RRN RUSSIA RESEARCH NETWORK

How Moscow Maps the World

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This is the second of a series of four reports in the project "Russian Globally Integrated Operations" which examines Russian strategic thinking and activity. The reports are intended as introductory texts for subsequent presentation and discussion.

Executive Summary

- Moscow has long recognised the value of mapping to pursue its national interests and to gain geostrategic advantage. Russia has recently undergone a revolution in its geospatial capabilities and is investing in updating its arsenal of associated technologies, which have supported more recent operations in Georgia, Ukraine and Syria. Russian military interest in Globally Integrated Operations is a direct result of Vladimir Slipchenko's theories on the global scale of sixth generation warfare.

- The way Moscow sees the world is fundamentally different from that of NATO. Its 'mental map' reflects the cartographic legacy of the Soviet Union, which sets global horizons. The combination of this mental map with updated and enhanced geospatial capabilities, particularly access to accurate geospatial data, provides the basis for pursuing a grand strategy and for supporting Globally Integrated Operations. Despite some superficial similarities between Soviet Theatres of Military Action (TVDs) and US Combatant Commands, they are fundamentally different concepts.

- The Russian military places supreme importance on the role of the commander in making critical decisions on the battlefield. The trajectory for Russia's geospatial capability includes the provision of comprehensive information on all aspects of terrain and on the dynamic environment of the battlefield to the commander in real time. Traditionally, Moscow sees TVDs as a regional construct, but recent technological advances mean that now Moscow contemplates 'global TVDs', such as aerospace and information.

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Russian Geospatial Capability for Globally Integrated Operations

By Dr Alexander J. Kent

The Russian leadership inherited a remarkably comprehensive global cartographical approach from the USSR, and continues to place great importance on mapping, or, more rather on Russia's *geospatial capability* – the provision of accurate and reliable geographical and spatial information to decision-makers. If troops fight on two fronts – against an enemy and against the environment – access to accurate and reliable geospatial information is an absolute requirement for success on the battlefield. Speaking recently to the Defence Ministry leadership, President Putin underlined his expectation that access to reliable real-time information on the aerospace, meteorological and cartographic situation, and on the status and activity of foreign armed forces, is a fundamental requirement.[i] An accurate assessment of Russia's geospatial capability is therefore crucial for understanding its geopolitical trajectory.

The Soviet Inheritance

The Soviet General Staff embarked on the most comprehensive global mapping project of the twentieth century. Dividing the world into squares of six degrees longitude by four degrees latitude, Soviet military cartographers adopted the gridlines and nomenclature of the International Map of the World, a collaborative project to create a global map at a scale of 1:1,000,000 that Russia had joined before World War One. Drawing on its world-class expertise in geodesy (terrestrial geometry) and unparalleled experience in mapping its vast territories, the USSR devised a standard specification encompassing cartographic symbology, projection, datum, ellipsoid and coordinate system.[ii] The resulting maps covered the globe at a range of scales from 1:1,000,000 to 1:25,000, including most of the five continents at 1:200,000 and Europe at 1:50,000 (Map 1).

Russia has therefore inherited the world's first truly global, multi-scale topographic database. Moscow also inherited a mental map of the world with boundless geopolitical horizons that facilitates and enables Globally Integrated Operations. The rational and systematic Soviet approach to mapping the world using imagery from satellites designed specifically for topographic mapping overcame the limitations of political borders in its collection of geospatial data. This gave the Soviet Union three advantages: firstly, in acquiring detailed knowledge of countries that were gaining independence in Africa and Asia during the late 1960s and 1970s; secondly, to respond to the geopolitical opportunities this afforded; and thirdly, to provide technical assistance to states such as Somalia and Yemen in mapping their own territories, thereby extending Soviet influence.

