Workshop on Complex Emergencies and Political Stability in Asia

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Research Team Memos

THE ROBERT S. STRAUSS CENTER™
FOR INTERNATIONAL SECURITY AND LAW

CEPSA COMPLEX EMERGENCIES AND POLITICAL STABILITY IN ASIA

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CEPSA COMPLEX EMERGENCIES AND POLITICAL STABILITY IN ASIA

The program on Complex Emergencies and Political Stability in Asia (CEPSA) explores the confluence of insecurities that impact vulnerability in Asia and potential strategies for response. In doing so, the program investigates the following questions: What are the diverse forces that contribute to climate-related disaster vulnerability and complex emergencies in Asia? What are the implications of such events for local, cross-border, and regional security? How can investments in preparedness, supported by international donors, minimize impacts and build resilience? CEPSA explores the impacts and potential responses related to climate-related hazards in Southern and Southeast Asia.

The program focuses on six countries in South Asia (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka) and five countries in the Mekong region of Southeast Asia (Cambodia, Laos, Myanmar, Thailand, and Vietnam).

The CEPSA program's qualitative and quantitative methods include: (1) modeling climate-related disaster vulnerability using Geographic Information Systems, (2) coding and mapping conflict events in real-time by extending the Armed Conflict Location and Event Dataset (ACLED) to high-risk Asian states, (3) conducting risk assessments and forecasting using geospatial analytics, (4) mapping aid flows to identify disaster response capacity, (5) conducting consultations and fieldwork to collect primary data, ground-truth conceptual tools and models, and implement case studies, and (6) designing mapping and analytical tools to facilitate the use of Program research in policy planning and response.

The program applies these methods in two core research areas: assessing the relationship between insecurities and complex emergencies in Asia, and identifying strategies to build government response capacity and societal resilience.

In the first research area assessing the relationship between insecurities and complex emergencies in Asia, we have three distinct projects focused on:

- Disaster Vulnerability
- Conflict and Complex Emergencies
- Governance Implications of Complex Emergencies

In the second research area identifying strategies to build government response capacity and societal resilience, we have three additional projects focused on:

- National Disaster Preparedness
- International Aid to Mitigate Disasters and Complex Emergencies
- Complex Emergencies Dashboard

Memos on each of these six projects follow in this report.

Disaster Vulnerability
Joshua Busby, Todd Smith, and Nisha Krishnan

This memo reviews the research plan for the vulnerability team associated with the CEPSA project. In our previous project on Climate Change and African Political Stability (CCAPS), we developed a sub-national model of climate security vulnerability for the entire continent. After groundtruthing efforts in the field, that model went through multiple iterations, with the most recent one being featured in a November 2014 article in *Political Geography*.[1]

For the 11 CEPSA countries, we propose the following steps in our research.[2] *First*, we aim to replicate the latest model of CCAPS for South and Southeast Asia. *Second*, we plan to compare the findings of these model results with the climate-related disaster event frequencies, deaths, and affected populations as reported in the EM-DAT International Disaster Database, geocoded to the lowest administrative unit possible (an early iteration of that work is already complete and discussed here). *Third*, we plan to accompany these steps with surveys of regional experts to have them rank the indicators we have in our current vulnerability model in terms of importance and appropriate weights. *Fourth*, we will create a version of the model based on these expert weights and take into consideration any ideas for alternative functional forms, model construction, and inclusion of other indicators. *Fifth*, we would like to develop an econometric model, taking subnational disaster affected numbers as the dependent variable. Throughout, we plan on some modest fieldwork but will rely more on communications and feedback from other CEPSA teams. The remainder of the memo provides a bit more detail on the vulnerability model, the EM-DAT comparison, and the expert surveys.

Vulnerability Model

In our models, we aim to identify the locations of what we call "climate security vulnerability." Climate security vulnerability is defined as the potential large-scale loss of life as a result of exposure to climate-related hazards, with such deaths occurring because of either direct exposure to a swift-onset hazard (deaths from drowning, falling objects, etc.) and from more prolonged exposure to slow-onset hazards such as droughts that contribute to loss of essential needs for survival such as food, water, medical care, or shelter. Such deaths can also accompany political instability, dislocation and violence triggered climate hazards.

We conceive of climate security vulnerability as multi-dimensional, influenced by physical exposure to hazards, where people live, what resources they have to protect themselves, and whether their governments are willing and able to help the populace in times of need. The

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[1] Busby, Smith, and Krishnan 2014. Other iterations of the model were featured in *International Security* and *Climatic Change*, among other publications. Busby et al. 2013; Busby et al. 2014. Contact Josh Busby for citations. This material is based upon work supported by, or in part by, the U.S. Army Research Laboratory and the U.S. Army Research Office via the U.S. Department of Defense's Minerva Initiative under grant number W911NF-14-1-0528.
[2] Our study includes six countries in South Asia (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka) and five countries in Southeast Asia (Cambodia, Laos, Myanmar, Thailand, and Vietnam).

CCAPS composite index of sub-national climate security vulnerability is thus based on the aggregation of four processes or baskets – physical exposure, population density, household and community resilience, and governance and political violence. All but population are represented by multiple indicators. The indicators tend to be based on equal weights, except in circumstances where two indicators represent a single concept, as with water anomalies. The baskets are equally weighted and added together, with sensitivity tests to different kinds of weights and aggregation methods (for a sample of model output see *Appendix Figure 1*).

Mapping vulnerability first requires identification and collection of physical hazard indicators for cyclones, rainfall anomalies, floods, fires, and areas of potential coastal inundation. These are often available at different spatial resolution but in some cases very fine grained resolution, as in the case of the digital elevation model which was available at 3 arc second or 1 degree resolution. We usually captured multi-year totals and tried to use indicators that measured event frequency and intensity. In the case of water anomalies, we generated our own indicators of chronic water scarcity and negative rainfall deviations (see *Appendix Table 1*).

Beyond this, we need to collect population density data as well as indicators of household and community resilience. For CCAPS, population density data was derived from Landscan, and we are likely to employ it again for CEPSA. LandScan is based on "ambient" populations. LandScan is a modeled dataset based on a variety of inputs such as road networks, elevation, slope, land use/land cover, high resolution imagery. Supporters of LandScan credit it with having more accuracy estimating population concentrations to take into account geographic features such as mountainous areas and rivers (see *Appendix Table 2*).

For Household and Community resilience, we collected data on education, health, access to necessities and services from the USAID-funded Demographic and Household Surveys (DHS) as well as the UNICEF-funded Multiple Indicator Cluster Surveys (MICS). These household surveys are carried out using community-level cluster sampling methods to which researchers derived averages aggregated up to larger administrative boundaries, sometimes provinces but in other cases with boundary files and units different from other conventional efforts like GAUL. For Africa, use of DHS and MICS files required us to develop our own sub-national shape files of administrative regions.

We are currently collecting subnational administrative boundaries for CEPSA countries, largely relying on GAUL, though with deviations in a few cases (see *Appendix Table 3* for a list of indicators and coverage used in the CCAPS model). In CEPSA countries, contested borders between India and Pakistan and China and various CEPSA countries will require some finesse (we will try to identify shapes of contested border areas). It is unclear if contemporary data with clear application to sub-national boundary shapes is available for all CEPSA countries.

For governance indicators, we compiled data from a variety of sources, the World Bank, Polity IV, the KOF Index of Globalization. Since no subnational indicators of governance exist, we incorporated a measure of subnational violence to reflect failures of local governance, drawing on the Armed Conflict and Location Event Dataset (ACLED), with data dating back to the late 1990s forward. As part of CEPSA, ACLED is being extended to cover countries in Asia, though data will initially only be available for 2014 (though some backdating will later extend

coverage to 2011-2013) (see *Appendix Table 4* for a list of indicators and coverage used in the CCAPS model).

Once these measures are all collected, the indicators have to be normalized on a common scale to be aggregated in to a single metric. In the early incarnations of our previous Africa work, we used quintile classification to simply metrics, though this led to considerable loss of variation in indicators. In the last iteration of our mapping work, we normalized using a zero to 1 scale using minmax or percent rank metrics. What that accomplished was a relative score of subnational climate security vulnerability in Africa, with areas within Africa compared relative to the distribution of values across the continent. While ideally our Asia metrics could be aggregated and compared to our Africa scores to measure relative vulnerability across both regions, our Asia metric will initially have to be a relative Asia only metric, as a combined metric would require us to rework all of the indicator scores for Africa, a time-consuming programming challenge given that we mapped the entire continent of Africa, with indicators drawn from different years and spatial resolution, normalized, weighted, and then aggregated into a single index. If time permits, we would like to combine with the Africa data for a combined relative ranking to see how sub-national units in Africa compare to those Asia.

EM-DAT Comparison

In our previous CCAPS work, we used the EM-DAT International Disaster Database compiled by the Université Catholique de Louvain in Belgium to compare the results of vulnerability model. The EM-DAT database records situations that have risen to a certain level of damage.[3] Since these events represent negative outcomes where physical exposure intersects with where people live, what resources they have to protect themselves, and how their governments respond, it is a decent proxy for what we are trying to explain. Their database includes a variety of climate-related "disasters."[4] The geographic coordinates available are not very precise – usually a field will list a town or province name, several provinces or regions, or sometimes the country as a whole.

Most events have some geographic data specified and include some estimates of deaths and the number of people affected. However, the consequences are not connected to individual locations where multiple towns or provinces are affected, making it difficult to know how to distribute the losses. For CEPSA countries, with the assistance of AidData, we had these events geo-coded for the period 1998–2012 by linking them to level-one administrative regions.

To get a rough approximation of the distribution of fatalities and affected populations, we equally weighted the distribution across administrative units mentioned in the geographic field from EM-DAT. If, for example, 100 people were killed in three provinces in a flood, we would assign roughly 33 deaths to each of the three provinces. In subsequent work, we aim to apportion fatalities/affected based on district-level population data, as we did in our CCAPS work. We

[3] The criteria include: For a disaster to be entered into the database at least one of the following criteria must be fulfilled: ten (10) or more people reported killed, one hundred (100) or more people reported affected, a declaration of a state of emergency, or a call for international assistance. CRED (Centre For Research on the Epidemiology of Disasters) 2012.
[4] This included droughts, floods, storms, wet landslides, wildfires, and extreme temperatures.

presented the initial findings of those disaster maps at the 2015 International Studies Association conference in New Orleans, which included comparisons to Elizabeth Malone's sub-national India vulnerability maps (see Appendices Figures 2-5 for some samples of that work).

Expert Rankings

Merely applying our CCAPS model to Asia may obscure regional differences and carry over problematic modeling choices from the Africa work. With the Asia project, we have an opportunity to revisit the functional form, indicator weights, and selection of indicators for the composite model and indeed whether or not a composite index is indeed the best modeling choice.

To that end, we were impressed by the work of Neil Adger, Nick Brooks, and colleagues who in 2005 carried out an econometric study on the correlates of disaster mortality. They used those results to identify 11 indicators associated with national level disaster mortality (we used those results to inform our choice of indicators for our model). They then carried out a series of 12 expert rankings to identify possible indicator weights for the elements in their model.[5]

We would like to carry out a similar exercise this year with the indicators from the CCAPS model (roughly which would require us to first develop a group of representative experts to and from the region. We would then need to develop a survey instrument to ask respondents to provide rank order and/or weights for the 4 baskets and 22 indicators contained in the model. The survey should also include commentary on the functional form and any lacunae of missing indicators we should consider for the model.

