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China has designed an anti-access area denial coastal defense using man-made islands on reclaimed reefs in the South China Sea. The United States Navy and Marine Corps introduced new concepts of Expeditionary Advanced Basing and Littoral Operations in a Contested Environment to enable Distributed Maritime Operations in order to counter the Chinese threat. United States maritime strategy will play a significant role in projecting power, maximizing influence, and winning battles if the conflict cannot be avoided, and submarines will be the key to victory. The U.S. submarine force is the key to penetrating China's coastal defense and enabling Joint Forcible Entry Operations (JFEO), Expeditionary Advanced Base Operations (EABO), and Littoral Operations in a Contested Environment (LOCE) in the South China Sea.

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MASTER OF MILITARY STUDIES

**Submarines:
The Key to Joint Forcible Entry Operations, Expeditionary Advanced Base Operations,
and Littoral Operations in a Contested Environment in the South China Sea**

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
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Executive Summary

Title: Submarines: The Key to Joint Forcible Entry Operations, Expeditionary Advanced Base Operations, and Littoral Operations in a Contested Environment in the South China Sea

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Thesis: The U.S. submarine force is the key to penetrating China's coastal defense and enabling Joint Forcible Entry Operations (JFEO), Expeditionary Advanced Base Operations (EABO), and Littoral Operations in a Contested Environment (LOCE) in the South China Sea.

Discussion: China has designed an anti-access area denial coastal defense using man-made islands on reclaimed reefs in the South China Sea. The United States Navy and Marine Corps introduced new concepts of Expeditionary Advanced Basing and Littoral Operations in a Contested Environment to enable Distributed Maritime Operations in order to counter the Chinese threat.

Conclusion: United States maritime strategy will play a significant role in projecting power, maximizing influence, and winning battles if the conflict cannot be avoided, and submarines will be the key to victory.

DISCLAIMER

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PREFACE

Researching how submarines fit into the overall naval strategy was a challenging experience for me. The research question I chose to answer is what policies, practices, and professional development methods should the Navy and Marine Corps adopt to foster a learning organization focused not just on defeating an adversary's capabilities, but on denying the enemy's strategic objectives while advancing our own concepts of Distributed Maritime Operations, Expeditionary Advanced Base Operations, and Littoral Operations in a Contested Environment. To some, the answer may be obvious, but writing about submarine capabilities at an unclassified level proved difficult. As I furthered my research, I validated that the concepts of DMO, EABO, and LOCE were not being discussed in all warfare areas, and where it was discussed, submarines were not.

I aim to assess current submarine capabilities and focus on the future capacities required to fit naval strategy and contribute to the concepts mentioned above. Training is important in all warfare areas of the military, but none more than submarines. Submarines are uniquely designed to penetrate anti-access area denial defenses, and provide a stealthy delivery platform to enable distributed operations and expeditionary advanced basing. I provided recommendations to accelerate submarine training to better align the force for future conflict in the South China Sea.

I would like to say thank you to my family for supporting me through this research paper. Additionally, thank you to the military and civilian faculty at Marine Corps University for your insight and support.

Introduction to A2/AD, EABO, and LOCE

The United States views China as a revisionist power trying to reshape the World in a manner antithetical to U.S. values and interests, as described in the 2017 *National Security Strategy of the United States of America*.¹ The 2018 *Summary of the National Defense Strategy of The United States of America* states that long-term strategic competition with China is a principal priority.² China has been bolstering its Anti-Access/Area Denial (A2/AD) coastal defense in the South China Sea with extensive anti-aircraft and anti-surface weapon systems for more than a decade. Specifically, it has built military bases on man-made islands meant to preclude U.S. naval surface ships from entering the SCS. Given this significant threat, the U.S. submarine force is the key to penetrating China's coastal defense and enabling Joint Forcible Entry Operations (JFEO), Expeditionary Advanced Base Operations (EABO), and Littoral Operations in a Contested Environment (LOCE) in the South China Sea.

The United States is in a great power competition with the People's Republic of China (PRC). This paper will discuss the People's Liberation Army Navy's (PLAN) coastal defense and anti-submarine warfare (ASW) capabilities, and contrast it with the U.S. Navy's submarine missions and capabilities, and the recommended changes to submarine training to better align with the Chinese threat. When describing the possible conflict in the South China Sea, the DIME model (Diplomatic, Informational, Military, Economic) of national power will be used to compare the strategic objectives of the U.S. and China with a focus on the military element. United States maritime strategy is the dominant factor in projecting power, maximizing influence, and winning battles if conflict cannot be avoided.

The United States National Security Strategy lists the categories of response and describes the priority actions to counter China's expanding military in each of its four pillars

(Protect the American people, the homeland, and the American way of life; Promote American prosperity; Preserve peace through strength; and Advance American influence) with a specific section dedicated to the Indo-Pacific region.³ It breaks down U.S. priorities using the language of the DIME model, addressing each of the five warfighting domains (land, air, sea, space, and cyberspace). The United States National Defense Strategy has eleven defense objectives and three distinct lines of effort (build a more lethal Joint Force, strengthen alliances, and reform Department business practices for greater performance and affordability), specifically mentioning China nine times. This strategic call to action requires a whole government approach using all elements of national power.

American interests in the South Pacific, and geopolitical tensions between the U.S. and China, and China and its neighbors, make the Indo-Pacific region the focal point of American strategic doctrine. The National Defense Strategy addresses each of the seven warfighting functions (command and control, fires, force protection, information, intelligence, logistics, and maneuver). China's actions can negatively affect all seven functions in the Indo-Pacific region; therefore, the U.S. is using a two-pronged method for dealing with China. The first prong is a diplomatic and economical approach "to engage China and encourage it to become a responsible stakeholder in the international community. The second is to [politically and militarily] engage in prudent hedging against competitive or aggressive behavior by China, pursuing continued engagement rather than treating the country as an enemy."⁴

There is no doubt that China has identified the United States as its main competitor and adversary. The 2019 Chinese Defense White Paper has been viewed as a significant change since the 2015 Chinese Defense White Paper, stating, "the new White Paper picks up the gauntlet that the U.S. threw down in its [NSS and NDS]. Both of these documents effectively made the PRC

the key objective in strengthening U.S. military forces and single it out as America's primary strategic competitor... The new Chinese White Paper touches on every key point in the 2019 versions of these two U.S. reports, and portrays the Chinese actions they describe as threats as just and peaceful."⁵ It is clear that the message sent by the United States was received, and this is how China has answered.

Anti-access and area denial (A2/AD) is not a new military concept, the principals involved can be seen as far back as the Greek – Persian War in 481 BC, but did not begin appearing in U.S. Joint Publications until after 2011. The DOD Dictionary defines anti-access as action, activity, or capability, usually long-range, designed to prevent an advancing enemy force from entering an operational area.⁶ Area denial is action, activity, or capability, usually short-range, designed to limit an enemy force's freedom of action within an operational area.⁷ The first and second island chain's long-range and short-range defenses, A2/AD, combined with early warning RADAR systems, prevent surface and air access the South China Sea unnoticed. The PLA's A2/AD in the South China Sea (SCS) is designed to preclude the United States operational access. The DOD Dictionary defines operational access as the ability to project military force into an operational area with sufficient freedom of action to accomplish the mission.⁸

The PRC uses the Nine-Dash Line to claim sovereignty over 90% of the contested waters in the South China Sea. The Nine-Dash Line encompasses nearly all of the SCS, including all reefs and islands up to each country's 12 NM territorial waters. The PRC claims this area as its own territorial waters, a claim that is not supported by the United Nations Convention for the Laws of the Sea (UNCLOS). This area extends as far as 1,243 miles away from the Chinese mainland. China argues that the Nine-Dash Line represents historic maritime agreements, but all

governments involved (except the PRC) have disputed this. Moreover, China has reclaimed an extensive area in the Spratly Islands, Paracel Islands, Woody Islands, and Scarborough Shoals. A 2016 report from the Pentagon shows that China had built 3,200 acres of artificial reefs in the island chain by the end of 2015.⁹

There are two island chains off the East Coast of mainland China that provide boundaries to the East coast of China. The first island chain (from the mainland) is a string of islands running roughly from the southern tip of Japan along the Ryukyu Islands to Taiwan, the northern part of the Philippines, and then to Borneo, encompassing the Yellow Sea, the East China Sea, and the South China Sea (See Figure 1 below). The second island chain stretches from the Japanese coast near Yokosuka south and east along the Bonin and Mariana Islands to Guam and then southwest to the Palau Islands and the western tip of New Guinea, encircling the Philippine Sea.¹⁰ The United States has four allies in direct proximity to China: Australia, Japan, Philippines, and Taiwan, as well as three U.S. territories in the South Pacific: American Samoa, Guam, and the North Mariana Islands.



