

The Opportunities for Cooperation on Environment, Humanity and Cultural Heritage in the South China Sea: A Preliminary Study

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I. Introduction

The “South China Sea Arbitration” July 2016.

Islands are colored by occupying country: **China**, the **Philippines**, **Malaysia**, **Vietnam** or **Taiwan**. Lines in the same colors show the extent of territorial claims.



http://www.nytimes.com/interactive/2015/07/30/world/asia/what-china-has-been-building-in-the-south-china-sea.html?_r=0

Sources: C.I.A., NASA,
China Maritime Safety
Administration

SOUTH CHINA SEA | Wed Jul 27, 2016 | 8:05pm EDT

U.S. diplomatic strategy on South China Sea appears to founder



“
ON NOVEMBER 8TH,
AMERICA'S COMEBACK BEGINS -
AND WE ARE GOING TO
RISE UP
FROM OUR PRESENT CHALLENGES
BIGGER AND BETTER
AND STRONGER
THAN EVER BEFORE.
-DONALD J. TRUMP

<http://www.independent.co.uk/arts-entertainment/music/news/no-one-seems-to-want-to-play-donald-trumps-inauguration-a7436531.html>

ASPI

AUSTRALIAN
STRATEGIC
POLICY
INSTITUTE

THE STRATEGIST

South China Sea: the problem of the marine environment

3 Jun 2015 | [Anthony Bergin](#)

In April the Philippine Department of Foreign Affairs pointed out that China's reclamation activities in the South China Sea were causing ['irreversible and widespread damage to the biodiversity and ecological balance'](#).

The [statement](#) noted that China's activities have so far caused destruction of 'over 300 hectares of coral reef systems, amounting to an annual economic loss of US\$100 million'. The damage extends beyond the artificial islands into the waters of surrounding littoral states.

China was criticised for 'tolerating harmful practices and harvesting of endangered species' that are protected under the Convention on Biological Diversity and the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

<http://www.aspistrategist.org.au/south-china-sea-the-problem-of-the-marine-environment/>

II. Land Reclamation

What China Has Been Building in the South China Sea

By **DEREK WATKINS**

UPDATED October 27, 2015

August 2014

Images by Digital Globe, via the CSIS Asia Maritime Transparency Initiative, and CNES, via Airbus DS and IHS Jane's

http://www.nytimes.com/interactive/2015/07/30/world/asia/what-china-has-been-building-in-the-south-china-sea.html?_r=0

22 January 2006

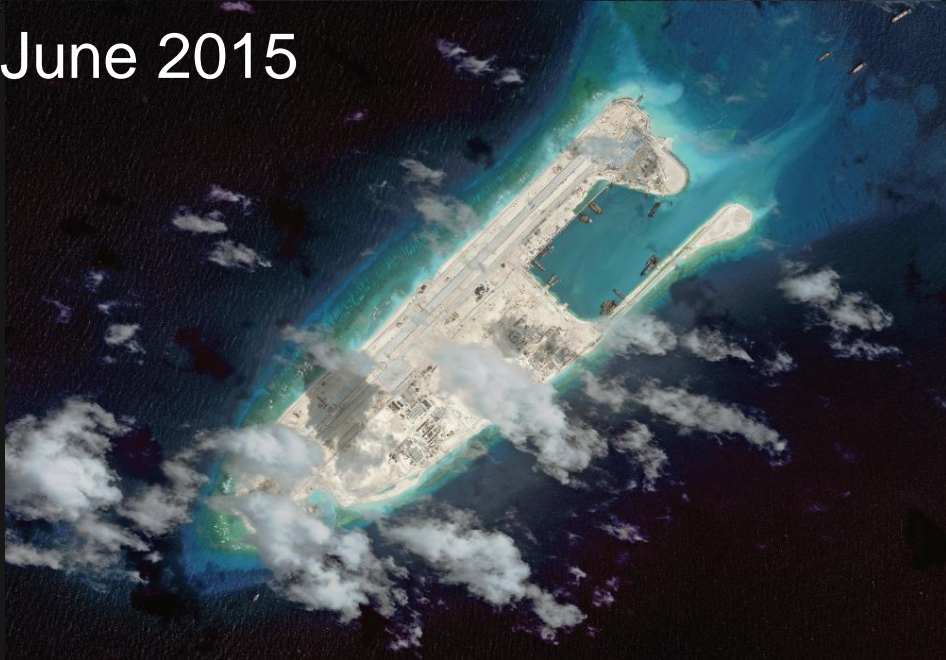


December 2014



Fiery Cross Reef
永暑礁

28 June 2015



February 2015



FIERY CROSS REEF

June 3, 2016



永暑礁

South China Sea Images reveal impact on coral of Beijing's military bases

The reclamation of land in the contested Spratly archipelago to build runways, military outposts and even small towns is endangering ecosystems that are key to maintaining world fish stocks and biodiversity.

