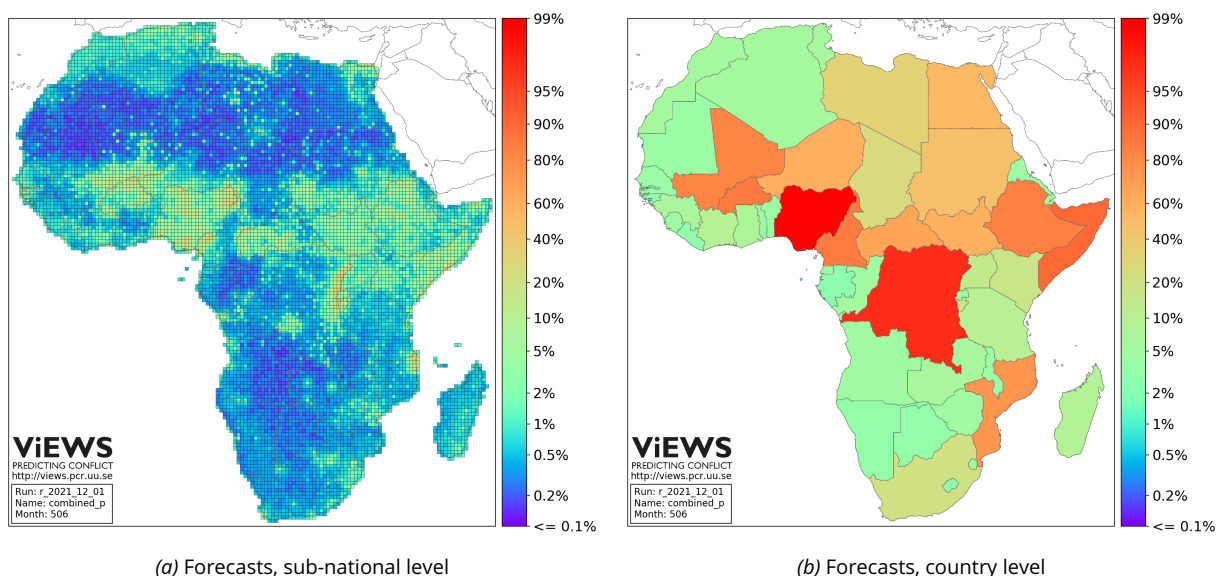


The Risk Monitor: December 2021

Africa-wide forecasts from the Violence Early Warning System (ViEWS)

*Forecasts for February 2022, based on data up to and including October 2021.**

By: The ViEWS Team



(a) Forecasts, sub-national level

(b) Forecasts, country level

Figure 1. Combined forecasts for fatal political violence in February 2022. Predicted risk (0-100%) that at least one fatality occurs per sub-national location (left), or at least 25 fatalities per country (right)—from either state-based, non-state, or one-sided violence.

EXECUTIVE SUMMARY

ViEWS generates high-risk alerts for countries with a recent history of fatal political violence. By February 2022, 25 or more fatalities per month from at least one of the three types of violence that ViEWS predicts (see page 7) are almost certain in DRC and Nigeria, and highly likely in Somalia, Cameroon, Ethiopia, Burkina Faso, and Mali (> 75% risk; Figure 1b).

More specifically, the forecasting system detects accentuated risks of fatal political violence over the near future in Borno, Katsina, Kaduna, Zamfara, and the southern states in Nigeria; the Far North and Anglophone re-

gion of Cameroon; the Ituri and Kivu provinces of DRC; and in the tripartite border region between Mali, Burkina Faso and Niger. Other high-risk locations include the Tigray region and scattered locations across Amhara, Afar, and Oromiya in Ethiopia; Mogadishu and other select locations in both southern and central Somalia and in the Central African Republic; the coast of the Sinai peninsula in Egypt; Tripoli and Sirte in Libya; the Saloum mountain in Tunisia; and the Cabo Delgado province of Mozambique. This is illustrated by Figure 1a, displaying forecasts for at least one fatality per approximately 55x55km location and month by February 2022. Diffuse risks furthermore form a belt across the Sahel region, its southern

*The forecasts were computed on resources provided by the Swedish National Infrastructure for Computing (SNIC) at Uppsala Multidisciplinary Center for Advanced Computational Science (UPPMAX). Descriptions of the ViEWS methodology, including the data informing the forecasts, can be found in Hegre et al. (2019) and Hegre et al. (2021). For a brief overview of key models and definitions, please see page 7 of this report.

