



# MAKING WAVES

*A maritime news brief covering:*

- **MARITIME SECURITY**
- **MARITIME FORCES**
- **SHIPPING, PORTS AND OCEAN ECONOMY**
- **MARINE ENVIRONMENT**
- **GEOPOLITICS**

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# CONTENTS

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<b>MARITIME SECURITY .....</b>	<b>3</b>
<b>5TH FLEET CO: CHINA LAYING GROUNDWORK IN MIDDLE EAST TO POSE FUTURE THREATS; INTERNATIONAL COALITIONS PUSHING BACK AGAINST IRAN .....</b>	<b>3</b>
<b>THE UNCLOS ISN'T PERFECT, AND IT'S TIME WE ACKNOWLEDGE THAT ...5</b>	<b>5</b>
<b>AUSTRALIA DECLARES 'THERE IS NO LEGAL BASIS' TO BEIJING'S CLAIMS IN SOUTH CHINA SEA.....</b>	<b>9</b>
<b>UK AND US SAY RUSSIA FIRED A SATELLITE WEAPON IN SPACE .....</b>	<b>11</b>
<b>SOUTH CHINA SEA: AUSTRALIAN WARSHIPS ENCOUNTER CHINESE NAVY IN DISPUTED WATERS.....</b>	<b>12</b>
<b>MARITIME FORCES.....</b>	<b>14</b>
<b>LARGEST SOLAR POWER PLANT OF INDIAN NAVY COMMISSIONED IN EZHIMALA .....</b>	<b>14</b>
<b>INDIA CHINA ROW: P-8I AIRCRAFT DEPLOYED IN LADAKH; MIG-29KS TO BE MOVED.....</b>	<b>14</b>
<b>PUTIN SAYS RUSSIAN NAVY TO GET HYPERSONIC NUCLEAR STRIKE WEAPONS .....</b>	<b>15</b>
<b>US EASES EXPORT RESTRICTIONS ON UNMANNED DRONES, NEW DELHI TO BENEFIT .....</b>	<b>16</b>
<b>THE BARBARIANS IN THE BAY: RUSSIA'S NUCLEAR ARMED DRONE SUBMARINE .....</b>	<b>17</b>
<b>RUSSIAN NAVY ACCEPTS NEWEST PROJECT 22350 FRIGATE ADMIRAL KASATONOV .....</b>	<b>22</b>
<b>AIP SUBMARINES WILL INCREASE THE LETHALITY OF THE INDIAN NAVY23</b>	<b>23</b>
<b>STEALTH UAVS COULD GIVE CHINA'S TYPE-076 ASSAULT CARRIER MORE FIREPOWER.....</b>	<b>24</b>
<b>SHIPPING, PORTS AND OCEAN ECONOMY.....</b>	<b>26</b>
<b>SATELLITES UNCOVER WIDESPREAD ILLEGAL FISHING IN PACIFIC OCEAN .</b>	<b>26</b>
<b>MANATUA CONSORTIUM CONFIRMS ONE POLYNESIA FIBRE CABLE READY TO LIGHT UP THE SOUTH PACIFIC.....</b>	<b>28</b>
<b>NEW REGULATOR FORMED TO OVERSEE ABU DHABI'S WATERWAYS.....</b>	<b>28</b>
<b>MARINE ENVIRONMENT .....</b>	<b>30</b>

<b>CHEAP WIND POWER COULD BOOST GREEN HYDROGEN, MORGAN STANLEY SAYS.....</b>	<b>30</b>
<b>CHEMISTS MAKE TOUGH PLASTICS RECYCLABLE.....</b>	<b>30</b>
<b>TEMPERATURES AT NORWAY'S ARCTIC ARCHIPELAGO HIT RECORD HIGH .</b>	<b>32</b>
<b>POLAR BEARS COULD BE WIPED OUT BY 2100 DUE TO CLIMATE CHANGE: STUDY.....</b>	<b>33</b>
<b>STUFF OF NIGHTMARES! RESEARCHERS DISCOVER A 14-LEGGED GIANT SEA COCKROACH IN THE INDIAN OCEAN.....</b>	<b>34</b>
<b>ACTIVE LEAK OF SEA-BED METHANE DISCOVERED IN ANTARCTICA FOR FIRST TIME .....</b>	<b>35</b>
<b>GEOPOLITICS .....</b>	<b>36</b>
<b>QUAD   THE CONFLUENCE OF FOUR POWERS AND TWO SEAS.....</b>	<b>36</b>
<b>IF FREE NATIONS DO NOTHING...": US' WARNING ON SOUTH CHINA SEA TENSION .....</b>	<b>38</b>
<b>EXPLAINED IDEAS: WHY INDIA SHOULD ELEVATE TIES WITH ARAB WORLD INSTEAD OF ROMANTICISING RELATIONSHIP WITH IRAN.....</b>	<b>39</b>
<b>ACKNOWLEDGEMENTS.....</b>	<b>40</b>

# MARITIME SECURITY

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## 5TH FLEET CO: CHINA LAYING GROUNDWORK IN MIDDLE EAST TO POSE FUTURE THREATS; INTERNATIONAL COALITIONS PUSHING BACK AGAINST IRAN

- Megan Eckstein

The head of naval forces in the Middle East said Chinese actions in the region don't pose a threat today but could lead to challenges down the road, with China laying the groundwork to gain economic and military leverage over countries in the Horn of Africa and the Arabian Peninsula.

Vice Adm. James Malloy, who has led U.S. 5th Fleet and U.S. Naval Forces Central Command since December 2018, said China has had a small naval force in the Middle East for a decade now – both contributing to international anti-piracy patrols as well as building up a military complex in Djibouti. More recently, China has begun investing in ports and other facilities as part of its Belt and Road initiative, which in many cases has left poor countries economically beholden to China when they can't pay back loans used for critical infrastructure improvements. Speaking at a Middle East Institute event online on July 22, Malloy said China wasn't doing anything militarily in the Middle East that concerned him yet, but he said that the foundation was being laid for China to gain influence in the region and to eventually disrupt the rules-based order meant to keep peace and safe flow of commerce in the busy waterways there.

“What concerns me in this region is not the combat capability in the near term. But what concerns me is all levers of national power that come to play. And when I take a look at this region, I only have to look east to be able to see what the future might look like, in the South China Sea – and I see economic coercion, I see military coercion, depending on what lever works, to be able to bend the reality or the facts on the ground to a different rule-based reality,” Malloy said.

“And so you pick your country out there in some sort of disagreement with China, and you see how the levers are being applied. And then you move into this region and you say, 15 years from now, you've got investment in East Africa, you have some contracts for building of some port facilities, and then you've got a military complex working out in the Horn of Africa. What does this look like when now, after all of this, the weapons-exporting in this area, what does this look like when there's a desire to change the facts on the ground from the international rules-based order that you mentioned that has been a good thing for the entire globe, but to bend it now to a different rule base – and the people that might disagree with that, now there are levers to be applied across the

DIME (Diplomatic, Information, Military and Economic), if you will, across each one of these countries that is now beholden in some way or the ability to be coerced on some way by that country (China) now moving into this region. We see signs of that: China is already on the record saying that they want to end the weapons embargo on Iran. .... That concerns me as a global partner, not just looking at my military challenges of the day – I’m not challenged by China in this region today, I am not – but what does this look like 10 years from now?” More immediately, Malloy said he is focused on “nefarious activities” from Iran in two categories: utilizing the maritime environment for these activities, such as weapons trafficking; and taking actions in the maritime to intimidate regional actors and merchant traffic, such as seizing tankers and putting mines in the water.

“I cannot sit idly and watch this creeping coercive activity at sea without setting a defensive posture that can respond to it, and making sure that everybody understands that my first mission is to be able to respond to those types of threats – deter them if I can – but if I cannot deter them, to respond very forcefully to them,” the vice admiral said. “I don’t worry about capability, because I know what capability we bring to bear, and it is substantial. It is a defensive shield and it is an offensive weapon behind that defensive shield, that there is no doubt in anyone’s mind how that would end.” Malloy drew a strong contrast between Iran’s activities and U.S. and coalition activities in the region over the last year or so: Iran conducted a mine attack on four ships at anchor in a harbor, attacked two ships sailing in the Gulf of Oman, shot down a U.S. drone flying in international air space, attempted to seize one tanker in the Persian Gulf and then successfully seized another shortly afterwards, and illegally shipped weapons to Yemen. On the other hand, the U.S. and its partners stood up Operation Sentinel to act as eyes and ears in the maritime domain and help keep merchant traffic safe, and held a massive International Maritime Exercise in the fall to rehearse defensive warfighting skills.

On Operation Sentinel, Malloy said there are now eight partners helping patrol the waters from the surface and from the air, and share information with other militaries and with merchant traffic. The coalition “is threat-based but it does not threaten. It provides a deterrence because there is a large body of evidence that says this activity, this state-sponsored activity, is driven by a desire to be clandestine, to obfuscate, to deny. If you watch the rhetoric that came out after the clearly mining activity that happened from Jask and from Chabahar (in Iran) to Fujairah (in the United Arab Emirates) and into the Gulf of Oman: we didn’t do it, nobody saw it, that type of thing. ... It is clear that one of the things that deters this type of activity is the ability to document, to be able to report this activity at sea. And so one of the lines of effort for us is the deterrent value that providing our sentries and our sentinels at sea, coordinated with each other, providing that surveillance capability, has acted as a deterrent to that activity since Sentinel has stood up.” Malloy noted that if Iran wasn’t doing anything illegal then it wouldn’t have any issue with the work Sentinel was conducting. “If you look at the mission that unites us, whether it be [the standing Combined Maritime Forces unit] or whether it be [the International Maritime Security Construct stood up last year], it’s not anti-this, anti-that, anti-anything. It is promoting maritime security, promoting the free flow of commerce, assuring the merchant fleets that we are out here patrolling and protecting that legitimate flow. There’s nothing anti about that. It’s not anti-Iran, it’s not anti- any country, because any country that

promotes that shouldn't have anything to worry about, with that positive vision for the region. And it is a common denominator that all of us can get onboard with."

In addition to the formal CMF and IMSC organizations, Malloy said dialogue is constant between like-minded partners in the area. Last summer, Malloy hosted a maritime security conference in Bahrain, where 5th Fleet is headquartered, with more than 30 heads of navy from regional partners to talk about maintaining maritime security. Just last week, he said, they held a similar meeting virtually to continue the ongoing effort to keep peace and security in the Middle Eastern waters. The meeting, Malloy said, "brought together many nations in common themes that all can agree to to balance out this nefarious one-off acting that we see on the other side. So speaking with the rule of law, speaking with the international community and a common joining element that way."

**Source:** [news.usni.org](https://news.usni.org); 23 July 2020

## THE UNCLOS ISN'T PERFECT, AND IT'S TIME WE ACKNOWLEDGE THAT

- Achin Vanaik

In the context of the recent China-India clashes, many Indian commentators sought to emphasise what they felt were the more general duplicities of China's strategic orientation by pointing to its unwarranted maritime claims and behaviour in the South China Sea. A few pointed out that the United Nations Convention on the Law of the Sea (UNCLOS) decisively ruled against some of these claims in favour of the Philippines and Vietnam. Fair enough, but interestingly, UNCLOS itself never receives any serious criticism from our realpolitikers when it certainly deserves this. It is important to understand not just its virtues but also its vices. This is what is attempted here. From the 18th to the mid-20th century, respect for the principle of 'freedom of the seas' meant that the stretch of coastal waters said to belong to a state was three nautical miles or 5.6 kilometres. This was the norm set by the imperialist powers of the time such as the US, Britain, France and others, and was based on the maximum distance a cannon shot could travel from an offshore threat. After the Second World War, economic ambitions led many countries to extend their sovereign claims to 12 nautical miles, which by the 1960s was widely accepted as the new norm.

