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El Niño and the Nomads: Global Climate, Local Environment, and the Crisis of Pastoralism in Late Ottoman Kurdistan

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Abstract

This article explores the impacts of environmental crises on pastoral nomads in Ottoman Kurdistan/Armenia in the late nineteenth-century. It demonstrates that the climatic fluctuations characterizing these environmental crises were synchronized with global climatic oscillations, specifically the El Niño Southern Oscillation. Recurrent episodes of severe drought and cold dramatically affected these groups, who were unable to withstand extreme changes in temperature and precipitation. Back-to-back drought episodes created a shortage of water, dried up pastures and damaged forage, while severe cold resulted in high rates of premature death among herd animals. These climatic events thus had devastating economic and social consequences.

Keywords

ENSO (El Niño Southern Oscillation) – environment – nomadic pastoralism – Ottoman Empire – Kurdistan/Armenia

Introduction

On February 10, 1889, Selim Sırrı Pasha, the Governor General of Diyarbekir Province of the eastern part of the Ottoman Empire, telegraphed the Ministry of the Interior to report the social upheavals under his administrative responsibility.[1] The telegram explained that a group of pastoralists located

1 Başbakanlık Osmanlı Arşivi, Istanbul (hereafter BOA), DH. MKT, 1593/3 (29 Kânûnusânî 1304/10 Feb. 1889).

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at the southern fringes of the province were unable to find sufficient grass in their traditional pastures. Conflict arose when the Shammar—one of the largest pastoral nomadic groups in the Ottoman Empire—occupied the rain-fed pastures, which left other pastoralist groups with no option but to take their herds to *kıraç* (dry) lands. As the pasha explained to Istanbul, the lack of forage in the dry lands weakened the physical conditions of the animals. This only added to ongoing problems caused by the severe winter cold of that year, which had already caused the death of many lambs, and led to the decimation of the herds. Similar troubles were witnessed in the neighbouring province of Mosul where the Shammar and Aneze pastoralists "*gasb*" (seized) and "*gâret*" (plundered) sheep in large quantities from local inhabitants, thus increasing "*ziyade telâş*" (more anxiety) among *ashâb-ı mevâşî* (livestock owners), peasants, and pastoralists throughout the region. To punish these "unruly nomads" and re-establish order in the region, the pasha requested that the Minister of the Interior send the animals belonging to the Imperial Cavalry to displace the Shammar from their pastures. He argued that flooding the Shammar's pastures with state-owned herds would be a policy that could end the depredation of these herders who had been destabilizing the region for a long period of time.[2]

In the weeks following the pasha's initial telegram, more detailed accounts documented the ongoing turbulence in the eastern provinces of the Ottoman Empire. A dispatch from the Ministry of the Interior to the Ministry of Health, dated February 27, 1889, pointed out inaccuracies in documents in the causes of animal mortality in the region and highlighted the important role of environmental stress in creating the social conflict.[3] Where some earlier reports also attributed the devastation of herds to disease, this communication denied that "transmitted disease" was the main problem. As Selim Sırrı Pasha had noted earlier, the report insisted that it was the "scarcity of forage" and "severe winter cold" in the dry lands that had killed many herd animals. Weak, starving animals, already malnourished from the previous summer drought, were not able to tolerate the low winter temperatures that year and perished in great numbers.[4]

This incident highlights the intertwined political and social problems that accompanied the environmental crises experienced in these areas of the late

2 Ibid.: BOA, DH. MKT, 1599/95 (15 Şubat 1304/27 Feb. 1889).

3 BOA, DH. MKT, 1600/37 (15 Şubat 1304/27 Feb. 1889).

4 On February 27, the *Seraskeriye* (Ministry of War) also received a report about the ongoing struggle over the rain-fed pastureland in the east. It also seems that the pasha's suggestion for intimidating the Shammar found several supporters among the bureaucrats in the imperial capital. Officials in the Ministry of the Interior, for instance, argued that this "*medâr-ı tehdîd*" (threat) would remind the "unruly pastoralists" of the "absolute authority of the Sultan." BOA, DH. MKT, 1600/37 (15 Şubat 1304/27 Feb. 1889).

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nineteenth-century Ottoman Empire. In many respects, this conflict over pasturelands in the eastern provinces of the Ottoman Empire, along with the state's response, reveals several significant issues concerning the role of environmental stress in shaping the socio-political and economic circumstances of human and animal populations during the late nineteenth century. In this example, a powerful pastoralist community forcefully held rain-fed pastures which had been previously available for the use of other pastoralists. This situation forced other groups to seek their fortune in more marginal lands, where pastures and water were scarcer. Predictably, the lack of forage in these dry lands had a deleterious effect on their herds. Weakened by malnourishment and lack of adequate water sources over the previous summer, animals were particularly vulnerable to severe winter temperatures. The exceptional cold that followed the 1887-88 drought resulted in the death of a high percentage of livestock. The state's response to the flight of pastoralists, instead of trying to alleviate the situation of these desperate pastoralists and their animals, or preventing the Shammar's occupation of the rain-fed pastures, was rather to exploit the situation. The local administration and the central state used these conflicts over pasture to exploit the limited natural resources in the region in times of environmental stress.[5]

This article examines the immediate and severe consequences of repeated climatic disruptions in late Ottoman Kurdistan, a territory that today comprises south-eastern Turkey and parts of northern Iraq and Syria, and situates these events within a broader narrative of climatic extremes. This region was inhabited by many Kurdish-, Turkish-, Arabic-, and Armenian-speaking pastoral nomadic groups and clans. The paper's goal is twofold. The first aim is to emphasize the fact that these environmental disruptions coincided with fluctuations in global climate patterns: these crises were not inflicted by policies specific to Ottoman Asia, but were part of a global pattern and corresponded with severe climatic disruptions in other parts of the world. The second object of the paper is to contest earlier notions, exemplified by earlier scholars of pastoralist societies such as Owen Latimore, that pastoralists and their herds were better able to resist environmental changes than peasants.[6] As this article demonstrates, in fact, pastoralists in late Ottoman Kurdistan were more susceptible to extreme variations in heat, cold, and precipitation and suffered

5 In his ground-breaking study, Mike Davis similarly argues that imperial states used environmental crises to expand state control and rid themselves of "surplus" population, see *Late Victorian Holocausts: El Niño Famines and the Making of the Third World* (London: Verso, 2002).

6 O. Lattimore, *Nomads and Commissars: Mongolia Revisited* (New York: Oxford University Press, 1962): 33.

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greater harm by such crises than agriculturalists. By tracing the immediate and severe impacts of climatic fluctuations on a region with a large but understudied pastoral population, this article seeks to emphasize the importance of understanding climatic factors and the periodicity of environmental changes in relationship to growing social tensions in the region. In doing so, it more broadly seeks to contribute towards building more environmentally-nuanced approaches to the histories of the late Ottoman Empire.

The environmental study of nomadic populations in the greater Middle East and North Africa has lagged behind that of other world regions.[7] In contrast to studies on nomadic and herding populations carried out by environmental historians of North America and South Asia, the relatively new field of environmental history in the Middle East has largely focused on sedentary groups.[8] Both historic and contemporary research on the relationship between agriculturalists and pastoralists points to the role of environmental crises in

7 M. L Weisiger, *Dreaming of Sheep in Navajo Country* (Seattle: University of Washington Press, 2009); N. Bhattacharya, "Pastoralists in the Colonial World." In *India's Environmental History: Colonialism, Modernity, and the Nation*, ed. M. Rangarajan and K. Sivaramakrishnan, vol. 2, 2 vols. (Ranikhet: Permanent Black, 2012): 281-315; J.W. Daschuk, *Clearing the Plains: Disease, Politics of Starvation, and the Loss of Aboriginal Life* (Regina: University of Regina Press, 2013); G. Oba, *Climate Change Adaptation in Africa: An Historical Ecology* (London: Routledge, 2014); D. Gilmartin, *Blood and Water: The Indus River Basin in Modern History* (Berkeley: University of California Press, 2015); N. Pederson et al., "Pluvials, Droughts, the Mongol Empire, and Modern Mongolia." *Proceedings of the National Academy of Sciences* 111/12 (2014): 4375-79; D.A. Bello, *Across Forest, Steppe, and Mountain: Environment, Identity, and Empire in Qing China's Borderlands* (Cambridge: Cambridge University Press, 2015); U. Büntgen and N. Di Cosmo, "Climatic and Environmental Aspects of the Mongol Withdrawal from Hungary in 1242 CE." *Scientific Reports* 6 (May 26, 2016): 25606; N. Di Cosmo et al., "Environmental Stress and Steppe Nomads: Rethinking the History of the Uyghur Empire (744-840) with Paleoclimate Data." *The Journal of Interdisciplinary History* 48/4 (2018): 439-63.

8 Among others, see W.J. Griswold, "Climatic Change: A Possible Factor in the Social Unrest of Seventeenth Century Anatolia." In *Humanist and Scholar: Essays in Honor of Andreas Tietze*, ed. Donald Quataert and Heath W. Lowry (Istanbul: Isis Press, 1993): 37-57; F. Tabak, *The Waning of the Mediterranean, 1550-1870: A Geohistorical Approach* (Maryland: The Johns Hopkins University Press, 2008); M. Y. Erler, *Osmanlı Devleti'nde Kuraklık ve Kıtlık Olayları, 1800-1880* (Istanbul: Libra, 2010); A. Mikhail, *Nature and Empire in Ottoman Egypt: An Environmental History* (New York: Cambridge University Press, 2011); S. White, *The Climate of Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011); Ö. Ertem, "Eating the Last Seed: Famine, Empire, Survival and Order in Ottoman Anatolia in the Late 19th Century" (Ph.D., European University Institute, 2012); Z. Karademir, *İmparatorluğun Açlıkla İmtihanı: Osmanlı Toplumunda Kıtlıklar (1560-1660)* (Istanbul: Kitap Yayınevi, 2014).

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disturbing previous patterns of economic and sociological interdependence and coexistence.[9]

The few studies that focus on the environmental crises affecting the Ottoman Empire's Asian provinces pay little attention to the south-eastern regions, including Kurdistan and Iraq.[10] Traditionally, approaches to the history of nineteenth-century nomadic pastoralists in the region were written either from the perspective of the imperial state or religious movements.[11] This approach to the region's nomadic pastoral population is replicated by the latest generation of historians who pay greater attention to the region's socio-political past,[12] predominately in order to reconsider inter-communal violence in the late nineteenth century up until the Armenian genocide.[13] Not only does the absence of environmentally-framed research directed to herding

9 Among others, see C. Cabot, *Climate Change, Security Risks and Conflict Reduction in Africa* (Heidelberg: Springer, 2017): 11-44; K. Hussein, "Conflict between Sedentary Farmers and Herders in the Semi-Arid Sahel and East Africa: A Review." *IIED Pastoral Land Tenure Series* (International Institute for Environment and Development (IIED): 1998).

