

MONSOON OSCILLATION AND CULTURAL EVOLUTION: THE FLOURISHING AND COLLAPSE OF CIVILIZATION IN SOUTHEAST IRAN DURING THE THIRD MILLENNIUM BCE

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Abstract: During the third millennium BC, while most parts of Iran were in cultural decline, the civilizations of the southeast were experiencing a period of prosperity. It was only at the end of this millennium that the stress of the 4.2 ka BP dry event (2200-1900 BCE) was able to lead to the collapse of the Bronze Age civilizations. The Akkadian dynasty, the old Egyptian kingdom, and the Indus Valley civilization were also affected by this great drought. The climatic event was probably due to a decrease in solar energy and, as a result, the cooling of the North Atlantic waters and a drop of westerlies and monsoon-related rainfalls. The climate of southeast Iran, which is mainly dominated by monsoons, had been absorbing relatively good humidity for most of the third millennium BCE, but with the occurrence of the 4.2 ka BP event, witnessed a significant drop in rainfall, which led to the gradual decline of civilization in this region. Furthermore, the beginning of the cultural decline of this region from around 2200 BCE could be due to the severe economic recession and the instability of the political system of Mesopotamia due to the pressures of drought, famine, migration, and war that affected the economic system throughout the region. Since then, luxury goods consumers have likely lost their purchasing power due to economic weakness. Besides, the occurrence of severe droughts at the peak of the Mesopotamian population growth no longer allowed the country to export grain. Therefore, the regular customers of Kerman region products decreased sharply, and as a result, these workshops went bankrupt. This article, while reconstructing the climate of southeast Iran in the third millennium BCE based on paleoclimate research of Iran and neighboring regions, tries to explain the direct and indirect effects of climate on the cultural evolution of human societies and the history of ancient civilizations of the Middle East. It seems that unbalanced population growth and socio-economic complexity of societies have been the main reasons for the inability of civilizations of the third millennium BCE to adapt to climate change.

Keywords: Paleoclimate, The 4.2 ka BP event, Third millennium BCE, Southeast Iran.

چکیده: در هزاره سوم ق.م در حالی که اغلب مناطق ایران دچار افول فرهنگی شده بودند، اما تمدن‌های جنوب شرقی دوره شکوفایی خود را می‌گذراندند. تنها در اواخر این هزاره بود که تنش حاصل از رویداد خشک ۴/۲ هزارسال پیش (۲۲۰۰ - ۱۹۰۰ ق.م) توانست طومار حیات این تمدن‌های باستانی را درهم بپیچد. شاهنشاهی قدیم مصر و سلسله بین‌النهرینی اکت نیز متأثر از این خشک‌سالی عظیم شدند. رویداد اقلیمی مذکور احتمالاً به دلیل کاهش انرژی خورشیدی و در نتیجه، سرمایش آب‌های اطلس شمالی و تضعیف بارش‌های ناشی از بادهای غربی و موسمی‌ها رخ داده است. منطقه جنوب شرقی ایران که از لحاظ آب‌وهوایی متأثر از موسمی‌ها است، بر اساس پژوهش‌های دیرین‌موسمی، در طی هزاره سوم ق.م رطوبت مطلوبی را جذب می‌کرده است، ولی در حدود ۲۰۰۰ ق.م با دومین اوج رویداد ۴/۲ هزارسال پیش سیستم موسمی به طور قابل ملاحظه‌ای ضعیف شده است. آغاز افول تدریجی فرهنگی این منطقه از حدود ۲۲۰۰ ق.م می‌تواند بیشتر به دلیل رکود شدید اقتصادی و زلزله نظام سیاسی بین‌النهرین در اثر فشار حاصل از خشک‌سالی، قحطی، مهاجرت و جنگ با گوتی‌ها در اولین اوج رویداد مذکور باشد که بازارهای جنوب شرقی ایران را نیز به شدت تحت تأثیر قرار داد. از این زمان، متقاضیان کالاهای ارزشمند مانند ظروف و اشیای سنگ صابونی (سری قدیم) احتمالاً به دلیل ضعف اقتصادی توان خرید خود را از دست دادند و همچنین، وقوع خشک‌سالی شدید در بین‌النهرین که در زمان اوج افزایش جمعیت رخ داد، اجازه صادرات غله را به این کشور نمی‌داد. بنابراین، کارگاه‌های صنعتی منطقه جنوب شرقی ایران که اغلب تبادلات اقتصادی‌شان با غلات و دیگر مواد خوراکی بین‌النهرینی بود، احتمالاً در مدت کوتاهی دچار ورشکستگی شدند. این مقاله با هدف بازسازی اقلیم جنوب شرقی ایران در هزاره سوم ق.م بر اساس پژوهش‌های دیرین‌موسمی و دیرین‌موسمی ایران و مناطق هم‌جوار، سعی دارد تأثیر مستقیم و غیر مستقیم آب‌وهوا را در دگرگشت فرهنگی جوامع انسانی و سرگذشت تمدن‌های باستانی منطقه مزبور روشن نماید. به نظر می‌رسد، افزایش شدید جمعیت، پیچیدگی اجتماعی و درهم‌تنیدگی اقتصادی جوامع از دلایل اصلی ناتوانی تمدن‌های به ظاهر نیرومند هزاره سوم ق.م در سازگاری با تغییر اقلیم بوده است.