Russia's Geospatial Capability

The fall of the USSR saw reduced investment in military mapping and Russian troops soon experienced the effect of a critical lack of geospatial capability. Digitization and dissemination of the vast repository of Soviet mapping was slow and Russian military textbooks cite the first war in Chechnya (1994–1996) as the nadir, blaming disappointing outcomes on the shortage of reliable and up-to-date mapping.[iii]

The geospatial capability of the Russian Armed Forces has since undergone a fundamental transformation. State geodetic reference systems were updated in 2002 (SK-95) and in 2012 (GRS-2011), and a military-purpose GIS (Geographical Information System) was introduced in 2011. This allows the storage of digital geospatial data in layers, making it easier to supply information to unit commanders and to keep up with the rapidly changing dynamics of the battlefield. The value of existing geospatial datasets is enhanced with the possibility of spatial analysis and modelling, particularly of terrain for determining intervisibility (what can be seen from where) and least-cost pathways (deriving accessibility from slope gradients and physical barriers, such as soils and rivers). In 2014, a new global geodetic reference system (PZ-90.11) was launched to improve positioning and navigation, with the first Orion and NAP-E navigation receivers delivered to troops in 2015. These advances maximise the versatility of geospatial data while supporting global strike capability with precision weapons.

Directing these reforms is Alexander Nikolaevich Zaliznyuk (b. 1966), who became Head of the Military Topographic Directorate (MTD) in 2015, and was promoted to Major General in 2018. Recognising a future need for maps of any territory on the planet in real time, the MTD is charged with the creation of a single geospatial database (with an object-oriented structure) for the Russian Armed Forces.[iv] As General Valery Gerasimov reported to the Board of the Ministry of Defence on 7 November 2017, the establishment of 20 digital mapping centres has already allowed the provision of terrain information four times more quickly, the use of GIS has increased the availability of topographic maps to troops to 60%, and the time taken to create 3D digital terrain models has halved.[v] By the end of this year, the MTD aims to equip Armed Forces with a Unified Automated Geospatial Information System that is designed to collect, record, store, duplicate and deliver geospatial information to military command and control in near real time.[vi]

Soviet and Russian military manuals have long stated the importance of maps for solving economic problems and for meeting the requirements of national defence. The provision of Russian technical expertise to Syria for the creation of new topographic maps suggests the long-term value of Russian geospatial capability for states under its influence (Map 2).[vii] This value will increase, given the competition for global resources. Certainly, if knowledge is power, the accumulation of geospatial knowledge is a strategic process for geopolitical gain. The enhancement of Russia's geospatial capability will ultimately provide confidence in its own geopolitical trajectory.

Implications of Globally Integrated Operations on Russian Theatres of Military Action

By Charles Bartles

"The content of military operations also is changing. Their spatial scope is growing and their intensity and dynamism are increasing. Time parameters of the preparation and conduct of operations are shortening. There is a transition from successive concentrated actions to continuous distributed actions conducted simultaneously in all spheres of opposition as well as in remote TVDs. Demands on troop mobility are toughening. A transition is being made to comprehensive engagement of the enemy based on integrating the efforts of all attack assets and weapons into a single system. Boundaries of the TVD are expanding substantially. Areas with facilities of military and economic potential are being encompassed that are at a considerable distance from zones of immediate combat operations."[viii] *(Valery Gerasimov, 24 March 2018)*

Theatres of Military Action (TVDs)

Soviet military planners divided the world into continental and oceanic "theatres of military action" (TVDs). These TVDs allowed the Soviet General Staff to take a regional approach to the consideration of the military geography, or the political, military, economic, physical-geographical, and cultural variables essential for military planning. Although the general geographic area that a given TVD covers would be used for planning purposes, the TVD (and its exact borders) was not formally established until officially declared by the political leadership at the recommendation of the General Staff before the initial period of war (IPW). This means that TVDs were (and still are) temporary constructs that have malleable, sometimes overlapping borders, with no standing headquarters.[ix] This practice ensured the TVD's borders were best suited for the accomplishment of the strategic objectives, in the context of the current operational environment (Map 3).

