Special Issue

Machine Learning Applications in Earth System Science

Message from the Guest Editors

With the advent of the big data era, concurrently with the advances in hardware and computational technologies, machine learning (ML) is proving to be increasingly useful in synthesizing valuable information from large volumes of data from earth observations (EO) and earth system models (ESMs). We invite manuscripts regarding the application of machine learning and artificial intelligence techniques in the subject areas of earth system science encompassing Atmosphere, including meteorology, oceanography, climatology, biometeorology, land-atmosphere interactions, aerosol and air quality. Topics that are of particular interest include ML frameworks for ESMs and EO, physics informed ML, interpretable ML, and applications of ML to a broad range of problems in classification and regression, anomaly detection, spatial mapping and gap filling, geophysical retrievals, spatio-temporal prediction, downscaling for regional climate projections, characterizing extreme events, subgrid scale parameterisations, and surrogate model development for use as emulators in earth system models.

Guest Editors

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Dr. Forrest M. Hoffman

Dr. Udaysankar S. Nair

Dr. Samantha Vanessa Adams

Deadline for manuscript submissions

closed (29 September 2021)

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About the Journal

Message from the Editor-in-Chief

Continued developments in instrumentation and modeling have driven atmospheric science to become increasingly more complex with a deeper understanding of concepts, mechanisms, and interactions. This is the field that innovation built and it has led to a better appreciation for the complexity with atmosphere. Human life is intertwined in this complexity as we strive to better understand our atmosphere. Climate change is constantly stretching the limits of our thinking and forcing new ideas and concepts to be played out. Welcome to the Anthropocene!

Editor-in-Chief

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