کلمات کلیدی: دیرین‌موسمی، رویداد خشک ۴/۲ هزارسال پیش، هزاره سوم ق.م، جنوب شرقی ایران.

I. Introduction

Holocene climate variations have been larger and more frequent than is commonly recognized, although generally weaker in amplitude than the dramatic shifts of the last glacial cycle. Comparison of paleoclimate records with climate forcing time series suggests that changes in insolation related both to earth's orbital variations and to solar variability played a central role in the global-scale changes in the climate of the last 11500 cal. year (Mayewski *et al.*, 2004: 243-244). The abrupt Holocene climate change, which, according to polar ice records, began within a decade or two and lasted 150 to

400 years, has had far-reaching effects on ancient societies. These changes are often considered as one of the main environmental factors that have caused socio-economic and cultural evolution, migration, and even collapse. According to this climatic determinism, an abrupt climate change could have made it very difficult for human societies to adapt, and consequently, led to fundamental social changes (Berger *et al.*, 2016).

During the Holocene, the continent of Asia in the south of the orbit 45° latitude witnessed the emergence and collapse of many farming communities at the same time as abrupt climate change (Staubwasser and Weiss,

2006). These collapses occurred quite suddenly and often involved regional abandonment, a change in subsistence system (for example, from agriculture to animal husbandry), or a weak socio-political organization (such as a change from a vast empire to a local government) (Weiss and Bradley, 2001: 609). One of the most important and influential climatic events that has caused severe and long-term droughts in many parts of the northern hemisphere, as the Bronze Age cultures and civilizations have been severely challenged, was the 4.2 ka BP event.

This period of climate change in Southwest Asia and northeastern Africa (the so-called Middle East) has brought such severe living pressures that it has led to the rapid collapse or gradual decline of glorious civilizations with powerful political systems from the Nile to the Indus Valley (Weiss, 2017). During this event, which lasted for about 300 years, the cultural region of southeastern Iran, while flourishing, suddenly fell into decline and in the early second millennium BCE stopped moving completely (Ascalone, 2015: 58-103).

Before high-resolution paleoclimate research, the cause of this gradual cultural decline and destruction of southeastern Iranian civilizations, such as Shahr-e Sokhta (Seyyed Sajjadi, 2002), Shahdad (Hakemi, 2006), and Jiroft (Madjidzadeh, 2003) was unclear. However, today it can highly likely be said that climate change and its dire consequences have been a major cause of the massive

collapse. In the study, while reconstructing the climate of the third millennium BCE, the direct and indirect effects of the 4.2 ka BP event on the socio-political changes in the Middle East, especially the civilizations of southeastern Iran, are discussed.

II. Material and methods

In this study, human-climate interaction in the third millennium BCE is discussed by examining the paleoclimate proxies of Southwest Asia and Northeast Africa.

Climatic archives studied are extracted from Lake Faiyum and Nile Delta in Egypt, Soreq and Jeita caves in the eastern Mediterranean, Lake Gölhisar in Turkey, southern Konar Sandal of Jiroft, Lake Neor, Lake Hamoun, Lake Zeribar and Gol-e Zard cave in Iran, Qunf cave in Oman, the M5-422 core in the Gulf of Oman and the 63KA core in the northeastern Arabian Sea (near the Indus Delta) (Fig. 1).