In today's Russia, this thinking has remained much the same. A Russian TVD would be divided into one or more strategic directions, and strategic directions divided into one or more operational directions. In peacetime, the standing highest-echelon geographic construct is the strategic direction, which is the responsibility of the Joint Strategic Commands (OSKs) headquarters. The formation of OSKs in 2010 resulted in a change of the number of strategic directions from six to four (West, Central, South, East), and in 2014, a fifth (North) was added. Threats are discussed in terms of these strategic directions, not by TVD.

The Addition of Global TVDs

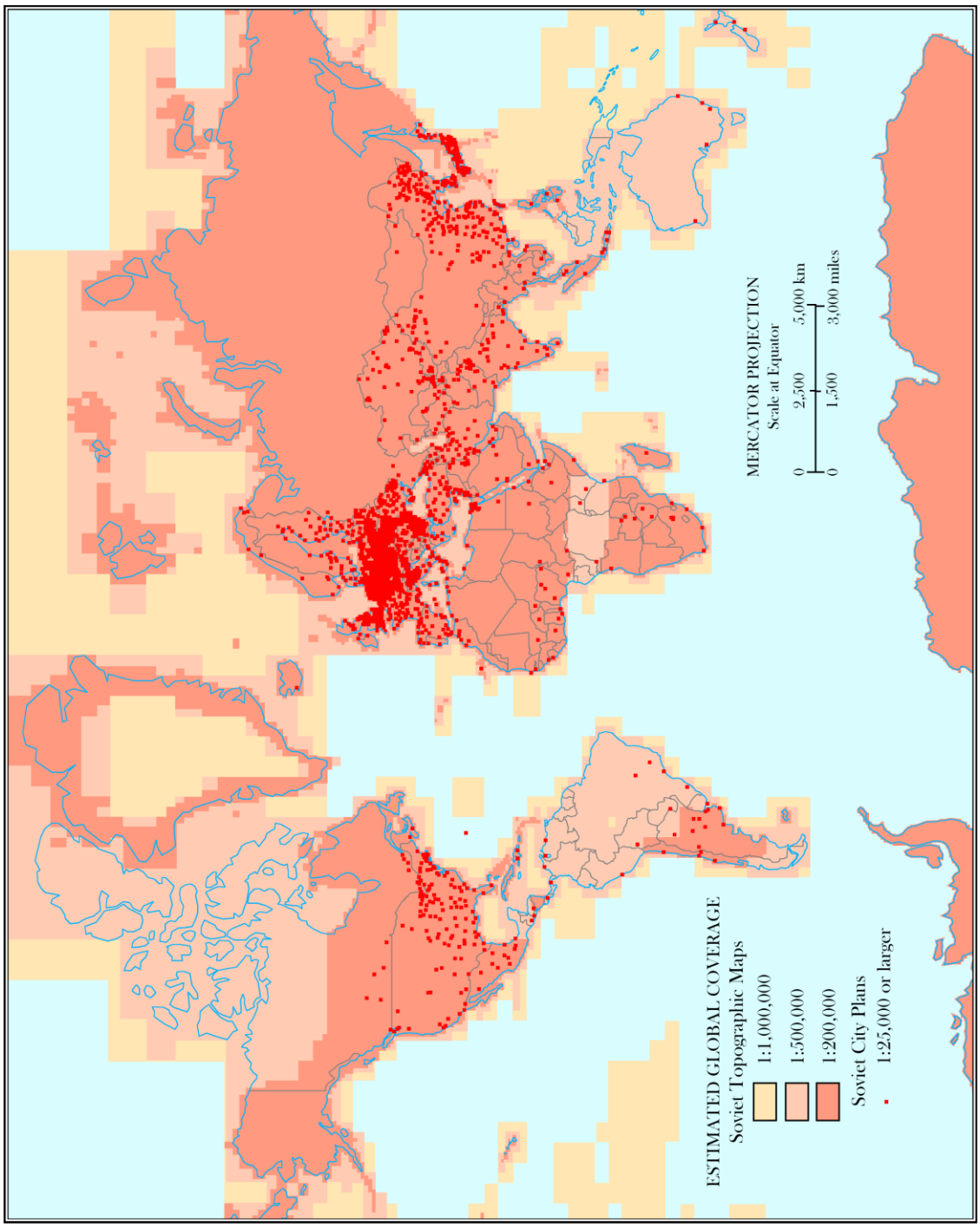
The late Russian Major General Vladimir Slipchenko coined the phrase "sixth generation warfare" to describe the 1991 Desert Storm operation and its aftermath. "Sixth generation warfare" is characterized by the increasing use of precision guided munitions (PGMs) and the growing importance of the informational aspects of war (information/psychological operations, C4ISR, Electronic warfare, cyber warfare, etc.). Russian security professionals sometimes also refer to this as "future war".[x]

