Climate Change and Mediterranean Coastal Wetlands: Gaps, Biases, and Research Priorities

Silvia Macis[1,2], Erika Bazzato[1,2], Alba Cuena-lombraña[1,2], Miriam Muñoz-rojas[3], Michela Marignani[1,2]

1. Department of Life and Environmental Sciences, University of Cagliari, Sardinia, Italy; 2. e.INS- Ecosystem of Innovation for Next Generation Sardinia; 3. Instituto de Recursos Naturales y Agrobiología de Sevilla (IRNAS), CSIC, Seville, Spain

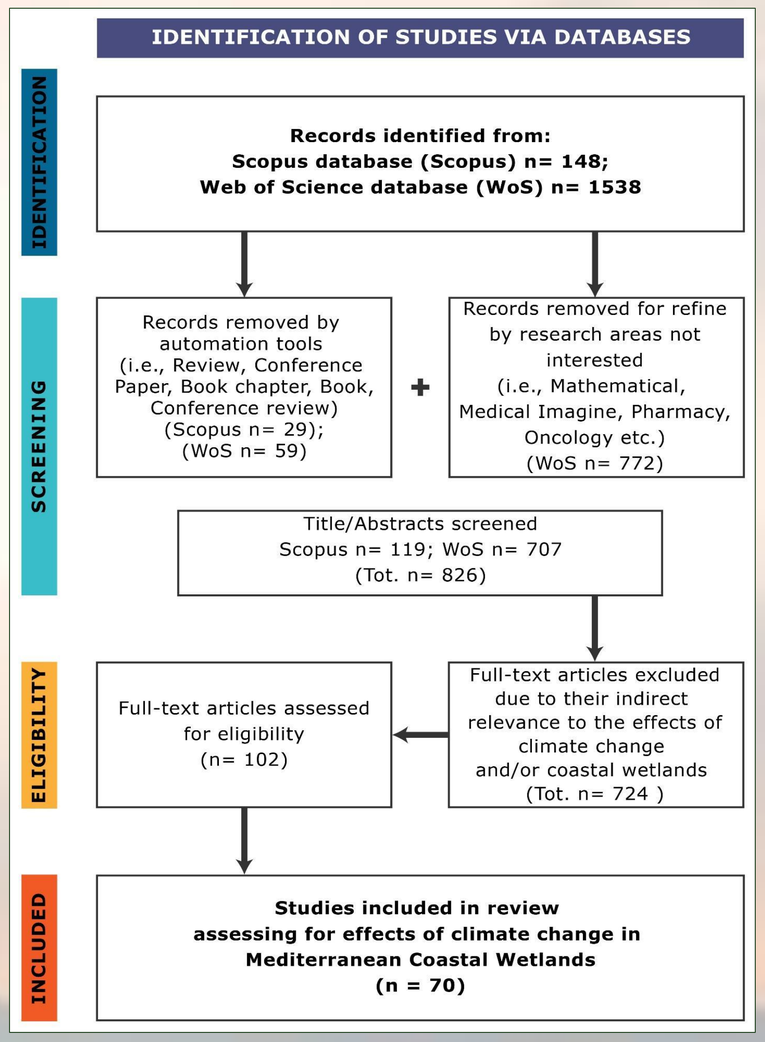
Contact: **silvia.macis2@unica.it**

INTRODUCTION

Coastal wetlands within Mediterranean climate regions represent biodiversity-rich ecosystems that are increasingly exposed to the pressures of climate change. Despite being recognized as highly vulnerable, research addressing their ecological responses to multiple climate drivers remains relatively limited.

Climate change factors	Environmental categories	Methodological approaches	Spatial scale and distribution
Precipitation	Human Heritage	Modelling	Local
Temperature	Agriculture/ Farming	IPCC Scenarios	Regional
Salinity	Soil	Experimental Studies	Global
Drought	Natural Vegetation	Descriptive and Observative Studies	
Sea Level Rise	Wildlife	Modelling	
Extreme Events	Generalized Complex System (GCSs)	IPCC Scenarios	

Tab. 1 Studies categorized according to climate change factors, environmental categories, methodological approaches, and spatial scale.



METHODOLOGICAL APPROACH

We selected studies from *Scopus* and *Web of Science* (WoS), (1992-2024) and categorized them on climate change factors, environmental impacts, methodological approaches, and geographic scale.