The results of these studies reconstruct the climatic conditions and dry events of this period. The socio-political conditions of the civilizations of the third millennium BCE, which relied heavily on water and favorable climatic conditions, are endangered by climate change, which is discussed in this discussion. The main focus of the research is the reasons for the rise and fall of civilizations in the southeastern region of Iran.



Figure 1. Location of important ancient cities of the third millennium BCE and Paleoclimate sites in the Middle East; (1) Shahr-e Sokhta, (2) Shahdad, (3) Konar Sandal of Jiroft, (4) Tepe Yahya, (5) Susa, (6) Ur, (7) Uruk, (8) Kish, (9) Mari, (10) Memphis, (11) Mohenjo-Daro, (12) Harappa, (A) Lake Neor, (B) Lake Hamoun, (C) M5-422, (D) 63KA, (E) Qunf Cave, (F) Soreq Cave, (G) Jeita Cave, (H) Lake Gölhisar.

III. Reconstruction of Climate

During the transition from the Chalcolithic to the Bronze Age (between 3300 and 3000 BCE), an arid climatic event at 5.2 ka BP occurred. Evidence of this

climate change can be found in the proxies of Lake Neor in Ardabil (Sharifi *et al.*, 2015), Jeita Cave in western Lebanon (Verheyden *et al.*, 2008), and Soreq Cave in Jerusalem (Bar-Matthews and Ayalon, 2011)

observed, but did not appear to have had a significant effect on monsoons, as did the flow of the Indus River (Staubwasser *et al.*, 2003) and the moisture content of the Qunf and Hoti caves in Oman almost as they do today (Fleitmann *et al.*, 2007), but research into the sedimentary core of the Gulf of Oman confirms this arid event (Cullen *et al.*, 2000).

According to the research of Soreq Cave, it is probable that the peak of this dry period was between 3250 and 3150 BCE.

Greenland Ice Sheet Project 2 indicates that the early third millennium BCE was associated with a dramatic drop in temperature, possibly leading to a period of climate change with extreme rainfalls and flooding (the 4.8 ka BP event).

This situation in North Central Iran has led to a major cultural recession (Shaikh Baikloo *et al.*, 2016, 2020b). According to paleoclimate research of Iran and neighboring regions, in the first half of the third millennium BCE, there was a very humid period in SE Iran, and monsoons were regularly active. From about 2500 BCE, the climatic conditions gradually became drier and reached a peak around 2200 BCE. This highly dry period, known as the 4.2 ka BP megadrought event, lasted until about 1900 BCE.

The deterioration of climatic conditions at this time is visible in most paleoclimate proxies of the Middle Eastern and generally in the Northern Hemisphere (Sharifi *et al.*, 2015; Wasylikowa *et al.*, 2006; Eastwood *et al.*, 2007; Roberts *et al.*, 2011; Gurjazkaite *et al.*, 2018; Railsback *et al.*, 2018; Giesche *et al.*, 2019; Bini *et al.*, 2019).

This climatic event has occurred due to the decline of solar energy and North Atlantic cooling (Bond *et al.*, 1997, 2001) and has led to a significant decrease in rainfall (Weiss, 2015; Gupta *et al.*, 2003; Cullen *et al.*, 2002). In this region, from the Nile Valley to the Indus Valley, the flow of all permanent rivers has dropped sharply, and seasonal rivers have dried up. The continuation of this arid condition has led to a decrease in vegetation, the drying of some wetlands, and a decrease in the level of many lakes.

Because this climatic event was accompanied by atmospheric anomalies and an increase in extreme weather events, it also led to torrential rains and severe floods. Sediments of this period indicate very dry and flood conditions. As will be seen, the 4.2 ka BP event had devastating effects on all civilizations of the third millennium BCE.

It is worth mentioning that high-resolution research in the Gol-e Zard cave in Damavand has shown the intensity of this climatic event (Carolin *et al.*, 2019) (Figs. 1 and 2).

