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Considerations of the Uses of Machine Learning in Subsurface Hydrology

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Deadline for manuscript submissions:

closed (30 April 2022)

Message from the Guest Editor

Dear Colleagues,

Machine learning (ML) approaches are revolutionizing many scientific disciplines. However, there is still some concern that subsurface hydrogeologic systems may not be well-suited to ML approaches. This concern stems from three sources. First, subsurface hydrology is plagued by a lack of data. Second, many hydrogeologic problems are hyper-local. Finally, many hydrologic assessments are conducted to assess the likely impact of proposed activities. To be fair, these limitations also apply to our current approach that relies on physics-based models. As such, these questions represent key challenges that must be addressed to take full advantage of the promise of ML for subsurface hydrogeology. The purposes of this Special Issue are: to document successes and failures of applying ML to subsurface hydrology; to present discussion papers regarding the future of ML methods in subsurface hydrology and their role in complementing and/or replacing physics-based models; and to propose paths forward for the successful adoption of ML methods for subsurface hydrogeologic investigations.

Prof. Dr. Ty Ferre

Guest Editor



mdpi.com/si/66164

Special Issue



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Message from the Editor-in-Chief

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