

Abu Dhabi Climate Analysis Report

An In-Depth Overview of Weather Patterns from 1971 - 2024



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Introduction

Welcome to the Abu Dhabi Climate Analysis Report, an extensive overview of the region's weather patterns from 1971 through 2024. This report utilizes historical weather data to offer a deep dive into the climatic conditions of Abu Dhabi, providing insights that are essential for government planners, businesses, environmentalists, and the public.

Abu Dhabi, known for its arid climate, has experienced significant changes in weather patterns over the past decades. These changes have implications across various sectors including agriculture, tourism, urban planning, and public health. As global climate dynamics continue to evolve, understanding these local patterns becomes crucial for effective planning and policy-making.

This report is structured to guide the reader through comprehensive analyses of several key climate parameters such as temperature, precipitation, humidity, and wind speed. We present our findings through a series of visualizations created using PowerBI, which enable an intuitive understanding of complex data. The visualizations cover different periods and aspects:

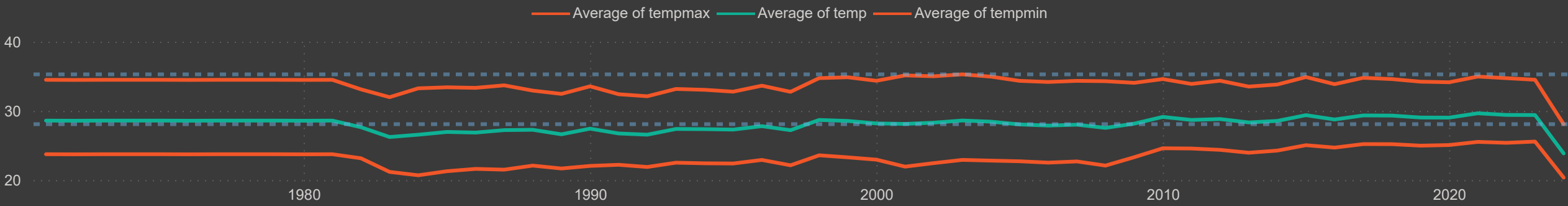
- Long-term Trends: Reviewing data from 1971 to 2024 to identify multi-decade climatic trends.
- Recent Changes: Focusing on the period from 2010 to 2024 to detail the latest developments in climate patterns.
- Monthly Analysis: Diving into monthly data for 2024 to discuss immediate past and short-term future conditions.

Each section aims to not only present data but also to offer actionable insights derived from our analysis. These insights will support the development of strategies to mitigate the impacts of adverse weather conditions and leverage favorable conditions.

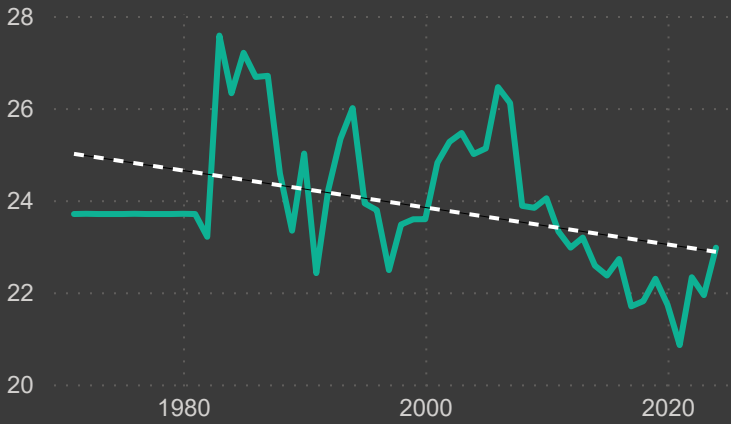
By the end of this report, We hope this report serves as a valuable tool in your planning and decision-making processes related to climate adaptation and sustainability efforts in Abu Dhabi.