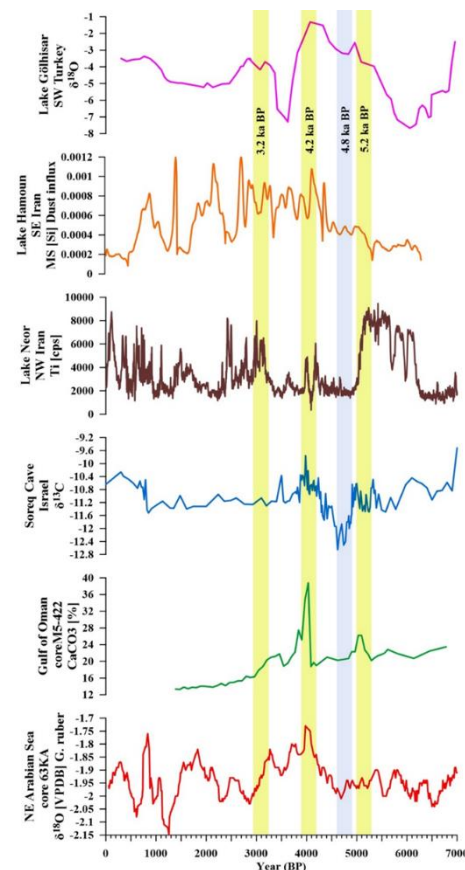


Figure 2. Changes in humidity over the past 7000 years; the yellow bar indicates a dry event and the blue bar indicates a cold event.

IV.1. Mesopotamia

Early in the 300-year-old 4.2 ka BP event, droughts, dust, and decreasing seasonal temperatures across the Habur Plain (Northern Mesopotamia) caused settlements to evacuate in the Akkadian Empire, leaving only a handful of settlements in strategic areas. Field surveys in a 30 km long, 1,900 km² area border region between Iraq and Turkey illustrate that 74 percent of the sites have been abandoned and 93 percent of the total residential sites reduced during the arid event. According to Harvey Weiss *et al.* (1993), the migration of the people of northern Mesopotamia to the south during the drought period may have upset the balance of supply and demand and led to socio-political unrest. Further, invasions of famine-stricken Gutians have also been instrumental in the fall of Akkad (cf. Cullen *et al.*, 2000; Ristvet and Weiss, 2005; Staubwasser and Weiss, 2006).

IV.2. Egypt

Paleoclimate research in Egypt suggests a decrease in the level of Lake Faiyum and regular floods of the Nile during the 4.2 ka BP event, which has led to lands

drying and increased dust (Hamdan *et al.*, 2016; Bernhardt *et al.*, 2012) (Fig. 3).

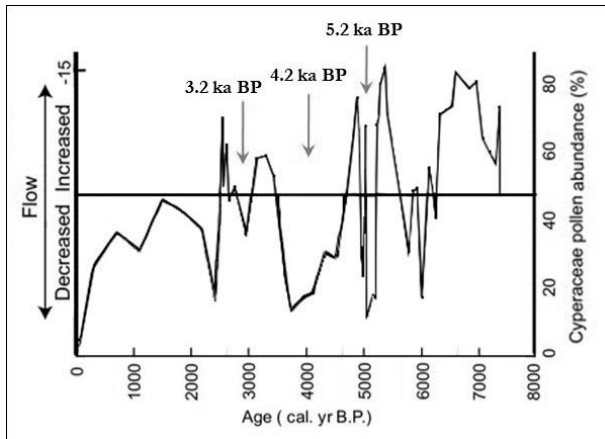


Figure 3. Changes in the flow of the Nile (Bernhardt *et al.*, 2012).

Probably the cause of these unfavorable climatic and environmental conditions in this region was the southward movement of the Intertropical Convergence Zone (ITCZ) and the North Atlantic Oscillation (NAO), which reduced rainfall in sources of the Nile, and torrential rainfalls in northern Egypt, respectively (Welch and Marks, 2014).

In Egypt, with the onset of this dry event, the first intermediate/dark period has begun. After the end of the old Egyptian Kingdom, between 2181 and 2055 BCE, the country lost its unity and was involved in socio-political disorder and turmoil. Little evidence remains of this period, especially from its earliest years. Egypt seems to have been divided into two parts in the lower and upper Nile regions (Gardiner, 1961: 107-109). It is believed that during this period, temples were looted and many artifacts and statues of kings were destroyed (Breasted, 1908: 133). Eventually, the kings of Thebes were able to occupy the northern region of Egypt and end this period of unrest.