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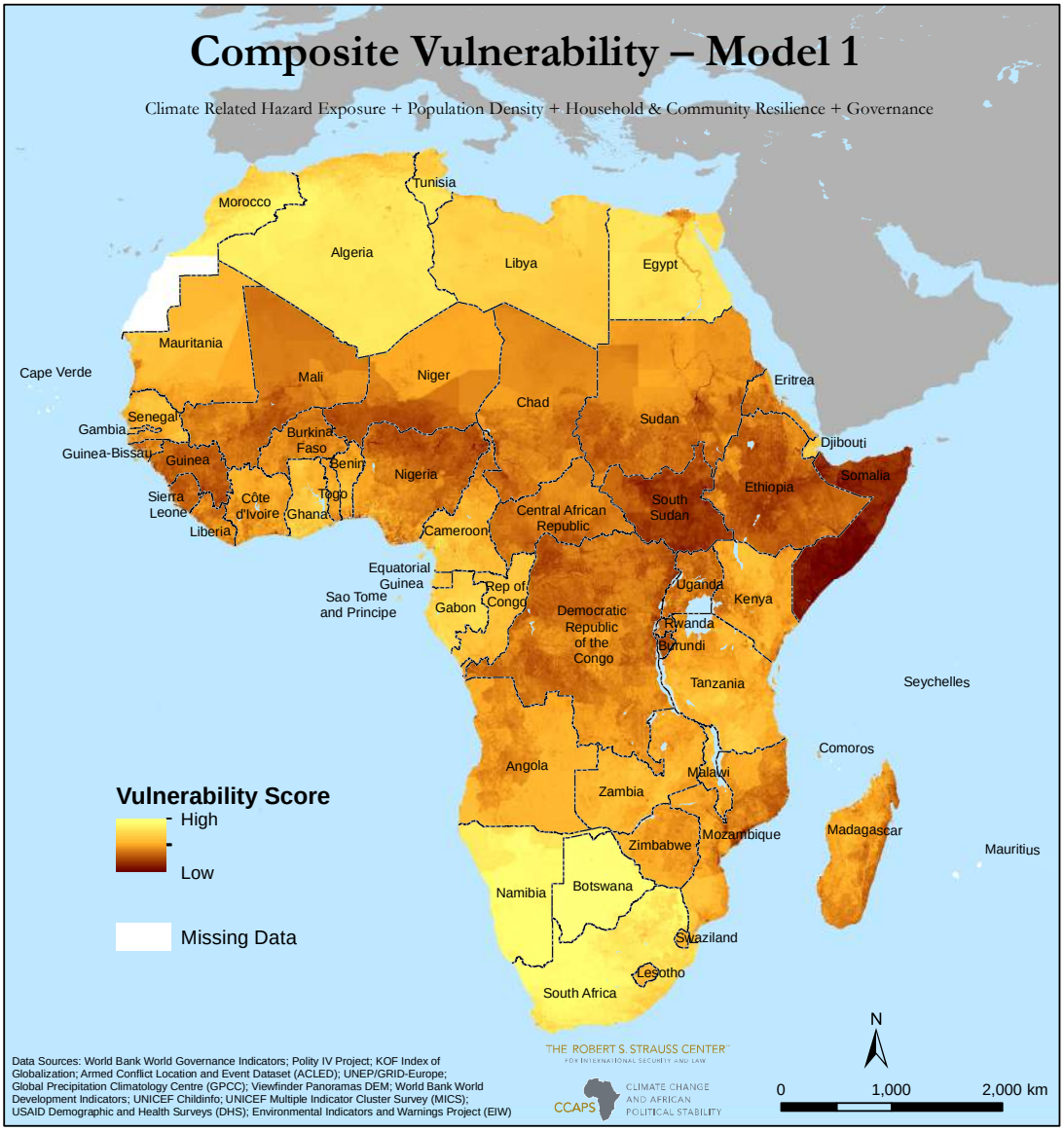
CRED (Centre For Research on the Epidemiology of Disasters). 2012. *EM-DAT: The OFDA/CRED International Disaster Database*. Brussels, Belgium: Université catholique de Louvain. Available from <www.emdat.be>.

[5] Brooks, Adger, and Kelly 2005.

Appendix Figure 1



Appendix Table 1: Physical Exposure in CCAPS

Hazard Type (weight)	Indicator	Scale	Years of Data Used	Source
Rainfall scarcity	Number of months between 1980-2009 in which the 6-month accumulated rainfall was 1.5 standard deviations or more below the average for that calendar month over the previous 20 years.	0.5 degree	1980-2009	Global Precipitation Climatology Centre
Aridity	Monthly coefficient of variation	0.5 degree	1980-2009	Global Precipitation Climatology Centre
Cyclone Winds	Tropical cyclones average sum of windspeed (km per year)	2 km x 2 km resolution	1970-2009	UNEP/GRID-Europe
Wildfires	Estimated frequency of events	1 km x 1 km resolution	1995-2011	UNEP/GRID-Europe
Floods	Flood Frequency (per 100 years)	1 km x 1 km resolution	1999-2007	UNEP/GRID-Europe
Inundation (Coastal elevation)	Low-lying coastal areas within 0 to 10km above sea level	3 arc second 1°x1° (90 m)		Viewfinder Panaromas

Appendix Table 2: Population Density in CCAPS

Variable	Indicator	Scale	Years of Data Used	Source
Population Density	Ambient population (average over 24 hours)	Subnational at 1 km x 1 km resolution	2011	LandScan Oak Ridge National Laboratory

Appendix Table 3: Household Resilience in CCAPS

Category	Indicator (weight)	Scale	Years of Data Used	Source
Education (25%)	Literacy rate, adult total (% of people ages 15 and above) (12.5%)	National, CCAPS First Administrative District	DHS 2003-2011, Stats SA 2011, World Development Indicators (WDI) 2006-2010	Subnational data from DHS, MICS; Stats SA; national level data WDI
	School attendance, primary (% gross) (12.5%)	National, CCAPS First Administrative District	DHS 2003-2011, Stats SA 2011, MICS 2006-2010, UNICEF 2003-2008	Subnational data from DHS, MICS; Stats SA; national level data UNICEF
Health (25%)	Infant mortality rate adjusted to national 2000 UNICEF rate (12.5%)	CCAPS First Administrative District	2008	Environmental Indications and Warnings Project
	Life expectancy at birth (years) both sexes (12.5%)	National	2008, 2010, 2011	WDI
Daily Necessities (25%)	Percentage of children underweight (more than two standard deviations below the mean weight-for-age score of the NCHS/CDC/WHO international reference population (12.5%)	National, CCAPS First Administrative District	DHS 1999-2010, WDI 2000, 2004-2008, 2011	Subnational data from DHS; national level data WDI
	Population with sustainable access to improved drinking water sources total (%) (12.5%)	National, CCAPS First Administrative District	DHS 2003, 2005-2011, MICS 2006-2007, 2010, Stats SA 2011, WDI 2001, 2006, 2008-2010	Subnational data from DHS, MICS, Stats SA; national level data WDI
Access to Healthcare (25%)	Health expenditure per capita (current US$) (12.5%)	National	WDI 2001, 2010	WDI
	Delivery in a health facility (% of births) (12.5%)	National, CCAPS First Administrative District	DHS 1999-2008, 2010, UNICEF 2003-2008	Subnational data from DHS, UNICEF; national indicators from UNICEF

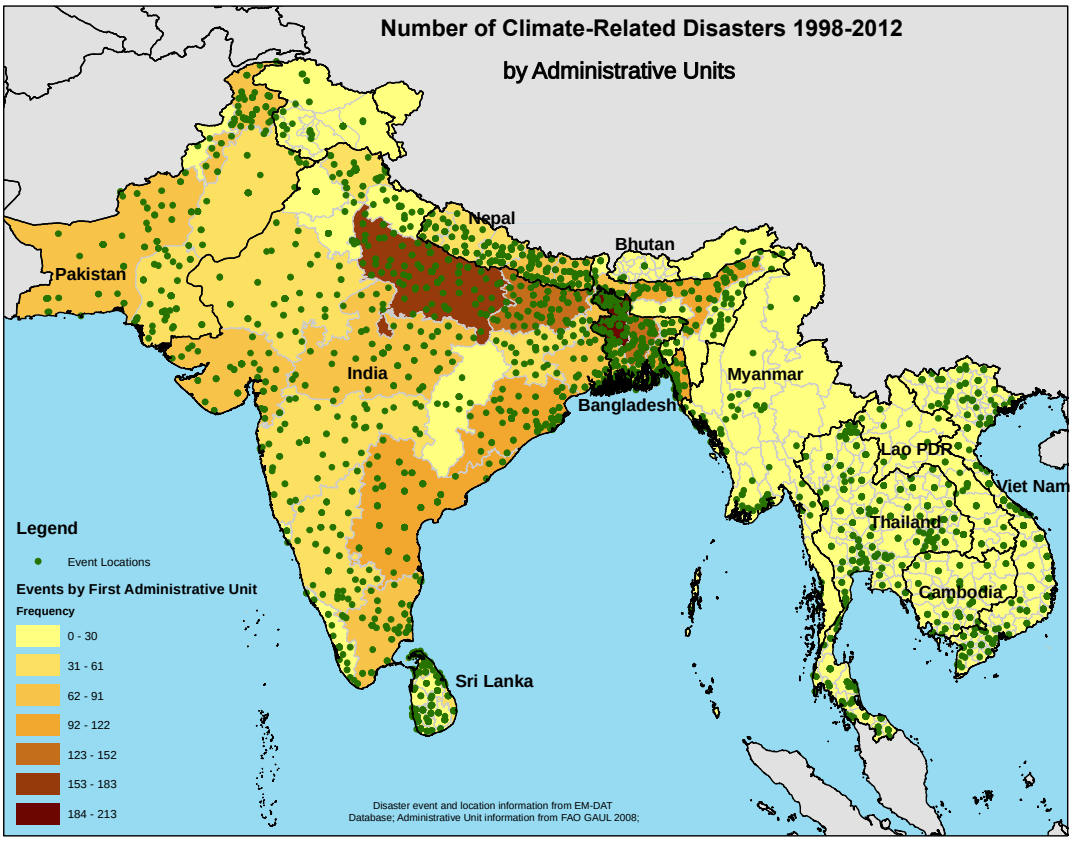
Appendix Table 4: Governance Indicators in CCAPS

Category	**Indicator (weight)**	**Scale**	**Years of Data Used**	**Source**
Government Response Capacity	Government Effectiveness (20%)	National	2008, 2009, 2010, 2011, 2012	WDI
Government Responsiveness	Voice and Accountability (20%)	National	2008, 2009, 2010, 2011, 2012	WDI
Political Stability	Polity Variance (10%)	National	2002-2011	Polity IV Project
	Number of Stable Years (as of 2011) (10%)	National	1855-2011	Polity IV Project
Openness to External Assistance	Globalization Index (20%)	National	2011	KOF Index of Globalization
History of Violence	Subnational conflict events (20%)	CCAPS First Administrative Division	1997-2013	Armed Conflict Location and Events Database (ACLED)

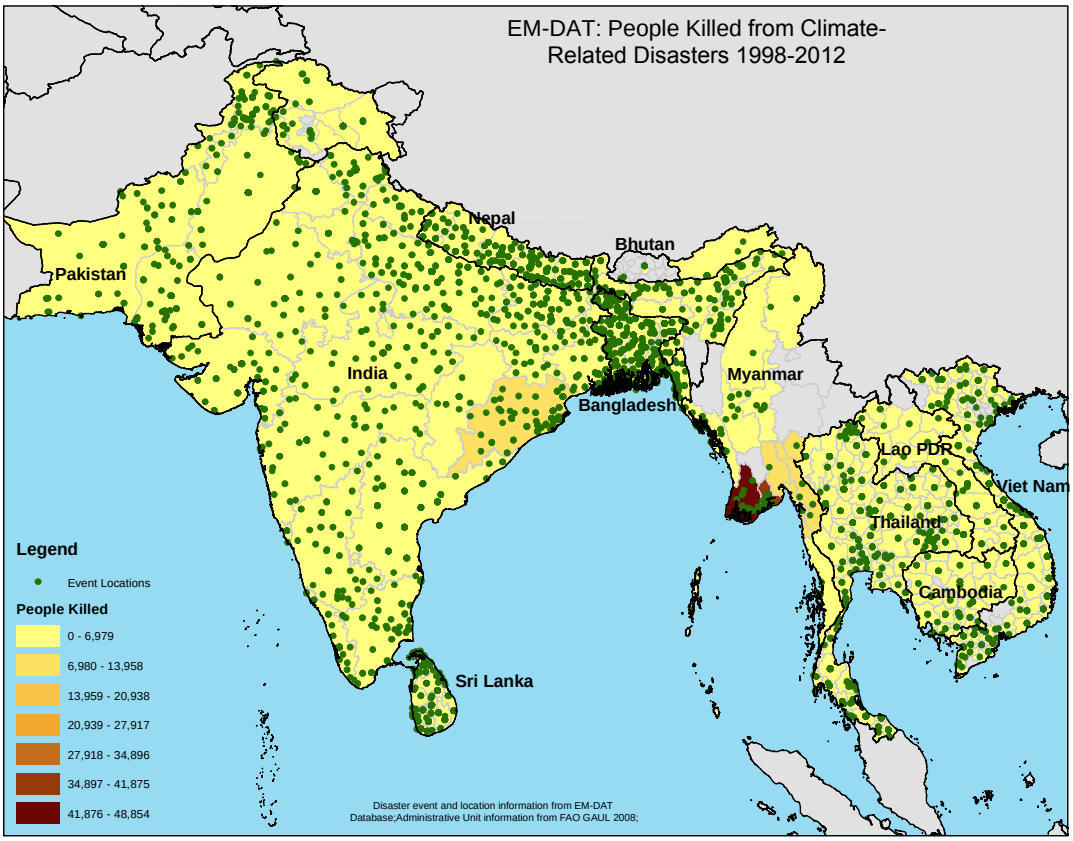
Appendices Figures 2-5: EM-DAT Event Count, Killed, Affected, and India Affected Maps

Each green dot represents the X, Y coordinates of an event with different precision codes depending on the specificity of the data. Some will be specific to a town name while others might be the centerpoint of a province or other geographic unit. There might be multiple events at the same X, Y location.

