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Widening the Scope to Asia: Climate Change and Security[1]

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Due in large part to high population densities along rivers and low-elevation coastal zones, Asian countries have among the highest numbers of people exposed to the impacts of climate-related hazards, and thus at greatest risk of mass death. Floods, droughts, and storms have always tested civilian governments and international humanitarian aid agencies. However, climate change threatens to make the problem worse by increasing the intensity and possibly the frequency of climate-related hazards.[2]

Increasingly, both national and foreign militaries are called upon to carry out humanitarian assistance operations in the event of major climate shocks. Because of the potentially destabilizing consequences of a changing climate, an emergent discussion about climate change and security has developed in policy circles[3] and among academics.[4] That literature has focused largely on the connections between climate change and conflict, mostly leaving aside other security outcomes of concern such as humanitarian emergencies.

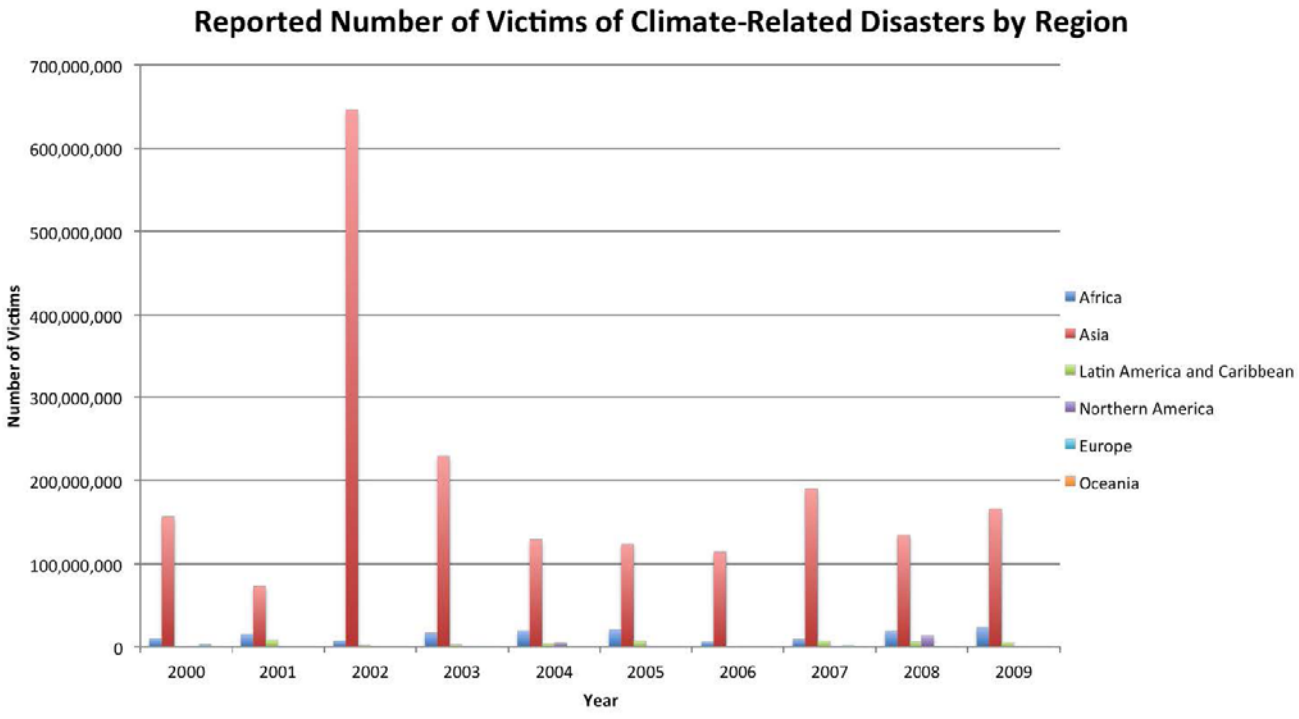
Though experiencing the lion's share of disaster fatalities and affected populations, Asian countries receive a small proportion of disaster assistance from donors such as the United States. At the same time, Asia remains understudied in the climate and security literature, particularly among academics. This chapter explores those dynamics and provides some preliminary thoughts about what that means for the study of, and emergent policy attention to, climate change and security.

