Yunha Lee

Research Scientist | **Carbon Solutions LLC**

Profile

Yunha is a computational scientist with more than 15 years of experience in the development of atmospheric models for air quality and climate applications. Her expertise includes developing atmospheric models with both physics and machine learning approaches and building a scientific workflow framework. Her work includes developing multi-scale air quality models in high performance computing environments, performing operational forecasting, and assessing societal impacts of ambient air pollution and climate change. She also has experience leading a research group and contributing to large-scale projects and open science projects. At Carbon Solutions LLC, she is excited to explore how low-carbon energy technology affects air quality, public health, and other societal impacts.

Contact Information

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Education & Training

Ph.D. | **Civil and Environmental Engineering**
Carnegie Mellon University | **2005–2010**
M.Sc. | **Environmental Science and Engineering**
Gwangju Institute of Science and Technology, South Korea | **2003–2005**
B.Sc. | **Geosystems and Environmental Engineering**
Inha University, South Korea | **2000–2003**

Professional Experience

Independent research scientist | **Build Data Solutions** | **2022–Present**
Contributed to the open science and source projects such as developing python-based 3D visualization to support Atmospheric Science community

Visiting Faculty | **Helmholtz-zentrum Dresden–Rossendorf, Germany** | **2020–2021**
Developed deep learning-based atmospheric modeling system to support a digital twin

Assistant Professor | **Washington State University** | **2017–2021**
Improved a physics-based air quality forecasting system, with a particular focus on wildfires smoke issues; led a study to evaluate a decadal forecast performance, and founded machine learning-based air quality forecasting system

Assistant Research Professor | **Washington State University** | **2016–2017**
Developed a novel air quality modeling framework to study how future air quality is influenced by potential climate projections, emissions, and land use changes

Research Scientist | **Duke University** | **2014–2016**
Assessed the influence of future US energy/climate policies on air quality, public health, and climate under three different projects using NASA's climate models for the US Environmental Protection Agency (EPA), the National Climate Assessment (NCA), and the United Nations Environmental Program (UNEP) projects

Associate Research Scientist | **NASA GISS and Columbia University** | **2013–2014**
Conducted climate simulations and data analysis for several international multi-model intercomparison and evaluation studies to improve our understanding of the uncertainties associated with global aerosol and climate modeling

Postdoctoral Researcher | **NASA GISS and Columbia University** | **2010–2012**
Led the development of a global-scale aerosol microphysics model, as part of a NASA climate model; validated the model against multi-source, multi-scale, global datasets

Selected Peer-reviewed Publications

- Lee, Y.H., D.T. Shindell, G. Faluvegi, and R.W. Pinder, 2016: Potential impact of a US climate policy and air quality regulations on future air quality and climate change. Atmos. Chem. Phys., 16, 5323-5342, doi:10.5194/acp-16-5323-2016
- Shindell, D.T., Y.H. Lee, and G. Faluvegi, 2016: Climate and Health Impacts of US Emissions Reductions Consistent with 2 °C. Nature Climate Change, doi:10.1038/nclimate2935.