Figure 1. South China Sea Island Chains.
[Consortium of Defense Analysts – Wordpress.com](http://www.consortiumofdefenseanalysts.com)

Joint forcible entry operations (JFEO) will be required for the U.S. to gain access to the South China Sea through the island chain defenses. Joint Publication 3-18 (Joint Forcible Entry Operations) defines JFEO as operations to seize and hold lodgments against armed opposition. A lodgment is a designated area in a hostile or potentially hostile operational area (such as an airhead, a beachhead, or combination thereof) that affords continuous landing of troops and equipment while providing maneuver space for subsequent operations.¹¹ Effective JFEO will require Expeditionary Advance Base Operations (EABO) to proceed through the congested defenses. Expeditionary advanced basing will provide step-by-step progression through the island chains toward China's littorals, and enable Littoral Operations in a Contested Environment (LOCE).

According to Brig Gen Stephen Liszewski, director of operations for the Marine Corps, "[EABO is] all about distributing lethality across the battlespace in support of a larger maritime campaign."¹² The Expeditionary Advanced Base Operations Handbook describes EABO as a concept designed to exploit geography and contribute to winning a hard war against a nation with military capabilities approaching those of the United States.¹³ The EABO concept enables U.S. naval forces to exercise maritime operations, meet new enemy A2/AD threats with new capabilities, as well as operate and thrive in and around close and confined seas using 21st - century technology. According to the EABO Handbook, EABO is a persistent inside force established by the joint access and maneuver in the global commons, and serves as a foundational enabling capability for other naval and joint concepts, such as Littoral Operations in a Contested Environment (LOCE) and Distributed Maritime Operations (DMO).¹⁴

EABO's purpose is to advance, sustain, and maintain naval and joint sensor, shooter, and sustainment capabilities of the inside force to leverage the decisive massed capabilities of the outside force with enhanced situational awareness, augmented fires, and logistical support.

According to Dr. James Lacey, in a *War on the Rocks* article,

“EABO seeks to further distribute lethality by providing land-based options for increasing the number of sensors and shooters beyond the upper limit imposed by the number of seagoing platforms available. The EABO concept espouses employing mobile, relatively low-cost capabilities in austere, temporary locations forward as integral elements of fleet operations. Expeditionary advanced base operations may be employed to position naval ISR assets, future coastal defense cruise missiles, anti-air missiles (to counter cruise and ballistic missiles as well as aircraft), and forward arming and refueling points and other expedient expeditionary operating sites for aircraft such as the F-35, critical munitions reloading teams for ships and submarines, or to provide expeditionary basing for surface screening/scouting platforms, all of which serve to increase friendly sensor and shooter capacity while complicating adversary targeting. They may also control, or at least outpost, key maritime terrain to improve the security of sea lines of communications (SLOCs) and chokepoints or deny their use to the enemy, and exploit and enhance the natural barriers formed by island chains.”¹⁵

According to Joint Publication 3-32, Joint Maritime Operations, the maritime domain includes the oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals.¹⁶ Bridging the gap between the land and the sea is amphibious warfare, taking place in the littoral operating area. The littoral comprises two segments of the operational environment. First, seaward: the area from the open ocean to the shore, which must be controlled to support operations ashore. Second, landward: the area inland from the shore that can be supported and defended directly from the sea.¹⁷ In addition, amphibious operations increase the commander's options for maneuver in the littorals and forcible entry operations.

Sea control is required to enable maneuver and dominate the maritime domain. Sea control is the naval cooperation and guidance for shipping, protection of sea lines of communications, air lines of communications, blockades, embargoes against economic or military shipping, and maritime operations. Maritime operations are operations to locate, classify, track, and target surface vessels, submarines, and aircraft. Littoral operations area is, for this concept, a geographical region encompassing the seaward and landward portions of the battlespace and the airspace above that is of sufficient size for littoral forces to accomplish assigned missions.¹⁸ All domain access is the ability to project military force in contested areas with sufficient freedom of action to operate effectively.¹⁹ The term contested is used to encompass both the uncertain and hostile environments as defined in joint doctrine.²⁰ Amphibious ships used to deploy Marines in a contested environment are more vulnerable to A2/AD than submarines.

The desired end state of LOCE is naval forces capable of operating in contested littorals with sufficient freedom of action to accomplish achievable objectives. Broadly stated, these objectives are: “gain and maintain battlespace awareness; establish persistent sea denial capabilities forward to deter aggression in the littorals; in a hostile environment, establish sea control; in an uncertain environment, employ sufficient defensive and non-lethal capabilities to conduct operations in the face of sea denial threats; and conduct maritime power projection operations.”²¹ The main prerequisites for success in littoral warfare are suitable and diverse platforms, weapons, and sensors; robust command organization; close cooperation among friendly forces; air superiority; well-developed theory; and sound doctrine.²²

The Navy and Marine Corps will refine how to organize, train, and equip forces to provide the fleet the ability to operate in all five dimensions of the littorals for the duration

required. “These five dimensions include: (1) seaward (surface and subsurface); (2) landward (surface and subterranean); (3) the airspace above; (4) cyberspace; and (5) the electromagnetic spectrum.”²³ In a littoral environment, an amphibious operations area may encompass a sector of land and include a missile engagement zone (MEZ). In this case, maritime combatants may be restricted by geography when defending selected coastal assets. Linking landbased surface-to-air missiles (SAM) systems with sensor data from maritime forces, or vice versa, can result in improved ability to defend littoral areas of the theater. “Without close coordination between land and marine forces, a seam may result in the air and missile defense. Operations along the edges of Weapon Engagement Zones (WEZ), sectors, or other geographically defined areas of airspace with separate controlling units/commands may create seams and present commanders with extensive coordination challenges. Enemy aircraft may cross into adjacent sectors during an engagement or may fly through friendly corridors or attack targets in one sector or WEZ from an adjacent area.”²⁴

Harvard Professor and political scientist Dr. Graham T. Allison coined the term 'Thucydides Trap' to describe the idea that when one great power is rising, it will inevitably threaten to displace the established power, consistently resulting in war.²⁵ The Chinese studied the Greek – Persian War, 481 – 478 BCE, and the first Gulf War, 1990 – 1991, and applied the principals of CAPT Alfred Thayer Mahan’s *The Influence of Sea Power Upon History, 1660–1783*, to national defense. They determined that A2/AD was needed to stretch U.S. supply lines nearly 7,000 miles across the Pacific Ocean to prevent the U.S. dominance seen during Operation Desert Storm I. Translating the Greek – Persian War into a China – United States conflict, the PLA sees itself as Greece facing a superior force in the U.S. military (Persia), and

devised a plan to push battles out to the first and second island chains similar to the battles of Thermopylae and Artemisium.²⁶

Chinese Coastal Defense Capabilities

Chinese national security appears dependent on complete control over the South China Sea (SCS) to provide unfettered access to its abundant oil and natural gas seabed deposits, significant fishing grounds, and provide unregulated naval activity within the first island chain. For the littoral nations of the South China Sea — Vietnam and the Philippines in particular — China’s robust military capabilities and its many controversial and militarized/fortified artificial islands have been casting much darker clouds over their policy planning toward PRC. In addition to these security elements, every nation in the region has economic ties to the PRC. In this context, China has an increased capacity to wield influence through its economic strength. At the same time, however, almost all regional players want a clear U.S. policy toward China as well as a visible U.S. military presence. They also prefer to maintain sound economic relationships with the United States.

