,** K. Novick, J. Wood, W. Pockman, and A. Konings "Interacting Effects of Leaf Water Potential and Canopy Biomass on Vegetation Optical Depth". AGU Fall Meeting 2017, New Orleans, LA.

20. **Momen, M.**, Z. Zheng, E. Bou-Zeid, and H. Stone "Inertial Gravity Currents from Edge Drainage". Bulletin of the American Physical Society, 70th Annual Meeting of the APS Division of Fluid Dynamics, CO, 2017.

21. Hezaveh, S. H., **Momen, M.** and E. Bou-Zeid "A Hybrid Model for Wind-Energy Forecasting". 97th American Meteorological Society Annual Meeting, Seattle, WA, Jan. 2017.

22. **Momen, M.** and E. Bou-Zeid "Towards a More Comprehensive Understanding of the Diabatic ABL Dynamics: Variability of Pressure Gradient in Time and Height". AGU Fall Meeting 2016, San Francisco, CA.

23. **Momen, M.** and E. Bou-Zeid "Turbulence dynamics in unsteady atmospheric flows". Bulletin of the American Physical Society 61, 69th Annual Meeting of the APS Division of Fluid Dynamics, OR, 2016.

24. **Momen, M.** and E. Bou-Zeid "Exploring the Impact of Unsteady Pressure Forcing and Surface Buoyancy on the ABL through a Reduced Mass-Spring-Damper Model". 22nd Symposium on Boundary Layers and Turbulence (BLT), American Meteorological Society, Salt Lake City, UT, 2016.

25. **Momen, M.** and E. Bou-Zeid "Analytical damped-oscillator models for unsteady atmospheric boundary layers". Bulletin of the American Physical Society 60, 68th Annual Meeting of the APS Division of Fluid Dynamics, Boston, MA, 2015.

26. **Momen, M.** and E. Bou-Zeid "Mean and turbulence dynamics in unsteady Ekman flows". International Conference on Model Integration across Disparate Scales in Complex Turbulent Flow Simulation, PA, 2015.

27. **Momen, M.** and E. Bou-Zeid "Large eddy simulations and reduced models of the Unsteady Atmospheric Boundary Layer". AGU Fall Meeting 2013, San Francisco, CA, Abstract A43A-0199.

Teaching Experience

- ***Analytical and Numerical Methods in Engineering CIVE7397*** **(Graduate)**
Instructor: Prof. Mostafa Momen, University of Houston, Fall 2020, Fall 2022, and Fall 2024

- ***Fluid Mechanics and Hydraulic Engineering CIVE 3434*** **(Undergraduate)**
Instructor: Prof. Mostafa Momen, University of Houston, Spring 2020, 2021, 2022, 2023, and 2024

- ***Advanced Fluid Mechanics and Turbulence CIVE7397*** **(Graduate)**
Instructor: Prof. Mostafa Momen, University of Houston, Fall 2021 and Fall 2023

- ***Assistant in Instruction for Boundary Layer Meteorology 588*** **(Graduate)**, Spring 2016, Instructor: Prof. Elie Bou-Zeid, Department of Civil and Environmental Engineering, Princeton University
- ***Assistant in Instruction for Mathematics in Engineering 305*** **(Undergraduate)**, Fall 2015, Instructor: Prof. Howard Stone, Princeton University, Department of Mechanical and Aerospace Engineering, Fall 2015
- ***Certificate of "effective teaching" workshop***, Princeton University, Fall 2015
- ***Introduction to MATLAB for UWIN URP Students***, Princeton University, *supported by NSF*
- ***Hydrology Teaching Assistant***, Fall 2011, Sharif University of Technology
- ***Theory of Structures Teaching Assistant***, Fall 2011 and Spring 2012, Sharif University of Technology

Graduate and Postdoctoral Advisees

Postdoctoral Researchers:
- Dr. Meng Li (Postdoc), June 2021 – July 2022 (now at Ansys)
- Dr. Mohammad Ibrahim Cheikh (Postdoc), Feb. 2020 –Nov. 2020 (now at Tesla, Inc.)
- Dr. Dezhi Dai (Postdoc), Sep. 2019 – Jan. 2020 (now at Argonne National Laboratory)

Ph.D. Students:
- Leo Matak (Ph.D. Candidate), Fall 2021 – Present
- Md Murad Hossain Khondaker (Ph.D. Candidate), Fall 2021 – Present
- Milad Rezaie (Ph.D. Candidate), Spring 2022 – Present
- Fateme Sabet Sarvestani (Ph.D. Candidate), Spring 2022 – Present
- Sishir Roy (Ph.D.), Spring 2025 – Present

