

# MIDLOC: Introducing the Militarized Interstate Dispute Location dataset

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#### **Abstract**

The Militarized Interstate Dispute Location (MIDLOC) dataset addresses a significant lacuna in the empirical literature on the geography of interstate conflict: the dearth of location-level data. This dataset provides details of the geographic location of Militarized Interstate Dispute (MID) *onsets* between 1816 and 2001. These data on locations are available at both the dispute-level (for 1816–2001) and the incident-level (for 1993–2001). This article briefly identifies the motivation behind this data-collection project, details some of the coding procedures followed in assembling the MIDLOC dataset, and then offers some mapped visualizations of the variance in this dataset across time. These maps are designed, in part, to stimulate additional hypothesis derivation in work on the geography of conflict. The data are then employed to offer a geographic assessment of the proposition that democracies tend to conduct the majority of their conflicts on their opponents' territories. The article then concludes with a discussion of some additional potential applications of the MIDLOC dataset.

## Keywords

conflict location, geography, militarized interstate dispute

## Introduction

Empirical studies of the geography of conflict have proliferated in number and scope over recent years. These studies have examined the location, geographic distribution, and geopolitical attributes of intrastate and interstate conflict. This represents a dramatic transformation for a subfield that has typically aligned with the thoughts of Singer & Small who – in their seminal study of war – stated that 'the geographical loci [of wars] are, from our point of view, of limited interest' (1972: 35). The behavioral approach to the study of conflict has tended instead to focus upon testing competing realist and liberal theories: measuring the distribution of capabilities in order to test competing hypotheses regarding power parity and power preponderance and specifying the nature of domestic regimes, with a view toward exploring the validity of the democratic peace proposition.

Accordingly, extant studies of the geography of conflict have until recently conceptualized association between conflicts as consisting primarily of a correlation between the actors that participate in them (see e.g. Siverson & Starr, 1991; Anselin & O'Loughlin, 1990). The recent wave of geographic studies of conflict contend, contrastingly, that analysis of the loci of conflicts allows us more accurately to assess the spatial distribution of these phenomena. Gleditsch et al. (2002: 14), for instance, argue that state-level data 'can give a misleading impression of the size and location of the zones of peace and zones of turmoil'. As an example, they point out how under traditional conceptions, 'the entire landmass of Russia can

be depicted as being in conflict because of the Chechnya War'. Their suggested remedy for this problem, which they claim will paint a more realistic picture of the zones of conflict, is to 'plot the conflicts by their actual geographical location'.

Until recently it has not been possible, however, to study the location of conflict quantitatively because of a dearth of applicable data. This lacuna is being filled in respect to civil conflicts with the publication of Buhaug & Gates (2002), through recent updates of the UCDP/PRIO Conflict dataset (Gleditsch et al., 2002), and in continuing work offering more precise details about the territory consumed by political violence (Raleigh & Hegre, 2005). This article introduces a new dataset designed to complement this flourishing series of studies examining the geography of warfare. The Militarized Interstate Dispute Location (MIDLOC) dataset details the precise geographic onset location of Militarized Interstate Disputes (MIDs) in the post-Napoleonic era (from 1816–2001), complementing the Correlates of War (COW) Project's considerable empirical data collection. The MIDLOC data offer a single point location to represent the onset of each individual MID between 1816 and 1992. For the period 1993–2001, the data are more detailed, identifying a single point location for each individual incident within each individual MID.

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The MID data have become a valuable resource for scholars of the scientific study of conflict. Over recent decades, studies utilizing these data have addressed a wide variety of questions related to various phases of the conflict process - addressing details of the onset (Maoz & Abdolali, 1989; Bremer, 1993), initiation (Huth, Bennett & Gelpi, 1992; Huth & Russett, 1993), frequency (Gochman & Maoz, 1984), duration (Bueno de Mesquita, Koch & Siverson, 2004), and escalation (Vasquez, 1993; Reed, 2000) of conflicts. In the absence of geographically sensitive details, however, this literature has yet to employ dispute data to assess a range of hypotheses regarding the spatiality of international conflict. Are observations of MID onset randomly located across space? Does proximity to the locus of MIDs affect the likelihood of third party intervention? Do conflicts cluster in a manner that enables us to identify 'problem areas', 'conflict hot spots', or 'shatterbelts'? Answers to these and many other questions regarding the geography of conflict are facilitated by the publication of this new dataset.