"The photo of **Mischief Reef** is particularly disturbing," says McManus, an expert in marine biology and fisheries at the University of Miami. The reef covers an area of about 45m sq metres, not including dense corals that extend dozens of metres deep.

美濟礁

<http://www.theguardian.com/world/ng-interactive/2015/sep/17/south-china-sea-images-reveal-impact-on-coral-of-beijings-military-bases>

Dredgers pump sediment onto Mischief Reef, March 2015.



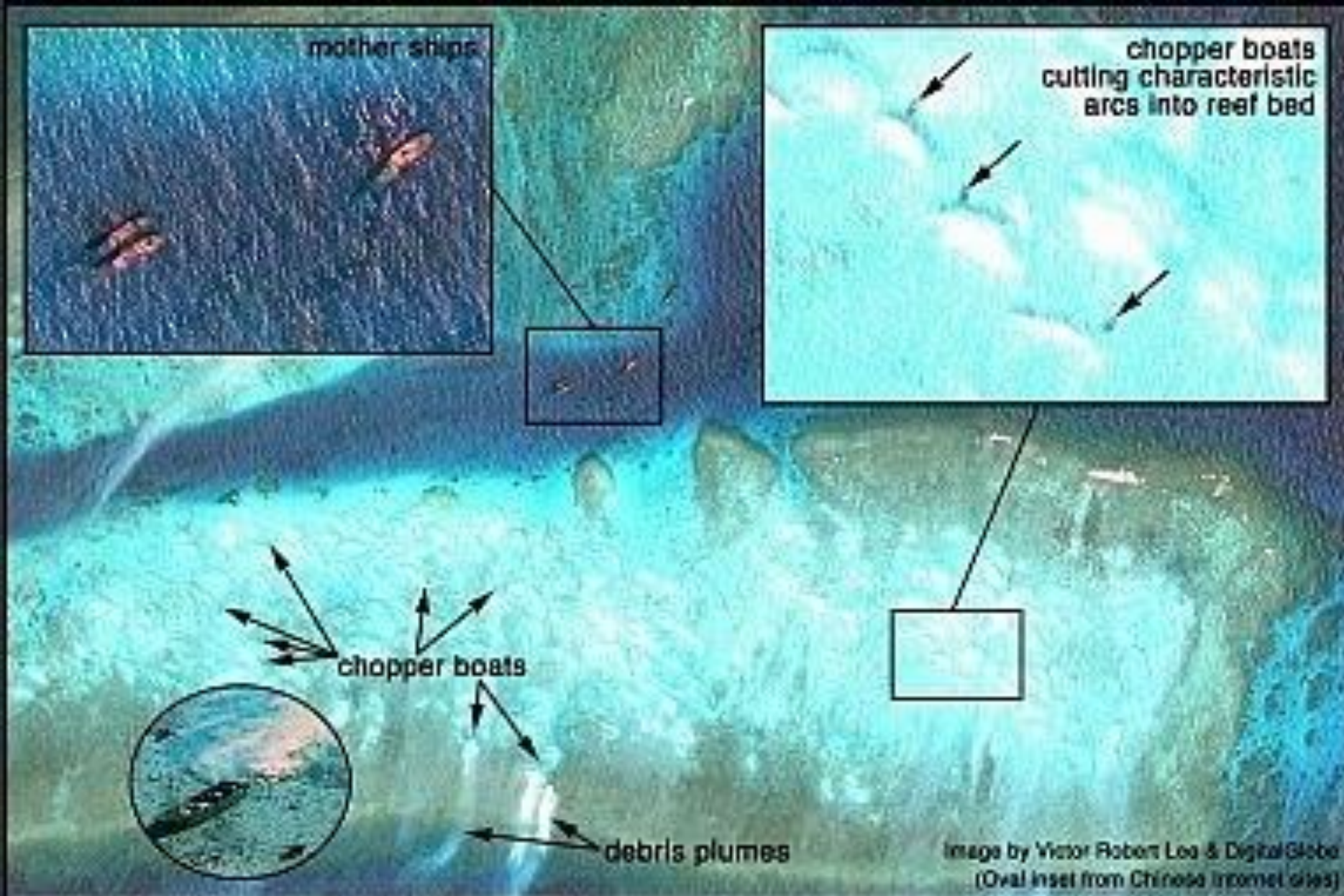


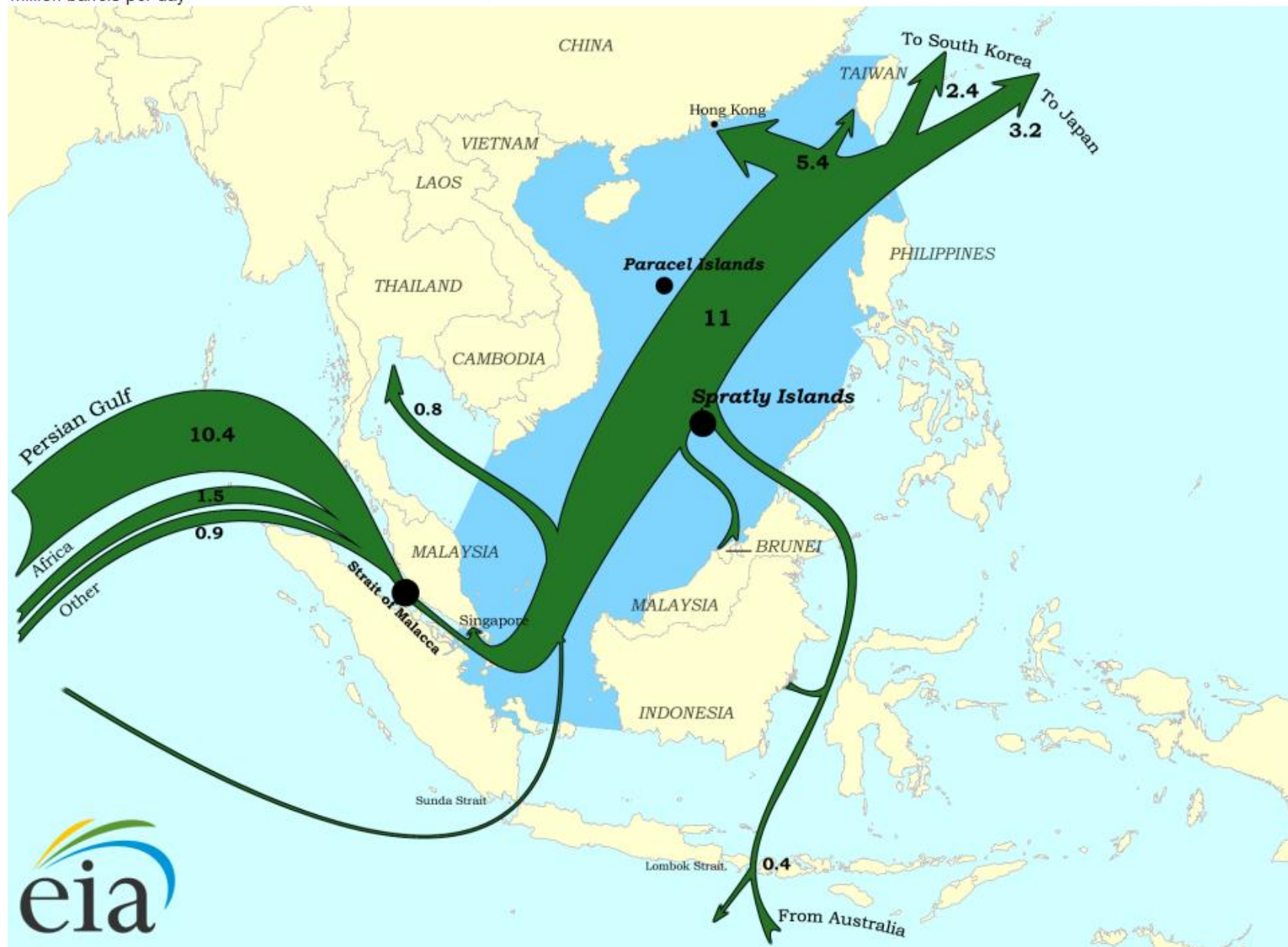
Image by Victor Robert Lee & DigitalGlobe
(Oval inset from Chinese internet sites)

**Reef chopping underway at East Thitu Reefs. 31 chopper boats and 6 mother ships are present in the original frame.
5 March, 2014**

<https://johnib.wordpress.com/2016/01/15/satellite-images-of-the-south-china-sea-shows-mans-ecological-ruin-of-the-seas-and-coral-reefs-xi-jinping-forms-chinese-maritime-militia-to-fight-the-philippines-and-vietnam/>

III. Environmental Damage

Major crude oil trade flows in the South China Sea (2011)
million barrels per day