Abu Dhabi Weather Changes from 1971 - 2024

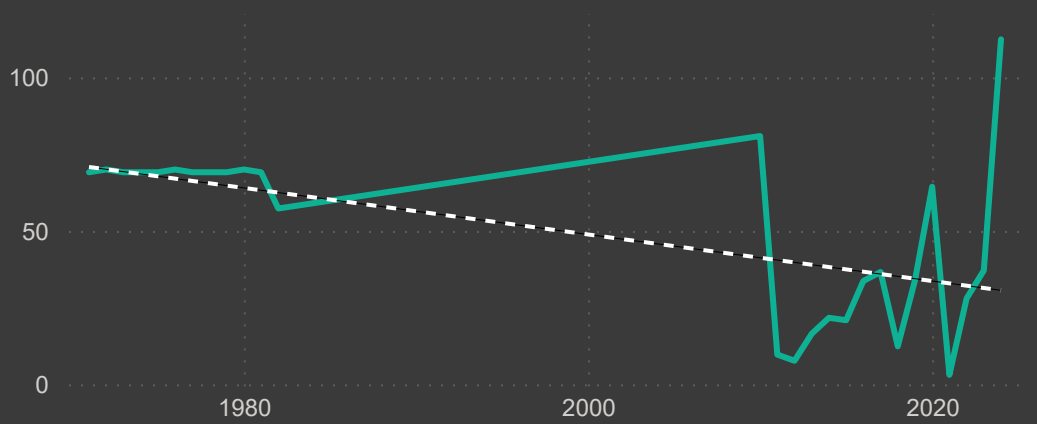
Abu Dhabi Temperature Changes



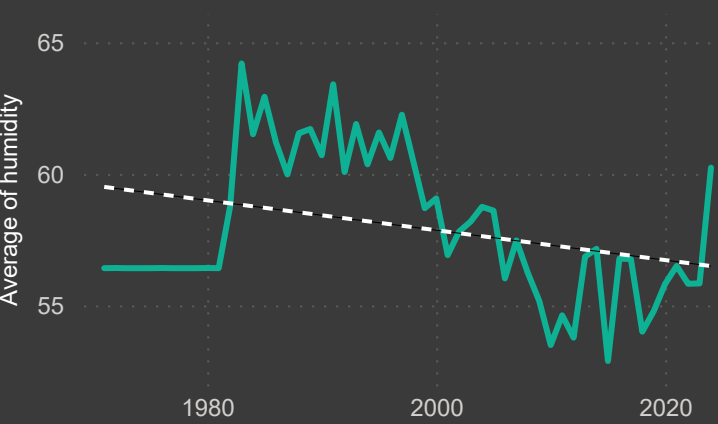
Abu Dhabi Wind Speed Changes



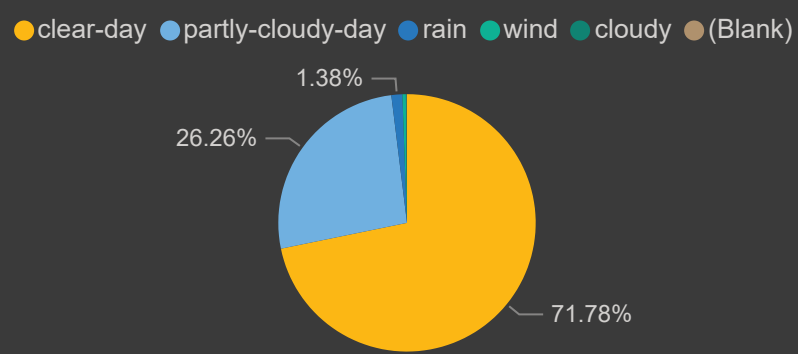
Abu Dhabi Cumulative Precipitation Changes