10 White, *The Climate of Rebellion in the Early Modern Ottoman Empire*; Erler, *Osmanlı Devleti'nde Kuraklık ve Kıtlık*; Karademir, *İmparatorluğun Açlıkla İmtihanı: Osmanlı Toplumunda Kıtlıklar (1560-1660)*; A. Mikhail, "Ottoman Iceland: A Climate History." *Environmental History* 20/2 (2015): 262-84; For a few exceptional studies see, F.H. Husain, "Changes in the Euphrates River: Ecology and Politics in a Rural Ottoman Periphery, 1687-1702." *Journal of Interdisciplinary History* 47/1 (2016): 1-25; Z. Pehlivan, "Beyond 'the Desert and the Sown': Peasants, Pastoralists, and Climate Crises in Ottoman Diyarbekir, 1840-1890" (Unpublished Ph.D. Dissertation, Queen's University, 2016); S. Dolbee, "The Locust and the Starling: People, Insects, and Disease in the Late Ottoman Jazira and After, 1860-1940" (Unpublished Ph.D. Dissertation, New York University, 2017).

11 B. Kodaman, *Sultan II. Abdülhamid Devri Doğu Anadolu Politikası* (Ankara: Türk Kültürünü Araştırma Enstitüsü Yayınları, 1987); S.A. Somel, *The Modernization of Public Education in the Ottoman Empire, 1839-1908: Islamization, Autocracy, and Discipline* (Leiden: Brill, 2001); H.-L. Keiser, *Iskalanmış Barış: Doğu Vilayetleri'nde Misyonerlik, Etnik Kimlik ve Devlet, 1839-1938*, trans. Atilla Dirim (Istanbul: İletişim Yayınları, 2005); S. Deringil, "'The Armenian Question Is Finally Closed': Mass Conversions of Armenians in Anatolia during the Hamidian Massacres of 1895-1897." *Comparative Studies in Society and History* 51/2 (2009): 344-71; J. Klein, *The Margins of Empire: Kurdish Militias in the Ottoman Tribal Zone* (Stanford: Stanford University Press, 2011).

12 J. Jongerden and J. Verheij (ed.), *Social Relations in Ottoman Diyarbekir, 1870-1915*, 51 (Leiden: Brill, 2012); N. Özok-Gündoğan, "Ruling the Periphery, Governing the Land: The Making of the Modern Ottoman State in Kurdistan, 1840-70." *Comparative Studies of South Asia, Africa and the Middle East* 34/1 (2014): 160-75; O. Miller, "Sasun 1894: Mountains, Missionaries and Massacres at the End of the Ottoman Empire" (Unpublished Ph.D. Dissertation, Columbia University, 2015); *The Ottoman East in the Nineteenth Century: Societies, Identities and Politics*, ed. Y. Tolga Cora, D. Derderian, and A. Sipahi (New York: I.B. Tauris, 2016).

13 U.Ü. Üngör, *The Making of Modern Turkey: Nation and State in Eastern Anatolia, 1913-1950* (Oxford: Oxford University Press, 2011); U.Ü. Üngör and M. Polatel, *Confiscation and Destruction: The Young Turk Seizure of Armenian Property* (London: Bloomsbury, 2011).

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and nomadic populations obscure the economic, political, and sociological interdependency of peasants and pastoralists that existed over many centuries throughout the empire, but it is particularly problematic in regions like Ottoman Kurdistan where intense violence followed centuries of symbiotic relations between sedentary peasant and nomadic herding communities. To investigate the specificities of the environmental crises in Ottoman Kurdistan and especially on the large herding communities that resided within the province or transited the region between their summer and winter pasturelands, it is necessary to understand why this largely symbiotic relationship between "the desert and the sown" broke down in last decades of the Ottoman Empire.

Of course, writing the history of nomadic populations in Ottoman Kurdistan poses certain methodological problems, even for native speakers of the region's languages. Unlike the histories of urban populations, the histories of pastoralists are complicated by the generally oral nature of their historical traditions. The lack of written Kurdish historical documents and the methodological difficulties of using sources from these existing Kurdish oral sources, embodied in the *Kîlam* (folktales) told by *Dengbêj*s (storytellers), pose limits to the sources used in this study.[14] Instead, this article relies upon documents produced by the Ottoman administration and European diplomats, merchants, and travellers. In the nineteenth century, European states as well as Russia turned their attention toward this strategic zone, which connected the eastern Mediterranean and Asia Minor to the Indian Ocean world through the Persian Gulf. British merchants regarded the region as an important market for British manufacturing goods and a supplier of transport animals for the colonial Indian Army.[15] The opening of the Suez Canal in 1869 might ultimately have reduced British interest in the region but the discovery of oil in northern Iraq in the 1880s reinforced its importance. This foreign interest has left behind considerable documentary evidence regarding the geography, climate, landscape, economy, politics, and demography of the region in European archives that complements the administrative and political sources found in the Ottoman archives. Furthermore, scientific studies and data on historic climatic patterns garnered

14 For Kurdish oral tradition, see C. Allison, "Kurdish Oral Tradition." In *Oral Literature of Iranian Languages: Kurdish, Pashto, Balochi, Ossetic, Persian and Tajik*, ed. P.G. Kreyenbroek and U. Marzolp, vol. 11 (London: I.B. Tauris, 2010): 129-68; M. Yüksel, "Dengbêj, Mullah, Intelligentsia: The Survival and Revival of the Kurdish-Kurmanji Language in the Middle East, 1925-1960" (Ph.D., University of Chicago, 2011).

15 For the horse trade between the Ottoman Empire and British India, see H. Fattah, *The Politics of Regional Trade in Iraq, Arabia, and the Gulf 1745-1900* (Albany: State University of New York Press, 1997): 159-84.

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from dendrochronological studies have proven very valuable for tracking rain patterns during the nineteenth century.

Pastoral Nomads and Environment in Ottoman Kurdistan

In identifying "Ottoman Kurdistan," I intend not to designate a political area—although Kurdistan was the name of an Ottoman province (1847-1867)—but rather to indicate a specific environmental region or threshold between Asia Minor, Iran, Syria, and Iraq and the southern Caucasus, and between the Taurus and Zagros Mountain ranges, which was particularly suitable to pastoral nomadism, both localized and transhumant. Furthermore, the region of this study does not directly correspond to any historical administrative division before, during, or after the period covered by this study; it is the mobility of pastoral nomads and their herds that defines the historical geographic scope of this study. In geographical terms, the region lies at roughly between 39°N and 36°N latitude and 38°E and 43°E longitude (see Map.1.1).[16] In the nineteenth century, this region was home to millions of sedentary peasants (between 1,920.000[17] and 2,250.000[18]) and mobile pastoralists (between 1,200.000 and 1,500.000)[19] belonging to a variety of ethno-religious communities, including Armenians, Assyrians, Bedouin (Arabic-speaking peoples), Chaldeans, E[ye]zidis, Greeks, Jews, Kurds, Nestorians, Syriacs, and Turks. By extension, it was also home to millions of domesticated animals.

While the northern edge of Ottoman Kurdistan reaches toward the Caucasus region and the Iranian borderland, its southern edge comprises part of what has historically been known as northern Mesopotamia. Map 1.1 reveals

16 For Kurdistan and its geographical boundaries, see *Evliya Çelebi in Diyarbekir: The Relevant Section of the Seyahatname*, ed. M. van Bruinessen and H. Boeschoten (Leiden: Brill, 1988); A. Salzmann, *Tocqueville in the Ottoman Empire: Rival Paths to the Modern State* (Leiden: Brill, 2004): 51-54.

17 K. Karpat, *Ottoman Population, 1830-1914: Demographic and Social Characteristics* (Madison: University of Wisconsin Press, 1985): 121-22.

18 The National Archives of the United Kingdom, London (hereafter TNA): War Office (hereafter WO): 106/6245, Confidential, Captain C.E. Callwell, "*Military Report on North-Eastern Turkey in Asia*," Compiled in the Intelligence Division of the War Office, vol. I (London: Harrison and Sons, 1892): 102-105; BOA, DH. ŞFR. 112/2 (5 Temmuz 1295/17 Jul. 1879). According to this Ottoman document, the total sedentary population in Diyarbekir province—including the city of Diyarbekir, Mardin, Siirt, and Malatya and their districts—was 273,473 Muslims and 62,104 Christians and Jews.

19 It is important to note that these estimates are approximate, Karpat, *Ottoman Population, 1830-1914: Demographic and Social Characteristics*: 54.

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MAP.1.1 Topography of Ottoman Kurdistan
SOURCE: UNIVERSITY OF TEXAS AT AUSTIN. FROM THE CAMBRIDGE MODERN HISTORY ATLAS, 1912. HTTP://WWW.LIB.UTEXAS.EDU/MAPS/HISTORICAL/WARD_1912/OTTOMAN_EMPIRE_ASIA_1792.JPG (ACCESSED 18 MARCH 2018)

a region characterized by a highly-varied topography that includes the northern and north-eastern parts of the area which are mountainous and the south which is low-lying. The Taurus Mountain range, running eastward through the Mediterranean coast of today's Turkey, divides the region, eventually joining the Zagros Mountains in Iran. There are dozens of fertile plains in the region, most stretching east to west, and many river valleys ornamented with pastures and arable lands. The river valleys, plains, and pasturelands, meandering along the slopes of the Taurus Mountains, connect the mountainous north to the low-lying south. Unlike the hilly northern zones, the middle portion of the region contains wide plains. Karaca, an inactive volcanic mountain with an elevation of 6300 feet, is one of the most recognizable physical features in this part of the region. Further south, the elevation decreases dramatically. Except for the moderately hilly Tur Abdin area, the southern part of this region is a broad plateau and dry lands, stretching down to Aleppo in Syria and the plain of Mosul in Iraq.[20] Because the region's major rivers, the Tigris and Euphrates,

20 M. Türkeş, "Kuraklık, Çölleşme ve Birleşmiş Milletler Çölleşme Ile Savaşım Sözleşmesi'nin Ayrıntılı Bir Çözümlemesi." *Marmara Avrupa Araştırmaları Dergisi* 20/1 (2012): 7-56.

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flow in a north-to-south direction, nomadic groups found a ready market for pack animals in large numbers that were required for transportation of goods from the Gulf, Iraq, and Iran toward the Ottoman capital and Syrian ports.

Such changes in altitude between Ottoman Kurdistan's northern and southern zones are directly related to vegetation and precipitation patterns and form the basis for transhumance in pastoral groups.[21] Each of these zones has an extremely different seasonal temperature and precipitation pattern. Average annual precipitation ranges from between 350 mm and 800 mm. Precipitation can reach over 1000 mm per year in the northern mountains, but is often less than 500 mm per year in the arid south.[22] January and April are the wettest months in the north/northeast whereas in the middle zone and the southern edge the wettest months are December, February, and April.[23] In the mountainous northeast, winters tend to be extremely cold, with below-freezing temperatures (mean temperature negative 8-12 Celsius) and heavy snowfalls in the high mountain valleys. Winter snows foster the growth of highly nutritious grasses that sustain thousands of grazing animals throughout the summer months.[24] By contrast, the middle plateau sees hot summers (over +32 Celsius) and cold, but rarely freezing, winters (+4-8), and less precipitation.[25] Further south the climate approaches desert conditions: hot summers with temperatures rising above forty degrees in July and August.[26] Keeping these different zones in mind, it becomes apparent that some regions of Ottoman Kurdistan were more vulnerable than others to unseasonable and changing precipitation and temperature.