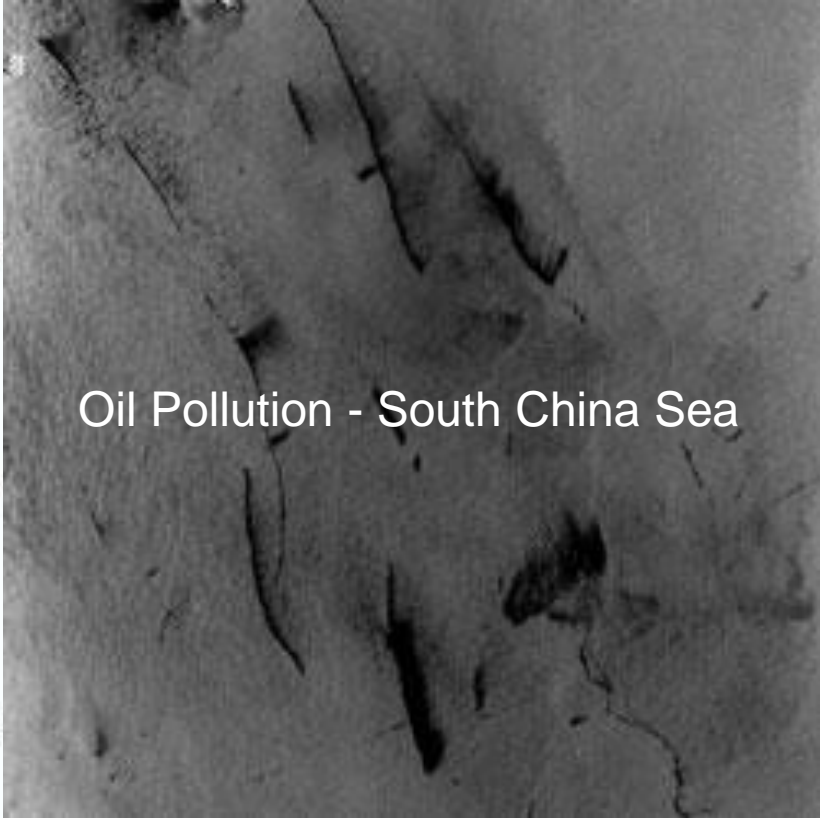
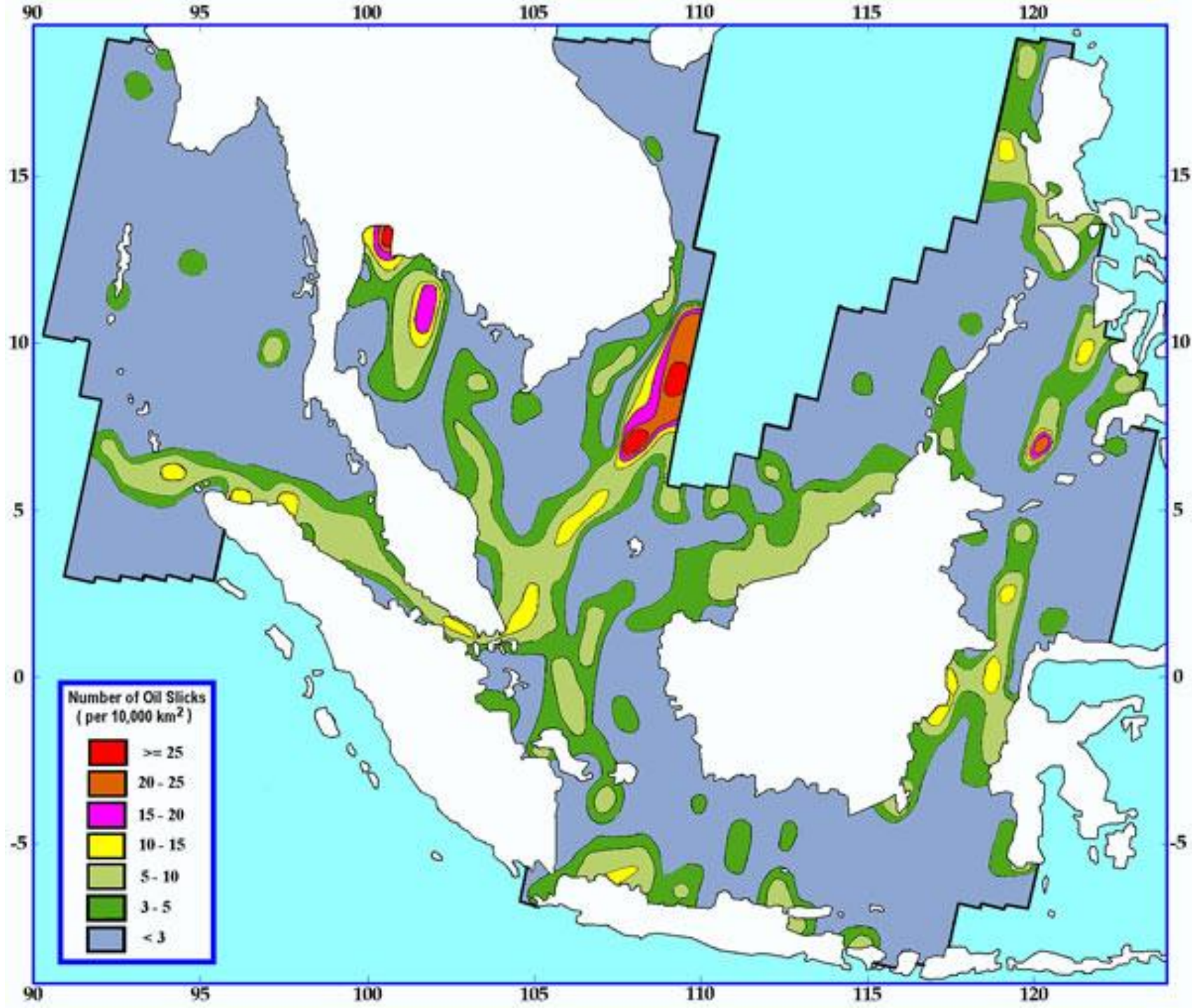


An important route for international shipping of crude oil

重要原油運輸路線

<http://www.eia.gov/todayinenergy/images/2013.04.04/mapIngbig.png>





Oil Pollution - South China Sea

Latitude: 04° 20' N - Longitude: 103° 59' E

A sea area off the east coast of Malaysia (near Kuantan) which is heavily polluted by oil discharged from ships.