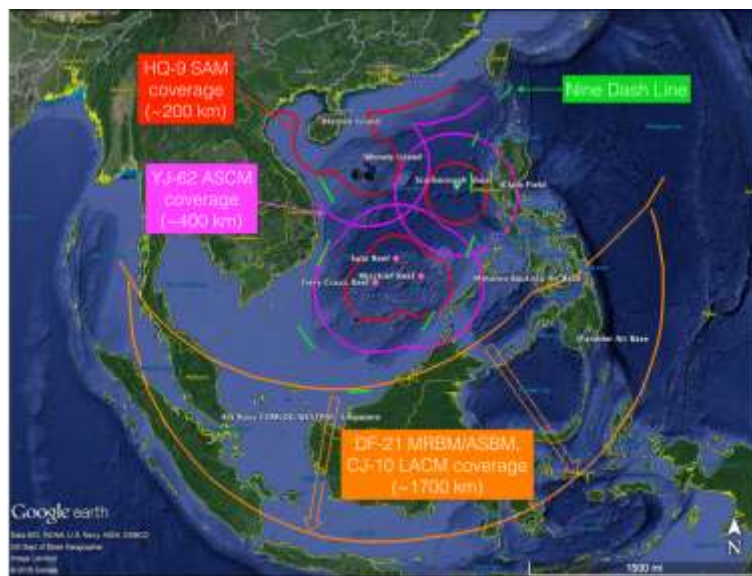


Figure 2. South China Sea Man-Made Islands and Missile Ranges.
[War on the Rocks - China's Artificial Islands](#)

China has been developing, manning, and arming man-made islands within the contested Nine-Dash Line territory, specifically the Spratly Islands, Paracel Islands, Woody Islands, and Scarborough Shoal. Though the Spratly Islands contain many reefs, the PLA's interests are concentrated on seven. The three large reefs—Mischief, Subi, and Fiery Cross—are similar in that they all house large anti-aircraft guns and close-in weapons systems. Each reef features helipads, long runways, and hangars capable of holding up to 24 fighter jets and several larger planes including the largest in the Chinese fleet. Fiery Cross Reef has a harbor at which the PLAN's largest naval vessels can dock. The construction of similar harbors is ongoing at Mischief and Subi reefs. The four smaller reefs—Gaven, Hughes, Johnson, and Cuarteron—each contain structures thought to be radar towers and helipads.²⁷

The Paracel Islands give the Chinese another defensive outpost. Eight of the islands currently include some form of Chinese presence, with six containing at least radar capabilities. The Woody Islands in the northeast of the island chain display perhaps the most substantial presence of Chinese military in the South China Sea. In addition to 1,400 military personnel, the island also has an airstrip that can support fighter jets, up to 20 aircraft hangars, helipads, radar facilities, and surface-to-air missiles with a range of 124 miles. Woody Island has been designated the official administrative capital of the region containing the island chains that the PRC claims as its territory (Paracel, Spratly, and the area encompassing Scarborough Shoal). In late 2016, the Chinese government attempted to further its presence on Woody Island with daily chartered civilian flights to the island. Putting civilians on the island bolsters China's sovereignty claim. It also increases the risk of civilian injuries in the event of an attack, and so has a deterrent effect.²⁸

While it currently has no military installations, Scarborough Shoal has been a point of tension in Philippine – Chinese relations, because Scarborough Shoal is located off the Philippines’ west coast, only 220 miles from Manila. Scarborough Shoal was in the headlines in 2017 as China announced plans to install “environmental monitoring stations” there. This set off a chain of reactions in the Philippines as people considered it Chinese aggression.²⁹



Figure 3. China’s Anti-Access Strategy
 Red Star Over the Pacific – Toshi Yoshihara and James R. Holmes

China is using early warning RADAR, long-range anti-access capability, and short-range area-denial defenses to make it incredibly challenging to send surface ships and aircraft into the SCS unnoticed. The PLA’s intermediate and long-range surface-to-surface missiles are capable of reaching major U.S. naval bases in both Guam and Japan, and its anti-aircraft defenses (early warning RADAR and SAM) are dispersed throughout the SCS making the risk to airpower unacceptable. On the surface, the Chinese appear to have proved successful in defending the mainland, their major economic zones, and their naval bases. The weakness in China’s A2/AD defense could lie beneath the surface.

According to CAPT Alfred Thayer Mahan, a great power requires a great navy, and China has been working diligently to get there.³⁰ A June 2016 report released by the Washington-based Center for Naval Analysis, has suggested that the PLAN will likely have commissioned a fleet that may exceed 270 vessels, making it the largest navy in terms of size and the second-most-capable blue-water naval force in the world. Despite this, it has been widely acknowledged that the PLAN remains comparatively weak in countering underwater threats. The U.S. Department of Defense (DOD) noted in a report on China's military capabilities that anti-submarine warfare (ASW) remains an observed weakness, with the service continuing "to lack either a robust coastal or deep-water ASW capability."³¹ ASW are the operations conducted to deny the enemy the effective use of submarines.³² Between 2015 and 2017, China launched almost 400,000 tons of naval vessels, about twice the output of U.S. shipyards in that period, the IISS said. The PLA Navy now has about 400 warships and submarines, according to U.S. and other Western naval analysts. A 2016 U.S. Naval War College study states, the Chinese Navy could have more than 530 warships and submarines by 2030.³³

Under President Xi, the PRC has opened the funding tap. Between 2015 and 2021, total military outlays are projected to jump 55 percent from \$167.9 billion to \$260.8 billion, according to a 2018 report that the U.S.-China Economic and Security Review Commission ordered from Jane's by HIS Markit.³⁴ Over the same period, the PLAN's share of this budget is expected to increase 82 percent, from \$31.4 billion to \$57.1 billion, the report said.³⁵ A significant focus of the PLAN modernization has been on their known deficient ASW capability and surveillance technology. Additionally, China has bolstered its coastal defenses to protect its strategic assets, the nuclear powered ballistic missile submarine (SSBN) bases. Jianggezhuang Naval Base is part of the North Sea Fleet in the Yellow Sea, and Yulin Naval Base is part of the South Sea Fleet in

the SCS, both hosting diesel-electric (SSK), nuclear powered fast attack (SSN), and SSBN submarines in underground tunnels. Moreover, Dinghai Naval Base in the East China Sea is part of the East Sea Fleet with many diesel-electric submarines.

According to a 2016 report by the Center for Naval Analysis, China announced plans to upgrade a civilian network of communications and sensor systems deep in the western Pacific that are supposedly used in scientific research. The system comprises buoys anchored between 400 m and 500 m beneath the surface of the western Pacific to research areas such as climate change and ocean currents.³⁶ Furthermore, it is essential to note that all of the variable depth sonar (VDS) equipped surface combatants are two-tailed – that is to say, they field *both* a towed VDS *as well as* a linear towed array sonar systems (TASS). Such an ASW sensor arrangement is not standard ASW fit for most surface combatants around the world, and tends to be reserved for more dedicated ASW warships. The speed and breadth with which this type of sensor outfit has proliferated among new PLAN warships has been impressive. Each of these warships features a Hull Mounted Sonar (HMS), but as aforementioned, the utility of such a sensor for modern ASW is somewhat limited.³⁷

Organic sensor capabilities aboard PLAN surface combatants have made a vast leap in quantity and quality in merely four years due to the introduction of the two tail VDS and TASS suite. When paired with the in-service Yu-8 system employed from 054A Frigates (FFG), as well as new and upcoming ASW weapons, PLAN warships are finally adequately equipped with organic ASW systems comparable to other international high-end ASW ships. This shows the PLAN's significant recent growth of capable ASW surface combatants, with many of those warships equipped with capable organic ASW sensor suites, including VDS and TASS. FFGs

and destroyers (DDGs) also have organic ASW weapons, such as vertically launched missile/rocket launched torpedo systems.

Another component of anti-submarine warfare is the PLAN's rotary and fixed-wing ASW aircraft, as well as a brief description of the other specialized ASW assets that the PLAN is developing. The PLAN has ship-launched ASW helicopters that greatly expand a warship's surveillance and engagement area and range against subsurface targets. ASW helicopters are typically equipped with several sensors such as surface search radars, sonobuoy launchers, dipping sonar, electro-optic cameras, and the ability to carry torpedoes. Datalinks between the helicopter and warship help to coordinate ASW activities prosecute a target. Compared to ASW helicopters, the sensors on ASW maritime patrol aircraft (MPA) are more powerful and sometimes more comprehensive, because they include magnetic anomaly detectors and feature a more robust electronic support measures (ESM) suite. Fixed-wing MPAs tend to be larger compared to ASW helicopters, providing not only longer range, endurance, speed, and payload, but also space for more operator consoles to allow the aircraft to conduct more complex missions independently.³⁸

In addition to the previously mentioned buoys, a number of other niche support systems for the ASW mission have been developed. One such system is the sound surveillance system, referring to the similarity to the U.S.-NATO system of fixed undersea hydrophones designed to track Soviet submarines. The exact location and scale of the Chinese system is not known and is likely a closely guarded secret. However, the fact that such a system is even known to exist is significant in and of itself.³⁹ These systems are specifically designed to detect, classify, and track submarines along the Chinese coast and open ocean.