Table I. Short-term watchlists^a

Top 5 high-risk locations in February 2022		Most notable changes since last month	
Nationally	Locally	Nationally	Locally
Nigeria	North-East, North-East (Nigeria)	Mali ↑	North-West (Nigeria) ↓
Somalia	Cabo Delgado (Mozambique)	CAR ↑	South-East (Nigeria) ↑
DRC	Ituri and Kivu provinces (DR Congo)	Burkina Faso ↑	Northern Burkina Faso ↓
Burkina Faso	Anglophone Cameroon	Niger ↑	Central Mali ↑
Cameroon	The tripartite border (Mali/BF/Niger)	South Africa ↓	Khartoum (Sudan) ↑

^aBased on Figure 1–2, in no particular order.

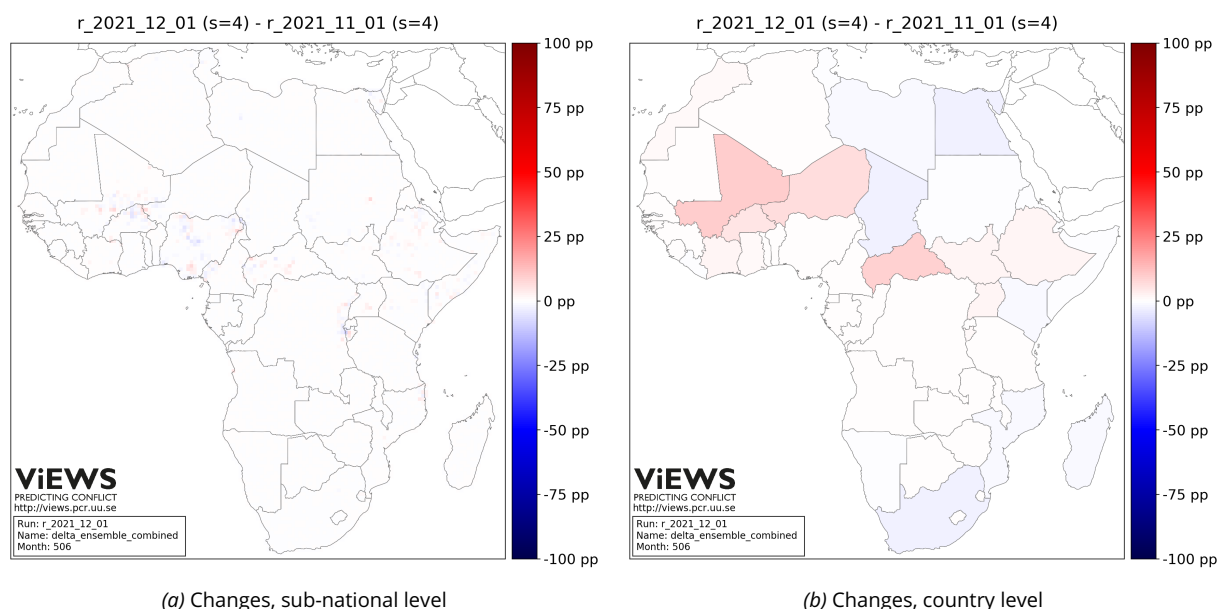


Figure 2. Changes to the combined forecasts since last month by percentage points (pp). Sub-national level (left) and country level (right).

neighbours, and the Horn of Africa.

Sub-national changes to the forecasts as compared to last month are predominantly confined to the high-risk regions above (Figure 2a).

At the country level, the combined risks of 25 or more fatalities per month from either one of the three types of violence have increased notably for a number of countries since last month, namely Mali, Burkina Faso, Niger, and Central African Republic.

Over the following pages, the ViEWS forecasts are presented and discussed separately for each category of violence.

STATE-BASED CONFLICT (SB)

The ViEWS system generates alerts for conflict involving a government of a state in countries with a recent history of fatal political violence and/or mass protests. In Nigeria, DRC, Somalia, Cameroon, Mali, Mozambique, Burkina Faso, CAR, and Ethiopia, the risk of 25 or more fatalities per month by February 2022 remain high and above 50%, as seen from the red and bright orange fill colors in Figure

3a (red colors indicating a near-certain risk, light orange a risk equal to a coin toss, and purple < 0.1% risk.)