Even before this though, there were greedy exceptions. The first culprit (no surprise) was the US which in 1945 under President Harry Truman unilaterally declared as its territory all the sea areas corresponding to its extended continental shelf which was at least, if not more than, 200 nautical miles (370 km). Within the next couple of years a few other countries such as Argentina, Chile, Peru and Ecuador similarly extended their sovereign claims over sea waters, seabed and subsoil.

In the post-Second World War era, with decolonisation putting an end to older empire geographies and creating a huge number of new states thereby promoting much

greater national competition for the resources of the seas and oceans as well as more maritime traffic, the most important negotiations for establishing an international Law of the Sea began in 1973. By this time, 25 countries were adhering to the three nautical miles limit, 66 countries to 12 miles and eight countries to at least 200 miles. These negotiations lasted for nine years culminating in UNCLOS in 1982 which came into force in 1994 when the 60th country, Guyana, ratified it.

### **What UNCLOS does**

UNCLOS is almost universally lauded for laying down laws and rules whose wide acceptance it is believed has greatly reduced the number, frequency and potential for inter-state conflicts that would otherwise have taken place. There are now 167 member countries plus the European Union. But these gains have also come at an incalculable cost, now and in the future, which is simply not recognised let alone counted. But before we come to that let us see what it does.

- The 12-mile zone was legally sanctioned as the ‘territorial seas’ belonging to a specific coastal state but within which “innocent passage” of other ships including warships is allowed.
- Easily the single-most important new development ushered in by UNCLOS was the creation and legal sanctification of Exclusive Economic Zones (EEZs) of 200 nautical miles over which states have sovereign rights to explore and exploit in the seas, the seabed and subsoil.
- The area beyond the EEZs are demarcated as the “high seas” and said to be the “common heritage of humankind”. Here, the stipulated International Seabed Authority (ISA) finally came into existence in 1994 to regulate, organize and control through licences and contracts with companies and governments, all mining explorations to be followed later by actual operations in the international seabed.
- Key narrow straits crucial for shortening maritime routes have been given international status for “transit passage” but otherwise local coastal states have sovereign rights over them.
- It has established a dispute-settlement mechanism for member countries.

### **Problems and criticisms**

The biggest beneficiaries of the introduction of EEZs are those countries with a huge coastline (Russia, Australia) and big archipelago island states (Indonesia, Japan), but above all the three premier colonial and imperialist powers of the 18th, 19th and early 20th centuries, namely the UK, France and then the US which through force conquered huge landmasses as well as scattered islands and long island chains establishing white settler regimes by massacring at least 80% of the indigenous non-white population. Besides the US itself, these are Australia, New Zealand, Canada and Brazil. The UK and France continue to retain many island groups.

- According to UNCLOS, uninhabited islands are also entitled to 200-mile EEZs. In terms of overseas areas in their possession, the top ten in order are France (11.7 million square kilometres), the US (11.4 million sq km), Australia (8.5 million), Russia (7.5 million), UK (6.8 million), Indonesia (6.2 million), Canada (5.6 million), Japan (4.5 million), New Zealand (4.1 million) and Brazil (3.8 million). For the US, France and the UK, their overseas areas exceed that of their own landmasses.
- The US has accepted the legal limit of 200 miles but nevertheless, unlike China, is not a member of UNCLOS. Membership requires the assent of a two-thirds majority in both houses which Republicans have so far prevented as there are strong voices which oppose any constraints on the US. For example, it can currently ignore the ISA when it comes to international seabed exploration and mining for commercial purposes. Given UNCLOS's ruling against Chinese claims in the South China Sea, some American strategists feel US membership would materially strengthen the opposition to China pursuing its ambitions in this regard.
- New Zealand, with a population of around five million has 4.1 million sq km while China with a population of 1.3 billion has around 900,000 sq km. China's Nine-Dash-Line is a demarcation that claims island groupings and thus more of the South China seas. Incidentally, this claim precedes the emergence of Communist China and continues to be held also by the current Taiwan regime. But after 1982 UNCLOS, the stakes in terms of areas to be acquired became much higher than ever before. This would now add a further two million sq km to China if conceded, which is still well short of New Zealand's total. Of course the Nine-Dash-Line must not be accepted. But pointing the disparities between New Zealand and China is meant to highlight how the legacies of former colonial rule and aggrandisement continue to shape in highly iniquitous ways the current order; to which one can add the iniquity that has emerged from sanctioning the principle of EEZs themselves.
- The establishment of such EEZs was effectively the inauguration of a process of substantial privatisation-nationalisation to shrink what has been called the "global commons". As such, it is in keeping with the growing dominance of neoliberal capitalist thinking among the ruling classes of different nation-states even if the most powerful states and those aspiring to join the 'Big Boys Club' hold the biggest share of responsibility for having produced and endorsed this outcome. Before 1982 sovereign rights were over a 12-mile zone. After UNCLOS, some 36% of the world's waters (by surface area, not volume) have been excluded from the "common heritage of humankind".
- The current "high seas" cover 64% area wise and volume wise amount to over 90%. But the workings of ocean currents lead to huge concentrations of phytoplankton – the crucial base of the fisheries food

chain – being disproportionately deposited within EEZs so that 87 coastal states control over 95% of the world’s fisheries and because of over-fishing, replenishment rates are seriously threatened. The world high water mark for fish catch, never since repeated, was 90 million metric tonnes in 1989 with subsequent catches stagnant or declining. So much so, that at current rates it is estimated that that all the world’s fisheries can collapse by 2050 or even earlier as ocean acidification and habitat destruction are also taking their toll. Predatory fishing by the more powerful fishing companies of the richer and more prosperous states is a fact. Also 87% of known and estimated hydrocarbon reserves and many mineral deposits are to be found among EEZs.

- When EEZs overlap it is left to the two countries involved to sort matters out. The region of greatest tension among neighbouring countries caused by such overlaps, by economic ambitions, by political tensions and above all by the geopolitical face-off between the US and China (which includes military preparations) is the Asia Pacific.
  
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### **Summing up**

The engine that keeps capitalist development running is the constant pursuit of profit, which necessarily requires the constant pursuit of economic growth through cumulative exploitation of resources; and that too within a framework of multiple nation-states where the strongest and most powerful want to set the rules of international order and management as much as possible in their own favour.

The sane alternative, for example, in the Asia Pacific (and elsewhere) would be the setting up of a genuinely impartial regional body whose number one priority would be the protection of the oceanic environment; the imposition of the most severe limits on the exploitation of the wealth of the seas and oceans; widening the domain of the “common heritage of humankind” by retracting these EEZs; and organising the distribution of whatever level of resource extraction that is allowed in the “global commons”, in proportion to the respective population sizes of the countries concerned. Of course this is not going to happen. Instead, the process of privatising the seas via UNCLOS has been joined by the process of privatising the atmosphere through pollution permits and carbon trading. Outer Space in military and nuclear terms has for some time now already been privatised for the so-called security of some countries. We are not just going to cross the ‘two degree’ climate change barrier but are well on the way to racing beyond it, while other forms of grave ecological despoliation on land and on the seas are also guaranteed. Future generations will not forgive us for failing to sufficiently protect and preserve our global commons.

**Source:** [thewire.in](http://thewire.in); 27 July 2020

## **AUSTRALIA DECLARES 'THERE IS NO LEGAL BASIS' TO BEIJING'S CLAIMS IN SOUTH CHINA SEA**

The declaration, made in a submission to the United Nations on Thursday, comes after the United States hardened its position earlier this month, accusing Beijing of a “completely unlawful ... campaign of bullying” to control the sea. Australia’s shift in position comes as Australia’s foreign affairs minister, Marise Payne, and the defence minister, Linda Reynolds, prepare to travel to Washington next week to meet with the US secretary of state, Mike Pompeo, and the secretary of defence, Mark Esper, for the 2020 Australia-United States Ministerial Consultations (Ausmin). The declaration to the UN said: “Australia rejects China’s claim to ‘historic rights’ or ‘maritime rights and interests’ as established in the ‘long course of historical practice’ in the South China Sea.”

Australia's declaration mentioned the objections and complaints held by the Philippines, Vietnam and Malaysia in regards to Beijing's actions in the South China Sea, and "rejects" the validity of "land building activities" used to create artificial islands. The declaration said Australia does not accept China's claim of sovereignty over the Paracel Islands and Spratly Islands, after Australian warships encountered China's navy near the Spratly Islands earlier this month when taking part in drills with Japan and the United States in the Philippine Sea. It notes "the Tribunal in the 2016 South China Sea Arbitral Award found these claims to be inconsistent with UNCLOS (United Nations Convention on the Law of the Sea) and, to the extent of that inconsistency, invalid".

"There is no legal basis for China to draw straight baselines connecting the outermost points of maritime features or 'island groups' in the South China Sea, including around the 'Four Sha' or 'continental' or 'outlying' archipelagos," it said. "Australia rejects any claims to internal waters, territorial sea, exclusive economic zone and continental shelf based on such straight baselines. "Australia also rejects China's claims to maritime zones generated by submerged features, or low-tide elevations in a manner inconsistent with UNCLOS. Land building activities or other forms of artificial transformation cannot change the classification of a feature under UNCLOS ... the Australian government does not accept that artificially transformed features can ever acquire the status of an island." Earlier on Saturday, Payne and Reynolds said "discussions at Ausmin 2020 will centre on our shared efforts towards a stable, resilient, open, secure and prosperous Indo-Pacific, particularly in the context of the impact of Covid-19".

"Our relationship is built on our shared values, and a shared understanding of the importance of maintaining presence and leadership in our region. "In the face of an increasingly complex and contested regional environment, it is vital we continue working together across the breadth of our relationship." The joint statement also reiterated that "the United States remains by far Australia's largest source of foreign investment". The ministers also wrote an opinion piece in Saturday's the Australian newspaper noting "coercive actions in the South China Sea, such as the escalation of disputes and militarisation of disputed features, continue to create tensions that destabilises the region". The opposition leader, Anthony Albanese, said Australia needed to defend the "national interest" when asked about the change in position on Saturday morning. "We also need to stand up for international law," he said. "And the international law of the sea provides for freedom of navigation which is absolutely critical to international trade."

Tensions between Australia and China escalated earlier this year as Canberra pushed for an inquiry into Beijing's initial handling of the Covid-19 outbreak, with Australia's trade minister, Simon Birmingham, complaining his Chinese counterpart would not answer his calls in May. Since then, China has issued a warning to its citizens, and lucrative international student market, not to travel to Australia out of fears of racism. In June, Chinese foreign ministry spokesman Zhao Lijian accused Australia of mass espionage and of "stoking confrontation". Rising tensions have prompted Australian business leaders, who are worried further hostilities could damage exports to China, to call for a "separation of powers" between Australia's foreign relations and trade ties.

**Source:** [azvision.az](http://azvision.az); 25 July 2020

## UK AND US SAY RUSSIA FIRED A SATELLITE WEAPON IN SPACE

- Jonathan Marcus

The US State Department described the recent use of "what would appear to be actual in-orbit anti-satellite weaponry" as concerning. Russia's defence ministry earlier said it was using new technology to perform checks on Russian space equipment. The US has previously raised concerns about new Russian satellite activity. But it is the first time the UK has made accusations about Russian test-firing in space. They come just days after an inquiry said the UK government "badly underestimated" the threat posed by Russia. In a statement on Thursday, US Assistant Secretary of State for International Security and Non-proliferation, Christopher Ford, accused Moscow of hypocrisy after it said it wanted arms control to be extended to space. "Moscow aims to restrict the capabilities of the United States while clearly having no intention of halting its own counter-space programme," he said.

