

# **Artificial intelligence based models for stream-flow forecasting: 2000–2015**

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## **Abstract**

The use of Artificial Intelligence (AI) has increased since the middle of the 20th century as seen in its application in a wide range of engineering and science problems. The last two decades, for example, has seen a dramatic increase in the development and application of various types of AI approaches for stream-flow forecasting. Generally speaking, AI has exhibited significant progress in forecasting and modeling non-linear hydrological applications and in capturing the noise complexity in the dataset. This paper explores the state-of-the-art application of AI in stream-flow forecasting, focusing on defining the data-driven of AI, the advantages of complementary models, as well as the literature and their possible future application in modeling and forecasting stream-flow. The review also identifies the major challenges and opportunities for prospective research, including, a new scheme for modeling the inflow, a novel method for preprocessing time series frequency based on Fast Orthogonal Search (FOS) techniques, and Swarm Intelligence (SI) as an optimization approach