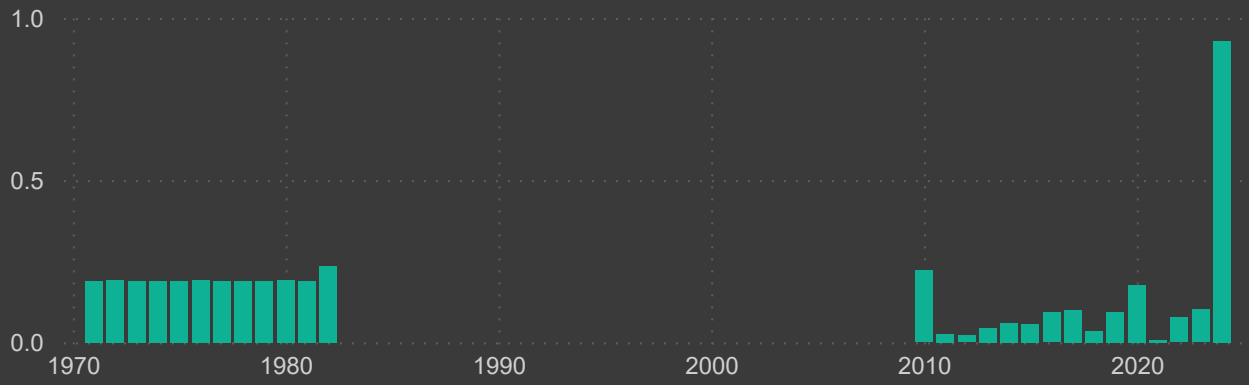
Abu Dhabi Humidity Changes



Abu Dhabi % of Weather Conditions



Abu Dhabi Avg Precipitation



Abu Dhabi Weather Changes from 1971 - 2024

· Abu Dhabi Temperature Changes

The gradual increase in temperatures underscores the impact of global warming. It's important for urban planners and public health officials to note these increases as they can exacerbate heat-related health issues and affect energy consumption patterns.

· Abu Dhabi Wind Speed Changes

The wind speed shows fluctuation without a clear trend towards increase or decrease. Wind speeds peak around the early 2000s and then show some variability.

· Abu Dhabi Cumulative Precipitation Changes

Displays a significant upward trend in cumulative precipitation, especially noticeable from around 2010 onwards.

· Abu Dhabi Humidity Changes

Humidity shows an increasing trend particularly from around 2010, suggesting a shift towards more humid conditions.

· Abu Dhabi % of Weather Conditions

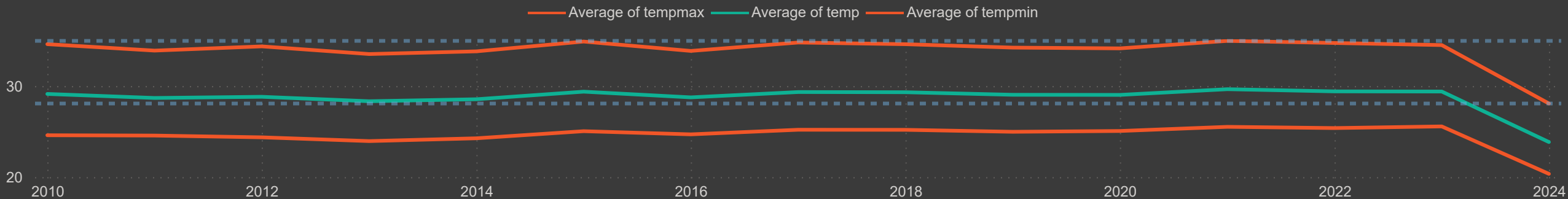
The pie chart indicates that the vast majority of days are clear (71.78%), with partly cloudy days making up 26.26% and very small percentages for rain and wind.

· Abu Dhabi Avg Precipitation

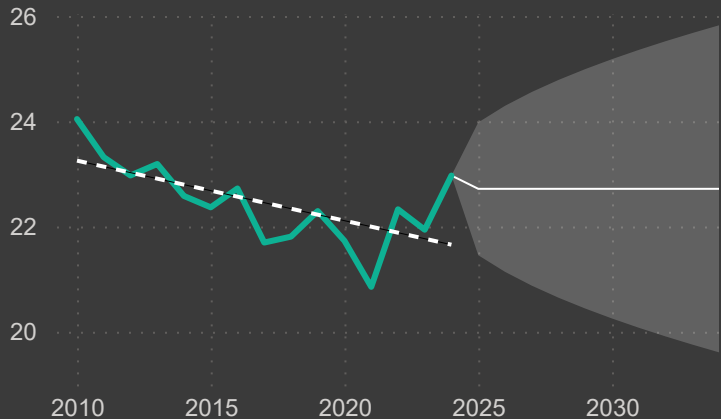
Shows average annual precipitation. Notable spikes in precipitation appear around 2010 and after 2020.

