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FINDINGS: U.S., NATO, AND RUSSIA

THE MILITARY INCIDENTS PROJECT

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Project Team

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Jessica Sleight currently serves as Global Zero's Program Director. She served as the director of the Military Incidents Projects from its founding in 2014 until 2018. She is also a member of the 2020 Center for Strategic and International Studies Project on Nuclear Issues (PONI) Mid-Career Cadre. Before joining Global Zero, Jessica worked as a research intern with Ploughshares Fund, a research associate for the Japan Policy Research Institute, and a graduate fellow at the Nautilus Institute for Security and Sustainability. She has a master's degree in Asia-Pacific studies from the University of San Francisco.

Introduction

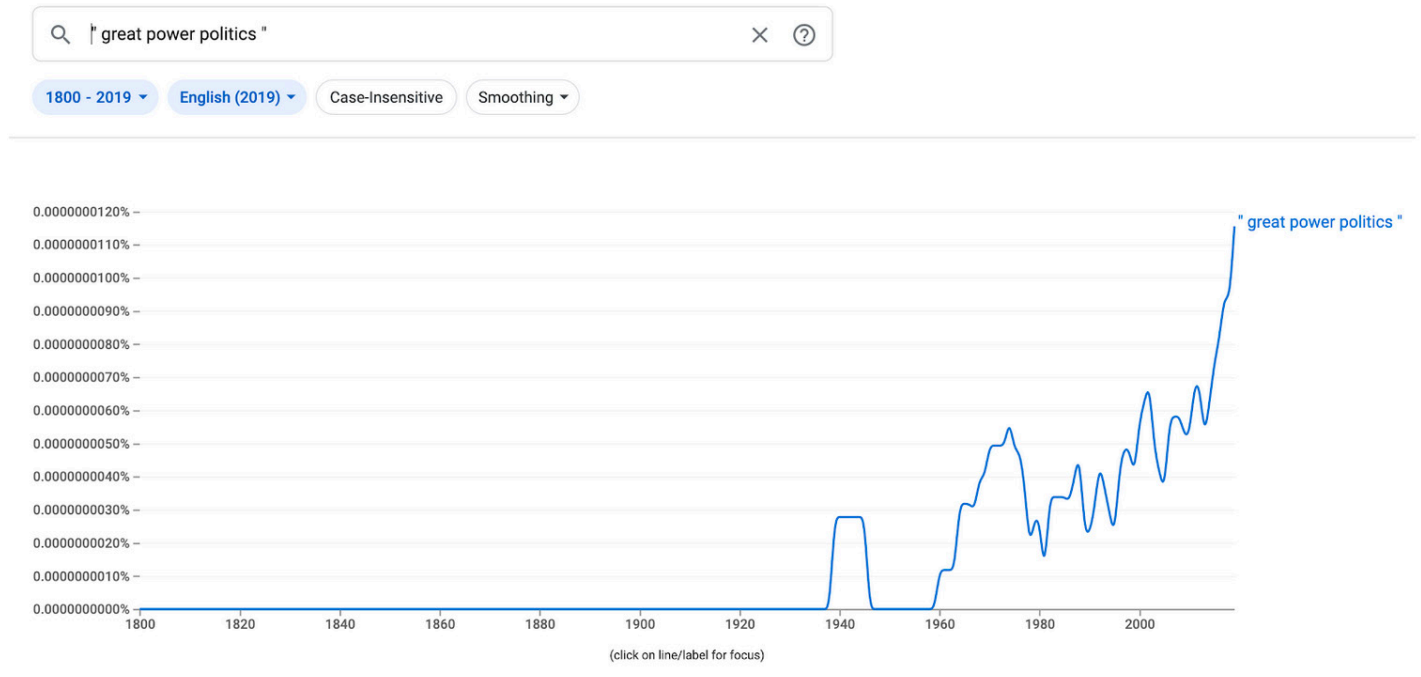
The Military Incidents Project launched in 2014 to better understand the changing conditions of international politics and the risk of nuclear conflict. For six years, it defined, collected and analyzed “military incidents:” interactions between the militaries of nuclear-armed states that carried with them the inherent risk of possible escalation to the use of nuclear weapons. The Project also tracked news, official statements, and other developments directly relevant to the regions and geopolitical relationships in which these incidents took place.

The Project covered four “nuclear flashpoints” or critical regions of the world where the militaries of nuclear-armed states regularly come into contact: the U.S./NATO-Russia, which primarily focuses on the Baltic Sea area, western Russia, eastern Europe, and the Black Sea; the South China Sea; the Korean Peninsula; and India/Pakistan, primarily focusing on Kashmir. The Project drew on all these areas to develop and refine its working definition of a “military incident.” Particularly, the risk of conflict between Russia and the U.S. and NATO since the annexation of Crimea and China’s expanding activities in the South China Sea were two key catalysts of the Project.¹ Both have served as important cases for Global Zero and others working on similar issues for defining and assessing the implications of military incidents.

These efforts also made use of major developments in research methodology and the always-expanding amount of data available on the Internet. The Russian annexation of Crimea and the invasion of Ukraine coincided with a surge of open-source intelligence research. Several factors, including the increasing availability and affordability of commercial satellite imagery, prompted a shift in the sources researchers and journalists alike relied on to understand facts on the ground.² Information that was once only easily available to governments equipped with advanced surveillance technology can now frequently be found free to use on the Internet. The rise of social media as a valuable source of on-the-ground information from conflict zones and an unpredictable magnifier of political news was also a significant factor in driving this change. It has vastly increased the amount of information available to be collected and analyzed, particularly on the behavior of non-state actors. As will be discussed in greater detail in this report’s Definitions & Methods section, the development of incident-tracking capabilities is ongoing, and the availability, range, and reliability of sources expanded significantly over the course of the Project.

In the early stages of the Project it became clear that focusing on military incidents and the media and governmental responses to them was an effective way to track important changes in international political dynamics that were still very much in progress. “Great Power Politics” was gaining popularity as a catch-all characterization (and, some would argue, driver) of political rivalries among the most powerful countries in the world—

most often Russia, the United States, and China. A Google Ngram search reveals the magnitude of the trend.



The term was used over twice as frequently in 2019 as in 2013:

The phrase conjures up images of powerful leaders driving the geopolitical fortunes of their countries, conducting tense negotiations and trading threats in a series of opulent rooms. Indeed, the United States has recently glimpsed the possibly disastrous consequences of a president with a disproportionate ability to direct foreign policy. As national leaders increasingly conduct relationships among nuclear-armed states to the exclusion of other representatives, and are often the only person (or one of a very few people) with the authority to launch nuclear weapons, disproportionate media and scholarly coverage of “Great Power Politics” makes a certain kind of sense.

