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SCIENTIFIC MACHINE LEARNING APPROACHES FOR REALTIME FORECAST AND CALIBRATION OF DIGITAL MODELS

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ABSTRACT

Digital models (DMs) are designed to be replicas of systems and processes. At the core of a digital model (DM) is a physical/mathematical model that captures the behavior of the real system across temporal and spatial scales. One of the key roles of DMs is enabling "what if" scenario testing of hypothetical simulations to understand the implications at any point throughout the life cycle of the process, to monitor the process, to calibrate parameters to match the actual process and to quantify the uncertainties. This mini-symposium presents the latest developments in real-time forecast and calibration approaches for digital twins. Approaches that are equipped with uncertainty quantification are especially highlighted in the mini-symposium.