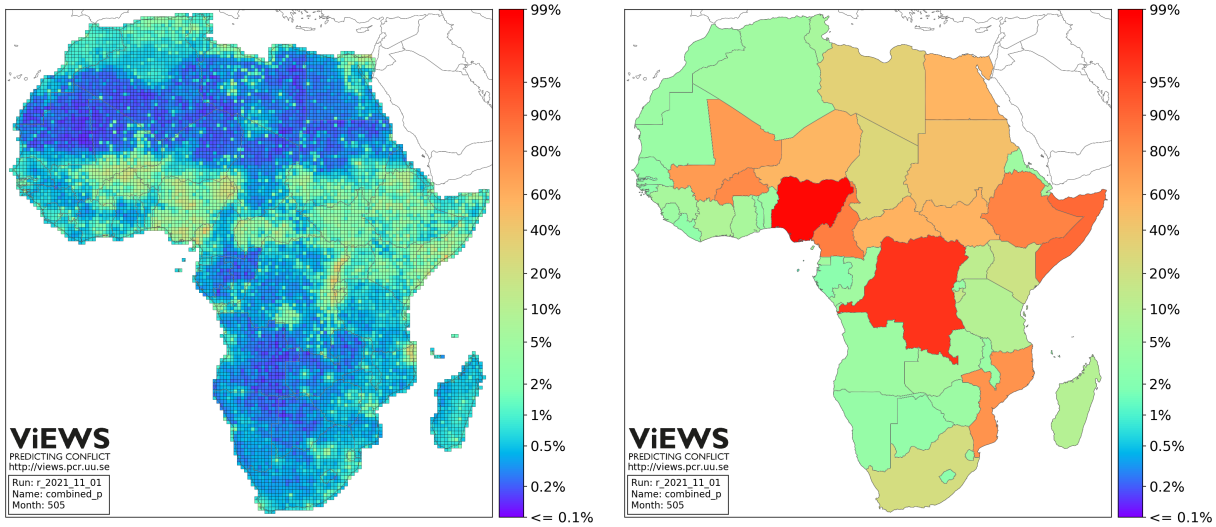
# The Risk Monitor: November 2021

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

***Forecasts for January 2022, based on data up to and including September 2021.****

By: The ViEWS Team




*(a)* Forecasts, sub-national level

*(b)* Forecasts, country level

*Figure 1.* Combined forecasts for fatal political violence in January 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 January 2022, 25 or more fatalities per month from at least one of the three types of violence that ViEWS predicts (see page 8) are almost certain in DRC and Nigeria, and highly likely in Somalia, Cameroon, Ethiopia, Burkina Faso, and Mozambique ($> 75\%$ risk; Figure 1b).

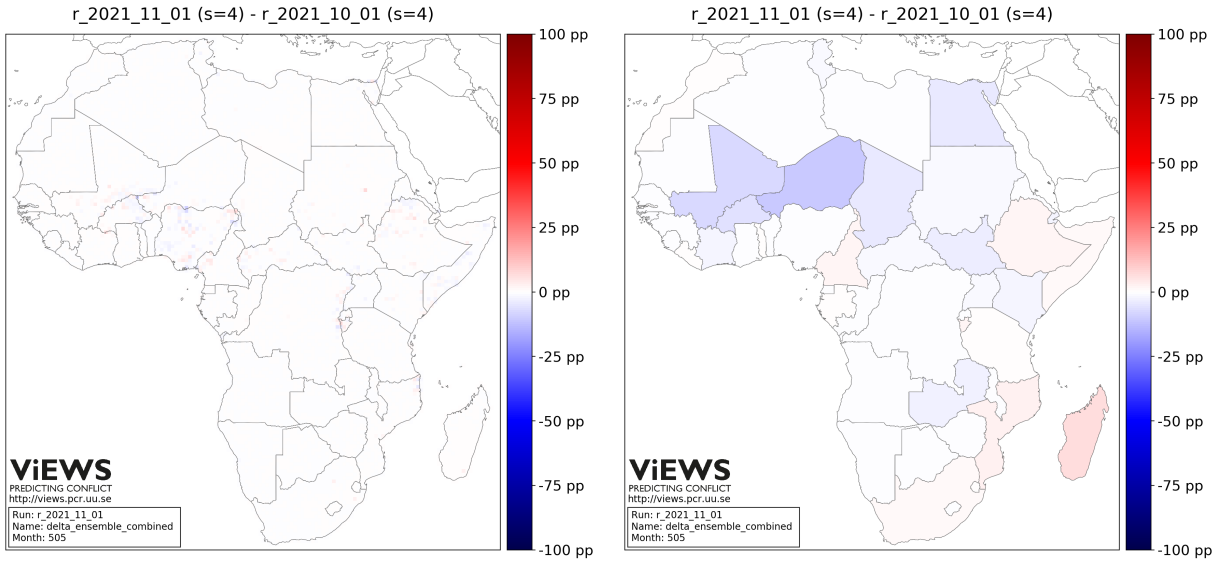
More specifically, the forecasting system detects accentuated risks of fatal political violence over the near future in Borno, Katsina, Kaduna, Zamfara, and the southern states in Nigeria; the Far North and Anglophone region of Cameroon; the Ituri and Kivu provinces of DRC; and in the tripartite border 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 appoximately 55x55km location and month by January 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 8 of this report.