It was not only the arid and semi-arid climate of Ottoman Kurdistan that created perfect conditions for pastoralism. Travellers spoke of rich grazing

21 For example, the altitude in Van is 5740 feet, 2132 feet in Diyarbekir, and 1181 feet in Cezire.

22 M. Türkeş, "Influence of Geopotential Heights, Cyclone Frequency and Southern Oscillation on Rainfall Variations in Turkey." *International Journal of Climatology* 18/6 (1998): 649-80; M. Türkeş, "Vulnerability of Turkey to Desertification with Respect to Precipitation and Aridity Conditions." *Turkish Journal of Engineering and Environmental Science* 23 (1999): 363-80; M. Türkeş, "Spatial and Temporal Variations in Precipitation and Aridity Index Series of Turkey." In *Mediterranean Climate: Variability and Trends*, ed. H.-J. Bolle (Heidelberg: Springer, 2003): 181-213.

23 İ. Hakkı Akyol, "Türkiye'de Basınç, Rüzgarlar ve Yağış Rejimi." *Türk Coğrafya Dergisi* 5-6 (1944): 28, 31.

24 F.R. Maunsell, "Kurdistan." *The Geographical Journal* 3/2 (1894): 81.

25 B. Darkot, "Türkiye'de Sıcaklık Derecesinin Dağılışı." *Türk Coğrafya Dergisi* 1 (1943): 31-32.

26 S. Erinç, "Climatic Types and the Variation of Moisture Regions in Turkey." *Geographical Review* 40/2 (1950): 224-35.

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lands and nutritious grasses of "endless variety"[27] that were found throughout the plains of northern Mesopotamia.[28] British archival documents indicate that in all seasons "a few showers" were enough to turn the "brown surface" of the Mesopotamian plain "into a green ornament."[29] The slopes of Karaca Mountain was another important grazing zone located in the middle portion of Ottoman Kurdistan. From December to late April, grass was obtainable in great quantities, and between May and October these grasses were turned into hay, predominantly for forage.[30] The other important grazing grounds were found in the river valleys that were created by numerous streams including major branches of the Euphrates and Tigris Rivers. In addition to these, extremely rich pasture lands were found in the areas around Lake Van as well as the Bitlis Valley in the north east.

Before identifying the major pastoral nomadic groups inhabiting late Ottoman Kurdistan, it is important to clarify the use of a few historical and anthropological concepts. In this study, 'pastoralism' refers to a form of itinerant herding of domesticated animals found throughout the premodern and modern world. Typically, pastoralism is an adaptation to arid and semi-arid environments. Depending on the needs of different herd animals and the ecosystems inhabited, nomadic pastoralism may take the form of cyclical movement between summer and winter pastures (transhumance), or shorter-distance movement to better pastures combined with periods of temporary settlement for growing crops. This study adopts a broad definition of pastoralists as "those who keep herd animals and who define themselves and are defined by others as pastoralists."[31] This includes not only the interdependency between people and their domesticated animals, but also a cultural identity that denotes a reciprocal relationship and a dependency on unbounded spaces. Since most pastoralists in late Ottoman Kurdistan were nomadic as well, in this article I use "nomads" and "pastoralists" interchangeably.

On the basis of the available historical sources, it appears that Ottoman Kurdistan was home to many different forms of pastoralism, each with distinct ways of life and ways of interacting with the pastures and land. Some were

27 TNA: WO 33/54, Confidential, Captain F.R. Maunsell, "*Military Report on Eastern Turkey in Asia*." Compiled for the Intelligence Division of the War Office, vol. I (London: Harrison and Sons, 1893): 274.

28 For varieties of grasses in Turkey, V. Erkun and W.M. Nixon, *Türkiye'de Çayır—Mer'a ve Yem Nebatları* (Ankara: Güzel İstanbul Matbaası, 1955): 11-13.

29 TNA: WO 33/2758, 27.

30 Ibid.

31 H.A. Koster and C. Chang, "Introduction." In *Pastoralists at the Periphery: Herders in a Capitalist World* (Tucson: University of Arizona Press, 1994): 8.

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"agro-pastoralists" with seasonal settlements to produce primary grain crops, while others followed cycles of movements between summer and winter pastures. Although some pastoralists practiced forms of agriculture, all were dependent on animal husbandry. Livestock was their primary source of food, clothing, and housing materials. Further, herds of sheep, goats, water buffalos, camels, mules, and horses represented accumulated wealth. The size of their herds determined not only their economic power, but also social and political status—both within groups and vis-à-vis other groups. As Reşat Kasaba points out, historically, pastoral nomadic groups were important socio-political actors within the Ottoman Empire.[32]

In the nineteenth century, the Shammar (10,000 tents)[33] and the Tayy (500 tents) appear to have been the largest groups of purely nomadic Bedouin herders—that is, populations without any fixed residences.[34] As shown by the Map 1.2, these groups populated the southern part of the region, from the Euphrates in the west to the Tigris in the east. The riverine pastures surrounding the Habur River were also important grazing areas for the Shammar.[35] They specialized in camel and sheep breeding and maintained strong trading networks with villagers and town-dwellers in the surrounding areas.[36]

Numerous Kurdish nomadic groups populated a large area of Ottoman Kurdistan from Mosul in the south to Aleppo in the west, Erzurum in the north

32 R. Kasaba, *A Moveable Empire: Ottoman Nomads, Migrants, and Refugees* (Seattle: University of Washington Press, 2009).

33 Ottoman sources do not provide any information regarding the number of individuals in each tent. British consular reports from the 1860s counted 5 souls for each tent. TNA: Foreign Office (hereafter FO) 195/799, no. 9, encl. 1, Constantinople, 13 July 1864 Taylor to Bulwer "Report on Trade of Diarbekr and Kurdistan for the Year 1863." According to this report there were about 23,000 tents of Kurdish and Arab pastoralists in the province of Diyarbekir.

34 *Salname-i Vilayet-i Diyarbekir*, Defa 3, 1288/1871-72. It is important to note that these numbers are rough estimations.

35 BOA, MVL, 227/7 (11 Recep 1265/2 Jun. 1849).

36 *Salname-i Vilayet-i Diyarbekir*, Defa 3, 1288/1871-72. According to a British Consular report, the Shammar possessed about a million small stock and tens of thousands of camels in the 1860s. According to an Ottoman document from 1889, however, the Shammar possessed about 200,000 head of sheep and numerous camels. The remarkable difference between these two sources indicates two possibilities; first, the Ottomans' estimation for 1889 was not accurate, or the Shammar lost a large portion of their herd animals in the late nineteenth century. As will be shown in the following pages, the massive loss of livestock in the 1880s was perhaps the major cause of this divergence between the 1860s and 1880s. TNA: FO 195/799, no. 9, encl. 1, Constantinople, 13 July 1864 Taylor to Bulwer; BOA, A. MKT. 1602/98, (25 Şubat 1304/9 Mar. 1889).

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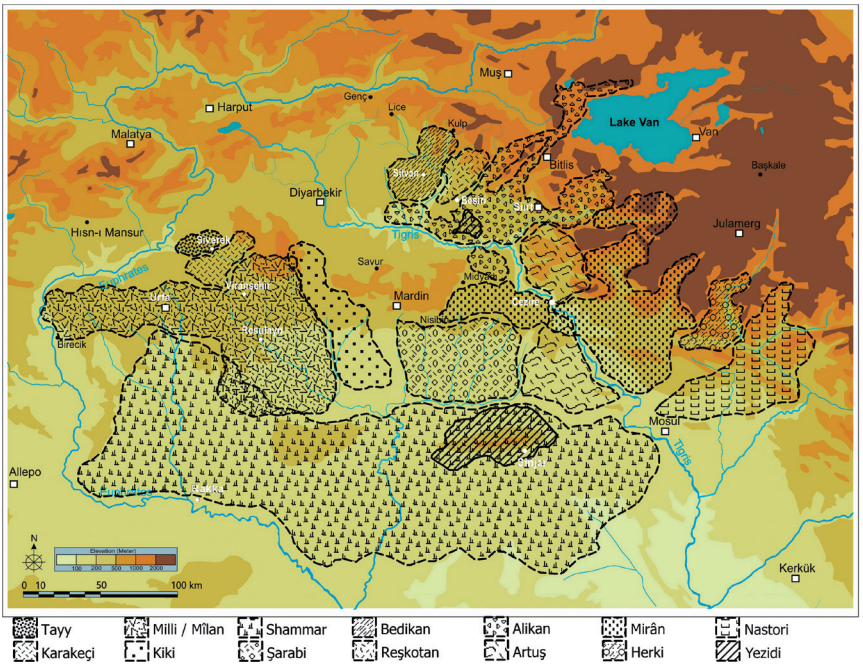

MAP.1.2 Major Pastoralist Communities and their Summer-Winter Pastures in Ottoman Kurdistan

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and Van in the east.[37] (Map. 1.2 and 1.3) The Mîlan/Milli (11,000 tents)[38] was one of the largest Kurdish pastoralist groups, inhabiting the districts of Viranşehir and Siverek and the area surrounding the Karaca Mountain.[39] A large portion

37 There are numerous sources on Kurdish pastoralists in the Ottoman Empire. Among these, Mehmed Hurşit Paşa's *Seyâhatnâme-i Hudûd* is one of the most important primary sources that provides significant details about pastoralists in Ottoman Kurdistan. Although *Seyâhatnâme-i Hudûd* contains many generalizations in considering pastoralists, Mark Sykes also provides a list of Kurdish pastoralists. See M. Sykes, "The Kurdish Tribes of the Ottoman Empire." *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* 38 (1908): 451-86; M. Hurşid, *Seyâhatnâme-i Hudûd* (Istanbul: Simurg, 1997); S. Ateş, *The Ottoman-Iranian Borderlands: Making a Boundary, 1843-1914* (Cambridge: Cambridge University Press, 2013).

38 TNA: WO 33/298, Secret, Lieut-Colonel F.R. Maunsell, "*Military Report on Eastern Turkey in Asia: Middle Euphrates Valley*," Compiled for the Intelligence Department of the War Office, vol. IV (London: Harrison and Sons, 1904): 62-63.

39 BOA, DH. ŞFR, 262/64 (11 Temmuz 1317/24 Jul. 1901); BOA, DH. MKT, 1323/38 (16 Şevval 1294/24 Oct. 1877).

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MAP.1.3 The location of Kurdish-Speaking Pastoralists in late Ottoman Kurdistan (1881-82)
SOURCE: TNA: FO 925/2821
Note: Although I searched for the report that British military engineer Herbert Chermside prepared on Kurdish-speaking pastoralists of the Ottoman Empire, I have not found the referred report among the documents in the British National Archive. It may have been cataloged among the India Office records located in the British Library.

of them were semi-nomadic; many possessed houses and villages they inhabited during the winter months, and a subset of the population was either purely nomadic or purely sedentary.[40] The Mîlan specialized in sheep and camel breeding, in addition to various forms of cultivation.[41]

Inhabiting both sides of the Habur River was another semi-nomadic group, the Kurdish Şerabi. Unlike the Mîlan or Shammar, the Şerabi's members bred large animals, particularly water buffalo, oxen, and buffalo, and settled long enough to cultivate millet thanks to the abundant water resources and the nutritious grassland of the river valley that they inhabited.[42] From their buffalo breeding, the Şerabi produced significant quantities of ghee (*revgan-ı sade*), which they brought to markets in neighbouring towns.

40 *Salname-i Vilayet-i Diyarbekir*, Defa 3, 1288/1871-72; TNA: WO 33/298, 62-65.
41 Ibid.
42 Ibid.