This article briefly introduces the MIDLOC dataset, describing the coding protocol followed when collecting the location data and offering descriptive statistics regarding the geographic distribution of locations across time. A series of mapped images of the data accompany this descriptive work. Finally, I offer a brief discussion of realized and potential applications of these data in order to demonstrate their inherent value to the literature addressing the geography of political conflict.

# Project goals

This project is designed to complement the resurgent literature on the geography of conflict. In their seminal contributions, Richardson (1960) and Wright (1965) posited that states with multiple neighbors are at greater risk of becoming infected by conflict than are states that are geographically isolated. This state-centric orientation has remained at the core of most subsequent studies of conflict location and contagion (see e.g. seminal studies by Most & Starr, 1980; Siverson & Starr, 1991; and Bremer, 1992). More recently, however, scholars have recognized the value of specifying the precise geographic loci of conflicts when seeking to explain the contagious, diffusive, and heterogeneous nature of conflict's place in time and space (see e.g. Gleditsch, 2002; Gleditsch et al., 2002; Buhaug & Gates, 2002; Braithwaite, 2006).

The motivation for examining the precise geographic location at which conflicts take place is, therefore, at least three-fold. First, examining patterns of participation in conflict can certainly be informative insofar as we are concerned with the relative belligerence of states. This practice can, however, be misleading if we are, in fact, more interested in the spatial distribution and diffusion of the violent actions and events themselves than in who is producing this violence. Second, identification of location better enables us to examine the influence that many geopolitical factors – including terrain, natural resources, and relative distance – have upon decisions

to initiate disputes, escalate hostilities, and join ongoing conflicts. Third, by identifying the locations of conflicts, it is possible for us to visualize 'problem-areas' – in which massive state- and International Organization-level resources are invested. This may ultimately enable more direct conflict management practices aimed at alleviating a conflict's impact at its source. Achievement of each of these three goals is facilitated by the geo-coding of a comprehensive dataset detailing international conflicts globally.

# **Coding protocol**

The MIDLOC data complement the MID 3.0 collection, incorporating data globally from 1816 to 2001. The MID 3.0 data provide summary information about the population of inter-state disputes, which are defined as:

United historical cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. (Jones, Bremer & Singer, 1996: 163)

Individual events (or incidents) are aggregated into MIDs if they represent a continuation of hostilities between the same parties over the same issue and are separated by not more than a sixmonth interruption in time. The MID 3.0 data collection consists of a total of 2,332 disputes – each measured as occurring at the time and location of the onset of the earliest incident of which the dispute is comprised. For each of these units of observation, I have defined a location at which it is reasonable to assert that the first hostilities of the MID took place. In order to facilitate subsequent mapping and spatial analysis, I geo-coded these records, identifying longitude and latitude coordinates for the dispute's onset location. The availability of location coordinates from online gazetteer search engines and Geographic Information Systems (GIS) expedited the data-collection process. Following common convention, latitude is measured as the angular distance, in decimalized degrees (DD), of a point north or south of the equator. Similarly, longitude is measured as the angular distance, in decimalized degrees (DD), of a point east or west of the prime (Greenwich) meridian.

The MID 3.0 dataset includes a simple text notation of a named location assigned to each dispute onset.<sup>2</sup> I base the

<sup>&</sup>lt;sup>1</sup> The bulk of location coordinates for the MIDLOC data were collected from search engines provided by the National Geospatial-Intelligence Agency: http://gnswww.nima.mil/geonames/GNS/index.jsp.

<sup>&</sup>lt;sup>2</sup> These text notes were provided to me in an Excel spreadsheet in 2001 by the late Stuart Bremer of Pennsylvania State University. Bremer had just succeeded J. David Singer as Director of the Correlates of War Project at that time. This original spreadsheet – the product of the collection of data for the MID 2.1 update – was comprised of two columns of data detailing the MID dispute number and the estimated location of the dispute onset. All details from this original spreadsheet are contained in the MIDLOC data under the variables, 'dispnum' and 'mid21location'.

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more precise geographic measurement upon this noted location. Where specific names of towns, cities, or bodies of water were quoted as part of the MID data-collection efforts, I was able to simply identify the specific longitude and latitude coordinates that represent this location. Other location entries were often less precise in their level of detail and typically took the form of references to countries, borders, regions, rivers, seas, or oceans. In these instances, I examined hard copies of the original MID codings. Where no greater level of detail existed, I relied upon identifying the central point of the referenced location (i.e. the center point along a shared border or the center point of an ocean). In these instances, I am less confident that I am able to accurately capture the precise location of the onset. I am confident, however, that this captures greater spatial sensitivity than exists in the absence of any spatial reference point. These 'center point' locations were commonly identified using ArcMap 9.1 so as to maximize spatial sensitivity.

