



A Perfect Storm: How Climate Change Contributed to the Rise of the Islamic State

PAULA GRANGER



Middlebury Institute of
International Studies at Monterey

Center on Terrorism, Extremism and Counterterrorism

Center on Terrorism, Extremism, and Counterterrorism
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Center on Terrorism, Extremism, and Counterterrorism
Middlebury Institute of International Studies
460 Pierce Street
Monterey, CA 93940, USA
Tel: +1 (831) 647-4634

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How Climate Change Contributed to the Rise of the Islamic State

Paula Granger

Most people do not think of climate change when they hear about the Islamic State (IS). Those in the political arena who have made statements linking climate change, directly or indirectly, to the Syrian conflict have caused quite a bit of controversy in the public sphere. For example, in 2015, Barack Obama stated, “drought and crop failures and high food prices helped fuel the early unrest in Syria.”¹ Intuitively, this statement makes a lot of sense and directly acknowledges environmental factors that slowly unfold in the background against which human activities occur. This climate contribution to conflict is not a new concept but impassioned arguments continuously rage surrounding the degree to which it impacts human institutions. Even individuals who may acknowledge the role the severe drought in Syria had in the civil conflict still may not be aware of the key role climate changes played in the rise and progression of the Islamic State. While many different factors, especially political and economic instability, directly contributed to the rise of IS in both Iraq and Syria, climate change was a key force multiplier that largely went overlooked in policy analysis and continues to be minimized. The complexity of the situation in Iraq and Syria cannot be overstated and encompasses a host of contributing variables that were instrumental in the decline of political and civil society. Yet climate change, although on the radar of top policy-makers, appears to have been the elephant in the room that was not addressed in the policies that were implemented. This oversight was, and continues to be, a missed opportunity resulting in dangerously lacking estimations. The analytic products containing viable policy options undergird the eventual implementation of those options selected by policy- and decision-makers, underscoring the importance of fully informed recommendations.

¹ Meyer, Robinson. “Does Climate Change Cause More War?” *The Atlantic*, 12 Feb 2018.
<https://www.theatlantic.com/science/archive/2018/02/does-climate-change-cause-more-war/553040/>. Accessed on 08 May 2019.

Of course, climate change is not the only factor to be considered when calculating appropriate actions, but it is one that should be seriously contemplated because of its severe impact on resident populations. Making accurate forecasts by which to plan actions as well as helping the populations prepare for what may come would be extremely beneficial to the people in the effected regions. Without considering the impacts of climate change, analysts focusing on Syria missed key markers of the impending chaos which had been building over time. A spokesperson for the Center for Climate & Security expressed dismay at discovering that while analysts were calculating and predicting outcomes around the time of the Arab Spring, they were completely leaving out the impact of climate changes in that area of the world. Their conclusion was that Syria was stable but, “What they had missed was that a massive internal migration was happening, mainly on the periphery, from farmers and herders who had lost their livelihoods completely.”² This migration due to loss of crops and therefore livelihood is one of the crucial reasons IS was able to recruit in Iraq and Syria, stir up sectarian violence, and eventually hold enough land to declare the establishment of the caliphate.

Following on the heels of any discourse about climate change comes the heated debate about whether climate change is human made or is naturally occurring. The inflammatory and divisive nature of this topic may result in analysts and decision-makers side stepping the topic altogether. In the short term, avoiding climate change considerations leaves out big chunks of helpful information that would be useful for connecting the dots of a much larger picture. In the long term, the consequences for ignorance is dangerous. The lack of resources and upheaval caused by climate change, naturally occurring or otherwise, is predicted to become a more frequent and destabilizing factor for regions with weak institutions unable to handle the challenges. The unintended consequences of this oversight could result in a great shakeup that starts at the immediately impacted area but slowly seeps out, spreading more instability throughout the world and its institutions.

² Plumer, Brad. “Drought helped cause Syria’s war. Will climate change bring more like it?” *The Washington Post*. 10 Sep 2013. https://www.washingtonpost.com/news/wonk/wp/2013/09/10/drought-helped-caused-syrias-war-will-climate-change-bring-more-like-it/?noredirect=on&utm_term=.d6b2cd421de7. Accessed on 08 May 2019.

In examining the role of climate change and the rise of IS in Iraq and Syria we must carefully peel back the layers; therefore, this paper will have four parts: 1. A look at the severe climate conditions in Iraq and Syria during the 2000s; 2. An examination of the impact of these climate conditions on the populations in the region; 3. A review of how IS capitalized on these conditions in order to further their own agenda; and 4. A discussion about the importance of considering climate change in analytic decision matrices.

It is outside the scope of this paper to tackle how to slow or stop climate change. This paper is also not designed to oversimplify the conditions in Iraq and Syria, relegating the colorful complexities to a black and white spectrum. Instead, considering a big-picture perspective allows for the blurry background of climate change, against which all this devastation occurred, to come into full focus. With this clarity, we can better understand the impacts such harsh environmental conditions have on populations and the institutions that organize the people.

Figure 1. Drought in Iraq & Syria

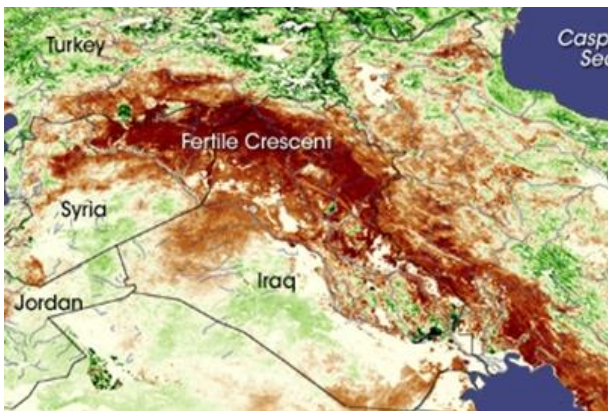
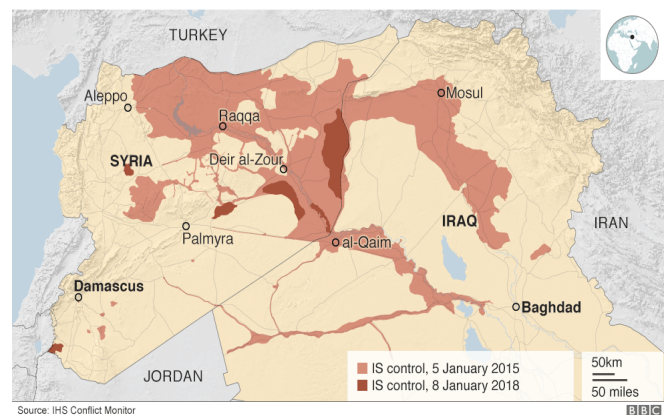


Figure 2. IS Controlled Territory in 2015 & 2018



Climate Change in Iraq & Syria

The different contributors that led to the rise of IS were many. Still, the unusually harsh climate conditions were especially relevant during the 2000s for both Iraq and Syria. The severity these regions experienced helped create a water shortage which wiped out crops. Those impacted by this hostile climate environment knew this better than anyone while outside observers, including analysts, did not recognize the extent of the devastation. Even now when the topic of IS comes up, many acknowledge the role of climate change as it relates to the drought

in Syria but not the drought and harsh winds that swept through Iraq. In hindsight, data repositories illustrate the degree to which the drought extended. Figure 1. highlights in red the most impacted areas by the drought. It is likely no coincidence these areas largely overlapped with the areas in which IS was most active (Figure 2.) and of which IS would eventually gain control. IS territory and the areas impacted by drought in Iraq and Syria were moderately to heavily populated regions illustrated in Figures 3. and 4. It is worth noting that visual representations of the drought and population densities for both Iraq and Syria in the same year are difficult to find.