This Russian test of what the Americans say is an anti-satellite weapon is part of a pattern of recent Russian space activity. In February, the US military said that two Russian satellites manoeuvred close to an American one, and in April Moscow test-fired a ground-based satellite interceptor. Only four countries - Russia, the US, China and India - have demonstrated an anti-satellite capability over the past decades. Anti-satellite warheads have been carried aloft by aircraft or rockets, and satellites have also been illuminated by lasers. But Moscow is also clearly looking at using one satellite to kill another. Interest in such weapons is growing given our reliance upon satellites for a variety of purposes such as intelligence gathering, communications, navigation and early-warning. There is no treaty banning or limiting such weapons though a number of countries have argued for some kind of agreement to do just this. But in military terms, space has already become the new frontier with several countries organising specific commands in their armed forces to deal with both the defensive and offensive aspects of protecting their essential space-based systems.

A test of a new Russian satellite took place on 15 July with the aim of performing checks on the country's space equipment, Russia's defence ministry said at the time. "During testing of the latest space technology, one of the domestic satellites was examined close up using the specialised equipment of small space craft," the ministry said, according to Interfax news agency. It added that "valuable information about the technical condition of the object under investigation" had been recorded.

**Source:** [bbc.com](http://bbc.com); 23 July 2020

# **SOUTH CHINA SEA: AUSTRALIAN WARSHIPS ENCOUNTER CHINESE NAVY IN DISPUTED WATERS**

- Daniel Hurst

Australian warships have encountered China's navy in the disputed South China Sea at a time of heightened diplomatic tensions between the two countries. The Australian government has played down the encounter – believed to have occurred last week – saying on Thursday that “all interactions with foreign warships throughout the deployment were conducted in a safe and professional manner”. The ABC first reported that Australian warships had encountered the Chinese navy during a voyage that included travel close to the Spratly Islands, although it was believed the Australian ships did not go within 12 nautical miles of the contested islands. A defence spokesperson confirmed that five Australian warships – HMAS Canberra, Hobart, Stuart, Arunta and Sirius – “transited the South China Sea independently” from 14-18 July, including near the Spratly Islands. They were bound for Hawaii to join a US-led military exercise known as Rimpac. The spokesperson said all interactions with foreign warships were handled safely and professionally “as we would expect in response to vessels operating in international waters in accordance with international law”.

There were “routine and professional naval communications” and “no confrontation”, the spokesperson added. News of the encounter comes after the Trump administration toughened up its position against China's maritime claims in the South China Sea, prompting Beijing to label the US a “troublemaker” that was making “completely unjustified” claims that China was bullying smaller countries in the region. Diplomatic tensions between China and Australia have also been rising, driven by a dispute over Canberra's call for a Covid-19 inquiry, along with Beijing's imposition of tariffs on Australian barley and the disagreement over the new national security law in Hong Kong. The five Australian warships left Darwin on 5 July and have been taking part in drills with Japan and the United States in the Philippine Sea this week before heading to Hawaii for Rimpac. Defence says the ADF vessels joined the USS Ronald Reagan Carrier Strike Group, which included the United States Navy's guided-missile cruiser USS Antietam and guided-missile destroyer USS Mustin, and Japan's Akizuki-class destroyer JS Teruzuki for joint activities in the Philippine Sea this week. This week's joint activities have included replenishment at sea, aviation operations, maritime manoeuvres and communications drills, according to a defence statement issued on Tuesday. Captain Sakano Yusuke, commander of Japan's Escort Division 4, said this week's exercise would give the three countries “tactical and operational advantages and make our friendships stronger, in addition to our regular joint exercises with both like-minded navies”.

US Navy Captain Russ Caldwell, commanding officer USS Antietam, said the US was “fortunate to routinely operate alongside its allies across the Indo-Pacific and coordinated operations like these reinforce our mutual commitment to international maritime norms and promoting regional stability”. Australia's defence strategy

update, released earlier this month, warned that the Covid-19 pandemic was sharpening aspects of competition between the US and China – and the Australian defence minister, Linda Reynolds, accused Beijing of taking some actions that had “unsettled the stability of our region”.

Mike Pompeo, the US secretary of state, said last week that the world would “not allow Beijing to treat the South China Sea as its maritime empire” and that the US would “stand with the international community in defence of freedom of the seas and respect for sovereignty” in the region. When asked last week about the implications for Australia, a defence spokesperson told Guardian Australia that ADF vessels and aircraft would “maintain our presence in the South China Sea and continue to exercise rights under international law, in accordance with our national interests” – but would not comment on future operations. Scott Morrison, the prime minister, also said Australia would “continue to adopt a very supportive position of freedom of navigation in the South China Sea”. On Wednesday it was revealed that an Australian defence contractor was listed among a range of victims of an alleged hacking operation by two Chinese nationals, according to an indictment unsealed by the US – prompting the Australian government to say it was concerned by the alleged intrusions and urging “all countries” not to breach their international commitments. A spokesperson for China’s foreign ministry later accused the US of “slandering China under the pretext of cyber security” and said it was actually America that had been “conducting cyber thefts of the largest scale around the world”.

**Source:** [theguardian.com](https://www.theguardian.com); 23 July 2020

# MARITIME FORCES

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## LARGEST SOLAR POWER PLANT OF INDIAN NAVY COMMISSIONED IN EZHIMALA

- Devanshu Kaushik

Largest Solar Power Plant at Indian Naval Academy, Ezhimala has been commissioned by the Vice Admiral Anil Kumar Chawla. It is a 3 MW Solar Power Plant which has been set-up in line with the Indian Government's initiative of 'National Solar Mission' which aims to achieve 100GW of solar power by 2022. The 3 MW Solar Power Plant established at Indian Naval Academy, Ezhimala is the largest in the Indian Navy and has an estimated life of 25 years. Kerala State Electronics Development Corporation Ltd (KELTRON) has executed the this project. The project will also support Naval Station Ezhimala in decreasing the carbon foot print.

**Source:** [currentaffairs.adda247.com](http://currentaffairs.adda247.com); 23 July 2020

## INDIA CHINA ROW: P-8I AIRCRAFT DEPLOYED IN LADAKH; MiG-29KS TO BE MOVED

The Indian Navy's Poseidon 8I anti-submarine warfare aircraft have been deployed in eastern Ladakh to carry out surveillance along the Line of Actual Control (LAC) and some of its MiG-29K jets are likely to be stationed in key IAF bases in the northern sector amid the border row with China, sources said on Tuesday. The sources said the military brass is considering deploying Indian Navy's MiG-29K fighter jets in a couple of air bases in the northern sector as part of efforts to bring in tri-services synergy in dealing with national security challenges. The maritime fighter jets will complement the Indian Air Force's (IAF) efforts to significantly boost deep strikes and air dominance capabilities, they said

At present, the Navy has a fleet of around 40 MiG-29K jets and at least 18 of them are deployed on board the country's aircraft carrier INS Vikramaditya. The IAF has already positioned almost all its frontline fighter jets like Sukhoi 30 MKI, Jaguar and Mirage 2000 aircraft in the key frontier air bases in eastern Ladakh and elsewhere along the LAC, a move that came against the backdrop of the border row with China. Diplomatic and military talks between China and India are continuing for complete disengagement of troops from a number of friction points in eastern Ladakh.

The IAF has been carrying out night time combat air patrols over the eastern Ladakh region in the last few weeks as part of its preparedness to deal with any eventualities in the mountainous region. By the second half of August, the IAF is planning to deploy

five Rafale fighter jets in the Ladakh sector which are expected to significantly enhance its combat capabilities. India is scheduled to receive the first batch of five Rafale jets on July 27. As part of its high-level of alertness, the IAF has also deployed Apache attack choppers as well as Chinook heavy-lift helicopters to transport troops to various forward locations in eastern Ladakh. The sources said Poseidon 8I aircraft of the Navy has been deployed for monitoring the movement of Chinese troops in eastern Ladakh. The long-range anti-submarine and reconnaissance aircraft was deployed in Doklam along the Sikkim border too during the 73-day standoff between Indian and Chinese troops in 2017. The P-8Is were also deployed to keep an eye on the movement of Pakistani troops after the Pulwama terror attack last year. In the midst of the border row with China, the Indian Navy on Monday and Tuesday carried out a military drill with a US Navy carrier strike group led by the nuclear-powered aircraft carrier USS Nimitz off the coast of Andaman and Nicobar Islands.

Four frontline warships of the Indian Navy participated in the "PASSEX" exercise when the US carrier strike group was transiting through the Indian Ocean Region (IOR) on its way from the South China Sea, officials said. The USS Nimitz is the world's largest warship and the exercise between the two navies assumed significance as it took place in the midst of China's renewed military assertiveness in eastern Ladakh as well as in South China Sea. The US Navy carrier strike Group comprises USS Nimitz, Ticonderoga-class guided-missile cruiser USS Princeton and Arleigh Burke-class guided missile destroyers USS Sterett and USS Ralph Johnson, the officials said. India carried out similar exercises with the Japanese navy last month. The Indian Navy has increased its surveillance missions and beefed up operational deployment in the IOR in the wake of the bitter border standoff with China in eastern Ladakh. The Indian Navy is also ramping up its operational cooperation with various friendly naval forces like the US Navy and Japan Maritime Self Defense Force in view of the fast-evolving regional security landscape, the officials said. Navies from the US, India, Australia, Japan and France have been deepening their mutual cooperation in the IOR in view of China's growing attempt to expand military influence in the resource rich region. Following escalation in tension between India and China in eastern Ladakh, the government put all the three forces on high alert. The Indian Navy was asked to raise its alert-level in the IOR where Chinese Navy has been making regular forays.

**Source:** [business-standard.com](https://www.business-standard.com); 21 July 2020

## **PUTIN SAYS RUSSIAN NAVY TO GET HYPERSONIC NUCLEAR STRIKE WEAPONS**

- Andrew Osborn

MOSCOW (Reuters) - Russian President Vladimir Putin said on Sunday the Russian Navy would be armed with hypersonic nuclear strike weapons and underwater nuclear drones, which the defence ministry said were in their final phase of testing. Putin, who says he does not want an arms race, has often spoken of a new generation of Russian

nuclear weapons that he says are unequalled and can hit almost anywhere in the world. Some Western experts have questioned how advanced they are. The weapons, some of which have yet to be deployed, include the Poseidon underwater nuclear drone, designed to be carried by submarines, and the Tsirkon (Zircon) hypersonic cruise missile, which can be deployed on surface ships.

The combination of speed, manoeuvrability and altitude of hypersonic missiles, capable of travelling at more than five times the speed of sound, makes them difficult to track and intercept. Speaking in St Petersburg at an annual naval parade that showcases Russia's best ships, nuclear submarines and naval aviation, Putin said the navy's capabilities were growing and it would get 40 new vessels this year. He did not specify when it would receive new hypersonic weapons, but suggested that day was drawing closer. "The widespread deployment of advanced digital technologies that have no equals in the world, including hypersonic strike systems and underwater drones, will give the fleet unique advantages and increased combat capabilities," Putin said. In a separate statement released via Russian news agencies, the defence ministry said testing of the Belgorod, the first submarine capable of carrying the Poseidon drones, was underway and testing of the weapons systems was nearing completion. "Work is being successfully completed to create modern weapons systems for the Navy," it was cited as saying. Putin last year threatened to deploy hypersonic missiles on ships and submarines that could lurk outside U.S. territorial waters if the United States moved to deploy intermediate-range nuclear weapons in Europe. Washington has not deployed such missiles in Europe, but Moscow is worried it might.