However, an overlooked but essential aspect of this concept is the increased importance it affords relatively small-scale military actions—flyovers, exercises, and troop movements, among other activities that do not rise to the level of direct conflict. Historical examples are instructive here. The Cuban Missile Crisis is remembered as nearly two weeks spent on the brink of nuclear war, but in fact it can be better understood as a period of severely elevated tensions between the U.S. and Russia with several “crisis points” where decision-makers’ fears and expectations about the other side’s behavior could have prompted an escalation to nuclear use in the absence of clear communication and unambiguous information.³

The era of “Great Power Politics,” despite its well-publicized media moments of meetings between leaders, has seen diplomacy decline as a means for maintaining stable relationships among nuclear-armed states. Regular meetings at all levels of government and military and means of communication intended to diffuse

crises have disappeared across flashpoints even as interactions between the most heavily armed states in the world have become more frequent.⁴ As a result, military incidents have taken on disproportionate importance by virtue of their value as signals of intent, shows of force, or assertions of presence in a border region.

The Project assesses “military incidents” within this specific political context. A small body of scholarly and policy work has been developed around this concept in the past few years, sparking a robust debate about the extent to which such incidents present a genuine risk of escalation into conflict or nuclear use.⁵ The period saw efforts to develop or expand legal or institutional frameworks for dealing with the most frequently occurring types of incidents, such as close contact between aircraft where existing means of communication with air traffic control centers and one another were often unavailable, but substantial risk remains.⁶

It is important not to overstate risks, and to produce accurate, balanced analysis of complex situations with many unknowable elements. However, the incentives for the governments of nuclear-armed states to understate the risks inherent to possessing these weapons (and keeping them ready to launch at any moment) are many.¹⁰ It is possible that existing classified information, if publicly known, could complicate the conclusions of this report and the Project in general. However, beyond questions of accessibility, the Project has actively sought to incorporate the public nature of the incidents it analyzes, acknowledging that this is a crucial aspect of their function as political tools. Media coverage of military affairs is a crucial filter through which the public—and civilian and military leadership—understands war, peace, and the value of a country’s defense establishment.

Rather than acceding to the unprovable and logically flawed assertion that because a nuclear weapon has not been accidentally (or purposely) used in a conflict situation since the Second World War, “the system works,” the Project seeks to foster a more realistic and responsible approach to understanding and mitigating conflict risk. As such, it places itself within a larger international effort to build public and institutional support for prioritizing peaceful means of resolving conflict and maintaining relationships among adversaries and allies alike.

Definitions & Methods

The Project defines a “military incident” as a publicly known interaction involving nuclear weapons states’ aircraft, ships, or other military units, which presents a significant risk of:

1. Escalation to an expanded military interaction or conflict, or
2. Severely damaging diplomatic relations between participants, or exacerbating a preexisting conflict.

We are not suggesting that events that fit this definition but are not publicly known do not regularly take place. Limiting the Project’s scope to publicly known incidents helps make sense of the limitations of open-source research and attempts to encompass the key role that media coverage and public messaging about these incidents plays in their political and diplomatic functions.

The six years during which the Project was active saw a rapid expansion of the quality and quantity of sources available to track these kinds of incidents. While this has obvious advantages for researchers, the Project team faced the challenge of effectively gathering and analyzing more, and more precise, data about incidents of potential interest without skewing the results of a project where the number of collected incidents is itself a relevant finding. The team conducted ongoing monitoring of news outlets with a military or regional focus as well as press services and other public-facing entities of defense ministries of countries within the flashpoints. Social media, primarily Twitter accounts tracking military exercises and flights, also played an increasingly valuable role through the Project period, as did the work of other researchers collecting data on military exercises and other relevant events.¹¹

As the Project developed and additional sources became available, the team revisited its working definition of a military incident. We developed a separate category of relevant event, termed a “background event.” A background event is defined as:

1. An event that meets the basic criteria for a military incident but does not present a significant risk of either escalation or damaging relations, or
2. An announcement, statement, or policy change by the government of a nuclear weapons state that is likely to damage diplomatic relations with another nuclear weapons state or its ally or exacerbate a preexisting conflict, or
3. Military activity that does not meet the criteria for a military incident, but may provide useful context.

Both military incidents and background incidents are listed in the Project data, and are distinguished by the “Incident Type” column. For the purposes of the project in its current form, all events labeled

“Defense News” and “military deployment” are considered background events and are not included in the final numbers on which the Findings section of this report is based.

The U.S., NATO, & Russia

Relations between the U.S./NATO and Russia in the past five years are often phrased in sweeping terms. For some, this period represents a “Second Cold War,” or even a continuation of the first; for others, this period’s military and political developments represent a wholly new level of poor relations and conflict risk between the countries with the two largest nuclear arsenals. The more recent question of Russia’s role in U.S. elections has drawn on this existing tradition of antipathy.

While the scope of this report covers the period immediately following Russia’s invasion and annexation of Crimea, from early 2014 through 2019, relevant trends in relations among NATO members and Russia extend back at least two decades, to the beginning of Russian President Vladimir Putin’s first term in 2000. The nature of the Russia-NATO relationship has changed fundamentally over the past 20 years, driven by Russia’s military modernization and changing force posture, as well as a parallel turn on the U.S. side to developing defensive and offensive capabilities as an alternative to diplomacy.

A renewed focus on military modernization and expansion has been a function of Russian policy under Putin since the beginning of his first term as president in 2000. Analysts noted that the 2000 military doctrine called for a somewhat expanded role for nuclear weapons, perhaps as a way of compensating for Russia’s relatively weak conventional forces.¹² Since the invasion of Georgia in 2008, however, Russia has concentrated investment in expanding conventional capabilities.¹³ These reforms have placed particular emphasis on increased readiness for operations near Russia’s borders and in its “near abroad,” as well as substantial upgrades to land, sea, and air capabilities.¹⁴ The extent of this effort can be seen in the fact that Russian military spending has increased over threefold in this 20-year period, from \$23.28 billion in 2000 to \$64.14 billion in 2019.¹⁵

Russia has also increased its military presence in its Western Military District and Belarus, though this is not necessarily exclusively a response to NATO and its increased presence in the area. Three new divisions were announced between 2014-2016 to be stationed along the border with Ukraine and Belarus, and approximately 30 divisions were relocated back to the District after many had been moved away in the years preceding the war in Ukraine.¹⁶ This area has also seen some of the highest-profile military exercises conducted in recent years.