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Numerous transhumant pastoralists migrated annually between the southern plains in Mesopotamia and the northern pasture lands around the Lake Van. In the late nineteenth century, the Artuş and Mîran were the largest transhumant Kurdish groups, amounting to 12,000 and 7,000 tents respectively.[43] According to an Ottoman document, the Mîran Kurds possessed about 200,000 head of sheep in 1888.[44] As shown by Map.1.2, their preferred summer pastures were in the south of Lake Van, and they wintered on the east bank of the Tigris and both banks of the Bohtan River.[45] In addition to these large clans, there were many mid-sized transhumant Armenian,[46] Ezidi,[47] Kurdish, Nestorian, and Turcoman pastoralists, including the Kiki, Karakeçili, Etmankî, Reşkotan, Bekîran, Alikan,[48] Badikan, Pencînar, and Teyyari.[49] (Map.1.3)

Geography, climate, and landscape shaped the destiny of these pastoralists and their herds. Differences in altitude, changing precipitation and temperature, available water resources, foraging opportunities, and the quality of grasslands determined both which animals were bred and the degree to which each pastoral group was dependent on seasonal movement. Some transhumant pastoralists undertook very long journeys in search of water and fodder for themselves and their livestock. For example, as shown in Map.1.2., pastoralists, including Artuş and Mîran, spent their winter months in the country between Cezire and Mosul, and pastured their flocks in the country around Lake Van in summer.[50] The approximate distance between their northern pastures and the summer plains was more than 250 miles. However, the Kurdish and Bedouin nomadic pastoralists with pastures in the south and west of the region did not need to move further upland to access better grazing areas. As C.E. Callwell, a British military observer, noted of the Mîlan Kurds, "none of

43 TNA: WO 33/325, Secret, Lieut.-Colonel F.R. Maunsell, "*Military Report on Eastern Turkey in Asia: The Tigris Valley*," Compiled for the Intelligence Department of the War Office, vol. III (London: Harrison and Sons, 1904): 54-57.

44 BOA, DH. MKT, 1521/46, 3 (Temmuz 1304/15 Jul. 1888).

45 TNA: WO 33/325, 54-57; WO 33/54, 293.

46 M. van Bruinessen, "Kurdish Society, Nationalism and Ethnicity, Refugee Problems." In *The Kurds: A Contemporary Overview*, ed. P.G. Kreyenbroek and S. Sperl (London: Routledge, 1992): 39. I would like to thank to Fikret Adanır for this important note.

47 For Yezidi pastoralists, see R.H.W. Empson, *The Cult of the Peacock Angel: A Short Account of the Yezidi Tribes of Kurdistan* (London: AMS Press, 1928).

48 For Alikan Kurds, see İ. Beşikçi, *Doğu'da Değişim ve Yapısal Sorunlar: Göçebe Alikan Aşireti* (Ankara: Doğan, 1969).

49 BOA, Y. EE. d. 297.

50 BOA, ŞD, 275/2 (25 Mart 1295/6 Apr. 1879).

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them migrate far," as the rich pasture around the Karaca Mountain was their summer campground.[51]

Although we do not have exact figures for the size of herd animals in the region, some estimates of an approximate livestock population owned by pastoralists can be obtained from European consular reports. According to one British report, for example, in the early 1860s there were about 2,250,000 sheep and goats in the province of Diyarbekir, comprising a large portion of northern Mesopotamia and inhabited by large pastoral nomadic communities, as shown in Map.1.2.[52] The majority of these sheep and goats belonged to the Bedouin and Kurdish nomadic pastoralists. The same report stated that it was "impossible to arrive at anything even like a useful approximate" of draft and transport animals, particularly oxen, mules, and horses owned by the people in the region. Regarding camels, however, the same report provides some estimates. Bedouins, particularly Shammar and Tayy, possessed about 130,000 camels while the Kurdish pastoralists had about 2,000 in the same province. These numbers only represent the southwestern portion of Ottoman Kurdistan and do not provide any information about other draft animals, particularly mules, one of the main transport animals bred in large numbers by Kurds. As explained above, some pastoralists raised large stock in great numbers. Thus, it can be argued that there were many more than two million head of livestock, including sheep, goats, cattle, oxen, buffalos, camels, horses, and mules in Ottoman Kurdistan in the middle of the nineteenth century.

NAO or ENSO: Nineteenth-Century Climatic Fluctuations in Ottoman Kurdistan

As illustrated in Map.1.4, Ottoman Asia, comprising today's Turkey, is located in a transitional zone between the Eastern Mediterranean Basin and the Indian Ocean. It is not only topography, environment, or the sea/ocean that influences climate in these areas, but also global climatic oscillations, particularly the El Niño Southern Oscillation (ENSO) and the North Atlantic Oscillation (NAO). These oscillations impact underground water resources, agriculture, fishing, human and animal migration, and diseases in a considerable portion of the world, including Ottoman Asia. To understand what triggered the climatic

51 TNA: WO 106/6246, Confidential, Captain C. E. Callwell, "*Military Report on North-Eastern Turkey in Asia*," Compiled in the Intelligence Division of the War Office, vol. II (London: Harrison and Sons, 1892): 232.

52 TNA: FO 195/799, no. 9, encl. 1.

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MAP.1.4 Turkey: Between the Mediterranean and the western Indian Ocean
SOURCE: GOOGLE EARTH MAPPING (ACCESSED 23 FEBRUARY 2018)

fluctuations in nineteenth-century Ottoman Kurdistan, and to establish the weak or strong synchronicities between regional and global climatic fluctuations, we must answer the following questions: how did global oscillations affect Ottoman Asia's climate? What kind of favourable or unfavourable climatic conditions occurred in the years of these oscillations? And how do they influence temperature and rainfall patterns in today's Turkey, which accounts for a large portion of former Ottoman Kurdistan?

Broadly speaking, the NAO is a global oscillation that influences temperature and precipitation patterns in the North Atlantic, Greenland, Europe, and the Mediterranean.[53] It has two phases—the positive and the negative—and each has short- and long-term climatic variability in these regions owing to its "importance in transporting heat and moisture to these regions or from them."[54] Records of the NAO from 1860 onward indicate that the NAO contributes to 20-60% of climate variability in the Mediterranean basin during the winter months, which is also represented in the negative phases of the NAO.[55] Overall,

53 J.W. Hurrell and H. Van Loon, "Decadal Variations in Climate Associated with the North Atlantic Oscillation." *Climatic Change* 36/3-4 (1997): 301-26.

54 M. Türkeş and E. Erlat, "Winter Mean Temperature Variability in Turkey Associated with the North Atlantic Oscillation." *Meteorology and Atmospheric Physics* 105/3-4 (2009): 211.

55 H.M. Cullen *et al.*, "Impact of the North Atlantic Oscillation on Middle Eastern Climate and Streamflow." *Climatic Change* 55/3 (2002): 319.

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the positive NAO brings drier conditions into the Mediterranean whereas the negative NAO brings wetter conditions.[56]

On a global scale, the NAO links Turkey to the North Atlantic by influencing storm tracks that effect the climate of the Mediterranean basin.[57] However, this does not mean that the NAO influences temperature and precipitation patterns everywhere in the region to the same degree. In fact, studies have found significant "spatial differences in the impact of the positive NAO phases across the Mediterranean basin."[58] Usually, the positive NAO brings mild and wetter conditions to Europe, while in Turkey it has the opposite effect.[59] During the negative NAO, wetter than usual conditions occur in Turkey while Europe has drier weather.

Climatological studies first noted the significant role of NAO phases during the occurrence of winter droughts in the Mediterranean basin in the twentieth century.[60] During the positive NAO phases, "high probabilities of dry conditions occurrence are recorded" in many parts of the Mediterranean basin, predominantly in the spring and summer.[61] Further, studies on Turkey's climate demonstrate that the "meteorological drought events" that occurred in Turkey between 1930 and 2001 were mostly "controlled by the extreme NAO conditions."[62] However, this does not imply that NAO has a steady impact on the Turkish climate throughout the year. Indeed, it seems that it is "stronger" in winter and autumn and "weaker" in spring.[63]

The NAO's influence in Turkey changes not only seasonally but also geographically. Owing to other global oscillations, as well as geographical features,

56 Sinan Şahin *et al.*, "Large Scale Moisture Flux Characteristics of the Mediterranean Basin and Their Relationships with Drier and Wetter Climate Conditions." *Climate Dynamics* 45/11-12 (2015): 3397.

57 H.M. Cullen and P.B. deMenocal, "North Atlantic Influence on Tigris—Euphrates Streamflow." *International Journal of Climatology* 20/8 (2000): 855-56.

58 S.M. Vicente-Serrano *et al.*, "The NAO Impact on Droughts in the Mediterranean Region." In *Hydrological, Socioeconomic and Ecological Impacts of the North Atlantic Oscillation in the Mediterranean Region*, ed. S.M. Vicente-Serrano and R.M. Trigo, Advances in Global Change Research 46 (Springer Netherlands, 2011): 28.

59 Cullen *et al.*, "Impact of the North Atlantic Oscillation on Middle Eastern Climate and Streamflow."

60 Vicente-Serrano *et al.*, "The NAO Impact on Droughts in the Mediterranean Region": 1.

61 Ibid.: 30.

62 M. Türkeş and E. Erlat, "Climatological Responses of Winter Precipitation in Turkey to Variability of the North Atlantic Oscillation during the Period 1930-2001." *Theoretical and Applied Climatology* 81/1-2 (2005): 62.

63 M. Türkeş and E. Erlat, "Precipitation Changes and Variability in Turkey Linked to the North Atlantic Oscillation during the Period 1930-2000." *International Journal of Climatology* 23/14 (2003): 1771-96.

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particularly topography and altitude, all parts of Turkey are impacted by the NAO differently. Accordingly, during the extreme negative phase of NAO, "wetter than long-term average conditions" occur in Turkey while "drier" conditions appear in its positive phase.[64] But, "spatially coherent and statistically significant changes" in the rate of precipitation during the extreme positive NAO are "more apparent in the west and mid Turkey."[65] This relationship is "stronger" over the Marmara Sea, the Aegean part of the Mediterranean, continental Anatolia, and the "Mediterranean Transition" zone.[66] In other words, the western, middle, and eastern regions of Turkey experience NAO very differently.

The findings of another study provide more details regarding the NAO's effect on the Turkish climate. Climatologists found a "significant" correlation between the "year-to-year variability of the NAO winter and Turkey's normalized [average] winter temperature series."[67] The extent of this correlation, however, is different from one region to the other. The relationship is "stronger in central and southwestern regions of Turkey," and "weaker over northern Marmara, eastern margins of the Eastern Anatolia and the Southeastern Anatolia."[68] Based on this and above—mentioned scientific studies, it can be argued that the eastern and south-eastern provinces of Turkey, which comprised a large portion of Ottoman Kurdistan in the nineteenth century, experienced less of an impact from NAO than the western and middle parts of the empire.