Figure 3. Syrian Population in 2002

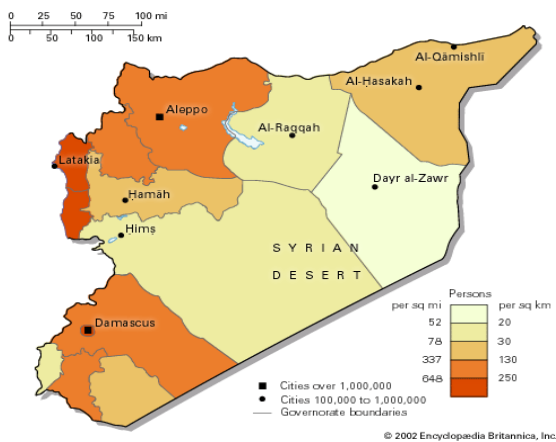
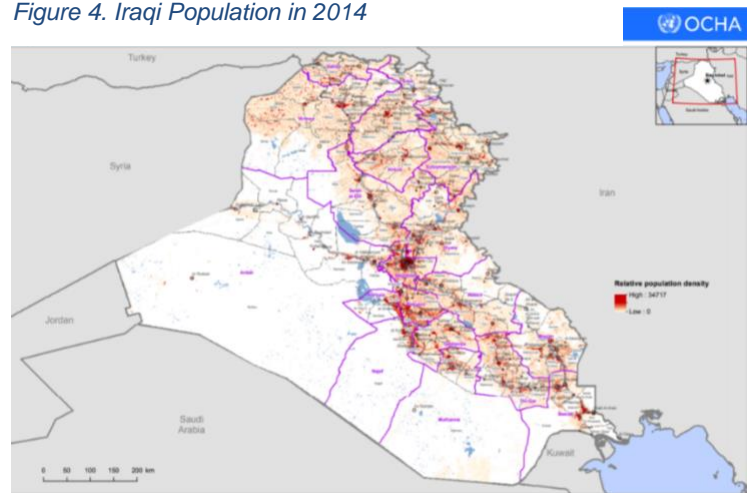


Figure 4. Iraqi Population in 2014



Iraq

Around the 2007-2008 growing season, drought gripped the northern Iraq region. Here, wheat crops are grown that are heavily dependent on rainfall and there are few other sources from which to draw water. The absence of rain devastated the crops which represented more than 85 percent of Iraq's total grain population.³ The drought continued into 2009 when locals reported that bearded IS fighters began recruitment efforts targeting struggling farmers.⁴ This severe climate event, coupled with lower water levels from the Tigris and Euphrates,

³ "Drought in Iraq." *Earth Observatory*. NASA. 2009 Apr 7-22. <https://earthobservatory.nasa.gov/images/38914/drought-in-iraq>. Accessed on 08 May 2019.

⁴ Schwartzstein, Peter. "Climate Change and Water Woes Drove ISIS Recruiting in Iraq." *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

demolished Iraqi wheat and rice crops into 2010.^{5, 6, 7} During this time, Turkey rationed water to both Iraq and Syria in addition to damming the main common water sources, which only further stretched an already thin resource. To make matters worse, Iraqis reported their eggplant crops near Kirkuk were decimated by high winds in 2012.⁸

Iraqi agriculture has been on the decline for decades due to a variety of factors, including lack of interest in non-oil sectors of the economy and conflict such as the Iran-Iraq war which ravaged the country. These factors combined with severe climate conditions helped create a water shortage. Parts of Iraq experienced years of below-average rainfall which only served to increase dependence on the Euphrates and Tigris, both of which are overused by various countries. Concurrently, Turkey and Iran were damming their tributaries causing the Tigris and Euphrates to shrink dramatically.⁹ Farmers tried to use wells, but the wells proved difficult and, in many cases, eventually dried up after years of use.¹⁰ One farmer reported having to lay off two of his hired hands after two of his wells ran dry. He suspected that soon after these men joined IS.¹¹ This water shortage also caused great disputes as skirmishes over the resource increased. Reports of assassinations of irrigation department officials and locals have been recorded with projections this will only worsen with the increasing scarcity of water that is ongoing.¹²

⁵ Al Ansary, Khalid and Serena Chaudhry. "Climate change worsens plight of Iraqi farmers." *Reuters*. 14 Nov 2010. <https://www.reuters.com/article/us-climate-iraq-idUSTRE6AD1DW20101114>. Accessed on 08 May 2019.

⁶ Schwartzstein, Peter. "Climate Change and Water Woes Drove ISIS Recruiting in Iraq." *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

⁷ Robertson, Campbell. "Iraq Suffers as the Euphrates River Dwindles." *New York Times*. 13 Jul 2009. <https://www.nytimes.com/2009/07/14/world/middleeast/14euphrates.html>. Accessed on 08 May 2019.

⁸ Schwartzstein, Peter. "Climate Change and Water Woes Drove ISIS Recruiting in Iraq." *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Schwartzstein, Peter. "Climate Change and Water Woes Drove ISIS Recruiting in Iraq." *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

¹² Hammer, Joshua. "Is a Lack of Water to Blame for the Conflict in Syria?" *Smithsonian Magazine*. Jun 2013. <https://www.smithsonianmag.com/innovation/is-a-lack-of-water-to-blame-for-the-conflict-in-syria-72513729/>. Accessed on 08 May 2019.

Syria

The drought that began in 2006 in Syria is estimated to have been the worst in 900 years. The United Nations reported that, “The drought caused 75 percent of Syria's farms to fail and 85 percent of livestock to die between 2006 and 2011.”¹³ Compared to Iraq and Turkey, also impacted by the drought, Syrian farmers are much more dependent on rainfall and groundwater to nurture their crops. Turkey’s diverse geography, location, and investment in irrigation allowed it to mitigate some of the drought’s impact. Also, despite the destruction in Iraq, the region impacted was much less dependent on agriculture than the areas effected in Syria. The drought stripped Syrians of both their livelihood and their sustenance on which their lives depended.¹⁴ Additional factors played important roles in the water shortage for which the drought was partially responsible. The Syrian government’s mismanagement of water resources by allotting more water to sectarian favorites was important as well. Adding insult to injury, Turkey cut off 40 percent of dams and hydroelectric plants to Syria.^{15, 16} Finally, drought was not the only severe climate event to occur during this time period; around sixty major dust storms from 2001 to 2010 were reported.¹⁷

The severe climate in Syria caused significant water shortages that ultimately led to a mass migration of farmers who had to abandon their dried-up crops in search of work that could sustain their family’s basic needs. This mass exodus drove thousands of people into already well populated urban centers, a tipping point for the revolution that eventually triggered the violence that followed in Syria. “You had a lot of angry, unemployed men

¹³ Stokes, Elaisha. “The Drought That Preceded Syria’s Civil War Was Likely the Worst in 900 Years.” *Vice News*. 03 Mar 2016. https://news.vice.com/en_us/article/3kw77v/the-drought-that-preceded-syrias-civil-war-was-likely-the-worst-in-900-years. Accessed on 08 May 2019.