Fig. 1 The PRISMA flow diagram shows the process of study identification, screening, eligibility assessment, and final inclusion in the systematic review

RESULTS AND DISCUSSION

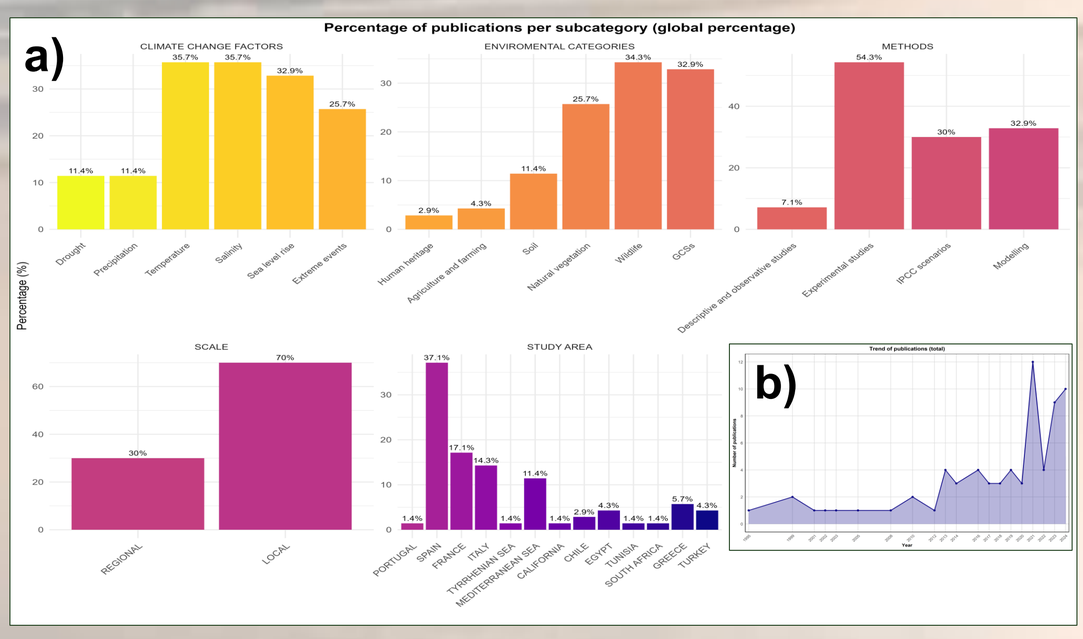


Fig. 2 a) Percentage of publications addressing each subcategory within the main categories included in the review (n = 70). **b)**Temporal trend of publications.

