

# THE MIDDLE EAST MISSILE ENVIRONMENT

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As recent events have shown—in particular, the launch of more than 1,500 rockets by Hamas and other Palestinian factions in Gaza against Israel during the week-long second Gaza war of November 2012, and the launch of a half dozen SCUD missiles by government forces against Syrian insurgents in early December 2012—the Middle East remains that part of the world where the threat posed by rocket and missile proliferation and use is most acute, and the need for effective rocket and missile defenses most urgent.

## ROCKET AND MISSILE PROLIFERATION TRENDS

To be sure, not all the news coming from the Middle East in the past decade pertaining to missile proliferation has been bad. The missile proliferation landscape in the region is characterized by a variety of countervailing trends, some positive, some neutral, and some negative, from the point of view of U.S. national interests.

On the positive side of the ledger, Iraq and Libya have abandoned their missile and associated nonconventional weapons programs, and are no longer countries of proliferation concern. Saudi Arabia is not believed to have modernized or replaced its inventory of CSS-2s, and it is not even clear whether these missiles remain operational; instead, Riyadh appears to be acquiring F-15S and Eurofighter Typhoon fighters for the long-range strike role. And Egypt's SCUDs are currently not perceived as a threat; that will remain the case as long as the new Egyptian

government continues the foreign and defense policies of its predecessor.

Conversely, the rocket and missile threat from the so-called "axis of resistance" (Iran, Syria, Hizballah, Hamas and Palestinian Islamic Jihad, and Iranian-supported special groups in Iraq) has become more acute in the past decade. Iran's missile program is the largest and most advanced in the region (outside of Israel) and shows signs of growing sophistication, including the claimed development of an anti-ship ballistic missile capability, as well as a satellite launch capability.

## EVOLVING THREAT CAPABILITIES

The most noteworthy developments of the past decade related to threat capabilities have been the proliferation of rocket, and possibly missile, systems to those non-state actors in the region that are supported by Iran, as well as the growing capabilities of the expanding rocket and missile arsenals of Syria and Iran.

*Non-State Actors.* During the U.S. occupation of Iraq, the rocket became a signature weapon used by Iranian-supported special groups such as the Mahdi Army, Asa'ib Ahl al-Haqq, and Kata'ib Hizballah, against American forces and the U.S. embassy in Baghdad. The weapons of choice included 107mm, 122mm, and 240mm rockets, as well as improvised rocket-assisted munitions (IRAMs). It is not clear whether these capabilities have been preserved since the departure of U.S. forces from Iraq.

The de facto Hamas state in Gaza is an emerging rocket power. Since 2001, Palestinian forces

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in Gaza have launched more than 12,800 rockets against Israel. At first, these groups relied exclusively on home-made rockets built from easily-available materials (sewage pipes, sheet metal, and a sugar and fertilizer propellant mixture). However, over the years, these Palestinian groups took delivery of Iranian Grad-type rockets, and more recently, long range Fajr-5 rockets (with a 75km range), smuggled in via the network of tunnels that connect the Sinai with Gaza. Israeli intelligence believes there are 12,000 rockets of all types in Gaza at present, including a domestically produced rocket, the M-75, as well as the Iranian Fajr-5, with sufficient range to reach the outskirts of Tel Aviv and Jerusalem.

Hezbollah has emerged as a non-state rocket superpower. During the 2006 war between Israel and Hezbollah, the Lebanese organization rained more than 4,000 rockets down on Israel. Since then, according to Israeli intelligence, its inventory has increased to more than 70,000 rockets, including systems that can reach nearly all of Israel, and it is believed that Hezbollah personnel have been trained in Syria on Syrian SCUDs. Some media reports claim that several of these missiles have been transferred to Hezbollah's control, though it is not clear whether they remain in Syria or whether they are now in Lebanon.