Other climatological studies, however, provide a different explanation of NAO's influence over precipitation in the eastern parts of Turkey. Heidi Cullen and Peter deManocal, for instance, emphasize the role of NAO on the climate and streamflow of the Middle East and eastern Turkey. They found a noteworthy connection between NAO and the streamflow of the Euphrates and Tigris, which comprise the largest river systems in Turkey, Syria, and Iraq. Accordingly, NAO's influence on winter precipitation in Turkey is about 27% of the interannual variance.[69] Despite this high rate of influence on the rivers, a closer look at the data and time series that has been used for the streamflow of the Euphrates and Tigris indicates some possible difficulties in making an historical analysis of NAO's impact on the climatic variability of the region. For example, streamflow data used by Cullen and deManocal covers the period from 1938 to 1972

64 M. Türkeş and E. Erlat, "Influences of the North Atlantic Oscillation on Precipitation Variability and Changes in Turkey." *Il Nuovo Cimento* 29/1 (2005): 117.

65 Ibid.

66 Türkeş and Erlat, "Climatological Responses of Winter Precipitation in Turkey": 45.

67 Türkeş and Erlat, "Winter Mean Temperature Variability in Turkey": 214.

68 Ibid.

69 Cullen and deMenocal, "North Atlantic Influence on Tigris—Euphrates Streamflow": 853.

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for the Euphrates, but only from 1965 to 1972 for the Tigris.[70] By looking at these short time series—less than half a century for the Euphrates and only seven years for the Tigris—one can see that more climatological studies, with longer time series, are necessary for mapping out the complete impacts of NAO on precipitation over eastern Turkey.

The NAO is not the only oscillation that influences heat, moisture, and rainfall patterns in Ottoman Asia; the El Niño Southern Oscillation (ENSO), Arctic Oscillation (AO), and North Sea-Caspian Sea (NCP) oscillation, along with Asian Monsoons, also impact climatic patterns in the region. As research shows, ENSO and Asian Monsoons have a particularly strong influence on temperature and rainfall patterns and variability in Ottoman Asia and the Mediterranean basin, especially in its "southern and south-eastern" parts.[71] Briefly stated, ENSO is a climatic event defined as "the appearance from time to time of warm sea surface water in the central and eastern Pacific Ocean near the equator."[72] It generates periodic mild to severe oscillations in rainfall, wind, and weather across the globe resulting from changes in temperatures in coastal areas of the Pacific Ocean. Global patterns of changing amplitude associated with ENSO cause either drought (El Niño) or colder/wetter weather (La Niña).[73]

ENSO occurs in the Pacific Ocean, but its influence is more widespread, affecting South Asia, China, Africa, Europe, South America, and the Middle East, including Turkey. Climatologists found evidence of significant correlations between indices of ENSO and precipitation in some parts of Turkey.[74] Accordingly, precipitation appears to increase in Turkey during the winter of El Niño years and before the ENSO phases take place.[75] Like NAO, the effects of ENSO are varied. The southwest region of Turkey, for example, experiences a decrease in precipitation during El Niño, whereas the centre of the northwest region experiences an increase in precipitation.[76] Findings of a study examining the association between ENSO and streamflow in Turkey also show variable influences of this oscillation on the region's climate and water levels.[77]

70 Ibid.: 857.

71 Şahin et al., "Large Scale Moisture Flux Characteristics of the Mediterranean Basin": 3382.

72 M.H. Glantz, *Currents of Change: Impacts of El Niño and La Niña on Climate and Society* (Cambridge: Cambridge University Press, 2001): 2.

73 Ibid.: 64.

74 Türkeş, "Influence of Geopotential Heights, Cyclone Frequency and Southern Oscillation on Rainfall Variations in Turkey."

75 Ibid.

76 M. Kadıoğlu, Y. Tulunay, and Yunus Borhan, "Variability of Turkish Precipitation Compared to El Niño Events." *Geophysical Research Letters* 26/11 (1999): 1599.

77 E. Kahya and Ç. Karabörk, "The Analysis of El Niño and La Niña Signals in Streamflows of Turkey." *International Journal of Climatology* 21/10 (2001): 1231-32.

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Hence, "coherent and significant streamflow responses" are very noticeable in the region of north-western and eastern Anatolia.[78] However, the impact of El Niño and La Niña events on the streamflow are very different: while the influence of El Niño is quite noticeable in north-western Anatolia, La Niña's impact is not visible.[79] In mountainous eastern Anatolia, however, "above normal conditions" occur in April-November during an El Niño event, while in La Niña the same conditions appear in May-February.[80] Despite these differences, it is clear that both ENSO phases have variable influences on precipitation in Turkey and Ottoman Kurdistan.

At times ENSO phases reduce rather than increase precipitation in Turkey. Some examples demonstrate its role in decreases of precipitation and even occurrences of destructive droughts in the country. Findings of climatologists, in considering ENSO's influence on temperature and rainfall patterns over Turkey, indicate the presence of a very complex system. As stated above, the precipitation rate increases before any phase of ENSO occurs. However, after La Niña events, conspicuous climatic disturbances have tended to take place in Turkey. The winter precipitation decreases "noticeably" in the year following La Niña, and this situation triggers the appearance of winter droughts throughout the country.[81]

Before presenting the historical records for Ottoman Kurdistan and the synchronicity between the global El Niño events and regional episodes in the second half of the nineteenth century, it is necessary to make a further point. Although more research on the role of global climatic oscillations in Ottoman Asia/Turkey is needed, what is emerging in scientific literature is a distinction between the climate of western and eastern portions of Turkey. As discussed above, the NAO has a greater impact on the western, southern, and middle portions of Turkey and a lesser impact on the east, while ENSO has a greater impact on north-western and eastern Anatolia. This scientific literature indicates that there are in effect two zones in Ottoman Asia. This study focusses on eastern Anatolia.

Scientists have provided historical records of El Niño and La Niña events from the sixteenth to the twentieth century.[82] In the second half of the nineteenth century, "extreme" (E), "very strong" (VS), and "strong" (S)—referring to

78 Ibid.
79 Ibid.
80 Ibid.
81 Türkeş, "Influence of Geopotential Heights, Cyclone Frequency and Southern Oscillation on Rainfall Variations in Turkey."
82 J.L. Gergis and Anthony M. Fowler, "A History of ENSO Events since A.D. 1525: Implications for Future Climate Change." *Climatic Change* 92/3 (2009): 343-87.

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event strength—El Niño events occurred in 1845 (VS), 1853 (VS), 1866-68 (VS), 1888 (VS), and 1891 (VS), respectively.[83] In this same study, some El Niño events were identified as "moderate" (M) or "weak" (W), including 1844 (M), 1846 (W), 1878 (M), 1881 (M), 1884 (W), and 1889 (W), respectively. On the other hand, scientists have identified the following La Niña events, including 1847 (S), 1860-61 (VS), 1870-71 (VS), 1874-75 (S), 1879 (E), 1880 (VS), 1886 (M), 1887 (VS), 1891 (W), 1892 (S), 1893 (VS), and 1894 (E).[84] These findings for global ENSO events are extremely important for historians looking to investigate links and various impacts of global oscillations in different parts of the world.[85] Thus, this global data is crucial for regional studies not only to understand the connections between global and regional climatic events but also for comparative studies showing how these crises affected different socio-economic groups and their environments in different geographies of the globe.

Historical records indicate that four major climatic disturbances occurred in Ottoman Kurdistan in the mid and late nineteenth century: in 1844-46, 1879-80, 1887-89, and 1891-93. Except for the crisis of 1879-80, which happened a year after the catastrophic global El Niño episode of 1876-78 that caused severe droughts resulting crop failure and famine in South Asia and elsewhere, three other major regional climatic events correspond to the worldwide El Niño events. On the other hand, the drought of 1879-80 occurred during an extreme global La Niña event. Although we cannot be sure that these episodes of drought in Ottoman Kurdistan were triggered by ENSO events, scientific findings regarding the composite effects of this global oscillation on Turkey's climate and the occurrence of some drought events in Turkey during El Niño/La Niña years indicate that we cannot dismiss the existence of such a possibility. What is clear, however, is that the historical record of Ottoman Kurdistan shows extreme droughts that coincided with ENSO-derived global occurrences.[86] More scientific research is necessary to understand the nature and driven forces of the cold events that happened in the years 1880 and 1889.

83 Ibid.: 368-69.

84 Ibid.

85 Mike Davis is one of the scholars who uses climate science to re-write the history of colonialism in the late nineteenth century, with a focus on South and East Asia. By looking at the effects of the El Niño phase of the ENSO cycle through anomalies observed in wheat, cotton, and sugar production, Davis describes not only the socio-economic impact of crop failures on agrarian societies in South Asia, China, and some other parts of the world, but also how colonial powers consolidated and expanded their authority in times of disaster. Davis, *Late Victorian Holocausts*.

86 Alan Mikhail also links global El Niño cycles to famines in Anatolia and Iran at the end of the nineteenth century. See his "The Middle East in Global Environmental History." In

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TABLE 1.1 Select recorded El Niño and La Niña years in late nineteenth century

Scientific Data (i)	Event	Global Cases (ii)	Historical Data for Ottoman Kurdistan (iii)	Climatic Phenomenon
1845 (VS) **1846** (V)	El Niño La Niña	China, Brazil	1844-46	Drought
1877-78 (VS) **1879** (E)	El Niño La Niña	India, China, S. Africa, Egypt, Java	1879-80	Drought/Cold
1887 (VS) **1888** (VS)	La Niña El Niño	China, Ethiopia, Sudan, Sahel	1887-89	Drought/Cold
1891 (VS) **1893** (VS)	El Niño La Niña	South and East Asia, Brazil, Indonesia, East and South Africa	1891-93	Drought

SOURCES:

I: J. GERGIS AND ANTHONY FOWLER, "A HISTORY OF ENSO EVENTS SINCE A.D. 1525: IMPLICATIONS FOR FUTURE CLIMATE CHANGE." *CLIMATE CHANGE* 92 (2009): 343-87.[87]

II: ON GLOBAL CLIMATIC CRISES IN THE LATE NINETEENTH CENTURY IN GENERAL; M. DAVIS, *LATE VICTORIAN HOLOCAUSTS: EL NIÑO FAMINES AND THE MAKING OF THE THIRD WORLD* (LONDON: VERSO BOOKS, 2002); ON CHINA: L. LI, *FIGHTING FAMINE IN NORTH CHINA: STATE, MARKET, AND ENVIRONMENTAL DECLINE, 1690S-1990S* (STANFORD: STANFORD UNIVERSITY PRESS, 2007); K. EDGERTON-TARPLEY, *TEARS FROM IRON: CULTURAL RESPONSES TO FAMINE IN NINETEENTH-CENTURY CHINA* (BERKELEY: UNIVERSITY OF CALIFORNIA PRESS, 2008).

III: Z. PEHLIVAN, "BEYOND 'THE DESERT AND THE SOWN': PEASANTS, PASTORALISTS, AND CLIMATE CRISES IN OTTOMAN DIYARBEKIR, 1840-1890" (UNPUBLISHED PH.D. DISSERTATION, QUEEN'S UNIVERSITY, KINGSTON, 2016).

A few explanations are also necessary in considering the frequency and intensity of these events in late Ottoman Kurdistan. Both scientific and historical records indicate that the drought in 1845 was one of the most extreme events in the last two centuries.[88] The period between the first two major drought

A Companion to Global Environmental History, ed. J.R. McNeill and E. Steward Mauldin (Malden: Wiley-Blackwell, 2012): 168.