Military exercises, another important type of incident tracked by the Project, are primarily covered by the 2011 Vienna Document, which outlines the requirements for which types and sizes of military exercises must be reported to other parties.⁷ However, the nature and purpose of military exercises has changed substantially since that time. While the Document provides a useful framework for reducing the escalatory risk of certain military activities, these procedures are not consistently followed by Russia, and do not apply to countries outside the

OSCE.⁸ Much has been written on how countries using military exercises as a form of signalling avoid expectations of transparency; for example, by conducting simultaneous exercises in different areas that technically fall below the reporting threshold of the document, yet for all intents and purposes make up one larger exercise.⁹

These, in particular ZAPAD-2017, have received substantial media coverage in the U.S. primarily as signals of military power and readiness. However, an increase in the size, number, and complexity of military exercises has been an integral part of Russia's military modernization, particularly since reforms began in 2008 following the invasion of Georgia.¹⁷

It is essential to understand the development of Russian ground forces as contributing to the potential for escalation in the region as much as the development of high-profile new weapons, though the latter has received more, and more comprehensive, attention from media and analysts. Though the specter of regional nuclear war has been raised repeatedly in recent years, conventional or "grey-zone" engagement remains a much more likely future military engagement scenario between two countries that together possess over 90% of the world's nuclear weapons. The existence of nuclear weapons raises the stakes for these low-level military interactions between NATO and Russia, so that any little mistake or misunderstanding could spiral to a direct conflict with unimaginable consequences. For this very reason, these interactions—the everyday scenarios which could set off a military confrontation leading to nuclear use—are at least as important to track and address as the development of new capabilities.

Russia's annexation of Crimea and invasion of eastern Ukraine increased NATO's focus on making sure it could deter, and if necessary, defend against a Russian conventional or hybrid attack. New anxieties about Russia's ability to take over territory of NATO states as part of an effort to secure its influence in eastern Europe focused mainly on the "Suwałki Gap" or "Corridor," a 40-mile-wide area between Kaliningrad and Belarus.¹⁸ Much of this concern was focused on the territory of its easternmost members, particularly Poland and the Baltic states.¹⁹ NATO's Enhanced Forward Presence was established following agreements at the alliance's 2014 conference in Wales and its 2016 conference in Warsaw for this purpose, with four battalion-sized battlegroups fully deployed by June of 2017.²⁰ At the same time, NATO established its Tailored Forward Presence, which increased its maritime and air capabilities in the region.²¹

This shift in focus was accompanied by renewed investment in NATO and U.S. military presence in Europe after Russia invaded Ukraine. The European Reassurance Initiative, which began as a billion-dollar short-term investment in U.S. military presence in Europe in 2014, had grown to a \$3.4 billion yearly request and a long-term commitment in the FY2017 U.S. budget request.²² This increase in total member state contributions to its operations enabled NATO's (and the U.S.'s) increased presence in the region, though the Trump administration's widely publicized claim that many members were not paying their fair share has done much to obscure

this fact.²³

Meanwhile, U.S.-Russia arms control and disarmament initiatives have suffered grievously in recent years. The relationship reached a relative high point in April 2009, when U.S. President Barack Obama laid out an ambitious course toward total disarmament in a speech in Prague.²⁴ For a moment, U.S. nuclear weapons policy seemed firmly re-oriented toward the active pursuit of nuclear disarmament required of all parties to the Nuclear Non-Proliferation Treaty.²⁵ However, worsening U.S.-Russia relations quickly made the possibility of attaining further arsenal reductions seem increasingly remote.³³ Apart from the downward spiral of the arms-control regime, official statements of Russia's nuclear doctrine have shown a slight but steady narrowing of the role of nuclear weapons in Russia's overall defense strategy.²⁶

While these developments set the stage for the period covered by this report, 2014-2019 saw an acute period of deteriorating relations between the two powers. The Ukraine crisis brought existing tensions to a head and focused attention squarely on key strategic points of contact along the border. Russia's violation of the Intermediate-Range Nuclear Forces (INF) Treaty further contributed to this deterioration; Russia repeatedly cited the U.S.' commitment to its missile defense program as a sign of its unwillingness to engage in good faith in bilateral arms control.²⁷ The dismantling of the arms-control treaty regime during the Trump administration, while first of all a direct consequence of that administration's approach to diplomacy—a lack of patience, a refusal to accept the need for reciprocal steps to make progress, and general bellicosity—also follows from these longer trends of deteriorating relations.²⁸

Perhaps most worrisome are signs that the nuclear taboo between the two countries might be eroding. On the U.S. side, support for a “low-yield” nuclear weapon has prompted open discussion of potential “battlefield” use of a nuclear weapon, a supposedly necessary step to counter a Russian “escalate-to-deescalate” strategy despite a lack of evidence that such a policy has ever been part of Russia's nuclear strategy.²⁹ Efforts to expand U.S. nuclear capabilities, and the ongoing Ground-Based Strategic Deterrent (GBSD) Program, which would replace U.S. silo-based missiles, demonstrate a commitment to the continuing existence and strategic importance of nuclear weapons against a longstanding, bipartisan commitment to disarmament. Russia too has dug its heels in on the nuclear front, developing new weapons and making basing decisions that seem to convey a commitment to an outsized role for nuclear weapons in national security.³⁰

These broad political trends are concretely visible in changes in on-the-ground military behavior. Our findings suggest several trends in these developments that may shed additional light on the political and technological currents driving them.

Findings

Data gathered in the U.S./NATO-Russia flashpoint suggests several key conclusions.³¹ First, the invasion of Crimea and the beginning of the war in eastern Ukraine has had both short- and longer-term effects on the frequency, intensity, and geographical spread of NATO and Russian military operations within the flashpoint. While the Project did not collect substantial data from the pre-annexation period, data gathered did suggest that there was a drastic rise in the number of events that would qualify as incidents between 2013 and 2014. This trend continued from 2014 to 2015, likely driven by the same factors—the Russian invasion of Ukraine and the ongoing war in its east—behind the previous year’s surge in incidents. By the following year, however, the number of incidents had declined, suggesting that the events in Ukraine alone might not have led to a permanent increase in incidents.

