Climate and the Syrian Civil War

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Abstract The relationship between climate change and security represents a subset of environmental security, and a new area of multidisciplinary research. Although climate change is now discussed in the national security policy and doctrine of a number of countries, research linking climate change and security has been debated, and has not yet adequately dealt with high levels of uncertainty in the associated complex socio-environmental systems. This chapter examines the relationship between climate change and security using the Syrian civil war as a case study. Some policy makers, commentators, and scholars have proposed that the Syrian civil war was caused, at least in part, by a long–term regional drought during the late 2000s, and that the drought is attributable to anthropogenic climate change. Others critique such claims, arguing that the effects of the drought, especially drought–induced migration, have been exaggerated, that it is not possible to attribute the drought to climate change (natural or anthropogenic), or that it is simply inaccurate to attribute the civil war to the drought in light of other, more significant socio–political factors. This chapter explores claims on opposing sides of the issue, in order to illuminate the ongoing debate. Finally the chapter summarizes lessons from the Syrian civil war as an environmental security case study, and suggests areas for future research.

Keywords Syrian civil war · Environmental security · Climate change

1 Introduction

The Arab Spring began in December 2010 with street protests in Tunisia. During the ensuing months, protests spread to countries across North Africa and the Middle East. Of the many countries affected directly by the 2011 Arab Spring uprisings, Syria has faced the most devastating outcomes. To date, casualty estimates in the Syrian civil war include between 300,000 and 500,000 killed, and as many as 12 million—half of

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F. Galgano (ed.), *The Environment-Conflict Nexus*, Advances in Military Geosciences, https://doi.org/10.1007/978-3-319-90975-2_11

the country's pre-war population—have been displaced from their homes. Neighborhoods in many cities lay in rubble, the Syrian economy is in ruins, and the outcome of the conflict remains uncertain. Armed conflict spilled across Syria's eastern border with Iraq, when the Islamic State in Iraq and Syria (ISIS) launched a campaign from northeast Syria to re-establish territorial control over large areas of northern Iraq. Regional state actors, including Turkey, Lebanon, Israel, Jordan, Saudi Arabia, Iraq, Qatar, and Iran, have become involved in the conflict to varying degrees. Non–state actors, including Hezbollah and Kurdish groups, are also involved; and the international community, including the United States, Russia, and the United Nations, have committed people and resources to Syria. Numerous peace negotiations have stalled or failed. In 2017, Syria ranked the fifth most fragile country of 178 listed on the Fragile States Index, with economic, political, social, and cohesion indicators all continuing to worsen since 2011 (Fund for Peace 2017).

Many factors contributed to the outbreak of armed conflict in Syria: i.e., widespread and long–standing discontent with the Assad regime, sectarian friction between a Sunni majority and the ruling Shia (Alawite) minority, high unemployment, the success of Arab Spring movements in changing regimes in nearby states such as Tunisia and Egypt, and a response to a heavy–handed government crackdown on early Arab Spring protesters in Syria (Sorenson 2016). Another factor that may have contributed to the conflict, but that is not often discussed, is the long term (2006–2010) drought in agricultural regions of northeast Syria. Some have argued that the drought is attributable to climate change. Others downplay the social and political implications of the drought, arguing it should not be considered among the factors contributing to the Syrian civil war.

This chapter examines climate change, security, and conflict, using the Syrian civil war as a case study. The first section examines the relationships among climate change, security, and conflict, including perspectives from both the academic and policy communities. The second highlights the role that climate change and drought may have played in the Syrian civil war, discussing different perspectives on the ongoing debate. The chapter concludes with a summary of environmental security lessons gathered from the Syrian civil war, and recommends areas of future research.

2 Climate Change, Security, and Conflict

The relationship among climate change, security, and conflict is complex, as described in a relatively small body of scholarly research that has recently emerged. Once thought to be too slow-changing to serve as a security concern, climate change did not enter as a variable in the environmental security debate until the early– to mid–2000s. Barnett (2003) provides one of the first comprehensive discussions of climate change as a security issue, cautiously suggesting that framing climate change as a security issue (at least in part) may help bridge science and policy. A number of more recent studies have examined possible correlations between changes in climate and violent conflict in particular. Most of this research has grown

out of the political science community, and employs traditional empirical methods (e.g., Nordas and Gleditsch 2007; Raleigh and Urdal 2007; Hsiang et al. 2013). Nonetheless, causal connections between climate change and conflict remain unclear, and are the subject of ongoing debate among scholars. In the end, most of the existing research attempting to link climate change with conflict does little to address the uncertainty surrounding future climate change and security, and has been generally insufficient to meet the demands of the policy community.