*Table I.* Short-term watchlists[a]

| Top 5 high-risk locations in January 2022 | | Most notable changes since last month | |
|---|---|---|---|
| *Nationally* | *Locally* | *Nationally* | *Locally* |
| Nigeria | North-East, North-East (Nigeria) | Niger ↓ | NW, NE, SE (Nigeria) ↑↓ |
| Somalia | Cabo Delgado (Mozambique) | Mali ↓ | The Far North and Anglophone Cameroon ↑ |
| DRC | Ituri and Kivu provinces (DR Congo) | Burkina Faso ↓ | Amhara, B-G, Oromiya (Ethiopia) ↑ |
| Cameroon | Anglophone Cameroon | Chad ↓ | The tripartite border (Mali/BF/Niger) ↑ |
| Ethiopia | The tripartite border (Mali/BF/Niger) | Madagascar ↑ | Khartoum (Sudan) ↑ |

[a]Based on Figure 1–2, in no particular order.




*(a)* Changes, sub-national level

*(b)* Changes, country level

*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). Of particular note is the mix of both increased and reduced risks across Nigeria, and the heightened risk alert for Anlglophone Cameroon.

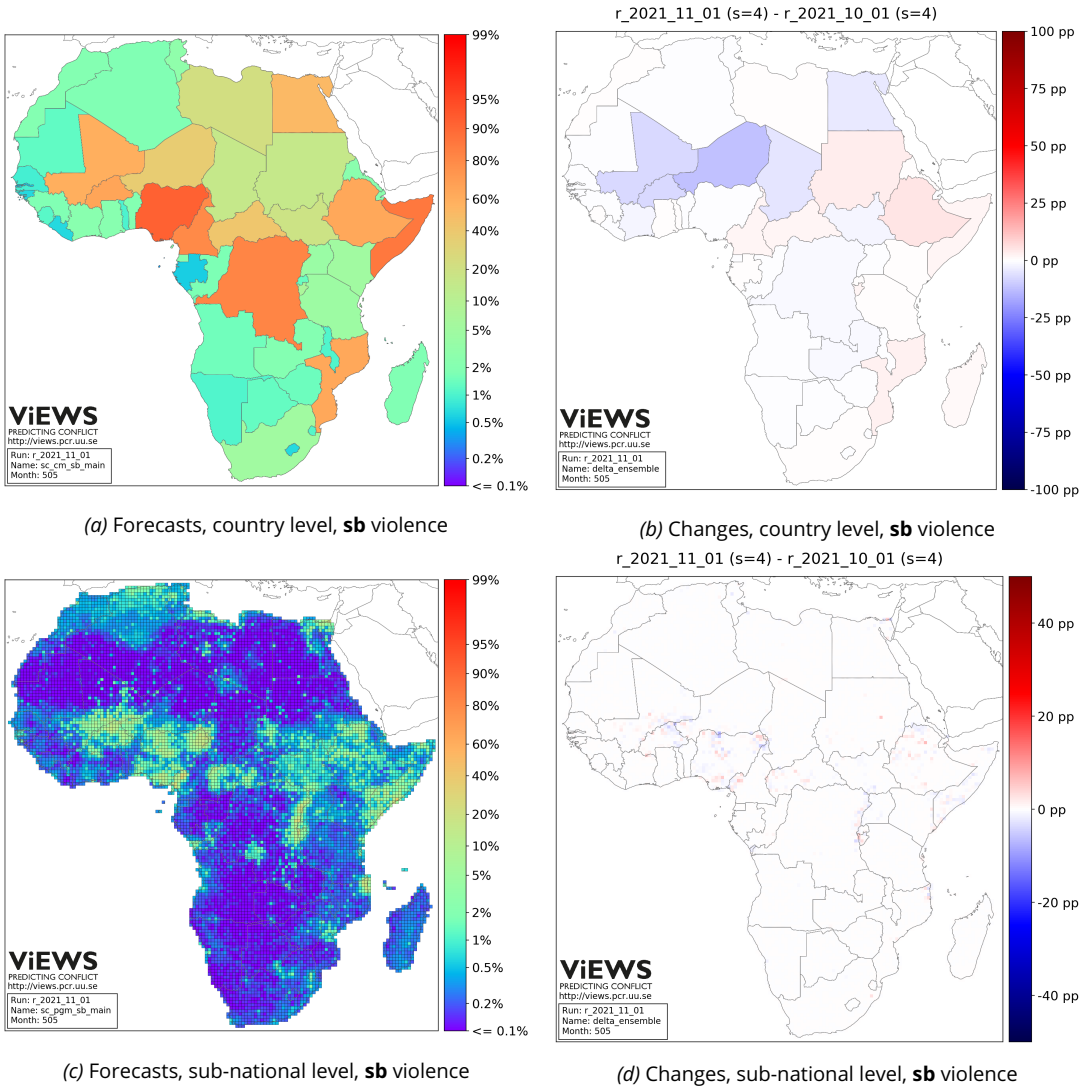
At the country level, the combined risks of 25 or more fatalities per month from either one of the three types of violence have reduced notably for a number of countries since last month. Increased risks are detected for no more than a handful of countries, most markedly for Madagascar, which observed its first incidences of fatal political violence (as recorded by the UCDP) in many years this September (Figure 2b).

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, Egypt, and Ethiopia, the risk of 25 or more fatalities per month by January 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