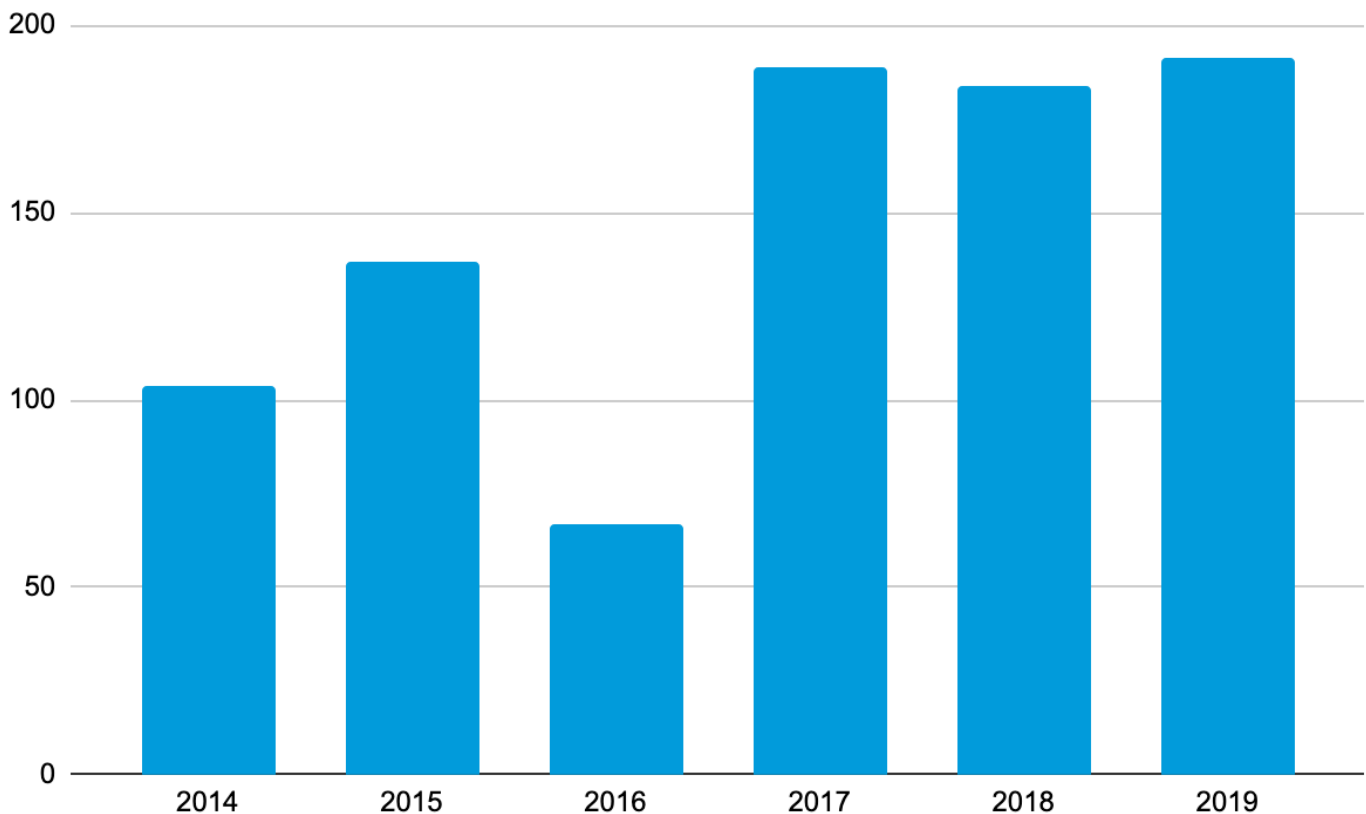


Figure 1: Total number of tracked incidents per year.

Further, the period overall has seen an increase in the number of incidents that cannot be attributed just to the effects of the events in Ukraine. After an increase of even greater magnitude than the one that occurred between 2013 and 2014, the number of incidents remained remarkably steady from 2017 to 2019. One obvious potential explanation is the beginning of the Trump administration in the United States and

with it an approach to foreign affairs that relied on military signaling to a greater extent than previous administrations.

Indeed, the period saw the U.S./NATO-Russia relations worsen at a faster and more alarming pace than in years previous. It is worth noting, however, that the number of incidents remained relatively steady despite copious anecdotal evidence that the political situation was becoming worse. The Trump administration's policy decisions and overall approach to managing diplomatic relationships are one likely cause for the elevated numbers of incidents during the second half of the Project period. However, documented cases where existing agreements were abandoned only to see the introduction of new military operations in an area of relevance did not lead to noticeable immediate increases in the number of incidents.³² Air intercepts and military exercises, two of the most common event types tracked by the Project, are routine events dictated by policies. A policy approach that privileges these kinds of actions will naturally result in higher numbers of incidents overall. Breaking the data down by incident type can provide more detailed insight beyond a sense of when governments rely more or less on military power to accomplish a range of goals.