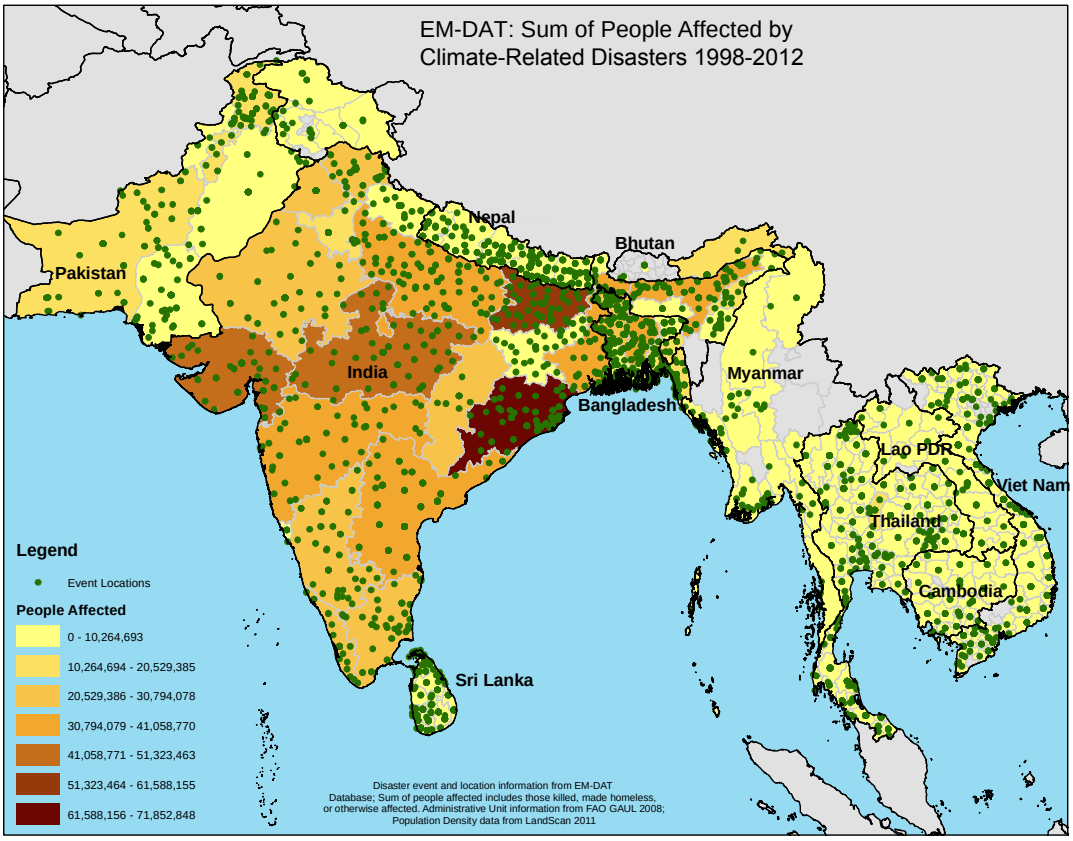
Appendix Figure 2: Number of EM-DAT Events



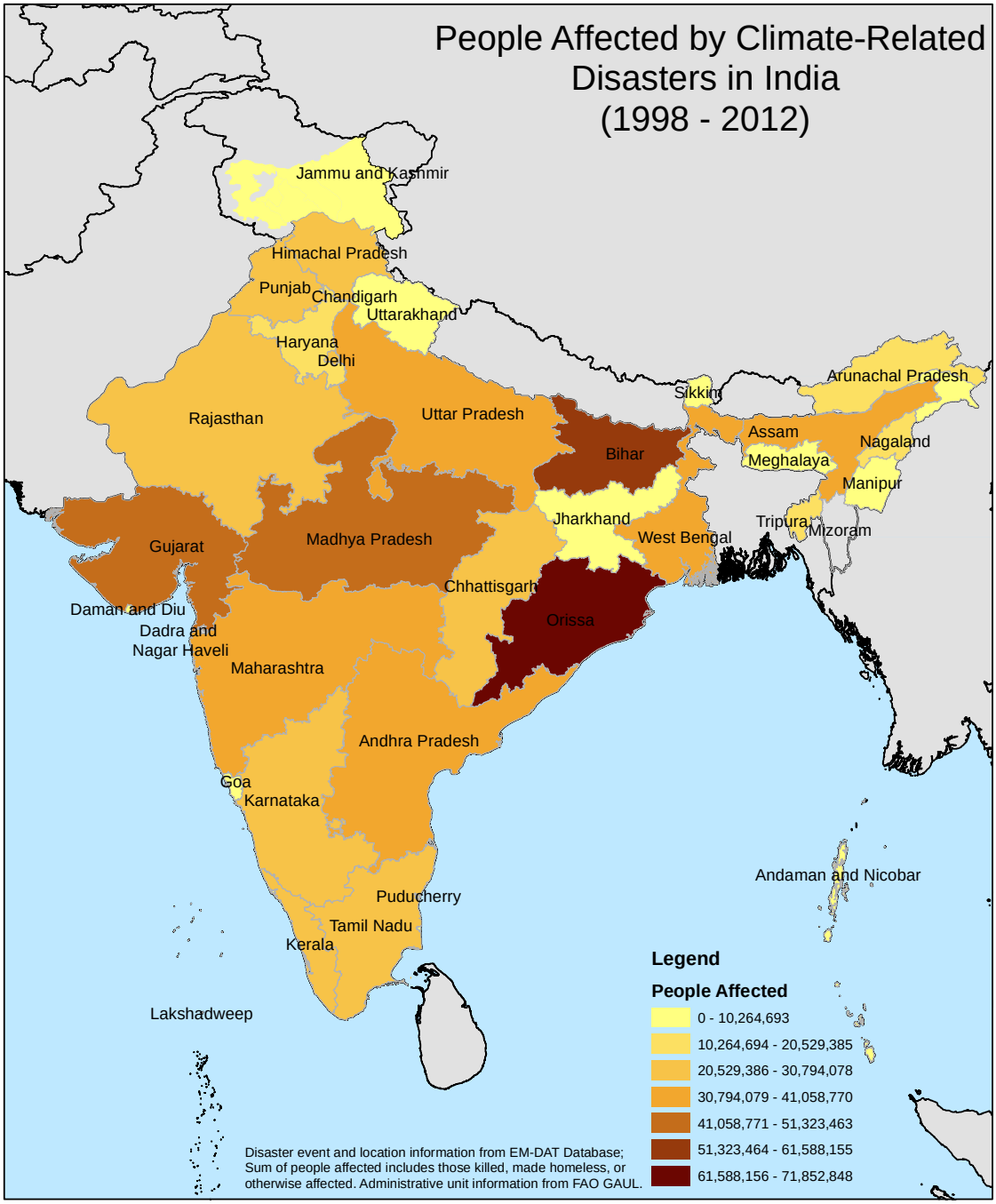
Appendix Figure 3: EM-DAT Number Killed



Appendix Figure 4: EM-DAT Number Affected



Appendix Figure 5: EM-DAT Affected India



Conflict and Complex Emergencies
Clionadh Raleigh and Sarah Kaiser-Cross

Outline for ACLED Asia

1. Overview of what ACLED collects and the existing data outside of Asia.
    a. See codebook. (Uploaded as a separate document in the Dropbox folder.)
2. Mandate of ACLED Asia
    a. Producing data
    b. Trend reports
3. Timeline for release and analysis
    a. Monthly release of both data and trend reports (data release on February 6th, trend reports begin in March.
4. Data collected and patterns available
    a. See presentation, codebook, actor list, and available data
5. Initial conclusions for application
    a. Focus on riots, protests and remote violence
6. Review of additional data on covered countries
    a. Time periods of coverage and sourcing
    b. SATP
    c. BFRS (from https://esoc.princeton.edu/files/bfrs-political-violence-pakistan-dataset)
        i. "BFRS codes a broad range of information on 28,731 incidents of political violence from January 1, 1988 through May 2011. For each incident we record the location, consequences, cause, type of violence, and party responsible as specifically as possible."
7. Role in CEPSA research

Main points:

1. As of December 31st, over eight coders have been trained since mid September. Data from November onwards is complete and referenced (with the exception of two missing areas of Islamabad for December and Indian Jammu and Kashmir for November- these will be complete by the end of January
2. We will release monthly data from January 1st, and release backdated data as it becomes available for complete years.
3. We have not yet set up a website for this project. One possibility is that we could release on the ACLED website, or an area on the CEPSA site while we accumulate data.
4. For November and December, the count of events is 1734. If indicative of future patterns, we should expect over 10,000 events a year. This is on par with the continent of Africa (although slightly less with real-time coding).

Some visuals follow that will be explained during the workshop.