Spatial distribution map of oil pollution in Southeast Asian waters during the period of September 1995 to September 1998. Figure provided by CRISP.

Haze from Indonesia Fire 印尼霾害

A11 國際新聞

自由時報

東南亞殺手霾 恐害10萬人早死

研究指出，印尼去年嚴重的霾害，可能造成東南亞各國逾10萬人早死。
(法新社檔案照)



【編譯孫宇青／綜合報導】美國哈佛大學及哥倫比亞大學最新研究指出，去年自印尼爆發、蔓延至東南亞多個國家，且持續長達數週的霾害，恐造成逾十萬人早死。這項研究成果將對印尼政府造成壓力，促其加強改善「殺手霾」所帶來的環境問題，以避免受害者數逐年增加。

印尼焚林整地 霾害殃及鄰國

印尼蘇門答臘和加里曼丹地區向來有「焚林整地」的習俗(俗稱燒芭)，但這種耕種方式容易引發山林大火，進而引發嚴重的霾害。去年七月至十月間發生在印尼的山林大火，在聖嬰現象影響下成為一九九七年以來最嚴重的一次，霾害更在季風助長下迅速擴散至馬來西亞、新加坡、菲律賓、汶萊、越南、泰國等東南亞國家，當地民眾苦不堪言。

這項由哈佛大學及哥倫比亞大學合作進行、發表於《環境研究通訊》期刊(Environmental Research Letters)的研究，著重在細懸浮微粒(PM2.5)對成年人在死亡率上的影響，結合衛星數據、暴露於霧霾下對健康的衝擊的數據，以及污染監測站的數據，並透過精密分析模型預測受霾害影響而致早死的人數。

研究結果顯示，去年霾害可能在印尼奪走九一六〇〇條人命，比官方公布的十九人高出許多；而在馬來西亞和新加坡，也分別有六五〇〇〇人及二〇〇〇人因此早死。印尼災害管理機構去年十月公布的報告也顯示，有逾四三〇〇萬國民暴露在霾害中，更有約五十萬人罹患急性呼吸系統疾病。

處理霾害相關問題的印尼研究人員及醫療人員，都認為該研究有助於進一步量化林火霾害對人體健康的嚴重後果。環保組織「綠色和平」也稱讚該研究提出具突破性的結果，但也警告上述的死亡數字可能只是一「保守估計」。

此外，該研究透過人造衛星觀察資料指出，去年印尼伐木許可範圍內的泥炭地造成的火勢，高於二〇〇六年另一場嚴重霾害，凸顯印尼土地使用行為與龐大紙漿造紙產業的問題。印尼環境保護當局則強調，正逐步執行抗霾行動，包括禁止開發新的棕櫚油栽植地，以及專門處理泥炭地等。

<https://www.theguardian.com/world/2016/sep/19/haze-indonesia-forest-fires-killed-100000-people-harvard-study>

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Indonesia

Haze from Indonesian fires may have killed more than 100,000 people - study

Harvard and Columbia universities estimate tens of thousands of premature deaths in areas closest to blazes clearing forest and peatland



A MI-17 helicopter run by the Indonesian National Disaster Mitigation Agency water-bombs a fire in South Sumatra province. Photograph: Abdul Qodir/AFP/Getty Images