Climate-Related Disasters in Asia

Climate-related hazards – such as floods, wildfires, storms, droughts, and hurricanes – endanger the lives of millions around the world. In some situations, resilient communities and capable governments are able to prevent exposure to a natural hazard from becoming a *disaster*, a situation where large impacts on the local population occur. However, in other instances, an absence of investments in risk reduction and preparedness make communities vulnerable to large-scale loss of life, humanitarian emergencies from the dislocation of local populations, and emergent food insecurity and disease risks. In such situations, civilian agencies are often overwhelmed.

Asia is particularly vulnerable to the effects of disasters because of its high population and the concentration of large numbers in mega-cities, defined as cities with a population in excess of ten million people. Sixty percent of the world's population lives in Asia. By one count, as many as 17 of 26 megacities are located in Asia.[5] As a consequence, of the 2.22 billion people killed and affected by climate-related disasters worldwide from 2001 to 2010,[6] 89% were located in Southeast, Southern and Eastern Asia (see Figure 1).[7]These numbers are estimates derived from the EM-DAT International Disaster Database, the main dataset that compiles information and statistics on disasters.

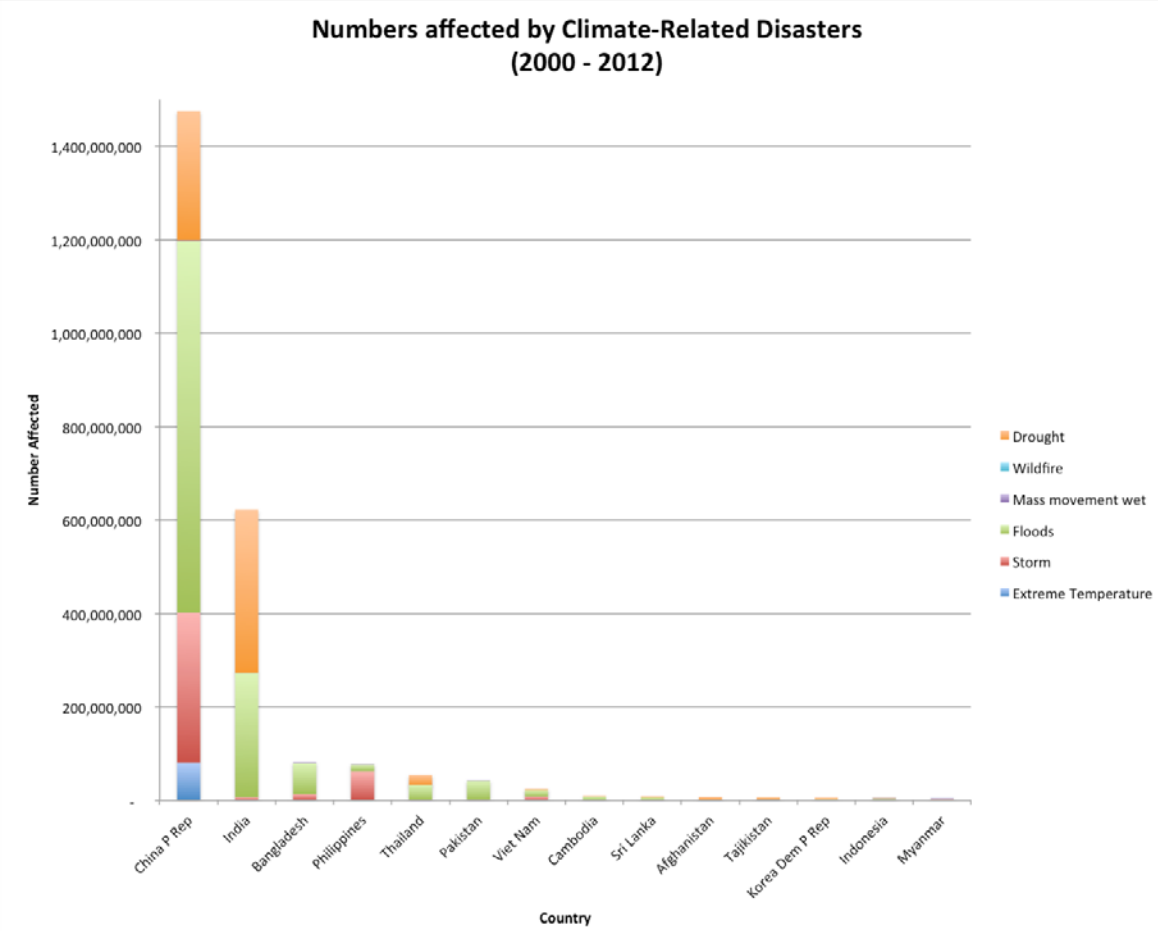
Figure 1. Reported number of victims of climate-related disasters by region