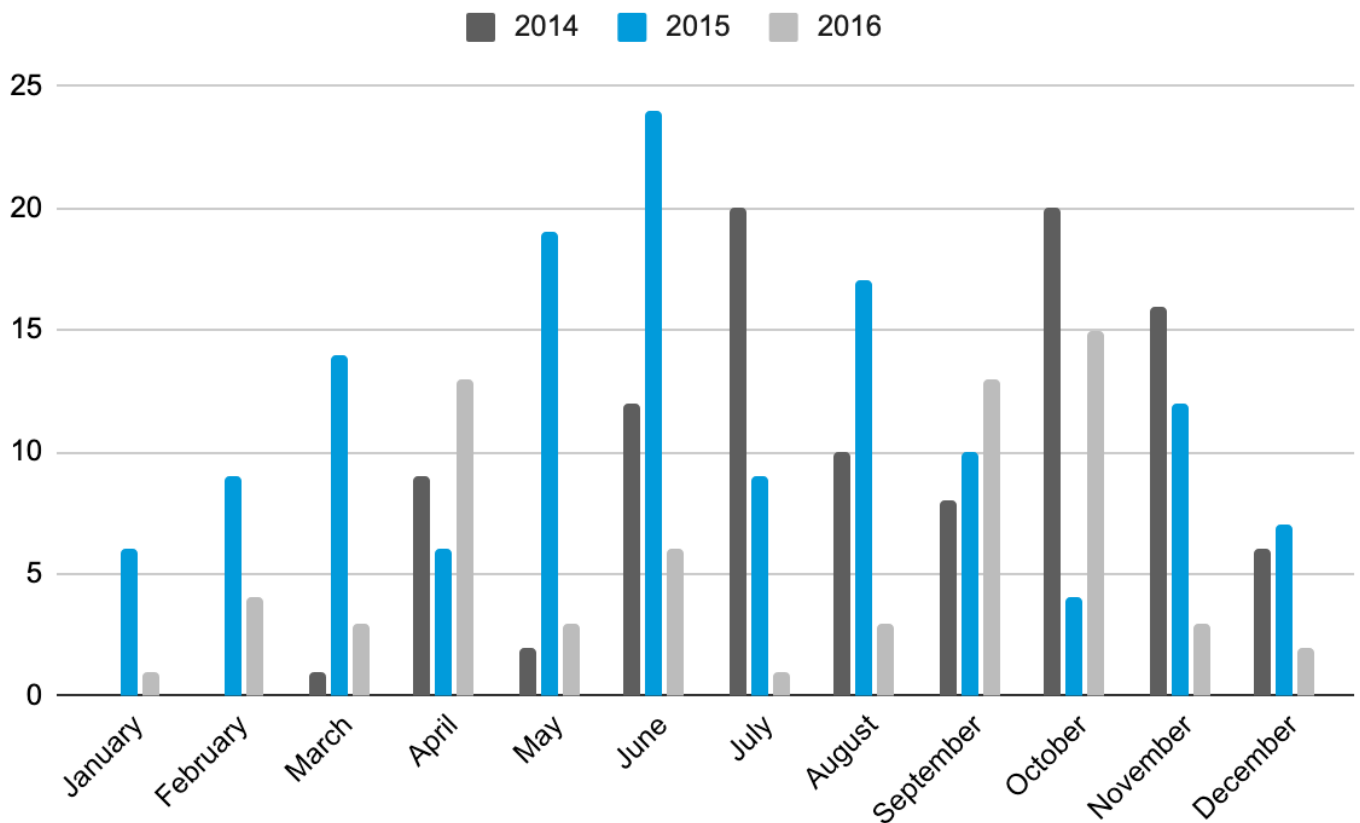


Figure 2: Incidents per month, 2014-2016.

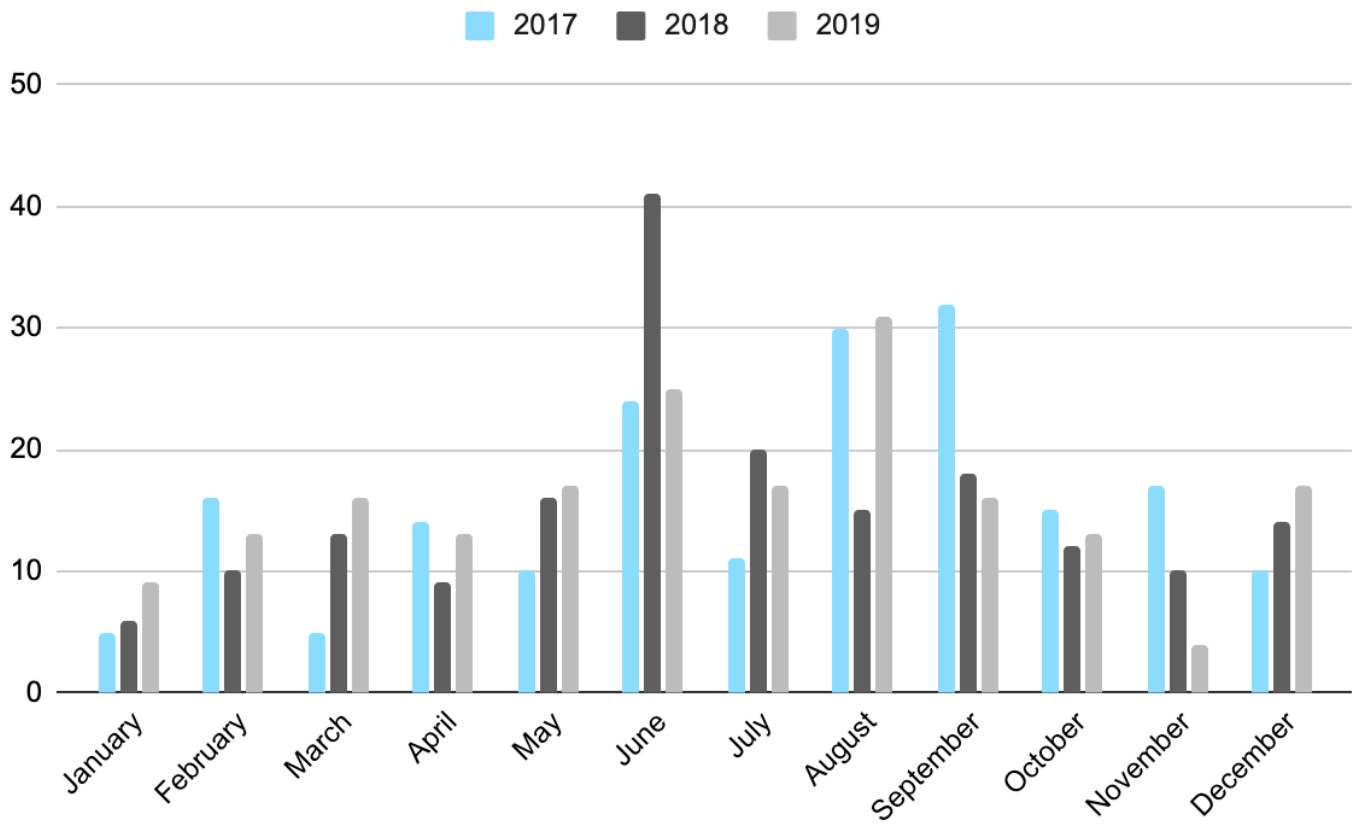


Figure 3: Incidents per month, 2017-2019.