陸源污染

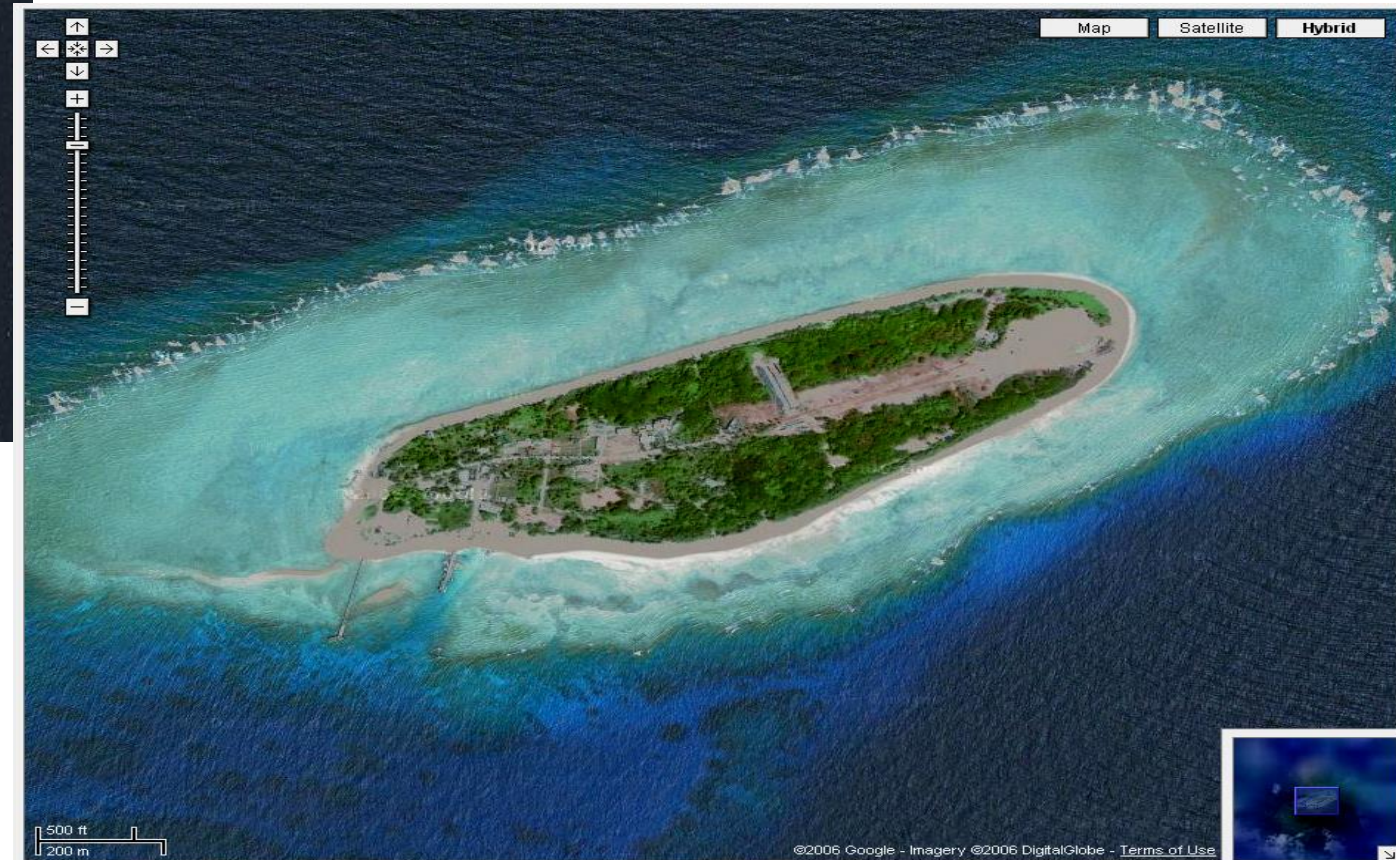
Land-based Pollution



太平島 (2015年4月23日)

Taiping (Itu Aba) Island

太平島



太平島-機場開挖中 2006-2-17

<http://maps.google.com/?ie=UTF8&t=k&om=1&z=13&ll=10.374193,114.408703&spn=0.117017,0.127888>



太平島（鄭明修博士提供）



太平島（鄭明修博士提供）

IV. Illegal Fishing



(鄭明修博士提供)



Destructive Fishing

Photo courtesy of CGA

Turtle capture and coral reef mining are still common in the coastal waters of Dongsha (Pratas) Island

大陸盜捕太囂張...東沙綠蠵龜被砍頭 / 聯合新聞網 2016-03-28



Indonesia's explosive response regarding illegal fishing vessels could show the seriousness of the problems in the region.