Submarines represent the third leg of the nuclear triad (air, land, and submarine launched nuclear missiles), and are the most effective way to detect and defend against other submarines (ASW). The PLAN has both nuclear powered and diesel-electric submarines for their fast attack and ballistic missile mission sets. The majority of the PLAN Submarine Force (PLANSF) consists of diesel-electric submarines (SSK); these versatile vessels are designed to attack surface ships and other submarines with torpedoes or missiles. The entire U.S. submarine fleet is nuclear powered while most of China's rapidly expanding force is made up of the smaller, stealthy diesel-electric submarines.⁴⁰ Although the PLAN has had a few nuclear-powered submarines since the 1970s, they have been widely regarded as inferior to Western types. The latest Type-093 *Shang* Class fast attack submarines and Type-094 *Jin* Class ballistic missile submarines, however, are a different matter. These newer subs are more numerous and, very likely, substantially more potent than the older models. They are not necessarily as capable as their western equivalents, but the gap is closing over time.⁴¹

The PLAN's ASW strategy can be viewed in a similar way as the PLAN's overall naval strategy; both divide the missions as either regional or blue water. Taskforces of ships, including surface combatants, power projection ships (aircraft carriers and amphibious assault ships), and submarines, will operate in waters around the World to defend Chinese interests. The ASW mission for these formations will require surface combatants, onboard ASW helicopters, and submarines to work together to defend against undersea threats. The lack of overseas air basing means it is unlikely that these taskforces can benefit from MPA support, and surveillance TASS ships may only occasionally be deployed beyond China's regional waters. In other words, the ASW strategy for blue water missions will likely seek to defend the naval ships from underwater

threats using only blue water capable surface combatants (i.e., frigates and larger ships), helicopters, and associated subsystems organic to the ships themselves.⁴²

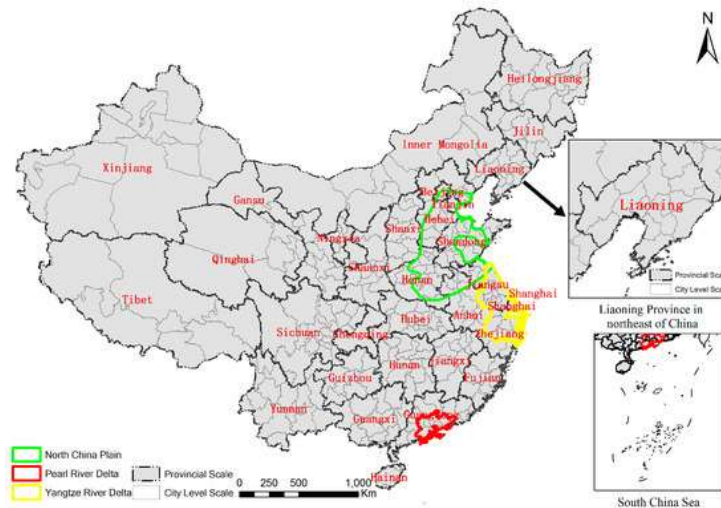


Figure 4. China's Three Major Economic Zones
 Google Images – Google.com

Figure 4 above shows China's three major economic zones: North China Plain or Bohai Economic Rim protected by the North Sea Fleet in the Yellow Sea, Yangtze River Delta Economic Zone protected by the East Sea Fleet in the East China Sea, and Pearl River Delta Economic Zone protected by the South Sea Fleet in the South China Sea. Access to the Chinese economic zones is protected by geographic chokepoints, from the Indian Ocean past Malaysia and Indonesia mostly through the Malacca Strait, and from the Pacific Ocean past Japan and the Philippines via the first and second island chains and the Philippine Sea. China's comparatively massive GDP and Nine-Dash Line claims cast a large shadow over its neighbors to the South.

The South China Sea's oil and gas deposits, fertile fishing grounds, and unfettered training ground for the PLAN make it the centerpiece of Chinese national power and, therefore, the main focus for protecting the PRC. China fully leverages all aspects of the DIME in protecting the SCS using its Belt and Road Initiative (BRI), a global development strategy adopted by the PRC government in 2013 that involves infrastructure development and investments in nearly 70 countries and international organizations in Asia, Europe, and Africa. A

simple explanation of the BRI is a comparison to a predatory loan with an impossibly high-interest rate so that the targeted country can build essential infrastructure. Once the construction is complete, the repayment of the loan is due. Due to the lofty interest rate, China knows the smaller country will default, and will impose sanctions or expect to negotiate/renegotiate a treaty heavily favoring China. PRC is not using its military arm to change the World, but instead it uses diplomacy and economics, along with coastal defenses performing policing actions in the SCS to push limits and slowly change globally accepted norms without breaking the rules.

China has shown patience using its diplomatic, information, military, and economic power with the objective of giving it the hegemony. In order to dominate its region, the PRC must force out outside superpowers like the United States by reducing the appearance of its threat, creating economic partnerships, and carefully managing information via the media. PRC must be careful not to come across as coercive because this may drive partners away from the cause and towards the U.S. In all relationships, communication is vital. China is trying to persuade the U.S. to lose interest in the SCS by minimizing the perceived threat, fostering peaceful disagreement, and creating business connections. To avoid the appearance of coercion or manipulation, the media is critical to understanding American skills and culture. The United Nations will play an essential role in China gaining international support with international forums and economic incentives using diplomacy and economic relations to change the opinions of the U.S. and the UN.

A 2018 RAND report, *An Interactive Look at the U.S.-China Military Scorecard*, compiled from open, unclassified sources, shows the relative advantage or disadvantage of U.S. and Chinese forces in diverse types of conflict, at varying distances (Mainland to Taiwan, and Mainland to the Spratly Islands) at different points in time from 1996, 2003, 2010, to 2017.⁴³

Using the changes in relative advantage or disadvantage from each year listed and comparing to the latest U.S. and PLA strategies, it can be determined which country had a more significant effect on the region. For example, looking at the Chinese airbase attack changes from 1996 to 2017, from the mainland to Taiwan, the U.S. had a major advantage from 1996 to 2003 but is now at a disadvantage in 2017. Within the Spratly Islands, the U.S. had a major advantage from 1996 to 2010 but is now at parity in 2017. It is clear that the PLA building, fortifying, and arming of the man-made islands in the South China Sea (SCS) has had a significant impact on the U.S. ability to operate freely in waters around mainland China. See Figures 2 and 3 for missile ranges.

As the Chinese economy grows and the stranglehold on the smaller countries around the SCS tightens, the military strength and freedom of operation will grow. If left unchecked, the PLA Navy will enjoy unobstructed activities in the SCS, unmonitored practice grounds for advanced naval tactics, and freedom of operation for its growing submarine force, specifically its survivable submarine-launched ballistic missile platforms. In the event of nuclear war, China will maintain its covert, survivable second-strike ability. The South China Sea's deep waters make favorable for submarine operations, as well as torpedo, mines, and unmanned underwater vehicle (UUV) operations precluding access of the U.S. surface fleet. These conditions push the U.S. fleet further out to distances that make an attack on mainland China very unlikely.

United States Navy Capabilities

The United States Navy has a significant presence in the South China Sea performing operations of all kinds, including freedom of navigation (FON), humanitarian, research and development, and allied and partner naval exercises. A continued presence in the SCS is vital to holding the PRC accountable for its actions and also monitoring the progression and fortification of the man-made island bases. The U.S. sustained naval operation directly projects the power of the U.S. military and is in line with the two-prong approach, ensuring China does not reach hegemony in the Indo-Pacific region. The increased presence of both military forces, heightened tensions, and aggressive rhetoric on both sides significantly increase the chances of armed conflict in the South China Sea.