IV.3. Indus Valley Civilization

Due to the decrease in monsoon rainfall caused by the 4.2 ka BP event, the Indus Valley farmer communities that relied on summer and winter monsoons gradually became vulnerable, and this change in rainfall in both seasons reduced their resilience and sustainability. Archaeological studies of the Harappa (Indus Valley Civilization) indicate the transition from advanced urbanization (2600-1900 BCE) to post-urbanization/rapid de-urbanization (1900-1600 BCE) with the abandonment of major cities in the Indus River region and the evacuation of most western areas. It occurred at the same time as the concentration of rural settlements in some areas east of the Indus River. This transition phase in Mohenjo-Daro began right after the 4.2 ka BP event with the abandonment of the Great Bath (about 200

years before leaving the entire city). The villages and the few surviving cities of the Indus civilization, which were smaller than the cities of the growth and prosperity period, were almost completely destroyed at the beginning of the 3.2 ka BP arid climate, and the late Harappa cultural period ended around 1300/1200 BCE (Giesche *et al.*, 2019; Green and Petrie, 2018; Petrie *et al.*, 2016; Dixit *et al.*, 2014; Staubwasser and Weiss, 2006; Possehl, 1997b).

V. The rise and fall of civilization in southeast Iran

The cultural region of southeastern Iran, according to geographical location, climatic and environmental conditions, and common socio-political history and culture in ancient times, includes the provinces of Sistan and Baluchestan, Kerman, South Khorasan, and Hormozgan. In fact, the cultures of these areas were so closely intertwined that civilization emerged, flourished, and declined downward almost simultaneously. This vast region has been influenced more by monsoons than by Westerlies. In the late fifth millennium BCE, when the Earth's axis and orbit reached its current state, ITCZ moved to the southern latitudes, and the influence of monsoons on this region became less than in the first half of the Holocene. Thus, since then, the climate and environment of southeastern Iran, such as the Arabian Peninsula and North Africa, have become arid, creating vast desert areas (Djamali *et al.*, 2010; Claussen *et al.*, 1999). Coinciding with this event, solar energy also declined, affecting the oceanic circulation and atmospheric conditions of the North Atlantic, creating cold and dry climatic events in the northern hemisphere (Bond *et al.*, 1997, 2001). These climate changes sometimes weakened both the westerlies and the monsoons, and sometimes did not affect the monsoons much. Paleoclimate research in Southwest Asia suggests that despite declining rainfall related to the westerlies and the occurrence of a dry period from about 3300 to 3000 BCE that affected the eastern Mediterranean, Mesopotamia, Anatolia, and many parts of Iran, but the monsoons had relatively good conditions. The research of Lake Hamoun (Hamzeh *et al.*, 2017), Jazmourian Playa (Vaezi *et al.*, 2018), Oman and Yemen Caves (Fleitmann *et al.*, 2007), and the flow of the Indus River (Staubwasser *et al.*, 2003) confirm this. Civilizations in the southeastern region of Iran have gradually emerged since then.

In Shahr-e Sokhta I and Tepe Yahya IVC, proto-Elamite clay tablets belonging to the late fourth millennium BCE have been found (Hessari, 2013: 23, 25), which shows that from the beginning of the emergence of civilization, they were involved in extensive economic activities and used the writing technique. Besides, in one of the mass graves of Shahr-e Sokhta, belonging to about 2800 BCE, the skull of a young deceased was found, the right part of which had surgical symptoms for the

treatment of a disease called hydrocephalus. Another deceased, a 28- to 32-year-old woman, had a prosthetic eye, the oldest known specimen in the world. On this eye, which is probably made of natural bitumen mixed with animal fat, the smallest capillaries have been designed with gold wires with a diameter of less than half a millimeter (Seyyed Sajjadi, 2015: 270-275).

However, 400 years had to pass from the beginning of the third millennium for southeastern Iran to flourish like the Indus Valley (the Harappan civilization). Atmospheric anomalies related to the cold period of 2900-2600 BCE (the 4.8 ka BP event), which has been identified by evidence of floods in Iran and Mesopotamia (Shaikh Baikloo *et al.*, 2020a), may have been the reason for the slow growth of these civilizations. North Central Iran also experienced a long-term cultural decline during the Bronze Age (Shaikh Baikloo *et al.*, 2020b; Schmidt *et al.*, 2011).

