

Scientific Study on the Impacts of Climate Change and Extreme Weather Events

المركز الإقليمي للتغير المناخي
The Regional Center for Climate Change



المركز الوطني للأرصاد
National Center for Meteorology
المملكة العربية السعودية



دراسة مناخية متقدمة

تأثير التغيرات المناخية والظواهر الجوية المتطرفة في
العاصمة المقدسة والمدينة المنورة

الهدف

إيجاد حلول مستدامة للتعامل مع الظواهر المناخية المتطرفة
وتحسين جودة الحياة في منطقتي مكة المكرمة والمدينة المنورة.

الأهمية

• دعم اتخاذ القرار المبني على علم البيانات

المحاور

• تحليل تأثيرات التغيرات المناخية على



The Regional Center for Climate Change has launched an advanced scientific study examining the impacts of climate change on the urban environment in the Holy Capital (Makkah) and the city of Madinah. The initiative aims to identify sustainable solutions for addressing extreme climate events and to support efforts to enhance the quality of life in these two cities, which are distinguished by their religious significance and exceptional urban planning.

The study explored key challenges facing the urban environment and proposed scientific solutions to promote institutional collaboration and integrate national efforts in this field.

It focused on several core areas, including:

- i. Analyzing climate change and its effects on urban settings
- ii. Studying patterns of extreme weather events
- iii. Applying modern climate modeling techniques
- iv. Utilizing advanced data to support urban planning
- v. Recommending actionable solutions that enhance climate adaptation and resilience, ensuring the safety and comfort of pilgrims visiting the Two Holy Mosques.

This study is part of the Regional Center for Climate Change's ongoing efforts to advance specialized scientific knowledge and support data-driven decision-making. It aligns with the environmental developments and major development projects taking place across the Kingdom, which require comprehensive climate research to ensure their sustainability.

Dr. Ayman bin Salem Ghulam, CEO of the National Center for Meteorology and General Supervisor of the Regional Center for Climate Change, emphasized that this study serves as a foundational pillar in supporting climate adaptation strategies for the Two Holy Mosques. He noted that the center sought to provide practical, science-based solutions to enhance the efficiency of future projects in Makkah and Madinah.

Meanwhile, Dr. Mazen Asiri, Executive Director of the Regional Center for Climate Change, confirmed that the study adopted a scientific and integrated approach to analyzing weather phenomena affecting urban environments. It drew upon leading international best practices to ensure the study's outcomes support sustainable urban planning and meet the demands of national development.

The Regional Center for Climate Change also organized workshops, discussion sessions, and coordination meetings with representatives from various governmental and research institutions. In addition, field studies were conducted in the central areas of Makkah and Madinah to ensure comprehensive analysis and the practical applicability of proposed solutions.