This data-collection process resulted in a total of 3,865 individual location records. This is comprised of recorded onset locations for 2,240 of the 2,332 independent MIDs from the MID 3.0 dataset. Of these 2,240 MIDs, 1,939 took place between 1816 and 1992 and 301 between 1993 and 2001. A total of just 92 MIDs remain without a recorded onset location. In addition to the MID-level data detailed, this dataset also includes incident-level location data for the period 1993–2001. There are 2,122 incident-level records that comprise the 301 MIDs during this period. Of these 2,122 records, 196 currently contain missing values.<sup>3</sup>

There is considerable variation in the perceived accuracy or observed precision of the location variables in the MIDLOC dataset. Accordingly, a 'precision' variable is coded to offer a glimpse of the relative accuracy of recorded locations. This ordinal variable includes six categories. Category 1 indicates a high level of precision in which a point measurement is selected to represent a point location. For instance, a town is known to have hosted a conflict. There are 698 such entries (which represents 17% of records). Category 2 covers all cases in which a considerable level of precision exists. For instance, the true location of a conflict is known to have been close to a particular point or landmark. In such cases, of which there are 220 in the dataset (5%), a point is used to measure a proximate location. Category 3 indicates that a point estimate has been employed to represent a subnational area (polygon) of

authority – a district or administrative unit. There are 1,017 such cases (24%). Category 4, in turn, indicates that a point estimate is used to proxy a record detailing a location known to be along a line – a river or a political boundary. There are 1,226 such examples (30%). Category 5 then identifies cases in which a point estimate (typically a capital city or centroid) is employed to represent a large polygon area (a nation-state, ocean, or sea). There are 704 such cases (17%). Finally, there are 230 observations (7%) for which no known locations exist and values are, therefore, missing.

# Mapping the MIDLOC data

In line with Anselin's (1999) suggestion, I utilize GIS to store, visualize, and manipulate the location data. The first stage in this process of geo-visualization requires conversion of the geographic location data into mapped point pattern representations of dispute onsets. Each onset is represented by a single set of longitude and latitude coordinates. The dataset – including the collective set of these points – forms a *shapefile* which is then used as an overlay on a projected map of the world. When combined, these two layers of information form static maps of onset locations.

A series of maps offers an example of the products of this process.<sup>7</sup> Figure 1 details all MID onset locations globally across three periods of time: 1816-1945, 1946-89, and 1990–2001. The point locations are superimposed upon maps of the independent state system in 1914, 1945, and 1994, respectively. The first map shows the locations of the 742 located disputes between states in the classical period of IR (1816–1945). This map demonstrates that these disputes occurred predominantly in the regions comprised of independent states during this period: including in Central and South America, Europe, and parts of East Asia. The second map, depicting the location of 1,151 independent disputes during the Cold War, follows the same pattern, with disputes proliferating to newly independent areas of the African and Asian continents. These locations appear to conform with what others have identified as a broad band of conflicts from the Middle East, through Central and East Asia (Gleditsch et al., 2002). The third map, illustrating onset locations for 347 post-Cold War MIDs, demonstrates that conflicts appear to have become increasingly concentrated around specific

<sup>&</sup>lt;sup>3</sup> The MIDLOC dataset, therefore, details a location for each MID between states between 1816 and 2001. By comparison, the UCDP/PRIO conflict dataset (Gleditsch et al., 2002) offers a summary of the geographic location of all conflict behaviors between two parties (of which at least one is a state actor) that resulted in at least 25 battle-related deaths. Their data cover all countries between 1946 and 2006. The ACLED dataset (Raleigh & Hegre, 2005), by contrast, details a precise coordinate location for every significant development (include non-conflict interactions) within domestic and internationalized episodes of conflict. The ACLED dataset currently details data for eight conflict countries in West and Central Africa between 1960 and 2004.

<sup>&</sup>lt;sup>4</sup> For this I use ESRI's ArcGIS 9 software.

<sup>&</sup>lt;sup>5</sup> All maps utilize the GCS Assumed Geographic 1 projection.

<sup>&</sup>lt;sup>6</sup> One clear advantage of this layered approach to mapping is that it is possible – depending upon data availability – to overlay a variety of geographic, demographic, and ethnographic data in coverage format to enhance the future search for agents of clustering and diffusion.

