



MedGU

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ATHENS, GREECE

**MEDITERRANEAN
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5th ANNUAL MEETING

Application of the WEAP model for the assessment of water allocation practices: Advancing water management strategies in the Keritis river basin

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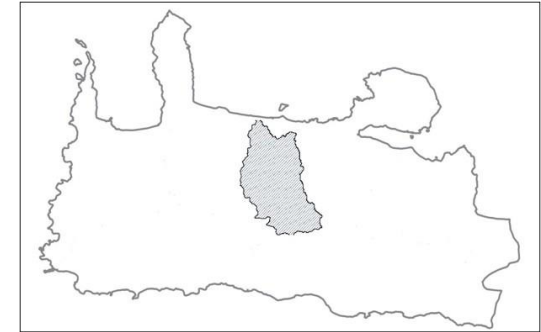
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1. Problem Statement and Research Goals

Background / Problem

- Significant groundwater overexploitation in Agia
- Excessive irrigation water withdrawals



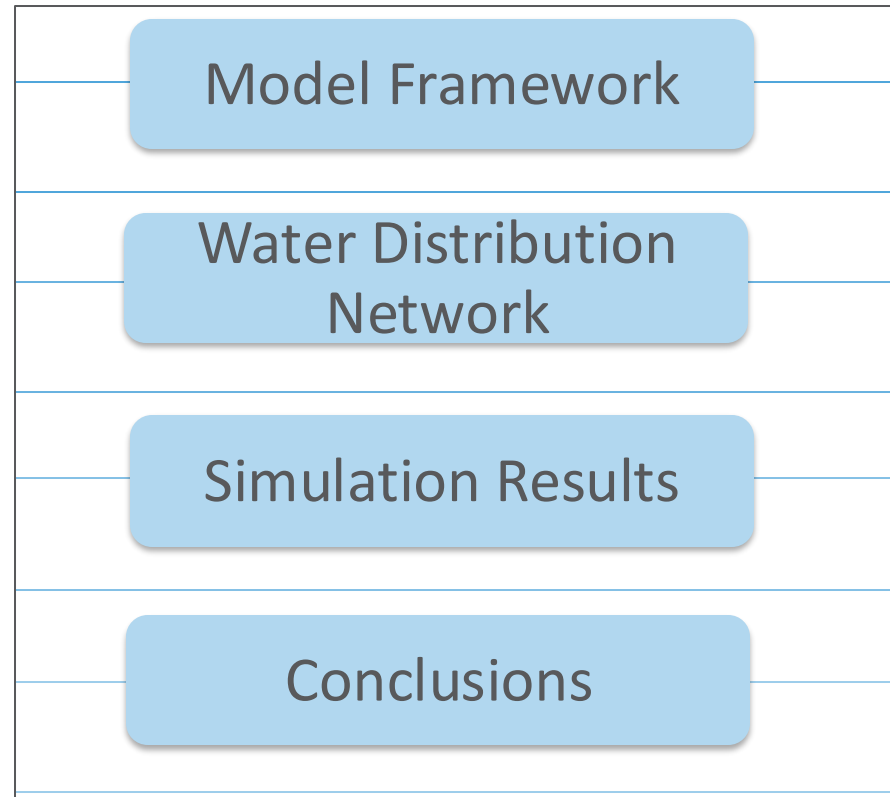
Research Initiative

- Development of a decision-oriented water management model tailored to the Keritis River basin