¹⁴ Kelly, Colin P., Sharzad Mohtadi, Mark A. Cane, Richard Seager, and Yochanan Kushnir “Climate change in the Fertile Crescent and implications of the recent Syrian drought.” *Proceedings of the National Academy of Sciences of the United States of America*. 17 Mar 2015. <https://www.pnas.org/content/112/11/3241.full>. Accessed on 08 May 2019.

¹⁵ Yeranian, Edward. “Water Crisis Looms as Syria Military Conflict Winds Down.” *VOA News*. 28 Aug 2018. <https://www.voanews.com/a/water-crisis-looms-as-syria-military-conflict-winds-down-/4547493.html>. Accessed on 09 May 2019.

¹⁶ Hammer, Joshua. “Is a Lack of Water to Blame for the Conflict in Syria?” *Smithsonian Magazine*. Jun 2013. <https://www.smithsonianmag.com/innovation/is-a-lack-of-water-to-blame-for-the-conflict-in-syria-72513729/>. Accessed on 08 May 2019.

¹⁷ Polk, William R. “Understanding Syria: From Pre-Civil War to Post-Assad.” *The Atlantic*. 10 Dec 2013. <https://www.theatlantic.com/international/archive/2013/12/understanding-syria-from-pre-civil-war-to-post-assad/281989/>. Accessed on 09 May 2019.

helping to trigger a revolution.”¹⁸ IS took advantage of this mass of men by exploiting their need for income and sustenance, for themselves and their families.

Impact of Climate Change in Iraq & Syria

Harsh climate in Iraq and Syria had significant impacts on the region that may not have been immediately obvious to outside observers but was felt almost instantly by residents. When combined with existing and rapidly evolving political and religious stressors the impact of inclement climate spelled disaster. Intuitively, it is no surprise that scarcity of resources, such as water for crop propagation and human provisions, significantly contributed to a chaotic landscape during this time. A growing body of research increasingly supports this instinctive connection between conflict and climate change. One report concludes that “there is more agreement across studies regarding the influence of climate on human conflict than has been recognized previously.” Additionally, in this report it states that in an examination of over 60 primary studies, researchers concluded: “Deviations from normal precipitation and mild temperatures systematically increase the risk of conflict, often substantially.”¹⁹

Estimates from Iraq in 2011 show that around thirty-nine percent of Iraqis were living in poverty, with nearly half lacking access to drinking water. These unsustainable conditions led to the migration of tens of thousands of defeated farmers seeking employment to sustain themselves and their families around 2012-2013. Approximately 39 percent of Iraqis, further inland from the Iraq-Syrian border in the town of Salahaddin, Iraq, cited the drought as the reason for their migration.²⁰ Similarly, in Syria with 75 percent total crop failure, farmers were forced to migrate to urban centers which were, “already experiencing economic insecurity due to an influx of Iraqi and

¹⁸ Hammer, Joshua. “Is a Lack of Water to Blame for the Conflict in Syria?” *Smithsonian Magazine*. Jun 2013. <https://www.smithsonianmag.com/innovation/is-a-lack-of-water-to-blame-for-the-conflict-in-syria-72513729/>. Accessed on 08 May 2019.

¹⁹ Hsiang, Solomon M., Marshall Burke, and Edward Miguel “Quantifying the Influence of Climate on Human Conflict.” *Science*. 13 Sep 2013. <https://science.sciencemag.org/content/341/6151/1235367.full>. Accessed on 09 May 2019.

²⁰ Schwartzstein, Peter. “Climate Change and Water Woes Drove ISIS Recruiting in Iraq.” *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

Palestinian refugees.”²¹ Predictably as a result of extreme agricultural failure, water shortages, and livestock deaths, Iraqis and Syrians were starving. “Eventually, by 2011, between two and three million people were starving in a country with a total population of 10 million. That’s nearly a third of Syria, starved by climate change. When these farmers can’t grow crops, they can’t afford food. And the conditions for unrest ripens.”²² Food insecurity, as a symptom of much bigger problems, emerges as being one of the biggest catalysts for the Syrian civil war. Due to crop failure, food prices soared, which the population could not afford.²³ These factors, amid religious and political stressors, all collided in 2011 when the population protested in Syria and was met with violence by the Assad Regime.²⁴

Conflict in Syria and Iraq differed in that the civil unrest in Syria was more severe, coupled with the more dire drought conditions. Subsequent government mismanagement of water resources, specifically in Syria, contributed to agricultural failure. In the portions of the countries that were mostly impacted, the drought similarities in conflict emerge. Both countries saw increased unemployment and migration to cities as well as lack a of basic necessities such as food and water. The combination of all these factors led to more civil unrest and a growing pool of future IS recruits.

IS & Climate Change Impact

IS capitalized on the destructive results of climate change in Iraq and Syria, taking advantage of vulnerable populations and weak security apparatuses. IS embraces a doctrine that outlines steps to forming the caliphate and justifies the brutality they use to realize this destiny.²⁵ In a 2004 manual titled “The Management of Savagery:

²¹ Polk, William R. “Understanding Syria: From Pre-Civil War to Post-Assad.” *The Atlantic*. 10 Dec 2013.

<https://www.theatlantic.com/international/archive/2013/12/understanding-syria-from-pre-civil-war-to-post-assad/281989/>. Accessed on 09 May 2019.

²² Merchant, Brian. “How Climate Change Warmed Syria Up for War.” *Motherboard*. 04 Sep 2014.

<https://web.archive.org/web/20141016172345/http://motherboard.vice.com/blog/climate-change-warmed-syria-up-for-war>. Accessed on 09 May 2019.

²³ Jones, Aled. “Food Security: how drought and rising prices led to conflict in Syria.” 26 Jan 2017. <https://theconversation.com/food-security-how-drought-and-rising-prices-led-to-conflict-in-syria-71539>. Accessed on 09 May 2019.

²⁴ Polk, William R. “Understanding Syria: From Pre-Civil War to Post-Assad.” *The Atlantic*. 10 Dec 2013.

<https://www.theatlantic.com/international/archive/2013/12/understanding-syria-from-pre-civil-war-to-post-assad/281989/>. Accessed on 09 May 2019.

²⁵ Sole, Jeff. “‘Management of Savagery’ -A Model for Establishing the Islamic State.” *The Mackenzie Institute*. 02 Jun 2016.

<http://mackenzieinstitute.com/management-of-savagery-a-model-for-establishing-the-islamic-state/>. Accessed on 09 May 2019.

The Most Critical Stage Through Which the Umma Will Pass,” little-known Abu Bakr Naji outlines “The Path for Establishing an Islamic State,” which is broken down into three main steps. In hindsight, when studying IS actions, it is clear how closely IS adhered to this doctrine. Although their method of absolute savagery came across as madness to spectators, the method to this perceived madness is explained in Abu Bakr Naji’s document. A side-by-side comparison of this instructional document and IS actions that led to the declaration of the caliphate renders startling similarities.