From about 2600 BCE, coinciding with the beginning of the Early Dynasty III in Mesopotamia and the Harappa IIIA period, the civilizations of Shahr-e Sokhta (III), Jiroft, Yahya (IVB), and Shahdad (III2) reached considerable growth, and flourishing. Economic prosperity with long-distance trade had a great impact on the development of these civilizations, which, of course, was mostly the result of the luxury-oriented of the Mesopotamian nobles. At this time, the people of the Tigris and Euphrates region were at the height of their glory, and this situation included the aristocracy of "Enclosure of the Ka of Ptah" (the ancient name of Egypt). Needless to say, the great pyramids of the Nile Valley were built at the same time. The most important products of southeastern Iran in this period were luxury objects made of marble and chlorite/steatite. A chlorite mine has been found near Tepe Yahya, and a soapstone production workshop has been revealed inside the site (Lamberg-Karlovsky and Potts, 2001).

Between 2600 and 2200 BCE, intercultural style soft stone artifacts (Kohl, 1974) or the Old Series (deMiroshedji, 1973) had a best-selling market in a large area from eastern Syria to the Indus Valley as an aristocratic commodity. These cultural materials in Mesopotamia have often been obtained from temples, but in Iran, a large number of these objects have been found in the graves of Jiroft (Madjidzadeh, 2003) and Shahdad (Hakemi, 2006), which may have indicated the different use or ritual belief of the natives of this region (Shaikh Baikloo, 2015). It is worth mentioning that in Shahr-e Sokhta, unlike Jiroft, Yahya, and Shahdad, soapstone has only been used to make some small objects, especially flat seals, but instead, a number of conical and cylindrical marble vessels have been found (Seyyed Sajjadi, 2015: 250).

The latest report on the absolute dating of Shahr-e Sokhta by Massimo Vidale *et al.* (2019) shows that the city was abandoned around 2350 BCE. This dating takes

the end of the Shahr-e Sokhta civilization far back than previously stated. Although Ascalone believes that there was another settlement on this site in the late third millennium BCE, Vidale emphasizes this date as the time of the end of urban life in Shahr-e Sokhta (Vidale, 2021). It seems that this date can be considered between 2350 to 2300 BCE, i.e. the early Akkadian dynasty. It is possible that with Sargon's rise to power, some economic interactions in the region have changed, to the detriment of Shahr-e Sokhta. Of course, Gol-e Zard cave studies in Damavand show a hundred-year drought between 2500 and 2400 BCE (Carolin *et al.*, 2019), which may not have been ineffective in the decline of this civilization.

Seyyed Sajjadi writes about the possible causes of the decline of this ancient city (2015: 281): "The results obtained from the excavations of Shahr-e Sokhta show that this society suffered from a political-economic and social crisis in the middle of the third millennium BCE, which provided the main reason for its gradual decline and collapse, so that at the end of the period IV, the population and the city in size has shrunk. The most plausible view about the abandonment of the city is the drying up and displacement of the Helmand River delta and its bed, which has forced people, in search of water and more favorable living conditions to migrate to areas we are currently unaware of." Thus, it is possible that both climate and economic factors were involved in the collapse of the Shahr-e Sokhta civilization.

At a time when the Sistan region was in decline, the Kerman region was at the height of its prosperity, until the 4.2 ka BP dry event. This event in a short time degraded the economy of the whole region. The high-quality and beautiful products of the old series of soapstones lost their customers, which implicitly indicates the severe weakness of the aristocracy in this period. The beautiful motifs engraved on the chlorite vessels were simplified to circles and dots. As a result of this climate catastrophe, the civilization of the Indus Valley was affected, the Akkadian dynasty collapsed within half a century, and the Egyptian kingdom declined. Furthermore, the glorious civilization of Jiroft disappeared early in the event. Absolute dating of the southern Konar Sandal suggests the decline of this civilization around 2150 BCE (Madjidzadeh and Pittman, 2008: 77). A paleoclimate research in this site also indicates the severity of the 4.2 ka BP dry event and the severe weakening of the monsoons (private conversation with Dr. Reza Safaierad).

