CLIMATE CHANGE IN THE MIDDLE EAST AND NORTH AFRICA: 15,000 YEARS OF FRAGILITY AND ADAPTATION BY WILLIAM R. THOMPSON AND LEILA ZAKHIROVA (ROUTLEDGE, 2022)

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William R. Thompson and Leila Zakhirova examine how environmental changes deeply affected Middle East and North African (MENA) civilizations over millennia, from the Younger Dryas to today. Their ten-chapter book explores human-climate interactions, demonstrating societies adapt yet often collapse during "Rapid Climate Change" (RCC). These episodes, nine major periods from the Younger Dryas to the Little Ice Age, involve sudden cooling events that occur roughly once per generation. The authors note that climate alone did not destroy civilizations and that historians often underplay its role, but closer study reveals it causes resource shortages, migration, and political upheaval. Climatic factors force societies to either adapt or collapse; nevertheless, their resilience hinges on how well their politico-economic systems handle cycles of growth and decline.

The authors examined the ancient Near East's deserts and mountains, which made it inherently vulnerable to drought. They compared the "political-economic rhythm" of polycentric Mesopotamia with that of unicentric Egypt to explain the different outcomes of climate-driven problems under each state's governance system. Egypt's centralized flood-predictability and response institutions enabled pharaohs to sustain longer conservation periods compared to Mesopotamia's fragmented city-states, which declined more quickly. River-level data also reveal cycles of water scarcity tied to regime changes, migration, and conflicts between nomadic tribes from the hinterlands and urban centers over scarce resources. Center-hinterland conflict became a defining feature of Mesopotamia, a phenomenon absent in Egypt owing to the narrow Nile Valley,

surrounded by deserts that served as natural barriers, and the unicentrally controlled strip of land.

Nevertheless, Egypt experienced alternating periods of centralized kingdoms and intermediate eras. The former is characterized by strong pharaonic authority, stability, and territorial expansion. In contrast, the latter is marked by political instability, the enhanced influence of regional competitors, and climate issues such as famine and low Nile floods. These fluctuations ultimately led to prolonged political unrest. Similar climate-linked collapses are identified in the Indus Valley and during the Late Bronze Age. Although different, the gravity of the climatically induced problems was equally intense in both Egypt and Mesopotamia. When Nile floods declined during the "First Intermediate Period," tomb inscriptions of Ankhtifi, who was the nomarch (regional governor) of the third nome of Upper Egypt, recorded cannibalism and state fragmentation. Conversely, in Mesopotamia, the volatile Tigris-Euphrates rivers caused constant center-hinterland warfare, e.g., by Amorite incursions (a nomadic group) during the Ur III decline.

The authors also highlight that climatic realities, such as hydraulic divergence, shaped development. Northern Mesopotamia remained less developed due to its reliance on rainfall, its hillier terrain, and its reliance on mountain water, unlike the arid, flat south. The south, therefore, prioritized building irrigation canals, new technologies, and trade networks to grow urban centers like Uruk. Despite this, both regions eventually declined due to unmanageable social crises caused by long-term drought and political instability. Even the well-established city of Uruk experienced the abandonment of its colonies and the collapse of trade networks due to political conflicts and climate stress. The authors thus refute claims that societal progress naturally shields against climate impacts. They also challenge Malthusian orthodoxy by arguing that it is not population growth but climate-induced food shortages that caused many premodern crises.

The authors employed six testable hypotheses about climate-society relationships by examining water scarcity, center-hinterland conflict, regime transitions, de-urbanization, trade collapse, and political-economic crises. They empirically proved that river-level data from Mesopotamia and Egypt clearly indicated links between cool/ dry periods and water shortages. The center-hinterland conflict was more consistently associated with climate deterioration and diminished water supply in Mesopotamia than in Egypt. The correlation between changes in political leadership and periods of deteriorating climate and water scarcity was much stronger in Mesopotamia than in the centralized state of Egypt. The relationship between deurbanization and reduced water availability was inconsistent, as during certain climate crises, it discouraged

population growth and urbanization. Trade collapse was associated with periods of deteriorating climate, particularly in the hub of trade networks in Mesopotamia. Finally, for politico-economic crises, findings suggest they were strongly associated with cooling and drying periods, leading to multi-pronged collapse.

This context explains why the post-ancient era, which includes the Late Antiquity Ice Age, the Medieval Climate Anomaly, and the Little Ice Age, continued to face pressures of the RCC periods after the decline of the classical empires of Mesopotamia and Egypt. Each of these periods weakened imperial systems differently, e.g., during the Late Antiquity Ice Age, the flow of the Euphrates reduced, pushing Bedouin tribes to migrate toward Byzantine Syria. However, the Little Ice Age had mixed effects because the Ottoman Empire's agricultural output declined, but Europe benefited from the cooling climate as the northern seas' herring shoals migrated toward it. This not only boosted Europe's herring fishing industry but also led them to discover new energy sources and naval innovations, which fueled their economy and helped them gain global prominence.

Although at times similar climate shocks can produce different outcomes, the socio-environmental domino effect stayed largely the same, starting with lower yields, higher grain prices, lower wages, and nutritional stress, eventually leading to population displacement or violent conflict. The book then discusses modern states and notes that although environmental changes do not cause crises directly, they worsen their effects. For instance, the Darfur crisis occurred during wetter years due to the political marginalization of ethnic groups. Similar evidence appears in Syria and Yemen. Syria's 2011 uprising was also not due to drought, but to the agricultural policy of removing subsidies in 2008-2009; whereas, Yemen's water crisis originates from exempting drilling restrictions for elites and levying punitive tariffs on civilians.

As water scarcity becomes increasingly urgent, the authors examined desalination, which consumes substantial energy. It prompted wealthier Gulf states to test alternative energy sources like solar power to offset scarcity, but poorer states cannot afford these options and remain vulnerable as their aquifers deplete. Regardless of the specifics, MENA states' frail national plans enter a new phase of global warming that could halve their freshwater resources and impair food production systems. Transboundary rivers also create flashpoints for water conflict. Egypt is already experiencing "extremely high" water stress, Jordan is at risk of falling below a critical water level, and Yemen is on the verge of the collapse of its aquifer due to overpumping groundwater.

These issues expose failures in both regional adaptation and global governance, further fueling MENA's instability, even if not yet at RCC levels. The book underscores that the abrupt transformation of modern states is inevitable; hence, Middle Eastern governments should avoid quick fixes and mere mitigation efforts and instead focus on proactive adaptation to avert the catastrophic recurrence of climate issues that could open the door to resource wars, hunger, and unprecedented migration. The authors skillfully integrate evidence from ancient and modern cases to reinforce their thesis that climate has frequently constrained governance rather than being a deterministic cause of conflict. This makes the book essential for understanding both the historical context of MENA and its uncertain future amid environmental vulnerabilities.