Master Students with Thesis:
- Prabesh Kshetri (Ph.D.), Fall 2023 – Present
- Oussama Romdhani (Masters with Thesis), Spring 2021– Fall 2022
  Thesis title: "*Characterizing the Impacts of Horizontal Turbulence and Surface Roughness Length Parametrizations on Real Hurricane Dynamics and Tracks*"
  Dissertation defense on 11/30/2022

M.Sc. Non-Thesis and Undergraduate Students:
- Ye Li (M.Sc.), Spring 2020 – Fall 2020: Conducted Research and Published a Paper
- Ismail Ali (B.Sc.) Fall 2020-Spring 2021: Winner of **$1000 scholarship** for Spring 2021 PURS program

- Rohaba Sajjad (B.Sc.) Spring 2024 – Fall 2024: Winner of **$4000 scholarship** for Summer 2024 SURF program and **$1000 scholarship** for Fall 2024 PURS program

Academic Service to Department, College, and University

- **Fall 2024, and Spring 2024** – Coordinated CIVE 6111 Graduate Seminar Series
- **Spring 2024** – **Spring 2025** – Coordinated Renovation, Maintenance, and Purchasing New Equipment for the Educational Hydraulic Laboratory (E101-D3) for Undergraduate Students
- **2021** – Environmental Engineering Faculty Search Committee
- **Fall 2020 and Spring 2020** – Organized and Coordinated CIVE 6111 Graduate Seminar Series
- *Ph.D. Qualifying Exams at the University of Houston:*

1. Leo Matak (Oral and Written), January 2023, *Advisor*: Momen
2. Md Murad Hossain Khondaker (Oral and Written), January 2023, *Advisor*: Momen
3. Lingbo Li (Written), January 2023, *Advisor*: Li
4. Kseniia Gerasimova (Oral and Written), May 2022, *Advisor*: Li
5. Oussama Romdhani (Oral and Written), May 2022, *Advisor*: Momen
6. Aitor Jimenez (Written), May 2022, *Advisor*: Li
7. Ge Hua (Written), January 2022, *Advisor*: Li
8. Yuanqi Hong (Written), January 2022, *Advisor*: Li
9. Fateme Sabet Sarvestani (Oral and Written), May 2023, *Advisor*: Momen
10. Milad Rezaie (Written), May 2023, *Advisor*: Momen
11. Prabesh Kshetri (Written), January 2025, *Advisor*: Momen

- *Ph.D. Thesis Committee Member at the University of Houston:*

#	Student Name	Degree	Committee Chair	Department
1	Ken Protasov	Ph.D.	Roberto Ballarini	Civil and Environmental Engineering
2	Alena Bessmertnykh	Ph.D.	Roberto Ballarini	Civil and Environmental Engineering
3	Tien Du	Ph.D.	Hyongki Lee	Civil and Environmental Engineering
4	Shuolin Xiao	Ph.D.	Di Yang	Mechanical Engineering
5	Meng Li	Ph.D.	Di Yang	Mechanical Engineering
6	Chen Peng	Ph.D.	Di Yang	Mechanical Engineering
7	Ali Ansari	Ph.D.	Debora F. Rodrigues	Civil and Environmental Engineering
8	Lin Su	Ph.D.	Keh-Han Wang	Civil and Environmental Engineering
9	Taher Chegini	Ph.D.	Hongyi Li	Civil and Environmental Engineering
10	Guta Wakbulcho Abeshu	Ph.D.	Hongyi Li	Civil and Environmental Engineering
11	Parham Jafari	Ph.D.	Hadi Ghasemi	Mechanical Engineering
12	Gokul Nair	Ph.D.	Hongyi Li	Civil and Environmental Engineering
13	Yuanqi Hong	Ph.D.	Hongyi Li	Civil and Environmental Engineering
14	Kseniia Gerasimova	Ph.D.	Hongyi Li	Civil and Environmental Engineering

Editorships and Reviews

- **Journal Reviewer for**

1. *Proceedings of the National Academy of Sciences*, 2. *Journal of the Atmospheric Sciences* [5 papers], 3. *Journal of Fluid Mechanics*, 4. *Boundary-Layer Meteorology* [5 papers], 5. *Quarterly Journal of the Royal Meteorological Society*, 6. *Geophysical Research Letters*, 7. *Atmosphere*, *8. Atmospheric Science Letters, 9. International Journal of Environmental Research and Public Health,* 10. *Engineering Structures*, 11. *Sustainable Energy Technologies and Assessments*, 12. *Applied Energy*, 13. *Journal of Applied Meteorology and Climatology*, 14. *Remote Sensing of Environment* [2 papers], 15. *Biogeosciences*, 16. *Air Quality, Atmosphere & Health*, 17. *Experimental Thermal and Fluid Science*, 18. *Journal of Wind Engineering & Industrial Aerodynamics*, 19. *Physics of Fluids*, 20. *Computers and Fluids*, 21. *Journal of Geophysical Research: Atmospheres*, 22. *Journal of Machine Learning for Modeling and Computing*, 23. *Dynamics of Atmospheres and Oceans*, 24. *Agricultural and Forest Meteorology*, and 25. *Journal of Geophysical Research: Machine Learning and Computation*.