Abu Dhabi Weather Changes from 2010 - 2024

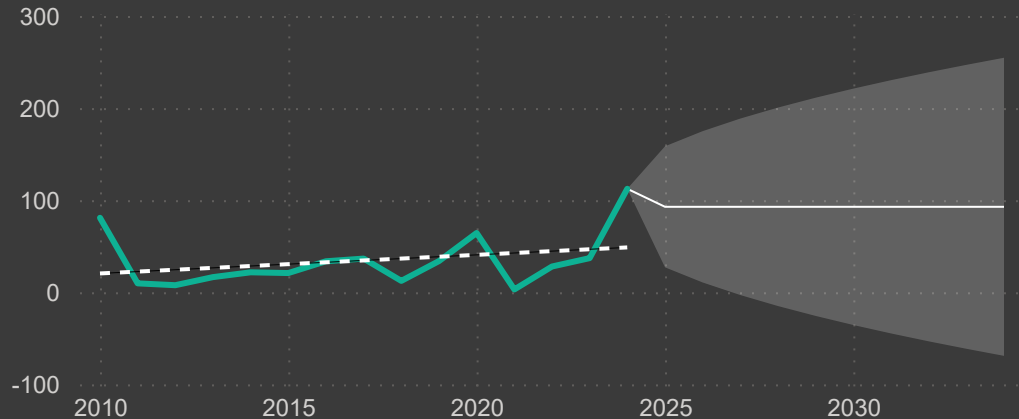
Abu Dhabi Temperature Changes



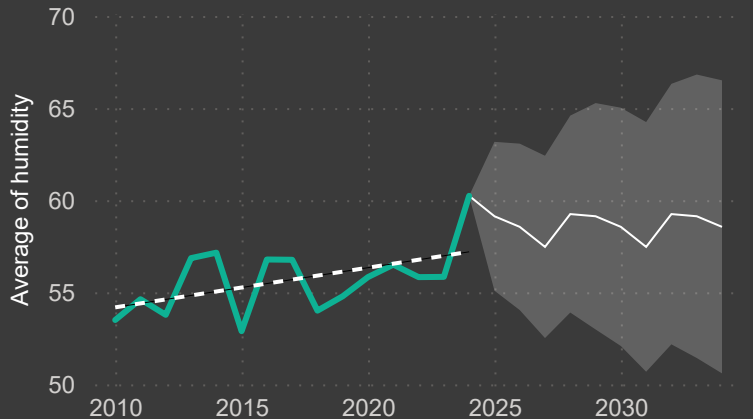
Abu Dhabi Wind Speed Changes



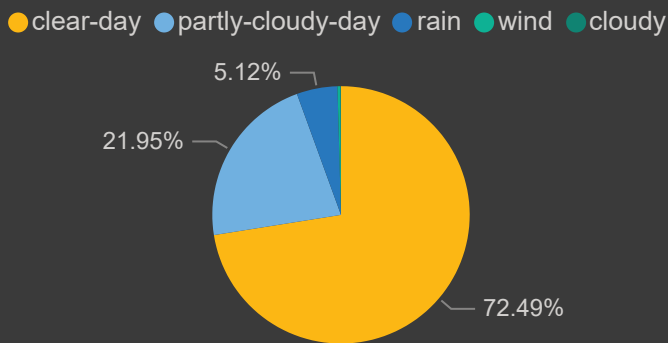
Abu Dhabi Cumulative Precipitation Changes



Abu Dhabi Humidity Changes



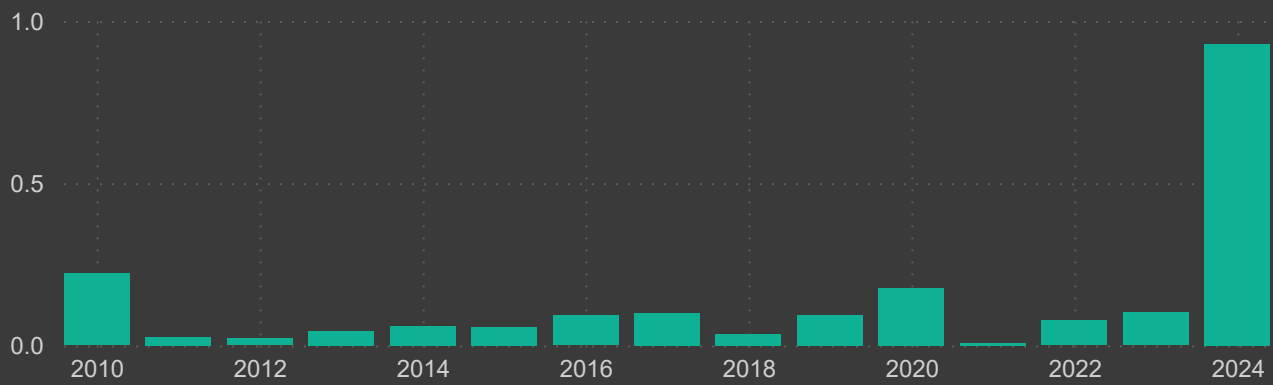
Abu Dhabi % of Weather Conditions



Year

2010	2014	2018
2011	2015	2019
2012	2016	2020
2013	2017	2021

Abu Dhabi Avg Precipitation



Abu Dhabi Weather Changes from 2010- 2024

• Abu Dhabi Temperature Changes (2010-2024)

Graph Insight: This line graph depicts a relatively stable pattern for average maximum, average, and minimum temperatures over the period. The lines show minor fluctuations but generally maintain a steady trajectory without significant long-term increases or decreases.

