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## Patent Search

Invention Title	SYSTEM AND METHOD FOR HYDROLOGICAL FORECASTING
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### Inventor

Name	Address	Country
Sridevi Bonthu	Associate Professor, Department of Computer Science and Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India	India
Srinivasa Raju Rudraraju	Professor, Department of Computer Science and Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India	India
Satti Venkata Ganga Pavan Reddy	UG Student, Department of Computer Science and Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India	India
Putti Nitin Ram	UG Student, Department of Computer Science and Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India	India
Sandu RaghuRam Mani Kanta	UG Student, Department of Computer Science and Engineering, Vishnu Institute of Technology, Bhimavaram, Andhra Pradesh, India	India

### Applicant

Name	Address	Country
Vishnu Institute of Technology	Vishnu Institute of Technology, Vishnupur, Bhimavaram West Godavari District Andhra Pradesh India 534202 deanrnd@vishnu.edu.in 8309117085	India

### Abstract:

SYSTEM AND METHOD FOR HYDROLOGICAL FORECASTING ABSTRACT A system (100) for hydrological forecasting is disclosed. The system (100) comprises a first data unit (102) to receive reservoir input data. A second data acquisition unit (106) to receive reservoir water allocation data from a computing device (124). A supply data unit (108) to generate a supply data by correlating the reservoir input data, and the reservoir water allocation data. A third data acquisition unit (112) to receive urban demand data. A demand data processing unit (116) is configured to generate time-series demand data windows with fixed lookback periods. A forecasting engine (120) to receive the generated supply data and the generated time-series demand data windows; establish temporal dependencies and inter-variable correlations; and generate a hydrological forecast. The system (100) unifies supply-side forecasting and demand-side forecasting into a single predictive model, enabling comprehensive and coordinated reservoir management planning. Claims: 10, Figures: 6 Figure 1A is selected.

Complete Specification

## Description:

## BACKGROUND

## Field of Invention

[001] Embodiments of the present invention generally relate to a prediction system and particularly to a system for hydrological forecasting.

## Description of Related Art

[002] Urban water resource management faces complex challenges due to the confluence of rising population densities, erratic climate behavior, and limited infrastructural scalability. Municipalities often experience resource strain as water demand increases, and rainfall patterns become unpredictable. The storage capacity of urban reservoirs remain under constant stress, and the lack of efficient planning tools hampers proactive decision-making in times of water scarcity or excess.

[003] Existing solutions primarily focus on discrete aspects of the water management cycle. On the supply side, hydrological tools such as Soil and Water Assessment Tool (SWAT) and Water Evaluation and Planning System (WEAP) support a modeling of inflows based on rainfall and land-use parameters. On the demand side, utility government agencies use statistical models, including ARIMA and regression analysis, to project future consumption. Agricultural estimations rely on tools such as CropScape, which assists in calculating irrigation requirements. These tools, however, operate independently and often fail to reflect the integrated nature of real-world water management systems.

[004] Shortcomings in the current landscape arise from the separation of supply and demand forecasting. Tools typically rely on historical trends without factoring in socio-economic developments or the compounding effects of multiple dynamic variables. As a result, city planners and policy authorities face delays and uncertainty

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