The U.S. Navy is developing a new operational concept called Distributed Maritime Operations (DMO) that enables localized sea control to generate more substantial combat effects through increasing the offensive power of individual components of the naval force. DMO uses the organic sensors and weapon systems on each asset connected to the network to communicate to the other assets and share a Common Operating Picture (COP) in real-time for distributed lethality with the tag-line “if it floats, it fights.” If it floats, it fights, should be considered to represent the realized necessity that cruisers, destroyers, and frigates cannot be endlessly tied to High-Value Units (HVU), whether those are amphibious ships or permanently constituted Carrier Strike Groups (CSG). Those ships must have not only an ability to defend themselves, of course but also a capability to strike hard in order to contribute to the broader mission of sea control. This suggests a compelling need to upgun these platforms, making them dramatically more capable both defensively and offensively.⁴⁴

Distributed Maritime Operations are the realization of a series of concepts that started with the Tactical Data Links (TDL) used in the late 1950s for anti-ship cruise missiles to counter

the Soviet threat, then a giant step forward with the Aegis Combat System (ACS) of the mid-1970s, to the Cooperative Engagement Capability (CEC) from the 1990s, sharing of raw sensor data.⁴⁵ Distributing offensive capability geographically requires a broader dispersion of ships to hold an enemy at risk from multiple axes, and will force that enemy to defend an increased number of vulnerabilities created by the dispersion. In a genuine DMO environment, amphibious ships and aircraft carriers may be required to operate independently for periods.⁴⁶ DMO provides distributed lethality utilizing a COP for power projection, which will mitigate some of the risks involved in ship-to-shore movements. Ship-to-shore movements are the portion of the action phase of an amphibious operation that includes the deployment of the landing force from ships to designated landing areas.⁴⁷

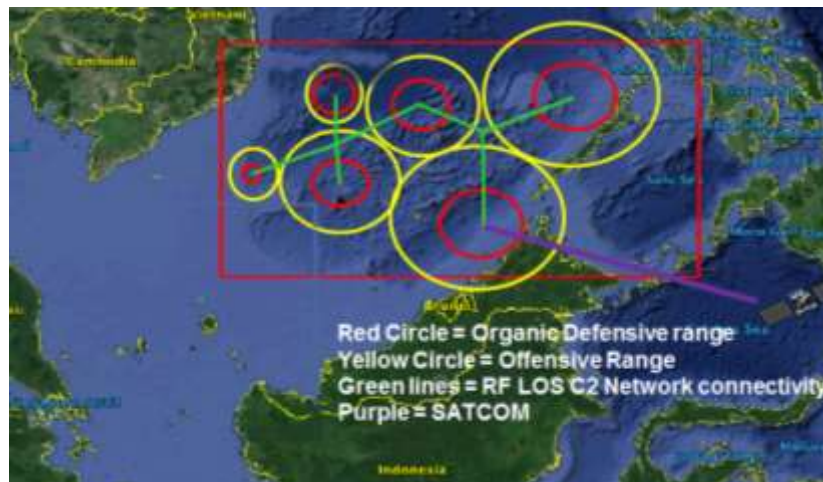


Figure 5. Distributed Maritime Operations

<https://wiki.nps.edu/display/~ptbeery/Distributed+Maritime+Operations>

Many different ships make up a Carrier Strike Group (CSG) and an Amphibious Readiness Group (ARG). The nuclear-powered aircraft carrier is the center of the CSG with its fixed and rotary-wing aircraft onboard. The aircraft makes up the majority of its offensive and defensive capabilities. The ARG has several Littoral Combat Ships carrying Marines, landing equipment, and aircraft. Within the CSG and the ARG is a combination of cruisers, destroyers,

frigates, and attack submarines, whose primary purpose is to defend the carrier, and the aircraft carrying LHA/LHD.

Aircraft carriers, both CVN and LHA/LHD, are the High-Value Unit (HVU) focal point of each CSG/ARG due to their limited quantity, offensive capability, and expense. This HVU requires shared defense from within their group and from their attached air wing. The restricted missile ranges of ships and aircraft prevent shaping and destruction of critical targets in the outer defenses at an acceptable risk level. Therefore, with considerable early warning radars, and significant anti-air and anti-ship defenses, neither the CSG nor the ARG can penetrate the Chinese A2/AD defense set up around the SCS. Making use of China's notable ASW weaknesses illustrates the need for submarines to terminate accessible targets and deliver troops within the SCS island chains.

The United States Navy has three types of nuclear-powered submarines with very different missions. Attack submarines (SSN) are designed to seek and destroy enemy submarines and surface ships, project power ashore with Tomahawk cruise missiles and Special Operation Forces (SOF), carry out Intelligence, Surveillance, and Reconnaissance (ISR) missions, support battle group operations, and engage in mine warfare. *Ohio*-class guided-missile submarines (SSGN) provide the Navy with unparalleled strike and special operation mission capabilities from a stealthy, clandestine platform. Armed with tactical missiles and equipped with superior communications capabilities, SSGNs are capable of directly supporting the Combatant Commander's strike and Special Operation Forces (SOF) requirements. Since the 1960s, the sole mission of nuclear ballistic missile submarines (SSBN) has been strategic deterrence, providing the United States with its most survivable and enduring strategic nuclear strike capability.⁴⁸

Submarines are uniquely designed to access highly defended areas unnoticed; they have a long history of delivering Marines amphibiously behind-the-lines through World War II. Submarines retain this capability, usually reserved for special operations, but have not practiced it with the Marine Corps since the Pacific island-hopping campaign. Submarines are the only platforms with the ability to stealthily penetrate PRC A2/AD screens, but are not even mentioned as an alternative platform to be considered for this purpose within USMC Expeditionary Force 21.⁴⁹ After the initial shaping phase, JFEO will require Marines on the ground to seize and hold an airfield or beachhead to provide maneuver space for subsequent operations against armed opposition, setup EABO, and enable LOCE.

Expeditionary Advanced Base Operations in a strongly contested environment will not be the same as those described in Fleet Marine Force Reference Publication (FMFRP) 12-46, *Advanced Base Operations in Micronesia*, by Major “Pete” Ellis. However, many of the same principals still apply. Today’s EABO shows the colossal advances in technology and organization, yet in the South China Sea will still resemble the island-hopping campaign tactics. Disabling mines and sensors, and deploying troops subsurface to facilitate an amphibious assault will allow the CSG to distribute within the SCS. As forces grow inside the A2/AD environment, EABO will be a force multiplier, further projecting power via DMO.

A major threat to littoral operations in the South China Sea will be PLAN’s stealthy submarine force. The most effective ASW weapon is the submarine. After shaping the battlefield, mapping the minefields, deploying troops, and enabling EABO, U.S. submarines will contribute to the fight with its anti-submarine and anti-surface ship warfare (ASuW). China’s submarine fleet is dispersed throughout the South China Sea and will attempt to obliterate the advancing U.S. surface fleet until restrained by American fast attack submarines. Once the

Chinese submarine threat is neutralized, the ARG and portions of the CSG can begin fighting their way towards the contested Chinese mainland.

Fast Attack and Guided-Missile submarine's ASW, strike, mine, special operations, and ISR capabilities are ideally suited to enable Joint Forcible Entry, Expeditionary Advanced Basing, and Littoral Operations in a Contested Environment. The stealth of the United States' submarine force permits penetration through the first and second island chains A2/AD defenses into the South China Sea. The sensors and offensive firepower onboard the SSN and SSGN contribute to the ASuW and ASW fight and can communicate with nearby assets that feed the Distributed Maritime Operations common operating picture. Submarine proficiency in each of the mission areas is critical because of the number of missions carried out and the various areas they get deployed to. Submarine Officers and crew train on each of their mission sets continuously on board the sub, and at submarine training facilities, for varying predefined geographic Areas of Responsibility (AOR).

Submarine Training Recommendations

The United States Navy submarine force is 120 years old, and Naval Submarine School (NAVSUBSCOL) has been around since 1916, ensuring customs and traditions, and safety and stealth remain paramount, ensuring mission success. NAVSUBSCOL is part of the Submarine Learning Center (SLC), as SLC oversees all aspects of the training curriculum and training centers. All Officers and Enlisted personnel onboard United States submarines go through a rigorous selection process before proceeding to NAVSUBSCOL. Submarine school is the first step for training and indoctrination into submarine life, learning basic theory, construction, and operation of nuclear-powered submarines. Students learn submarine practices and procedures designed to teach essential damage control, rating specific (MOS) operations, and tactics.