Technological advances have significantly influenced how Russian military thinkers envision TVDs. Slipchenko stated that "*next-generation warfare will undoubtedly leave the operational and even strategic levels and immediately acquire a global scale. Using information networks and assets, a global aggressor can provoke technogenic catastrophes in large economic regions and sections of the world... It is important to mention that in next-generation warfare, starting with the sixth, man will not be the main target of a strike. He will be defeated indirectly, through other structures and systems associated with his life support.*"[xi] But Russia has only recently acquired the technological capabilities to begin implementing these theories, leading Russian theorists to now start discussing global TVDs such as an "aerospace TVD" and "informational TVD", as the spectrum for planning is transitioning from strategic (regional) to the global considerations.

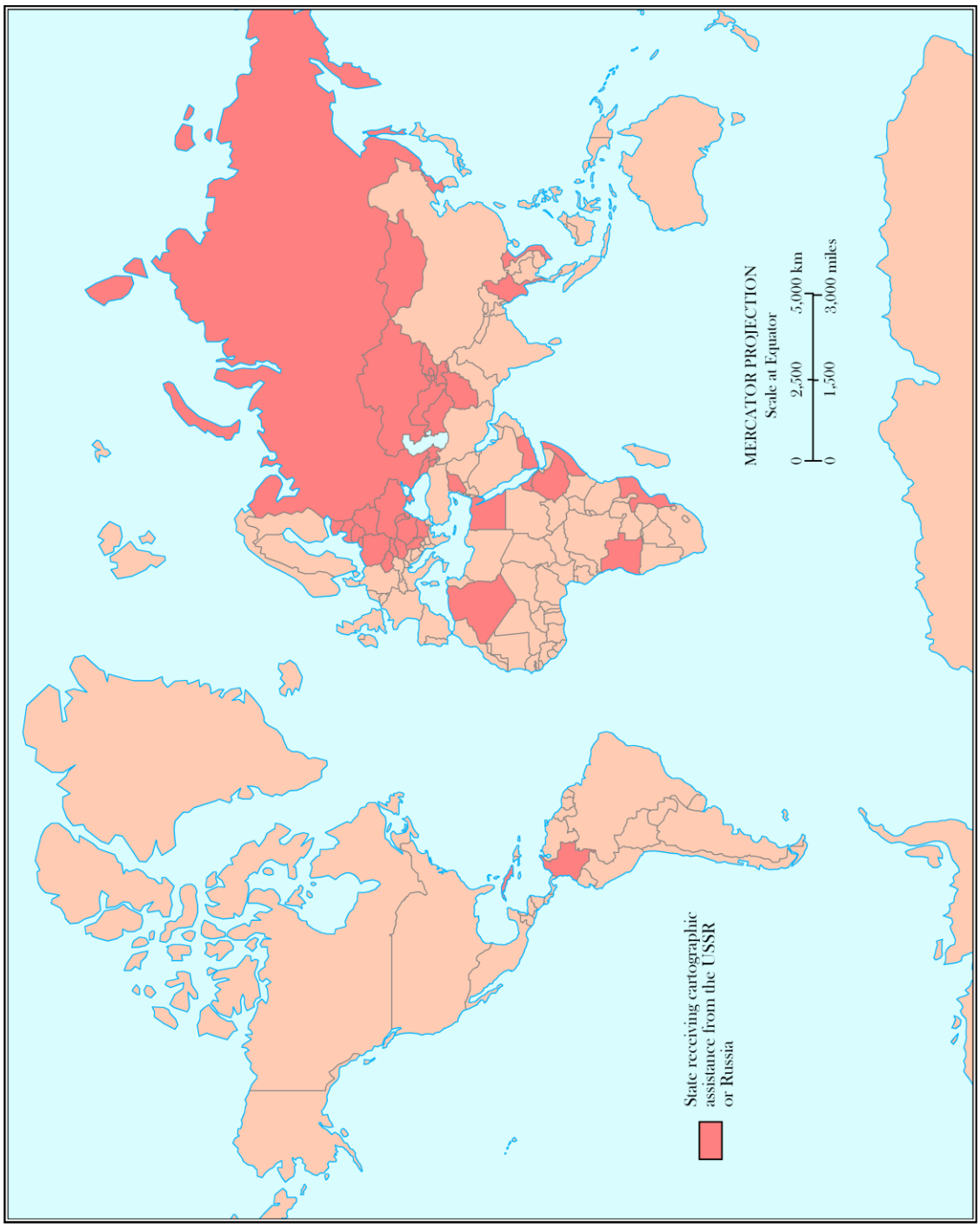
Implications of the transition to global TVDs