*(a)* Forecasts, country level, **sb** violence

*(b)* Changes, country level, **sb** violence

*(c)* Forecasts, sub-national level, **sb** violence

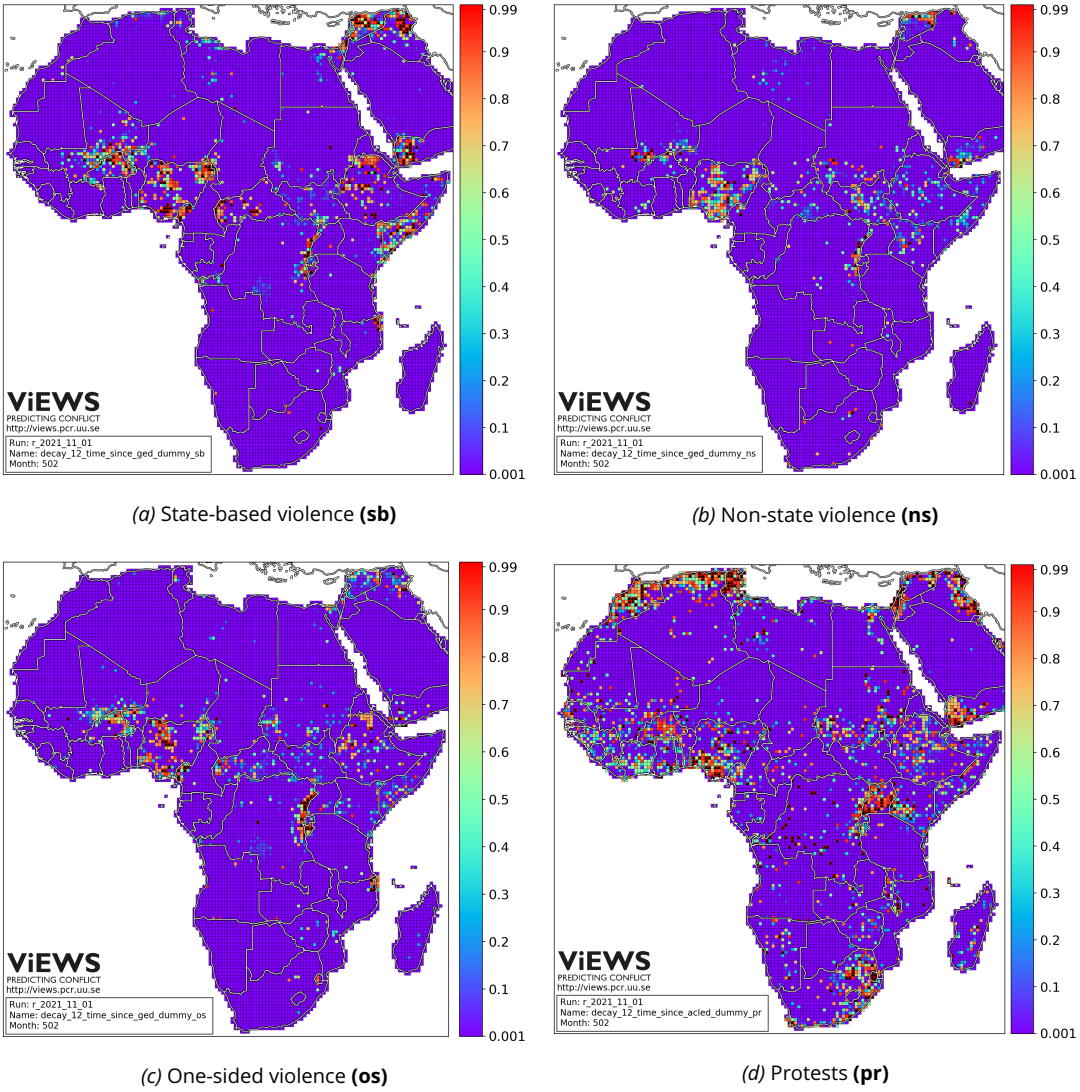
*(d)* Changes, sub-national level, **sb** violence

*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 January 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

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) location [1] and month across the African continent.

Figure 3b and 3d show how the respective forecasts 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 that conflict risks have reduced in Niger, Mali, Burkina Faso, Chad, and Egypt since last month, all due to a decline in conflict-related deaths between August and September (the last month of conflict data informing the November production of the ViEWS forecasts).[3] Increased risks, in turn, are detected in Ethiopia, Sudan, and Mozambique, coupled with moderate risk elevations in Cameroon, CAR, Somalia, and Madagascar.

The heightened conflict risk in Ethiopia as compared to last month is informed by continued clashes between government/government-affiliated forces and the TDF in Amhara and Benishangul-Gumuz (as well as an attack by ethnic Gumuz rebels on security forces) this September, and clashes between the government and OLA in Oromiya. For Sudan, it follows the death of five Sudanese counter-terrorism offiers in a raid reportedly targeting a cell linked to the IS in Khartoum on 28 September. An increased number of fatalities from political violence between August and September informs the risk elevation also for Mozambique and Madagascar, albeit neither case is due to conflict events classified as state-based violence, but rather to effects from changes in the other two conflict categories.[4] For Cameroon, CAR, and Somalia, as well as Sudan, alerts from the International Crisis Group's Cri-