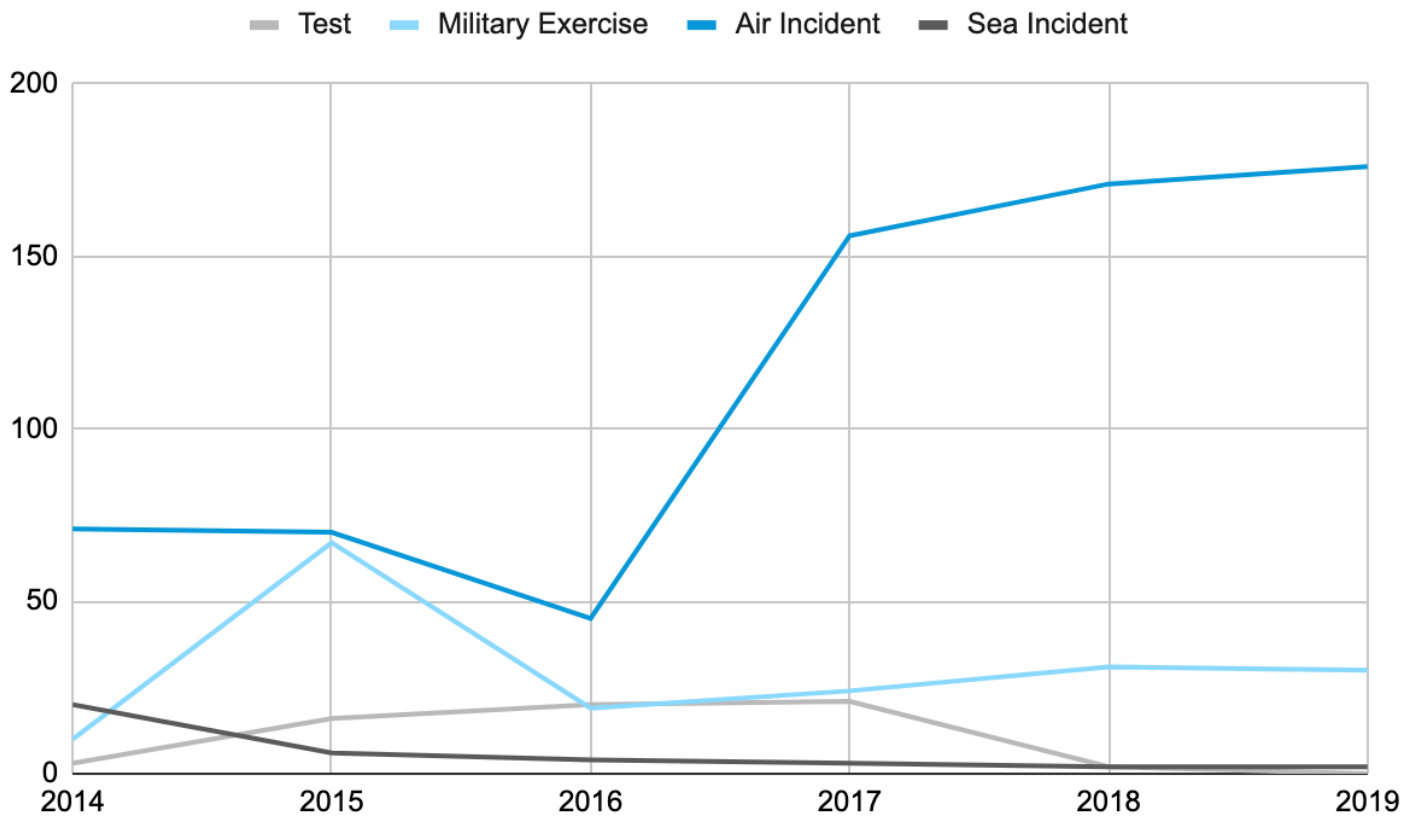


Figure 4: Incidents by type per year.

The data broken down by incident type reflects the particular importance of air power in the flashpoint and makes a compelling case that an increase in the frequency of air incidents is the single factor driving the overall increase in incidents. In contrast to military exercises, which increased in frequency following the Ukraine crisis before remaining relatively stable at levels slightly elevated from pre-crisis levels, the increase in air incidents seems to reflect a clear policy change beginning in 2017 and sustained for both years following. Anecdotal evidence bears this trend out: press coverage of military activity in Eastern Europe drew increasingly clear connections between worsening relations between the U.S./NATO and Russia and an increase in air incidents.³³ The vast majority of these incidents took place in international airspace over the Baltic Sea, and somewhat less frequently, adjacent national airspace.

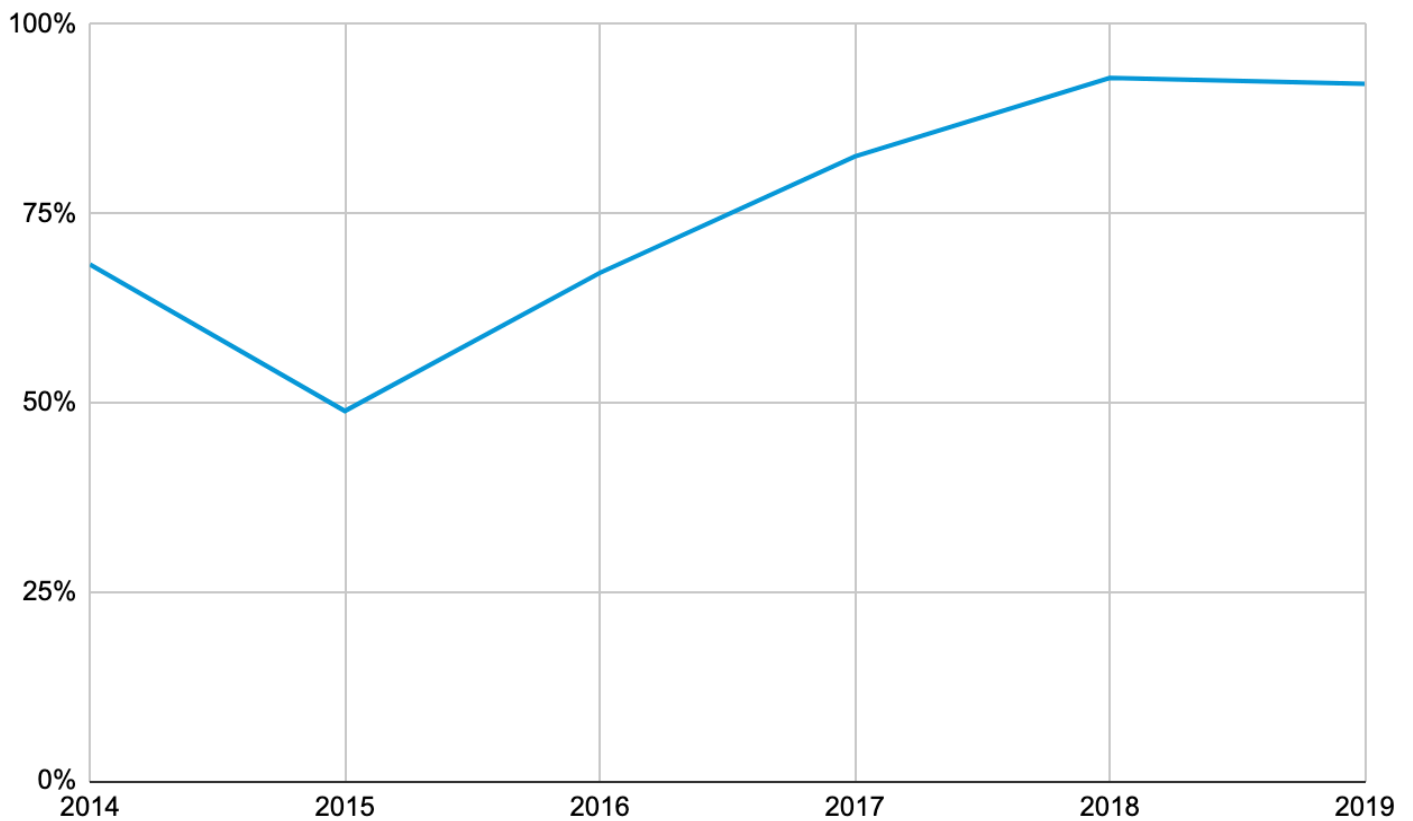


Figure 5: Percentage of total incidents that were air incidents by year. Overall, 70% of tracked incidents were air incidents.