By the time the drought began in 2006, IS was already an established group that had evolved through different stages. Abu Musab Al-Zarqawi, a Jordanian Salafi Jihadist, started an organization in 2004 that eventually morphed into the IS we know today. Through its evolution IS pledged allegiance to Al Qaeda and then fell out with them later along their timeline.²⁶ IS began in Iraq calling itself Al Qaeda in Iraq (AQI) in 2005 and then the Islamic State in Iraq (ISI) in 2006, after the death of Zarqawi.²⁷ IS eventually expanded into Syria to exploit the civil unrest that came to a head in 2011. In 2014, Abu Bakr al Baghdadi declared the caliphate to the world’s collective horror.²⁸

“The Path for Establishing an Islamic State” has three main stages as laid out in the manual: 1. Power of Vexation and Exhaustion; 2. Administration (or Management) of Savagery; and 3. Power of Establishment-Establishing the State. Of these three steps, the author notes that the second step is the most important to leading to the establishment of the state and is where observers can most clearly see IS acting accordingly. Administration of Savagery, “refers to the control of the chaos that results from the breakdown of order. It is an interim stage between the collapse of the old order and the establishment of the caliphate – a stage characterized by ungoverned space, savage politics, lack of the provision of basic needs, and loss of religious adherence.”²⁹

²⁶ “The Islamic State.” *Stanford*. [ongoing collection of information]. <https://cisac.fsi.stanford.edu/mappingmilitants/profiles/islamic-state>. Accessed on 09 May 2019.

²⁷ “Timeline: the Rise, Spread, and Fall of the Islamic State.” *Wilson Center*. <https://www.wilsoncenter.org/article/timeline-the-rise-spread-and-fall-the-islamic-state>. Accessed on 09 May 2019.

²⁸ *Ibid*.

²⁹ Sole, Jeff. “‘Management of Savagery’ -A Model for Establishing the Islamic State.” *The Mackenzie Institute*. 02 Jun 2016. <http://mackenzieinstitute.com/management-of-savagery-a-model-for-establishing-the-islamic-state/>. Accessed on 09 May 2019.

Although the first and third stages of “The Path for Establishing an Islamic State” can be clearly seen in IS activity, the second step is especially clear and most relevant to Iraq and Syria leading up to the caliphate. It is no coincidence that IS began to take shape in the chaos after the U.S. Iraq war in 2003 in accordance with the manual of capitalization on the chaos.³⁰ IS membership and activity ebbed and flowed for several years mostly due to U.S. security activity. Eventually, IS was forced from Baghdad in 2007 into regions that were heavily impacted by drought and other inclement climate conditions. IS began to gain strength again in Iraq in 2009 when the Iraqi Prime Minister al-Maliki began targeting Sunni leaders, which only served to further polarize the population and increase IS support. This strengthening continued in 2011 when IS expanded to Syria parallel to the escalation of the civil conflict.³¹

Reports from Iraq and Syria exemplify the IS doctrine in action. In Iraq, locals reported IS recruiters targeting farmers who were in dire straits due to their failed crops. They promised income and appeared right after severe climate events seeking new blood. One tribal sheikh reported that the recruiters would say, “Join us, and you’ll never have to worry about feeding your family....”³² This phenomena was not limited to Iraq but was reported in Syria as well from farmers and officials who stated IS would take advantage of the desperation of those who were in need of food, water, and ways to support their families.³³ Climate conditions were not the only elements that contributed to the mass desperation and death, but it was likely what drove this region to its tipping point.³⁴ It is not likely a coincidence that in Iraq IS was able to gather more support in regions heavily impacted by water shortages. “Throughout 100 plus interviews conducted over three years, farmers and agricultural officials alike sometimes wondered aloud: if only we’d received a little more assistance, might this entire blood-soaked mess have been averted?”³⁵ Aligning with IS doctrine of agitating sectarian grievances coupled with

³⁰ “The rise and fall of ISIS.” *Straits Times*. 23 Mar 2019. <https://www.straitstimes.com/world/middle-east/timeline-the-rise-and-fall-of-isis>. Accessed on 09 May 2019.

³¹ “Timeline: the Rise, Spread, and Fall of the Islamic State.” *Wilson Center*. <https://www.wilsoncenter.org/article/timeline-the-rise-spread-and-fall-the-islamic-state>. Accessed on 09 May 2019.

³² Varfolomeeva, Anna. “Climate change: an increasingly dangerous recruiting sergeant for insurgent groups.” *The Defense Post*. 13 Apr 2019. <https://thedefensepost.com/2019/04/13/climate-change-insurgency/>. Accessed on 09 May 2019.

³³ Schwartzstein, Peter. “Climate Change and Water Woes Drove ISIS Recruiting in Iraq.” *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

³⁴ *Ibid.*

³⁵ *Ibid.*

negative climate impacts, IS was able to benefit from this destruction by drawing from Sunni Arab villages that bore the weight of environmental ruin.³⁶ IS spread the word to Sunni farmers that the Shia-dominated areas had access to more water and the government was trying to drive them away from their land, yet again sowing discord.³⁷

Overcrowding is also mentioned in the IS doctrine as a factor when considering exploiting a bad situation in order to gain a foothold: “With regard to the common links between states in which the regions of savagery can come into being, we notice that some or all of the (following) factors pertain to them:…The weakness of the ruling regime and the weakness of the centralization of its power in the peripheries of the borders of its state and sometimes in internal regions, particularly those that are overcrowded.”³⁸ Drought is often a cause of mass migration, which was certainly the case in Iraq and especially Syria. This led to overcrowding in often urban areas, all of which helped prep the battlefield for IS to recruit and eventually take over.³⁹

Part of the “Administration of Savagery” is also attending to the people’s food and medical treatment needs—providing order for the true believers in the chaos. Unfortunately for people in IS controlled territory this meant that necessary resources were under IS’s control to be rationed out as they saw fit.⁴⁰ This was especially the case after the declaration of the caliphate where IS controlled preexisting government resources.⁴¹ One resident in Mosul declared, “I pay no rent nor even electricity or water lol. It’s a good life!!!” but not everyone had such a positive experience.⁴² Hoarding and controlling basic resources is not unique to IS: “Terrorist groups are increasingly using natural resources – such as water – as a weapon of war, controlling access to it, and further compounding, and exacerbating resource scarcities…The scarcer resources become, the more power is given to

³⁶ Ibid.

³⁷ Ibid.

³⁸ Sole, Jeff. “The Management of Savagery.” Abu Bakr Naji [translated by William McCants]. *Archive.org*. 23 May 2006. https://archive.org/stream/TheManagementOfBarbarismAbuBakrNaji/The+Management+of+Barbarism+-+Abu+Bakr+Naji_djvu.txt. Accessed on 09 May 2019.

³⁹ Mierau, Kim. “War Unmakes the World Long After the Fighting is Done.” *Preemptive Love.org*. 22 Apr 2019. <https://preemptivelove.org/blog/war-unmakes-the-world-long-after-the-fighting-is-done/>. Accessed on 09 May 2019.