Image 1: Event Total Comparison

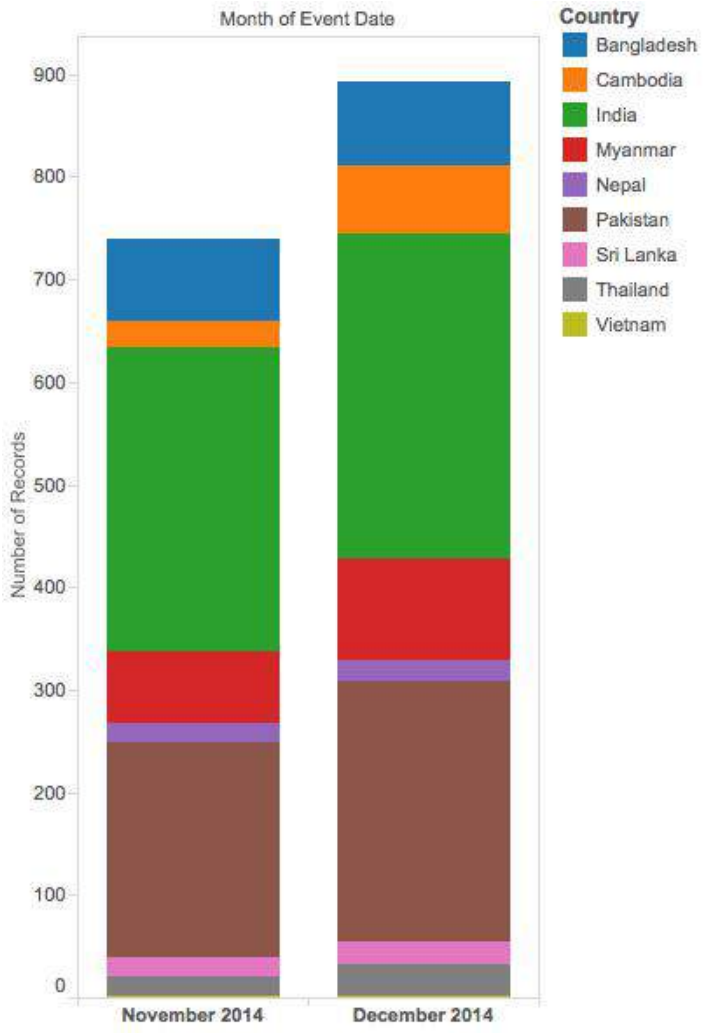


Image 2: Country comparison

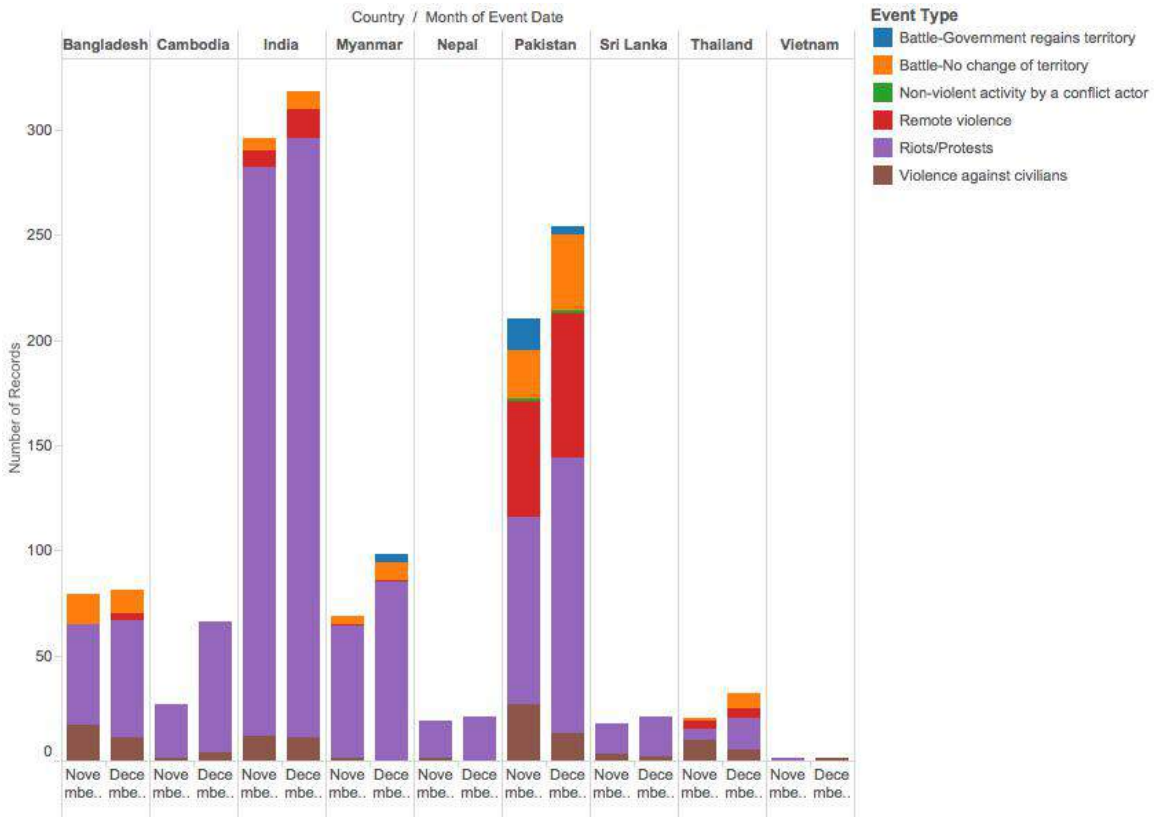


Image 3: Events and Fatalities by Country

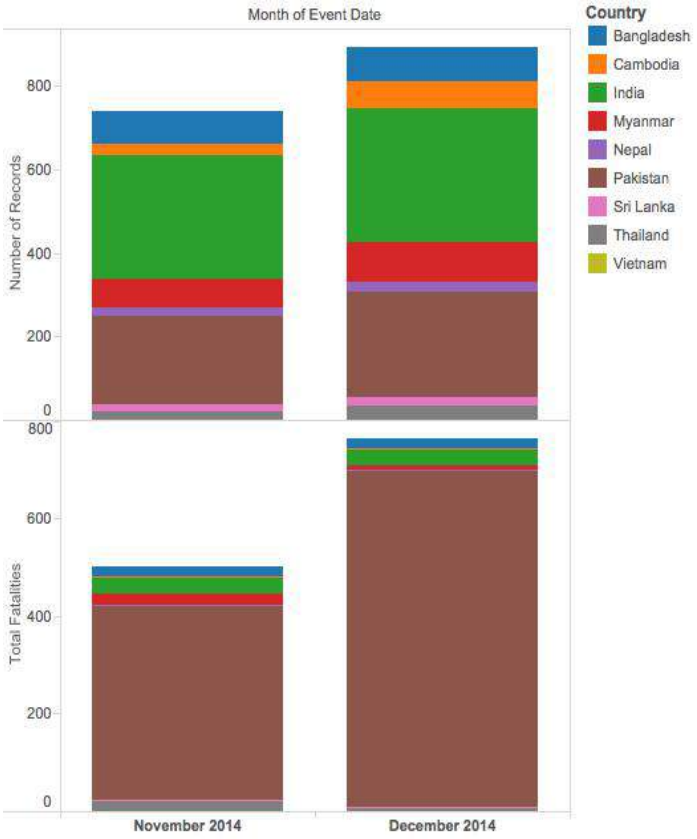


Image 4: India and Pakistani Interaction Comparison

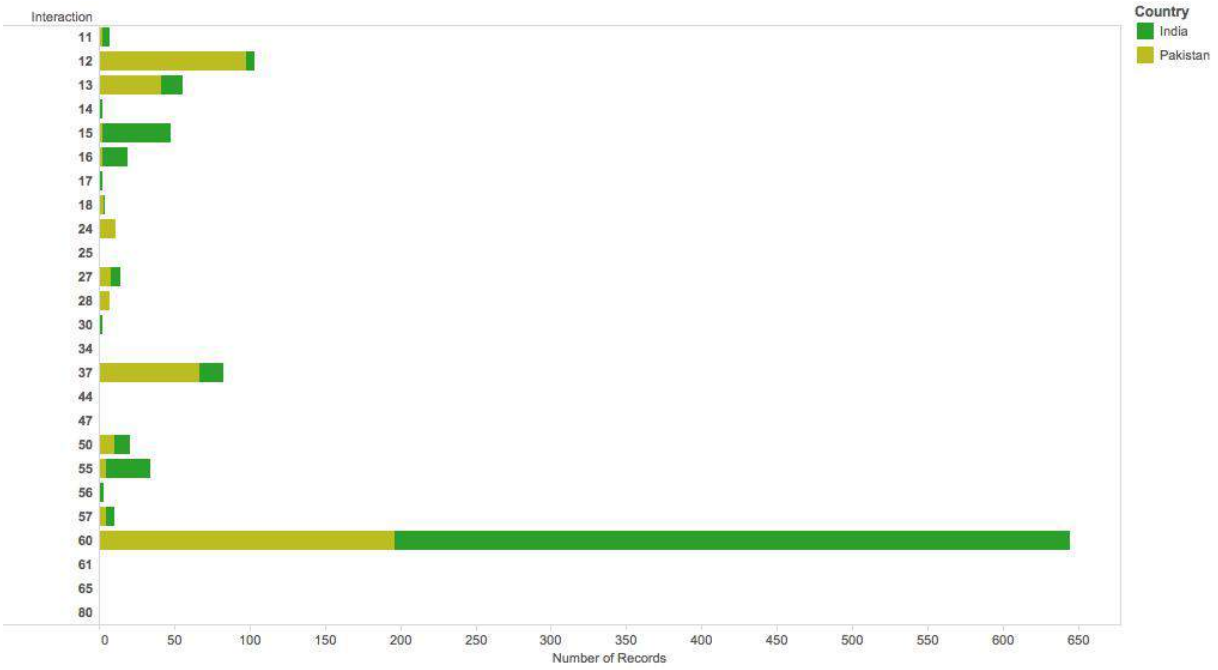


Image 5: Map of Activity

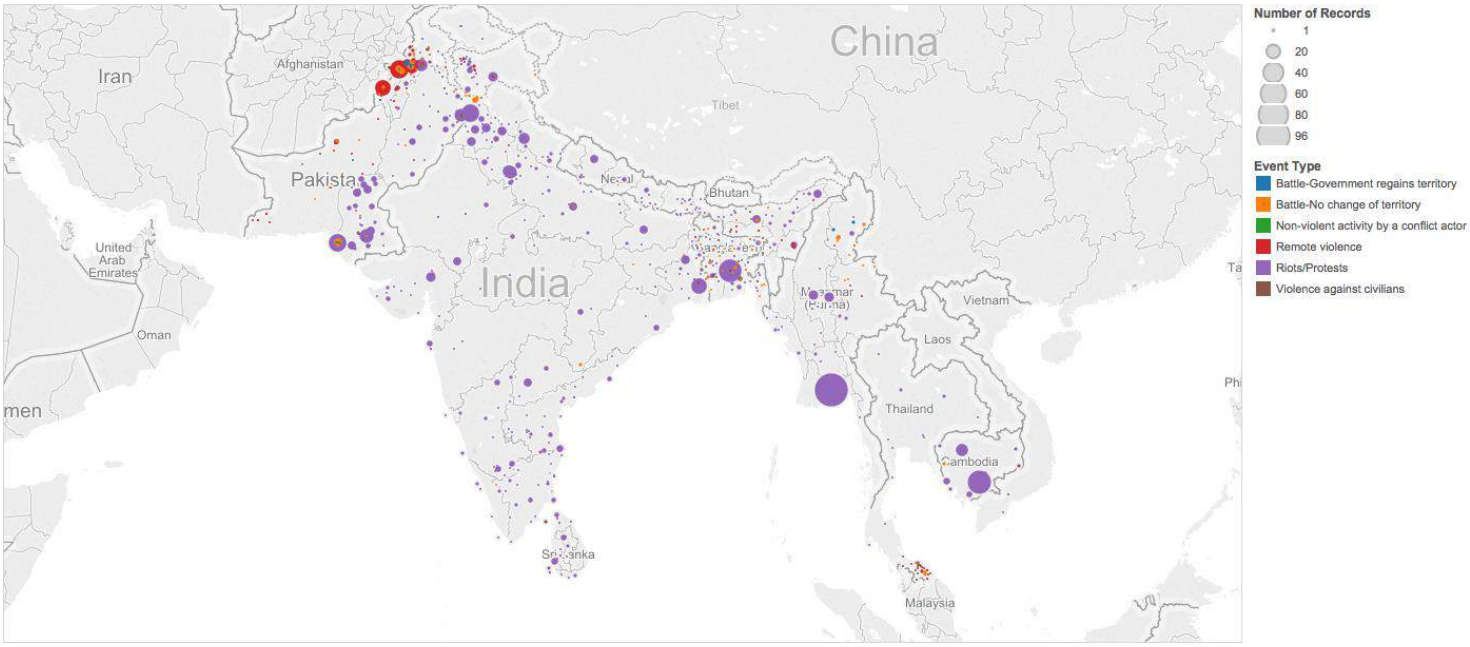


Image 6: Pakistan

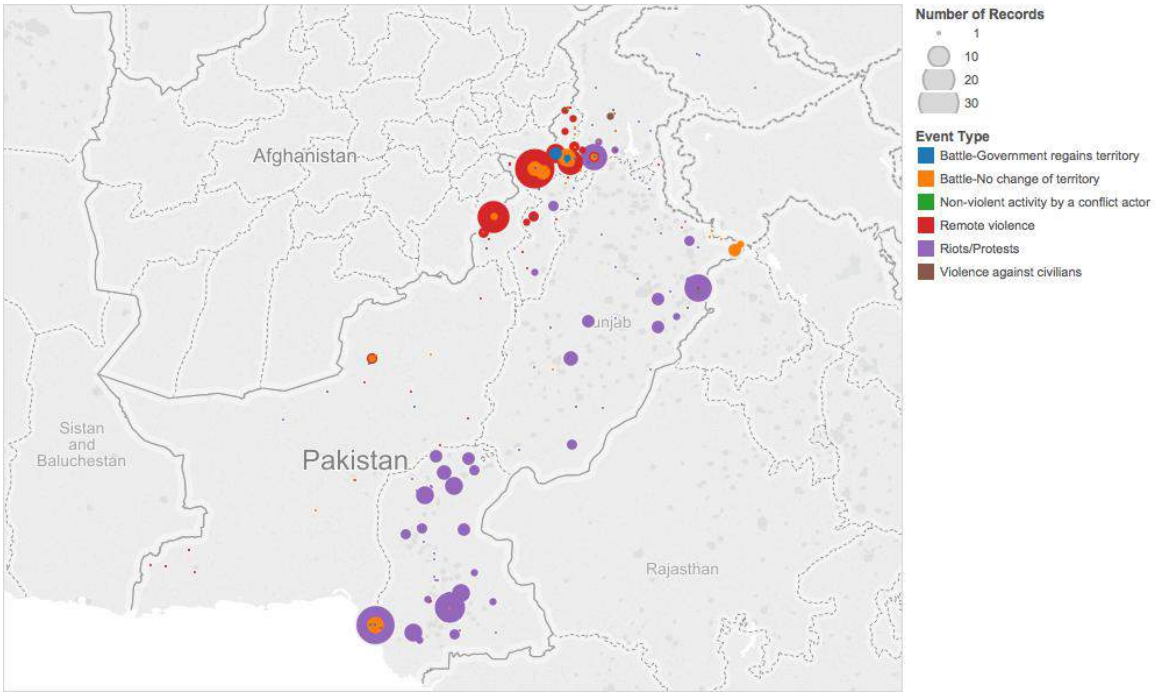
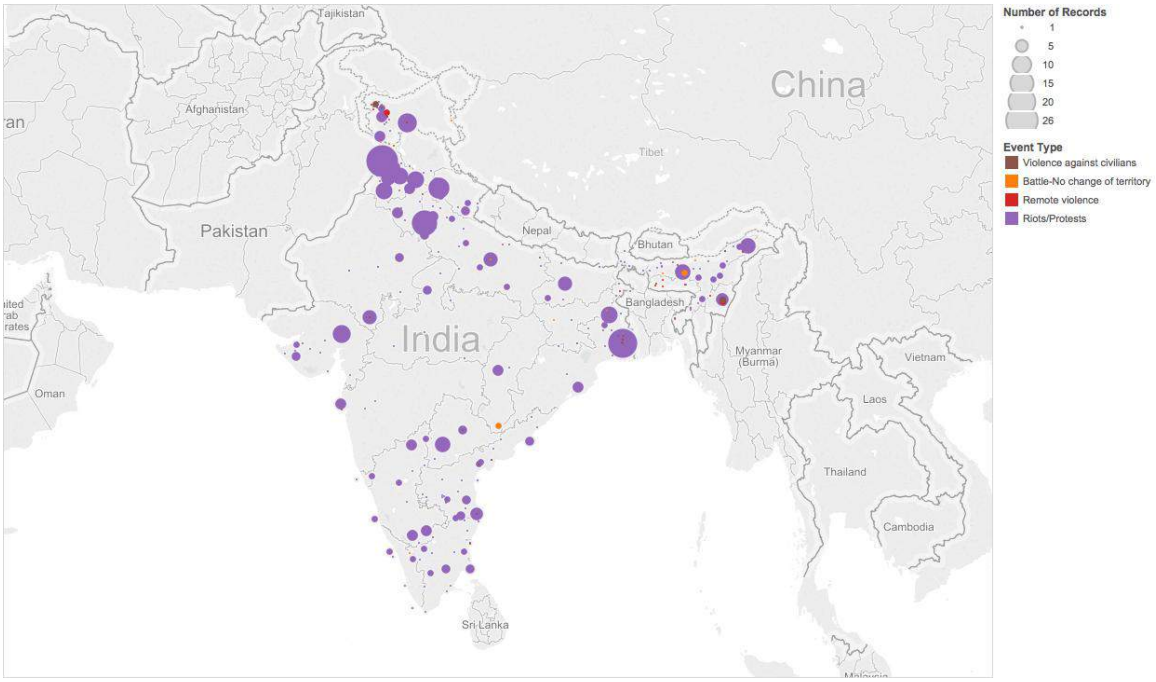


Image 7: India



Complex Emergencies Dashboard: Integrating Research on Insecurities and Policy Responses
Ashley Moran and Josh Powell

Goals

The Complex Emergencies Dashboard aims to:

(1) Provide policymakers and researchers with an interactive tool to use CEPSA program data to visualize trends in disaster vulnerability, conflict, governance challenges, and disaster aid;
(2) Allow users to explore where varied insecurities co-occur and inform the design of responses to complex emergencies; and
(3) Allow users to examine how the distribution of security outcomes varies across different environmental hazards, disaster types, governance and economic conditions, geographies, and/or other contextual factors.

Rationale

The Complex Emergencies Dashboard aims to facilitate the use of CEPSA research in policy planning and response. The dashboard will be an open access, online mapping and analytics platform. It will include data and modeling produced by the CEPSA program, related external datasets, and geospatial analytics—designed in coordination with U.S. military and policy agencies—to provide a technical and data-driven framework for recognizing and analyzing complex emergencies in Asia.

For the CEPSA program to have the greatest possible impact, policymakers, practitioners, and researchers must be able to quickly and intuitively consume and use the program's datasets and modeling. However, the program's diverse research approaches, dataset structures, fields and definitions, coverage, and metadata make leveraging the full capabilities of even a single dataset difficult. This problem is compounded when analysts seek to broaden their inquiry by combining two or more datasets together. Knowing which datasets are compatible, and which can be linked or layered, can be tricky questions that require a detailed knowledge of the datasets to answer. The Complex Emergencies Dashboard will be a data portal that allows the CEPSA team to resolve these questions behind the scenes, allowing users to leverage program datasets to pose their own questions and find answers. Through data visualization and built-in analytical tools, the dashboard can give users a clear picture of what the data actually say.

Prospective Components

The exact design and functionality of the dashboard will be developed in consultation with U.S. military and policy agencies and other stakeholders. Broadly speaking, the dashboard will include three core areas of functionality described below. The exact features within these core areas will be decided based upon the program's research interests and key questions, data