Source: CRED, "EM-DAT."

When we take a more detailed look at country level patterns over the slightly longer time-period of 2000-2012, we see that the most populous countries – China and India – were the most affected by climate-related disasters. Some 60% of those affected were located in China with another 25% in India (see Figure 2). Floods were the main drivers of affected numbers, responsible for 51% of the total, followed by droughts (about 28%) and storms (slightly more than 17%). Single events often drove the size of the estimates for death totals—a 2002 drought in India that affected 300 million, and the 2003, 2007, and 2010 floods in China that each affected more than 100 million people. There is no clear trend in the number of people affected during this period.[8]

Figure 2. Number of people affected by climate-related disasters, 2000 - 2012



Source: CRED, "EM-DAT."

In terms of deaths, some 234,975 people were killed by climate-related disasters during this time period. Of these, cyclone Nargis that struck Myanmar in 2008 claimed nearly 60% of the total. India (23,155), China (15,877) and the Philippines (13,937) followed with the largest number of deaths.[9]

What effect will climate change have on the region, particularly with respect to exposure to climate-related hazards and extreme storms? Current data availability makes this a particularly difficult question to answer with geographic precision and high confidence. The science of climate change attribution for extreme weather events is a young one and contentious. Studies on the future frequency and intensity of extreme weather events in Asia, namely cyclones, have not yet generated strong conclusions and confidence across models. Asia is a diverse and large region; thus the impacts are likely to vary significantly by location.

Nonetheless, the 2014 IPCC Fifth Assessment Report from Working Group II drew some strong conclusions about likely impacts, emphasizing the exposure of coastal and riverine populations to flooding and storm surge, even in the absence of clear signals on cyclone risk. Moreover, the report concluded:

> Extreme climate events will have an increasing impact on human health, security, livelihoods, and poverty, with the type and magnitude of impact varying across Asia (high confidence) [24.4.6]. More frequent and intense heat-waves in Asia will increase mortality and morbidity in vulnerable groups. Increases in heavy rain and temperature will increase the risk of diarrheal diseases, dengue fever and malaria. Increases in floods and droughts will exacerbate rural poverty in parts of Asia due to negative impacts on the rice crop and resulting increases in food prices and the cost of living.[10]

Thus, though aspects of Asia's vulnerability to climate change remains uncertain, the region remains especially vulnerable, given large population concentrations, particularly along coasts and rivers.

U.S. Interests and Assistance to Asia

Not only do the countries in this region constitute some of those most affected by climate-related hazards, but they are also among those that are increasingly important to the global economy and to geostrategic considerations for the United States. U.S. disaster relief in the region – to countries like the Philippines, Pakistan, and Indonesia – has often had both a humanitarian and a national security and diplomacy component.