More specifically, the system suggests that the risks of fatal violence are particularly pronounced for Nigeria: for Borno and Yobe state in the North-East; Katsina, Kaduna, and Zamfara in the North-West; as well as for a portion of the South-East and South-South. High-risk locations are also found in the Far North and Anglophone regions of Cameroon; the Ituri and Kivu provinces of DRC; Cabo Delgado in Mozambique; the broader border region between Mali, Burkina Faso and Niger; the Tigray region in Ethiopia along with a number of locations across Oromiya, Amhara, and Benishangul-Gumuz; Mogadishu and other select locations in southern and central Somalia; the north-eastern coast of Egypt; the north-western coast of Libya; as well as for the central and western regions of Central African Republic (CAR). This is illustrated by Figure 3c, which maps the risk of at least one fatality per approximately 55x55km (0.5x0.5 decimal degree location, or PRIO-GRID cell) location¹ and month across the African continent.

Figure 3b and 3d show how the respective forecasts

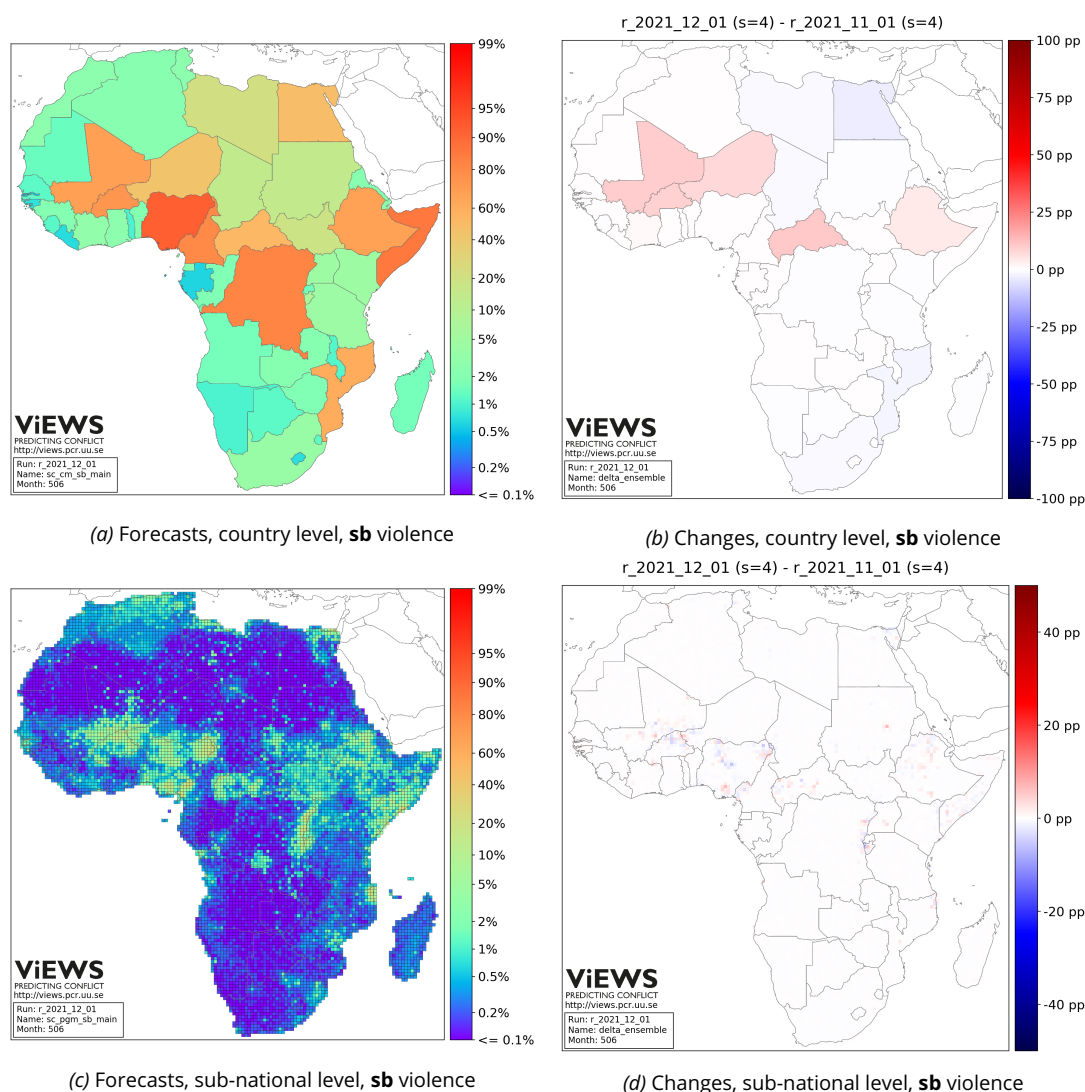


Figure 3. Forecasts for the risk of at least 25 fatalities (country level, top left) and 1 fatality (sub-national level, bottom left) from state-based (**sb**) violence in February 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

have changed since last month.² Red colors point to heightened risks, whereas blue colors indicate that risks have reduced. The severity of each risk alteration (by percentage points, *pp*) is illustrated by the color saturation; white indicating no change. Figure 3b shows that conflict risks have increased significantly in Mali, Burkina Faso, Niger, and CAR, notably also in Ethiopia, the first four due to an increase in the number of battle-related deaths from state-based violence between September and October 2021 (the last month of conflict data informing the December production of the ViEWS forecasts). In CAR, the risk elevation follows a steep increase in fatalities from one-sided violence.³