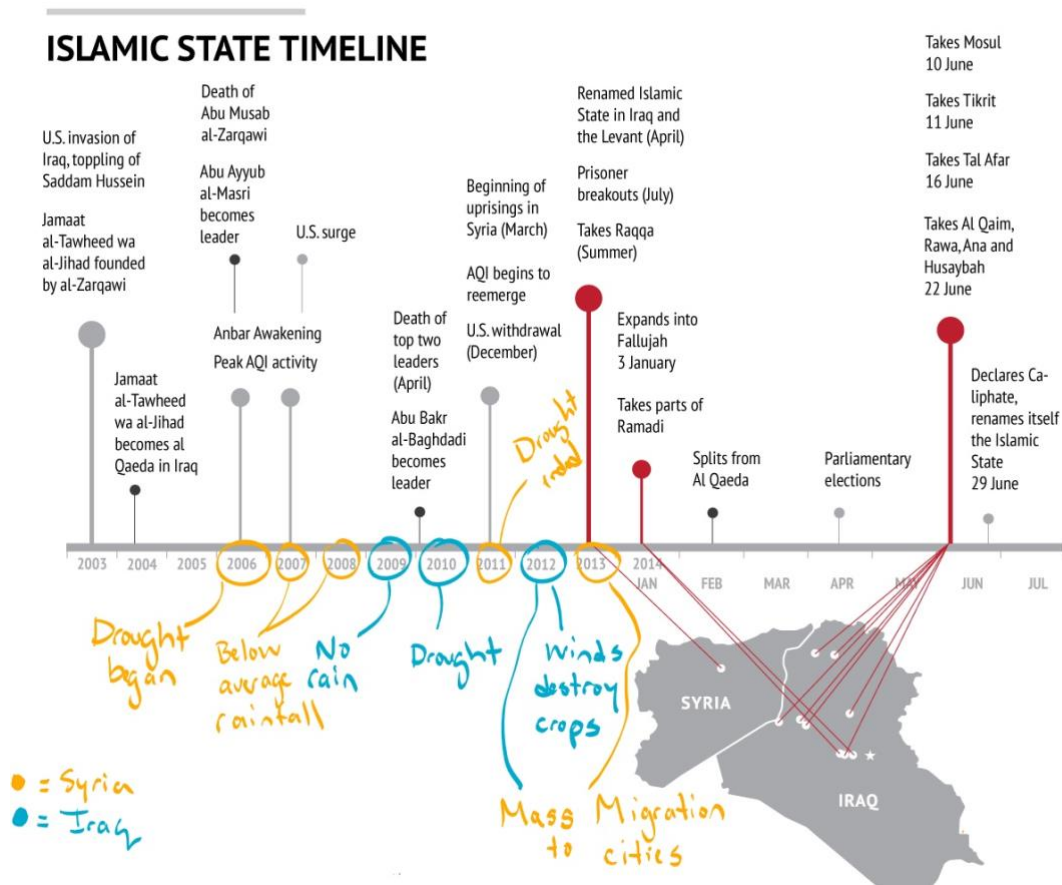
⁴⁰ Tawfeeq, Mohammed and Salma Abdelaziz “ISIS uses water as a weapon in Mosul fights.” *CNN*. 01 Dec 2016. <https://www.cnn.com/2016/11/30/middleeast/mosul-water-isis/index.html>. Accessed on 09 May 2019.

⁴¹ Callimachi, Rukmini. “The ISIS Files.” *The New York Times*. 05 Apr 2018. <https://www.nytimes.com/interactive/2018/04/04/world/middleeast/isis-documents-mosul-iraq.html>. Accessed on 09 May 2019.

⁴² Ibid.

those who control them, especially in regions where people are particularly reliant on natural resources for their livelihoods.”⁴³

Figure 5: Islamic State Timeline



IS’s modus operandi is clearly seen in Iraq and Syria with their entering an area and stirring up sectarian grievances and other violence in unstable regions before exploiting the multifaceted vulnerability of the region. IS may have been a footnote on the pages of history had it not been for the environmental factors that facilitated their progress by way of their “Management of Savagery” doctrine coupled with the crippling impacts of unfriendly environmental conditions. Without the severe climate, IS would likely have been snuffed out early in Iraq with U.S. counterterrorism attacks, dwindling numbers, and stagnant growth. Similar conditions on a larger

⁴³ Varfolomeeva, Anna. “Climate change: an increasingly dangerous recruiting sergeant for insurgent groups.” *The Defense Post*. 13 Apr 2019. <https://thedefensepost.com/2019/04/13/climate-change-insurgency/>. Accessed on 09 May 2019.

scale brought Syria to the brink where IS was able to gain physical strongholds. These conditions helped lay the groundwork for the caliphate, which attracted thousands from around the world and saw the third step of “The Management of Savagery” realized for a time.

Discussion & Considerations

Climate change factors contributed to the rise of IS and its ability to take over land because of civil instability and inability of the government to respond appropriately. All roads appear to lead back to climate change as a significant contributor to the bedlam. Climate change, which was a factor leading to the rise of IS, created the perfect grounds for recruitment, growth, and sustainment of the group itself by fulfilling a range of needs. These needs existed both on the part of IS—need for members, land, etc.—and the part of the supporter, including needs such as food, water, clothing, etc. Much of the support that IS received in Iraq was due to changes in the climate and the desperation of farmers to support themselves and their families; the same can be said about Syria. The masses of foreign fighters that came to fight for IS were only able to do so because of the instability in the regions due to climate change. The climate devastation allowed for IS to obtain physical space to host and govern those who traveled near and far to join the caliphate that was established due to climate change factors.

Environmental factors, including climate change, should be more of a concern and consideration to analysts. Intuitively, it makes sense that the environment has a huge impact on social systems including governments. The environment impacts individuals and individuals make up governments. Specifically, environmental byproducts make recruitment for terrorists easier. In the case of IS, environmental concerns caused such disruption in the population in Syria that it created a perfect storm IS was able to exploit.

Climate change information can be used to predict conditions that may lead to instability and the reassembling of IS or other terrorist organizations. This is a piece of a big puzzle that analysts can use in order to produce well-informed products that ultimately go to policy- and decision-makers who implement and approve actions. Without this information, a very important link is missing from the chain which only weakens the earnest attempts to manage situations in mid- and long-term estimations. One analyst asks, “So what would that mean?”

First we'd be moving forward with mitigation (i.e., trying to slow the pace of climate change). But the United States would also be doing more to help vulnerable nations adapt, to build resilient infrastructure — things like better infrastructure for disease.”⁴⁴ U.S. analysts could adopt a popular U.K. method of analysis that adds environmental factors to the estimation going from PEST analysis (Political, Economic, Socio-Cultural, Technological Factors) to PESTEL (Environmental, Legal).⁴⁵ Another option is applying the PMESII (Political, Military, Social Informational, and Infrastructural) model used by the U.S. military and NATO to assess an operational environment for military operations but adding PT, which stands for Physical Environment and Time.^{46, 47} This systematic consideration for climate change in the initial assessment and analytic rigor process could help shed light on a dark and shadowy subject that has long been neglected resulting in a more fully developed strategy.