availability and heterogeneity (file formats, time periods, content types, etc.), stakeholder input, and available budget. The three classes of functionality targeted for inclusion in the dashboard are described below.

First, the dashboard will visualize CEPSA program datasets on disaster vulnerability, conflict, and international disaster aid, as well as related external datasets—for example on migration, food security, and epidemics—to allow detailed analysis of each of these phenomena individually, as well as where they co-occur. Users will be able to map any combination of the CEPSA program's geocoded data by selecting the range and type of data they want displayed on the map. Contextual data about the region or dataset being mapped may be shown alongside the map, thus allowing users to assess the spatial, temporal, and contextual dimensions of each program dataset.

Second, the dashboard will include spatial analytics that allow users to examine the distribution of security outcomes across different environmental hazards, disaster types, governance and economic conditions, geographies, and/or other contextual factors. The aim is to allow users to conduct spatial analysis of the relationship between environmental stressors (e.g. rainfall variation and extreme weather events) and security outcomes (e.g. conflict and disaster-related deaths), as well as the factors that mediate this relationship (e.g. regime type, governance quality, food distribution networks, migration patterns, and international aid, among others).

Third, users will be able to export the data available on the dashboard in a variety of standardized formats (e.g. csv, excel, raster data). The program seeks to make its datasets as widely accessible as possible.

On the back-end, the dashboard will be flexible enough to store and make use of appropriate metadata about each dataset to combine and present each layer intelligently. The system will allow the CEPSA program to specify, for example, which fields in each dataset should be searchable for users, which fields can be used to filter the data, which fields should be used to link datasets together, which datasets are "related" to each other, and which are mutually exclusive and should thus not be shown on the map at the same time. In addition to its role supporting the front-end user interface, the back-end will also facilitate collaboration and data sharing among program researchers based at several universities by allowing remote researchers to easily update their datasets and have their updates immediately visible on the dashboard.

Issues under Consideration

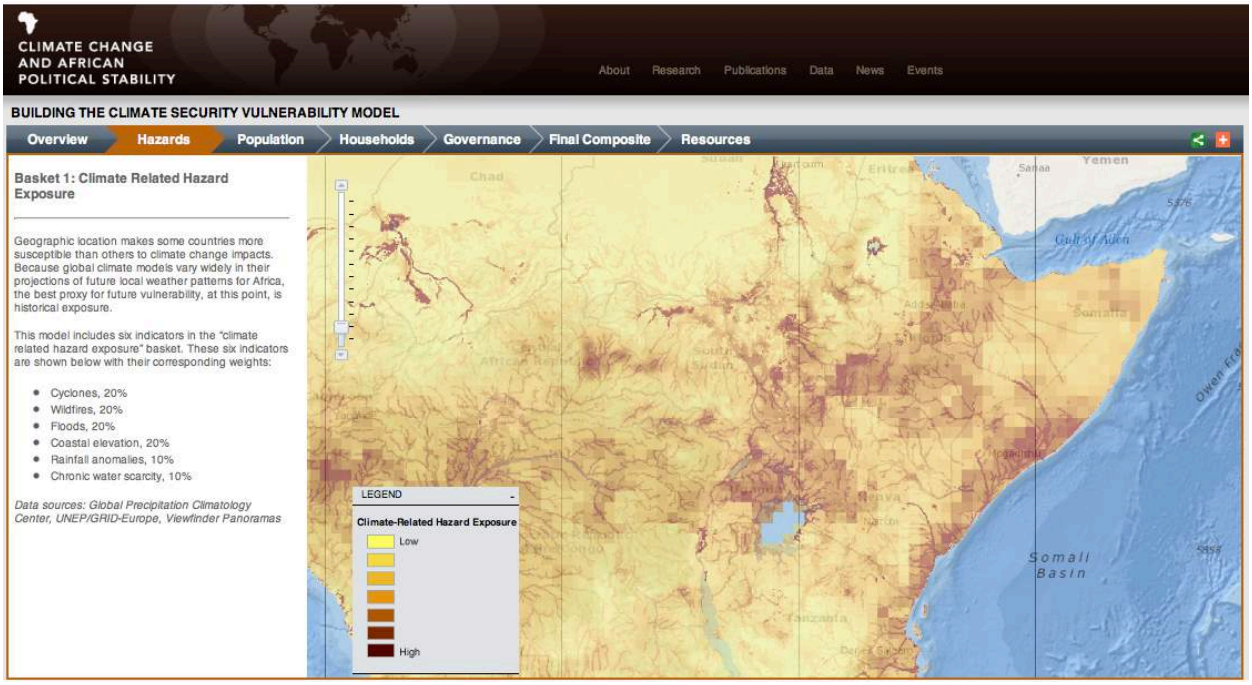
(1) Potential for integrating the dashboard and data with USG agency platforms using the data (e.g. through API or something more direct).

(2) Potential for collaboration or coordination with other organizations (e.g. multilateral organizations and/or other Minerva projects working in the same space).

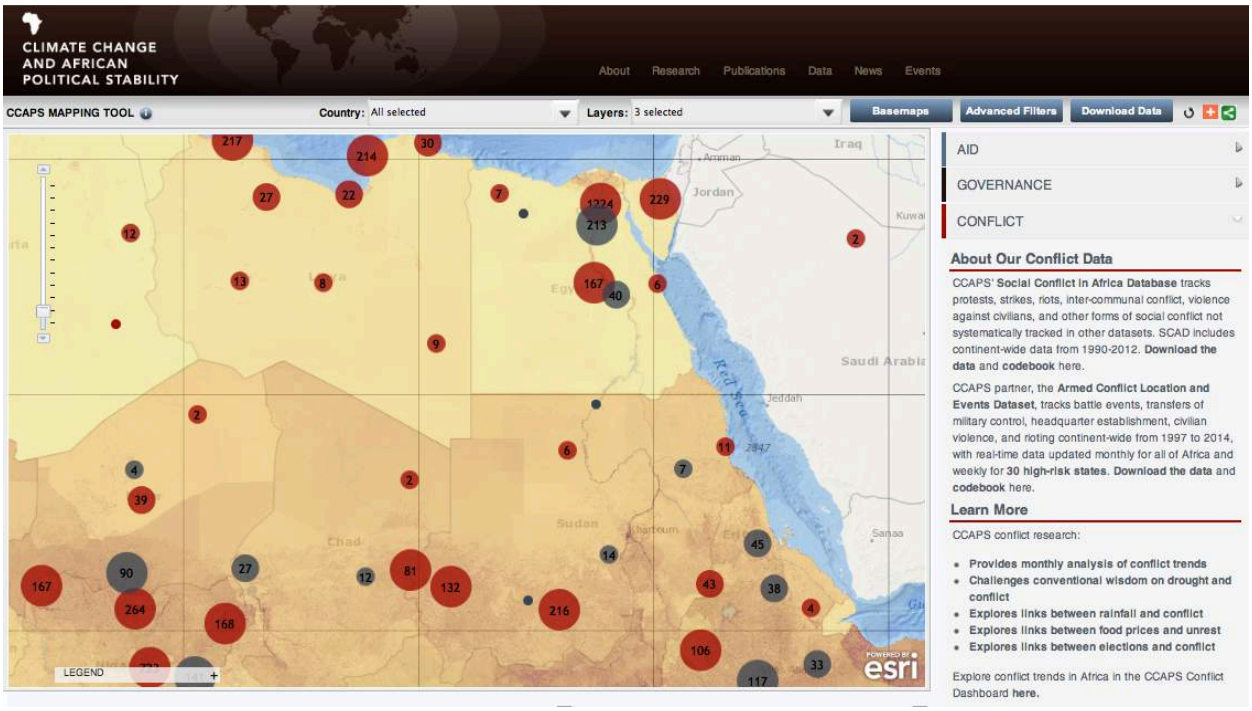
(3) Potential for visualizing frameworks developed in some of the program's qualitative research components (e.g. Paula's framework for complex emergencies).