By the collapse of the powerful and centralized Akkadian state in Mesopotamia, a period of disorder and civil war ensued. Even the Ur III dynasty could not get rid of the waves of drought and famine and finally perished after its short life around 2000 BCE. Due to the political weakness in Mesopotamia, the Shimashki dynasty emerged in southwest Iran, but the conflicts with its

neighboring country continued. Shahdad and Yahya in southeast Iran were the last civilizations that were able to survive until the early second millennium BCE. The weakening of the monsoons, which had intensified since 2200 BCE, imposed severe droughts on the region and the Indus Valley. The Late Mir Abedin Kaboli wrote about Shahdad (2015: p. 306): “At the end of the third

millennium BCE, this region was faced with a continuous and long period of drought. The drought was so severe that the inhabitants of the area were forced to leave their homes, towns, and villages and move to other areas, the location of which is currently unknown” (Table 1).

Table 1: Chronology of the Bronze Age civilizations of southeastern Iran in comparison with the civilizations of Susa, Mesopotamia, and the Indus Valley.

| Time BCE | Indus Valley | | Mesopotamia | Susa/Elam | | Jiroft | Yahya | Shahdad | Shahr-e Sokhta |
|----------|-------------------------|------|--------------------------|-----------|------|-----------|-------|-----------------------|----------------|
| 1800 | IV Post-urbanization | | First Babylonian Dynasty | Sukkalmaḥ | A XV | | | | |
| 1900 | | | | | | | | | |
| 2000 | Gradual decline | IIIC | Isin-Larsa | Shimashki | VB2 | | IVA | II2 | |
| 2100 | | | Ur III | | VB1 | | | III1 | |
| 2200 | | | Gutian | | VA | | | | |
| 2300 | Flourishing | IIIB | Akkadian Empire | Awan | IVB | Decline | IVB | III2 | |
| 2400 | | | ED IIIb | | IVA | | | | |
| 2500 | | IIIA | ED IIIa | III | | | | | |
| 2600 | | | | | | | | | |
| 2700 | II Early Harappa | | ED II | IIIB | | Formation | | IV1 | II |
| 2800 | | | | | | | | | |
| 2900 | I Formation | | ED I | IIIA | | | IVC | IV2 Surface survey | I |
| 3000 | | | Jemdet Nasr | | | | | | |
| 3100 | | | | | | | | | |
| 3200 | | | | | | | | | |

VI. Conclusion

The emergence of Bronze Age civilizations in southeastern Iran coincided with the favorable climate and activity of the monsoons. These civilizations flourished in the mid-third millennium BCE in trade with Mesopotamia and the Indus Valley. In fact, luxury-oriented nobles gave them the opportunity to become

rich by producing and exporting valuable goods. With the rise of Akkadian rule and the end of the early Mesopotamian dynasties, some economic interactions probably changed to the detriment of Shahr-e Sokhta, leading to the decline of this civilization. Of course, in this regard, climatic and environmental factors should not be overlooked. After that, the civilizations of Jiroft,

Shahdad, and Yahya flourished. Around 2200 BCE, with the onset of the 4.2 ka BP dry event, all the civilizations of Southwest Asia and Egypt experienced enormous tensions, which led to the cultural decline and collapse of the Middle Eastern civilizations. The severe economic downturn and the weakening of the Mesopotamian political system due to the pressures of drought, famine, migration, and the Gutian invasions early in the climate event severely affected economic exchanges throughout the region. Since then, consumers of luxury goods, such as soapstone artifacts (old series) probably lost their purchasing power due to economic weakness. Besides, the occurrence of severe droughts in Mesopotamia during the peak of population growth would no longer allow the country to export grain. Therefore, the regular customers of Kerman

region products fell sharply, and as a result, these workshops went bankrupt. On the other hand, the severe weakening of the monsoons put the severest subsistence pressure on the Indus River region and southeast Iran. The evidence found in Shahdad confirms this fact. During the late third and early second millennium BCE, the urbanization situation in the eastern regions changed to ruralization, and the remnants of the southeast Iranian civilizations disappeared. Unbalanced population growth and socio-economic complexity of Bronze Age societies seem to have been the main reasons for the inability of civilizations of the third millennium BCE to adapt to climate change, although paleoclimatologists consider the 4.2 ka BP event to be the most severe drought period of the second half of the Holocene.

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