Assessing climate change data can also help identify regions and populations that are vulnerable to the impact of climate change and provide insight on how to avoid or slow down climate change in the first place. Even though existing open-source resources provide evidence that top U.S. military and government officials have climate change as a threat multiplier on their radar, this information reportedly missed the analysts in charge of projecting possible scenarios in the case of Syria. An article on how climate change is setting the stage for terrorist recruitment states, “At present, the international community is focused on short-term humanitarian relief and counter-terrorism support....Billions are being spent on military solutions to fight jihadi groups, but these efforts are falling short. Much greater investments are needed in longer-term climate mitigation and adaptation strategies.”⁴⁸ In general, the Department of Defense (DoD) recognizes climate change as a significant part of the equation, but so far it has failed to put its money where its mouths is. If DoD were to dedicate more resources and

⁴⁴ Plumer, Brad. “Drought helped cause Syria’s war. Will climate change bring more like it?” *The Washington Post*. 10 Sep 2013. https://www.washingtonpost.com/news/wonk/wp/2013/09/10/drought-helped-caused-syrias-war-will-climate-change-bring-more-like-it/?noredirect=on&utm_term=.d6b2cd421de7. Accessed on 09 May 2019.

⁴⁵ “PESTILE analysis.” *CIPD*. 17 Dec 2018. <https://www.cipd.co.uk/knowledge/strategy/organisational-development/pestle-analysis-factsheet>. Accessed on 09 May 2019.

⁴⁶ Svendsen, Adam D.M “Advancing ‘Defence-in-depth’: intelligence and systems dynamics.” *Defense & Security Analysis*. 25 Mar 2015. <https://www.tandfonline.com/doi/pdf/10.1080/14751798.2014.995337?needAccess=true>. Accessed on 09 May 2019.

⁴⁷ Ducote, Brian M. “Challenging the Application of PMESII-PT in a Complex Environment.” *School of Advanced Military Studies (U.S. Army)*. 26 Apr 2010. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a523040.pdf>. Accessed on 09 May 2019.

⁴⁸ Varfolomeeva, Anna. “Climate change: an increasingly dangerous recruiting sergeant for insurgent groups.” *The Defense Post*. 13 Apr 2019. <https://thedefensepost.com/2019/04/13/climate-change-insurgency/>. Accessed on 09 May 2019.

attention to the effects of climate change, incremental steps could be made to mitigating climate change in the first place, ideally slowing its pace. Furthermore, assisting more vulnerable nations by building stronger infrastructure designed to weather the effects and consequences of climate change would help fortify these nations contributing to regional stability and national resilience.⁴⁹

Part of the problem is likely the seemingly glacial nature of climate change versus the rapid nature of terrorism and terrorist attacks, which largely elicit quick reactions from governments instead of measured responses. A cofounder of the Center for Climate and Security stated, “What we would say in Syria’s case is that a number of analysts both inside governments and out [sic] governments missed the boat in their assessments of Syria's stability. Those assessments were largely focused on what the grievances were in urban areas, on the history of instability in terms of sectarian and religious differences. What was conspicuously absent from those analyses was environmental security and food security variables and climate factors.”⁵⁰ Assessing information that was necessary to truly understand the big picture in pre-civil war Syria would have required longer term tracking of climate change and its possible effects in that region, which did not happen.

Culturally, the U.S. does not focus on the long term as much as other large and powerful nations such as China. A website based on Dutch Social Psychologist Gerard Hendrik Hofstede’s work on the different dimensions of national culture render this unsurprising information.⁵¹ For example, China rates eighty-seven to the U.S.’s 26 with a higher score indicating more consideration given to long-term orientation. The U.S.’s score is more on par with that of Iraq’s score, a war-torn country. This lack of vision for long-term considerations puts both U.S. domestic and foreign policy at risk by isolating possible consequences to the shorter term, such as in five-year increments. Yet climate change itself is a much longer consideration and therefore so are consequences of its impacts. This also relegates options for measured action to mostly reaction in response to terrorist acts, which leaves decision-makers scrambling on the ground struggling to gain control of the chaos and respond

⁴⁹ Plumer, Brad. “Drought helped cause Syria’s war. Will climate change bring more like it?” *The Washington Post*. 10 Sep 2013. https://www.washingtonpost.com/news/wonk/wp/2013/09/10/drought-helped-caused-syrias-war-will-climate-change-bring-more-like-it/?noredirect=on&utm_term=.d6b2cd421de7. Accessed on 09 May 2019.

⁵⁰ Ibid.

⁵¹ “Compare Countries.” *Hofstede Insights*. <https://www.hofstede-insights.com/product/compare-countries/>. Accessed 09 May 2019.

accordingly. Unfortunately, the very nature of terrorism is reactionary itself and hard to predict, although the events that lead to terrorist acts may live within the realm of predictability and provide more plausible options to forecast. This realm is one in which considering the short- and long-term effects of climate change could provide more accurate and more informed analysis upon which to formulate measured plans and actions.

Conclusion

The very existence of climate change, whether it is manmade or natural, and to what extent it impacts humans is often a divisive issue. Resistance to considering the impact of climate change is a barrier to a broad comprehensive examination of contributions and drivers to the rise of groups such as IS. The conditions that contributed to the rise of IS still exist both in Iraq and Syria as well as in other parts of the world. Analysts, policy- and decision-makers should take heed to not ignore such a big piece of the puzzle when considering projections of where IS and other terrorist organizations will take hold.

Before the IS attacks in Sri Lanka an analyst warned, “I’d point to the Asia-Pacific region. The commander of U.S. Pacific Command, Admiral Locklear, said in a *Boston Globe* interview in March that climate change was the biggest long-term security threat there. There’s a massive population movement to coastal areas, and many of those coastal regions are vulnerable to sea-level rise and extreme weather. That’s certainly a huge problem in terms of what could happen as a result of those vulnerabilities.”⁵² Even with these future projections many warn that the IS danger in Iraq and Syria is not over. Many of the factors that existed in the first place are still present, including damages from the severe climate: A tribal sheikh from Shirqat stated, “ISIS is gone for now, but with all these water and heat problems, things will only get worse... We need help now.”^{53, 54}

⁵² Plumer, Brad. “Drought helped cause Syria’s war. Will climate change bring more like it?” *The Washington Post*. 10 Sep 2013. https://www.washingtonpost.com/news/wonk/wp/2013/09/10/drought-helped-caused-syrias-war-will-climate-change-bring-more-like-it/?noredirect=on&utm_term=.d6b2cd421de7. Accessed on 09 May 2019.

⁵³ Hennigan, W.J. “Pentagon Warns ISIS Could Resurge in Syria Within Months.” *Time*. 04 Feb 2019. <http://time.com/5520495/isis-syria-donald-trump-resurgence/>. Accessed on 09 May 2019.

⁵⁴ Schwartzstein, Peter. “Climate Change and Water Woes Drove ISIS Recruiting in Iraq.” *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.

Despite overwhelming evidence, some remain steadfast in arguing that, “focusing on external factors like drought and climate change in the context of the Syrian uprising is counterproductive as it diverts attention from more fundamental political and economic motives behind the protests and shifts responsibility away from the Syrian government.”⁵⁵ Yet this argument misses the bigger picture by ignoring that all the events that transpired at the tipping point in Syria and Iraq occurred against the backdrop of the deemed “external factors like drought and climate change.” These factors, which many agree do not directly contribute to civil war, chip away slowly at human institutions such as politics, economies, and societies by undermining and destroying the resources upon which they depend. The unfortunate reality is that, “... a changing climate is baked into the underlying fabric of the geostrategic landscape in which all nations operate.”⁵⁶

⁵⁵ De Chatel, Francesca. “The Role of Drought and Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution.” *Middle Eastern Studies*. 27 Jan 2014. <https://www.tandfonline.com/doi/abs/10.1080/00263206.2013.850076>. Accessed on 09 May 2019.