(4) Utility of having a version of the platform that covers a single region, country, or subregion. It could be that we have a *main* mapping platform that shows all case countries and quantitative data produced by the program, as well as an additional version of the platform that uses a different format or data specific to a key country. The latter may be a way to visualize one of the qualitative case study locations where we may have more detailed data that are not available for the whole region, or where we want to try to visualize a qualitative framework for analyzing complex emergencies.

(5) Utility of having a version of the platform that allows us to prefilter the data in order to tell a 'story' on a series of maps. For example, under CCAPS we created what we called a "tabbed dashboard" that allowed us to show prefiltered data on each tab, accompanied by text, to walk users through a particular model or a particular trend in the data. The example below is a "tabbed" dashboard that allows users to click through the grey tabs across the top to see text and maps that explain each component of the CCAPS vulnerability model:



(6) Utility of accompanying the dynamic maps with contextual information. The example below comes from the main CCAPS mapping tool, which included data descriptions and publication links related to each CCAPS dataset shown on the map:



(7) Possibility (and desirability) of linking the Complex Emergencies Dashboard in some way to the existing CCAPS Mapping Tool.

(8) Integration of disparate types of data. The dashboard will need to accommodate data with different formats and time periods. This will be an open conversation while the research teams are finalizing their project scopes and dataset designs. However, a key item upfront will be establishing uniform sources for boundary files, place names, etc.

(9) Timeline and prioritization of features and data.

Next Steps in Spring-Summer 2015

We will be exploring the spatial analytics tools and external datasets for inclusion in the dashboard. Most importantly, we'll be working with all the CEPSA teams to ensure the dashboard framework evolves in a way that accounts for program research agendas and dataset designs as they're finalized through the first year. We will also consult with academic, policy, and military stakeholders for input into dashboard design and functionality. Other input and feedback is continually welcome.

National Disaster Preparedness
Jennifer Bussell

The primary question for my component of the CEPSA research project is: why do, or don't, governments prepare for natural hazards? This question is important because, despite evidence that preparedness for natural hazards is considerably more cost effective than response (Healy and Malhotra 2010), we continue to observe many governments failing to put in place institutions and programs that adequately account for the risks associated with natural shocks.

Considerable theoretical work has attempted to outline the incentives for and against preparedness in order to explain the puzzle of under-preparedness. While important empirical work has begun to parse various explanations for variation in disaster policies, primarily with regard to regime type and electoral incentives, there remains insufficient work testing the underlying mechanisms and attempting to use empirical evidence to adjudicate between theoretical hypotheses. The first portion of this project, conducted as a part of the original CCAPS initiative, attempted to evaluate the relative empirical support for seven major hypotheses in the literature using detailed case evidence from ten African countries. To summarize, these hypotheses are as follows:

1) **Perceived risk:** If governments perceive that the risk of a natural hazard is high, then they will invest more in preparedness.
2) **Economic strength:** If a country has greater economic resources overall, then it will spend more on disaster preparedness.
3) **Electoral incentives and democracy:** If a government perceives disaster preparedness to be electorally beneficial, then it will spend more on preparedness.
4) **Political development:** If a government is more developed in terms of the quality of its politicians and the quality and independence of bureaucrats, then it will prepare better for natural hazards.
5) **Foreign aid:** If governments anticipate that other actors will spend on preparedness or response, then they will spend less on preparedness
6) **Civil society:** If there is a strong civil society, then there will be greater investment in preparedness.
7) **External actors:** If a government has greater exposure to disaster preparedness from the actions of external actors, then it will invest more in preparedness.

The Africa analysis yielded a number of important findings. In short, the cases show that the two clearest predictors of investment in preparedness activities are economic strength and perceived risk of natural threats. However, these factors explain little when there is limited electoral incentive to invest in disaster management or minimal bureaucratic capacity to implement preparedness programs. Electoral conditions and political development affect whether governments have the incentive to invest in preparedness activities and the institutional capability to do so. In addition, domestic civil society and external actors often offer important support to governments, and it is the explicit focus by these non-state actors on both preparedness and response that seems to limit the risk of moral hazard that international funding

for disaster preparedness would potentially create, resulting in reduced domestic spending on preparedness. Thus, the African cases provide support for a view of disaster preparedness that takes into account both economic and political characteristics of states, as well as the potential effects of outside actors on political decision-making.

In the South Asia analysis to be conducted as a part of the CEPSA program, my goal is not only to examine whether these findings hold in a different global context, but also to probe further the relationship between the explanatory factors highlighted in the existing literature and our Africa analysis. A few examples may help to illustrate this goal. First, there is strong evidence that past exposure to natural hazards leads to better preparedness, but what is the mechanism underlying this relationship? Is it the anticipation of economic losses, or of human losses, or is it an expectation that elected officials will be held politically accountable for any losses that occur? Given recent findings that politicians are held responsible even for events over which they had no control (Healy et al. 2010; Achen and Bartels 2013), we might expect politicians to be particularly wary of any political backlash from a natural shock that results in a disaster due to lack of preparedness. Whether there is evidence for differing political behaviors in the wake of a natural hazard requires further analysis.

Second, we find minimal evidence for the risk of moral hazard in the African case, but this is conditioned by the fact that international actors are clearly attempting to limit this risk through the manner by which they engage national governments in both general development and disaster-specific activities. In a national context, where a central government is distributing aid to state or local governments, should we expect to see the same type of behavior or might we expect a greater threat of moral hazard? Additionally, does the introduction of political considerations into the relationship between central and sub-national governments change the dynamic of moral hazard in any important ways?

Given this background, I propose to conduct a comparison of preparedness across three country cases, India, Pakistan, and Bangladesh, similar to that conducted in the Africa study, and then an additional set of analyses within the Indian case to examine these questions in that context. The planned analyses are listed below in order of relative scope in terms of countries/sub-national units included, not the degree to which the ideas for the research have been developed. I welcome your feedback on any element as well as what other potentially related questions you think emerge from the previous analysis, or elsewhere, that might be reasonably investigated in the context of India, Pakistan, and Bangladesh.

Large-N Cross National Comparison

I did not propose to conduct a large-N analysis as a part of the original grant proposal, but I had intended to do this in the Africa project and did not for methodological reasons. I now believe that this is more feasible and would like to incorporate it as a part of this phase of the project.

Viable cross-national comparisons of disaster preparedness have previously been difficult to do given the nature of the available data on the effects of natural shocks. In our report on the

Africa project (Bussell 2014) and the research brief on our methodology (Bussell and Colligan 2013), we note that a cross-national statistical analysis of preparedness was infeasible due to the nature of available data on natural disasters. The most widely used data on natural disasters is from the EM-DAT database, which tracks people affected and lives lost, among other indicators. One key problem with using these measures as an indicator of intensity of various shocks is that they are endogenous to the relative preparedness of each country. A rainstorm in a well-prepared country will likely affect and kill far fewer individuals than a similarly intense storm in a less prepared country.

The solution to this endogeneity problem is to use measures of hazard intensity that do not rely on post-hazard measures of effects. The type of hazard for which this is easiest to do is earthquakes, because Richter scale measures of earthquake intensity are not related to effects. A cross-national analysis of the relationship between earthquakes and disaster policies by Keefer, Neumayer, and Plumper (2011) takes advantage of this measure and finds evidence for a relationship between preparedness and a limited set of independent variables including earthquake propensity, regime type, and economic conditions.

Recent measurement innovations developed by Hsiang and colleagues offer an opportunity expand the range of natural hazards for which we can conduct these analyses using and independent measure of cyclone intensity that is unrelated to the degree of preparedness (Hsiang 2010; Hsiang and Narita 2012). To date, this cyclone measure has been used to evaluate cross-national adaptation to the threat of natural shocks (Hsiang and Narita 2012). This analysis finds that "countries with more intense TC [tropical cyclone] climates suffer lower marginal losses from an actual TC event, indicating that adaptation to this climatological risk occurs but that it is costly" (Hsiang and Narita 2012: 1250011-1). This offers additional evidence that in the cross-national context, previous exposure to intense cyclones increases the likelihood of preparedness investments, all else equal. However, the authors do not attempt to evaluate other potential factors that may affect preparedness and so use country fixed effects in the analysis to account for other country-level variation.

I propose to extend these analyses by evaluating the relationship between shock intensity and measures of time-varying country-level characteristics that capture additional theoretical concepts important to existing theories on investment in preparedness, such as economic strength, bureaucratic capacity, electoral competition, the strength of domestic civil society, and the presence of foreign aid. I will use measures of both cyclone and earthquake intensity to allow for tests across natural hazards types. Though these analyses are outside the scope of our Minerva grant, they are relatively low cost analyses that will help to provide context and external validity for the Minerva-funded South Asia analyses.

Country Case Comparison

The goal of this portion of the project is to conduct a comparative study of national preparedness in line with the comparisons made in the Africa study. As in the previous study, we will use the Hyogo Framework as a baseline for measuring preparedness. In the cases of India and Pakistan, I would also like to develop sub-national measures of preparedness for at least

some portion of the states/provinces in these countries. I am still debating the appropriate case selection process for this part of the study and would welcome feedback. In Africa, we chose cases on the basis of paired countries that face somewhat similar types of natural threats. I am not wedded to that model in this case, and would be interested in using a more independent variable-driven case selection process, for which previous exposure to natural shocks is perhaps the most appropriate variable on which to focus. I look forward to hearing your thoughts on this.

India Disaster Spending Analysis

In India, I also believe it will be feasible to conduct an analysis of the ways in which disaster-related funds are requested by the states and allocated by the central government. Existing hypotheses suggest that political alignment between the central government and a state should increase the likelihood that the state receives assistance for both preparedness and response. In addition, those states with greater past exposure to natural hazards should be more likely to request funds, conditioned by levels of electoral competition and bureaucratic capacity. Given these arguments and those noted above, I will ask two primary questions about disaster preparedness aid requests: 1) Do states with historical exposure to natural hazards request more funds from the central government for preparedness? 2) Is the allocation of funds to states correlated with a state's political alignment with the central government? 3) Does the allocation of assistance for preparedness differ in important ways from the allocation of response funds and support? In addition, I can use this data to test existing hypotheses about the relationship between preparedness and state characteristics such as electoral competition, bureaucratic capacity, and the strength of civil society.

The primary source of disaster preparedness assistance in India is training programs offered by the National Institute for Disaster Management (NIDM). Every year, states are given an opportunity to request programs from the NIDM, which then develops a set of programs and schedule for the upcoming year. I have collected information on the participants in training programs every year since 2009-10. This includes the name of the participant, their designation, department, city, state, and training program. There are nearly 10,000 observations in this dataset. I propose to use this information as a measure of these requests and training programs for multiple years to develop a measure of preparedness aid. In addition to this measure of preparedness aid, previous work has measured central government aid to the states in disaster response using data from the Reserve Bank of India (Cole et al. 2011). I should be able to use this same data to measure response aid.

