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# China's Giant Ionosphere-Zapping Radar Is a Defense System Masquerading as Science

The new facility may target U.S. submarines in the South China Sea.







University of Alaska

The South China Morning Post recently **revealed plans for a new Chinese radar facility** on the island of Hainan, China's southernmost point. Described as a "high-powered incoherent scatter radar," this installation will bounce radio waves off the Earth's high-altitude layer of charged gas called the ionosphere.

Although the project is in step with the county's other mega-science projects—like planning the **world's most powerful particle accelerator**, building **the largest single dish radio telescope**, or racing other nations to **the nuclear fusion finish line**—experts think the new facility is more interested in military matters than discovering the secrets of Earth's upper atmosphere.

## America's Least Secret Weapon

The possible military benefits of an ionosphere radar isn't lost on other countries, especially the U.S. The Navy and DARPA ran a similar facility– the <u>High Frequency Active Auroral Research Program</u> (HAARP) in Gakona, Alaska—before it was passed to the University of Alaska in 2014. Although it was sold as a project focused on studying the ionosphere, these 40 acres of radar antennas figured prominently in <u>conspiracy theories</u> involving government-sanctioned <u>weather control</u>, human-made <u>earthquake and tsunamis</u> or just general "<u>mental</u> <u>disruption throughout a region</u>."





HAARP array

The conspiracy theories **don't hold up**, of course. Today the University of Alaska runs HAARP, pointing its arrays skyward for researching atmospheric plasmas, solar wind, and the behavior of particles in the ionosphere. But militaries are still intensely interested in the ionosphere because of one major tool on today's modern **battlefield: satellites.** 

During HAARP's military tenure, experiments investigated possibilities of turning the ionosphere into a giant antenna for **Extremely Long Frequency** (ELF) radio waves. Unlike shorter radio wavelengths, ELFs travel through water and can be picked up by submarines at operating depth as deep as several hundred feet and several experiments tested this methods sub-aquatic communication abilities. The U.S. also hypothesized that ELF **could detect mines** or interfere with enemy satellites.

The Chinese facility will be similar to HAARP in many ways. Expected to begin construction later this year, it'll be somewhat smaller having only "several hundred" megawatts, compared to HAARP's 5.1 gigawatts of power. The big difference is motivation: the main purpose of the facility is apparent in its incredibly strategic location in the South China Sea.

### **China's Reply**

HAARP was deliberately sited in the wilds of Alaska; the nearest settlement is Gakona, population two hundred. The Chinese facility is on the **densely-population island** of Hainan, beside Sanya, a beach-side city bigger than Miami or Honolulu with more than four hundred thousand inhabitants.

It's an unusual location, according to Sue Mitchell of the University of Alaska Geophysical Institute, who says HAARP's location was so remote partly because its high-power transmissions could have big city complications. "These can interfere with commercial radio stations in the area," Mitchell told Popular Mechanics. "Siting it near a major city could cause issues."

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There's also the question of air traffic. HAARP's radio beam would have serious effects on any passing plane's electronics. Whenever the facility is in operation, a Temporary Flight Restriction closes the surrounding area to aircraft. This happens only three or four times a year, but it can last up to ten days at a time.

"Air traffic is pretty sparse around Gakona, Alaska," says Mitchell. "That was part of the reason for it being located where it is."

By contrast, Hainan is the middle of international air traffic lanes for flights to China, Malaysia, Vietnam, and the Philippines. Any highpowered transmission is going to cause significant disruption or risk accidents. But where its location might be a headache for airline industries, it's military benefits are equally numerous.

As long as U.S. submarines operate in this part of the world, China has no chance of dominating it. But a system which could blank out ELF communications and selectively interfere with other satellite communications would severely affect any submarine operations in the South China Sea.

China could even use the new array as a transmitter for ELF radar to detect submarines at long range. The U.S. Navy <u>discounted this</u> <u>approach in the '80s</u> but the technology may be ripe for reappraisal. At least a dozen of recent scientific papers have looked at ELF radar for investigating <u>underground features</u>, finding <u>natural resources</u>, and <u>locating pipelines</u>. Interestingly, almost all these research papers have been from China. <u>One paper</u> suggests the same technique might be applied to 'underwater target detection,' <u>another</u> looks at ELFs for detection of underwater objects. Finding submarines is definitely on the agenda.

This idea isn't as far-fetched as it seems. In order to make it work, a military would need aircraft flying nearby with a magnetic detector to pick up radar returns. China's new **Y-8Q Maritime Surveillance Aircraft** can do just that—and it's already deployed in the South China Sea.

### **Science Plus Military Equals Power**



Journalist Stephen Chen, who **broke the story about the new ionospheric radar** in the *South China Morning Post*, told Popular Mechanics he has no doubt that the Hainan radar is primarily a military project.

While the facility may also have a scientific function, Chen says there is little talk surrounding the project in recent international academic meetings and the fact that many of its details are classified is unusual for such a "scientific" project.

"The available information strongly suggested the facility's role and function to help China strengthen its grip on the South China Sea," says Chen, who spoke with multiple inside sources about military aspects of the project.

China already leads the world in scientific output, and now its science is joining forces with its invigorated military ambitions. Hainan's new ionospheric radar is not an earthquake-producing, hurricane-causing superweapon that many conspiracy theorists fear, but it may be the beginning of a major powershift in the South China Sea.

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