The Submarine Learning Center has Submarine Learning Facilities (SLF) in each submarine port, that are manned with the best instructors, who train crews on mission-specific tasks and current tactical guidance. SLF are hands-on trainers, with equipment and simulators, and allow teams to practice the tactics required to accomplish their mission. These versatile trainers enable crews to practice all submarine capabilities for specific AOR at varying levels of difficulty. SLC also makes training products that allow crews to train onboard, individually, or as teams, while in-port or underway. This mission-essential training is incorporated into all aspects of submarine life, individual watch station qualification, training cycle objectives, and deployment workups.

The PLANSEF is comprised of both diesel-electric and nuclear-powered submarines, with the former making up the majority of the force. U.S. submarine crews train on each of them; however, more time and effort is generally spent on highly capable, modern nuclear-powered submarines of the World. Conversely, China's submarine fleet consists of older and less capable nuclear-powered subs and more modern SSK, which creates a knowledge gap on Chinese capability. United States Geographic Combatant Commanders (GCC), Submarine Learning Center (SLF), and NAVSUBSCOL should prioritize diesel submarine tactics to better align with Chinese threat capability to use submarines against China's A2/AD defense in the SCS. Additional area familiarization is required to account for the SCS naturally harsh ASW environment, specifically, phytoplankton rich waters, shallow water near shores and reefs, and multiple straights or narrow sea lanes.

The United States submarine force is more advanced and capable than the PLANSEF, and U.S. submarine weapons systems are possibly the best in the World, but there have not been any significant changes in the fleet with respect to weapon capability. Submarines rely on the use of

torpedoes and missiles to carry out ASW, ASuW, and strike missions, but the weapons in use today are not utilizing current technology. China has ramped up its modernization program significantly closing the U.S. – Chinese naval capability gap. The U.S. military spends a significant amount of money on research and development, including both weapon systems and munitions, but the acquisition program is long and slow. To ensure mission success, there needs to be program reform to meet the numbers and capabilities of a fight today, tomorrow, and ten years from now, focusing on Unmanned Underwater Vehicles (UUV), better torpedoes, and multi-mission missiles that will allow submarines to neutralize A2/AD. The sooner the new weapons systems get to the fleet, the sooner the fleet can train on and employ them.

Submarines are the best platform to penetrate the island chains' defense, but troops on the ground are needed, or Expeditionary Advanced Basing is not possible, and the fight to get to the littorals becomes significantly harder. Submarine special operation capabilities are designed to deliver teams unseen behind adversary lines, but SOF teams are not enough, they need more numbers. Returning Marines to submarines enables EABO and eases the burden for follow-on forces, thereby facilitating LOCE, just as done during the WWII Island-hopping campaign. The CMC and the CNO have called for Marine integration on Navy ships, and doing so on submarines will allow the delivery of a lethal amphibious force undetectably behind adversarial lines.

Conclusion

Since Operation Desert Storm in 1991, China has been preparing its coastal defenses to protect the mainland from attack by the United States military, as it sets to revise the World's rules-based order. The arming of man-made islands and the 2019 Chinese Defense White Paper make it clear that the PRC has set its sights on protecting itself from the U.S. using A2/AD defenses in the SCS. It appears that the top two military powers in the World are destined to collide as China attempts to surpass the U.S. and take over as the World's top and possibly only superpower, creating a unipolar world order.

The Cooperative Strategy for 21st Century Seapower calls on submarines eleven times in describing its strategy, and the Commandant's Planning Guidance mentions subs when discussing future amphibious capability and force development. Submarines are capable of penetrating anti-access/area denial defenses undetected, neutralizing minefields, deploying troops, and conducting anti-submarine and anti-surface ship warfare, thereby enabling Joint Forcible Entry Operations, Expeditionary Advanced Base Operations, Littoral Operations in a Contested Environment, and Distributed Maritime Operations. Submarines can operate on independent operations or as part of a larger battle group, distributing lethality, and projecting power without being seen, while clearing and protecting the straights into and out of the South China Sea.

The United States views China as a revisionist power set to change the World in its favor, and therefore against the U.S. favor. Addressing this threat has been the principal objective of the U.S. National Security and Defense Strategies. With China's already large and still growing economy, single-minded diplomacy, and control of information within its country, it seems destined that conflict will occur. At this point, the only thing China will respect may be military power in the South China Sea. United States maritime strategy will play the most significant role

in projecting power, maximizing influence, and winning battles if the conflict cannot be avoided, and submarines will be the key to victory.

¹ The White House, *The National Security Strategy of the United States of America*, (Washington, DC, 2017), 2, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf/>.

² Jim Mattis, *Summary of the 2018 National Defense Strategy of The United States of America: Sharpening the American Military's Competitive Edge*, (Washington, DC, 2018), 1, <https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.

³ The White House, *The National Security Strategy of the United States of America*, (Washington, DC, 2017), v, <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf/>.

⁴ Ashton Carter and Jennifer Bulkeley, "America's Strategic Response to China's Military Modernization," *Harvard Asia Pacific Review* (2007), 1, <https://www.belfercenter.org/sites/default/files/legacy/files/Americas%20Strategic%20Response.pdf>.

⁵ Anthony Cordesman, "China's New 2019 Defense White Paper," *Center for Strategic & International Studies* (2019), 1, <https://www.csis.org/analysis/chinas-new-2019-defense-white-paper>.

⁶ Department of Defense, *Joint Publication 3-01: Countering Air and Missile Threats*, (Washington, DC: Joint Chiefs of Staff, May 2018), GL-7.

⁷ Department of Defense, *Joint Publication 3-01: Countering Air and Missile Threats*, (Washington, DC: Joint Chiefs of Staff, May 2018), GL-7.

⁸ Department of Defense, *Joint Publication 3-01: Countering Air and Missile Threats*, (Washington, DC: Joint Chiefs of Staff, May 2018), GL-12.

⁹ George Friedman, "3 Maps that Explain China's Real Goal in the South China Sea," *Mauldin Economics* (2017), 2, <https://www.mauldineconomics.com/editorial/3-maps-that-explain-chinas-real-goal-in-the-south-china-sea>.

¹⁰ Bobby Anderson and Charles Perry, "Weighing the Consequences of China's Control Over the South China Sea," *The Institute for Foreign Policy Analysis, Inc.* (2017), 8, http://www.ifpa.org/pdf/PDF_South%20China%20Sea%20Book_BA_11.21.17.pdf.

¹¹ Department of Defense, *Joint Publication 3-18: Joint Forcible Entry Operations CH-1*, (Washington, DC: Joint Chiefs of Staff, June 2018), vii.

¹² Mandy Mayfield, "NEWS FROM SEA-AIR-SPACE: Navy Marine Corps Moving Forward with New Operating Concept," *National Defense Magazine* (2019), 1, <https://www.nationaldefensemagazine.org/articles/2019/5/9/navy-marine-corps-moving-forward-with-new-operating-concept>.

¹³ Art Corbett, *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment*, (Quantico, VA: Marine Corps Warfighting Lab, Concepts and Plans Division, 2018), 5, <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>.

¹⁴ Art Corbett, *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment*, (Quantico, VA: Marine Corps Warfighting Lab, Concepts and Plans Division, 2018), 5, <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>.

¹⁵ James Lacey, "The "Dumbest Concept Ever" Just Might Win Wars," *War on the Rocks* (2019), 2, <https://warontherocks.com/2019/07/the-dumbest-concept-ever-just-might-win-wars/>.

¹⁶ Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), ix.

¹⁷ Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), x.

¹⁸ Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), II-6.

¹⁹ Ray Mabus, *A Cooperative Strategy for 21st Century Seapower*, (Washington, DC: Headquarters Navy, 2015), 19, <https://www.navy.mil/local/maritime/150227-CS21R-Final.pdf>.

²⁰ Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), II-6.