Making use of these measures will again require that I also have some independent measure of the intensity of each natural shock. For this case, it may be reasonable to use a combination of measures for natural hazard exposure that can be assumed to be reasonably independent of preparedness activities. India faces four major natural hazards: cyclones, earthquakes, floods, and droughts. Cyclone exposure can be measured using the Hsiang measure discussed above. Earthquake magnitude can again be measured using the Richter scale, as well as a population density-weighted Richter scale measure, as done by Keefer and Neumayer (2011). Recent work by Bhavnani and Lacina (2014) utilizes measures of rainfall that account for significant deviations above or below the historical mean during the monsoon. This measure

thus accounts for both the risk of floods and the risk of drought in years with abnormal monsoons. These measures can then be used individually, to evaluate potential variations in outcomes due to disaster type, as well as combined to create an index of overall natural hazard exposure at the state level.[6]

Measures of additional independent variables, including electoral competition and bureaucratic capacity, are reasonably easy to create and I have used both in my previous work. I am open to suggestions about how to measure civil society. Previous work has used measures of newspaper penetration and it may also be possible to estimate domestic NGO presence.

Effects of Disaster Exposure on Political Participation

Recent analyses suggest a number of important dynamics related to the relationship between disasters and political behavior. First, the literature on retrospective voting posits that voters punish politicians for shocks that are largely out of their control (Healy et al. 2010; Achen and Bartels 2013), such as shark attacks and losses by local sports teams. If this is the case, then we might expect an even larger punishment of elected officials for shocks, or effects of shocks, that are at least somewhat within their control. Indeed, voters have been shown to punish politicians for weather shocks in general (Cole et al. 2011), but to reward incumbent politicians for successful disaster response efforts (Ibid; Healy and Malhotra 2010; Bechtel and Hainmueller 2011). At the same time, the benefits from disaster response may be contingent on the size of the response (Bechtel and Hainmueller 2011) and the proximity of the response to an election (Cole et al. 2011). In addition, voters do not seem to value disaster preparedness efforts (Healy and Malhotra 2010). While this suggests, at the very least, that democratically elected governments should be willing to engage in disaster response, the relative cost effectiveness of disaster preparedness over response implies that this is a highly inefficient policy outcome (Ibid.).

Existing work on this topic, however, fails to account for situations in which relative preparedness for shocks may be more evident to voters at the time of a natural hazard. Anecdotal evidence suggests that those individuals with experience of natural hazards are more responsive to preparedness efforts than those who have not been directly affected in the past. Yet, the existing literature assumes preparedness is most often difficult to observe and so does little to affect political outcomes. Indeed, the notion of observability is key to many of the arguments for why voters are more likely to reward disaster response efforts than those aimed at disaster preparedness. As Healy and Malhotra note, the benefits of preparedness are often harder to observe than those of response, and also more likely to be publicized by the media. Related to this, it is more difficult to conceive of the preparedness counterfactual at the time of a natural shock: "what would have been the impact of a disaster in the *absence* of preparedness spending (Health and Malhotra 2009: 389, emphasis in original)?"

[6] It's possible that this combined measure could also be developed at the sub-state level, such as at the level of electoral constituency or even polling station, as I am planning to do for the cyclone analysis described below. I will do this is if it seems theoretically interesting and methodologically viable after developing the state measures.

If preparedness is so difficult to observe, then an analysis, such as Healy and Malhotra's (2009), that shows us a strong effect on voting patterns of response spending, versus no effect of preparedness spending, may tell us less about the degree to which voters value preparedness and more about the invisibility of these activities. In other words, we are not able to differentiate between whether this null effect of preparedness on vote choice is the result of actual opinions on preparedness or instead evidence to support the argument that preparedness is difficult to observe.

There are conditions under which we can assume that at least some individuals are able to estimate the preparedness counterfactual, based on previous experience with natural hazards, but analysts have not yet exploited these conditions. In an area that has experienced natural shocks in the past, voters should be able to evaluate the value of preparedness efforts at the time of a future shock. If we (conservatively)[7] consider that any activities happening before the shock happens are preparedness, even if they are not observable, then when the shock occurs, individuals should be able to gauge whether a similar level of response activities are necessary to react to the shock, holding constant the intensity of the shock. In those cases where fewer response resources are necessary than in the face of previous shocks, this should offer evidence of preparedness investments that have been made in between the two shocks.[8]

Given this situation, the question I ask in this piece of the project is: What is the effect on voting behavior of directly observing changes in the government's level of preparedness? The opportunity to observe multiple shocks over time implies that once a natural shock has occurred, politicians may assume that at least some proportion of voters *will* be able to estimate the preparedness counterfactual on the basis of their experience with this shock. In this sense, past experience of disasters changes the information available to a segment of voters, making them more competent at evaluating the performance of the incumbent than their non-disaster-exposed peers. As a result, the perceived electoral value of preparedness may increase, making preparedness activities more compelling as an electoral strategy than was previously the case.

I propose to take advantage of the potential effects of past disaster exposure on perceptions of preparedness to evaluate previously underspecified electoral implications of preparedness. I will do so using evidence on voting patterns and cyclone exposure in the Eastern Indian states of West Bengal, Odisha, and Andhra Pradesh. These states are the most highly affected by cyclones in India and have seen substantial disaster losses, as well as preparedness investments, over the last fifteen years. At the same time, exposure to individual cyclones is often highly varied across the region, implying much different exposure patterns within each state over a given time period.

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[7] It is plausible to argue that some activities that happen during a response are the direct result of preparedness, such as the activation of community groups that have been trained in how to respond to particular

[8] This supposition assumes that at least some reasonable element of a natural shock can be observed and qualitatively measured by individuals apart from its effects on the surroundings that may have been altered by preparedness activities. In other words, the shaking of the ground due to an earthquake, the force of the wind in a cyclone, or the amount of rain can be observed and evaluated apart from the effects that these natural forces have on an individual's surroundings.

As noted above, while existing data on natural disasters are flawed measures of intensity because the number of lives lost or affected is endogenous to preparedness, Hsiang's measure of cyclone intensity can be used as an independent gauge of the degree to which a particular community was threatened by a given storm. In this analysis, I will evaluate the effects of disaster preparedness on voting behavior by comparing turnout rates and vote choice of individuals who have differing histories of exposure to cyclones in these three Indian states.

There are a number of comparisons that can feasibly be made given available data on cyclone intensity and voting patterns. The primary analysis will take advantage of the fact that there were serious cyclones of similar intensity that occurred in 1999 and 2013 and use variations in exposure to these cyclones to evaluate voting in the 2014 national parliament election and state elections in Andhra Pradesh and Odisha. In this case, I will measure cyclone exposure dichotomously and compare outcomes at the polling station level across four categories: affected by both cyclones, affected by the 1999 cyclone, affected by the 2004 cyclone, and affected by neither cyclone.

Additional analyses are feasible to test robustness of the findings and evaluate other potentially related expectations. For example, I can also use a more continuous measure of cyclone exposure to account for the fact that any dichotomous measure will have to involve a potentially arbitrary decision about what constitutes zero exposure. In addition, while GIS codes for the election following the 1999 cyclone are unavailable at the polling station level, they are available at the level of the state assembly constituency. Using this information, it will be possible to conduct a similar analysis that compares voting behavior in the same constituencies over time, thus allowing for a comparison of within-constituency changes in voting behavior, taking into account cyclone exposure. I can also expand the sample to all of the cyclone-affected states in India, including Tamil Nadu, Maharashtra, and Gujarat.

This analysis should contribute both to our understanding of the complex electoral calculations underlying decisions about disaster-related spending in particular as well as the more general topic of retrospective voting and the ways in which politicians are, or are not, held accountable for their policy decisions.

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Governance Implications of Complex Emergencies
Paula Newberg and Jason Cons

Greetings from the non-quantitative project sub-team. We are looking forward to working with everyone, and sorting out how our interests and plans fit with CEPSA's at large. Jason and I have been talking in the last month or so, and met yesterday to refine our plans (which are still in progress). We'd ask, therefore, that this short memo be read in the context of the original proposal (which is copied below), which outlines our rationale and general direction.

That proposal sets out the context of our interests as the intersections of migration and citizenship, poverty, and livelihoods, and policies in transitional political environments. We will coordinate Jason's interest in ethnography with Paula's in governance as we organize travel, consultations and workshops that examine migration (cross-border and internal) and protection. Our goal is to raise questions about the ways that changing perceptions about sovereignty and national identity (Jason) and sovereignty and rights (Paula) affect the ways that insecurity, vulnerability, resilience and adaptation are (or are likely to be) understood. These issues arise out of our mutual interest in borders and national identity under conditions of profound change (not for the first time in south Asia), as well as our interests in the situations of fragility that are driving political change in and around the borders we have chosen: Bangladesh –India, Pakistan – India, Bangladesh – Burma, and Pakistan – Afghanistan. In this sense, our interests are as much cosmopolitan as regional or local.

Although our projects are not specifically urban in focus, urban environments will be critical to our understanding of these places. Although the expected pairing of Kolkota and Dhaka, and Karachi and Mumbai are certainly within our sights – the similarities in location, physical environment and population contrast with differences in governance and policies in critically interesting ways -- we are both interested in peri-urban environments and smaller cities in Pakistan (Faisalabad) and Bangladesh (Khulna). In each country, they are driving urbanization, migration, population growth and politics in regions already at risk from changing monsoon patterns.

Jason hopes to undertake ethnographic research in the communities that have become the focus of government and donor interest; he is also looking at the ways that donor policies are influencing government decisions about what is important and where to focus policy. Paula will be examining the ways that current landscapes of power affect the capacity of these states to rethink their politics and adaptability. Together and with other colleagues, we will be looking at the underlying politics of land, water and political power in Pakistan and Bangladesh; probing the meanings of resilience and adaptation in politics and policy; asking where responsibility is likely to lie (local, national, regional, global) as changes in climate provoke potentially profound alterations in the politics of the region; and ultimately, asking whether climate change policies (drafted by each government) are equal to the tasks at hand and if so, whether they can be implemented.

Project Goals and Scope (from Original Grant Proposal)

In the Program's third research area, Paula Newberg will investigate the governance dimensions of complex emergencies, leveraging her extensive experience working on complex emergencies and governance. This will explore how climate and environmental factors have affected the capacity of states to handle political and economic development, how the structure of governance has evolved—or not—to cope with emergencies, and how these governance dimensions contribute to the evolution of a natural hazards into a complex emergency.

Of particular concern is the changing nature of complex emergencies, resulting from urbanization, migration, and climate change. While Asia has long experienced natural hazards like earthquakes and climate-related events, climate change in Southeast and South Asia (and by extension, the Gulf in relation to South Asia) is creating a new category of emergencies. Because they are no longer caused primarily by conflict or unanticipated disasters, or confined within traditionally defined regions, they will require new political, legal, normative, and policy vocabularies at the intersections of security, humanitarianism, and development. Mapping the intersections of state capacity and effectiveness, on the one hand, and on the other, local, regional, and global cooperation in these arenas is a matter of particular urgency in three intersecting arenas of law and policy.

Migration: A recent ruling by a New Zealand Court has placed the problem of climate change migration in sharp relief. By denying asylum to "climate change migrants," the Court has highlighted the weaknesses of international refugee law and the institutions meant to protect migrants. In a region in which the rights of migrants are often compromised as a matter of policy, and where cross-border and internal migration has traditionally been an outlet for states and individuals alike, the incompleteness of national and international law in confronting climate change adds an important element to our understandings of vulnerability and the material conditions that lead to claims for protection. This is a problem exacerbated by contentious cross-border regions (e.g. Pakistan-India and India-Bangladesh) that otherwise witness similar problems that should be handled by coordinated approaches and funding.

Food security and livelihood security: Despite some considerable development improvements across South and Southeast Asia, human development and security remain at risk. Extreme poverty is itself a form of vulnerability that is likely to be compounded by the exigencies of climate change; poverty and potential food insecurity in urban, rural, and mixed rural-urban agrarian areas will stretch the capacities of the region and its governments to provide basic protections for its populations. The intersection of complex spatial relationships—where traditional rural-urban distinctions are eroding as megacities grow and smaller urban areas of one to two million residents develop in rural areas—has created both opportunities and, in the context of changing climates, new vulnerabilities. Where borders separate otherwise similar climate conditions, their different humanitarian, development, governance, and emergency-assistance trajectories challenge the borderless nature of disaster vulnerability. This equally impacts the critical questions of negotiating access for humanitarian response and development planning.