*(a)* State-based violence **(sb)**

*(b)* Non-state violence **(ns)**

*(c)* One-sided violence **(os)**

*(d)* Protests **(pr)**

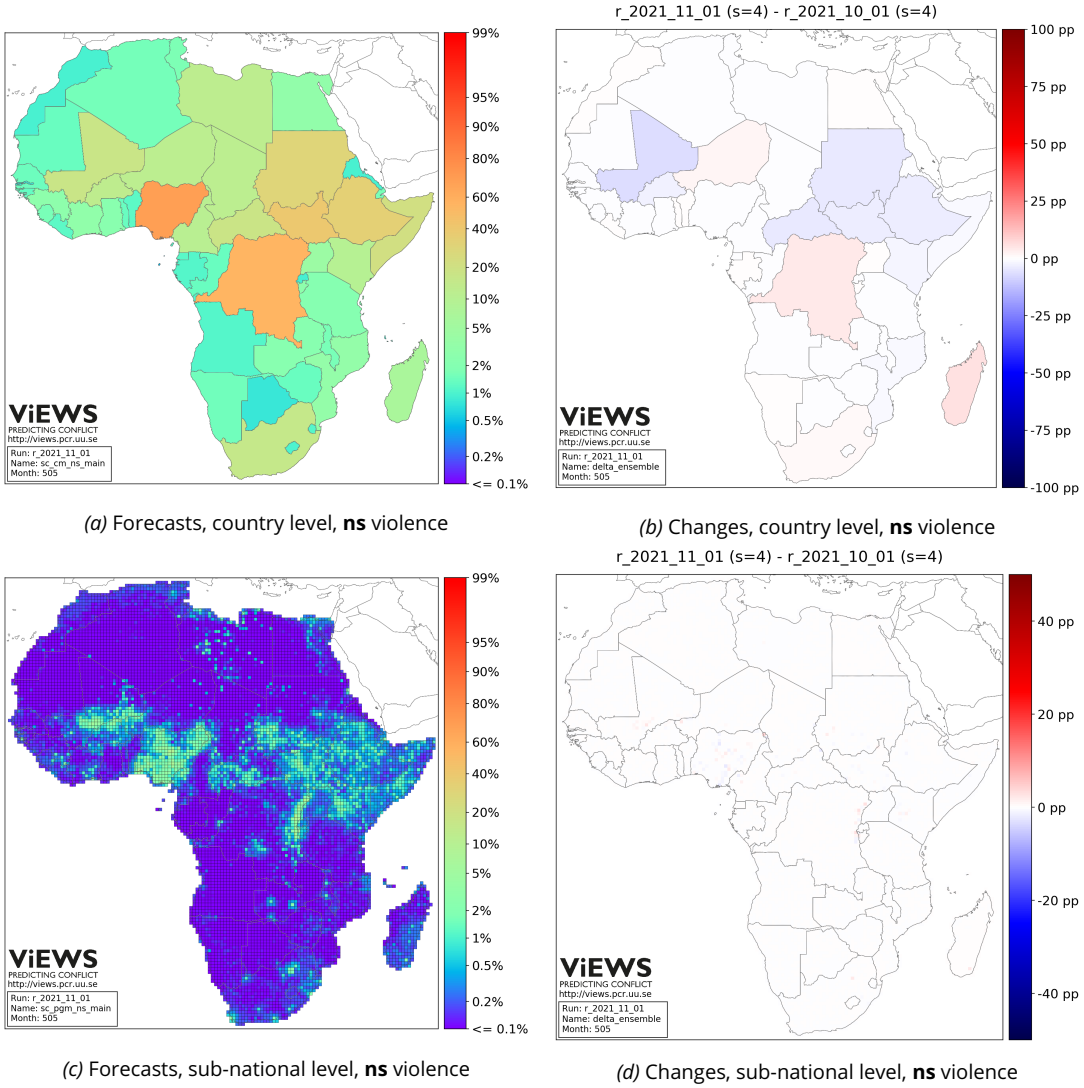
*Figure 4.* Illustrations of the recent history of fatal political violence as well as protests (violent and non-violent), as recorded by the UCDP (`http://ucdp.uu.se`) and ACLED (`http://acleddata.com`), respectively. Red cells observed qualifying incidents in September 2021 (distinguished by a black marker) or August 2021. Purple cells have not experienced such incidents for many years.

sis Watch and/or conflict data from ACLED instead played a key role in changing the respective countries' risk profiles.