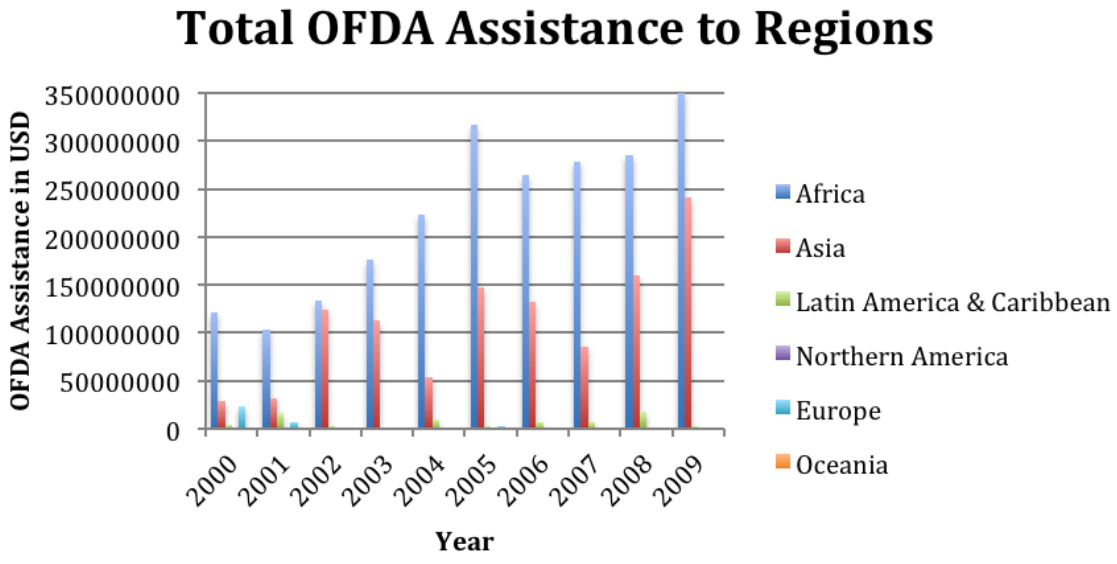
For example, in 2010, the U.S. military responded to the 2010 floods in Pakistan by mobilizing 26 helicopters and three C-130 aircraft, deploying 600 personnel on land with another 4,000 afloat ships offshore. Twenty million pounds of aid relief were delivered, with an estimated value of $75 million.[11] Whether this commitment of resources had a lasting effect on Pakistani public opinion of

the United States is debatable, but there is no doubt that Pakistan's strategic location and precarious domestic situation were salient factors for U.S. decision-makers. In the context of the 2013 typhoon in the Philippines, guerilla insurrection from Abu Sayyaf alongside maritime disputes with China make political stability in the region and the U.S.-Filipino relationship once again strategically significant.

The importance of disaster response as part of U.S. involvement in Asia is also seen relative to global trends. Of the $791 million the U.S. Department of Defense spent for all disaster relief between FY2005 and FY2010, nearly $287 million – 36% – was spent in Asia. If one excludes the $464 million spent on disaster relief for the Haitian earthquake, the Asia portion of U.S. military disaster relief during this period rises to 87%.[12]

However, while U.S. government disaster assistance by the military focuses on Asia, the same is not true for disaster assistance carried out by civilian agencies like USAID. In preliminary assessments of USAID Office of Foreign Disaster Assistance (OFDA) expenditures from 2000 to 2009, 77% of all OFDA expenditures were directed to Africa and only about 38% to Asia, notwithstanding the fact that nearly 90% of disaster victims were concentrated in Asia (see Figure 3).

Figure 3. Total OFDA assistance to regions



Source: USAID-OFDA, 2010

One reason for these patterns of resource allocation is that OFDA expenditures have been directed to complex emergencies such as the crisis in Darfur that are not reflected in EMDAT disaster statistics.[13] Moreover, the EM-DAT statistics themselves may undercount African casualties to disasters. For example, the 2011 drought that resulted in as many as 250,000 excess deaths in

Somalia[14] registers in the EM-DAT disaster database with only affected numbers and no deaths. Nonetheless, these national level patterns of resource allocation and disaster victims raise interesting questions about why funds are allocated as they have been.