The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (Parry et al. 2007) briefly mentions links between climate change and conflict, but does not provide supporting research. The Fifth Assessment Report (AR5) includes a chapter on human security, and briefly addresses research on the relationship between climate change and armed conflict. The AR5 concludes that "*confident statements about the effects of future changes in climate on armed conflict are not possible given the absence of generally supported theories and evidence about causality*" (Adger and Pulhin 2014). Causal connections between climate change and conflict remain unclear, and are the subject of ongoing debate among scholars. Much of the scholarly research that has focused on climate and conflict has employed methods that attempt to correlate climate change with indicators of conflict. As noted in AR5, such methods are problematic—they typically focus on a single spatial level, thereby missing or neglecting emergent properties; they are limited in the number and scope of social variables included in their analysis; they normally follow linear causal relationships and fail to address non–linearity, feedback, or thresholds; and the existing research relies almost exclusively on data from past events and historic conditions, so the results may be very limited in what they can tell us about the future under conditions of unprecedented climate and social change (Adger and Pulhin 2014).

A growing body of non–scholarly literature addresses climate change, conflict, and security, including numerous white papers, studies, and other publications by government institutions, intergovernmental organizations (IGOs), and non–governmental organizations (NGOs). The U.S. Congress required the establishment of the U.S. Global Change Research Program in 1990, which coincided with some of the earliest research on the relationship between climate change and security. In 2008, Congress directed the Department of Defense to include discussion of the effects of climate change on U.S. national security in the next Quadrennial Defense Review (National Defense Authorization Act for Fiscal Year 2008). In 2017, Congress stated that climate change is "*a direct threat to the national security of the United States and is impacting stability in areas of the world both where the U.S. Armed Forces are operating today, and where strategic implications for future conflict exist*" (National Defense Authorization Act for Fiscal Year 2018). U.S. national strategic policy documents, including the 2010 and 2015 National Security Strategy, the 2010 and 2014 Quadrennial Defense Reviews, and the 2010 Quadrennial Development and Diplomacy Review, address the relationship between climate change and security. Each of these recurring strategic documents features climate change as an important factor influencing U.S. national security, but the theoretical underpinnings of climate change–security issues in the documents are unclear—the

strategic documents neither list supporting references, nor contain any theoretical background or empirical evidence in the documents themselves. The policy community in the U.S. remains engaged on issues related to climate change and security. Within the executive branch, the national security community has conducted or funded a number of studies to better understand the national security implications of climate change. In 2009, the U.S. Navy created Task Force Climate Change to coordinate research and operational planning related to climate change impacts on maritime operations, especially in the Arctic.

Several NGOs in Washington, D.C., remain engaged on climate change–security issues, including the Center for a New American Security, CNA, the Center for Strategic and International Studies, the Brookings Institute, the American Security Project, the Center for Climate and Energy Solutions, and the Center for Climate and Security. The 2007 report by CNA's Military Advisory Board (MAB; a panel of retired generals and admirals), which articulated the security implications of climate change, is considered by many to be a landmark event in the U.S. climate change conversation (Catarious et al. 2007); the MAB released an updated report in 2014, refining their findings from the 2007 report, stressing the security implications of climate change, and urging action on the part of the U.S. government (Goodman 2014). Within the United States, the federal government has not established a uniform, consistent policy regarding climate change and security, and both the academic and policy communities continue to struggle to establish an effective research agenda (and policy based on effective research) related to climate change and security. The Syrian civil war presents an opportunity to examine the emergent security landscape as it relates to environmental security, including possible connections between climate change and security.