Study Goals

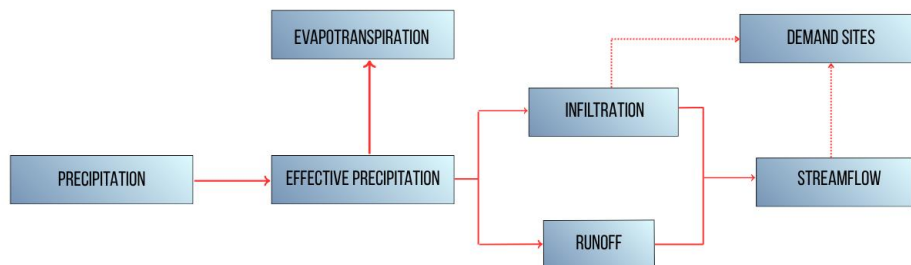
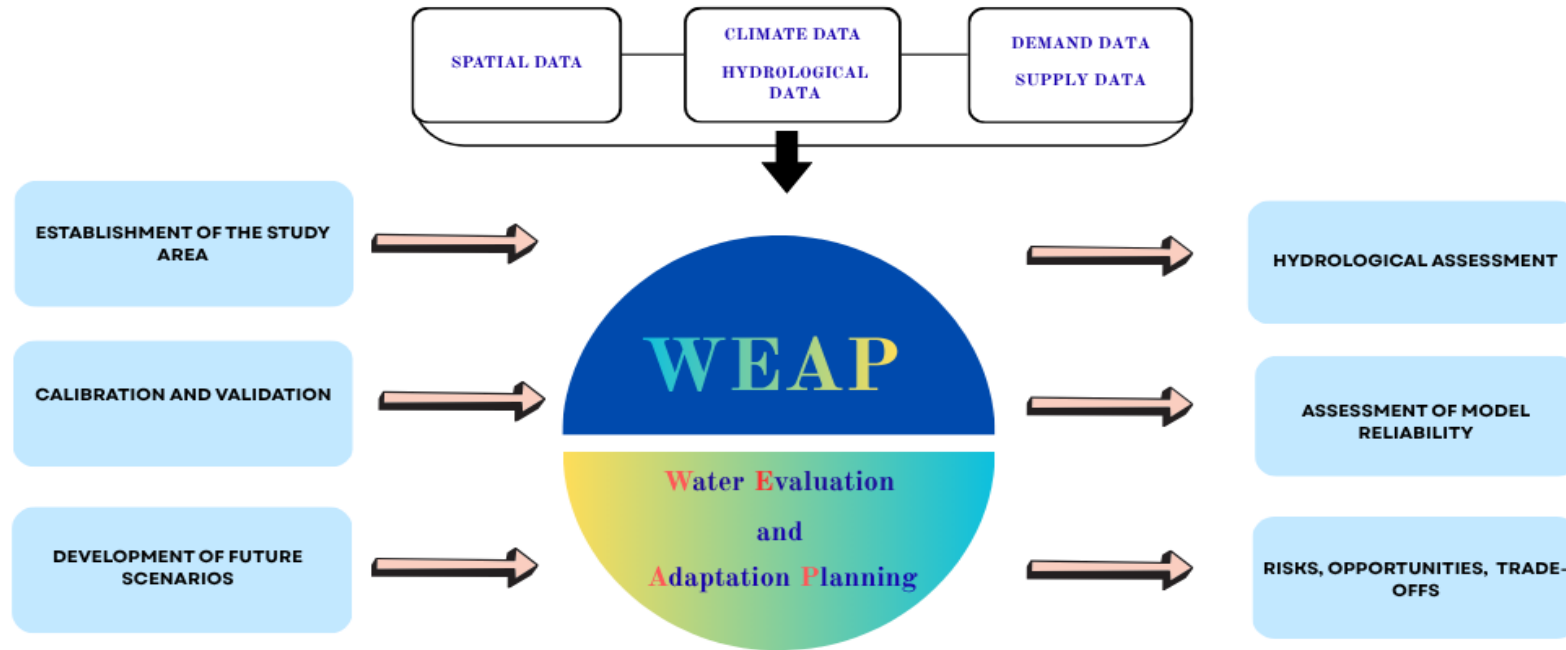
- Innovate water management strategies, guided by principles of adaptive decision-making.

To what extent are existing water distribution networks adequate, effective, and resilient enough to meet current demands and adapt to emerging future challenges?



