The Rice University Environmental Fluid Dynamics Group (http://pedram.rice.edu/) has multiple postdoc and PhD positions in the following two topics (and at their intersection):

1) Applications of machine learning (ML) to improve the modeling and prediction of turbulent flows, atmospheric processes, climate change, and weather extremes.

2) Understanding the dynamics and future changes of the extratropical, large-scale atmospheric circulation variability, with a particular focus on blocking events and annular modes.

Regarding (1), one topic of particular interest is developing rigorous frameworks for interpreting/explaining deep neural networks and analyzing their stability, out-of-distribution generalization, and error bounds for applications involving multi-scale dynamical systems such as turbulent flows and the climate system. One objective of this project is to support two multi-disciplinary collaborative initiatives involving several US and international teams focused on developing subgrid-scale parameterizations for atmospheric gravity waves by leveraging high-resolution simulations, observational data, and novel ML techniques: DataWave (https://datawaveproject.github.io/) and CSSI-GW (https://cssi-gws.github.io/index.html).

The successful applicant for this position has a strong background in at least two of these areas: turbulence physics/modeling, dynamical systems, numerical analysis, and climate science. Prior experience with machine learning is highly desirable but not necessary at the time of appointment.

Regarding (2), the main interest is in using hierarchical modeling and novel approaches to analyzing eddy-mean flow interactions and deriving scaling laws to gain a deeper understanding of the dynamical mechanisms of blocking events and annular modes, and their future changes under global warming.

The successful applicant for this position has a strong background in at least two of these areas: geophysical fluid dynamics, climate physics, climate modeling, and climate data analysis.

Postdoc applicants: For more information about the two research topics and the application process, please see “Postdoc Positions” here http://pedram.rice.edu/available-positions/. The start date is flexible. Applications that are received by Nov. 15, 2022 will receive full consideration. Review of applications will continue until the positions are filled.

PhD applicants: For more information about the application process, please see “PhD Positions” here http://pedram.rice.edu/available-positions/.

We strongly encourage applicants from diverse backgrounds to apply. Rice University is an Equal Opportunity Employer with a commitment to diversity at all levels, and considers for employment qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national or ethnic origin, genetic information, disability, or protected veteran status.