87 The author thanks the anonymous reviewer for this suggestion.

88 M. Arsalani *et al.*, "Tree-Ring Based December—February Precipitation Reconstruction in the Southern Zagros Mountains, Iran." *Dendrochronologia* 49 (2018): 45-56; Nesibe Köse *et al.*, "Spring Temperature Variability over Turkey since 1800 CE Reconstructed from a Broad Network of Tree-Ring Data." *Climate of the Past* 13/1 (2017): 1-15; Ghasem Azizi *et al.*,

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occurrences was approximately thirty years. Over the final two decades of the century, however, climatic fluctuations became very frequent. Starting in the winter of 1879, there was a climate-related disruption approximately every five to six years. In terms of intensity, the drought in 1879 was the most severe event of the period under consideration. The strength of the drought episode in 1887-88 was lesser than 1891-93. The greatest cold episode appeared in winter and spring 1880 just after the strongest drought event in the region. Another cold spell occurred in 1889, between the two major drought events in 1887-88 and 1891-93. Historical records indicate that this unusual cold episode particularly impacted the southern portion of the region. Both intensity and geographic extent of these unusual cold episodes were different. Given the increasing frequency of these periods of extreme drought and severe cold in late Ottoman Kurdistan, the following section will focus on the effects of these episodes on nomadic pastoralists and their livestock population.

Nomadic Pastoralism and Crises

Thus far, this article has described not only major pastoralist groups in Ottoman Kurdistan but also the characteristic aspects of the environment inhabited by these peoples and their herd animals. By examining the findings of recent scientific studies on Ottoman Asia/Turkey in detail, it has showed how the NAO and ENSO influence climate patterns of this vast region differently. More importantly, it has documented the synchronicity between global El Niño events and regional climatic fluctuations in Ottoman Kurdistan, and also highlighted what seem to be local climatic events occurring in the second half of the nineteenth century. Next, we need to consider the evidence of specific episodes of harsh weather from the 1840s, 1880s, and 1890s, and the periodic and cumulative impacts of these back-to-back climatic crises on pastoralists and their animals in Ottoman Kurdistan. Since pastoralism depends on herd animals, it is crucial to begin with an explanation of how drought or severe cold can affect herd animals in general.

Drought, severe cold, and strong winds have a range of diverse effects on domestic animals. Drought and extreme cold are perhaps the worst climate conditions for livestock, producing the most devastating immediate implications. Such conditions interrupt normal feeding, decrease productivity, and increase vulnerability to disease. Sheep, goats, cattle, camels, horses, and mules—the

"Precipitation Variations in the Central Zagros Mountains (Iran) since A.D. 1840 Based on Oak Tree Rings." *Palaeogeography, Palaeoclimatology, Palaeoecology* 386 (2013): 96-103.

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primary livestock of pastoralists in Ottoman Kurdistan—all suffer in these adverse conditions. Moreover, extreme and prolonged changes in weather also have a major impact on animal fertility. In general, animals' reproductive capacity is reduced during drought periods due to a lack of sufficient food and water, leading to lower conception rates and higher incidents of stillbirth and miscarriage. Further, the early spring is a critical time for these animals as they recover their physical well-being after the winter.[89] A shortage of grass or excess precipitation during this period can trigger the death of new-born lambs and weakness among ewes needing extra food to recover from giving birth. It can also cause already weak animals to lose weight, and deprive them of the strength needed to travel to productive northern pastures.[90]

In addition to affecting reproduction, heat stress also affects animal productivity.[91] Evidence suggests that dairy cattle may experience a decline in milk production of up to 50 per cent when temperatures exceed 32°C.[92] Scarcity of grazing land and decreased body weight also correspond to a reduced production of milk, meat, and wool. Weaker animals are less able to carry goods or pull loads, and at the same time are more susceptible to pathogens and diseases.[93] However, vulnerability is species-dependent: cattle, horses, and mules, for example, are less able to withstand high temperatures and malnutrition than are sheep, goats, and camels.[94] Among all breeds, the young, elderly, and pregnant animals are the most vulnerable in times of drought.[95] The degree of vulnerability of young animals and pregnant females during a drought determines the size of the herd and the quality of herd animals in future generations. The impact of water scarcity is therefore cumulative; its impact is compounded when a drought persists over multiple years.[96]

Severe cold is no less devastating to herds. While drought can have immediate and protracted impacts on herds, the effects of extreme cold are often

89 W. Spöttel and K. Bilgemre, *Türkiye koyunculuğu hakkında etüdler* (Ankara: Yüksek Ziraat Enstitüsü, 1937): 6.

90 Ibid.

91 L.P. Bengtsson and J.H. Whitaker, eds., *Farm Structures in Tropical Climates* (Rome: FAO, 1988): Chapter 10. http://www.fao.org/docrep/s1250e/S1250E00.htm#Contents (accessed on 23 April 2018).

92 Ibid.

93 R. Blench and Z. Marriage, "Drought and Livestock in Semi-Arid Africa and Southwest Asia." Working Paper (London: Overseas Development Institute (ODI): March 1999).

94 C. Toulmin, "Livestock Losses and Post-Drought Rehabilitation in Sub-Saharan Africa." *LPU Working Paper* (Addis Ababa: International Livestock Centre for Africa (ILCA): 1985): 7.

95 Ibid.

96 Ibid.: 7.

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sudden, with large numbers of animals succumbing to hypothermia. The death rate among sheep and goats is, on average, 25 per cent in years with a severely cold winter in the Middle East.[97] In 1889, as mentioned at the beginning of this paper, for example, severe cold and snow killed numerous lambs and sheep in the dry lands of Kurdistan.[98] Severe cold events generated the worst conditions for livestock and the situation could be much more devastating if one disaster followed another. As the following paragraphs show, the conditions for pastoralists in Ottoman Kurdistan became intolerable when an extreme drought episode was followed by one of severe cold.

Both archival documents and dendrochronological studies indicate that the drought in 1844-45 was one of the most destructive and widespread droughts of the century.[99] Both peasant and pastoralist peoples of Ottoman Asia were affected by this extreme drought. The drought caused crop failure, shortages of grass, rising food prices, the death of animals, struggle over the limited natural resources, migration, and famine throughout the empire. In Asia Minor, for example, thousands of starving people walked barefoot for hundreds of kilometres to the port of Gemlik on the south of Marmara Sea in search of grain.[100]

The peoples in Ottoman Kurdistan were not any better off. A document from the autumn of 1845 indicates that most crops failed in the fields, due to lack of rainfall during the spring of 1844.[101] Large numbers of people could not yield the quantity of seed that they originally planted. By the sowing season, many peasants had nothing in hand to sow for the following year's crop and were demanding wheat and barley seed from the local administration. In the following year, the state of the country was completely impoverished. After they had eaten their seed for the next sowing season and slaughtered their livestock, many peasants and pastoralists were forced to abandon their arable lands and pastures for nearby urban centres.[102]

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97 Spöttel and Bilgemre, *Türkiye koyunculuğu hakkında etüdler*: 5.

98 BOA, DH. MKT, 1593/3 (29 Kânûnusânî 1304/10 Feb. 1889).

99 Ünal Akkemik and Aliye Aras, "Reconstruction (1689-1994 AD) of April-August Precipitation in the Southern Part of Central Turkey." *International Journal of Climatology* 25/4 (2005): 537-48; R. Touchan *et al.*, "May-June Precipitation Reconstruction of Southwestern Anatolia, Turkey during the Last 900 Years from Tree Rings." *Quaternary Research* 68/2 (2007): 196-202; Ünal Akkemik *et al.*, "Tree-Ring Reconstructions of Precipitation and Streamflow for North-Western Turkey." *International Journal of Climatology* 28/2 (2008): 173-83; Azizi *et al.*, "Precipitation Variations in the Central Zagros Mountains (Iran) since A.D. 1840 Based on Oak Tree Rings."

100 BOA, İ. MVL, 78/1519 (12 Cemazeyilahir 1262/7 Jun. 1846).

101 BOA, C. İKT, 13/637 (15 Zilkade 1261/15 Nov. 1845).

102 BOA, İ. D, 103/5197 (17 Cemaziyelevvel 1261/24 May 1845); Erler, *Osmanlı Devleti'nde Kuraklık ve Kıtlık*, 141.

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A dispatch from 1847 provides crucial evidence that Ottoman administrators were aware of the long-term impacts of the drought on agricultural production in the region—one they considered vital to the Imperial Army.[103] The dispatch emphasized that, on account of the continuing scarcity of food for the last two years—referring thus to the 1844-46 drought—it had been "truly" difficult to collect taxes in the form of grain and barley from the peasants.[104] Moreover, the local governor argued, taxes and extra demands for feeding the army in these difficult times burdened the local population. The problem would continue until the next harvest time, which was still three or four months away.

For pastoralists and their herds, the drought in 1844-45 meant shortages of forage and water. In those years, Kurdish and Bedouin nomadic pastoralists in the southern portion of the region were encroaching on peasant farmland in search of water and food for themselves and their herds.[105] Hundreds of deserted villages became the first target of pastoralists who had lost their herds due to drought and lack of forage.[106] The magnitude of the drought in the plains of northern Mesopotamia was extremely high, thus pushing pastoralists further north in search of food and water.[107] To protect the sedentary population and sustain political order in the region, provincial governors organized military operations against pastoralists who were feeding their animals in peasants', farmlands.[108] In Mosul and Cezire, the rainfall deficiency caused a shortage of grass in the rich grazing lands that normally fed millions of sheep, and this diminished forage and dried up grasslands that caused Bedouins to abandon their usual pastures.[109]

The cumulative impact of the severe drought of these years on animals was extreme. Lack of water and forage weakened small and larger stocks. Although we do not know the extent of loss due to thirst among the livestock population—particularly sheep and goats, which cannot tolerate a lack of water for extended periods of time—in view of pastoralists' desperate and frequent movement through agricultural areas, it is likely that a considerable number of small stocks died in 1844-46. The death of animals was only the

103 BOA, A. MKT, 69/30 (15 Rabiulevvel 1263/3 Mar. 1847).

104 Ibid.

105 BOA, MVL, 19/43 (21 Zilhicce 1263/30 Nov. 1847); BOA, C. DH, 28/1373 (7 Zilkade 1263/17 Oct. 1847).

106 BOA, İ. DH, 156/8116 (14 Şaban 1263/28 Jul. 1847).

107 BOA, İ. DH 157/8175 (18 Şevval 1263/27 Sept. 1847; 14 Zilkade 1263/24 Oct. 1847); BOA, İ. DH, 160/8311 (29 Zilkade 1263/8 Nov. 1847).

108 BOA, İ. DH, 159/8242 (25 Şevval 1263/6 Oct. 1847); BOA, C. DH, 28/1373 (7 Zilkade 1263/17 Oct. 1847).

109 TNA: Foreign Office (Hereafter FO) 195/301, no. 16, Mosul, 5 April 1847, Rassam to Wellesley; TNA: FO 195/301, no. 18, Mosul, 17 April 1847, Rassam to Wellesley.

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immediate drought-related consequence of environmental crises. In the longer term, the consequences were more complicated both for herd animals and their pastoralist owners. A lack of food and water weakened animals' immune systems, making them more susceptible to diseases. In fall 1847 for instance, disease broke out among malnourished cattle and sheep in the north-east of Ottoman Kurdistan, already weakened by the severe drought of 1844-45.[110] By the winter of 1848 correspondents noted that "the loss from the epidemic has been serious" and, in consequence, meat prices rose considerably.[111] Further south, in Cezire and Mosul, the situation was even more devastating: "an immense number of sheep died of diseases and many proprietors, both peasants and pastoralists, lost from one half to two thirds of their flocks."[112] In addition to weakened animals being susceptible to pathogens, insufficient water in the river basin may also have contributed to the spread of disease among animals as well.