*Syria and Iran.* Syria and Iran have the most active rocket and missile programs in the Middle East today. Both countries conceive of their rocket and missile forces as a deterrent, as psychological warfare tools (during parades, Iran frequently dresses its missiles with banners declaring that "Israel should be wiped off the map"), and for the delivery of both conventional and nonconventional payloads in wartime. Both countries subscribe to the "resistance doctrine," which states that the path to victory is through demoralizing the enemy, by bleeding his army as well as his civilian population (by rocket and missile attacks against civilian population centers), and by denying him success on the battlefield—not by seizing and holding terrain. In this context, rockets are as important as missiles, since they yield the same psychological effect on the targeted population. For Iran, this was a key lesson of its eight year war with

Iraq (1980-1988), and for Syria, of the 1991 Gulf War and the 2006 war between Israel and Hezbollah.

Syria is believed to have several score SS-21 and perhaps 400-500 SCUD-B and -C missiles. All are capable of carrying chemical payloads. It also has 220mm and 302mm rocket systems, which it has provided in large numbers to Hezbollah. In past crises, Syria has used its SCUDs for signaling, and in recent weeks it fired a half dozen SCUDs against anti-regime insurgents. These incidents reflect the progressive escalation of the country's civil war and the Assad regime's growing desperation, and raise the possibility that Syria may eventually use its SCUDs to deliver chemical weapons against opposition forces or civilian population centers.

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Iran has invested significant resources in building a large, capable missile force, with the total number of missiles perhaps in the high hundreds. These include single stage liquid fuel missiles such as the Shahab-1, and -2, Qiam-1, Shahab-3 and Ghadir-1 (with ranges of 300, 500, 750, 1,300, and 1,500km, respectively). Additionally, it has tested a two stage solid fuel missile, the Sejil-2 (with a 2,000+km range)—though the latter is not yet believed operational. Iran has also claimed an anti-ship ballistic missile capability (Khalij-e Fars), and has demonstrated a satellite launch capability (Safir) which could eventually provide the basis for an Iranian ICBM. For now, however, Iran is apparently limiting itself to the production of 2,000km range missiles (sufficient range to reach Israel, but not Western Europe) and eschewing at least the overt development of ICBMs, in order to deflect concerns in Europe and the U.S. regarding its missile program. Iran also fields a very large number of solid fuel rockets—both short, medium, and long-range systems, including the Noor

122mm rocket (20 km), the Fajr-3 and -5 (with ranges of 45 and 75km, respectively) and the Zelzal-1, -2, and -3 (with ranges of 125 to 400km).

Iran has built such a large inventory of rockets and missiles in order to enable it to saturate enemy rocket and missile defenses, and achieve cumulative strategic effects on the enemy's morale and staying power through conventional means. All of Iran's missiles can be mounted on mobile launchers, and it is starting to place its missiles in concrete silos. This mix of launch options is likely intended to make it more difficult for potential enemies to pre-emptively target Iran's missile force.

### REGIONAL DEFENSE: A WORK IN PROGRESS

The threat in the Middle East consists of very large numbers of conventionally (and a smaller number of nonconventionally) armed strategic rockets and missile systems. At present, the U.S. and its allies (except for Israel) lack the ability to counter the rocket threat, and are at risk of being numerically overwhelmed by the missile threat that they face.

In both respects, Israel is better prepared than is the United States and its other regional allies, though gaps in its capabilities remain. Israel has fielded the Iron Dome system to defend against short- and medium-range rockets from Gaza, and Patriot PAC-2/GEM and Arrow II (and eventually, Arrow III) interceptors to deal with short- and medium-range ballistic missiles from Syria and Iran. However, it currently lacks enough Iron Dome batteries to defend against the many thousands of short- and medium-range rockets held by Hezbollah, or the latter's inventory of long-range rockets (its five operational Iron Dome batteries are all currently positioned to deal with the

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threat from Gaza). The anticipated deployment of the David's Sling interceptor in 2014 will, however,

enable it to deal with the threat of Hezbollah's long-range rockets. For now, Israel is relying on deterrence, and will resort to pre-emption, if need be, to deal with that threat.