Comment: The stable temperature trend over the last decade suggests that despite global warming concerns, local temperature extremes have not shown drastic changes.

• Abu Dhabi Wind Speed Changes (2010-2030 Projection)

Graph Insight: The wind speed data shows some variability with a notable decrease in the late 2020s as projected.

Comment: The observed fluctuations and projected decrease in wind speed could impact sectors like wind energy.

• Abu Dhabi Cumulative Precipitation Changes (2010-2030 Projection)

Graph Insight: A striking upward trend in cumulative precipitation is seen, especially pronounced after 2020.

Comment: This increase suggests a shift towards wetter conditions in recent years.

• Abu Dhabi Humidity Changes (2010-2030 Projection)

Graph Insight: There's a clear upward trend in average humidity, with a sharper increase projected towards 2030.

Comment: Rising humidity could affect public health, comfort levels, and energy usage patterns, particularly in cooling systems. This trend might require more aggressive strategies in urban planning and public health to manage increased heat index levels.

• Abu Dhabi % of Weather Conditions (2010-2024)

Graph Insight: The pie chart shows a dominant 72.49% clear days, with partly-cloudy days and other conditions making up smaller fractions.

Comment: The consistency of clear days is advantageous for solar energy projects and outdoor activities but underscores the need for efficient water usage policies in agriculture and urban landscaping due to the scarcity of rain.

• Abu Dhabi Avg Precipitation (2010-2024)

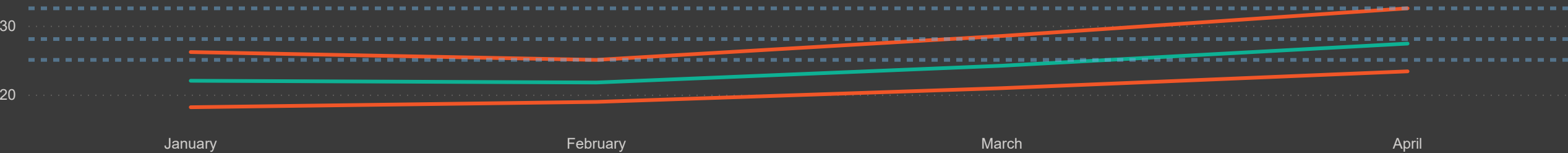
Graph Insight: Shows average precipitation with a notable peak in 2024.

Comment: The peak in precipitation in 2024 could be an anomaly or part of a shifting trend. This spike should be analyzed further to understand its impact on the region's hydrology and to adjust water management strategies accordingly.