Another devastating period appeared several decades after the first period of crisis. Climatic fluctuations ushered in a decade and a half of crises for the region's pastoral economies, beginning with a very severe drought in 1879. This drought affected all pastoralists and peasants and decimated herd animals in Ottoman Kurdistan. These abnormal conditions were first witnessed in the north-eastern part of the region. Destitute people applied every means to reach out to the central government for relief. In their petition, Armenian peasants in the province of Van informed the Armenian Patriarch in Istanbul about their desperate living conditions after an extreme drought had wiped out the harvest throughout the region in 1879.[113] According to the Ministry of Interior's response, which was transmitted to the Council of State, the highest administrative assembly of the empire, crop failure caught people in this part of the empire "unprepared."[114]

Not only had crops in the fields dried up during the drought, but so had small streams, meadows, and every sort of wild shrub. The whole of Ottoman Kurdistan, including the high pastures in the hilly-mountainous northeast, the

110 TNA: FO 78/703, no. 32; FO 195/284, no. 31.

111 TNA: FO 78/752, no. 9, Erzurum, 7 February 1848, Brant to Palmerston; FO 195/284, no. 6, Erzurum, 2 February 1848, Brant to Cowley.

112 TNA: FO 195/301, no. 21, Mosul, 21 February 1848, Rassam to Cowley. Sam White's recent article is an important study that shows the possible link between climatic crises and the occurrence of epizootics in the Ottoman Empire and Europe during the Little Ice Age. S. White, "A Model Disaster: From the Great Ottoman Panzootic to the Cattle Plagues of Early Modern Europe." In *Plague and Contagion in the Islamic Mediterranean*, ed. N. Varlık (Kalamazoo: Arc Humanities Press, 2017): 91-116.

113 BOA, İ. ŞD, 51/2868 (8 Şevval 1297/13 Sept. 1880).

114 Ibid.

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river valleys and plateaus of the middle zone, and rich southern pastures, resembled a desert. Domesticated herd animals suffered greatly during this calamity. In one petition, peasants reported that due to scarcity of fodder and pasture caused by drought, their cattle were "falling down" dead.[115] By early spring, people in northeast districts watched as their livestock succumbed to starvation. In a report, Lieutenant-Colonel Steward of the Bengal Staff Corps described the great mortality among sheep and cattle, as people competed with them for foods such as grass and wild herbs.[116] In the village of Dahir, inhabited by Kurds, there was no food for the horses. The Armenian villagers of Deli Baba lamented the loss of 2,000 sheep and cattle within less than five months. Steward remarked that this was no exaggeration, having himself seen a "very great number of bodies of animals about the place."[117] As these areas were important grazing zones for Kurdish pastoralists and their herds, some of these carcases would have belonged to those communities.

The state of pastoralists in the southern part of Ottoman Kurdistan was no better. In Mardin and its surrounding area, with streams and pastures dried up, many pastoralists were forced to leave their usual habitats in search of food and water in the neighbouring areas.[118] A petition from Christian religious leaders, representing Eastern and Catholic Assyrians, Armenians, and Chaldeans, as well as Protestant Armenian communities, provides more detail regarding the socio-economic disturbances and ecological calamity caused by the recent drought in Mardin. According to the petition, "all sheep and other livestock" had died by the spring 1880.[119] As Mardin and its vicinity was inhabited by the largest pastoralist groups, the calamity to pastoralists was also great. As pastoralists possessed millions of animals and could not find sufficient water and forage to minimize the losses, the damage among their herd animals was perhaps much higher than for peasants.

In 1880, a severe cold episode occurred in all regions of Ottoman Kurdistan. It seems that this cold, which followed the drought of 1879, occurred during a "moderate" El Niño year.[120] This extreme cold episode caused widespread famine and resulted in the death of millions of animals in the eastern provinces of the empire. Both Ottoman Kurdistan and Iraq were blanketed with heavy snow and ice in this year. An eyewitness from Mosul described winter 1880 thus: "The snowfall, almost unprecedented, has been great, and the ground

115 TNA: FO 195/1237, no. 5, Erzurum, 17 December 1879, Everett to Trotter.
116 TNA: FO 195/1316, no. 6, Erzurum, 11 June 1880, Everett to Trotter.
117 Ibid.
118 BAO, ŞD, 611/39 (16 Haziran 1295/28 Jun. 1879).
119 BOA, Y. MKT, 3/129 (1 Mayıs 1296/13 May 1880).
120 R.S. Bradley and P.D. Jones, *Climate since AD 1500* (London: Routledge, 2003): 631.

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was covered with snow for five weeks." He added that people "are utterly unprepared for this."[121] It was not only heavy snowfall that befell the region but also very strong winds. Severe winds "tore up the roots of crops" and other plants in the southern districts of Nisibin and Mardin, a region inhabited by millions of herd animals.[122] The lack of grain, meat, and even wild herbs increased the destitution among humans and animals alike, and famine became an unescapable reality for the region's peoples.[123]

By the middle of January 1880, the level of distress in Ottoman Kurdistan had reached a critical point. In Diyarbekir, desperate pastoralists were invading peasants' farmlands in search of food, an alarming situation for local administrators.[124] Major Trotter, British Military Consul in Kurdistan, detailed the increasing distress seen in the region, explaining that the winter of 1880 had been unusually severe and that sheep and cattle were dying in "enormous numbers" from the "combined effects of hunger and cold."[125] Mortality among sheep, cattle, and camels was high, "especially on the borders of the desert."[126] By late winter 1880, Kurdish and Bedouin nomadic pastoralists occupying the southern pastures had "lost nearly all their flocks through want of the forage and the unusual severity of the winter."[127] It is clear that in winter 1880 pastoralists were hit especially hard, with dozens losing livestock because of deep snow and freezing temperatures.

The unseasonable cold continued into the early spring of 1880. Daily heavy snowfall, freezing cold, and frosts during the night meant that the herds which had managed to survive the long winter season of 1880 now began to perish

121 TNA: FO 424/106, no. 96, encl. 1, Diyarbekir, 2 February 1880, Chermside to Layard; FO 195/1308, Mosul, 19 January 1880, Miles to Layard.

122 TNA: FO 78/3132, no. 13, Diyarbekir, 3 May 1880, Trotter to Granville.

123 BOA, DH. MKT, 1331/41 (25 Nisan 1296/7 May 1880); DH. MKT, 1332/105 (13 Şaban 1297/21 Jul. 1880).

124 BOA, DH. MKT, 1329/47 (2 Safer 1297/15 Jan. 1880).

125 TNA: FO 78/3132, no. 1, Diyarbekir, 7 January 1880, Trotter to Salisbury.

126 Ibid.

127 TNA: FO 78/3132, no. 7, Diyarbekir, 3 March 1880, Trotter to Salisbury. This observation was not an exaggeration. Examples from different periods and geographies demonstrate the seriousness of the damage that a severe cold event can inflict on animals. In Western Anatolia and the Balkans, for example, when the Little Ice Age (1300-1850) was at its height, numerous livestock had been killed by freezing cold. Similar phenomena have been observed in Inner Mongolia in the late eighteenth century as well. According to David Bello, a snow-storm in May 1734 killed 70% of small stocks belonging to Urad pastoralists. White, *The Climate of Rebellion in the Early Modern Ottoman Empire*, 157-58; D.A. Bello, "Relieving Mongols of Their Pastoral Identity: Disaster Management on the Eighteenth-Century Qing China Steppe." *Environmental History* 19/3 (2014): 481.

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from the cold and hunger in early spring.[128] The fertile pasturages of northern Mesopotamia, from the east of the Euphrates extending to Mosul plain on the Tigris, which provided grass for millions of sheep, goats, cattle, and horses, were covered by snow in March 1880.[129] The devastation was even more significant in the southern portion of the Diyarbekir and Aleppo province, where nomadic pastoralists lost the greater part of their small stocks.[130] In Diyarbekir, "more than one half of the sheep and more than one half of the cattle" had perished during the winter and spring of 1880.[131] The conditions of livestock in Mardin, Nisibin, Cezire, and Mosul, each with a large population of transhumant pastoralists, were no better than Diyarbekir.[132] In Mosul, 80% of sheep and cattle had died under the combined impact of hunger and cold.[133] Farther north, animal mortality was also significant. For example, from autumn 1879 to spring 1880, the Cemadanlı Kurdish pastoralists lost 98% of their herds; only 200 of 18,000 head of sheep survived.[134] Even in Garzan, which usually has abundant grass, Şikak pastoralists abandoned their recently settled villages in search of water and food for their remaining livestock.[135]

The loss of draft animals, particularly horses, was significant. In the province of Diyarbekir, which was inhabited by the largest number of Bedouin and Kurdish nomadic pastoralists who possessed large numbers of draft animals, "more than four-fifths of the horses had perished" from winter to spring 1880.[136] In Mosul, the mortality rate of draught animals was about 95%.[137] Archival documents do not provide exact figures for the percentage of loss in camels during the severe winter of 1880. However, as mentioned above, camels cannot survive severe cold and frost in general. From this point of view, the number of camels that died was perhaps high. The acute lack of transport animals between Iraq and Ottoman Kurdistan, in turn, affected all forms of communications.[138] Shortages of transport animals in the region may have been re-

128 TNA: FO 195/1316, no. 9, Diyarbekir, 17 March 1880, Trotter to Salisbury.
129 Ibid.
130 TNA: FO 195/1316, no. 10, Diyarbekir, 22 March 1880, Trotter to Salisbury.
131 TNA: FO 78/3132, no. 13, Diyarbekir, 3 May 1880, Trotter to Granville.
132 TNA: FO 78/3132, no. 12, Diyarbekir, 16 April 1880, Trotter to Salisbury; FO 424/106, no. 177, encl. 1, 30 March 1880.
133 TNA: FO 424/106, no. 177, encl. 1, Diyarbekir, 16 April 1880, Trotter to Salisbury "Tabular Statement on Famine in Mosul District by Rev. N. Andrus," dated Mosul, 30 March 1880.
134 TNA: FO 424/107, no. 79, encl. 1, Erzurum, 23 July 1880, Trotter to Lady Strangford.
135 BOA, Y. PRK. DH, 1/43 (13 Teşrinisani 1297/25 Nov. 1881).
136 TNA: FO 78/3132, no. 13, Diyarbekir, 3 May 1880, Trotter to Granville.
137 TNA: FO 424/106, no. 177, encl. 1, Diyarbekir, 16 April 1880.
138 TNA: FO 424/106, no. 194, encl. 1, in 194, Kharput, 3 April 1880, Chermside to Layard. Due to the paucity of draft animals in Mosul, Herbert Chermside, British Military Engineer,

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sponsible for forcing the Ottoman State Council to formulate a *Nizamname* (regulation) prohibiting the export of grain and animals to foreign countries.[139]

The last two episodes of El Niño-related climatic fluctuations were particularly severe because of the remarkable damage in 1879-80. Although drought in 1887-88 was somewhat weaker than 1891-93, the damage was still widespread. It caused crop failure, shortage of water, shortage of grasslands, and in some areas, starvation. The area around Lake Van, which was inhabited by numerous pastoralist groups in the summertime, witnessed a shortage of grasslands, reduced yields of grain, and in some cases caused a complete failure of harvest.[140] In the hilly middle zone of the region, particularly in Eruh and Pervari, dozens of inhabitants abandoned their native lands due to drought.[141] Circumstances in the plain of Muş, inhabited mainly by Armenian peasants, were no better. There, drought reduced yields and left numerous cultivators without seed, which had been supplied by funds from the Public Benefits Bank with a guarantee of creditors.[142]

The conditions of peoples in the south and south-east were also alarming. In Diyarbekir, a sharp decline—almost one-fourth—in the trade of animals and animal products, of which pastoralists were major producers, was recorded.[143] The extent of the devastation caused by drought in northern Iraq was much greater than the crop failure experienced in the north. A complete failure of the harvest occurred in Zaho, Sulaymaniyah, and Mosul. Thousands of cultivators waited for wheat and barley seed to arrive from the government; dozens were forced to eat barks to survive.[144] Pastoralists also struggled to cope with drought due to a shortage of grasslands. Unlike most of their agrarian neighbours, they had the additional burden of feeding their livestock as well as themselves.[145]

To protect limited natural resources in their region in times of crises, provincial governors started to prevent pastoralists from neighbouring provinces from accessing their traditional grazing pastures. Mîran Kurds, wintering in northern Mesopotamia, for instance, were not allowed to use their ordinary

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wrote [from Mosul] "I came a great part of the way on foot, and as far as Diyarbekir [I] could not get a single post-horse."