**Source:** [usnews.com](https://www.usnews.com); 26 July 2020

## **US EASES EXPORT RESTRICTIONS ON UNMANNED DRONES, NEW DELHI TO BENEFIT**

Shishir Gupta

President Donald Trump's order on updated export restrictions on unmanned aerial vehicles (UAV), with the new speed limit of 800 kmph, will not only help its allies in the Middle-East facing the brunt of Chinese armed drones in Libyan theatre but will also help India acquire proven Predator-B armed and Global Hawk surveillance drones from the US. Both the top of line drones have speeds less than 800 kmph. A statement issued by White House said, "The President has decided to invoke our national discretion to treat a carefully selected subset of missile technology control regime category I unmanned aerial systems (UAS), which cannot travel faster than 800 kmph as category II... This will increase our national security by improving the capabilities of our partners and increase our economic security by opening the expanding UAV market." This policy change means that the UAVs under 800 kmph will no longer be subjected to the "strong presumption of denial" of the MTCR".

While the US defence contractors were restricted by the Missile Technology Control Regime (MTCR) UAS clause, the Chinese have been supplying Wing Loong armed drones to Pakistan and for use in the Yemen and Libyan civil war. According to intelligence reports, China has already supplied four Wing Loong armed drones to Pakistan for protection of the CPEC and Gwadar port. The drone, which has a limited track record, carries more than 1,000 kilograms of bombs or air-to-surface missiles. Neither China nor Pakistan are members of the MTCR, hence there is no restriction on Beijing to export these systems to Islamabad. It is the introduction of Wing Loong into the Indian sub-continent which has prompted India to relook the acquisition of Predator-B drone, proven in Afghan and Iraq theatre, for the Indian military. The Predator-B is the armed version of Guardian drone, twenty-two of which have been approved for sale to India by the Trump administration. Predator B can carry four Hell-fire missiles and two 500-pound laser-guided bombs.

By tweaking the MTCR rules for UAS, President Trump has opened doors for India to acquire the armed drones as well as systems to counter them. The armed drones will also be available to US allies like Saudi Arabia, UAE and Egypt who have acquired the Chinese armed drones. As the cost of a Predator-B drone is no less than a fighter aircraft, the Indian Air Force may have to reduce its limit of manned fighters to create squadrons of armed drones within the present Cabinet sanction of 42 squadrons.

**Source:** [hindustantimes.com](http://hindustantimes.com); 25 July 2020

## **THE BARBARIANS IN THE BAY: RUSSIA'S NUCLEAR ARMED DRONE SUBMARINE**

- Mark B. Schneider

In September 2015, Bill Gertz reported that Russia was developing a massively destructive nuclear-armed, nuclear-powered, high-speed, deep-diving drone submarine called the Canyon. In November 2015, the existence of the “Maritime Multifunctional System Status-6,” a nuclear-armed, 10,000-km range, very fast drone submarine capable of operating at a depth of 1,000-meters was widely reported in the Russian press. (The system is now called Poseidon by Russia and, often, Canyon in the West.) The source for this report was a Russian Presidential briefing slide, which was alleged to have been inadvertently videotaped by the Russian state media at the start of a Kremlin meeting with President Putin. It received a lot of publicity on Russian state television and, for a while, it was present on the Kremlin website. The Kremlin actually confirmed the story, which suggests the leak was intentional. It has also been suggested that a leak was perceived as means “to amplify its [Status-6] intimidating effects...”

Noted Russian journalist Pavel Felgenhauer warned that Status-6 “may further embolden the Kremlin to push for a new world order of its liking by intimidating the United States and its allies.” The Washington Post editorialized that Russia’s underwater nuclear drone “should raise alarm bells.” The Post is certainly correct

about the implications of this weapon, but it is not, as the Post characterized it, a “tactical nuclear weapon.” Nor is it a torpedo but rather a drone submarine. The best description of it is an arms control concept included in the START and New START Treaties – a “new kind of strategic offensive arm.” It is probably the most destructive weapon in human history. Its use would cause massive loss of life and cause grave global environmental effects. As Chief arms control negotiator Ambassador Marshall Billingslea said, the Poseidon is a “terrible” weapon and should be banned.

Status-6 (Poseidon) is designed to kill civilians by massive blast and fallout. The leaked Kremlin briefing slide stated the weapon was aimed at, “Damaging the important components of the adversary’s economy in a coastal area and inflicting unacceptable damage to a country’s territory by creating areas of wide radioactive contamination that would be unsuitable for military, economic, or other activity for long periods of time.” According to a 1995 legal paper drafted by the Department of State’s legal office, “The law of armed conflict precludes making civilians the object of attack as such.” Poseidon cannot be used consistent with international law because it is designed to kill civilians by the millions through a massive nuclear blast and an extremely high level of radioactive fallout. It reportedly can also be used as a generator for radioactive tidal waves, but it is unclear that tidal waves would be significant compared to blast and fallout. While far less dangerous than the Russian nuclear-powered cruise missile, testing it is still risky because a test failure could create a small Chernobyl. The early Russian press reports said the Poseidon had a yield of 100 megatons. Pavel Felgenhauer stated, “The plan is to deliver a 100-megaton nuclear bomb to the U.S. shores.” The Russian government daily *Rossiyskaya Gazeta* said that the weapon could achieve “extensive radioactive contamination” and the weapon “could envisage using the so-called cobalt bomb, a nuclear weapon designed to produce enhanced amounts of radioactive fallout compared to a regular atomic warhead.” A cobalt bomb is a “doomsday” weapons concept conceived during the Cold War, but apparently never actually developed. It intensifies the duration of deadly radioactive fallout. Since the leak, Russia has been attempting to “civilize” the Poseidon. TASS claimed that the Poseidon could carry a “nuclear warhead with a capacity of up to 2 megatonnes to destroy enemy naval bases...” A yield of two megatons is much too low for a weapon of this size and attacking naval bases is not the likely mission. Before one accepts the TASS’s two megaton number, it would be useful to get on the internet and find out about the yields associated with even the 1950s large nuclear weapons, which used technology that would be considered primitive today.

In 2018, talking about the Poseidon (not yet named), President Putin claimed the drone submarine would carry “massive nuclear ordnance” but also said, “Unmanned underwater vehicles can carry either conventional or nuclear warheads, which enables them to engage various targets, including aircraft groups, coastal fortifications and infrastructure.” It is certainly possible to load Poseidon’s massive weapons compartment with conventional explosives, but that will not make it a conventional weapon. The explosive would destroy the nuclear reactor creating a very lethal dirty bomb. The idea of destroying aircraft with an underwater nuclear detonation is nonsensical. Moreover, today, coastal fortifications do not exist. The reported 100 megaton yield appears possible. It may be a rounded-up number. Certainly, based on the early U.S. very large thermonuclear weapons and the reported yield of Russian large single warhead missiles, a yield of tens of megatons is an easy goal for such a

large design. The nuclear warhead the drone submarine carries is enormous. Based on the line drawing of Status-6 in the leaked Kremlin briefing slide, Russian analysts concluded that the nuclear warhead is 1.6 meters in diameter and 6.5 meters long. This is not big enough to fit the Soviet hundred megaton bomb tested at half yield in 1961 (apparently never fielded), the JOE-111 (proudly displayed in Moscow today). It reportedly took only 14 weeks to develop. Detonation of a single 100 megaton bomb "...would have increased the world's total fission fallout since the invention of the atomic bomb by 25%."

The Soviet Union apparently continued developing extremely high-yield thermonuclear warheads long after this practice ended in the U.S. and the UK. The Committee on the President Danger said that the 1960s Russian SS-9 heavy ICBM had an 18-25 megaton warhead. In the 1970s, the Russians developed and deployed a number of very high yield single warhead strategic nuclear missiles. The SS-17 Mod 2 reportedly carried a 5 megaton warhead. The SS-19 Mod 2 also reportedly carried a 5 megaton warhead. According to the Federation of American Scientists, the SS-18 Mod 1 and the SS-18 Mod 3 carried a single warhead with a yield of 18-25 megatons and 24-25 megatons, respectively. The SS-18 Mod 6 reportedly carried a 20 megaton warhead. Colonel (ret.) Houston Hawkins of the Los Alamos National Laboratory reports the SS-18 carries the "8F675 Mod2 20 MT warhead" and also "the (8F021 2) 5 MT warhead." The warheads for these ICBMs are substantially smaller than the depicted warhead section for Status-6 in the Kremlin briefing slide. Current Russian nuclear weapons technology is obviously far superior to what the Soviet Union had in 1961. Hence, 100 megatons or something close to it appears possible. One hundred megatons, or even the 5-10 megatons initially reported by Bill Gertz, is vastly in excess of what is required to destroy a port facility and would cause enormous collateral damage. A 100 megaton bomb detonated in a harbor would destroy all or nearly all of a large city. The following describes the effects of the 1961 Soviet 50 megaton detonation: "All buildings in Severny (both wooden and brick), at a distance of 55 km, were completely destroyed. In districts, hundreds of kilometers from ground zero, wooden houses were destroyed, and stone ones lost their roofs, windows and doors; and radio communications were interrupted for almost one hour." This appears to be somewhat exaggerated, but the 55-km number seems credible. Moreover, this weapon was apparently not an intentional fallout generator like Poseidon.

In a nuclear weapon designed for very high yield and to maximize fallout casualties, the fallout potential is roughly proportional to yield. There is simply no way to limit collateral damage from a very high yield weapon detonated in a harbor. The 1954 U.S. Castle Bravo 15 megaton hydrogen bomb test created a band of fallout that was 170 miles long and 35 miles wide with sufficient strength to threaten people's lives exposed to the fallout in a period of 96 hours after the blast. Radiation sickness is hardly a pleasant way to die. Because of Poseidon's nature, it cannot be air burst in a manner that minimizes or eliminates fallout. Deadly and dangerous fallout would travel hundreds of miles downwind.

The Kremlin briefing slide says that Project 09852 (Oscar class) or Project 09851 (the new Khabarovsk design) submarines can carry 4 and 3-6 Status-6, respectively. (Two Poseidon carrier submarines now exist). TASS says that Russia plans to deploy 32 Poseidon (up to eight per submarine) on four submarines. Thus, if the yield is 100

megatons, each submarine would unleash up to 800 megatons. To put this in perspective, in Congressional testimony, Dr. John Harvey, Principal Deputy Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Program during the Obama administration's 2010 Nuclear Posture Review, said that the review concluded that the U.S. needed "about 1850 'real' deployed [strategic nuclear] warheads." According to Ambassador Ron Lehman (former Assistant Secretary of Defense, Chief START Treaty negotiator and Director of the Arms Control and Disarmament Agency), the average yield of U.S. nuclear warheads in 1994 was .216 megaton. Since then, the average yield certainly has not increased since no new weapons have been added to the U.S. nuclear arsenal. A force of 1,850 deployed nuclear warheads with an average of .216 megaton yield would total slightly less than 400 megatons. If there is a need for any more evidence of the fundamental difference between U.S. and Russian views concerning nuclear weapons, Poseidon certainly provides it. As Admiral (ret.) Richard Meese, former Commander of the U.S. Strategic Command, has written, our military doctrine is designed to "hold at risk our potential adversaries' military forces, war-supporting industry, command and control capabilities, and military and national civilian leadership while minimizing to the maximum extent possible collateral damage to population and civilian infrastructure." As a matter of policy, the U.S. has long avoided the targeting of cities. As early as 1974, U.S. policy was shifting toward "avoiding targets near cities and to minimizing civilian casualties through yield selection." The Obama administration's 2013 unclassified "Report on Nuclear Employment Strategy of the United States..." stated, "The new guidance makes clear that all plans must also be consistent with the fundamental principles of the Law of Armed Conflict. Accordingly, plans will, for example, apply the principles of distinction and proportionality and seek to minimize collateral damage to civilian populations and civilian objects."