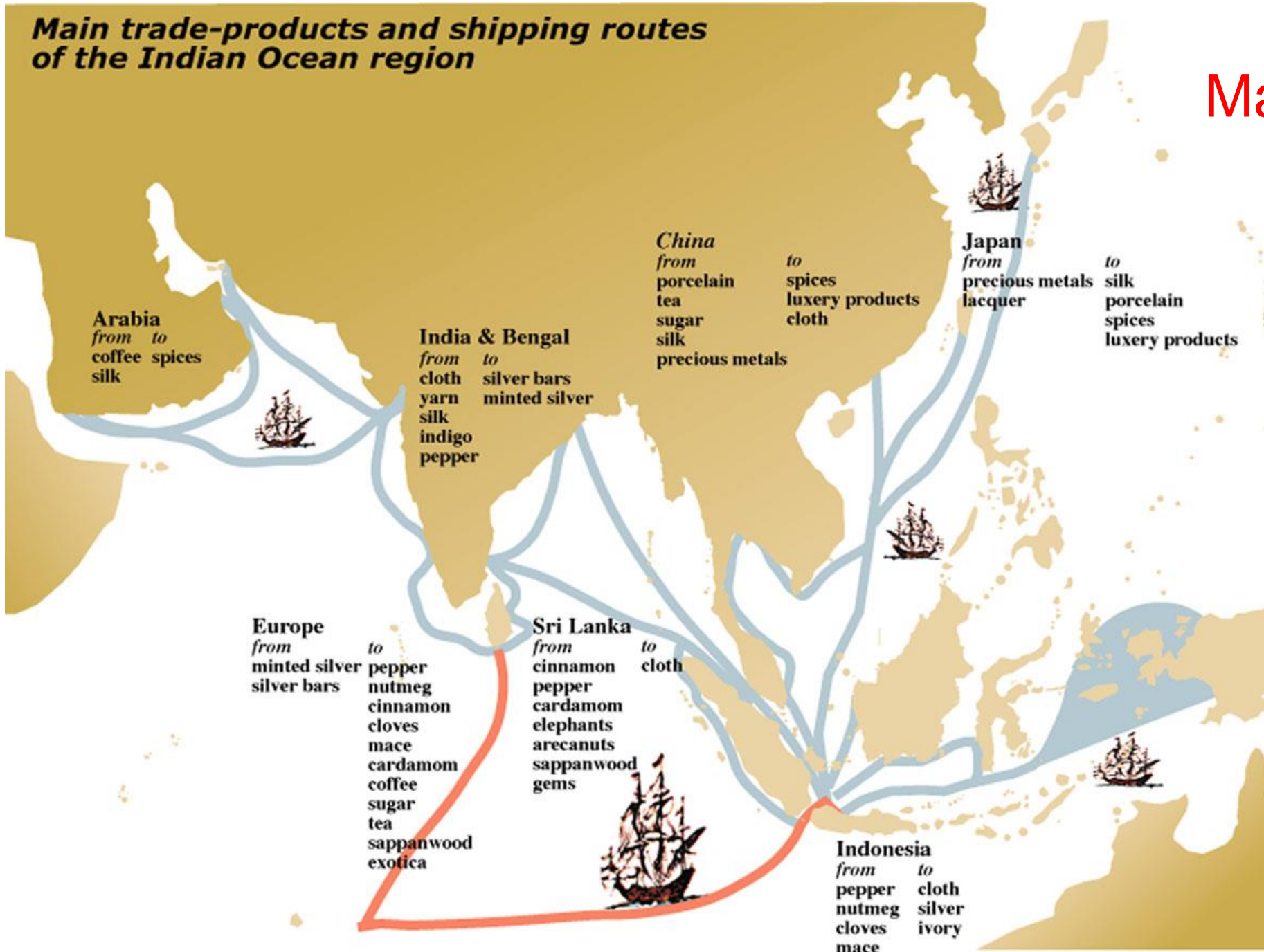
「南海仲裁案」裁決在即，中國與印尼又在南海發生糾紛。中國外交部發言人華春瑩昨(19)日表示，針對中國漁船在南海納土納群島附近作業，遭多艘印尼軍艦射擊並扣押，造成1人中彈受傷，1艘漁船和7名漁民被扣，已向印尼提出強烈抗議，並指印尼軍艦「濫用武力襲擾」漁船，嚴重違反國際法。

香港《明報》報導，印尼海軍發言人前日稱，該國一艘海軍軍艦KRI Imam Bonjol 383扣押了一艘中國漁船和7名中國船員，指該漁船在印尼毗鄰南海的領海內非法捕魚。發言人指印尼軍艦收到報告稱，有12艘外國漁船在納土納海非法捕魚，發現印尼軍艦接近時，漁船全速逃跑。軍艦鳴槍警示數次後，有一艘漁船停下，船上有1女6男，全部為中國籍。

