ABSTRACT

Developing accurate soft computing methods for groundwater level (GWL) forecasting is essential for enhancing the planning and management of water resources. Over the past two decades, significant pro gress has been made in GWL prediction using machine learning (ML) models. Several review articles have been published, reporting the advances in this field up to 2018. However, the existing review articles do not cover several aspects of GWL simulations using ML, which are significant for scientists and practition ers working in hydrology and water resource management. The current review article aims to provide a clear understanding of the state-of-the-art ML models implemented for GWL modeling and the mile stones achieved in this domain. The review includes all of the types of ML models employed formodeling from 2008 to 2020 (138 articles) and summarizes the details of the reviewed papers, including the types of models, data span, time scale, input and output parameters, performance criteria used, and the best models identified. Furthermore, recommendations for possible future research directions to improve the accuracy of GWL prediction models and enhance the related knowledge are outlined.