From Mud to Space: Adapting Missile Defenses to the China Threat

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Both of the Pentagon’s last two National Defense Strategy documents have identified China as a strategic and pacing threat to the United States and its allies.\(^1\) Within the military dimension of that strategic competition, an increasingly diverse, numerous, and sophisticated spectrum of aerial and missile threats has assumed an outsized importance. Once regarded as a niche or boutique problem, these missile threats have now become weapons of choice.\(^2\) The surge in the global supply and demand for both a spectrum of long-range standoff capabilities and the means to contend with them is a defining feature of a new missile age.

For decades, missile defense efforts have largely been directed at rogue state ballistic missile threats, especially from those armed with weapons of mass destruction. The threat from major powers represents a far more complex problem. U.S. air and missile defense efforts require considerably more adaptation than that which has been undertaken to date to contend with the scale and urgency of this threat.

At least five areas of improvement are worth consideration to adapt U.S. air and missile defenses to better contend with the military competition with major powers.

The first is that of policy. Not so long ago, it seemed in many quarters unthinkable to put Russia or China in the same sentence as missile defense. Over the past two years, the successful engagement of Kinzhals and hundreds of other high-end missiles in Ukraine have decisively chipped away at the idea that such threats are unstoppable. Now it should be unthinkable not to contemplate active defense. While still relying upon nuclear forces to deter large-scale, strategic nuclear attacks, the specter of nonnuclear strategic attacks makes such defensive measures indispensable.

The second area, the principal effort to realize the defense of nonnuclear strategic attack, is the collection of efforts to provide air and missile defense for the island of Guam. Besides being U.S. sovereign territory and homeland of Americans, the principal reason for defensive investments for Guam has every-
thing to do with the military forces dependent upon the island for power projection and deterrence. While passive defense measures should be maximized fully, some things that cannot be moved or hidden must be defended. Doing so will require every tool in the toolbox of today’s air defenders and the development of new ones. To defend against the full spectrum of threats from a near-peer in their backyard will require integration among several air and missile defense systems, not just to create a common air picture but to achieve integrated fire control to optimize and deconflict engagements.

A third capability area is the specific area of cruise missile defense, relevant not just to Guam but to bases throughout the United States Indo-Pacific Command (INDOPACOM) and beyond. Garden-variety cruise missiles represent one of the most underappreciated, high-capacity, and near-term threats to U.S. forces and the homeland. The U.S. Army’s efforts for cruise missile defense will need to be kept on schedule and expanded. Since being named the lead service for air and cruise missile defense of the homeland, the U.S. Air Force is advancing critical work on domain awareness and over-the-horizon radars. Further work will be required to increase cruise missile intercept capacity both in the homeland and in the Pacific, much of which will likely need to be ground-based.

At the lower end of the aerial threat spectrum is the need to counter the seemingly humble but increasingly ubiquitous category of systems called unmanned aerial systems (UAS). Despite receiving their own category, UAS threats might be conceived as the next generation of the categories previously dubbed fixed wing, rotary wing, and cruise missiles. As the next chapter of air defense, counter-UAS (C-UAS) will require organizational and training changes, not just for dedicated air defenders but across the entire Joint Force.

The United States does not get to pick which parts of the air and missile threat spectrum China will mix and match to hold U.S. forces at risk. The fifth and final category is, therefore, not optional. The ability to defeat high-speed maneuvering threats, or various kinds of so-called hypersonic missiles, represents a necessary capability to counter significant Chinese investments in the area. These include boost glide vehicles, scramjet powered cruise missiles, orbital bombardment, and space planes.

Important progress has been made so far for the first component, space-based sensors capable of tracking unpredictable missiles from birth to death—but the capability is still far from being realized. Questions remain about schedule and fire control requirements for these forthcoming sensor layers. A second component, the kinetic or non-kinetic means to defeat these threats, must also be developed with all deliberate speed. Past aversions to space-based capability must likewise be overcome. Although the implications of embracing space as a warfighting domain have yet to be fully internalized, advanced capabilities in and from space will be critical to the future of missile defense and defeat.

We do not get to choose which sort of threats China will pose. The specter of complex, structured, and integrated missile attacks requires attention to the full spectrum of defenses, from mud to space.

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