The Limits of Chinese Naval Power
Part 1: Claims & Conflicts
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Background
Over the past several years, China has taken numerous aggressive actions and provocative stances in the South and East China Seas (SCS and ECS, respectively). Its People’s Liberation Army Navy (PLAN) vessels vigorously patrol these waters, and have artificially constructed island-naval bases to militarily defend their state’s political claims over the SCS. These territorial claims are largely unsupported by the international community and the United Nations Convention on the Law of the Sea (UNCLOS). China has voiced similar territorial claims in the ECS as well. China’s actions in the SCS and ECS have encouraged its maritime neighbors—namely Taiwan, Vietnam, Indonesia, and Malaysia—to increase their military presence and readiness in order to counter Chinese aggression.

Our first poster will examine China’s territorial claims, its attempts to project power, and past confrontations in the South China Sea. Our second poster will focus on the response of China’s maritime neighbors and explore how they have adopted Anti-Access/Area-Denial (A2AD) strategies to counter perceived Chinese aggression. With an A2AD strategy, a state uses weapons such as missiles and mines to prevent an opposing military from advancing toward its claimed or sovereign territory. Our third poster will attempt to predict future security environments in the SCS and ECS based on the stated defense procurement plans of the involved parties.

Introduction
In the East China Sea, China and Japan have been at odds over legal rights to the Senkaku/Diaoyu Islands, as well as on the extent of their Exclusive Economic Zones (EEZs). EEZs typically include the maritime areas within 200 nautical miles (nm) from a country’s coastline, but the distance between the two countries is only 360 nm. China has declared as Air Defense Identification Zone (ADIZ) in the SCS extending far beyond its recognized UNCLOS claim. Our second map goes beyond China’s UNCLOS Claims line vector layer to show China’s military capabilities on Woody Island, which we will later discuss in depth. We then use the feature-to-polygon tool to convert this line-vector to an polygon-vector following, we union our 9-Dash Line polygons with our shore-based ASBM buffer and select (by attribute) overlapping areas. By using the Statistics tool, we can find the density of China’s unrecognized claims are covered by Vietnam’s shore-based ASBMs. To show China’s military capabilities on Woody Island, we first activate the Paracel Island point layer. We then select (by attribute) Woody Island and export this element as a new point layer. Next, we create buffers around Woody Island using the combine range of the following systems: HQ-9 Surface-to-Air Missile (150 km), YJ-62 Anti-Ship Cruise Missile (400 km), the JH-7A Fighter Bomber (1333 km), and the J-11 Fighters (1400 km). For the fishing incidents map, we start with the point layer of fishing incidents. We then use the ellipse tool to show where the incidents were concentrated, using one standard deviation. We repeat these steps to create the naval confrontations map. To create the density map, we start by merging the naval and fishing incident point-layer vectors. Using this “general incidents” point-layer vector, we perform a Kernel density analysis to better illustrate incident concentration. We did not fill the Population field, as our incident points contained location coordinates without values.

Results
Our first map clearly shows the large scale of China’s maritime claims. This is especially important in the SCS, where China’s 9-Dash Line extends far beyond its recognized UNCLOS claim. Our second map focused on China’s unrecognized claims continues this theme, but also introduces our central thesis that China’s maritime neighbors’ A2AD coverage in these seas makes it difficult for China to project power in the region. Our third map depicts the weaponization of Woody Island is a prime example of how China is expanding its power projection capabilities. The following three incident maps show that regional conflict is not merely a theoretical issue, but a real and current danger. These maps also show that conflict points concentrate along the disputed Paracel and Spratly Islands. Furthermore, it is important to note that several of these confrontations occurred in waters that are undeniably part of Vietnam’s Exclusive Economic Zone (EEZ). This helps demonstrate how aggressive China’s Coast Guard has been in the SCS. Finally, the large distribution of naval confrontations (even at one standard deviation), shows that China’s maritime neighbors should prepare for conflict along a large front.

If we compare the Woody Island map to our incident maps, we see how potentially decisive China’s Woody Island base could be in a maritime conflict in the SCS. This leads to another critical conclusion—should war break out between Vietnam and China, it would be a strategic imperative for Vietnam to neutralize China’s Woody Island airfield as soon as possible.

