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India's eye in the sky takes aim

By Neeta Lal
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On Monday launched an Israeli-made RISAT 2, or radar-imaging satellite, on board its domestically built rocket the Polar Satellite Launch Vehicle, from Sriharikota, a barrier [island](#) off the southern Indian state of Andhra Pradesh.

The launch is seen as a vital step towards securing India's borders and deterring cross-border infiltration in the wake of the deadly terror strikes which have rocked India in recent months, particularly the Mumbai attack on November 26, 2008, that killed up to 200 people and destroyed property worth millions.

The 300-kilogram RISAT will orbit about 550 kilometers above the Earth. It was designed by Israeli Aerospace Industries and is equipped with Synthetic Aperture Radar (SAR) technology. SAR systems, according to experts, take advantage of the long-range propagation characteristics of radar signals and the complex information processing capability of modern digital electronics to provide high-resolution imagery. The photos provided by the technology have such a high-resolution that even car number plates can be read.

According to defense experts, it was a lack of the SAR capability in Indian satellites that stopped the nation from detecting Pakistan militants who had entrenched themselves in Kashmir prior to the Kargil war, an 11-week conflict between India and Pakistan in 1999.

The need for satellites with such technology has since been acutely felt in India. India's current surveillance satellites cannot function to their optimal level at night or during the monsoon season. The RISAT-2 will also be able to detect and monitor incoming ballistic missiles.

The RISAT's "all-weather capability" will enable it to process images, irrespective of cloud cover or inclement weather. In addition to defense and surveillance, the satellite can be used in disaster management situations like floods and in agricultural planning, a boon for India

where nearly two-thirds of the populace are farmers.

The new satellite will become part of India's fleet of successfully launched satellites. India began its space program in 1963, and its ISRO (Indian Space Research Organization) recently joined the [United States](#), Russia, China, Ukraine and the European Space Agency in offering commercial satellite launch services.

The successful launch last November of the Chandrayaan-1, India's first unmanned moon probe, demonstrated that India had the capability to penetrate the global satellite market. Chandrayaan-1 made space history as the cheapest contemporary lunar mission ever launched. With a budget of some \$100 million, its price tag was almost half of China's Chang'e 1 mission (\$187 million) and about one-fifth of Japan's Kayuga (\$480 million). Experts say low labor costs are the major reason for India's comparative price advantage in satellite production and launching.

The ISRO was initially set up to carry out scientific research, but now also earns money from commercial launches in a global market worth an estimated \$2.5 billion each year.

[The RISAT launch also has geopolitical overtones, due to the Israeli connection. The importance of the satellite has been magnified by the fact that earlier Indo-Israeli satellite ventures were scrapped due to objections by Arab states which viewed them as a threat to their "defensive integrity".](#)

The RISAT's launch has given Indo-Israeli relations new momentum in the strategic areas of space and defense. India helped [Israel](#) launch its own spy satellite TecSAR, another SAR-enabled satellite, last January. In a controversial break from its longstanding military space policy of strategic self-reliance, Israel launched TecSAR aboard India's Polar Satellite Launch Vehicle rather than its indigenous Shavit rocket.

Two more Indo-Israeli satellites will be launched over the next two years, according to defense ministry sources. Aside from cooperation in space exploration, India has bought over US\$5 billion worth of Israeli military equipment since 2002. Israel has reportedly helped [train](#) Indian military units and given Indian commandos instruction in counter-terrorist tactics and urban warfare.

The beginnings of Indo-Israeli defense cooperation dates to the Kargil era when the right-wing Bharatiya Janata Party government, under premier Atal Bihari Vajpayee, acquired "anti-terror" Israeli expertise for operations in Kashmir. During the Kargil conflict, New Delhi sought Israeli support to defend against a Pakistani invasion. In return, Israel reportedly supplied military equipment and unmanned aerial vehicles. India has used a variety of Israeli surveillance devices along its border with Pakistan.

When the [United Progressive Alliance \(UPA\)](#) government, led by Congress leader Sonia Gandhi, swept into power in 2004, India-Israeli cooperation in the field of defense was again pursued. Air-to-surface missiles, anti-missile defense projects, advanced radars, electronic warfare systems and third-generation night-fighting capabilities are all on the collaboration agenda. By 2008, bilateral trade between India and Israel had exceeded \$4 billion and Israel was India's second-largest military supplier.

Heightened fears of terror attacks in India have propelled cooperation with Israel to greater

heights. India's defense budget was ratcheted up 24% this fiscal year by Prime Minister Manmohan Singh's UPA government as its military fast-tracked acquisitions in the wake of the Mumbai massacre. The \$29.4-billion defense allocation comprises 15% of the entire budget for the financial year beginning April 1. Finance Minister Pranab Mukherjee has stated that the amount could be increased even further.

"We are going through tough times," said Mukherjee in February. "The Mumbai terror attacks have given an entirely new dimension to cross-border terrorism."