A comparison of the conflict history map in Figure 5a with the figure mapping changes to the sub-national forecasts of at least one death per grid cell and month (Figure 3d) further illustrates the influence that the recent history

of violence has on future conflict risks – risks are generally heightened where violent episodes have occurred in the recent past. This is evident in Figure 3d not only for the aforementioned countries, but also for a number of other locations.

NON-STATE CONFLICT (NS)

Seen from the mostly blue, green, or light orange shades in Figure 4a, the short-term risks of 25 or more fatalities per month from conflict between two or more armed non-state groups (non-state conflict) are relatively low for the strong majority of the African countries, most often less than 10 or even 5%. The system nevertheless alerts to high risks of conflict in both DRC and Nigeria, and somewhat lesser but pronounced risks in Sudan, South Sudan, Ethiopia, Somalia, CAR, South Africa, Burkina Faso, and

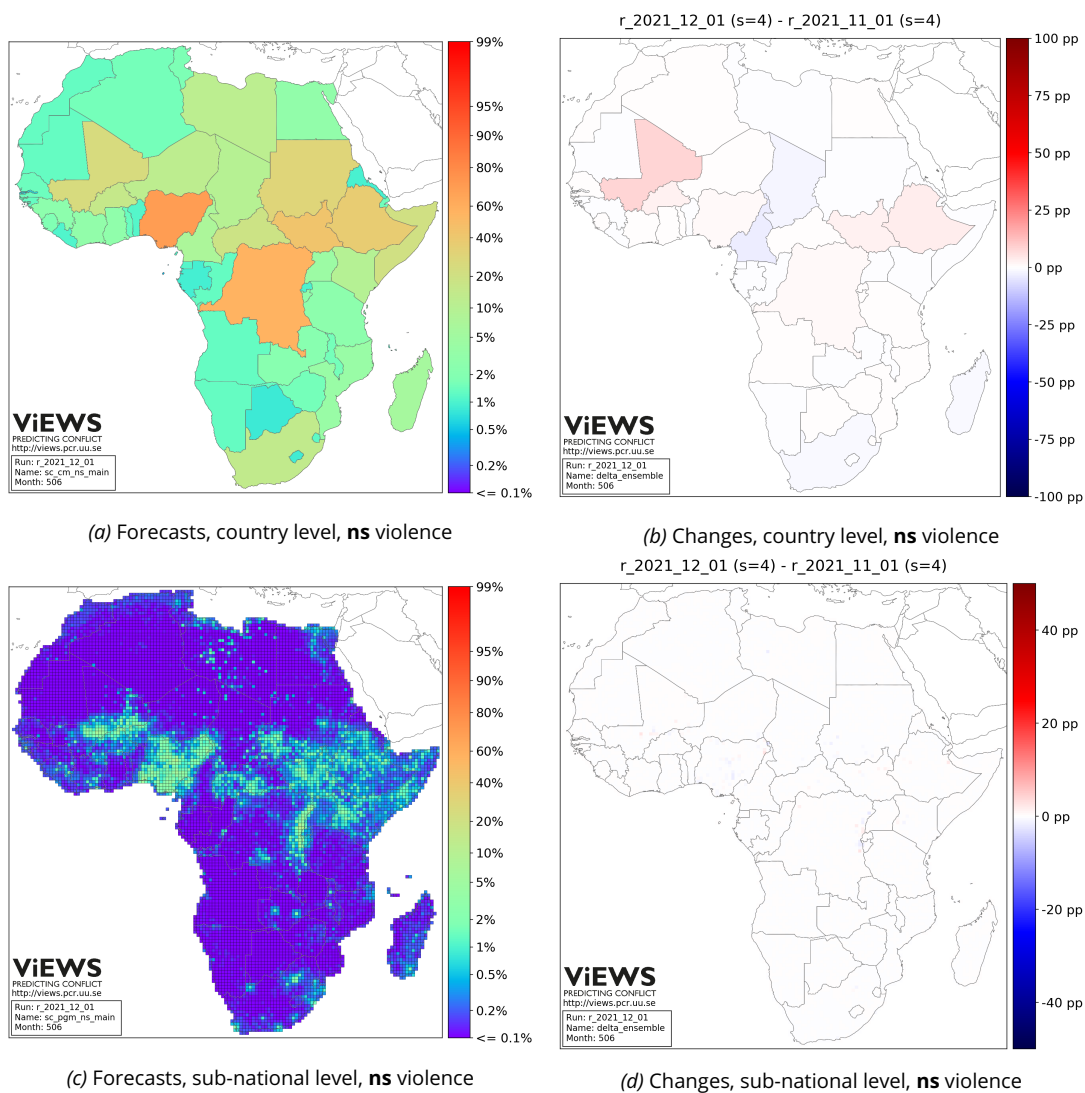


Figure 4. Forecasts for the risk (0-100%) of at least 25 fatalities (country level, top left) and 1 fatality (sub-national level, bottom left) from non-state (**ns**) violence in February 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

Mali.

