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KERNEL METHODS AND NEURAL NETWORKS FOR WATER RESOURCES MANAGEMENT

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Abstract

This paper offers a hybrid approach, for the effective estimation of the maximum water supply and the special water flow in the watersheds of Thasos Island. This modeling effort was carried out by employing both artificial neural networks (ANNs) and kernel algorithms. Moreover support vector machines (SVMs) were used for the optimization of the ANNs. Support vector machines were applied to determine the loss of the developed ANN and to enhance its ability to generalize. As a matter of fact, though this manuscript describes a specific case study, its modeling design principles and its error minimization approach can be applied in a wide range of research fields and applications. From this point of view it can have a significant impact in the field of intelligent environmental management.

Key words: artificial neural networks, environmental modeling, support vector machines, water resources management

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