Nima Khorshidian

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Education

University of Houston   **Houston, USA**
Ph.D., Atmospheric Sciences and Meteorology,   *Aug. 2022 – Now*

Sharif University of Technology   **Tehran, Iran**
M.Sc., Aerospace Engineering,   *Sep. 2014 – Jan. 2017*
Thesis: Investigation of Reduced Frequency Effects on the Aerodynamic Efficiency of a New Wind Turbine Blade Section in Pitching Motion

Shiraz University   **Shiraz, Iran**
B.Sc., Mechanical Engineering,   *Sep. 2008 – Sep. 2013*
Thesis: CFD Analysis of Micron Particles Deposition in a Human Tracheobronchial Model

Professional Experience

University of Houston   **Houston, USA**
Graduate Research Assistant   *Aug. 2022 – Now*

○ Working on a DOE-funded project utilizing a novel data assimilation approach to investigate aerosol-cloud interactions with the ARM's TRACER campaign datasets and a fine-resolution WRF-Chem model with the Spectral Bin Microphysics (SBM) scheme. Key objectives involve investigating aerosol particle roles in the formation of cloud condensation nuclei (CCN) and impacts on cloud microphysics and precipitation; comparing aerosol effects as CCN on convective strength intensification in the boundary layer and lower free troposphere; evaluating cloud influences on aerosol particles and formation of secondary aerosols, and assessing aerosol particle effects on cloud radiative forcing.

○ Contributed to a project funded by the Coordinating Research Council (CRC) investigating the benefits of electric vehicles and emission controls in US cities, using advanced simulations to assess impacts on $PM_{2.5}$ and ozone levels. Responsible for data analysis, simulation, and visualizing how electrification can mitigate urban air pollution.

○ Participated in a NASA-supported study analyzing the effects of the Williams Flats wildfire on downwind ozone concentrations, utilizing WRF-Chem/DART assimilation of satellite data. Key responsibilities included analyzing model outputs to understand ozone concentration changes, creating visual representations of these changes to illustrate the wildfire's impact, and contributing to the review and editing of the manuscript.

○ Collaborated on a NASA-funded project analyzing surface ozone trends and health impacts across the US from 1991-2020, focusing on regional ozone changes and their implications for public health policies, with responsibilities in data visualization and manuscript editing.

Shining Copper Processing Co.   **Tehran, Iran**
Mechanical Engineer   *Jul. 2019 – Jul. 2022*

○ Collaborated on engineering design and construction of a 700 tph copper flotation plant and a 1000 tph High Pressure Grinding Roll factory.

Publications

- **Khorshidian, N.**, Choi, Y., Mousavinezhad, S., Pouyaei, A., Park, J., Fan, J. (2024). Comparing the Interactions between Particulate Matter and Cloud Properties over Two Populated Cities in Texas Using WRF-Chem Fine-Resolution Modeling. Atmospheric Environment, 120795.
- Mousavinezhad, S., Choi, Y., **Khorshidian, N.**, Ghahremanloo, M., Momeni, M. (2024). Air quality and health co-benefits of vehicle electrification and emission controls in the most populated United States urban hubs: Insights from New York, Los Angeles, Chicago, and Houston. Science of The Total Environment, 912, 169577.
- Pouyaei, A., Mizzi, A. P., Choi, Y., Mousavinezhad, S., **Khorshidian, N.** (2023). Downwind Ozone Changes of the 2019 Williams Flats Wildfire: Insights from WRF-Chem/DART Assimilation of OMI NO2, HCHO, and MODIS AOD Retrievals. Journal of Geophysical Research: Atmospheres, e2022JD038019.
- Mousavinezhad, S., Ghahremanloo, M., Choi, Y., Pouyaei, A., **Khorshidian, N.**, Sadeghi, B. (2023). Surface ozone trends and related mortality across the climate regions of the contiguous United States during the most recent climate period, 1991–2020. Atmospheric Environment, 300, 119693.

Academic Honors and Awards

- Travel and Participation Award for presentation in TACCSTER (September 2024)
- Scholarship award for outstanding graduate work in atmospheric sciences at University of Houston (2024)
- First place, M.S. and first-year Ph.D. student talks, 36th Annual EAS Student Research Conference at University of Houston (April 2023)
- Scholarship award for early Ph.D. work in atmospheric science at University of Houston (2023)
- Full scholarship award for the graduate program at Sharif University of Technology (2014)
- Full scholarship award for the undergraduate program at Shiraz University (2008)

Technical Proficiencies

Programming Languages: Python, FORTRAN, MATLAB, C++

Atmospheric Modeling: WRF, WRF-Chem, CMAQ

CFD Modeling: ANSYS Fluent, OpenFOAM

CAD Software: SolidWorks, AutoCAD

Data Formats: NetCDF, GRIB, HDF

Data assimilation: 3DVAR

Scripting languages: csh, Bash