Climate Change and Security

While a handful of studies have focused on individual countries in Asia or wider regional issues, the implications of climate and security outcomes in Asia remain understudied, particularly among academics.

For example, in a meta-analysis of 60 papers related to climate and security, Hsiang et al. identified 30 studies related to inter-group conflict and another 15 related to institutional breakdown and population collapse.[15] Of these 45 studies, only 8 (about 18%) dealt with Asian countries exclusively, five of them on China alone (with 2 on India and another on Cambodia).[16] Another 8 studies had a global focus to include Asia, but the results are striking when we contrast them with studies on Africa or African countries. 15 of the 45 studies (33%) focused on countries within Africa.[17] We hope to correct this lacuna as part of a newly awarded Department of Defense grant to study, "Complex Emergencies & Political Stability in Asia" within the Minerva Initiative.[18]

What explains the difference in emphasis in climate and security? Most of the work in this space focuses on climate change and conflict outcomes. Armed conflicts are not confined to Africa. There exists a so-called "shatter belt" of violence that extends across the Sahel through Central Africa to the Middle East beyond to Afghanistan and Pakistan.[19] Nonetheless, African countries are thought of as the most fragile when it comes to governance[20] and are experiencing the largest number of active non-state conflicts[21] and fatalities from such violence.[22] Perhaps the geographic tilt in scholarship is a consequence of expected vulnerability in Africa, given the higher level of some categories of violence and low levels of state capacity. However, it may also be a function of the field of security studies that primarily emphasizes armed conflict.[23]

The above discussion highlights the mismatch in geographic and population concentration and the study of climate change and security. Coupled with the disconnect between funding for disasters and disaster outcomes, a better understanding of the specific climate security vulnerabilities in Asia is overdue.

Chao Phraya river flooding near Bangkok. October 2011. Flickr/Daniel Julie

Conclusion

This short chapter sought to demonstrate that Asia remains understudied in the climate and security literature, particularly among academics, in part because of the strong focus on the associations between climate and conflict. As a consequence, Asia's particular vulnerability to extreme weather events has not received sufficient attention from the climate security community, though that oversight may be less acute among think tanks and practitioners.

Nonetheless, while not a full portrait of resource flows for disaster assistance, this chapter provided some data from one of the largest donors, the United States. While its military disaster assistance does show a strong Asia focus, given the region's strategic importance to the United States and a number of high-profile events over the last decade, the patterns of civilian disaster assistance have disproportionately been directed to Africa. Though that may have ample justification, the relative neglect of Asia's particular vulnerability to climate security consequences and the patterns of resource allocation deserve more treatment in the future.

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Notes

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2 Christopher B. Field and the Intergovernmental Panel on Climate Change (IPCC), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: Special Report of the Intergovernmental Panel on Climate Change* (New York: Cambridge University Press, 2012). Assessing the links between climate change and the frequency and intensity of extreme weather events remains a difficult scientific endeavor. For an interesting recent exchange of conflicting perspectives, see Kerry Emanuel, "MIT Climate Scientist Responds on Disaster Costs And Climate Change," FiveThirtyEight, March 31, 2014, accessed June 29, 2014, available at http://fivethirtyeight.com/features/mit-climate-scientist-responds-on-disaster-costs-and-climate-change/; Roger Pielke Jr., "Disasters Cost More Than Ever – But Not Because of Climate Change," *FiveThirtyEight*, March 19, 2014, accessed June 29, 2014, available at http://fivethirtyeight.com/features/disasters-cost-more-than-ever-but-not-because-of-climate-change/