The sub-national forecasts are closely correlated with the country-level predictions. Geographic locations at risk of at least one fatality per month over the near future form a belt spanning the Horn of Africa, the southern parts of Sudan, South Sudan, CAR, south-eastern and south-western Chad, northern-most and Anglophone Cameroon, the whole of Nigeria, and the broader border area between Mali, Burkina Faso and Niger (Figure 4c). A more intense risk cluster is also found in the Ituri and Kivu provinces of DRC, coupled with scattered at-risk locations across Libya, lands along the Nile delta in Egypt, southern Côte d'Ivoire and Guinea, West Kasai in DRC, and the largest cities in South Africa.

Changes to the country-level forecasts as compared to last month are mostly moderate, seen from the faint col-

ors in Figure 4b. Mali is the exception, for which we see a steep risk increase since last month due to an elevated number of fatalities also from non-state violence between September and October 2021 (reaching nearly 100 deaths in October).

At the sub-national level, the ViEWS model does not expect much to change over the next few months – the change map in Figure 4d is almost completely blank.

ONE-SIDED VIOLENCE (OS)

With a handful exceptions, the risks of 25 or more fatalities per month are relatively low (less than 5–10%) also with regards to one-sided violence – violence exerted by an armed actor against unarmed civilians – for the majority of African countries. Most pronounced are the risk