Methodology
In order to create these maps, we need the following layers: a country polygon-vector layer, a 9-Dash Line line-vector, a China UNCLOS Claim line-vector, point-vectors of recent naval and fishing incidents, a Paracel Islands point-vector layer, and point coordinates outlining the Chinese ADIZ. We will also need the ranges of several Chinese weapon systems (detailed below), as well as a vessel-based Anti-Ship Missile (ASM) buffer created in Post 2.

To illustrate how much of China’s unrecognized claims in the SCS (represented by its 9-Dash Line) are covered by its neighbors’ shore-based ASM, we first need to merge the 9-Dash Line line-vector layer with the China UNCLOS Claims line-vector layer. We then use the feature-to-polygon tool to convert this line-vector into a polygon-vector following, we union our 9-Dash Line polygons with our shore-based ASBM buffer and select (by attribute) overlapping areas. By using the Statistics tool, we can find how much of China’s unrecognized claims are covered by Vietnam’s shore-based ASBMs. This raster map shows the density of both naval and fishing incidents in the SCS. It reveals a strong concentration of incidents around the Spratly and Paracel Islands, which is to be expected given their strategic value. There is little reason to expect a change in this trend in the near future, as all parties are unwilling to back down and lose face in any conflict around these islands. If a conflict does break out in the Paracels, China would have an advantage based on the island chain’s proximity to its coast, but this would not be the case for a conflict in the Spratlys (more on this in Poster 2).

China’s Unrecognized SCS Claims
By connecting the extent of China’s recognized (UNCLOS) and unrecognized (9-Dash Line) claims, we can estimate the total area of China’s unrecognized SCS claims. Given its maritime neighbors’ A2AD capabilities in the SCS, however, it will be difficult for China to control this area. Our analysis shows that Vietnam’s shore-based Anti-Ship Missiles (ASM) alone cover 29% of China’s unrecognized claims in the SCS. We will later discuss A2AD coverage in depth.

Windy Island Airfield Construction
Given the extensive waters claimed in its 9-Dash Line, China has difficulty projecting power further south in the SCS. China’s military only has one, obsolete aircraft carrier and 13 aerial refueling tanker aircraft. To offset this problem, China has constructed an airfield on Woody Island in the Paracels. China has already deployed HQ-9 Surface-to-Air Missile (SAM) batteries and shore-based YJ-62 ASM to this island-base to defend its claims in the Paracels from enemy warships and aircraft. Perhaps even more concerning to China’s maritime neighbors are China’s deployments of JH-7A Fighter Bombers and J-11 Fighters, which would dramatically improve China’s ability to fight in an SCS-based conflict.

Fishing Incidents
In recent years, numerous conflicts have arisen between China and its maritime neighbors over fishing rights in the disputed waters of the SCS. These incidents often take the form of Chinese Coast Guard vessels harassing Vietnamese, Indonesian, or Malaysian fishing boats. These maps display the number of fishing incidents from 2009 and measures their geographic distribution. It reveals a strong ellipse that very closely matches the distribution of fishing incidents. We then use the ellipse tool to measure their geographic distribution (one standard deviation). This ellipse shows that the naval clashes tend to be more distributed and more common in the south than are fishing incidents.

Naval Confrontations
China and its maritime neighbors tend to view their coast guard as extensions of their navies, instruments of projecting power and asserting control, rather than police forces. Chinese Coast Guard vessels routinely clash with Vietnamese, Indonesian, and Malaysian coast guard and naval ships in the SCS. These confrontations, should they escalate, could lead to war between China and its maritime neighbors. This map shows confrontations since 1974 and again uses an ellipse to measure their geographic distribution. It reveals a strong ellipse that very closely matches the distribution of naval confrontations.

Density of Combined Incidents
This raster map shows the density of both naval and fishing incidents in the SCS. It reveals a strong concentration of incidents around the Spratly and Paracel Islands, which is to be expected given their strategic value. There is little reason to expect a change in this trend in the near future, as all parties are unwilling to back down and lose face in any conflict around these islands. If a conflict does break out in the Paracels, China would have an advantage based on the island chain’s proximity to its coast, but this would not be the case for a conflict in the Spratlys (more on this in Poster 2).