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CONFERENCE PROCEEDINGS OF SELECTED PAPERS in WATER RESOURCES, FOREST, MARINE, AND OCEAN ECOSYSTEMS

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DISCLAIMER

The **International Multidisciplinary Scientific GeoConference SGEM (Survey, Geology, Ecology, and Management)** serves as a global platform for pioneering research and scientific dialogue across the diverse fields of geosciences. It is dedicated to advancing interdisciplinary solutions for the most pressing environmental challenges of our time and includes studies on sustainable water management, climate resilience, hydraulic and hydrological modeling, soil conservation and land restoration, forest ecosystems and biodiversity, and marine–coastal protection including blue-carbon environments. **These thematic areas directly contribute to achieving the United Nations Sustainable Development Goals: SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 14 (Life Below Water), SDG 15 (Life on Land), and SDG 12 (Responsible Consumption and Production).**

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FOREWORD

SGEM Conference Proceedings - Water Resources, Forest, Marine, And Ocean Ecosystems, Vol 25 / Issue 3.2

Hydrology, Water Resources and Climate Resilience · Soil Science, Conservation and Land Restoration · Forest Ecosystems and Sustainable Forestry · Marine, Coastal and Blue Carbon Systems

It is our pleasure to present this special selection of papers in **Water Resources, Forest, Marine, And Ocean Ecosystems, Vol 25 / Issue 3.2** of the *SGEM GeoConference Proceedings 2025* —an academic collection dedicated to advancing the green sciences through rigorous research, responsible environmental stewardship, and practical pathways toward sustainability. This volume brings together studies focused on the environmental systems that underpin ecological stability and societal wellbeing: **water, soils, forests, and marine–coastal ecosystems**. These domains form a continuous natural and socio-ecological continuum, where pressures and changes in one component inevitably shape the others. The research collected here demonstrates that sustainability is not a slogan; it is the outcome of careful measurement, modeling, monitoring, and evidence-based decision-making.

Scientific scope and contribution

The hydrology and water resources contributions address contemporary challenges in **water security and climate resilience**—including changing precipitation regimes, flood risk and vulnerability in sensitive coastal and delta environments, hydrochemical variability under anthropogenic pressure, and applied approaches for improving forecasting and preparedness. Several papers extend beyond diagnosis toward solutions, offering tools that support operational planning and risk management, including data-driven methods relevant to emergency response contexts.

A second thematic axis focuses on **soil science, conservation, and land restoration**, emphasizing soil as a living system that sustains biodiversity, productivity, and long-term landscape resilience. The studies examine land-use change, drought vulnerability, degradation dynamics, erosion risk, and protection frameworks for agricultural lands. Collectively, these works reinforce a key scientific message: the integrity of soil systems shapes not only environmental quality, but also food security and the adaptive capacity of communities.

The volume also includes a substantial section on **forest ecosystems and sustainable forestry**, highlighting the increasing scientific importance of forests as biodiversity reservoirs, climate regulators, and economic resources. Contributions explore monitoring and assessment tools, remote sensing applications, forest risk and hazard relations, and economic perspectives on forestry resilience under changing conditions. These studies demonstrate how modern data and field-based evidence can strengthen sustainable forest management and long-term planning.

Finally, the marine and coastal dimension - particularly **blue carbon systems** - is recognized as an urgent scientific and societal priority. Coastal ecosystems represent

some of the most effective natural mechanisms for carbon capture and long-term storage, while also protecting shorelines and supporting biodiversity. Research in this area contributes to climate mitigation and adaptation, strengthening scientific understanding and informing strategies for conservation and restoration.

Relevance to global sustainability priorities

The themes in **Vol 25 / Issue 3.2** align closely with key global sustainability priorities and support the **United Nations Sustainable Development Goals**, notably **SDG 6 (Clean Water and Sanitation), SDG 13 (Climate Action), SDG 14 (Life Below Water), SDG 15 (Life on Land), and SDG 12 (Responsible Consumption and Production)**. Through diverse methodological approaches and applied perspectives, the volume offers scientific insights that can inform policy, management practice, and further research.

Editorial standards and academic integrity

All manuscripts included in this volume underwent **rigorous peer review** conducted by independent specialists. The editorial process prioritized scientific integrity, methodological clarity, originality, and relevance. Each accepted contribution is prepared for long-term academic traceability and citability through appropriate publication standards and digital archiving.

On behalf of the Editorial Board and the scientific community supporting SGEM Vienna Green, we express our sincere gratitude to all authors for their scholarly contributions and dedication. We also thank the reviewers for their careful evaluations and for safeguarding academic quality. The collective effort behind this volume strengthens international scientific dialogue and supports the shared mission of advancing sustainable solutions through knowledge.

We wish readers a valuable and inspiring engagement with the research presented in **SGEM Conference Proceedings - Water Resources, Forest, Marine, And Ocean Ecosystems, Vol 25 / Issue 3.2,** and we hope the findings gathered here will contribute meaningfully to scientific progress and practical impact in the green sciences.

Sincerely,

Prof. Dr. hab. oec. Baiba Rivza
Editor-in-Chief of XXV SGEM GeoConference Proceedings
Member of the Presidium of the Latvian Academy of Sciences, LATVIA
President of the Latvian Academy of Agricultural and Forestry Sciences
Vice-chair of the Latvian Council of Higher education
President of Latvian universities professors' association
Expert from the European Academy of Sciences Academic Advisory Board (EASAC)

Prof. Dr. hab. Ildiko Tulbure
Editor-in-Chief of XXV SGEM GeoConference Proceedings
Professor, Clausthal University of Technology, Clausthal-Zellerfeld, GERMANY

Professor, 1 Decembrie 1918 University, Alba Iulia, Romania
Supervisor at Technical University of Cluj-Napoca, Romania
Member of the Alexander von Humboldt Scientific Foundation, Germany
Member of the National Society for Environmental Studies & Engineering, Romania
Member of the Romanian Environmental Association, Romania

Prof. DSc. Oleksandr Trofymchuk
Editor-in-Chief of XXV SGEM GeoConference Proceedings
National Academy of Sciences of Ukraine, UKRAINE
Director of Institute of Telecommunications & Global Information Space, Ukraine

CONFERENCE PROCEEDINGS CONTENTS

HYDROLOGICAL AND COASTAL SYSTEMS IN CLIMATE AND ENVIRONMENTAL RESILIENCE

SOIL SCIENCE, CONSERVATION, AND LAND RESTORATION