The U.S., by contrast, has not devoted sufficient resources to developing counter-rocket systems (though the threat of rocket attacks by Iraqi special groups led to the rush deployment of the largely ineffective Phalanx Counter Rocket, Artillery, and Mortar System/C-RAM). However, there is a growing recognition that rockets can have a strategic impact, and that in the future, proliferators may use rockets and missiles in synergistic ways. For instance, Iran may attempt to suppress U.S. and allied missile defenses with rocket attacks by proxies operating on the ground or by missile strikes, in order to facilitate rocket and missile attacks against population centers, critical infrastructure, and military facilities. It is not clear, however, whether this growing recognition will result in the acquisition of more capable anti-rocket systems.

In recent years, the U.S. and many of its Arab Gulf allies have acquired large numbers of modern missile defenses, though probably not in the numbers required to defeat Iranian saturation tactics. The U.S. now has 1-2 Aegis ships in the Mediterranean, and 2-3 in the Persian Gulf. It has Patriot PAC-2s or PAC-3s in Kuwait, Bahrain, UAE, and Qatar, and can deploy a THAAD battery to the region in a crisis. It has also deployed AN-TPY-2 X-Band radars in Israel, Turkey, and Qatar. As for America's Arab allies, the Patriot PAC-2 has been purchased by Kuwait, Bahrain, Saudi Arabia, and the UAE, and Saudi Arabia is upgrading its missile defenses to PAC-3 standards, perhaps as a first step toward eventually acquiring this system, which has already been purchased by Kuwait and the UAE. Finally, America's most advanced missile, THAAD, has been ordered by the UAE, and may be ordered by Qatar. By contrast, Turkey, a key U.S. ally, lacks any kind of missile defenses, and had to request NATO assistance to deal with the missile threat from Syria. More needs to be done to close this missile gap.

Israel is the only country in the region with a national early warning system and robust civil defenses, in the form of a nationwide network of shelters and

highly capable emergency services. This is critical for fostering societal resilience, for civilians must believe that everything possible is being done to protect them. This is a critical gap in the capabilities of America's Arab allies that needs to be filled—especially since the events of the so-called “Arab Spring” are likely to lead to increasing calls for greater governmental accountability in the Gulf Arab states. The failure of these regimes to adequately protect their citizens could have a major impact on political stability in the Gulf in the aftermath of a war. The U.S. needs to do more with these allies to enhance their civil defenses.

In the Persian Gulf, offensive air operations will be necessary to attack and attrite Iranian rocket and missile forces, and thereby lighten the load borne by the missile defenses, in accordance with lessons learned in previous wars in the region (in particular, the 1991 Gulf War, the 2006 war in Lebanon, and the 2012 war in Gaza). To this end, the U.S. maintains two Aerospace Expeditionary Wings and 2-3 Carrier Strike Groups in the region, while several U.S. allies have acquired very capable strike aircraft, including the Saudi F-15S and Eurofighter Typhoon, and the UAE F-16 Block 60 Desert Falcon. More needs to be done to enhance interoperability among U.S. and Arab air forces and to enhance the professional standards of the latter, so that they can take on a greater share of the burden in future wars.

Finally, to the degree that Iran and its allies in the “axis of resistance” use the threat posed by their rockets and missiles to intimidate and demoralize their enemies, countering this “fear factor” will be a critical goal of missile defense. Diplomatic and military public affairs and MISO (Military Information Support Operations) personnel should play a key role in formulating and implementing U.S. and allied rocket and missile defense strategies, by deflating frequently exaggerated Iranian claims about their rocket and missile forces, and publicizing what the U.S. and its allies are doing to counter them, so that Tehran is unable to derive any benefit from what is perhaps its most potent psychological warfare weapon. ■