This TVD concept explains why Moscow takes such a different approach to Multi-Domain Operations than the US Army.

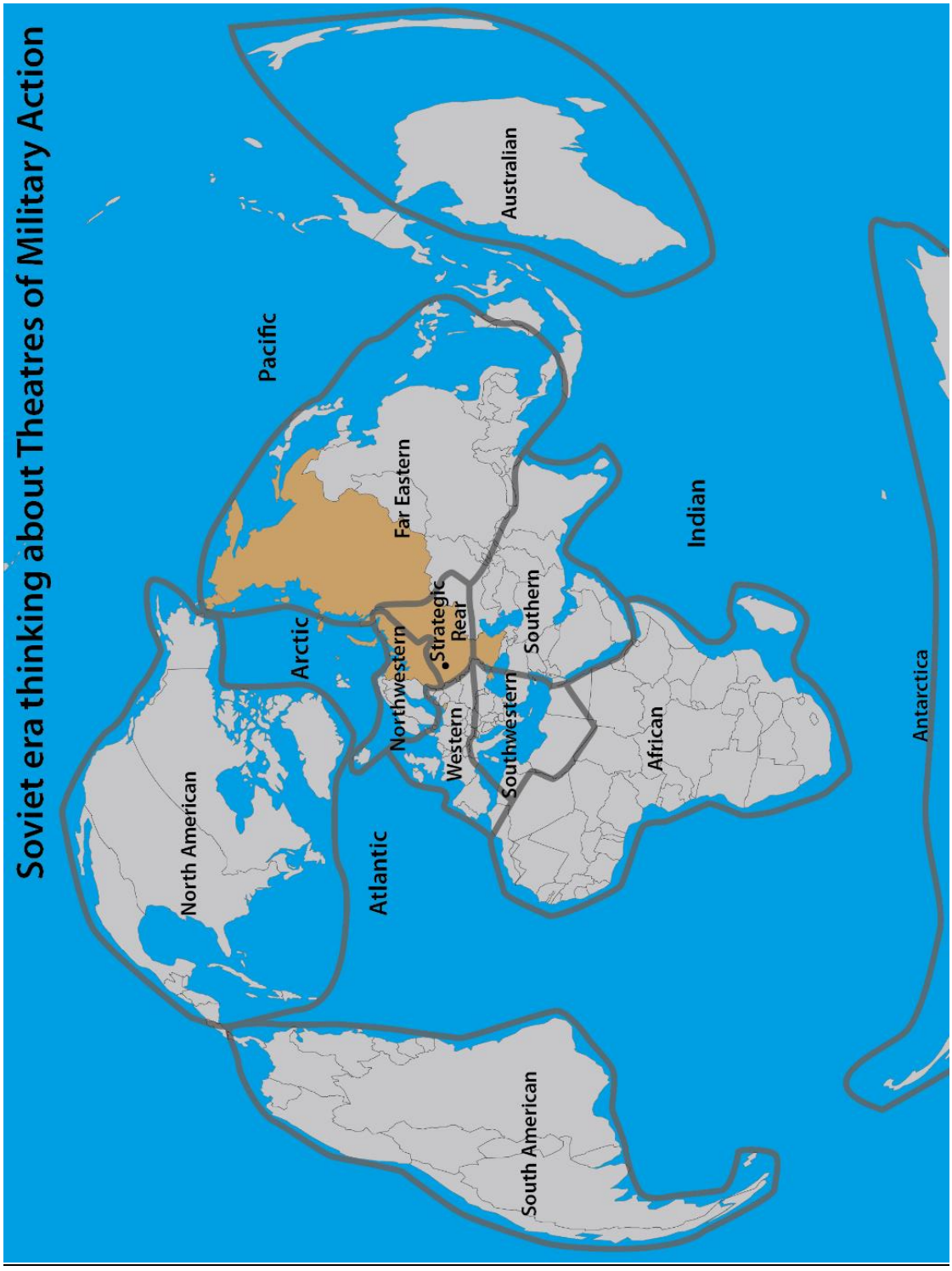
- In the past, operational-level commanders only had assets that could be employed within the TVD's boundaries. Now, due to the increased ranges of operational-tactical weapon systems (Kalibr-NK, SSC-8), these **commanders can, and likely will, engage targets in adjacent TVDs**.
- Due to better technology, especially AI, the speed of decision making has increased dramatically. An ongoing process, this will facilitate **decision-making not only on a strategic scale, but also a global one**.[xii]
- In current Russian thinking, **the first actions (information confrontation) of a conflict will occur within the informational TVD to shape the IPW**. Ideally, this effort could achieve the strategic objective(s), thereby ending the conflict; or could put Russia on a more advantageous footing for a more conventional conflict.[xiii]
- **Global thinking about information confrontation has practical consequences**. Russians are also developing means to disrupt electron flows physically, as can be evidenced by Russian technologies that disrupt satellite communications and can sever underwater internet fibre optic cables.
- Moscow may be considering global TVDs, but this does not mean more traditional regional TVDs will not be established in the future. In times of hostilities, these **different types of TVDs will likely coexist.**
- Technological advances were the impetus for global TVDs, now this global thinking is **driving changes in Russian force design and capability development**, as best evidenced by the creation of the Russian Aerospace Forces (VKS) in 2015, which consolidated air and space assets under a single command.[xiv]