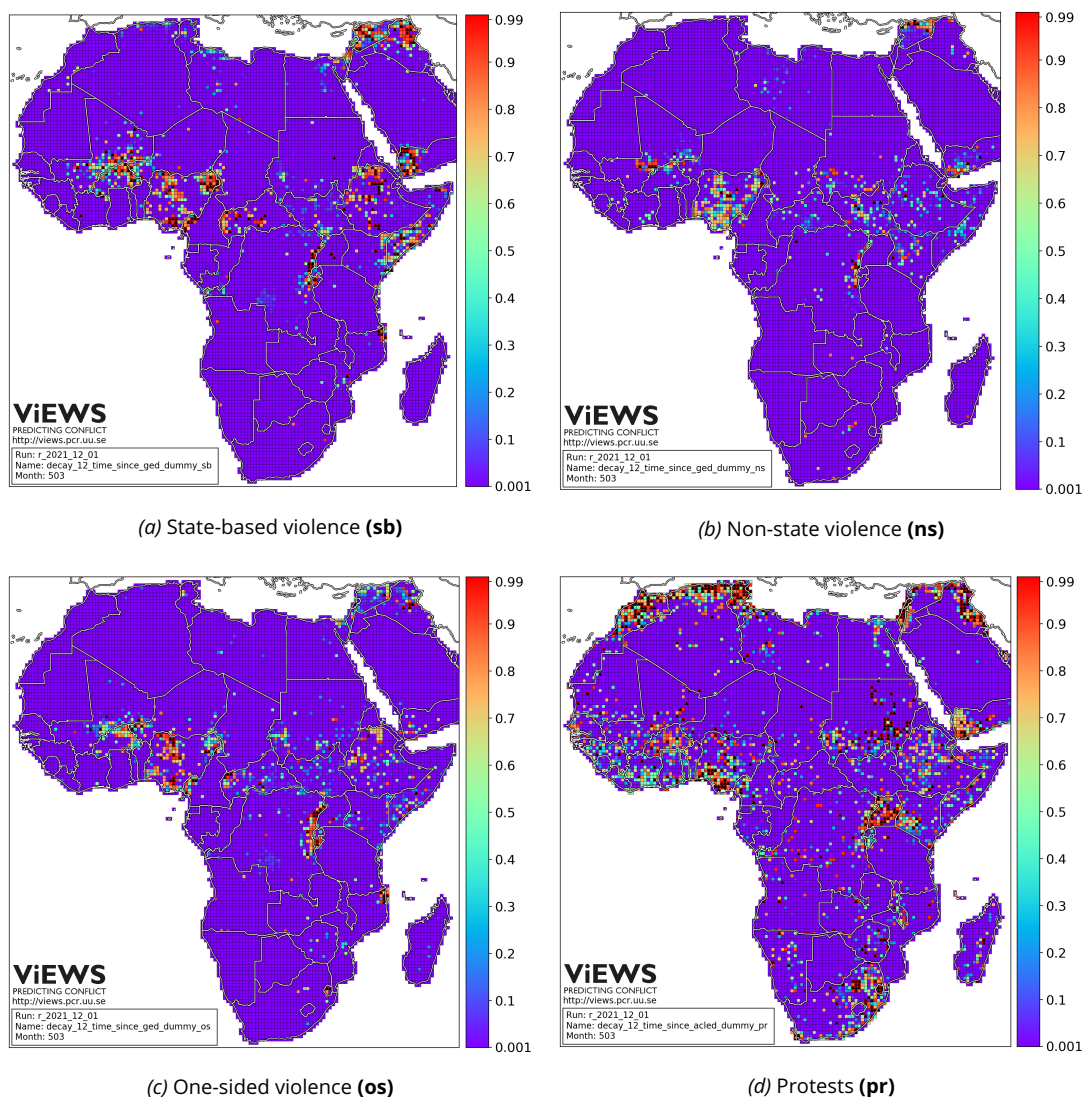


Figure 5. Illustrations of the recent history of fatal political violence as well as protests (violent and non-violent), as recorded by the UCDP (<http://ucdp.uu.se>) and ACLED (<http://acleddata.com>), respectively. Red cells observed qualifying incidents in October 2021 (distinguished by a black marker) or September 2021. Purple cells have not experienced such incidents for many years.

profiles for DRC and Nigeria (bright orange colors in Figure 6a). Also Mali, Burkina Faso, Niger, Ethiopia, Mozambique, Cameroon, CAR, Sudan and South Sudan nevertheless stand out in the conflict forecasts for February 2022.

At the sub-national level, assessing the risk of at least one fatality per approximately 55x55km location, results are more refined (Figure 6c). We find the Ituri and Kivu provinces of DRC to be particular hot-spots for one-sided violence, persistently plagued by police brutality, Islamist militants, and various armed groups. A less severe risk cluster is also found over DRC's Kasai/Kasai-Central. In Nigeria, in turn, particular high-risk locations include Borno state (grappling with Boko Haram and IS-affiliated groups), Katsina, Kaduna, and Zamfara states (with a history of banditry), and the southern states. Other 'hot-spots' include northernmost Cameroon, Cabo Delgado in

Mozambique, and the broader tripartite risk cluster spanning central Mali, northern/north-eastern Burkina Faso, and south-western Niger (all of which are prone also to state-based violence due to militant Islamist operations in the area); Anglophone Cameroon; central and western CAR; and Darfur in Sudan. Last, a more diffuse risk cluster is found over the Horn of Africa.

Similar to the former category of violence, the ViEWS model does not expect much to change over the near future at the sub-national level – also here is the change map in Figure 6d mostly blank.

At the country level, changes are more pronounced. We find a discernible risk increase in Mali and DRC following a heightened number of fatalities from one-sided violence between September and October 2021, and a notable risk reduction in Ethiopia.

