Book Title	Climate-Smart Water Resource Management: A Paradigm Shift from Ancient to Modern Practices with Integrated Technologies

Keywords	Artificial Intelligence (AI); Machine Learning (ML); Remote Sensing (RS); Geographical Information Systems (GIS); Large Language Models (LLMs); Natural Language Processing (NLP); Smart Networks; Innovative Infrastructure; Traditional Water Harvesting

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Primary Audience	This book's most relevant target audience includes researchers, scientists, and professionals in water resource management, climate science, environmental science, artificial intelligence, machine learning, remote sensing, geographical information systems, large language models, and sustainability. Additionally, the book may appeal to policymakers, government officials, and students pursuing advanced studies in these areas.

Background and Purpose	• This book comprehensively explores evolving water management strategies in the face of climate change. This book delves into the rich history of water resource management, tracing the shift from ancient practices to cutting-edge modern innovations. Bridging the realms of climate science, artificial intelligence, geospatial technologies, and large language models, it presents 18 chapters covering AI-ML applications, RS-GIS techniques, and the transformative role of LLMs. Tailored for professionals, researchers, and academics, this book provides a holistic guide to sustainable water management in the modern era. • The purpose of writing this book is to address the pressing need for a comprehensive resource that aligns traditional water resource management practices with contemporary technologies in the context of climate change. The book aims to fill the existing gap in the literature by providing an in-depth exploration of the historical evolution of water management, offering insights into the challenges posed by climate change, and presenting innovative solutions through integrating AI-ML, RS-GIS techniques, and LLMs. This resource is a timely guide for professionals, researchers, and academics seeking a holistic understanding of climate-smart water resource management. • This book addresses the critical problem of adapting water resource management to the challenges of climate change by integrating traditional practices with modern technologies. The unique selling point lies in the extensive coverage of LLMs, offering readers innovative insights into leveraging advanced language processing techniques for effective communication, stakeholder engagement, and future trends in climate-smart water governance. By providing a holistic approach that combines AI-ML, RS-GIS, and LLMs, the book equips readers with cutting-edge tools and strategies to navigate the evolving landscape of water resource management in a changing climate.
Publishing Timeline	• Proposal Submission Deadline (title or abstract with author's affiliation): **June 30, 2024** • Notification of Acceptance of Proposal: **July 15, 2024** • Full Chapter Submission Deadline: **October 31, 2024** • Submission Email: rajib@civil.iitkgp.ac.in; amansrivastava1397@kgpian.iitkgp.ac.in
Author's Guidelines	• The original chapter must include: 1. Title; 2. Author(s) Name & Current Affiliation with Email and ORCID; 3. Abstract (<250 words); 4. Keywords (5-6 words); 5. Introduction; 6. Rationale of the Study (Optional); 7. Materials and Methods; 8. Results and Discussion; 9. Challenges/Limitations of the Study (Optional); 10. Recommendations (Optional); 11. Conclusions; 12. Acknowledgments (If any); and 13. References (APA Format). • The word count of the full-length chapter may be around 10,000 words. • Manuscripts should be submitted in Word.

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Chapter 11: Integration of Remote Sensing and GIS for Hydrological Modeling: Examining the integration of remote sensing and GIS in hydrological modeling.

Chapter 12: Monitoring Climate Change Impacts on Water Resources Using Remote Sensing: Assessing the impact of climate change on water resources through remote sensing.

Chapter 13: Advancements in LiDAR Technology for Precision Water Resource Management: Discussing the advancements in LiDAR technology for the precision management of water resources.

- [Section D: Harnessing the Power of Large Language Models (LLMs) in Water Management](#)

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