A comparison of the conflict history map in Figure 4a 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 that suffered state-based violence in September 2021, but also for a number of other locations. These include the broader border area between Mali, Burkina Faso, and Niger, the Far North of Cameroon, Borno and Yobe state in Nigeria, and the Cabo Delgado province of Mozambique (militant Islamist activity); Katsina, Zamfara, Sokoto and Niger (bandits and/or attacks by gunmen, and government operation to combat them) as well as the South-East in Nigeria (clashes between government forces and IPOB); Anglophone Cameroon (the Ambazonia separatist movement), western and central CAR (continued clashes between rebels and government, or government-affiliated forces), and the Ituri and Kivu provinces of DRC (clashes between government forces and various armed groups).

## NON-STATE CONFLICT (NS)

Seen from the mostly blue, green, or light orange shades in Figure 5a, the short-term risks of 25 or more fatalities per month from conflict between two or more armed non-




*(a)* Forecasts, country level, **ns** violence

*(b)* Changes, country level, **ns** violence

*(c)* Forecasts, sub-national level, **ns** violence

*(d)* Changes, sub-national level, **ns** violence

*Figure 5.* 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 January 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

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 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 5c). 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 predominatly point to reducing risks of non-state violence over the near future, informed by a decline in the number of fatalities between August and September. The only notable exceptions are DRC and Madagascar. For the former, the risk elevation follows a strong alert issued by the sub-model informed by conflict data from ACLED, combined with effects from the rise in state-based conflict fatalities between August and September. The risk increase in Madagascar can be sourced to the 17 September raids by armed bandits on the villages of Ambohitsohy and Vohitsimbe in Marovitsika district, which

resulted in the death of 46 people. This is the first case of UCDP-recorded fatal political violence in the country in many years, giving rise to a steep risk elevation.

At the sub-national level, the ViEWS model does not expect much to change over the next few months – the change map in Figure 5d is almost completely blank. Moderate risk increases can nevertheless be seen in localities in central Mali, Nigeria, northernmost Cameroon, the Ituri and Kivu provinces of DRC, Darfur in Sudan, and in one grid cell in South Africa and Madagascar, all of which observed fatal non-state violence in September 2021 (see the conflict history map in Figure 4b).

## 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 profiles for DRC, Nigeria, and Burkina Faso (bright orange colors in Figure 6a). Also Mali, Niger, Ethiopia, Mozambique, Cameroon, CAR, Sudan, South Sudan, and Somalia nevertheless stand out in the conflict forecasts for January 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 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. Most pronounced is a single locality at a markedly reduced risk of one-sided violence in the Kivu provinces of DRC.

At the country level, changes are more proncounced but also here mostly point to reducing risks – DRC, Niger, Burkina Faso and Mali are all shown in blue in the change map in Figure 6b. Moderately increased risks can nevertheless be seen in Ethiopia, Mozambique and Cameroon, the latter two of which saw a slight increase in fatalities from one-sided violence between August and September, while Ethiopia observed a drop from 173 to 51 deaths over the same time. For Ethiopia, the mild risk increase in instead informed by the rising death toll from state-based violence.