Disease and poverty: South and Southeast Asia's complex disease profile is changing. While public health planning has not adequately met the linked challenges of poverty and disease, the transmission of old diseases has increased (e.g. dengue and malaria) just as other climate-affected health challenges such as water and nutrition are reasserting themselves. These phenomena may be poverty-related in cause, and they are certainly poverty-related in consequence. In turn, they affect migration and insecurity in ways that profoundly challenge current understandings of complex emergencies.

Taken together, these policy arenas raise serious normative and policy questions in three related areas: *(1) sovereignty and trans-border risks* between and among states, particularly those with underdeveloped planning and response capacities; *(2) adaptation to and mitigation of* climate change on top of preparedness for other natural hazards such as earthquakes in the face of poverty and insecurity; and *(3) humanitarian responsiveness and development planning*, as reflected in government planning and foreign assistance priorities. In each instance, the data basis for judging policy alternatives for governments, international organizations, and non-state actors is incomplete. Multilateral organizations have established aid-related rubrics for consolidating humanitarian assistance that has a climate change element (particularly through UNOCHA), but similar rubrics for coordinating development assistance—even accounting for those established by the World Bank and the UN Development Group that are helpful at a preliminary analytical level—remain underdeveloped. Creating and analyzing the intersections of these three policy arenas—migration and rights, food security and livelihood security, and disease and poverty—will be critical for all of these actors in the very near future if the phenomenon of complex, climate-related emergencies continues to become more common. These intersecting policy arenas therefore represent a primary focus of the data analysis and a new focus for policy analysis as well.

This research therefore poses several questions that seek to clarify the governance dimensions of complex emergencies in South and Southeast Asia:

- How does governance contribute to the evolution of a disaster into a complex emergency?
- How do complex emergencies related to climate change differ in the ways they evolve and the responses they require?
- What does disaster vulnerability mean in this politically divided and often politically insecure region? What will it mean for the future?
- What are the shared normative and policy foundations on which state and regional responses to climate-related hazards and earthquakes can be constructed, not only within states but across borders?
- How can this region construct a shared policy understanding of the protection missions of the state under conditions of pervasive cross-border uncertainty?

The project will begin with a series of policy research consultations in the United States, South Asia, and if possible Southeast Asia. Also, in order to facilitate regional discussions where cross-border travel is difficult, the project will hold a regional consultation bringing stakeholders from many countries together in the Gulf or South Asia. Drawing on Dr. Newberg's extensive experience in the region, the project will identify relevant partners for consultation including

humanitarian, development, and environmental organizations from civil society, academia, and government as well as intergovernmental organizations and international non-governmental organizations with expertise in this space. The project will focus in particular on the ways that the region is confronting population movement, population growth, and the prospect of forced migration as a result of climate change.

The persistent challenge in this field has been the divergence between humanitarian response, development planning, and national and sub-national financial structures for public policy. Mapping them together could and should provide a robust foundation for further work related to complexity, disaster and climate change responses, and emergency preparedness in these three overlapping policy arenas.

As a result of consultations and workshops on elements of current and future climate change policies, it should be possible to understand the ways that climate-related emergencies have been anticipated, and how planning and response have worked. This research project will therefore map analytically four intersecting trends: intra-regional migration; legal protections for cross-border population movement; tensions between development policy and humanitarian response across the region; and changing understandings of state responsibilities as the region faces a changing climate.

Additionally, a cross-border comparative study of these issues should provide a platform for future assessments of the effectiveness of sub-national interventions for disaster planning and disaster mitigation. The variously federalized states of Pakistan and India treat similar, sub-national border regions quite differently and thus provide fascinating object lessons in development finance and disaster response—the Punjab in India and Pakistan, for example, or the cross-border economies across Pakistan and Afghanistan. Policymaking between and among these regions can provide a laboratory not only for understanding the effects of complex emergencies in substantive policy arenas, but also help to prevent conflicts arising from potential emergencies. This project will also help to map a future research agenda that takes account of this rapidly changing field.

International Aid to Mitigate Disasters and Complex Emergencies
Kate Weaver, Mike Findley, and Nisha Krishnan

Introduction

Responses to disasters and complex emergencies are varied and are dependent on several factors, including donor preferences, geopolitical considerations, and need. The incidence and magnitude of such events are hard to predict but their impacts can be mitigated through disaster risk reduction and preparedness and capacity building activities. While the international donor community has increasingly attempted to undertake such preparedness activities through official and unofficial aid channels, especially in the light of growing vulnerabilities to climate change impacts, the amounts devoted to and effectiveness of such preparation and response has been the subject of much debate. It is also possible that our lack of understanding stems from the dearth of accessible and accurate information on such preparedness and response activities. Ultimately without better information, it will always be difficult to assess whether disaster assistance is allocated appropriately or effectively changes the context for the better, thus necessitating more careful collection and analysis of the potential mediating effects of foreign assistance on disasters and complex emergencies.

In this research area focused on understanding support to enhancing government capacity, we will assess whether international aid for both disaster risk reduction and management (DRRM) and disaster and humanitarian response is targeting areas of highest need and enhancing domestic efforts to build capacity in these areas. Building on prior work tracking aid, we will produce a comprehensive resource mapping that captures the majority of domestic and international resources mobilized to respond to disasters and to enhance DRRM capacity in countries that are extremely vulnerable to disasters.

Objectives

For the 11 countries under study, this CEPSA component seeks to understand:

1. The universe of assistance provided for events related to climate change related natural disasters
    a. amounts and trends over 2005 – 2013/14
    b. major donors and actors[9]
2. Its purpose, i.e., the proportion of funds and activities directed towards preventative and risk reduction versus response and recovery[10]

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[9] We hope to devise a logical sampling strategy based upon available information in AidData and UN OCHA FTS. This will include, at a minimum for all 11 countries: World Bank, USAID, Asian Development Bank, DFID, JICA/Japan, GFDRR, UNDP, UNEP, WHO, WFP.

3. Of those projects identified as DRRM or disaster response aid, how many of those projects or attendant activities can also be coded as climate change adaptation and mitigation?[11]

4. Complementarities or differences with local and national government priorities and activities, and

5. Whether assistance is commensurate and coincident with vulnerable areas.

Methodology

We propose to address our agenda through the following four interrelated phases. The phases allow us to be flexible and continuously evaluate whether data availability, resources, and findings are compatible and extendable with further work.

Phase 1

The first phase will involve collection of data on aid and financial commitments to climate-related DRRM activities, collation, and preliminary coding based on the methods subsequently described.

Existing Data Sources

Wherever possible, this effort is going to rely on existing data sources, including UN OCHA, the World Bank, other multilateral development banks (MDB) and bilateral aid data sites, IATI, AidData, and national budgetary data. This partially is to make sure that we leverage existing work, but also as a way of being cognizant of limited resources (both financially and logistically). We will not be collecting primary project documents and using an original coding system, but will rely on existing datasets and merge where needed with the activity codes used in AidData that align with the literature's broad understanding of activities related to disaster risk reduction, management, response and recovery.

Foreign assistance to disasters and complex emergencies are channeled through many different agencies and organizations, including military outfits, making accurate tracking difficult. Several other challenges exist in understanding how donors classify humanitarian assistance (whether it is counted as Official Development Assistance (ODA) or emergency assistance, thus affecting where/ how they are reported), how existing data are reported and collected, defined, and overlap; and how best to decipher assistance directed towards recovery/response vs. preventative/risk reduction activities, given sparse details. A key challenge includes figuring out what sectors to focus on and investigate further, given that DRRM activities often happen in sectors and not as a purpose.

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[10] This section will particularly build upon existing work from GFDRR and ODI.

[11] That is, what is the overlap and where does disaster aid incorporate components that are geared towards reducing long-term vulnerability to, or increasing resilience, to climate change?

From preliminary analysis, we have identified two primary sources to start (based on their completeness and direct data collection from donors): UN OCHA and AidData. These two data sources are described more in detail below.

UN Office for Coordination of Humanitarian Affairs (UN OCHA)

UN OCHA hosts the Financial Tracking Service (FTS), collecting real time updates on donor contributions through its three channels: Consolidated Appeals Processes (CAPs), Central Emergency Response Funds (CERFs), and Common Humanitarian Funds (CHFs). CAPs are general purpose funds - i.e., they are not targeted at any one country and act as a common pool fund for UN OCHA to distribute if its criteria are met. CERFs and CHFs are distributed based on whether the country is designated as a priority (only 18 are classified as priority, and only Pakistan and Myanmar from our 11 countries qualify) and if the criteria for these funds are met.

These data can be filtered by donors, recipient country, amount funded, and by specific events. Donors, if donating to particular events or activities, have provided brief project descriptions that allow some deciphering of whether the funding is related to prevention/risk reduction or towards response/recovery. Further, location information is also sometimes available, allowing us to spatially specify coverage of assistance.

AidData

Based off the OECD DAC and its own collection efforts to include non-DAC donors, the AidData database contains over 1.75 million records on foreign aid (loosely classified; AidData relies on donor reported information and non-DAC donors do not strictly adhere to OECD definitions). AidData also just updated their China aid dataset. These data are geocoded (based on donor provided information and/or project documents) and activity coded (both purpose and specific activity codes). Both these characteristics can generally guide us to understand more about what funds are being directed towards (i.e., prevention vs. response). Further, we are also able to keyword search and specify sectors we may want to focus on (given that DRRM efforts are usually sector-specific and not general DRRM).

We expect some overlap between OCHA and AidData; primarily because donors could (and do) report humanitarian assistance (especially if they self-define contributions as ODA) to both parties. To address this, we would need to more carefully figure out donor reporting patterns (perhaps only for the top 5-10 actors) and use keywords and/or event data (if that is a common characteristic). Similarly, there could be some danger of double counting if the data are not merged carefully. Further, depending on the level of geographic specificity we decide upon (perhaps constrained by the data itself), we may have overlapping data which could pose problems in disaggregating or aggregating between the two sources.

Based off these two primary data sources, we hope to pinpoint patterns in donors and actors in this space, preliminarily understand trends in assistance, and identify areas needing further study. Further, this first phase will also allow us to devise our sampling strategy for major donors. It will enable deeper understandings of the overlap with climate-related activities (e.g., adaptive capacity building, mitigation, or general resilience building), reasons for assistance (e.g.,

proactive or reactive funding; types of events), and whether there are underlying causal relationships that can be teased out.

Phases 2 – 4

Much of these subsequent phases depend on the outcomes of the first phase. We have briefly outlined our activities under each below; however, these are subject to change.

Phase 2

Data collection and processing efforts in the first phase will enable us to spatially pinpoint areas of assistance. This might be the point at which our scope narrows, considering availability of spatial information across our data sources. Precision of spatial information varies considerably across donors and data sources – a key challenge here will be to understand how to leverage available data across our sources. Findings and results from this phase form the basis for our work in Phases 3 and 4. In particular, efforts here are integral in ensuring compatibility with other parts of the CEPSA program.

Phase 3

Based on previous data collection and analysis efforts, this phase focuses on analyzing trends in aid related to climate-change related natural disasters, with a subsequent focus on assessing where that aid also aligns temporally and geographically with complex emergencies in the region. This work will build upon our already developed climate coding methodology (under the Program on Climate Change and African Political Stability). This spatial component will allow us to combine our work with other relevant parts of the CEPSA program, including the vulnerability assessments, areas of conflict and violence, and also guide our further concentration on donor-recipient-event dynamics.

Phase 4

The fourth phase will involve merging this data with national and state budgetary data, contingent on results from components investigating and evaluating national government disaster management capacity and where budget data may become available over the next year through sources such as the International Budget Partnership or the World Bank's BOOST program. We envision that this phase will require further data collection, cleaning and development of sectoral classification schemes that can help merge data from different sources that use different reporting categories.

Through these phases, we hope to have understood dynamics in disaster and complex emergency assistance. First, we hope to have identified trends in the reasons for, types of, and locations to which foreign assistance is provided. Second, we envision a spatially based resource mapping exercise that helps us understand whether assistance is targeted to areas in need (as determined by the vulnerability component of the CEPSA program). The third phase naturally extends our work and begins to unwind the complex relationship between disaster response, climate- and

disaster-related preparedness and the underlying causes of complex emergencies. In attempting to address this, we hope to elicit patterns that roughly can be categorized on a continuum of emergency response to resilience. The last phase assesses where national and international resources are aligning (or not) to address DRRM needs and will be used to bring together all previous phases in evaluating assistance for complex emergencies.