⁵⁶ Werrell, Caitlin and Francesco Femia “Climate and Security: Steering the Ship of State Through Uncertain Waters.” *The Center for Climate and Security*. <https://climateandsecurity.org/2016/11/28/climate-and-security-steering-the-ship-of-state-through-uncertain-waters/>. Accessed on 09 May 2019.

References

- “2014 Climate Change Adaptation Roadmap.” *DoD*. 2014.
<http://web.archive.org/web/20170127042339/http://ppec.asme.org/wp-content/uploads/2014/10/CCARprint.pdf>. Accessed 09 May 2019.
- Abu Bakr Naji [translated by William McCants]. “The Management of Savagery.” *Archive.org*. 23 May 2006.
https://archive.org/stream/TheManagementOfBarbarismAbuBakrNaji/The+Management+of+Barbarism+-+Abu+Bakr+Naji_djvu.txt. Accessed on 09 May 2019.
- Al Ansary, Khalid and Serena Chaudhry. “Climate change worsens plight of Iraqi farmers.” *Reuters*. 14 Nov 2010.
<https://www.reuters.com/article/us-climate-iraq-idUSTRE6AD1DW20101114>. Accessed on 08 May 2019.
- Callimachi, Rukmini. “The ISIS Files.” *The New York Times*. 05 Apr 2018.
<https://www.nytimes.com/interactive/2018/04/04/world/middleeast/isis-documents-mosul-iraq.html>. Accessed on 09 May 2019.
- “Climate Change and National Security.” *Council on Foreign Relations*. Nov 2007.
<https://www.cfr.org/report/climate-change-and-national-security>. Accessed on 09 May 2019.
- “Climate Change Risk Profile.” *USAID*. 2017. <https://www.climatelinks.org/resources/climate-change-risk-profile-syria>. Accessed on 09 May 2019.
- “Climate Change Threatens National Security Says Pentagon.” *United Nations*. 14 Oct 2014.
<https://unfccc.int/news/climate-change-threatens-national-security-says-pentagon>. Accessed on 09 May 2019.
- “Compare Countries.” *Hofstede Insights*. <https://www.hofstede-insights.com/product/compare-countries/>. Accessed 09 May 2019.
- De Chatel, Francesca. “The Role of Drought and Climate Change in the Syrian Uprising: Untangling the Triggers of the Revolution.” *Middle Eastern Studies*. 27 Jan 2014.
<https://www.tandfonline.com/doi/abs/10.1080/00263206.2013.850076>. Accessed on 09 May 2019.
- Ducote, Brian M. “Challenging the Application of PMESII-PT in a Complex Environment.” *School of Advanced Military Studies (U.S. Army)*. 26 Apr 2010. <https://apps.dtic.mil/dtic/tr/fulltext/u2/a523040.pdf>. Accessed on 09 May 2019.
- Femia, Francesco and Caitlin E. Werrell. “Building a New Libya in a New Climate: Water as a Key to Cooperation.” *The Center for Climate & Security*. 12 Mar 2012.
https://climateandsecurity.files.wordpress.com/2012/04/building-a-new-libya-in-a-new-climate-water-as-a-key-to-cooperation_briefer-12.pdf. Accessed on 09 May 2019.
- Gleick, Peter H. “Water, Drought, Climate Change, and Conflict in Syria.” *AMS100*. 03 Feb 2014.
<https://journals.ametsoc.org/doi/full/10.1175/WCAS-D-13-00059.1>. Accessed 09 May 2019.
- Hammer, Joshua. “Is a Lack of Water to Blame for the Conflict in Syria?” *Smithsonian Magazine*. Jun 2013.
<https://www.smithsonianmag.com/innovation/is-a-lack-of-water-to-blame-for-the-conflict-in-syria-72513729/>. Accessed on 08 May 2019.
- Hennigan, W.J. “Pentagon Warns ISIS Could Resurge in Syria Within Months.” *Time*. 04 Feb 2019.
<http://time.com/5520495/isis-syria-donald-trump-resurgence/>. Accessed on 09 May 2019.
- Hsiang, Solomon M., Marshall Burke, and Edward Miguel. “Quantifying the Influence of Climate on Human Conflict.” *Science*. 13 Sep 2013. <https://science.sciencemag.org/content/341/6151/1235367.full>. Accessed on 09 May 2019.

- “Iraq: Relative population density (as of 23 July 2014).” *Reliefweb*. 23 Jul 2014. <https://reliefweb.int/map/iraq/iraq-relative-population-density-23-july-2014>. Accessed on 09 May 2019.
- “Islamic State Timeline.” *Twitter [Stratfor]*. 27 Apr 2015. <https://twitter.com/stratfor/status/592675255430324225>. Accessed on 09 May 2019.
- Jones, Aled. “Food Security: how drought and rising prices led to conflict in Syria.” 26 Jan 2017. <https://theconversation.com/food-security-how-drought-and-rising-prices-led-to-conflict-in-syria-71539>. Accessed on 09 May 2019.
- Kelly, Colin P., Sharzad Mohtadi, Mark A. Cane, Richard Seager, and Yochanan Kushnir. “Climate change in the Fertile Crescent and implications of the recent Syrian drought.” *Proceedings of the National Academy of Sciences of the United States of America*. 17 Mar 2015. <https://www.pnas.org/content/112/11/3241.full>. Accessed on 08 May 2019.
- Lomborg, Bjorg. “Is Climate Change to Blame for ISIS?” *Forbes*. 10 Dec 2015. <https://www.forbes.com/sites/bjornlomborg/2015/12/10/is-climate-change-to-blame-for-isis/#688e657059cd>. Accessed on 09 May 2019.
- Merchant, Brian. “How Climate Change Warmed Syria Up for War.” *Motherboard*. 04 Sep 2014. <https://web.archive.org/web/20141016172345/http://motherboard.vice.com/blog/climate-change-warmed-syria-up-for-war>. Accessed on 09 May 2019.
- Meyer, Robinson. “Does Climate Change Cause More War?” *The Atlantic*, 12 Feb 2018. <https://www.theatlantic.com/science/archive/2018/02/does-climate-change-cause-more-war/553040/>. Accessed on 08 May 2019.
- Mierau, Kim. “War Unmakes the World Long After the Fighting is Done.” *Preemptive Love.org*. 22 Apr 2019. <https://preemptivelove.org/blog/war-unmakes-the-world-long-after-the-fighting-is-done/>. Accessed on 09 May 2019.
- “PESTILE analysis.” *CIPD*. 17 Dec 2018. <https://www.cipd.co.uk/knowledge/strategy/organisational-development/pestle-analysis-factsheet>. Accessed on 09 May 2019.
- Plumer, Brad. “Drought helped cause Syria’s war. Will climate change bring more like it?” *The Washington Post*. 10 Sep 2013. https://www.washingtonpost.com/news/wonk/wp/2013/09/10/drought-helped-caused-syrias-war-will-climate-change-bring-more-like-it/?noredirect=on&utm_term=.d6b2cd421de7. Accessed on 09 May 2019.
- Polk, William R. “Understanding Syria: From Pre-Civil War to Post-Assad.” *The Atlantic*. 10 Dec 2013. <https://www.theatlantic.com/international/archive/2013/12/understanding-syria-from-pre-civil-war-to-post-assad/281989/>. Accessed on 09 May 2019.
- “Population Density of Syria.” *Britannica Kids*. 2002. <https://kids.britannica.com/students/assembly/view/65674>. Accessed on 09 May 2019.
- Qiu, Linda. “Fact-checking Bernie Sanders ‘comments on climate change and terrorism.’” *Politifact*. 16 Nov 2015. <https://www.politifact.com/truth-o-meter/statements/2015/nov/16/bernie-s/fact-checking-bernie-sanders-comments-climate-chan/>. Accessed on 09 May 2019.
- Qiu, Linda. “Fact-checking the link between climate change and ISIS.” *Politifact*. 23 Sept 2015. <https://www.politifact.com/truth-o-meter/statements/2015/sep/23/martin-omalley/fact-checking-link-between-climate-change-and-isis/>. Accessed on 09 May 2019.
- “Response to Congressional Inquiry on National Security Implications of Climate-Related Risks and a Changing Climate.” *DoD*. Jul 2015. <https://archive.defense.gov/pubs/150724-congressional-report-on-national-implications-of-climate-change.pdf?source=govdelivery>. Accessed on 09 May 2019.