139 BAO, Y.A.RES, 6/42 (17 Mart 1296/29 Mar. 1880; 23 Şubat 1295/6 Mar. 1880).

140 BOA, DH. MKT, 1451/70 (14 Eylül 1303/26 Sept. 1887).

141 BOA, DH. MKT, 1477/116 (3 Kânûnuevvel 1303/15 Dec. 1887).

142 BOA, DH. MKT, 1502/79 (6 Nisan 1304/18 Apr. 1888).

143 TNA: FO 195/1617, no. 12, Diyarbekir, 8 May 1888, Boyajian to Wratislaw.

144 BOA, DH. MKT 1457/3 (12 Teşrinievvel 1303/24 Oct. 1887).

145 For the impact of drought on pastoralists in Iraq, see Sarah Shields, *Mosul before Iraq: Like Bees Making Five-Sided Cells* (Albany: State University of New York Press, 2000): 164.

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summer pastures in the northeast.[146] Warning the central government about the dangers of this policy, the governor of Diyarbekir, where the Mîran paid their sheep-taxes, sent telegraphs to Istanbul. Barring the Mîran from their pastures, he argued, "would cause the loss of two hundred thousand head of sheep" because there was not enough forage for the herds in the southern pastures due to drought.[147]

The last episode of drought that synchronized with a global El Niño event occurred in 1891-93. The impact of the drought was first observed in the decline of agricultural yields. According to a petition, "three years continuous drought" had caused great poverty in Palu. To prevent migration of inhabitants, the local governor demanded the central government grain to feed residents, as well as seed to sow.[148] The state of neighbouring Muş was poorer than Palu; drought in 1891-93 caused crop failure that triggered famines and forced thousands of inhabitants to flee to the administrative and commercial urban centres of the region in search of aid.[149] Further east and northeast, drought led about 30,000 people to go to Trabzon, Lazistan, and Giresun, located on the Black Sea coast, while numerous others went further west, particularly to Sivas province.[150] Interestingly, it was noted by the local governor that these people "were not accustomed to agriculture" (*ahali-i merkume zaten ziraatle me'luf takımdan olmadıklarından*).[151] This description suggests that they were likely pastoralists who lost everything.

Between these two drought events, there was a cold snap in 1889. In just two days, the southern portion of Ottoman Kurdistan was covered in a blanket of snow, measuring "30 cm in the plain country and much more" in the hilly areas.[152] Unusually high amounts of snowfall caught pastoralists in a difficult position. Their weakened herd animals that had lost weight due to the spring-summer drought of 1887-88 could not tolerate low winter temperatures and snowfall. Numerous young animals, particularly new born sheep and goats, perished in great numbers.[153] In Siverek and Urfa, inhabited by Shammar, Mîlan Kurds, and Karakeçili *Turcoman*s, snowstorms and blizzards

146 BOA, DH. MKT, 1521/46 (3 Temmuz 1304/15 Jul. 1888).
147 BOA, DH. MKT, 1521/102 (4 Temmuz 1304/16 Jul. 1888).
148 BOA, Y. MTV, 79/55 (11 Haziran 1309/23 Jun. 1893).
149 BOA, BEO, 388/29073 (9 Nisan 1310/21 Apr. 1894); BOA, DH. MKT, 190/71 (13 Kânûnuevvel 1309/25 Dec. 1893).
150 BOA, BEO, 386/28878 (4 Nisan 1310/16 Apr. 1894); BOA, BEO, 356/26692 (20 Kânûnusânî 1309/1 Feb. 1894).
151 BOA, BEO, 386/28878 (4 Nisan 1310/16 Apr. 1894).
152 BOA, Y. PRK. PT, 4/51 (12 Kânûnusânî 1304/24 Jan. 1889).
153 BOA, DH. MKT, 1600/37 (15 Şubat 1304/27 Feb. 1889).

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caused the death of countless animals.[154] One snowstorm, which continued for a few days, also killed numerous livestock in Kirah, the pastureland of Karakeçili pastoralists, in late January 1889.[155] The area hardest hit by these snowstorms was the southern portion of Ottoman Kurdistan, the major grazing ground of the largest pastoral confederations during the winter season. The occurrence of snowstorms and blizzards further damaged herds that had still not recovered from the previous crises of 1887-88.

Not all animals died from starvation and cold. In the longer term, weakened herd animals became more susceptible to disease. In fact, from 1883 to 1893, a large amount of sheep, particularly new born lambs, and cattle died from diseases in Ottoman Kurdistan.[156] In 1883-85, when rinderpest entered the Ottoman Empire, herds had still not recovered from the drought and severe cold catastrophes of 1879-80.[157] This situation perhaps drove the spread of disease, particularly among younger and pregnant animals due to their vulnerable immune systems.[158] By 1887-88, morbidity reached its peak. In some regions, such as Erzurum and Diyarbekir, about a quarter of all cattle died in a few months.[159] In the spring of 1893 in Lice, north-east of Diyarbekir, a combination of animal diseases killed five thousand head of livestock, belonging to both peasants and pastoralists. By the summer of the same year, in Silvan, about 2-3% of sheep and other livestock died because of an unidentified disease.[160] Another immediate and severe consequence of these crises for herd animals was a decline in fertility. Weakened and underfed female herd animals' reproduction processes declined tremendously in times of drought and

154 BOA, DH. MKT, 1589/89 (18 Kânûnusânî 1304/30 Jan. 1889).

155 BOA, Y. PRK, 13/117 (15 Kânûnusânî 1304/27 Jan. 1889).

156 BOA, DH. MKT, 250/18722 (20 Muharrem 1311/3 Aug. 1893); BOA, DH. MKT, 66/43 (31 Mayıs 1309/12 Jun. 1893); BOA, DH. MKT, 111/19 (31 Temmuz 1309/12 Aug. 1893). In addition to rinderpest, some other diseases including *kara sığır hastalığı* (black cattle disease) also caused animal mortality in the region.

157 For rinderpest in the Ottoman Empire, see M. Ak, "Osmanlı Devleti'nde Veba-i Bakarî (Sığır Vebası)," *OTAM* 39 (2016): 215-40; For the possible links between climatic crises and panzootic, see White, "A Model Disaster: From the Great Ottoman Panzootic to the Cattle Plagues of Early Modern Europe"; T.P. Newfield, "Domesticates, Disease and Climate in Early Post-Classical Europe: The Cattle Plague of c.940 and Its Environmental Context." *Post-Classical Archaeologies* 5 (2015): 95-126.

158 BOA, DH. MKT, 1714/31 (22 Mart 1306/3 Apr. 1890); BOA, DH. MKT, 1806/57 (24 Kânûnusânî 1306/5 Feb. 1891).

159 TNA: FO 195/1617, no. 4, Erzurum, 31 January 1888, Wratislaw to White; FO 195/1617, no. 12, Diyarbekir, 8 May 1888, Boyajian to Wratislaw.

160 BOA, DH. MKT, 13/16, (13 Mayıs 1309/25 May 1893).

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in the following years. The impact of this was much more devastating for pastoralists and directly affected future generations of herd animals in the region.[161]

Conclusion

This article argues that bringing nomadic pastoralists back into the history of the late Ottoman Empire requires not only an appreciation of the specificity of their lifestyle and economies, but also a critical understanding of the climatic changes that had systematic impacts on the region's environment in the nineteenth century. Archival sources point to more than a mere coincidence between weather patterns of periodic severe heat and cold in the region of Ottoman Kurdistan, and instead suggest a parallel climate system, a regionalized fact of a global climatic phenomena known as the El Niño Southern Oscillation. Synchronicity meant that the region experienced drought events as part of global El Niño trends. It is thus important that future studies pay greater attention to the Middle East's position as part of such global environmental trends.[162]

Establishing these 'glocal' patterns of climate, this article points to the particular and acute effects of drought and unprecedented cold on the pastoral economy. Recurrent and intense climatic crises affected pastoralism in distinct ways. Drought limited the amount of forage, pastures, and available water sources of the region. In some areas, even small streams dried up. These were the sudden impacts of drought on the environment. As for herd animals, the story was more devastating and had tremendous consequences. Lack of forage and water weakened animals. With the combined effect of high heat, thirst, and starvation, great losses occurred among herd animals. Of course, some animals were more sensitive than others: young and pregnant animals became the first victims of these conditions. Larger animals, like horses and water buffalo, were more vulnerable than smaller animals like goats and sheep. Weakened surviving animals became vulnerable to diseases while a sharp decline in their reproduction processes occurred. Cold was arguably much more destructive for herds that wintered outside without or limited protection; already malnourished and undernourished animals perished in great numbers during unseasonable cold weather.

These environmental-climatic disruptions of the nineteenth century, synchronized with ENSO, were among several major challenges that together

161 Pehlivan, "Beyond 'the Desert and the Sown'": 113-68.

162 For a similar approach, see Mikhail, "Ottoman Iceland."

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posed an existential crisis for pastoralists in Ottoman Kurdistan. Herds defined the pastoralists' lifestyle: they depended on their animals as means of accumulating wealth, as food supply, transport, trade, and status. Great losses of animals affected both the subsistence of individuals and the power of clans and groups to act politically, as well as a loss of income that derived from sales of pack animals, dairy products, wool, hide, meat, and manure to sedentary societies. Loss from the sale and rental of pack animals would be exacerbated with the arrival of steamships on the Tigris and Euphrates and the diversion of trade from the Indian Ocean toward the Suez Canal after 1869. Added to this was new pressure from the Ottoman state to force the settlement of pastoral nomads, exploit the region's limited natural resources, and consolidate its own authority. Without accounting for the combination of global climatic trends and immediate and severe decimations of herds, as well as economic and political pressures, which threatened the very existence of pastoralists in Kurdistan in the nineteenth century, it is not possible to explain how a region of relative stability and coexistence later descended into the violence of the late nineteenth and early twentieth century.

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