3 Case Study: The Syrian Civil War

Many factors contributed to the outbreak of armed conflict in Syria, such as widespread discontent with the Assad regime, sectarian friction, high unemployment, the success of Arab Spring movements in changing regimes in nearby states, and a response to a heavy–handed government crackdown on the early Arab Spring protesters in Syria. Another factor that may have contributed to the conflict, but that is not often discussed, is the long term (2006–2010) drought in agricultural regions of northeast Syria. Some scholars have argued that the drought is attributable to climate change, and suggest, therefore, that anthropogenic climate change was a factor in triggering the Syrian civil war. Such claims have been echoed by some policy makers, media, and commentators. Others critique such claims, arguing that the effects of the drought, especially drought–induced migration, have been exaggerated, that it is not possible to attribute the drought to climate change (natural or anthropogenic), or that it is simply inaccurate to attribute the civil war to the drought in light of other, more significant socio-political factors. This section begins with a

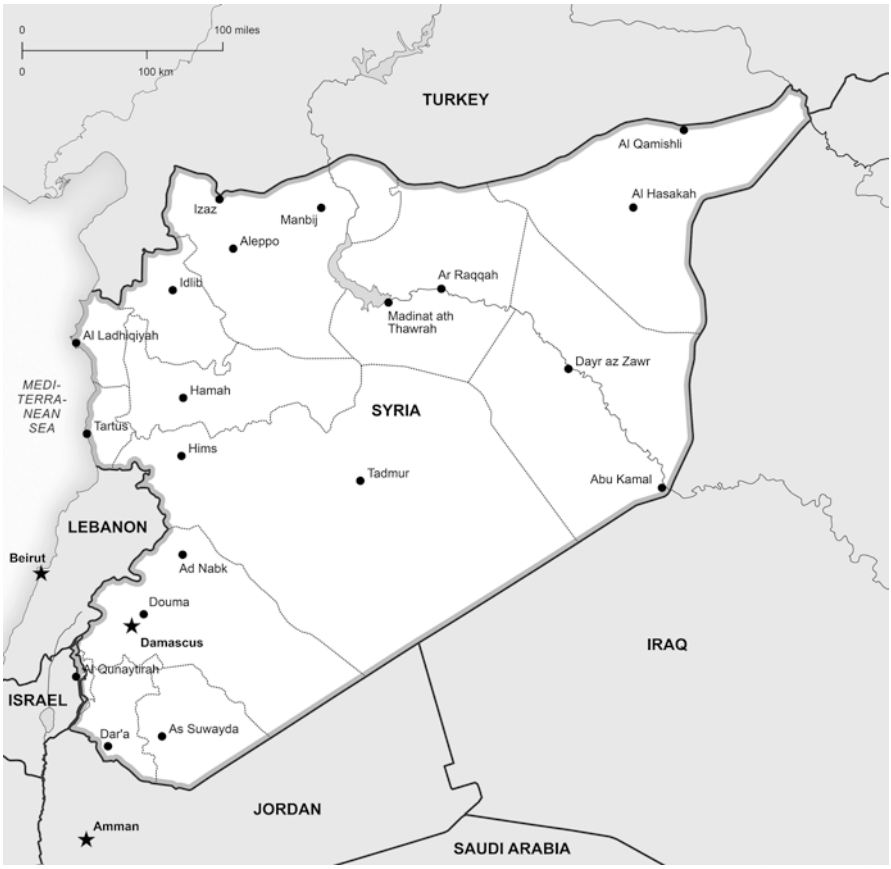

Fig. 1 Syria, 2017 (www.onestopmap.com)

brief background of Syria and its civil war. Then the claims linking climate change to the civil war are explored.

3.1 Background

Syria is a Middle Eastern country of approximately 185,000 square kilometers (about 1.5 times the size of Pennsylvania) in the eastern Mediterranean, or Levant region (Fig. 1). The country consists of semiarid and desert plateau, with a narrow coastal plain and mountains along the Mediterranean Sea in the west. Summers are hot and dry, with weather patterns dominated by subtropical high pressure. Winters are mild, with most of the country's annual precipitation falling from December to February, brought by midlatitude cyclones. About 75% of Syria's land is agricultural (30% arable or permanent cropland, 45% pasture). Approximately one quarter

of the cropland is irrigated, either from surface or groundwater sources. Twenty percent of the country's Gross Domestic Product (GDP) derives from agriculture; wheat, barley, and cotton are major crops (CIA 2017).