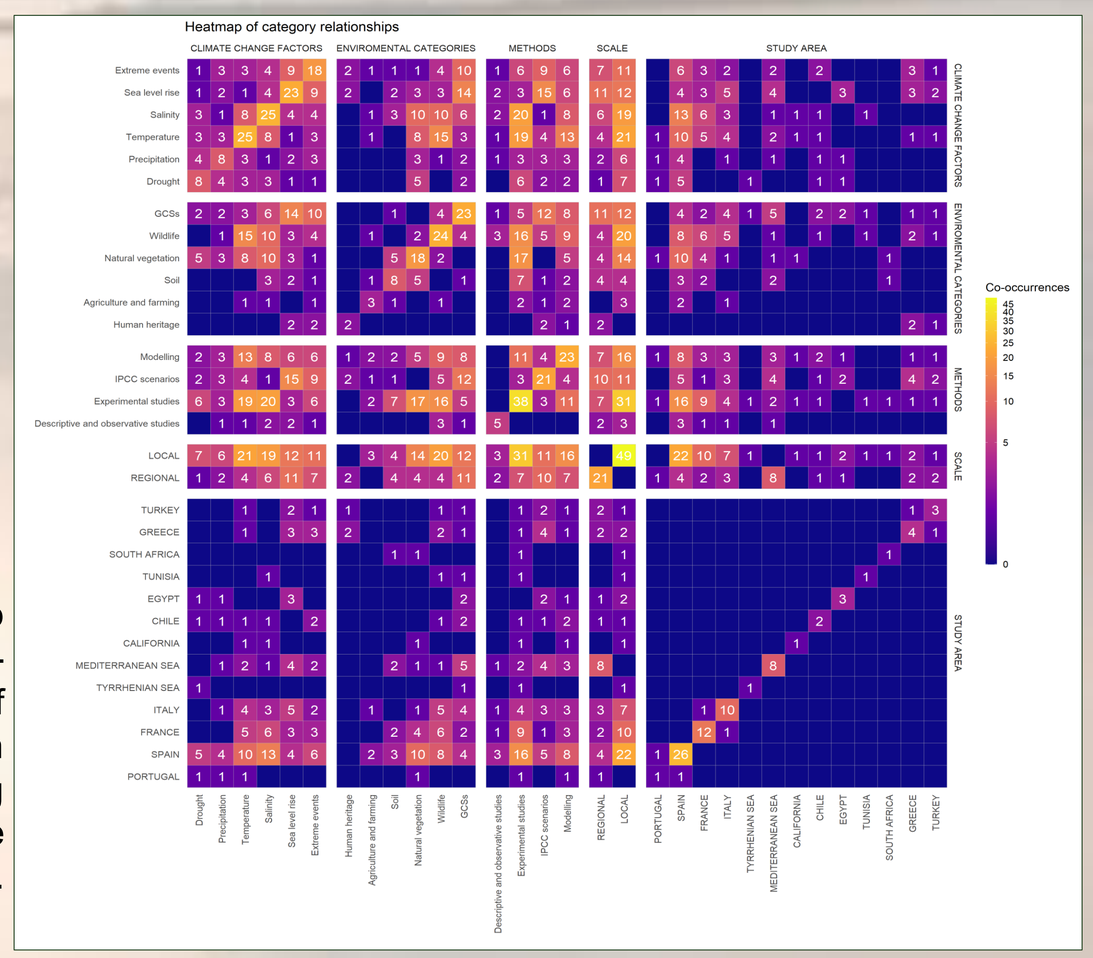


Fig. 4 Heatmap showing the co-occurrence of research categories in studies addressing climate change impacts on MCWs.

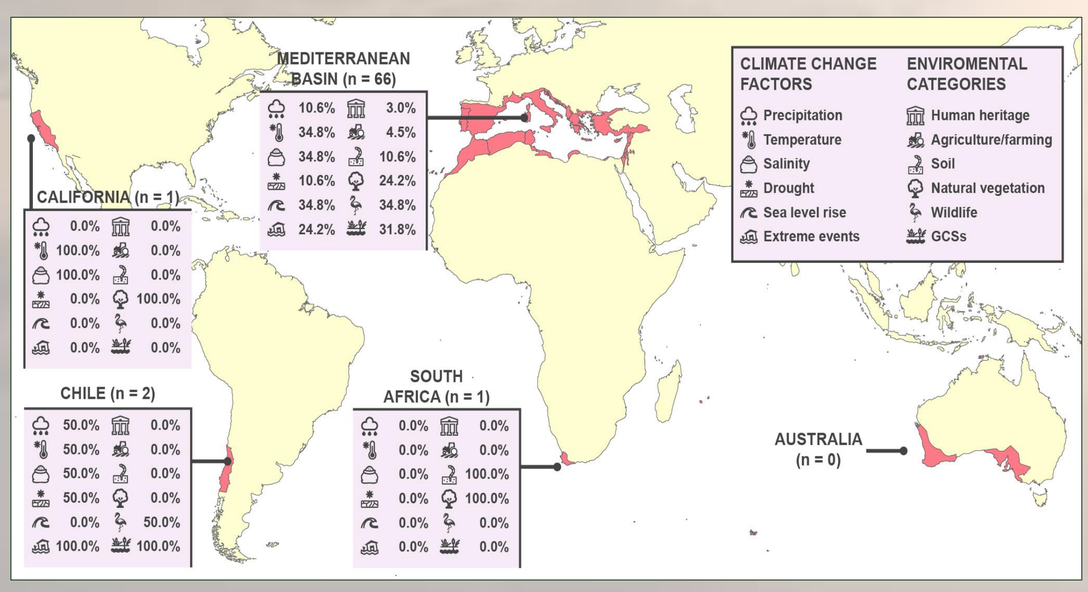


Fig. 3 Spatial distribution of thematic focuses across study areas.

MCWs are shaped by multiple climate stressors, especially salinity, sea-level rise, and warming, causing cascading ecological impacts. leading to soil and water salinization, shifting plant and faunal communities. Human pressures further accelerate *marinisation* and habitat degradation. Research on MCWs remains geographically and thematically unbalanced; expanding long-term, scenario-based, and interdisciplinary studies is crucial to guide nature-based strategies for ecosystem resilience and adaptation.

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