Why are the Russian developing such a heinous weapon? Poseidon's cost must be great. Ordinary Russian submarines and most Russian naval vessels can carry nuclear-armed cruise missiles. In 2005, a Russian Defense Ministry publication stated, "The main strike force of the Navy consists of nuclear-powered submarines, armed with ballistic and cruise missiles with nuclear warheads." In December 2015, President Putin revealed that new Russian Kalibr long-range ship-launched cruise missile, which is now being widely deployed, can carry "special nuclear warheads." Deploying more of them would obviously be a lot cheaper than developing and producing Poseidon. Moreover, nuclear cruise missiles are in no way limited by the New START Treaty. The reason for Poseidon lies in Russia's nuclear strategy. As a December 2012 U.S. National Intelligence report stated, "Nuclear ambitions in the U.S. and Russia over the last 20 years have evolved in opposite directions. Reducing the role of nuclear weapons in U.S. security strategy is a U.S. objective, while Russia is pursuing new concepts and capabilities for expanding the role of nuclear weapons in its security strategy." This fundamental difference is illustrated by one member of the Russian Duma who recommended, "...simply snap at the United States with all 10,000 nuclear teeth in the Cheshire cat's smile. It's frightening, but the idea is very good." Putin's version is a little more subtle. He says he does not want to be seen as insane, so he deploys "...an iron fist in a velvet glove. This is about our style, I think." Russian leaders frequently make nuclear threats, including President Putin. Russia's large strategic nuclear exercises reportedly end in a massive nuclear strike.

Russian nuclear strategy is based on the belief that if Russia uses nuclear weapons first, it will win because its adversaries will not retaliate. Pavel Felgenhauer reported in 1999 that under the new Russian thinking about nuclear weapons first use, “It is assumed that a ‘precision strike’ of this kind will not result [in an] immediate nuclear war.” What better weapon to deter a nuclear response to a small Russian low-yield nuclear strike than a terror weapon like Poseidon? Poseidon is clearly linked to the massive nuclear strike aspect of Russia's nuclear doctrine, as evidenced by their reported practice of massive nuclear strikes in their large strategic nuclear exercises. In a major strategic exercise conducted in 2010, Russia reportedly simulated hundreds of missile launches, and, “Throughout the world, the mushroom clouds rose skyward.” In March 2014, early in the Ukraine crisis, the Russian Strategic Missile Troops conducted a nuclear exercise which reportedly involved a “massive” nuclear strike. In May 2014, Russia held a large strategic nuclear exercise, presided over by President Putin, which ended in what the Russian Defense Ministry called a “massive” Russian nuclear missile launch. The October 2019 Russian large strategic exercise had the involvement of at least 250 Russian delivery vehicles and, according to Felgenhauer, Russia simulated the launch of almost all the Russian ICBM force. Poseidon fits well into a military strategy that relies on massive global nuclear strikes if small scale attacks fail.

In July 2020, Lieutenant Commander Joshua M. M. Portzer wrote, “The U.S. Navy should find this weapon horrifying. Naval Station Norfolk is the world’s largest naval base and houses approximately 75 ships and 130 aircraft. A single Kanyon detonation at Norfolk could wipe out half of the United States’ aircraft carriers and roughly a third of the surface Navy without warning. A coordinated attack against both Norfolk and San Diego ports would catastrophically cripple the Navy.” This is certainly true, but this is not a likely use of Poseidon. The reason is that just about any Russian strategic or non-strategic high yield nuclear warhead can do the same thing. While 100-knots is incredibly fast by the standards of submarines and surface ships, it would take the Poseidon 40 hours or more to get to a U.S. target from likely bastion areas for Russian strategic submarines which are close to Russia. Even a Russian subsonic cruise missile is many times faster than the Poseidon. Russian hypersonic missiles are the most likely weapon against time urgent targets as they are fielded. If its noisy, as reported, use of Poseidon in a first strike would be foolish. Poseidon is a strategic rather than a tactical nuclear weapon. Calling it a “torpedo” is also a mischaracterization. It is a nuclear-powered drone submarine whose extreme range, speed and depth gives it tactical advantages. It is not, as has been recently suggested, a weapon against at- sea aircraft carriers. It is not likely to be launched at short-range against carriers because the tactical advantage would be lost and the relative noisiness of the carrier submarine could be a critical factor. At short- or medium-range, the ordinary Russian nuclear torpedoes, anti-ship cruise missiles or the new soon-to-be deployed hypersonic weapons would be better. Moreover, the Russians reportedly have much faster short-range nuclear torpedoes.

If the Russians launch from extremely long ranges and the Poseidon operates at a depth of 1,000 meters, it is unlikely the Russians will be able to communicate with it to give it updated targeting information. There is no indication in the Kremlin briefing slide that it carries a sonar, particularly one with sufficient range to find a carrier strike group. The role of Poseidon appears to be to terrorize the U.S. and NATO into not

responding to the initial Russian low-yield nuclear attack after the seizure of bordering NATO territory. Under its “escalate to de-escalate” or “escalate to win” nuclear doctrine, Russia is going to use nuclear weapons first. Deterrence and defense are necessary. A new generation of weapons is probably necessary to destroy the Poseidon. At a minimum, deterring genocidal nuclear attacks against our major port cities is a critical equity. There is no nice way of deterring genocide. In deterring use of a weapon like Poseidon, a kinder and gentler nuclear strategy won’t cut it. The Russians should be warned that such attacks on American cities will result in retaliation against Russian cities. We need to deter the entire threat spectrum. In addition, at the end of the Cold War, the idea of a strategic nuclear reserve force evaporated. It should be revived.

**Source:** [realcelardefense.com](http://realcelardefense.com); 25 July 2020

## **RUSSIAN NAVY ACCEPTS NEWEST PROJECT 22350 FRIGATE ADMIRAL KASATONOV**

The Russian Navy has accepted its newest Admiral Gorshkov class of Project 22350 frigate, Admiral Kasatonov. According to the Ministry of Defence of the Russian Federation, the ship’s receiving ceremony and the St Andrew’s flag raising was held on the Neva roadstead. Frigate Admiral Kasatonov is scheduled to participate in the Main Naval Parade. Russian Navy commander-in-chief admiral Nikolay Evmenov said: “The frigate Admiral Kasatonov, which successfully completed the state tests, was accepted into the navy on the Neva roadstead, on the traverse of the Senate Square. “The navy has been replenished with another ship that can effectively solve the tasks set in the far sea and ocean zones.” The new frigates feature stealth capabilities and carry high-precision weapons. They are being built by Severnaya Verf (United Shipbuilding Corporation).

With a displacement capacity of 5,000t, the 135m-long and 16m-wide vessels can cruise at speeds of about 30k. The ships can accommodate around 200 people. Sorry, there are no polls available at the moment. The first frigate, Admiral Sergei Gorshkov, joined service in November 2013. The third and the fourth ships, Admiral Golovko and Admiral Isakov, are anticipated to join the navy within the next two years. In May this year, the Russian Navy accepted delivery of the strategic ballistic missile carrier submarine Knyaz Vladimir from the Sevmash shipyard. Laid down at Sevmash in 2012, the vessel delivered is the improved Borei-A class project of the fourth-generation nuclear submarines.

**Source:** [naval-technology.com](http://naval-technology.com); 22 July 2020

## **AIP SUBMARINES WILL INCREASE THE LETHALITY OF THE INDIAN NAVY**

- H I Sutton

Unlike its potential adversaries China and Pakistan, India has yet to adopt Air Independent Power (AIP) for its submarines. Also known as Air Independent Propulsion, this technology allows a non-nuclear submarine to operate for longer without having to surface. This makes it harder to detect and allows it to patrol in high-risk areas for longer. But AIP is coming to Indian submarines. The current Kalvari class boats are expected to receive an Indian-made system. This should greatly increase the potency of India's non-nuclear submarines. Indian engineers have been working on an indigenous AIP system. Engineering firm Larsen & Toubro has built and tested a prototype system that fits inside the Kalvari's hull. The company is also involved in India's indigenous nuclear-powered submarine. According to people familiar with the situation, the plan is for each of the Kalvari class submarines to be retrofitted with the indigenous AIP. This should happen six to seven years after commissioning. It would be mounted in a hull extension that is inserted between the crew area and the engine space. The locally designed system is expected to extend the endurance of the submarines by two weeks.

India will operate six of the Kalvari class, which are the newest non-nuclear submarines in the Indian fleet. They are a version of the French-designed Scorpène type submarines. In the French lineage these are a generation newer than the Agosta Class boats in service with neighboring Pakistan. Some of Pakistan's Agostas already have AIP, which for the moment may confer some advantages to them. Unlike the Indian subs, which will use fuel cells, the Pakistan Navy submarines use the MESMA (Module d'Energie Sous-Marine Autonome) system. This burns ethanol with stored oxygen to produce steam, which turns a turbine similar to a nuclear power plant. Pakistan is buying eight Type 093B submarines from China that will come with another type of AIP called a Stirling generator, which uses a closed-cycle diesel engine. These are essentially the same as China's own AIP submarines, 17 of which are believed to be in service. The Stirling generator is famous because of the Swedish Navy's use, and it is also the type used by Japan.

Submarine warfare expert Aaron Amick, author of the Sub Brief podcast, believes that AIP will give the Indian Navy strategy advantages over the current non-nuclear submarines. He says that it will "force their closest rival, Pakistan, to be more vigilant over a wider area. Improving their Scorpene submarines with AIP will balance India with Pakistan's new Type 093B Chinese subs that are due in 2023." In Amick's view AIP is "essential in the 21st century, open water battle space. Submarines only get one chance to attack from stealth and AIP gives them the best opportunity for success." The Indian project will take years to put in place. For some time Pakistan's AIP submarines will continue to out-number India's. But the indigenous fuel cell technology will allow India to increase the usefulness of their conventional submarines. Add to this India's nuclear-powered submarines and the Indian Navy should be able to retain a competitive edge. And India's next generation Project-75I

boats will get AIP from the get-go. The big unknown is whether China will establish an Indian Ocean submarine squadron. That could further complicate the picture.

**Source:** [forbes.com](https://www.forbes.com); 22 July 2020

## **STEALTH UAVS COULD GIVE CHINA'S TYPE-076 ASSAULT CARRIER MORE FIREPOWER**

- H I Sutton

The Chinese Navy is building assault carriers to support amphibious operations, like a possible invasion of Taiwan or landings on disputed islands in the South China Sea. The first two ships, called LHDs (landing helicopter docks) in naval terminology, are still being outfitted. But information is already emerging suggesting that the follow-on design, the Type-076, will have much more firepower.

The Chinese Navy, officially known as the People's Liberation Army Navy (PLAN), is still new to the assault carrier game. Their current LHDs, which have yet to enter service, are the Type-075. These feature a spacious flight deck and are generally equivalent to the U.S. Navy's America Class assault carrier. They can carry helicopters, including rotor-wing drones, and hovercraft. But it seems unlikely that they will host jet aircraft or UAVs (uncrewed air vehicles). Not so the Type-076. A document circulating on the Chinese internet appears to be a request for proposals for the next generation of assault carrier. While it cannot be verified, it does appear to reflect the direction of PLAN thinking. It indirectly lays out the specification for the ship in the form of a list of systems and features. If it is broadly correct, then the Type-076 will carry jet aircraft of some sort. We can infer this because a key new system will be an electromagnetic aircraft launch system, or EMALS, the 21st century equivalent to the steam catapult used for launching planes from aircraft carriers. A similar system is fitted to the U.S. Navy's Ford Class aircraft carriers. China's own next generation aircraft carrier is also reported to have EMALS, so China has a working knowledge of the technology. The U.S. Navy has reportedly suffered teething problems, however. We should not assume that China will face the same issues, but it is a brand new technology so there are development risks involved.