Syria's population of approximately 18 million (2017 estimate) is mostly Arab (90%) with Kurdish and Armenian minorities. The population is majority Sunni Muslim (74%), but includes other Muslim sects (i.e., Alawi, Ismaili, and Shia, totaling 13%), Christians (10%), and Druze (3%) (CIA 2017). Syria has been governed by an authoritarian regime since 1963, when a bloodless coup led by military leaders loyal to the Ba'ath Party gained control of the country. In 1970, Hafez al-Assad became president, and remained in control until he died in office in 2000; he was succeeded by his son Bashar al-Assad. On the one hand, the back–to–back Assad regimes provided stability, and saw general economic growth in the country for many years, especially during the 1980s and 1990s. However, the apparent stability and growth was accompanied by an often brutal, repressive security apparatus that prevented any significant political or social dissent. The lack of any significant opposition groups in Syria is considered one of the reasons for the very fragmented opposition since the outbreak of hostilities in 2011 (Abboud 2016). Widespread discontent (due in part to high unemployment rates) with the Bashar al-Assad regime stands out as a leading factor in the anti–government demonstrations during March 2011, which started in the southern city of Dara'a, and were inspired in part by ongoing Arab Spring demonstrations across North Africa and the Middle East. Following a heavy-handed government response to the protests, the demonstrations quickly escalated, become violent, and, within a year, spiraled into a sectarian civil war (Hokayem 2013). While economic, social, and political factors stand out as leading causes of the civil war, another less–explored factor has emerged among some scholars: long term drought in the northeast agricultural region of Syria, drought that may have been caused or exacerbated by climate change.

3.2 The Role of Climate Change

A debate about the role that climate change, drought, and migration may have played in the Syrian civil war has developed among a small group of scholars. Those arguing that anthropogenic climate change played a role in the outbreak of the civil war make three claims. First, the drought in northeast Syria from 2006 to 2010 was caused by, or made worse by, human-induced climate change. Second, large numbers of Syrians affected by the drought migrated to already crowded cities in the country. And finally, the drought–induced migration resulted in overcrowding in major population centers, worsening already poor living conditions, employment opportunities, and access to basic services, in turn fueling anger and discontent among both residents and migrants. In this section, each of these points (and respective counterpoints) is presented.

There is no dispute that the drought in northeast Syria from 2006 to 2010 was among the most severe on record—both sides of the debate agree on this point

(Selby et al. 2017). But can the drought, or its severity, be attributed to anthropogenic climate change? Proponents of the climate change link, including Gleick (2014), Werrell et al. (2015), and Kelley et al. (2015) all point to a single source, a study by Hoerling et al. (2012) that states the warming and drying trends across the Mediterranean region over the past century are explained by anthropogenic climate change, not natural processes alone. Selby et al. (2017) reanalyzed the data, and came to different conclusions. First, while there are long term warming and drying trends across the Mediterranean region, the trends at more localized spatial levels are varied, with some areas becoming drier and other areas becoming more wet. Second, the uncertainty associated with climate models used by Hoerling et al. (2012) and Kelley et al. (2015) is too great to conclusively attribute the drought in northeast Syria to anthropogenic climate change. To do so is "*to confuse probabilistic and deterministic claims*" (Selby et al. 2017, 235). The weight of the evidence seems to suggest that attributing the severe drought in Syria in the late 2000s to anthropogenic climate change is tenuous.

The second claim linking climate change to the civil war is that millions of Syrians affected by the drought in northeast Syria opted to migrate, mostly from rural, drought affected areas to already overcrowded cities in Syria. Proponents of this claim state that between 1.5 and 2 million Syrians migrated in the late 2000s as a result of lost livelihood because of the long term drought (Gleick 2014; Kelley et al. 2015; Werrell et al. 2015); this number seems to have been cited from a single Syrian government official in 2009 (IRIN 2009). Selby et al. (2017) acknowledge that the severe drought did cause loss of livelihood, and some chose to migrate, but they cast doubt on the numbers who opted to migrate, as well as their motives for migrating. Official U.N. and Syrian government reports of migrants from the northeast region in the late 2000s estimate 40,000–60,000 families in the 2008–2009 timeframe. Even if that number of families migrated for multiple years, the number falls far short of the frequently cited 1.5–2 million migrants. Additionally, other factors may have motivated those who did migrate, including economic liberalization policies (Selby et al. 2017). Although millions of Syrians have been displaced, both internally and externally, as a result of the civil war, there remains doubt about causal role of drought-induced mass migration in northeast Syria before the war.