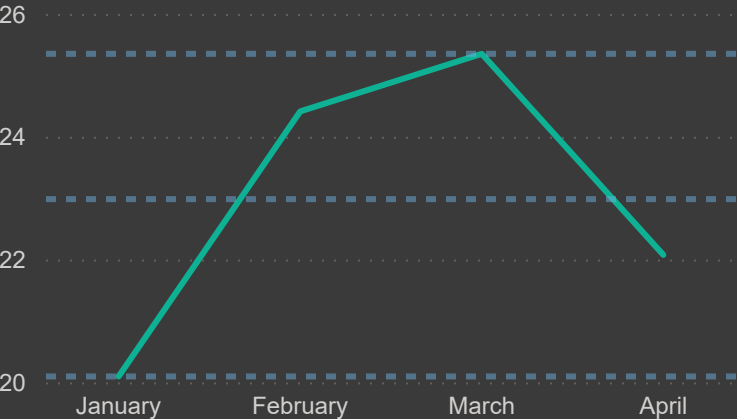
Abu Dhabi Weather Changes in 2024

Abu Dhabi Temperature Changes

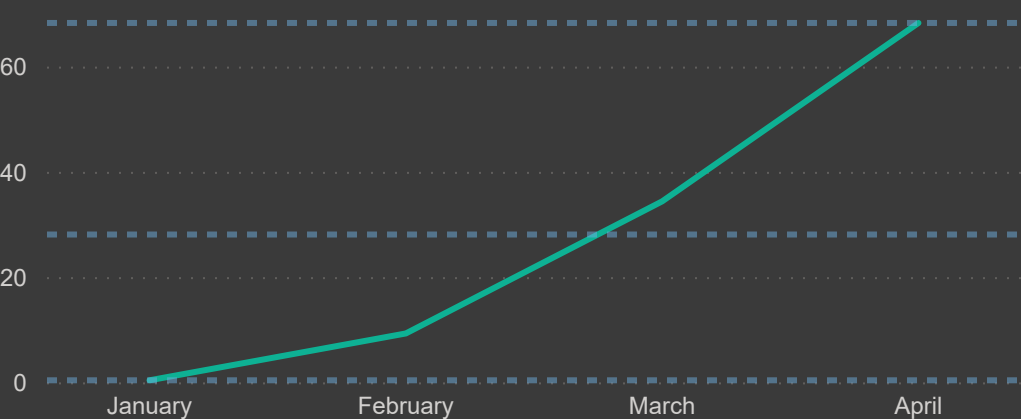
Average of tempmax Average of temp Average of tempmin



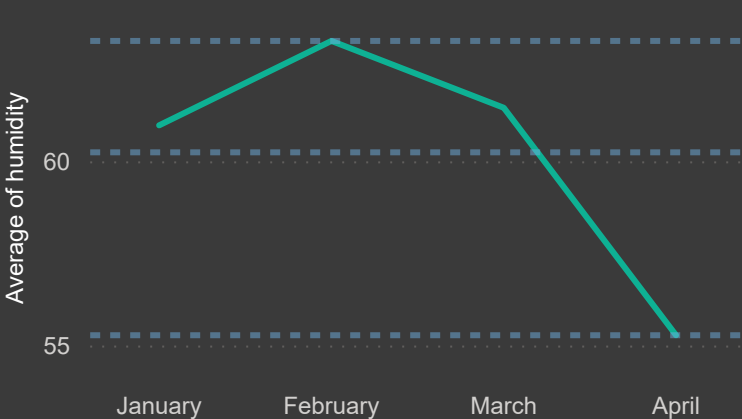
Abu Dhabi Wind Speed Changes



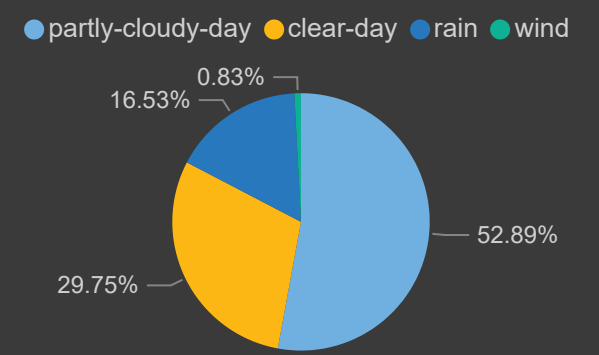
Abu Dhabi Cumulative Precipitation Changes



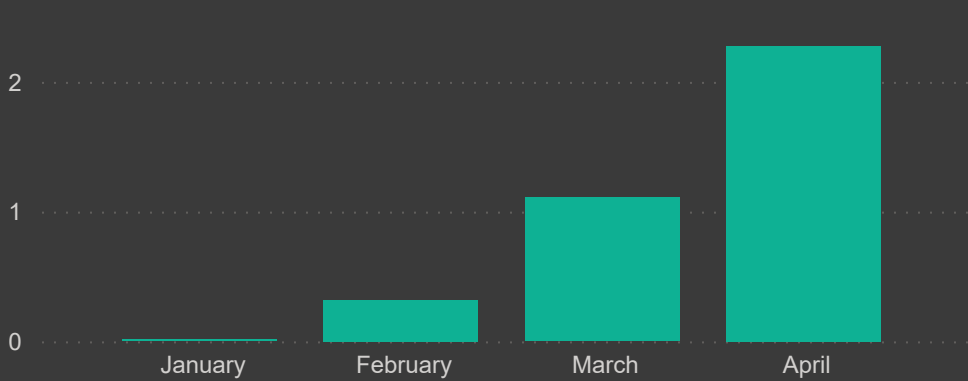
Abu Dhabi Humidity Changes



Abu Dhabi % of Weather Conditions



Abu Dhabi Avg Precipitation



Month			▼
January	May	September	
February	June	October	
March	July	November	
April	August	December	