Having EMALS on an assault carrier could be a significant game changer for China. It would allow it to carry jet aircraft, such as fighters or large UAVs. UAVs with an offensive weapons load are term UCAVs (uncrewed combat air vehicles). These could greatly increase air support for landing operations. I asked B.A. Friedman, a military analyst focused on amphibious warfare and author of *On Tactics: A Theory of Victory in Battle*, what he thinks the implications of the EMALS would be. "There are no disadvantages to having jets on an LHD. But there trade-offs to the type of jets you can put on it. They need a lot of runway or they need to be VTOL [vertical take-off and landing], which itself has advantages and disadvantages. And jets tear up the deck plating faster than propeller aircraft."

The EMALs approach suggests that the aircraft would not be VTOL. But what the aircraft would be is open to speculation. China may be developing a fighter aircraft suitable for relatively small flight decks of the LHD. For context, many Western LHDs are slated to carry the F-35 Lightning-II strike fighter. The current J-11 version of the famous Flanker, used aboard Chinese aircraft carriers, is likely too large. But it may relate to a UCAV. These could benefit from being smaller than the equivalent crewed aircraft. The GJ-11 Sharp Sword is one design for a stealthy UCAV that China has been developing. Its payload is estimated to be around 4,400 lbs, which is at the lower end for warplanes. Another, the Flying Dragon-2, is expected to fly in 2021. This promises to still be light enough to operate from the Type-076's 30-plus ton capacity aircraft lifts, but lift some 13,227 lbs of weapons. Something like these would require a catapult to operate for an assault carrier.

Friedman is cautious about how quickly these new capabilities can be developed. Learning how to use regular assault carriers, let alone ones with UCAVs, could take years. Friedman says that it is not like they can ask, " 'How do you guys normally do this?' They have never done it. It could be years." All the same the PLAN is building its capabilities at an astonishing rate. No sooner have we become used to seeing the Type-075 LHD, which was seen as a massive step forward less than a year ago, and already we are on to the next generation. The possible RFP documents give us an inkling about what the Type-076 may be like, but until we see one we will still be guessing.

**Source:** [forbes.com](https://www.forbes.com); 23 July 2020

# SHIPPING, PORTS AND OCEAN ECONOMY

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## SATELLITES UNCOVER WIDESPREAD ILLEGAL FISHING IN PACIFIC OCEAN

- Mike Wall

Satellite imagery has dragged "dark" fishing fleets out into the light. Orbital observations have revealed extensive illegal fishing of Pacific flying squid (*Todarodes pacificus*) in the Pacific Ocean around Russia, Japan and North and South Korea in 2017 and 2018, a new study reports. In fact, "extensive" may not be a strong enough word. More than 900 vessels of Chinese origin probably violated United Nations sanctions by fishing in North Korean waters in 2017, and another 700 did the same in 2018, the study found.

These scofflaw ships likely hauled in more than 176,000 tons (160,000 metric tons) of Pacific flying squid over those two years, a catch worth about US \$440 million, study team members said. That's nearly equivalent to the combined *T. pacificus* catch of Japan and South Korea over the same span. "The scale of the fleet involved in this illegal fishing is about one-third the size of China's entire distant-water fishing fleet," said study co-lead author Jaeyoon Park, a senior data scientist at Global Fishing Watch, an international nonprofit organization dedicated to increasing ocean sustainability via greater transparency. "It is the largest known case of illegal fishing perpetrated by vessels originating from one country operating in another nation's waters," Park said in a statement. Park and his colleagues tracked fishing activity in the Pacific around the Koreas, Japan and Russia, a big patch of poorly monitored ocean.

Many of the vessels plying these waters are dark, meaning they don't publicly broadcast their positions and don't show up in monitoring databases. So the researchers got a bird's-eye view, studying the region using four different types of satellite information. For example, the researchers pored through Automatic Identification System (AIS) data, which is designed to help ships keep tabs on traffic in their area and avoid collisions. AIS signals stream continuously from transponders on ships, and these signals are often detected via satellite. But many ships don't beam out AIS signals, and the ones operating illegally are very unlikely to do so. The team also looked at optical imagery gathered by Earth-observing satellites operated by San Francisco-based company Planet. The researchers analyzed wide-field photos captured by Planet's shoebox-sized Dove cubesats, as well as targeted imagery from larger, sharper-eyed SkySats. In addition, Park and his colleagues scrutinized data

from the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument aboard Suomi NPP, a satellite operated jointly by NASA and the U.S. National Oceanic and Atmospheric Administration. VIIRS can spot brightly lit ships at night, which makes it well suited to hunt squid boats; these vessels usually operate after dark, drawing squid up from the depths with huge banks of very bright lights.

The researchers also used synthetic-aperture radar (SAR) imagery to hunt for large metal vessels in the region. The team used SAR data from several different satellites: the European Space Agency's Sentinel-1, the Japanese Space Exploration Agency's PALSAR-2, and RADARSAT-2, which is operated by the company Kongsberg Satellite Services. Combining all of this information allowed the team to determine the extent of illegal fishing in the area — something that had never been done on this scale, team members said. "These novel insights are now possible thanks to advances in machine learning and the rapidly growing volume of high-resolution, high-frequency imagery that was unavailable even a couple of years ago," co-author David Kroodsma, Global Fishing Watch research and innovation director, said in the same statement. "We've shown we can track industrial fishing vessels that are not broadcasting their locations."

The new study, which was published online today (July 22) in the journal *Science Advances*, suggests that the illegal vessels pose a significant threat to the management of the *T. pacificus* fishery. That fishery is extremely valuable — *T. pacificus* is the top seafood by production value in South Korea, and one of the top five seafoods eaten in Japan — and it's on an unsustainable trajectory. Since 2003, reported catches of *T. pacificus* have dropped by 80% and 82% in South Korean and Japanese waters, respectively, study team members said. "Global fisheries have long been dominated by a culture of unnecessary confidentiality and concealment. Achieving a comprehensive view of fishing activity is an important step toward truly sustainable and cooperative fisheries management, and satellite monitoring is a key part of the solution," co-author Quentin Hanich, an associate professor at the Australian National Center for Ocean Resources and Security at the University of Wollongong, said in the same statement.

"This analysis represents the beginning of a new era in ocean management and transparency," Hanich added. The team also determined that about 3,000 North Korean ships fished illegally in Russian waters in 2018, likely pushed so far afield by competition with the illegal Chinese vessels in their own backyard. Most of the North Korean boats are small and made of wood, and therefore not designed for such long open-ocean voyages. Indeed, hundreds of North Korean fishing vessels have washed up on Japanese and Russian shores in recent years, study team members said. "The consequences of this shifting effort for North Korean small-scale fishers are profound, and represent an alarming and potentially growing human rights concern," study co-author Katherine Seto, an assistant professor of environmental studies at the University of California, Santa Cruz, said in the same statement.

**Source:** [space.com](https://www.space.com); 22 July 2020

## **MANATUA CONSORTIUM CONFIRMS ONE POLYNESIA FIBRE CABLE READY TO LIGHT UP THE SOUTH PACIFIC**

**SOUTH PACIFIC** – Leaders of the four nations behind the Manatua One Polynesia Cable Project have announced that the cable was accepted last week from turnkey supplier and submarine cable leader, SubCom. They further announced that, following final checks and preparations by the four operators managing the project as the Manatua Consortium, comprising Office des Postes et Télécommunications (OPT) in French Polynesia, Avaroa Cable Limited (ACL) in the Cook Islands, Telecom Niue Limited (TNL) in Niue, and Samoa Submarine Cable Company (SSCC) in Samoa, the system was officially “Ready for Service.” The announcement is the culmination of three years of planning, design, cable manufacture, and cable laying. Since completing the cable lay in January 2020, the focus has been on commissioning and testing to confirm the system functions to specifications prior to handover. Despite disruptions from the global COVID-19 pandemic during the latter stages of the project, which restricted the movement of critical test resources, the Manatua system has been delivered on time and within the original budget – a major testament to the collaboration and determination of the partners and SubCom. Manatua is a groundbreaking collaboration initiated in April 2017 with the signing of an international treaty by the President of French Polynesia, the Prime Minister of the Cook Islands, the Prime Minister of the Independent State of Samoa, and the Premier of the Government of Niue.

The new 3600 km optical fibre submarine cable now spans the South Pacific and will transform speed, capacity, resilience, and affordability. The cable connects Tahiti and Bora Bora in French Polynesia, Rarotonga and Aitutaki in the Cook Islands, Niue and Samoa. It is the first submarine cable in the Cook Islands and Niue, which until now have relied on satellite connectivity. Once operational, the Manatua cable is designed to provide service for at least 25 years. The system comprises two optical fibre pairs, each capable of carrying data at 10 Terabits per second (= 10,000,000 Mbps). Citizens of the consortium countries will benefit from Manatua as each operator works to make the new infrastructure available to retailers for incorporation into their local connectivity products and services.

**Source:** [thenews.com.pk](https://thenews.com.pk); 22 July 2020

## **NEW REGULATOR FORMED TO OVERSEE ABU DHABI'S WATERWAYS**

Abu Dhabi Ports, an ADQ company, has been assigned as the primary custodian of all of Abu Dhabi's waterways and marine ecosystems, through the creation of Abu Dhabi Maritime. The new body was formed by the Department of Municipalities and Transport (DMT) based on an agreement between Abu Dhabi Ports and DMT, in which

both entities agreed to cooperate in launching a wide variety of integrated services and facilities. The joint effort is in line with Abu Dhabi Government's strategy to integrate and streamline governance and oversight of priority growth sectors, and delivers on the leadership's vision as reflected in the Abu Dhabi Plan Maritime. Leveraging on Abu Dhabi Ports' maritime expertise, the new entity will function as a consolidated single point of regulatory entry with a mandate to implement effective maritime services and state-of-the-art infrastructure, supported by highly-qualified human resources and upholding the highest health, safety and quality standards.

Abu Dhabi Maritime will be supported by a new Maritime Advisory Council, which will represent the interests of key partners and customers including, government entities, ports, individual users, communities, and marine service companies. H.E. Falah Mohammad Al Ahbabi, Chairman of the Department of Municipalities and Transport, and Chairman of Abu Dhabi Ports, said: "With the establishment of Abu Dhabi Maritime, we will deliver on the emirate's Plan Maritime, and take the regulatory oversight of our maritime sector to the next level. By working closely with our strategic partners, we will achieve our goal of placing Abu Dhabi among the world's top-five maritime centres, in line with our leadership's expectations." Captain Mohamed Juma Al Shamisi, Abu Dhabi Ports Group CEO, said: "An important component of Abu Dhabi's rise as a major global maritime centre has been our wise leadership's emphasis on regulatory excellence. Establishing Abu Dhabi Maritime serves to advance our emirate's goal of becoming a world leading maritime centre through the pursuit of regulatory advancement, fulfilling the needs of the maritime sector and attracting more direct foreign investment." Captain Saif Rashid Al Mheiri, Managing Director, Abu Dhabi Maritime, said: "The new entity will commence its work by implementing a comprehensive regulatory framework, developing world-class maritime infrastructure, and introducing consolidated strategic planning for coastal zone management. Our synergistic approach backed by a highly interactive digital single window portal will ensure that Abu Dhabi's maritime waterways and ecosystems continue to attract new investors and increase the maritime sector's contribution to the growth of our national economy."

**Source:** [logisticsmiddleeast.com](https://logisticsmiddleeast.com); 26 July 2020

# MARINE ENVIRONMENT

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## CHEAP WIND POWER COULD BOOST GREEN HYDROGEN, MORGAN STANLEY SAYS

- Gerson Freitas Jr. and Christopher Martin

(Bloomberg) — The falling cost of wind power is shaping up to be a boon for another clean energy source: green hydrogen. Hydrogen — a fuel made by electrolyzing water — requires a tremendous amount of power to produce. But siting hydrogen facilities at wind farms, which typically generate more electricity than they need at night, could give the fuel an edge. Producing hydrogen at wind sites in the U.S. Midwest and Texas could make it competitive within two years, Morgan Stanley said in a research note Thursday. That would benefit renewable energy suppliers including NextEra Energy Inc. and AES Corp. and hydrogen producers such as Plug Power Inc. It also could cut costs, creating an opportunity for wind-farm developers and companies that seek to generate and use green hydrogen “to form strategic alliances,” analysts led by Stephen Byrd said. Green hydrogen can be used to fuel everything from cars to power generation plants to industrial facilities. Conventional hydrogen, which is typically used by the refining and chemical industries, is usually made from natural gas and adds to greenhouse-gas emissions.