The final claim linking climate change to the civil war is that the aforementioned mass migration and subsequent overcrowding pushed the affected populations to, or close to, a breaking point. Proponents suggest that drought-affected rural to urban migrants put additional strain on Syria's already crowded cities, contributing to public demonstrations of grievances (Werrell et al. 2015; Gleick 2014), and this rapid, mass migration worsened a number of other factors in the unrest (including unemployment, corruption, and inequalities)(Kelley et al. 2015). Opponents of this claim cite a lack of evidence supporting the assertions about population pressures caused by migrants to Syrian cities, and suggest that those who did migrate from northeast Syria in the late 2000s were not involved in the initial protests and unrest in 2011 (Selby et al. 2017). Further research on this claim, including more extensive social science research, might shed additional light on the role that migrants played in the initial uprisings and ongoing conflict.

To summarize, debate has emerged among a small group of scholars over the role of climate change, drought, and migration as causal or contributing factors in the outbreak of the Syrian civil war. Proponents of the linkages claim that climate change caused or exacerbated drought in northeast Syria from 2006–2010, that the severe drought led to the migration of 1.5–2 million rural Syrians to cities, and that the pressure of these migrants contributed to the unrest in 2011, which soon led to the outbreak of hostilities across the country. Opponents dispute each of these claims, suggesting that while there was a severe drought in the northeast of Syria, it cannot be conclusively attributed to climate change, nor did it cause migration on the scale suggested by proponents, and those who did opt to migrate did not play a significant role in the unrest and ensuing hostilities in 2011–2012.

4 Conclusions

The role that climate change or drought played in the outbreak or exacerbation of the Syrian civil war may be difficult to prove with any degree of certainty. Nonetheless, there are lessons that we can learn from the Syrian civil war that relate to environmental security. First, water and climatic conditions play an important role in the economic and social conditions of the Middle East broadly, and Syria specifically. In many instances, at both the regional and local levels, past water use practices are unsustainable. Gleick (2014) suggests three options to move toward more sustainable water use: improve water efficiency in agriculture, improve monitoring and management of groundwater resources, and continue to work toward more comprehensive international agreements on use of the region's rivers that flow across state borders. Second, violent conflict has a significant effect on the environment. The impact of violent conflict on the environment has long been a subset of environmental security, and the Syrian civil war provides another, albeit tragic, example. In Syria, one of the most significant environmental impacts of the war is on agriculture. From 2011–2016, the cost of damage and loss in the country's agricultural sector was an estimated $16 billion, including $3.2 billion in damage to irrigation and other agriculture infrastructure, with 60% of households reporting significant damage (FAO 2017). As conditions permit, Syria, with significant assistance from the international community, will begin the rebuilding process. Though expensive, with rebuilding comes opportunities to introduce more sustainable agricultural and other environmental infrastructure and practices. Third, precise language and rigorous research matter, especially when communicating environmental security-related research to policy makers, the media, and the general public. The previously discussed debate surrounding the role of climate change in the Syrian civil war represents a healthy dialog among scholars that will contribute to the rigor of future research in this area. Some members of the media and the policy community have picked up on elements of this research, without seeking to understand context or limitations of the findings. Selby et al. (2017) rightly caution that, given the *"urgency of the climate change challenge and the contestation around it, plus*

the mass media's preference for striking, overblown stories," researchers should avoid exaggerating climate-conflict links, and that scholars should draw on cross-disciplinary expertise for such complex problems (241).

Looking forward, the Syrian civil war provides opportunity for future environmental security research. Areas that are ripe for research include a more comprehensive assessment of the emergent effects of human insecurity (including drought, food insecurity, and migration) on local, regional and international security interests, as well as more effective methods for bridging the science-policy-general public gaps on complex issues such as climate change and conflict. The environmental impacts of the Syrian civil war, especially the effects on agriculture, land use, and water resources represent another area that calls for more research. Finally, further study of environmental security implications of the Syrian civil war demands employment of rigorous cross-disciplinary research to study, understand, and communicate complex socio-environmental challenges and opportunities.

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