<sup>&</sup>lt;sup>7</sup> Each of these maps returns examples of what might be considered unlikely points representing MID onset locations. Some of these locations are precise representations of fishing and/or naval disputes; others are imprecise representations of vaguely detailed locations. For instance, a non-trivial number of entries were simply listed in the MID 2.1 dataset as being located in 'the Atlantic Ocean'.

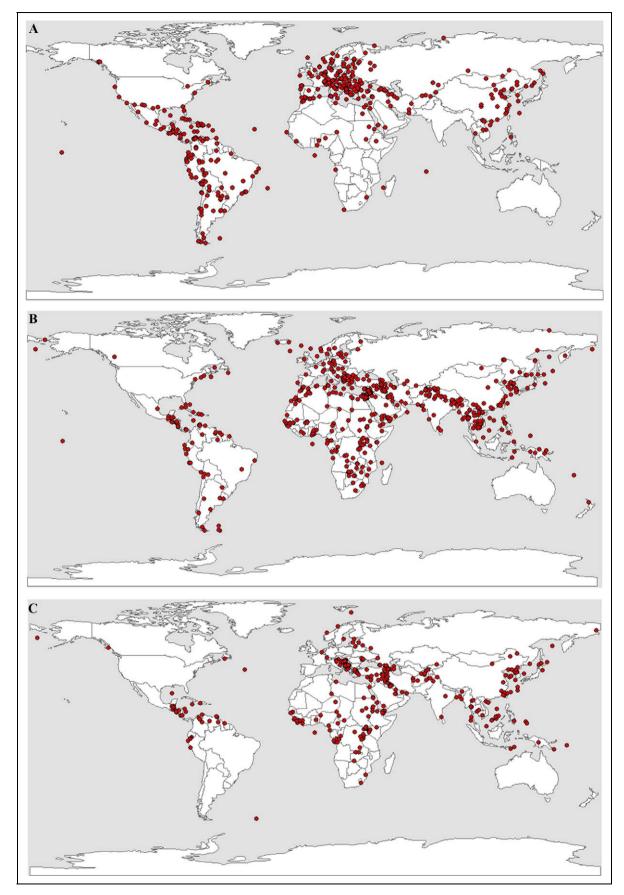


Figure 1. Militarized Interstate Dispute locations across time A: 1816–1945; B: 1946–89; C: 1990–2001

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locations – including in Central America, West and Central Africa, the Balkans region of Eastern Europe, the Middle East, Central Asia, and the Korean peninsula. It is notable that the locations identified across these three time periods do not align perfectly with the territories of some of the most frequent participants in conflicts – a list that includes North American and Western European states. This may be because many of these major powers have, by virtue of their power projection capabilities, largely been able to select locations for conflict away from their home territories (Gleditsch & Hegre, 1997: 294).

# Data applications

A comprehensive literature addresses the relationship between states' regime types and their conflict behaviors. The monadic proposition derived from the logic of the democratic peace posits that democratic states are inherently more peaceful than their non-democratic counterparts, concluding additionally that they are less likely to initiate conflict against other states than are their autocratic counterparts. This proposition has received mixed empirical support. Danilovic & Clare (2007) offer a thorough account of the considerable literature on this proposition, as well as an in-depth assessment of its liberal philosophical underpinnings. Recent studies have demonstrated an evolution in logics underpinning the democratic peace, from those that prioritized normative claims to those that focus upon institutional (primarily electoral) designs (see e.g. Reiter & Stam, 2002; Bueno de Mesquita et al., 2003).

Democracies pay higher costs for involvement in conflict, primarily in the form of electoral costs (Bueno de Mesquita et al., 2003). The populaces of democratic societies are viewed as being risk-averse, especially when it comes to paying the costs of conflict in terms of lives lost and/or spikes in military budgets. Moreover, in these societies, this risk-averse population has the ability to select and remove their leadership; hence, their risk-aversion tends to have an influence in the decision-making process (Bueno de Mesquita et al., 2003). Another important conclusion of the more recent democratic peace scholarship identifies states with democratic credentials and institutions as considerably less attractive targets for uses of force (see e.g. Reiter & Stam, 2002). This follows from the same logic as before, in which democratic leaders are understood to have increased incentives to avoid entering conflicts that they are likely to lose. Thus, it tends to be the case that they select themselves into conflicts that they have a considerable likelihood of winning. Finally, there is an increasingly common conception that when democracies use force overseas, they do so as a means of spreading democratic institutions, identifying targets for their uses of force that are autocratic in nature. Accordingly, they most frequently select conflict locations within autocratic states and regions (see e.g. Russett, 2005).