3. WEAP MODELING FRAMEWORK

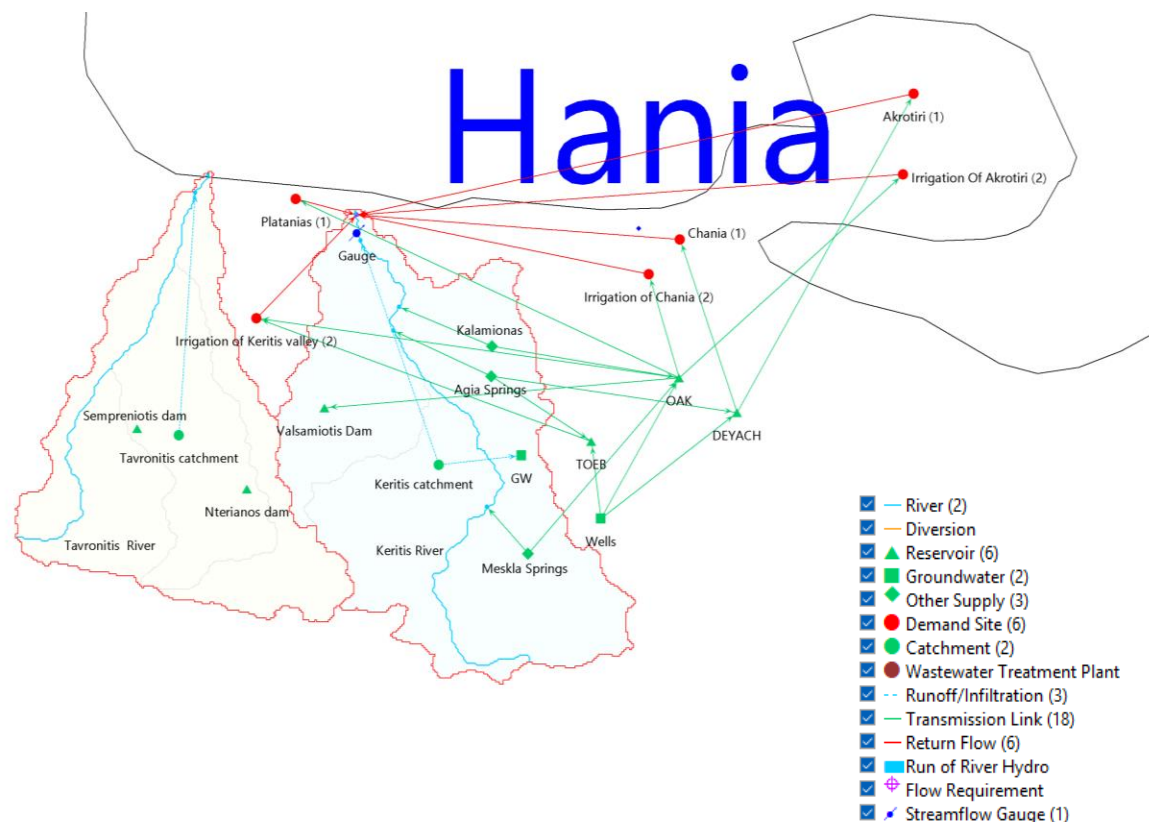
MODELING FRAMEWORK



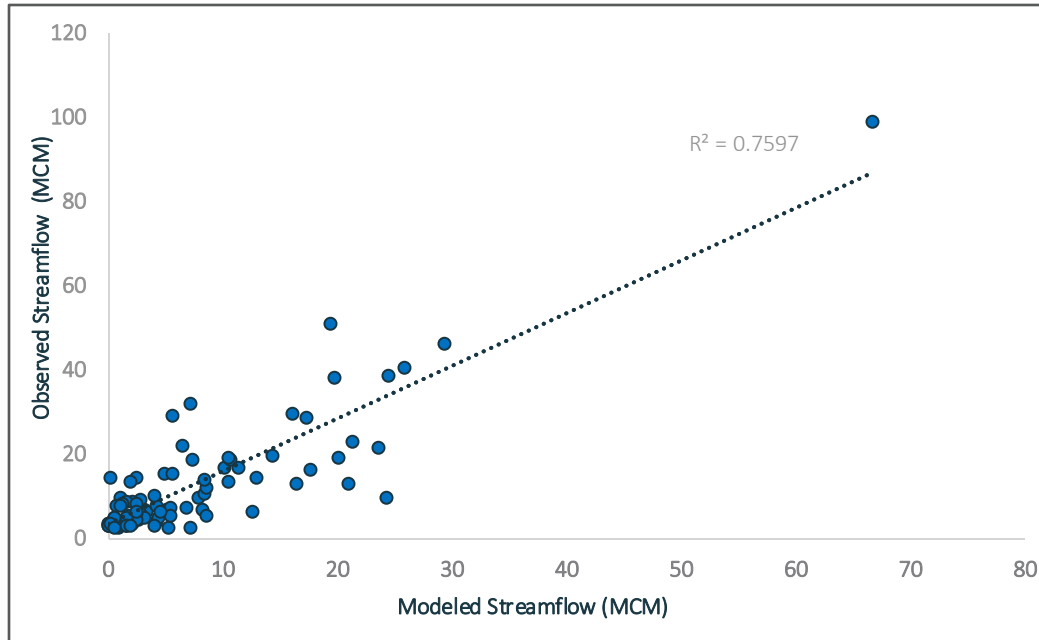
Fundamental Concept: Mass balance equation

4. Water Distribution Network

- Node-based water allocation network
- Priority-based allocation approach
- DEYACH: Urban water supply and wastewater services
- TOEB - Local Land Reclamation Organization: Irrigation water for agriculture
- OAK: Crete water authority, island water manager, hydraulic infrastructure operator, urban and irrigational water supplier

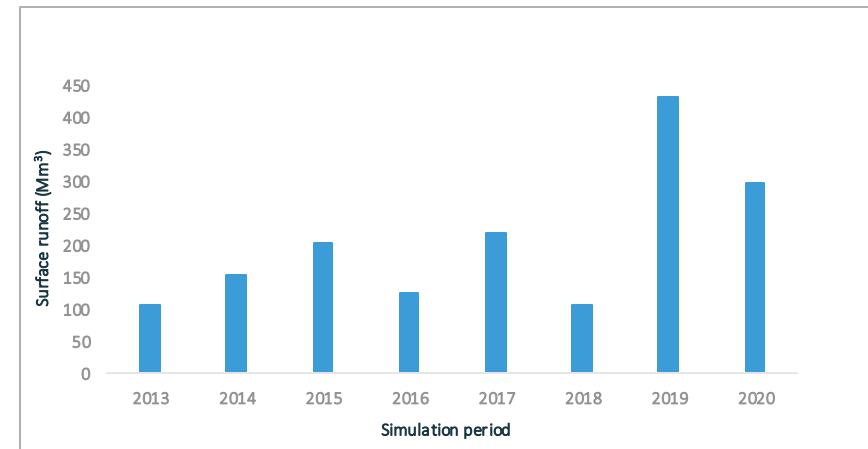


5. Simulation Results



- The network operates at optimal efficiency to enable effective water allocation.
- No unmet demand was recorded throughout the entire simulation period

Performance metrics	Value	Performance rating
R^2	0.74	Satisfactory
RSR	0.65	Satisfactory
NSE	0.57	Satisfactory
PBIAS	41%	Unsatisfactory



- The study aimed to design and evaluate a simulation model capable of representing a distribution network in a simple, efficient, and user-friendly way.
- Results confirmed that the model performs reliably, accurately reflects real network conditions, and aligns with findings from existing studies and stakeholder feedback.
- Validation confirmed robustness and alignment with real data.
- Stakeholder insights supported model applicability.
- The study contributes a flexible, accessible framework for analyzing and improving distribution networks.

Future work will focus on the:

- Optimization of the network performance, test of alternative configurations, and integration of new infrastructure solutions to further improve efficiency.
- Incorporation of variable demand factors—such as non-permanent populations and seasonal consumption (e.g., swimming pools, summer resorts).



Thank you!

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