Mathematical Problems in Engineering

Hindawi

Special Issue on

Diagnostic Evaluation and Uncertainty Quantification of Earth and Environmental Systems Models

CALL FOR PAPERS

Earth and Environmental Systems (EES) models play a crucial role in facilitating the research and development in science and engineering disciplines. To better conceptualize the EES by using mathematical equations, models are becoming more complex with increasingly more sources of uncertainty, including the characterization of initial and boundary conditions, the errors in observation data, the difficulty in obtaining accurate parameter estimates, and model structural deficiencies. Therefore, it is necessary to quantify uncertainties propagated through the EES models in order to advance the understanding of nonlinear dynamics and chaos in the complex EES and to enhance the reliability of model results.

The aim of this special issue is to gather contributions on both theory and application of diagnostic analysis and uncertainty quantification of the EES models. Researchers and scientists are invited to propose recent advances in methodologies, models, and tools for diagnostics, sensitivity, and uncertainty analysis of the EES models. Contributions may include but are not limited to robust parameter estimation, algorithmic improvements, interaction detection, dimensionality reduction, approximate techniques, surrogate models, and optimization.

Potential topics include but are not limited to the following:

- Diagnostic calibration and evaluation of the EES models
- Novel methods for effective characterization and propagation of uncertainty in the EES modeling
- Mathematical methods for environmental systems modeling and optimization
- Uncertainty analysis for environmental risk assessment and decision-making
- Algorithms for improving computational efficiency of sensitivity and uncertainty analyses of the EES models

Authors can submit their manuscripts through the Manuscript Tracking System at https://mts.hindawi.com/submit/journals/mpe/deuqm/.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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