**Source:** [financialpost.com](https://www.financialpost.com); 23 July 2020

## CHEMISTS MAKE TOUGH PLASTICS RECYCLABLE

- by Massachusetts Institute of Technology

Thermosets, which include epoxies, polyurethanes, and rubber used for tires, are found in many products that have to be durable and heat-resistant, such as cars or electrical appliances. One drawback to these materials is that they typically cannot be easily recycled or broken down after use, because the chemical bonds holding them together are stronger than those found in other materials such as thermoplastics. MIT chemists have now developed a way to modify thermoset plastics with a chemical linker that makes the materials much easier to break down, but still allows them to retain the mechanical strength that makes them so useful. In a study appearing today in *Nature*, the researchers showed that they could produce a degradable version of a thermoset plastic called pDCPD, break it down into a powder, and use the powder to create more pDCPD. They also proposed a theoretical model suggesting that their approach could be applicable to a wide range of plastics and other polymers, such as rubber.

"This work unveils a fundamental design principle that we believe is general to any kind of thermoset with this basic architecture," says Jeremiah Johnson, an professor of chemistry at MIT and the senior author of the study. Peyton Shieh, an American Cancer Society Postdoctoral Fellow at MIT, is the first author of the paper.

## **Hard to recycle**

Thermosets are one of the two major classes of plastics, along with thermoplastics. Thermoplastics include polyethylene and polypropylene, which are used for plastic bags and other single-use plastics like food wrappers. These materials are made by heating up small pellets of plastic until they melt, then molding them into the desired shape and letting them cool back into a solid. Thermoplastics, which make up about 75 percent of worldwide plastic production, can be recycled by heating them again until they become liquid, so they can be remolded into a new shape. Thermoset plastics are made by a similar process, but once they are cooled from a liquid into a solid, it is very difficult to return them to a liquid state. That's because the bonds that form between the polymer molecules are strong chemical attachments called covalent bonds, which are very difficult to break. When heated, thermoset plastics will typically burn before they can be remolded, Johnson says. "Once they are set in a given shape, they're in that shape for their lifetime," he says. "There is often no easy way to recycle them."

The MIT team wanted to develop a way to retain the positive attributes of thermoset plastics—their strength and durability—while making them easier to break down after use. In a paper published last year, with Shieh as the lead author, Johnson's group reported a way to create degradable polymers for drug delivery, by incorporating a building block, or monomer, containing a silyl ether group. This monomer is randomly distributed throughout the material, and when the material is exposed to acids, bases, or ions such as fluoride, the silyl ether bonds break. The same type of chemical reaction used to synthesize those polymers is also used to make some thermoset plastics, including polydicyclopentadiene (pDCPD), which is used for body panels in trucks and buses. Using the same strategy from their 2019 paper, the researchers added silyl ether monomers to the liquid precursors that form pDCPD. They found that if the silyl ether monomer made up between 7.5 and 10 percent of the overall material, pDCPD would retain its mechanical strength but could be broken down into a soluble powder upon exposure to fluoride ions. "That was the first exciting thing we found," Johnson says. "We can make pDCPD degradable while not hurting its useful mechanical properties."

## **New materials**

In the second phase of the study, the researchers tried to reuse the resulting powder to form a new pDCPD material. After dissolving the powder in the precursor solution used to make pDCPD, they were able to make new pDCPD thermosets from the recycled powder. "That new material has nearly indistinguishable, and in some ways improved, mechanical properties compared to the original material," Johnson says. "Showing that you can take the degradation products and remake the same thermoset again using the same process is exciting." The researchers believe that this general approach could be applied to other types of thermoset chemistry as well. In this study,

they showed that using degradable monomers to form the individual strands of the polymers is much more effective than using degradable bonds to "cross-link" the strands together, which has been tried before. They believe that this cleavable strand approach could be used to generate many other kinds of degradable materials.

If the right kinds of degradable monomers can be found for other types of polymerization reactions, this approach could be used to make degradable versions of other thermoset materials such as acrylics, epoxies, silicones, or vulcanized rubber, Johnson says. The researchers are now hoping to form a company to license and commercialize the technology. MIT has also granted Millipore Sigma a non-exclusive license to manufacture and sell the silyl ether monomers for research purposes. Patrick Casey, a new product consultant at SP Insight and a mentor with MIT's Deshpande Center for Technological Innovation, has been working with Johnson and Shieh to evaluate the technology, including performing some preliminary economic modeling and secondary market research. "We have discussed this technology with some leading industry players, who tell us it promises to be good for stakeholders throughout the value chain," Casey says. "Parts fabricators get a stream of low-cost recycled materials; equipment manufacturers, such as automotive companies, can meet their sustainability objectives; and recyclers get a new revenue stream from thermoset plastics. The consumers see a cost saving, and all of us get a cleaner environment."

**Source:** [phys.org](https://phys.org); 22 July 2020

## TEMPERATURES AT NORWAY'S ARCTIC ARCHIPELAGO HIT RECORD HIGH

- Nerijus Adomaitis

OSLO (Reuters) - Temperatures at Norway's Svalbard archipelago, about midway between the mainland and the North Pole, hit a record high of 21.7 degrees Celsius on Friday, Norway's Meteorological Institute said. The Arctic islands are warming faster than almost anywhere on Earth, highlighting risks in other parts of the Arctic from Alaska to Siberia, a Norwegian report said last year. "A 41-year-old record has been broken in Longyearbyen," the Meteorological Institute said on Twitter. Between 1700 and 1800 CET (1500-1600 GMT), the temperature measured 21.7 degrees Celsius, 0.4 degrees above the previous record from 1979, it added. Home to more than 2,000 people, Longyearbyen, the main settlement in Svalbard, is about 1,300 kilometres (800 miles) from the North Pole.

The Norwegian Centre for Climate Studies said last February average temperatures in Svalbard had leapt between three and five degrees Celsius (5.4-9.0 Fahrenheit) since the early 1970s and could rise by a total of 10C (18F) by 2100, if world greenhouse gas emissions keep climbing. Rising temperatures would thaw the frozen ground underpinning many buildings, roads and airports and could cause more avalanches

and landslides, it added. Two people died in 2015 when an avalanche destroyed 10 houses in Longyearbyen. A warming climate also threatens Arctic wildlife such as polar bears and seals which depend on the sea ice cover.

**Source:** [reuters.com](https://www.reuters.com); 26 July 2020

## **POLAR BEARS COULD BE WIPED OUT BY 2100 DUE TO CLIMATE CHANGE: STUDY**

In some regions they are already caught in a vicious downward spiral, with shrinking sea ice cutting short the time bears have for hunting seals, scientists reported in *Nature Climate Change*. Their dwindling body weight undermines their chances of surviving Arctic winters without food, the scientists added. "The bears face an ever longer fasting period before the ice refreezes and they can head back out to feed," Steven Amstrup, who conceived the study and is chief scientist of Polar Bears International, said. On current trends, the study concluded, polar bears in 12 of 13 subpopulations analysed will have been decimated within 80 years by the galloping pace of change in the Arctic, which is warming twice as fast as the planet as a whole. There is not enough data for six others to make a determination as to their fate. "By 2100, recruitment" -- new births -- "will be severely compromised or impossible everywhere except perhaps in the Queen Elizabeth Island subpopulation," in Canada's Arctic Archipelago, said Amstrup. That scenario foresees Earth's average surface temperature rising 3.3 degrees Celsius above the preindustrial benchmark. One degree of warming so far has triggered a crescendo of heatwaves, droughts and superstorms made more destructive by rising seas. But even if humanity were able to cap global warming at 2.4C -- about half-a-degree above Paris Agreement targets, but hugely ambitious all the same -- it would probably only delay the polar bears' collapse. "That is still way above anything polar bears have faced during one million years of evolutionary history," said Amstrup. The threat is not rising temperatures per se but the top-of-the-food-chain predators' inability to adapt to a rapidly shifting environment. "If somehow, by magic, sea ice could be maintained even as temperatures increase, polar bears might be fine," Amstrup said by email. "The problem is that their habitat is literally melting."

Half of Earth's land-based megafauna are classified as threatened with extinction, but only polar bears are endangered primarily by climate change. But that status may not be unique for long, and should be seen as a harbinger of how climate will impact other animals in the coming decades, the authors warned. There are approximately 25,000 *Ursus maritimus* left in the wild today. The challenge to their survival has long been understood, but the new study -- building on pioneering work by Amstrup a decade ago -- is the first to put a timeline on their likely demise. The new approach overlays two sets of data. One is the expanding fasting period, which varies across regions and can last for half-a-year or more. The other is a pair of climate change projections tracking the decline of sea ice until the end of the century, based on scenarios from the UN's IPCC climate science advisory panel. "By estimating how thin and how fat polar

bears can be, and modelling their energy use, we were able to calculate the threshold number of days that polar bears can fast before cub and adult survival rates begin to decline," said lead author Peter Molnar, a professor at the University of Toronto. A male bear, for example, in the West Hudson Bay population that is 20 percent below its normal body weight when fasting begins will only have enough stored energy to survive about 125 days rather than 200 days. New-born cubs are even more exposed, according to the study, especially when mothers have not fattened up enough to provide nourishing milk. Females without offspring, however, have the greatest capacity to withstand long periods without food.

The polar bear's 'vulnerable' status on the IUCN Red List of endangered species -- less severe than 'endangered' or 'critically endangered' -- does not accurately reflect their plight, the authors argue. Categories established by the International Union for the Conservation of Nature are based mainly on threats such as poaching and habitat encroachment that can be addressed with local action on the ground. "But we cannot build a fence to protect sea ice from rising temperatures," said Amstrup. "Think of it this way: If I were to push you off of the roof of a 100-story building, would your risk level be 'vulnerable' until you pass by the 10th floor?," he told. "Or would you be 'endangered' all the way down?" Dire predictions for polar bears has led to the mulling of alternative solutions, such as captive breeding programmes or air lifts to Antarctica, but there is no 'Plan B'. "The only way to save them is to protect their habitat by halting global warming," said Amstrup.

**Source:** [ddnews.gov.in](http://ddnews.gov.in); 21 July 2020

## **STUFF OF NIGHTMARES! RESEARCHERS DISCOVER A 14-LEGGED GIANT SEA COCKROACH IN THE INDIAN OCEAN**

Get ready to shudder! As if a 6-legged cockroach weren't enough to make us squirm, now researchers from Singapore have discovered a new species of cockroach at the bottom of the Indian Ocean — a 14-legged giant cockroach! The gigantic cockroach was first spotted back in 2018, during an in-depth survey near the coast of Banten in Western Java in Indonesia. Now, after 2 years, the cockroach has been identified as belonging to a new species and has been given the name "Bathynomus raksasa". The discovery was a joint effort by a team from the National University of Singapore and the Research Center for Oceanography, Indonesian Institute of Sciences (LIPI). Many have commented on how the 14-legged creature resembles 'Darth Vader', the legendary Star Wars character. Bathynomus Raksasa is a giant isopod, a type of crustacean that resembles the cockroaches of the land but are more closely related to marine species like crabs and shrimp. The crustacean can grow up to 50 cm in size, making it the second-largest isopod species known to Science. Though the creature has 14 legs, it uses these only to crawl along the bed of oceans in search of food.