Air Power: the Baltic Sea Region

The uptick in military incidents in the Baltic region can first and foremost be traced to its increased importance as a potential site of Russia-NATO conflict following the events of 2014 in Ukraine. In the earliest months after the conflict began, air incidents characterized by risky behaviors occurred across a broad geographical area, from the California coast to the Sea of Okhotsk.³⁴ However, by the fall of 2014, nearly every air incident recorded by the Project took place over the Baltic Sea. 44% of all tracked incidents occurred in the Baltic Sea region.

As discussed above, this focus on the area can be attributed to its reputation as a point of strategic interest between NATO and Russia, a status reflected by the buildup of NATO and U.S. troops on the ground in areas adjacent. The NATO Baltic air-policing mission program was established in 2004 at Šiauliai Air Base in Lithuania, and expanded to a second base, Estonia's Ämari Air Base, in 2014.³⁵ These changes were accompanied by the establishment of a regular military exercise, Rammstein Alloy.⁴⁵ This exercise, in combination with increased investment in NATO by members and the establishment of some additional ground capabilities, can be understood as setting a "higher floor" on the number of incidents even at moments of relative stability.

In terms of longer-term changes in Russian military planning and force structure, it seems clear that while the increased overall emphasis on the Western Military District in Russian defense planning has been attributed to NATO's increased presence nearby, the bulk of these longer-term changes with where troops and forces are based are focused on the border with Ukraine, and to a lesser extent, Belarus.³⁶ While some high-profile changes have been noted in recent years in Kaliningrad (most notably, the basing of nuclear weapons there), the bulk of the increased Russian presence in the Baltic has been through military aircraft based in mainland Russia conducting air intercepts. Based on these developments, it can be cautiously concluded that, while Russian policy and practice seem to endorse the usefulness of maintaining an aircraft presence in the area, the more likely near-future scenario driving Russian military planning is ongoing war in eastern Ukraine. Maintaining an air presence in the area requires relatively little investment with much of the perceived advantage that a larger-scale reallocation of military resources might, with the additional benefit of flexibility and the potential for rapid deescalation if deemed necessary.

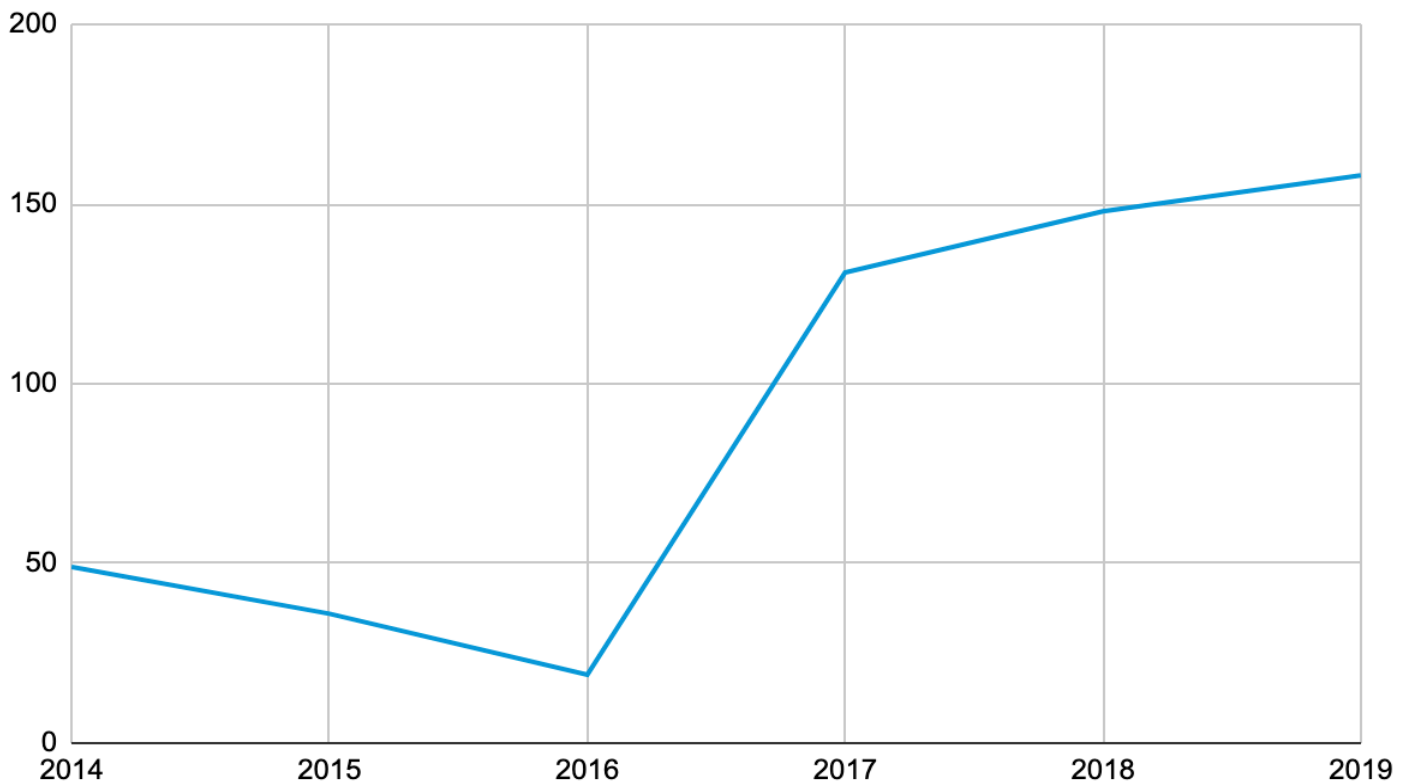


Figure 6: Number of Baltic Sea incidents by year.

Incidents, particularly air intercepts, have become a fairly routine part of relationship management between the U.S./NATO and Russia. However, the “routine” nature of these incidents should not tempt us as observers to dismiss them as beneath concern. Under ordinary circumstances, they strengthen norms around military activity as an acceptable stand-in for diplomacy and a relative lack of communication in high-pressure situations; when events conspire to create a moment of “crisis,” an incident that might in other contexts appear routine could carry escalatory potential. An approach to foreign and military policy that re-centers diplomacy can effectively address this risk, but it must begin before a real moment of crisis forces a reassessment of the status quo.

Conclusion

We believe that continued tracking and analysis of military incidents is a crucial task for researchers interested in nuclear conflict risk, “grey-zone” conflict, and escalation dynamics. Further, making this analysis readily available and easy to use and understand for journalists, scholars, policymakers, and the general public can encourage broader understanding of the actual state of nuclear politics beyond the dogma and secrecy that has long shaped the public understanding of nuclear weapons.