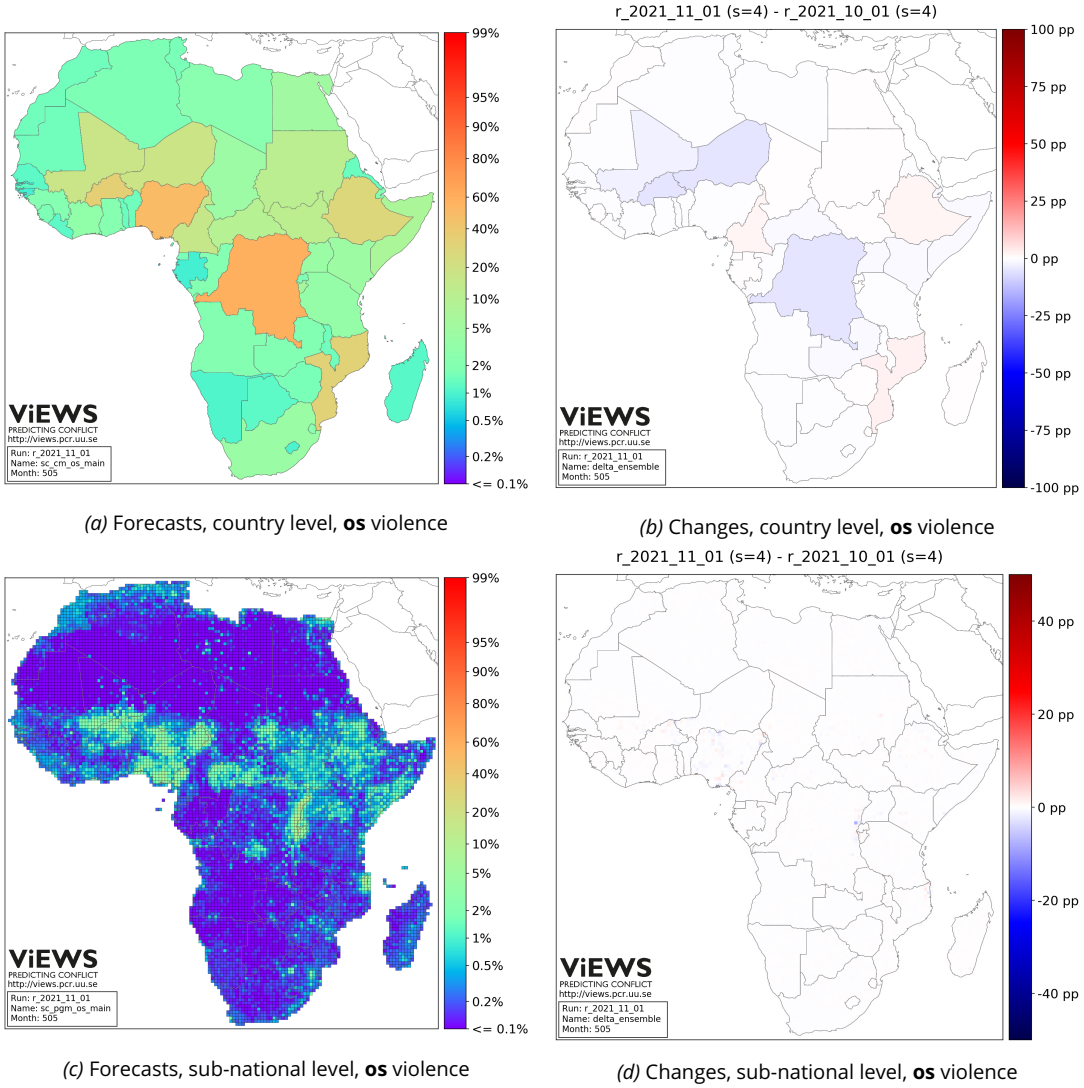
## NOTES

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 8 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, Högbladh, 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 relase of the Uppsala Conflict Data Program (UCDP, `https://ucdp.uu.se`) Candidate Events Dataset (Pettersson, Högbladh, and Öberg, 2019; Sundberg and Melander, 2013; Hegre et al., 2020), here the October 2021 release covering the month of September 2021. Any fatality counts listed correspond to the 'best estimate' records.

4. In Mozambique, the number of battle-related deaths from state-based violence decreased by two between August and September, but increased notably in the one-sided violence category, which influenced the forecasts also for the former category.




*(a)* Forecasts, country level, **os** violence

*(b)* Changes, country level, **os** violence

*(c)* Forecasts, sub-national level, **os** violence

*(d)* Changes, sub-national level, **os** violence

*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 January 2022, and changes to the respective forecasts since last month by percentage points (right-hand column).

In Madagascar, not a single fatality was recorded from neither state-based nor one-sided violence in September, but 46 deaths from non-state conflict. A similar effect is thus seen also for this country.

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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 projections 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 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 September 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.

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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`

The full list of publications are accessible at:

`https://pcr.uu.se/research/views/publications/`