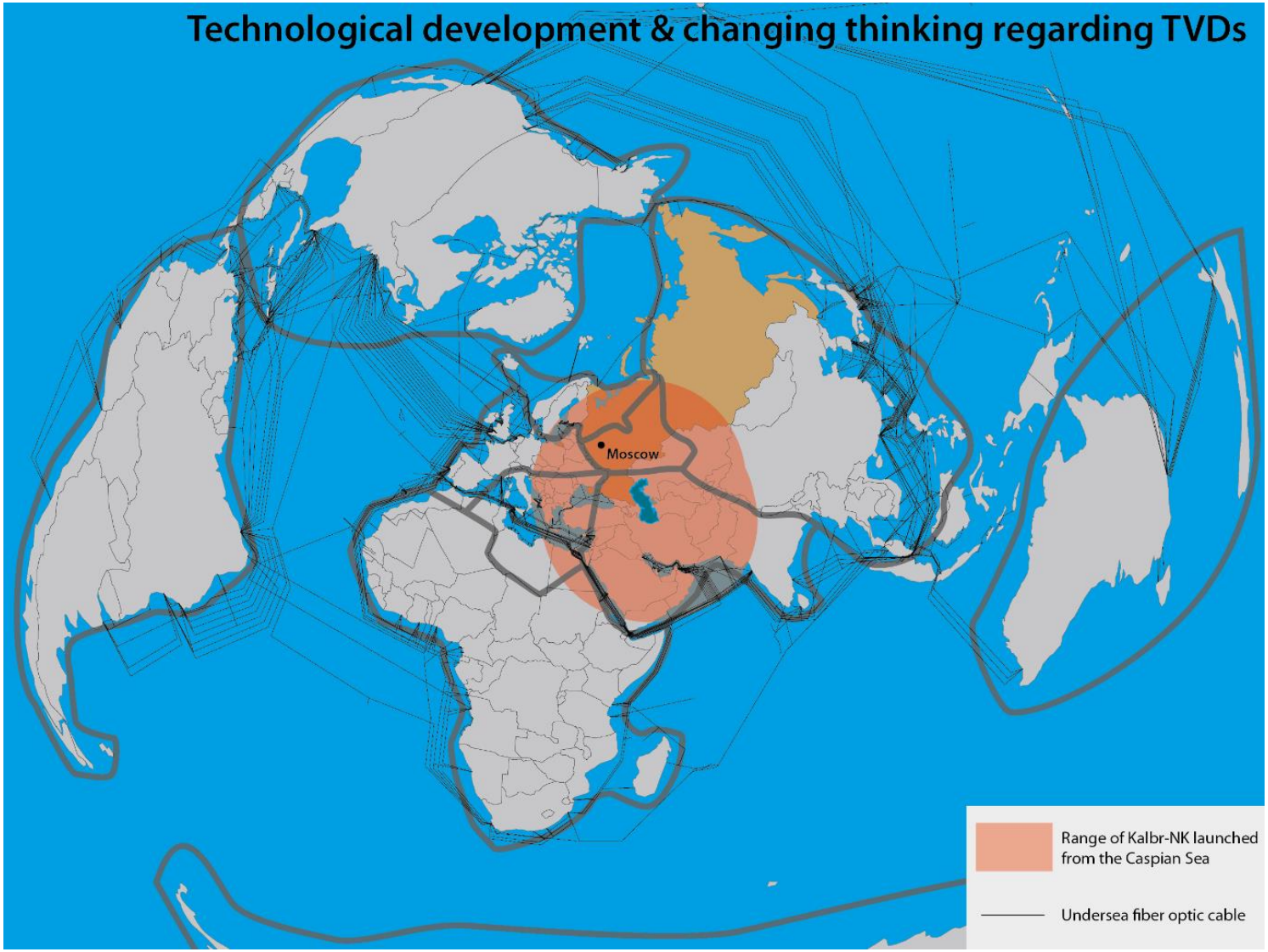
Map 1 Estimated global coverage of Soviet topographic mapping and city plans



Map 2 Countries receiving cartographic assistance from the Soviet Union or Russia



Map 3 Soviet era thinking about Theatres of Military Action



Map 4 Technological development & changing thinking regarding TVDs

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About the "Russian Globally Integrated Operations" project

This project examines Russian grand strategy. The concept of "Globally Integrated Operations" – one explicitly discussed by the Russian leadership – provides a holistic lens through which to view Russian strategic thinking and activity. It illuminates how Moscow seeks to reorganise the structure of its defence and security landscape to cope with perceived security challenges, and the trajectory of its international activity. It examines Moscow's "mental maps" and how Russian economic and security interests are intertwined.

Previous report
- Russia's Grand Strategy (Not Opportunism)

Future reports will address
- Russian energy and globally integrated operations
- The Importance of Geo-economics to Moscow.

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About the Russia Research Network, Ltd.

Established in 2006 by Dr Andrew Monaghan, The Russia Research Network is a small consultancy offering tailored research and analysis of Russian politics, defence, energy and economic issues. Based in London, our team are all highly qualified and internationally recognized subject matter experts, with many years of experience advising international organisations, governments and parliaments, and major companies. We have built a reputation for delivering high quality and timely analysis and advice to decision-makers in small and large organisations alike.

Endnotes

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