The potential applications for the Project in policymaking contexts are many. Global Zero’s Nuclear Crisis Group, a team of veteran diplomats, military leaders, and experts convened in 2017, can serve as an example. The Group used the Project data and analysis as the basis for its detailed policy recommendations aimed at reducing the risk that a nuclear weapon will be used in each of the Project’s four geopolitical flashpoints. Armed with these recommendations and the data to back them up, the Nuclear Crisis Group was a voice for nuclear risk reduction in the halls of nuclear-armed governments around the world. Their recommendations can be found [here](#), and the December 2020 [NATO-Russia Crisis Brief](#) contains additional analysis and near-term recommendations.

The Military Incidents Project team experimented with an additional analytical framework: a risk rating rubric that would systematically evaluate each incident based on a range of factors, including location, timing, political context, and the frequency and severity of similar incidents occurring at a similar time and place, and assign it a number indexing its “riskiness” in comparison with other incidents evaluated by the Project team. This task presented the substantial challenge of producing consistent and meaningful ratings as well as the more quotidian difficulties of staff capacity and resources. Still, we believe that such an extension of the Project using this or another data set could be an invaluable tool for researchers and advocates to develop understandings of escalation dynamics that admit more complexity and context than existing qualitative assessments.

Global Zero believes this report and the data it draws on can provide insight on a difficult, pivotal period in

the history of relations among nuclear-armed states, even as we hope that the world is turning toward a new era defined by recommitment to arms control and disarmament and collaboration on other issues of global concern.

Notes

1. For a recent example, see “Russia Says It Fired Warning Shots at UK Destroyer in Crimean Waters,” *Deutsche Welle*, <https://perma.cc/25CM-FQNE>.
2. Frank Pabian, “Commercial Satellite Imagery as an Evolving Open-Source Verification Technology: Emerging Trends and Their Impact for Nuclear Nonproliferation Analysis,” EUR27687, 2015.
3. See Emma Claire Foley, “What the Cuban Missile Crisis Can Teach Us about Nuclear Conflict Risk Today,” *Global Zero* (blog), October 28, 2019, <https://perma.cc/45BG-Y9HG>.
4. “Russia Delays Strategic Stability Talks with U.S.: RIA,” *Reuters*, March 2, 2018, <https://perma.cc/UT2G-CVMJ>.
5. Denitsa Raynova, and Lukasz Kulesa, “Russia-West Incidents in the Air and at Sea 2016-2017: Out of the Danger Zone?” London: European Leadership Network, October 2018, <https://perma.cc/S9QB-XD34>.
6. “Other successes included the agreement by Russia to provide flight plans for military cargo flights to and from St Petersburg and Kaliningrad to EUROCONTROL (although flight plans for other Russian state aircraft would remain classified), and the negotiation between Russia, Finland, and Estonia, of a new flight path between St Petersburg and Kaliningrad. This latter agreement, consisting of the identification of seven new waypoints over the high seas to replace existing longitude and latitude coordinates, seems designed to avoid inadvertent airspace violations caused by irregular borders, such as around Estonia’s Vaindloo Island in the Gulf of Finland.” Frears, Thomas. “Lessons Learned? Success and Failure in Managing Russia-West Military Incidents 2014-2018.” *European Leadership Network*, April 12, 2018. <https://perma.cc/6JX8-8H3U>
7. “Vienna Document 2011,” OSCE, 2011, <https://perma.cc/8VK6-ND5X>.
8. Rose Gottemoeller, and Diana Marvin, “Reimagining the Open Skies Treaty: Cooperative Aerial Monitoring,” *Bulletin of the Atomic Scientists* (blog), June 15, 2021, <https://perma.cc/JQQ8-VCGS>.
9. Nicholas J. Myers, “Russian ‘Massive’ Vostok-2018 Military Exercise: Not So Massive After All?,” *The National Interest*, The Center for the National Interest, October 1, 2018, <https://perma.cc/7HK5-33ZN>.
10. Seth D. Baum, Robert de Neufville, and Anthony M. Barrett, “A Model for the Probability of Nuclear War.” *Global Catastrophic Risk Institute Working Papers*, Global Catastrophic Risk Institute,

March 8, 2018, <https://perma.cc/6BYR-JU6X>.

11. One of the more sensational recent examples of this is Russian soldiers' posting from eastern Ukraine, despite strenuous denials by the Russian government of a Russian military presence there. See "Russian Soldiers Face Ban on Selfies and Blog Posts," BBC News, October 5, 2017, <https://perma.cc/T8ZH-Y2C8>.
12. "Russia's 2000 Military Doctrine," NTI, <https://perma.cc/M4VZ-AW2J>.
13. U.S. Library of Congress, Congressional Research Service, "Russian Armed Forces: Military Modernization and Reforms," by Andrew S. Bowen, IF11603 (2020), <https://perma.cc/3JKH-TPR9>.
14. Russian military expansion and modernization has focused on air and naval forces over ground-based forces and capabilities, though all have been substantially developed. The Russian Air Force has introduced "new fighters, helicopters, and upgraded long-range bombers. During GPV 2020, the Russian Navy introduced a new frigate class (Project 22350), smaller corvette class (Project 20380/85, Project 22800), and numerous smaller coastal and patrol craft (Project 21630/1, Project 22160). Additionally, new ballistic missile submarines (Project 955/A) and attack submarines (Project 885/M, Project 636.6) are being introduced into service." See U.S. Library of Congress, Congressional Research Service, Russian Armed Forces: Military Modernization and Reforms, by Andrew S. Bowen, IF11603 (2020), 2 for a brief overview; for a longer treatment of the results of Russian military modernization, see U.S. Library of Congress, Congressional Research Service, Russian Armed Forces: Capabilities, by Andrew S. Bowen, IF11589 (2020).
15. Dr. Nan Tian, Alexandra Kuimova, Dr. Diego Lopes da Silva, Pieter D. Wezeman, and Siemon T. Wezeman, "Trends in World Military Expenditure, 2019," April 2020, distributed by Stockholm International Peace Research Institute, <https://perma.cc/CQB5-8B3N>.
16. In some cases, Russian basing and force development decisions are driven by similar concerns to NATO's, including the possibility of another military engagement in Ukraine and political instability in Belarus. Note that the restructuring of Russia's ground forces began before NATO convened its new battle groups after its Warsaw conference. See Michael Kofman, "Russia's New Divisions in the West," Russia Military Analysis (blog), May 7, 2016, <https://perma.cc/ZPA5-Q5NH>.
17. Michael Kofman, "The ABCs of Russian Military Power: A Primer for the New Administration," The National Interest, The Center for the National Interest, February 2, 2017, <https://perma.cc/7UES-EMY3>.
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