3 See for example: Joshua Busby, *Climate Change and National Security: An Agenda for Action*, (Council on Foreign Relations, 2007), available at www.cfr.org/publication/14862; CNA Corporation, *National Security and the Threat of Climate Change*, 2007, available at http://www.npr.org/documents/2007/apr/security_climate.pdf.; Jay Gulledge, "Three Plausible Scenarios of Future Climate Change," in *The Age of Consequences*, edited by Kurt M. Campbell et al., Washington, DC: CSIS/CNAS, available at http://www.csis.org/media/csis/pubs/071105_ageofconsequences.pdf.; Thomas Fingar, "National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030," United States National Intelligence Council, 2008, available at http://www.dni.gov/files/documents/Newsroom/Testimonies/20080625_testimony.pdf.; Javier Solana, "Climate Change and International Security: Paper from the High Representative and the European Commission to the European Council," March 14, 2008, available at http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/reports/99387.pdf

4 Joshua Busby, "Who Cares About the Weather? Climate Change and U.S. National Security," *Security Studies* 17, 2008, 468–504; Nils Gleditsch et al., "Climate Change and Conflict: The Migration Link," *Coping with Crisis: Working Paper Series*, 2007, available at http://mercury.ethz.ch/serviceengine/Files/ISN/126950/ipublicationdocument_singledocument/0923c865-dafe-4362-ad05-529b200506f8/en/climate_change_conflict_05_2007.pdf.; Cullen S. Hendrix and Idean Salehyan, "Climate Change, Rainfall, and Social Conflict in Africa," *Journal of Peace Research* 49 (2012): 35–50, available at http://jpr.sagepub.com/content/49/1/35; Ole Magnus Theisen, Helge Holtermann, and Halvard Buhaug, "Climate Wars? Assessing the Claim That Drought Breeds Conflict," International Security 36 (2012): 79–106, available at http://www.mitpressjournals.org/doi/abs/10.1162/ISEC_a_00065; Clionadh Raleigh, Lisa Jordan and Idean Salehyan, "Climate Change, Migration and Conflict," The Social Development Department, The World Bank Group, 2008, available at http://siteresources.worldbank.org/EXTSOCIALDEVELOPMENT/Resources/SDCCWorkingPaper_MigrationandConflict.pdf.; Clionadh Raleigh and Henrik Urdal, "Climate Change, Environmental Degradation and Armed Conflict," *Political Geography* 26 (2007): 674–94; Halvard Buhaug, Nils Petter Gleditsch, and Ole Magnus Theisen, "Implications of Climate Change for Armed Conflict," World Bank, 2008, available at http://siteresources.worldbank.org/INTRANETSOCIALDEVELOPMENT/Resources/SDCCWorkingPaper_Conflict.pdf.; Halvard Buhaug, "Climate Not to Blame for African Civil Wars," *Proceedings of the National Academy of Sciences* 107 (2010): 16477–82, available at doi:10.1073/pnas.1005739107. http://www.pnas.org/content/107/38/16477; Halvard Buhaug, "Concealing agreements over climate–conflict Results," *Proceedings of the National Academy of Sciences* 111 (2014): E636–E636, available at doi:10.1073/pnas.1323773111; Solomon M. Hsiang, Kyle C. Meng, and Mark A. Cane, "Civil Conflicts Are Associated with the Global Climate," *Nature* 476 (2011): 438–41, available at doi:10.1038/nature10311; Solomon M. Hsiang, Marshall Burke, and Edward Miguel, "Quantifying the Influence of Climate on Human Conflict," *Science*, 1237557 (2013), available at doi:10.1126/science.1235367; S. M. Hsiang and K. C. Meng, "Reconciling Disagreement over Climate-Conflict Results in Africa," *Proceedings of the National Academy of Sciences* 111 (2014): 2100–2103, available at doi:10.1073/pnas.1316006111S.

5 Wendell Cox, "World Urban Areas Population and Density: A 2012 Update," *New Geography*, May 3, 2012, available at http://www.newgeography.com/content/002808-world-urban-areas-population-and-density-a-2012-update.