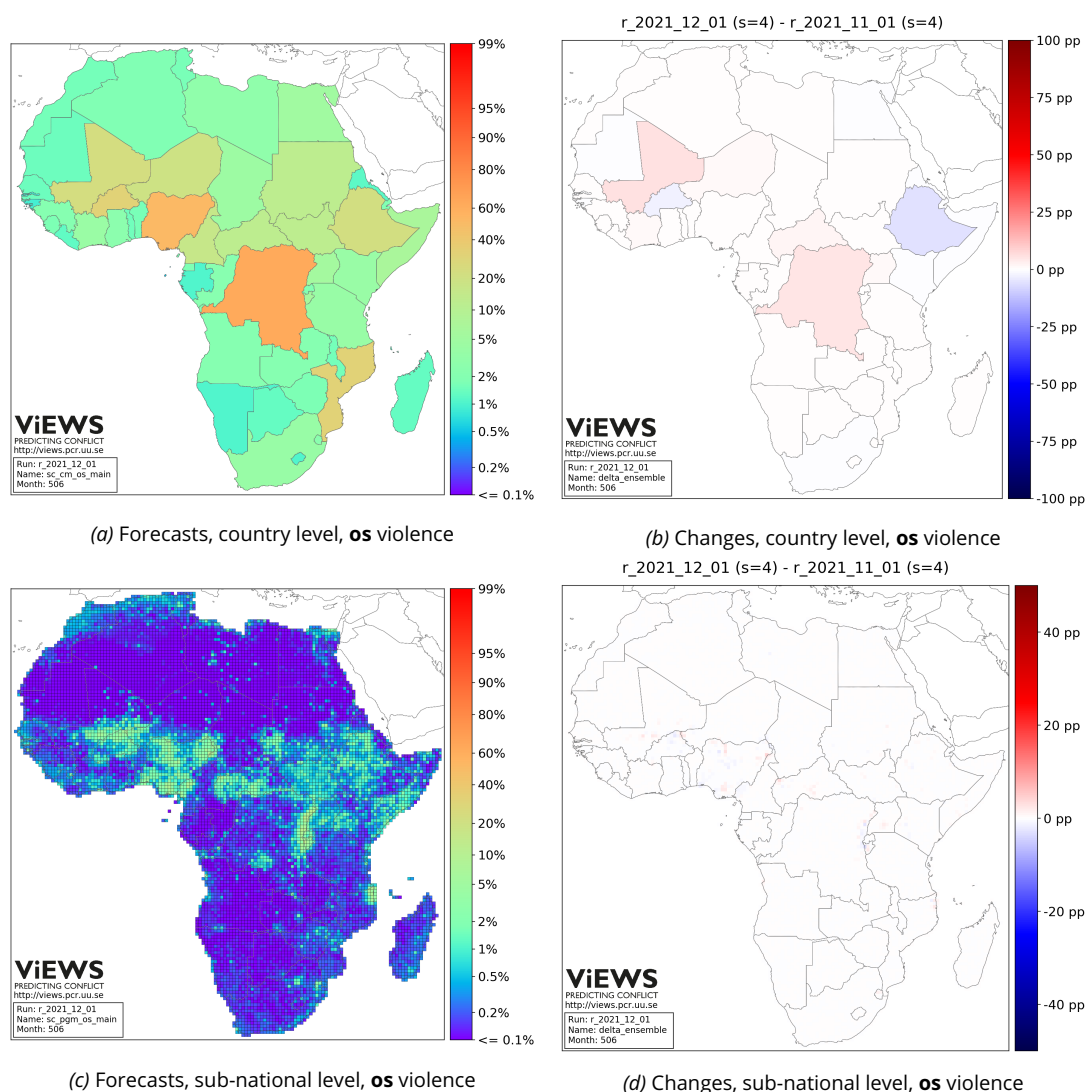


Figure 6. Forecasts for the risk (0-100%) of at least 25 fatalities (country level, top left) and 1 fatality (sub-national level, bottom left) from one-sided (**os**) violence in February 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

NOTES

1. The systematic grid structure formed is known as the PRIO-GRID. It is the most spatially granulated level that the ViEWS system currently produces forecasts for. See page 7 for the full definition.
2. Changes to the risk assessments as compared to last month are indicative of effects from new input data, most commonly by publicly available conflict and protest data from the Uppsala Conflict Data Program (UCDP, <http://ucdp.uu.se>) (Pettersson, Högladh, and Öberg, 2019; Sundberg and Melander, 2013; Hegre et al., 2020) and the Armed Conflict Location and Event Dataset (ACLED, <http://acleddata.com>) (Raleigh et al., 2010).
3. Unless otherwise stated, all fatality counts and details on conflict events noted in this report are derived from the latest release of the Uppsala Conflict Data Program (UCDP, <https://ucdp.uu.se>) Candidate Events Dataset (Pettersson, Högladh, and Öberg, 2019; Sundberg and Melander, 2013; Hegre et al., 2020), here the November 2021 release covering the month of October 2021. Any fatality counts listed correspond to the 'best estimate' records.