Given that the cost of conflict is likely to be especially high if fought on home territories – with costs likely to include some, if not all, of the following: civilian lives, damage to

infrastructure, market costs (especially in terms of FDI inflows) - it seems that leaders will do all they can to avoid fighting conflicts at home. Under such circumstances, they are highly likely to identify and select locations away from home territories. Moreover, given that democratic states represent such formidable foes when using force, there is reason to suspect that democratic states will more frequently (than their autocratic counterparts) enjoy the option of being able to launch a use of force overseas. This argument aligns neatly with the well-founded claim that democratic states are typically technologically more advanced and, therefore, 'better able to deploy force at greater distances, so that most of the fighting occurs on the opponent's territory' (Gleditsch & Hegre, 1997: 294). In combination with the burden of empirical evidence on the monadic democratic peace proposition, this logic introduces a location-based implication, that democracies [may] frequently participate in MIDs but they rarely host them. It is this geographic hypothesis that I will examine as a means of demonstrating the utility of the MID-LOC dataset.

This hypothesis is examined by means of a multivariate test comparing likely rates of MID participation and MID hosting behaviors: specifically, a logistic regression in which rates of participation (as defined by the COW project) and rates of hosting (as defined by the MIDLOC dataset) are regressed against a range of the 'usual suspects' from quantitative studies of the monadic democratic peace proposition.

Three dummy variables are operationalized to identify whether or not states are, respectively, 'democratic', 'anocratic', or 'autocratic'. The first of these is coded 1 if the state receives a polity score of greater than 6 (on the scale from -10 to 10). The second is coded 1 if the state receives a score of between -6 and 6. The third is coded 1 if the state receives a score of less than -6. These are the cutoff points that are suggested by Jaggers & Gurr (1995: 474). I introduce a second regime type variable to try to capture the deterrent value of democratic regions. This variable measures the proportion of a state's contiguous neighbors that are democratic.8 I have additionally operationalized covariates to capture the individual state's share of global national capabilities, an indicator of whether or not the state is a major power, a measure of the state's total trade activity (imports and exports), the state's affinity with the global hegemon, and a count of the number of neighbors with which the state shares a contiguous border.9

The results of multivariate testing on data covering all states for the years 1875 to 2001 are reported in Table I. Two models are listed. The first pertains to trends in state-level participation in MIDs. The second models the likelihood by which states host MIDs on their sovereign territory.

<sup>&</sup>lt;sup>8</sup> This variable is taken from Gleditsch & Ward (2006).

 $<sup>^{9}</sup>$  Each of these variables was generated using EUGene (Bennett & Stam, 1999).

Table I. Regime type effects upon levels of dispute participation and hosting, 1875-2001

| Variable               | Participation | Hosting  |  |
|------------------------|---------------|----------|--|
| Democracy              | -0.030        | 0.044    |  |
| •                      | (0.167)       | (0.210)  |  |
| Autocracy              | -0.027        | -0.020   |  |
| •                      | (0.104)       | (0.116)  |  |
| Regional democracy     | -0.761**      | -1.191** |  |
|                        | (0.198)       | (0.286)  |  |
| Lag dependent variable | 1.241**       | 1.263**  |  |
|                        | (0.083)       | (0.116)  |  |
| State capabilities     | 5.756**       | 6.818**  |  |
|                        | (1.720)       | (2.241)  |  |
| Major power            | 0.866**       | -1.092** |  |
|                        | (0.243)       | (0.358)  |  |
| Affinity with hegemon  | -0.155        | -0.344   |  |
| , ,                    | (0.164)       | (0.230)  |  |
| Total trade (logged)   | 0.118**       | 0.091**  |  |
|                        | (0.020)       | (0.027)  |  |
| No. of neighbors       | 0.061*        | 0.130**  |  |
|                        | (0.030)       | (0.031)  |  |
| Constant               | -2.273**      | -2.943** |  |
|                        | (0.130)       | (0.190)  |  |
| No. of observations    | 7,880         | 7,880    |  |

Robust standard errors (clustered on the state) in parentheses.