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7 Southern Asia encompasses Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka. Southeast Asia includes Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. Eastern Asia thus encompasses China, Hong Kong, Macao, North Korea, Japan, Mongolia, and South Korea: United Nations Statistics Division, "Composition of macro geographical (continental) regions, geographical sub-regions, and selected economic and other groupings," October 31, 2013, available at http://unstats.un.org/unsd/methods/m49/m49regin.htm.

8 CRED, "EM-DAT."

9 Ibid.

10 Yasuaka Hijioka, Erda Lin, and Joy Jacqueline Pereira, "Chapter 24. Asia - Report of Working Group II," *Climate Change 2014: Impacts, Adaptation, and Vulnerability*, UN Intergovernmental Panel on Climate Change, 2014, available at http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap24_FGDall.pdf.

11 Office of Partnership Strategy and Stability Operations (PSO), "DoD Involvement in Foreign Disaster Relief 2005-2010," 2010.

12 Ibid.

13 USAID-OFDA, *USAID-OFDA and USG Disaster Response FY 2000-2009*, (Washington, DC: USAID, 2010).

14 Francesco Checchi and W. Courtland Robinson, "Mortality among Populations of Southern and Central Somalia Affected by Severe Food Insecurity and Famine during 2010-2012," FAO and FEWS NET, 2012, available at http://www.fsnau.org/downloads/Somalia_Mortality_Estimates_Final_Report_8May2013_upload.pdf.

15 The remainder dealt with interpersonal conflict, with the geography of events less relevant.

16 Even those with a strong Asia focus often deal with ancient pre-modern historical periods that may have limited applicability to contemporary circumstances. The five China studies examined in the Hsiang et al. paper, for example, begin as early as 2100 BCE with the others beginning in the 3rd, 11th, 15th, and 17th centuries. While several of them analyze a long trajectory, even the most contemporary of the studies concludes its analysis in 1911.

17 Hsiang, Burke, and Miguel, "Quantifying the Influence of Climate." While this study does not encompass all of the work in this field, it encompasses a large number of studies and is reasonably comprehensive. A January 2012 *Journal of Peace Research* special issue on climate change and conflict featured 17 articles, including a summary review articles. Of the remainder, 7 dealt exclusively with evidence from Africa countries while only one was exclusively about Asia.

18 "Department of Defense," The Minerva Initiative of the Department of Defense, 2014, available at http://minerva.dtic.mil/funded.html; The Robert S. Strauss Center, "Complex Emergencies and Political Stability in Asia," available at https://www.strausscenter.org/cepsa/

19 On the shatter belt, see Buhaug, Gleditsch, and Theisen, "Implications of Climate Change."

20 Center for Systemic Peace, "Global Conflict Trends," March 27, 2014, available at http://www.systemicpeace.org/conflict.htm

21 Conflicts between two parties, neither of which is a government. Uppsala Conflict Data Program, "UCDP Non-State Conflict Dataset v. 2.4-2012, 1989-2011," available at http://www.pcr.uu.se/research/ucdp/charts_and_graphs/#non-state_region; Ralph Sundberg, Kristine Eck, and Joachim Kreutz, "Introducing the UCDP Non-State Conflict Dataset," *Journal of Peace Research* 49 (2012): 351–62.

22 Human Security Report Project, "Human Security Report 2013: The Decline in Global Violence: Evidence, Explanation, and Contestation," Simon Fraser University, 2013, available at www.hsrgroup.org/human-security-reports/2013/overview.aspx

23 Busby, "Who Cares About the Weather?"; Joshua Busby, "The Climate Security Connection: What It Means for the Poor," in *Climate Change and Global Poverty: A Billion Lives in the Balance?*, ed. Brainard et al. (Washington, DC: Brookings Institution, 2009); Joshua Busby, "Feeding Insecurity? Poverty, Weak States, and Climate Change" in *Confronting Poverty: Weak States and U.S. National Security*, ed. Rice et al. (Washington, DC: Brookings Institution Press, 2009).