Bathynomus Raksasa feeds on remains of other dead marine animals and just like other cockroaches, they can also survive without food for days. “The discovery of new species is a great achievement for a taxonomist. Especially spectacular species in terms of size and even the ecosystem where the species is found,” Cayo Ramadi, from the Indonesian Institute of Sciences told the BBC.

**Source:** [india.com](http://india.com); 20 July 2020

## **ACTIVE LEAK OF SEA-BED METHANE DISCOVERED IN ANTARCTICA FOR FIRST TIME**

A team of researchers with Oregon State University has confirmed the first active leak of sea-bed methane in Antarctica. In their paper published in Proceedings of the Royal Society B, the group describes their trip to Cinder Cones located at McMurdo Sound situated in the Ross Sea, and why they believe it signals very serious repercussions for global warming. Scientists believe that there is a large amount of methane sealed beneath the ocean floor off the coast of Antarctica. It is believed to have developed from algae decaying beneath the seafloor sediment. And it has likely been there for a very long time. As the planet has warmed, scientists have become concerned that the methane could be released if the waters above it were to warm. And if that were to occur, they fear it would release so much methane that there would be no recovering—the planet would warm beyond our means to survive.

The researchers note that the methane leak at the Cinder Cones is not in a part of the ocean that has been warming; thus, the reason for the leak is a mystery. Much more concerning is the reaction of undersea microbes. Prior research has shown that when other parts of the seafloor begin releasing methane, microbes move in and eat it, preventing it from making its way to the surface and into the atmosphere. Cinder Cones has been leaking for at least five years, they note, but as yet, methane-eating microbes have not moved in. Thus, the methane is almost certainly making its way into the atmosphere. The reason this is so concerning, they point out, is because it suggests that if other parts of the seafloor in Antarctica begin to seep methane due to warming, microbes may not move into the area quickly enough to prevent massive amounts of the gas from making its way into the atmosphere. They plan to continue monitoring seepage at Cinder Cones, noting that it could take as long as five more years for microbes to move in. But that research will have to wait, as the pandemic has put their plans on hold.

**Source:** [phys.org](http://phys.org); 22 July 2020

# GEOPOLITICS

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## QUAD | THE CONFLUENCE OF FOUR POWERS AND TWO SEAS

- Suhasini Haidar

Parallel exercises in the Indo-Pacific this week, including a trilateral exercise between the U.S., Australia and Japan in the Philippines Sea, and an Indo-U.S. naval exercise in the Indian Ocean have fuelled speculation that Quadrilateral (Quad) exercises will be launched soon between all four navies. All eyes are on a decision by New Delhi, to accept Australia's request that has been pending for four years now, to join the annual Malabar exercises with India, the U.S. and Japan. The decision has not been an easy one, given China's fierce opposition to the militarisation of a coalition seen as a counter to its claims in the Pacific and inroads in the Indian Ocean. India has also been wary of joining any exercise that could be construed as an alliance, something External Affairs Minister S. Jaishankar said this week India will "never be" a part of.

In 2018, at the Shangri-La Dialogue, Prime Minister Narendra Modi had said that India sees the Indo-Pacific as a "geographical concept", not a "strategy or a club of limited members". Also, India is the only country in the Quad that shares a land boundary with China, and the militarisation of the Quad will not help India deal with that threat. Fourthly, unlike the U.S., Japan and Australia, which are tied by military alliances, India is a member of other strategic forums, such as the Shanghai Cooperation Organisation with China, Russia and Central Asia, BRICS and RIC, which appear to be at cross purposes with a Quad alliance.

### **The China factor**

Even so, many contend that China's recent moves, including its aggression in the South China Sea and transgressions and deadly clashes across the Line of Actual Control (LAC), may in fact prove to be the tipping point that makes India take the plunge, pushing the countries of the Quadrilateral Security Group, called the Quad for short, into a military embrace that will have far-reaching implications for regional and global security. Ironically, the Quad, which today involves such laboured and slow-paced discussions, was originally born in an instant: from the crisis that followed the tsunami in December 2004. Within days of the disaster, India had mobilised an impressive fleet, and demonstrated to the world that it would not just manage its own rescue effort in Tamil Nadu and the Andaman and Nicobar islands but could also provide assistance to its maritime neighbours: Sri Lanka, the Maldives and Indonesia.

In all, about 32 Indian ships and 5,500 troops were pressed into India's international efforts. The humanitarian and disaster relief effort was coordinated in the next few weeks with three other naval powers engaged in the rescue effort: the U.S., Australia and Japan. The then Foreign Secretary, Shyam Saran, spoke every day to his

counterparts about what was needed next. Eventually, the “Quad” effort was handed over to the UN, but the idea of the Indo-Pacific as a larger maritime strategic community, and the Quad as an effective instrument in it, had been planted in the minds of all four members. Japanese Prime Minister Shinzo Abe, who had been promoting the idea of an “arc of prosperity and freedom” that brought the Quad countries closer together, was happy to develop the concept, and Prime Minister Manmohan Singh discussed it with him during a summit in December 2006. In 2007, when the annual India-U.S. ‘Malabar’ exercises were held in the Indian and Pacific oceans, first off Okinawa and a few months later, off Visakhapatnam, they included Japan, Australia and Singapore. The exercises and the strategic coordination in what Mr. Abe had called “the confluence of two seas” rattled Beijing and Moscow, who termed it an attempt to build “an Asian NATO”.

China’s Navy had not at the time undergone its massive modernisation drive towards a blue water navy (it only commissioned its first aircraft carrier, Liaoning, in 2012), and the effort by the Quad countries was clearly an impetus to hasten the process. But at the time, China’s demarches to the Quad countries paid off. Contrary to the currently popular lore, it was not India that cancelled the “Quad” exercises in 2008: the U.S., which was trying to gain China’s support in the six-party talks on North Korea, dampened enthusiasm for a Quad Foreign Ministers’ meeting, and the Kevin Rudd government in Australia then pulled out of the exercises. The Quad was shelved for the next decade.

In 2017, the Quad returned, now named Quad 2.0, coinciding with the revision in Washington’s assessment of the challenge from China, and similar reassessments in New Delhi, Tokyo and Canberra. In November 2017, just months after the Doklam stand-off between the Indian Army and the PLA, officials from all four countries met in Manila for the ‘India-Australia-Japan-U.S.’ dialogue. The name of the new Quad was innocuous, in an effort to dispel the notion this was a “gang-up”, and they did not even issue a common joint statement. In fact, differences within the group went deeper, and while India defined the “Indo-Pacific” region from Africa and the U.S. west coast, the U.S. limited it to the Indian coast (in 2020, the U.S. aligned its definition with India’s).

### **Alternatives to BRI**

Subsequent meetings have closed many of the gaps they have, and the Quad grouping has met biannually since then, discussing “connectivity, sustainable development, counter-terrorism, non-proliferation and maritime and cyber security, with a view to promoting peace, stability and prosperity in an increasingly inter-connected Indo-Pacific region”. The emphasis on connectivity has seen the Quad challenge China in another sphere: a coordinated effort to provide financing and sustainable alternatives to China’s Belt and Road Initiative (BRI), which has led many nations to take loans and accept infrastructure bids from Beijing. The counter has not yet made much headway, but each of the Quad countries is coordinating their responses on infrastructure projects in their spheres of influence, including India and Australian efforts in the Pacific islands, India-U.S. coordination in South Asia and the Indian Ocean region, and India-Japan joint efforts to develop projects in Sri Lanka, Bangladesh and Myanmar. The military aspect of the Quad has also grown: India has

strengthened its naval ties with each of the other Quad countries, and there have been more interactions, formal and informal at the official, political and military levels.

Eventually, the question over the next step in the Quad — whether India invites Australia to the next Malabar exercises or not — will be secondary to how India develops its own strategic vision, especially given the stand-off with China. Will India revert to traditional positions of non-alignment, enlisting China's ally Russia in its attempt to manage the threat from Beijing? Or will India pursue "multi-alignment", inviting middle powers such as the EU, the U.K., France, Russia, and partners such as Brazil, the UAE and South Africa into its Indo-Pacific strategy? Or does India's course lie in a closer coalition with China's adversaries, and being drawn into choosing its corner in the new Cold War that is developing between the U.S. and China? India's moves with the Quad will be closely watched, as they bear more meaning than ever before on the path it will take to realise its strategic future.

**Source:** [thehindu.com](https://www.thehindu.com); 25 July 2020

## IF FREE NATIONS DO NOTHING...": US' WARNING ON SOUTH CHINA SEA TENSION

- ANI

Washington DC: In one of the strongest attacks by the United States on Beijing's illegal territorial claims in the strategic waters of South China Sea, State Secretary Mike Pompeo on Saturday stressed that Washington's policy in the region is crystal clear and said that the disputed territory in the South China Sea (SCS) is "not China's maritime empire" "The United States' policy is crystal clear: The South China Sea is not China's maritime empire. If Beijing violates international law and free nations do nothing, history shows the Chinese Communist Party (CCP) will simply take more territory. China Sea disputes must be resolved through international law," Mr Pompeo said in a tweet.

The South China Sea is grouped into three archipelagos. China claims almost the entire South China Sea as its sovereign territory and it has aggressively asserted its stake in recent years. This comes weeks after the United States officially dismissed China's claims to offshore resources across most of the South China Sea and termed Beijing's campaign of bullying to control them as "completely unlawful." Earlier on July 13, Mr Pompeo had issued a statement on the US position on maritime claims in the South China Sea, saying that the Chinese government has no legal grounds to unilaterally impose its will on the region. Washington announced that it is aligning the US position on the Chinese government's claims in the South China Sea with the 2016 Arbitral Tribunal's decision. The Trump administration has hardened its stance towards Beijing, especially as relations between the two global superpowers continue to deteriorate in wake of coronavirus pandemic as well as coercive behaviour with its neighbours, including India.

**Source:** [ndtv.com](https://www.ndtv.com); 25 July 2020

## **EXPLAINED IDEAS: WHY INDIA SHOULD ELEVATE TIES WITH ARAB WORLD INSTEAD OF ROMANTICISING RELATIONSHIP WITH IRAN**

In his latest column, C Raja Mohan, director, Institute of South Asian Studies, National University of Singapore and contributing editor on international affairs for *The Indian Express*, writes that the persistent enthusiasm for Iran in Delhi stands in stark contrast to the perennial under-appreciation of India's much deeper and wider relationship with Iran's Arab neighbours. Mohan explains the arguments in favour of "an extra-special relationship with Iran". These include historical connections, civilisational bonds, energy supplies and regional security. But he points out that all these factors are of far greater import in India's engagement with the Arabian peninsula. "Millions of Indian immigrants in the Arab nations, massive hard currency remittances from them, and the density of commercial engagement with the Arab Gulf outweigh the relationship with Iran. The UAE and Saudi Arabia have, in recent years, extended invaluable support in countering terrorism and blocked attempts to condemn India in the Muslim world".

The sources of this curious inversion in India's intellectual imagination are many – the latest anxiety pertains to the loss of a railway contract in Iran due to US sanctions. But for "the romantics", a longstanding motivation for Delhi's friendship with Tehran is to defy the US. Then there are those who are worried about Beijing's economic partnership with Iran. So what should India do? Mohan argues that for both internal (repeated rebellions against the clerical regime) and external (the US sanctions etc) reasons, Iran will remain a difficult place to do business. "Delhi must advance ties with it within the confines of that unfortunate but real constraint," he says. Meanwhile, the Arab world has had its doors open for political, economic, and technological cooperation with India. "This provides a solid basis for elevating India's economic partnership with the Arab world to the next level. For India, the costs of neglecting the new possibilities for wide-ranging Arabian business are far higher than a lost railway contract in Iran," he concludes.

**Source:** [indianexpress.com](https://indianexpress.com); 22 July 2020

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