Table II. Percentage changes in odds of participating in and hosting MIDs

| Variable               | Unit increase          | Participation | Hosting |
|------------------------|------------------------|---------------|---------|
| Democracy              | From 0 to 1            | NS            | NS      |
| Autocracy              | From 0 to 1            | NS            | NS      |
| Regional democracy     | 1 SD                   | -20%          | -30%    |
|                        | (29% of neighbors)     |               |         |
| Lag dependent variable | From 0 to 1            | 246%          | 254%    |
| State capabilities     | 1 SD                   | 23%           | 27%     |
|                        | (3.5% of capabilities) |               |         |
| Major power            | From 0 to 1            | 138%          | -67%    |
| Affinity with hegemon  | 1 SD                   | NS            | NS      |
| Total trade (logged)   | 1 SD                   | 32%           | 24%     |
| No. of neighbors       | 1 additional neighbor  | 6%            | 32%     |

NS = factor not statistically significant (as reported in Table I).

A series of findings are of particular interest here. First, and most pertinently, we can compare Models 1 and 2 to demonstrate that democracies are neither more nor less likely to participate in or host MIDs than are autocracies (or the omitted category, anocracies). Both 'Democracy' and 'Autocracy' return statistically insignificant parameter coefficients in both models. This evidence is rather damning for the hypothesis of interest. The models do demonstrate, however, that states within regions with higher proportions of democratic states are less likely to host MIDs than are states in less democratic regions. It is the case, however, that this same regional environment also dramatically decreases participation levels. Table II summarizes the

marginal effects of these findings. We can see here that an increase of almost one-third in the proportion of neighbors that are democratic is associated with a 20% decrease in participation levels and a 30% decrease in hosting levels. Overall, this provides some evidence that states within democratic environments are more likely to fight abroad when they participate in MIDs.

Elsewhere in the two models, we can see that more powerful states both participate in and host more MIDs (a one standard deviation increase in capabilities increases these likelihoods by 23% and 27%, respectively). We can also see, however, that the most powerful states, major powers, while participating more frequently than minor powers, are also

<sup>\*\*</sup> *p* < 0.05; \*\* *p* < 0.01.

SD = standard deviation.

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hosting less frequently (138% and –67%, respectively). This contrast supports intuitive expectations that the most powerful states (which are not exclusively democratic) are able to select where to fight their battles.

## Potential applications

The mapped visualizations of the geographic distribution of the MIDLOC data are offered simply to demonstrate some ways by which we could conceive of variation in the spatial distribution of conflict locations. These data have been employed to demonstrate that the geographic size (extent of spread) of individual MIDs is a product of local topography and the initial number of participants in the dispute (Braithwaite, 2006). There are a great many additional ways in which these data could subsequently be employed to facilitate a more comprehensive understanding of the geography of violent conflict. These data could, for instance, be employed alongside data summarizing the locations of civil conflicts and transnational terrorist campaigns as a means of examining the interactive relationship between types of conflict at various levels of analvsis. Such an application would rely upon conceptualizing geographic location as the common denominator across cases of internationalized civil conflict, transnational terrorism, and uses of force designed to tackle terrorist safe havens.

These data could also be employed alongside recently released data from the Issues Correlates of War (ICOW) and Geographic Representations of War (GROW) (see e.g. Cederman, Rød & Weidmann, 2007) projects to examine the geographic interplay of international conflict, issue disputes, and local natural resource dependence. This would facilitate greater cross-disciplinary interaction between scholars of what have traditionally been viewed as International Relations (studying inter-state wars) and Comparative Politics (studying civil conflict). It is possible, after all, that both forms of conflict tend to cluster in regions/locations rich in valuable but scarce natural resources — a relationship that has been tentatively demonstrated for civil conflicts, at least (Buhaug & Gates, 2002; Buhaug & Lujala, 2005).

Finally, the location of a conflict may be shown to offer a crucial indication of the likely salience of a conflict to the various state actors in the international system. Siverson & Starr (1991) demonstrated that the 'opportunity' and 'willingness' for a state to participate in international wars are well captured by patterns of contiguity and alliance partnerships between current and potential war participants. An additional variable may be crucial in determining patterns of conflict-joining behaviors: the proximity of ongoing conflicts. This variable can now be neatly operationalized, thanks to the availability of precise location data to accompany the MID dataset.

## Replication data

The dataset and do-file for the empirical analysis in this article can be found at http://www.prio.no/jpr/datasets. The full

MIDLOC dataset is available via the Correlates of War project: http://www.correlatesofwar.org.

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