- ²¹ Robert B. Neller, and John M. Richardson, *Littoral Operations in a Contested Environment*, (Washington, DC: Officer of the Chief of Naval Operations, 2017), 9, <https://www.hqmc.marines.mil/Portals/160/LOCE%20full%20size%20edition.pdf?ver=2018-06-20-095003-177>.
- ²² Milan Vego, "On Littoral Warfare," *Naval War College Review*: Vol. 68: No. 2, Article 4, (2015), 3, <https://digital-commons.usnwc.edu/nwc-review/vol68/iss2/4>.
- ²³ Robert B. Neller, and John M. Richardson, *Littoral Operations in a Contested Environment*, (Washington, DC: Officer of the Chief of Naval Operations, 2017), 9, <https://www.hqmc.marines.mil/Portals/160/LOCE%20full%20size%20edition.pdf?ver=2018-06-20-095003-177>.
- ²⁴ Department of Defense, *Joint Publication 3-01: Countering Air and Missile Threats*, (Washington, DC: Joint Chiefs of Staff, May 2018), III-8.
- ²⁵ Mike Colagrossi, "The Thucydides Trap: How to Stop the Looming War Between China and the U.S.," *Big Think Newsletter*, (August 2018), 2, <https://bigthink.com/mike-colagrossi/thucydides-trap-historical-conflicts-of-nation-states>.
- ²⁶ Sam J. Tangredi, *Anti-Access Warfare: Countering A2/AD Strategies*, (Annapolis, MD: Naval Institute Press, 2013), 27.
- ²⁷ George Friedman, "3 Maps that Explain China's Real Goal in the South China Sea," *Mauldin Economics* (2017), 1, <https://www.mauldineconomics.com/editorial/3-maps-that-explain-chinas-real-goal-in-the-south-china-sea>.
- ²⁸ George Friedman, "3 Maps that Explain China's Real Goal in the South China Sea," *Mauldin Economics* (2017), 2, <https://www.mauldineconomics.com/editorial/3-maps-that-explain-chinas-real-goal-in-the-south-china-sea>.
- ²⁹ George Friedman, "3 Maps that Explain China's Real Goal in the South China Sea," *Mauldin Economics* (2017), 2, <https://www.mauldineconomics.com/editorial/3-maps-that-explain-chinas-real-goal-in-the-south-china-sea>.
- ³⁰ Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660-1783*, (Boston, MA: Dover publications, 1987), 107.
- ³¹ Jane's Information Group, "Undersea Dragon: Chinese ASW Capabilities Advance," *Jane's International Defence Review*, (2017), 2-3, https://www.janes.com/images/assets/911/72911/Undersea_dragon_Chinese_ASW_capabilities_advance.pdf.
- ³² Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), GL-6.
- ³³ Reuters Investigates, "The China Challenge: Ruling the Waves," accessed December 06, 2019, <https://www.reuters.com/investigates/special-report/china-army-navy/>.
- ³⁴ Jane's Information Group, "Undersea Dragon: Chinese ASW Capabilities Advance," *Jane's International Defence Review*, (2017), 5,
- ³⁵ Reuters Investigates, "The China Challenge: Ruling the Waves," accessed December 06, 2019, <https://www.reuters.com/investigates/special-report/china-army-navy/>.
- ³⁶ Jane's Information Group, "Undersea Dragon: Chinese ASW Capabilities Advance," *Jane's International Defence Review*, (2017), 5, https://www.janes.com/images/assets/911/72911/Undersea_dragon_Chinese_ASW_capabilities_advance.pdf.
- ³⁷ Rick Joe, "The Chinese Navy's Growing Anti-Submarine Warfare Capabilities," *The Diplomat* (Sept 2018), 3, <https://thediplomat.com/2018/09/the-chinese-surface-fleets-growing-anti-submarine-warfare-capabilities/>.
- ³⁸ Rick Joe, "Chinese Anti-Submarine Warfare: Aviation Platforms, Strategy, and Doctrine," *The Diplomat* (Oct 2018), 2, <https://thediplomat.com/2018/10/chinese-anti-submarine-warfare-aviation-platforms-strategy-and-doctrine/>.
- ³⁹ Rick Joe, "Chinese Anti-Submarine Warfare: Aviation Platforms, Strategy, and Doctrine," *The Diplomat* (Oct 2018), 4, <https://thediplomat.com/2018/10/chinese-anti-submarine-warfare-aviation-platforms-strategy-and-doctrine/>.
- ⁴⁰ Reuters Investigates, "The China Challenge: Ruling the Waves," accessed December 06, 2019, <https://www.reuters.com/investigates/special-report/china-army-navy/>.
- ⁴¹ H. I. Sutton, "China's Submarines May Be Catching Up With The U.S. Navy," *Forbes* (Nov 2019), 2, <https://www.forbes.com/sites/hisutton/2019/11/24/latest-chinese-submarines-catching-up-with-us-navy/#5c8993da298c>.
- ⁴² Rick Joe, "Chinese Anti-Submarine Warfare: Aviation Platforms, Strategy, and Doctrine," *The Diplomat* (Oct 2018), 2, <https://thediplomat.com/2018/10/chinese-anti-submarine-warfare-aviation-platforms-strategy-and-doctrine/>.
- ⁴³ Project Air Force, "An Interactive Look at the U.S.-China Military Scorecard," RAND Corp. (2018), 1,

<https://www.rand.org/paf/projects/us-china-scorecard.html>.

⁴⁴ Kevin Eyer, and Steve McJessy, “Operationalizing Distributed Maritime Operations,” *Center for International Maritime Security*, (March 2019), 2, <http://cimsec.org/operationalizing-distributed-maritime-operations/39831>.

⁴⁵ Kevin Eyer, and Steve McJessy, “Operationalizing Distributed Maritime Operations,” *Center for International Maritime Security*, (March 2019), 2, <http://cimsec.org/operationalizing-distributed-maritime-operations/39831>.

⁴⁶ Department of Defense, *Joint Publication 3-32: Command and Control of Joint Maritime Operations*, (Washington, DC: Joint Chiefs of Staff, June 2018), GL-6.

⁴⁷ Department of Defense, *Joint Publication 3-02: Amphibious Operations*, (Washington, DC: Joint Chiefs of Staff, January 2019), IV-25.

⁴⁸ Global Security, “Submarine Missions,” accessed December 06, 2019, <https://www.globalsecurity.org/military/systems/ship/sub-mission.htm>.

⁴⁹ David C. Fuqea, “Put the Marines Back in Submarines,” *War on the Rocks* (July 2015), 4, <https://warontherocks.com/2015/07/put-the-marines-back-in-submarines/>.

Bibliography:

- Anderson, Bobby, and Charles Perry. "Weighing the Consequences of China's Control Over the South China Sea." *The Institute for Foreign Policy Analysis, Inc.* (2017), http://www.ifpa.org/pdf/PDF_South%20China%20Sea%20Book_BA_11.21.17.pdf.
- Ani. "Is China Planning to use Military Force." *The Economic Times* (2019), <https://economictimes.indiatimes.com/news/defence/is-china-planning-to-use-military-force/articleshow/71610444.cms>.
- Bailey, Branden. *Offsetting Tomorrow's Adversary in a Contested Environment: Defending Expeditionary Advance Bases in 2025 and Beyond*. Master's thesis, Air War College, 2017. Semantic Scholar <https://www.semanticscholar.org/paper/OFFSETTING-TOMORROW'S-ADVERSARY-IN-A-CONTESTED-IN-Bailey/307c87b3f471615575c2b4b7f908cdca43b6f913>
- Berger, David H. *Commandant's Planning Guidance*. Washington, DC: Office of the Commandant of the Marine Corps, July 2019. https://www.hqmc.marines.mil/Portals/142/Docs/%2038th%20Commandant%27s%20Planning%20Guidance_2019.pdf?ver=2019-07-16-200152-700
- Carter, Ashton, and Jennifer Bulkeley. "America's Strategic Response to China's Military Modernization." *Harvard Asia Pacific Review* (2007), <https://www.belfercenter.org/sites/default/files/legacy/files/Americas%20Strategic%20Response.pdf>.
- Clausewitz, Carl von. *On War*. Edited by Michael Howard and Peter Paret. Translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1984.
- Colagrossi, Mike. "The Thucydides Trap: How to Stop the Looming War Between China and the U.S." *Big Think Newsletter*, (August 2018). <https://bigthink.com/mike-colagrossi/thucydides-trap-historical-conflicts-of-nation-states>
- Corbett, Art. *Expeditionary Advanced Base Operations (EABO) Handbook: Considerations for Force Development and Employment*. Quantico, VA: Marine Corps Warfighting Lab, Concepts and Plans Division, 2018. <https://mca-marines.org/wp-content/uploads/Expeditionary-Advanced-Base-Operations-EABO-handbook-1.1.pdf>
- Cordesman, Anthony. *China's New 2019 Defense White Paper*. Center for Strategic and International Studies (2019). <https://www.csis.org/analysis/chinas-new-2019-defense-white-paper>
- Dempsey, Martin E. *Capstone Concept for Joint Operations: Joint Force 2020*. Washington, DC: Headquarters JCS, September 2012. <https://www.benning.army.mil/mssp/security%20topics/Global%20and%20Regional%20Security/content/pdf/Setting%20the%20Azimuth%20for%20Joint%20Force%202020.pdf>
- Department of Defense. *Description of the National Military Strategy 2018*. Washington, DC: Joint Chiefs of Staff, 2018. https://www.jcs.mil/Portals/36/Documents/Publications/UNCLASS_2018_National_Military_Strategy_Description.pdf
- Department of Defense. *Joint Publication 3-01: Countering Air and Missile Threats*. Washington, DC: Joint Chiefs of Staff, May 2018.
- Department of Defense. *Joint Publication 3-02: Amphibious Operations*. Washington, DC: Joint Chiefs of Staff, January 2019.
- Department of Defense. *Joint Publication 3-18: Joint Forcible Entry Operations CH-1*. Washington, DC: Joint Chiefs of Staff, June 2018.
- Department of Defense. *Joint Publication 3-32: Command and Control of Joint Maritime Operations*. Washington, DC: Joint Chiefs of Staff, June 2018.
- Ellis, Earl H. *FMFRP 12-46 Advanced Base Operations in Micronesia*. Washington, DC: Headquarters Marine Corps, 1992.
- Eyer, Kevin, and Steve McJessey. "Operationalizing Distributed Maritime Operations." *Center for International Maritime Security*, (March 2019). <http://cimsec.org/operationalizing-distributed-maritime-operations/39831>
- Friedman, George. "3 Maps that Explain China's Real Goal in the South China Sea." *Mauldin Economics* (2017). <https://www.mauldineconomics.com/editorial/3-maps-that-explain-chinas-real-goal-in-the-south-china-sea>
- Fuquea, David C. "Put the Marines Back in Submarines." *War on the Rocks*, (July 2015). <https://warontherocks.com/2015/07/put-the-marines-back-in-submarines/>
- Gilsinan, Kathy. "How the U.S. Could Lose a War with China." *The Atlantic* (2019), <https://www.theatlantic.com/politics/archive/2019/07/china-us-war/594793/>.
- Goldstein, Lyle. "China Girds for Undersea Battle in the South China Sea." *The National Interest* (Dec 2018).

<https://nationalinterest.org/feature/china-girds-undersea-battle-south-china-sea-38452>

- Heath, Timothy, Kristen Gunness, and Cortez Cooper III. *The PLA and China's Rejuvenation: National Security and Military Strategies, Deterrence Concepts, and Combat Capabilities*. www.rand.org (2016)
https://www.rand.org/pubs/research_reports/RR1402.html
- Hooper, Craig. "Why China's Big Military Parade is Nothing to be Afraid of." *Forbes Magazine* (2019),
<https://www.forbes.com/sites/craighooper/2019/10/01/why-chinas-big-military-parade-is-nothing-to-be-afraid-of/#5797eca47ae9>.
- Jane's Information Group. "Undersea Dragon: Chinese ASW Capabilities Advance." *Jane's International Defence Review*, (2017).
https://www.janes.com/images/assets/911/72911/Undersea_dragon_Chinese_ASW_capabilities_advance.pdf
- Joe, Rick. "The Chinese Navy's Growing Anti-Submarine Warfare Capabilities." *The Diplomat* (Sept 2018).
<https://thediplomat.com/2018/09/the-chinese-surface-fleets-growing-anti-submarine-warfare-capabilities/>
- Joe, Rick. "Chinese Anti-Submarine Warfare: Aviation Platforms, Strategy, and Doctrine." *The Diplomat* (Oct 2018).
<https://thediplomat.com/2018/10/chinese-anti-submarine-warfare-aviation-platforms-strategy-and-doctrine/>
- Koda, Yoji. "Countering Beijing's South China Sea Strategy." *The Japan Times* (Dec 2019).
<https://www.japantimes.co.jp/opinion/2019/12/10/commentary/japan-commentary/countering-beijings-south-china-sea-strategy/#.XnVm1W5FxpZ>
- Lacey, James. "The 'Dumbest Concept Ever' Just Might Win Wars." *War on the Rocks* (2019).
<https://warontherocks.com/2019/07/the-dumbest-concept-ever-just-might-win-wars/>
- Lamothe, Dan. "Tension on the South China Sea Draws Concerns. So Should Submarine Warfare Underneath." *The Washington Post* (Apr 2016). <https://www.washingtonpost.com/news/checkpoint/wp/2016/04/13/tension-on-the-south-china-sea-draws-concerns-so-should-submarine-warfare-underneath/>
- Lu, Zhenhua. "US Military Plans New War-Fighting Concept in Response to Threat from China, Russia." *South China Morning Post* (2019),
<https://www.scmp.com/news/china/diplomacy/article/2187006/us-military-plans-new-war-fighting-concept-response-threat>.
- Mabus, Ray. *A Cooperative Strategy for 21st Century Seapower*. Washington, DC: U.S. Government, 2015.
<https://www.navy.mil/local/maritime/150227-CS21R-Final.pdf>
- Mahan, Alfred Thayer. *The Influence of Sea Power upon History, 1660-1783*. Boston, MA: Dover publications, 1987.
- Mattis, Jim. *Summary of the 2018 National Defense Strategy of The United States of America: Sharpening the American Military's Competitive Edge*. Washington, DC, 2018.
<https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf>.
- Mayfield, Mandy. "NEWS FROM SEA-AIR-SPACE: Navy Marine Corps Moving Forward with New Operating Concept." *National Defense Magazine* (2019).
<https://www.nationaldefensemagazine.org/articles/2019/5/9/navy-marine-corps-moving-forward-with-new-operating-concept>
- Neller, Robert B. and John M. Richardson. *Littoral Operations in a Contested Environment*. Washington, DC: Officer of the Chief of Naval Operations, 2017.
<https://www.hqmc.marines.mil/Portals/160/LOCE%20full%20size%20edition.pdf?ver=2018-06-20-095003-177>
- O'Connor, Tom. "China May Win Fight 'Before America Can Respond' in Pacific." *Newsweek* (2019),
<https://www.newsweek.com/china-win-america-pacific-1455065>.
- Paret, Peter, ed. *Makers of Modern Strategy: from Machiavelli to the Nuclear Age*. Princeton, NJ: Princeton University Press, 1986.
- Project Air Force. *An Interactive Look at the U.S.-China Military Scorecard*. www.RAND.org (2018). <https://www.rand.org/paf/projects/us-china-scorecard.html>.
- Richardson, John M. *A Design for Maintaining Maritime Superiority, version 2.0*. Washington, DC: Office of the Chief of Naval Operations, 2018.
https://www.navy.mil/navydata/people/cno/Richardson/Resource/Design_2.0.pdf
- Sutton, H. I. "China's Submarines May Be Catching Up With The U.S. Navy." *Forbes* (Nov 2019).

<https://www.forbes.com/sites/hisutton/2019/11/24/latest-chinese-submarines-catching-up-with-us-navy/#5c8993da298c>

Tangredi, Sam J. *Anti-Access Warfare: Countering A2/AD Strategies*. Annapolis, MD: Naval Institute Press, 2013.

The White House. *The National Security Strategy of the United States of America*.

Washington, DC, 2017. <https://www.whitehouse.gov/wp-content/uploads/2017/12/NSS-Final-12-18-2017-0905.pdf/>.

Tice, Ryan. "Naval Integration Begins in the Classroom." *U.S. Naval Institute* (Jan 2020).

<https://www.usni.org/magazines/proceedings/2020/january/naval-integration-begins-classroom>

Vego, Milan. "On Littoral Warfare." *Naval War College Review*: Vol. 68: No. 2, Article 4, (2015).

<https://digital-commons.usnwc.edu/nwc-review/vol68/iss2/4>

Yoshihara, Toshi, and James Holmes. *Red Star Over The Pacific*. Annapolis, MD: Naval Institute Press, 2018.