- Editorial board member of *Remote Sensing* (ISSN:2315-4632), PiscoMed Publishing Pte. Ltd. (2018-2020)

- **Invited Guest/Topic Editor for**

1) ***Atmosphere*** (ISSN 2073-4433; CODEN: ATMOCZ) by MDPI (*IF* = 2.9), 2022-2023
Special Issue on "*Atmospheric Boundary Layer Modeling and Observation*"
https://www.mdpi.com/journal/atmosphere/special_issues/1F565Q00VL

2) ***Physics of Fluids*** (ISSN: 1070-6631) by the American Institute of Physics (*IF* 4.6), 2024
Special Issue on "*Flow and Climate*"
https://publishing.aip.org/publications/journals/special-topics/phf/flow-and-climate/

- **Reviewer of Proposals for**
  - **NASA Postdoctoral Program (NPP)**
  - **National Science Foundation, PDM Program**

Academic Service to the Scientific Community

Conference and Session Organizing

- **Primary Convener for the American Geophysical Union's 2024 Annual Meeting:** Organized a session on "*Boundary Layer Processes and Turbulence*" with 70 submitted abstracts as the main convener. Sorted the abstracts into three oral and one poster session.
- **Abstract Sorter for the American Physical Society – Division of Fluid Dynamics 2024 Annual meeting:** Helped to sort 157 submitted abstracts and proposed session chairs
- **Local organizing committee of the American Physical Society – Division of Fluid Dynamics 2025 Annual meeting**

Chairing Sessions at Conferences

- **Session Chair for the American Physical Society's 77th Annual Meeting of the Division of Fluid Dynamics,** entitled "*Turbulence: Large-Eddy Simulations*", Salt Lake City, Utah, 2024
  https://meetings.aps.org/Meeting/DFD24/Session/T39

- **Session Chair for the American Meteorological Society's 104th Annual Meeting,** entitled "*Tropical Cyclones: Observations, Data Assimilation, and Forecasting*", Baltimore, Maryland, 2024 https://ams.confex.com/ams/104ANNUAL/meetingapp.cgi/Session/65884
- **Session Chair for the American Geophysical Union's 2023 Annual Meeting,** entitled "*Boundary Layer Processes and Turbulence*", San Francisco, California, 2023 https://agu.confex.com/agu/fm23/meetingapp.cgi/Session/200055
- **Session Chair for the American Meteorological Society's 103rd Annual Meeting,** entitled "*Beyond the Textbook ABL: Unsteadiness, Advection, Baroclinicity and other often ignored physical processes*", 24th Symposium on Boundary Layers and Turbulence, Denver, Colorado, 2023 https://ams.confex.com/ams/103ANNUAL/meetingapp.cgi/Session/63699

Committee Member

- **Committee Member of the ASCE's Engineering Mechanics Institute (EMI) – Fluid Dynamics (FD) Technical Committee**, 2023 – present. https://www.asce.org/communities/institutes-and-technical-groups/engineering-mechanics-institute/committees/board-of-governors--emi/technical-division/fluid-dynamics-committee

Professional Memberships

- *Engineering Mechanics Institute (EMI) of the American Society of Civil Engineers (ASCE)*
- *American Geophysical Union (AGU)*
- *American Physical Society*
- *American Meteorological Society (AMS)*
- *Water and Environment Professionals*

Seminars and Workshops

- *18th Biennial Summer Program of Center for Turbulence Research,* Stanford University, July 2022
- *Judge at 2017 Stanford research review*, Stanford University, Winter 2017
- *Google Earth Engine Workshop*, Google Office in San Francisco, CA, Fall 2016
- *Andlinger Center for Energy & Environment Opening Symposium*, Princeton, Spring 2016
- *EEWR Brown Bag Seminars*, Princeton University, Spring 2014 and 2016
- *Dynamic Modeling and Its Applications,* Math Department, SUT, 2010

Public Outreach and Service

2024 Interview with the NBC Channel 2

Pre-recorded interview with NBC Channel 2 on Improving Hurricane Forecasting https://www.click2houston.com/news/local/2024/10/10/how-a-uh-professor-is-improving-hurricane-forecasting/

2024 Interview with the ABC13 Channel

Live interview with the ABC13 News Channel on our Enhanced Hurricane Forecasting Model

2021 Outreach, Children's Museum of Houston

Helped with the development of two virtual workshops on "3D hurricane modeling" and "hurricane-proof structure design" in May 2021 by preparing videos for hurricane science and simulations for children.