- Robertson, Campbell. "Iraq Suffers as the Euphrates River Dwindles." *New York Times*. 13 Jul 2009. <https://www.nytimes.com/2009/07/14/world/middleeast/14euphrates.html>. Assessed on 08 May 2019.
- Schlosser, C. Adam, Kenneth Strzepek, Xiang Gao, Elodie Blanc, Sergey Paltsev, Henry Jacoby, John Reilly, and Arthur Guneau. "The future of global water stress: An integrated assessment." *AGU100*. 28 May 2014. <https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2014EF000238>. Accessed on 09 May 2019.
- Schwartzstein, Peter. "Climate Change and Water Woes Drove ISIS Recruiting in Iraq." *The Long Road Home*. National Geographic. 14 Nov 2017. <https://news.nationalgeographic.com/2017/11/climate-change-drought-drove-isis-terrorist-recruiting-iraq/>. Accessed on 08 May 2019.
- Sole, Jeff. "Management of Savagery'-A Model for Establishing the Islamic State." *The Mackenzie Institute*. 02 Jun 2016. <http://mackenzieinstitute.com/management-of-savagery-a-model-for-establishing-the-islamic-state/>. Accessed on 09 May 2019.
- Stokes, Elaisha. "The Drought That Preceded Syria's Civil War Was Likely the Worst in 900 Years." *Vice News*. 03 Mar 2016. https://news.vice.com/en_us/article/3kw77v/the-drought-that-preceded-syrias-civil-war-was-likely-the-worst-in-900-years. Accessed on 08 May 2019.
- Svendson, Adam D.M. "Advancing 'Defence-in-depth': intelligence and systems dynamics." *Defense & Security Analysis*. 25 Mar 2015. <https://www.tandfonline.com/doi/pdf/10.1080/14751798.2014.995337?needAccess=true>. Accessed on 09 May 2019.
- Tawfeeq, Mohammed and Salma Abdelaziz. "ISIS uses water as a weapon in Mosul fights." *CNN*. 01 Dec 2016. <https://www.cnn.com/2016/11/30/middleeast/mosul-water-isis/index.html>. Accessed on 09 May 2019.
- "The Islamic State." *Stanford*. [ongoing collection of information]. <https://cisac.fsi.stanford.edu/mappingmilitants/profiles/islamic-state>. Accessed on 09 May 2019.
- "The rise and fall of ISIS." *Straits Times*. 23 Mar 2019. <https://www.straitstimes.com/world/middle-east/timeline-the-rise-and-fall-of-isis>. Accessed on 09 May 2019.
- "Timeline: the Rise, Spread, and Fall of the Islamic State." *Wilson Center*. <https://www.wilsoncenter.org/article/timeline-the-rise-spread-and-fall-the-islamic-state>. Accessed on 09 May 2019.
- Trenda, Ron. "Islamic State and the crisis in Iraq and Syria in maps." *BBC*. 28 Mar 2018. <https://blogs.mprnews.org/updraft/2014/09/climate-cast-is-climate-change-destabilizing-iraq/>. Accessed on 09 May 2019.
- Trenda, Ron. "Climate Cast: Is climate change destabilizing Iraq?" *Minnesota Public Radio*. 17 Sep 2014. <https://blogs.mprnews.org/updraft/2014/09/climate-cast-is-climate-change-destabilizing-iraq/>. Accessed on 09 May 2019.
- Varfolomeeva, Anna. "Climate change: an increasingly dangerous recruiting sergeant for insurgent groups." *The Defense Post*. 13 Apr 2019. <https://thedefensepost.com/2019/04/13/climate-change-insurgency/>. Accessed on 09 May 2019.
- Welch, Craig. "Climate Change Helped Spark Syrian War, Study Says." *National Geographic*. 02 Mar 2015. <https://www.nationalgeographic.com/news/2015/3/150302-syria-war-climate-change-drought/>. Accessed on 09 May 2019.
- Werrell, Caitlin and Francesco Femia. "Climate and Security: Steering the Ship of State Through Uncertain Waters." *The Center for Climate & Security*. 26 Nov 2016. <https://climateandsecurity.org/2016/11/28/climate-and-security-steering-the-ship-of-state-through-uncertain-waters/>. Accessed on 09 May 2019.

Werrell, Caitlyn and Francesco Femia. “‘Is Climate Change the Biggest Security Threat’ Is Still a Bad Question.” *Climate and Security*. 16 Nov 2015. <https://climateandsecurity.org/2015/11/16/is-climate-change-the-biggest-security-threat-is-still-a-bad-question/>. Accessed on 09 May 2019.

Yeranian, Edward. “Water Crisis Looms as Syria Military Conflict Winds Down.” *VOA News*. 28 Aug 2018. <https://www.voanews.com/a/water-crisis-looms-as-syria-military-conflict-winds-down-/4547493.html>. Accessed on 09 May 2019.

Author Biography

Paula Granger graduated from MIIS in 2019 with an MA in Nonproliferation and Terrorism Studies and a specialization in Financial Crime Management. Paula has been a member of the Army National Guard for 9 years and received a Joint Service Commendation Medal for Exceptionally Meritorious Service for her work at United States Cyber Command. Her language background includes Spanish as well as Persian (Farsi and Dari) which she learned while attending the Defense Language Institute. She is a graduate of Indiana University, Purdue University of Indianapolis where she earned dual BA degrees in Philosophy and Women's Studies. Her interests include studying the intersection between Cybersecurity, International Affairs, and Counterterrorism in pursuit of creative and practical solutions to these complex problems. Paula was recently selected as a 2019-2021 Empire State Fellow where she will gain two years of policy experience in the New York State government.

