

## Recent Catastrophic Flooding in Valencia: Causes, Impact and Future Implications

Eleftheria Stamati PhD\*

BSc Department of Biomedical Science - Medical Laboratory Technologist, University of West Attica – Greece - MSc Department of Molecular and Applied Physiology – School of Medicine - MSc Department of Geology and Geo-environment - PhD candidate, National and Kapodistrian University of Athens, Greece

**Citation:** Stamati E. Recent Catastrophic Flooding in Valencia: Causes, Impact and Future Implications. *Int J Cur Res Sci Eng Tech* 2025; 8(1), 203-204. DOI: doi.org/10.30967/IJCRSET/Stamati-E/166

**Received:** 13 March, 2025; **Accepted:** 17 March, 2025; **Published:** 24 March, 2025

\***Corresponding author:** Eleftheria Stamati PhD, National and Kapodistrian University of Athens, Greece, MSc Climate Crisis, Environmental Management and Governance - Department of Geology and Geo-environment, Email: elestam@geol.uoa.gr

**Copyright:** © 2025 Stamati E., This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### ABSTRACT

The catastrophic flooding that struck Valencia on October 29, 2024, resulted in severe humanitarian and environmental crises. This paper analyzes the causes, consequences and future implications of the disaster. The study highlights the role of extreme weather events, climate change and inadequate urban infrastructure in exacerbating the flood's impact. Furthermore, it discusses the shortcomings in disaster preparedness and response, emphasizing the necessity of improved mitigation strategies.

**Keywords:** Valencia flood, Climate change, Urban resilience, Extreme weather events, Disaster management

### Introduction

The devastating flood that struck Valencia in late October 2024 raised significant concerns about the city's vulnerability to extreme weather events. The event, marked by over 300 millimeters of rainfall within a span of 24 hours, resulted in massive destruction, claiming 213 lives and leaving hundreds missing<sup>1</sup>. The flood has become a stark reminder of the growing risks posed by climate change and the shortcomings in disaster preparedness. This paper aims to examine the primary causes of the disaster, assess the socio-economic and environmental impacts and propose strategies to mitigate the effects of similar future events.

### Causes of the Flood

The Valencia flood was driven by a combination of natural phenomena and human-induced factors. The Spanish Meteorological Agency<sup>2</sup> reported that the atmospheric phenomenon known as DANA (Depresión Aislada en Niveles Altos), an isolated depression at high altitudes, was the main

cause of the extreme rainfall. This weather pattern intensified the rainfall, leading to severe flooding. Recent studies by the Intergovernmental Panel on Climate Change<sup>3</sup> suggest that rising global temperatures are contributing to more frequent and intense storms, increasing the likelihood of such catastrophic weather events.

In addition to natural causes, urbanization and inadequate drainage systems worsened the situation. Dr. Javier López<sup>4</sup> highlighted that the rapid urban expansion in Valencia had significantly reduced the city's capacity to absorb rainfall, resulting in quicker runoff and greater water accumulation in urban areas. The presence of debris, vehicles and poorly maintained infrastructure obstructed natural drainage channels, which intensified the flood's impact<sup>5</sup>.

### Impact of the Flood

The consequences of the Valencia flood were widespread, affecting the city's population, economy and environment.

### A. Humanitarian crisis

The humanitarian impact was severe. Rescue efforts were impeded by damage to infrastructure, leaving many citizens stranded in their homes or on the streets. Vulnerable groups, such as the elderly and low-income families, faced disproportionate suffering<sup>6</sup>. The lack of efficient evacuation plans and insufficient coordination between emergency services further exacerbated the crisis.

### B. Economic damage

The economic impact of the flood was catastrophic. Thousands of homes and businesses were destroyed, leading to substantial financial losses. Many residents and business owners expressed frustration over the inadequate government response to provide assistance and support for rebuilding efforts<sup>7</sup>. Local economies, particularly in the retail and tourism sectors, experienced significant setbacks due to prolonged recovery times.

### C. Environmental effects

The environmental toll of the flood was also devastating. The floodwaters carried various pollutants, including chemicals and waste, into the city's water bodies. This raised concerns about the long-term ecological risks, particularly regarding water quality and biodiversity<sup>8</sup>. The lack of effective waste management systems and the accumulation of debris further worsened the environmental impact.



**Figure 1:** Environmental effects.

## Lessons Learned and Future Recommendations

The 2024 flood in Valencia revealed critical gaps in the city's disaster preparedness and infrastructure resilience. Despite previous flooding events, the authorities failed to implement necessary infrastructure improvements. Moving forward, strengthening forecasting systems and investing in climate-resilient urban planning are vital steps to mitigate the risks of future floods.

Dr. Pedro Serrano<sup>9</sup> stressed the importance of educating communities about disaster preparedness and enhancing emergency response capabilities. Public awareness campaigns, coupled with the development of early warning systems, can play a pivotal role in minimizing casualties and economic loss. In addition, urban planning policies should prioritize the implementation of flood-resistant infrastructure, such as improved drainage systems, green spaces for water absorption and flood barriers.

## Conclusion

The catastrophic flood that struck Valencia in 2024 serves as a wake-up call for the urgent need to rethink disaster management strategies. Climate change, urbanization and inadequate infrastructure have combined to exacerbate the impact of extreme weather events. To safeguard against future disasters, it is crucial for authorities to prioritize climate adaptation strategies, urban resilience and proactive disaster management policies. Only by addressing these issues can we hope to prevent similar crises in the future.

## References

1. Naftemporiki. Severe floods devastate Valencia 2024.
2. AEMET. Meteorological analysis of the Valencia flood 2024.
3. IPCC. Climate change and extreme weather events 2023.
4. López J. Urbanization and flood risk. ABC 2024.
5. Lekkas E. Hydrological analysis of the Valencia flood. OASP 2024.
6. ABC. Social impact of the flood disaster 2024.
7. El País. Economic consequences of the Valencia flood 2024.
8. La Vanguardia. Environmental risks post-flood 2024.
9. Serrano P. Civil protection strategies for extreme weather events 2024.