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DATA SOURCES

Conflict and protest data

- Uppsala Conflict Data Program (UCDP)
<http://ucdp.uu.se>
- Armed Conflict Location and Event Data (ACLED)
<https://acleddata.com>

Other input data

- Varieties of Democracy (V-Dem)
<https://v-dem.net>
- World Bank World Development Indicators (WDI)
<https://datacatalog.worldbank.org/dataset/world-development-indicators>
- International Crisis Group's Crisis Watch (ICGCW)
<https://www.crisisgroup.org/crisiswatch>
- PRIO-GRID dataset
<https://grid.prio.org/#/>
- REIGN Rulers, Elections, and Irregular Governance dataset (REIGN), <https://oefdatascience.github.io/REIGN.github.io/>
- SPEI Global Drought Monitor (SPEI)
<https://spei.csic.es/index.html>
- Shared Socioeconomic Pathways dataset (SSP)
<https://tntcat.iiasa.ac.at/SspDb/dsd?Action=htmlpage&page=welcome>
- Ethnic Power Relations dataset (EPR)
<https://icr.ethz.ch/data/epr/>

DEFINITIONS AND MODELING SET-UP

Types of violence

The ViEWS forecasts take the form of monthly probabilistic assessments of the risk and likely severity of three forms of organized political violence occurring in a given month, as defined by the Uppsala Conflict Data Program (UCDP):

- **State-based (sb) violence:** the use of armed violence over either government or territory between armed actors, in which at least one is a government of a state;

- **Non-state (ns) violence:** the use of armed force between two organized armed groups, neither of which is a government of a state, and;
- **One-sided (os) violence:** the deliberate use of armed force by the government of a state, or by a formally organized group, against civilians.

Levels of analysis

The results are presented at two levels of analysis using the calendar month as the temporal unit of analysis:

- The country-month (*cm*) level, which follows the country outline determined by CShapes (Weidmann, Kuse, and Gleditsch, 2010), and;
- The PRIO-GRID-month (*pgm*) level, which is outlined by fine-grained geographical locations known as PRIO-GRID-cells, a global quadratic grid structure with cells measuring 0.5 x 0.5 degrees in longitude and latitude, spanning approximately 55 km^2 along the equator (Tollefsen, 2012, <https://grid.prio.org/#/>).

Model descriptions

The forecasting system consists of a suite of forecasting models, each of which has been trained to capture the effects of a particular theme of conflict-inducing factors.

At the national level, the system gives particular weight to structural, slow-moving features and patterns that often characterize countries over a longer period of time, such as the stability of political institutions, democracy indices, and socio-economic factors. It also relies heavily on a number of conflict and protest history models that capture not only the long-term trends in each country and region, but also the most recent developments in each country. Changes to the ViEWS projec-

tions are nevertheless most often informed by the latter, more specifically by data updates from the Uppsala Conflict Data Program (UCDP, <http://ucdp.uu.se>) and the Armed Conflict Location and Event Dataset (ACLED, <http://acleddata.com>).

While the national level forecasts do inform the local forecasts—and vice versa—the forecasting models employed at the two levels of analysis differ from each other. Models informing the national level forecasts bring, for instance, valuable structural and historical factors to the table, whereas models tailored to the sub-national level excel in accentuating effects from local compound risks. This includes—but is not limited to—heightened risks related to local demography, terrain, proximity to natural resources, local precipitation levels, droughts, and conflict history in neighbouring areas. The two sets of forecasts should therefore be seen as separate assessments, which nevertheless are best interpreted in conjunction with each other.

The full suite of forecasting models are described in detail in Appendix B and C to our Special Data Feature in *Journal of Peace Research* (Hegre et al., 2021), available at <https://pcr.uu.se/research/views/publications/>.

Steps s ahead

In some figures, you may see a reference to a particular step s . This refers to the internal ViEWS notation for what number of months ahead (1-36) a given forecast is produced. In any given run of the forecasting system, $s = 1$ refers to the first calendar month following the last month of available data. In this report, the last month of available data was October 2021). Forecasts for $s = 1$ would thus effectively have referred to forecasts for last month, $s = 2$ to the 'nowcast' for the month of writing, $s = 3$ to the forecasts for the following calendar month, and so forth.

FUNDING

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**COLLABORATIONS**

ViEWS has an active interaction with other projects, including CLIMSEC, CAVE and CROP at PRIO (<https://prio.org/>), the MISTRA Geopolitics project, and most importantly the Uppsala Conflict Data Program (<https://ucdp.uu.se/>) at Uppsala University.

CODEBASE & PUBLICATIONS

ViEWS' codebase is available at:



[https://github.com/
UppsalaConflictDataProgram/
OpenViEWS2](https://github.com/UppsalaConflictDataProgram/OpenViEWS2)

The full list of publications are accessible at:



[https://pcr.uu.se/research/
views/publications/](https://pcr.uu.se/research/views/publications/)