鉅亨網新聞中心 2016/06/20

V. Underwater Cultural Heritage

Main trade-products and shipping routes of the Indian Ocean region



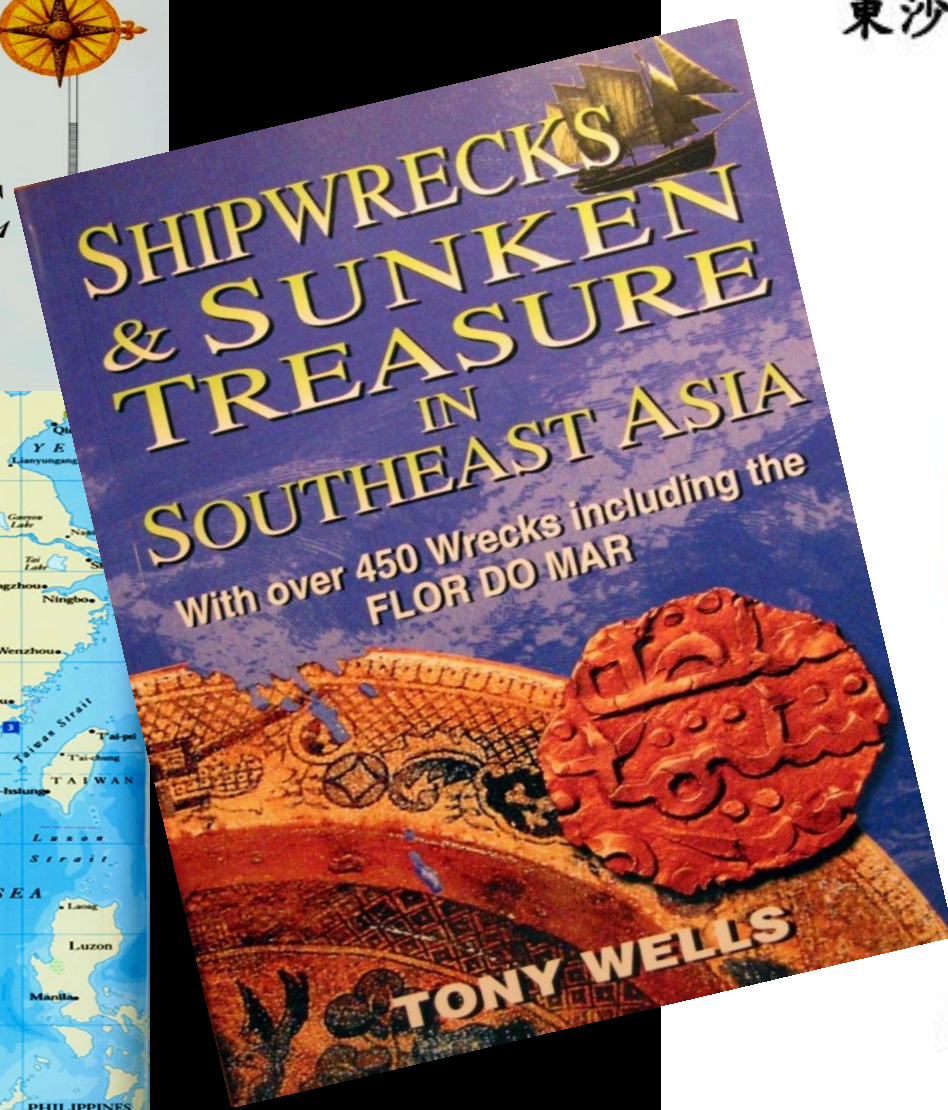
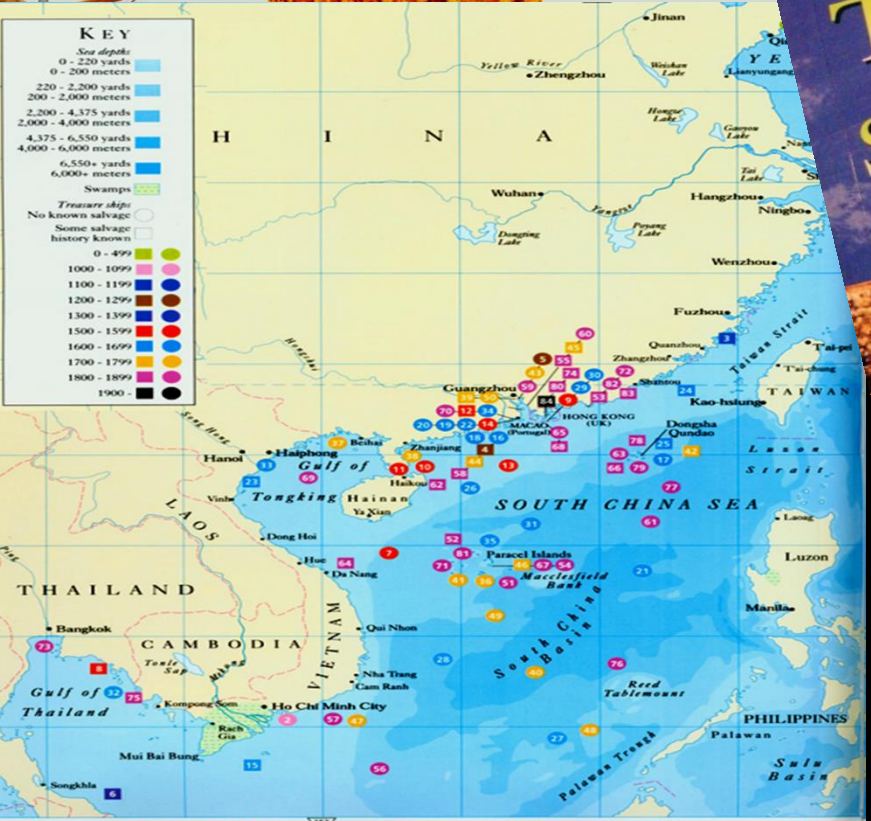
Maritime Silk Road

海上絲綢之路



http://zh.wikipedia.org/w/index.php?title=Image:Zheng_He.jpg&variant=zh-hk

The ATLAS of SHIP WRECKS & TREASURE



東沙海域古沉船遺蹟之調查研究



受委託者：財團法人海洋台灣文教基金會
 研究主持人：邱文彥
 協同主持人：陳陽益、謝新曦
 研究員：田文敏
 研究助理：張芳嘉、陳泰安

內政部營建署委託辦理報告

中華民國 94 年 12 月

The excavation of the "South China Sea No. 1."



張威先生提供



http://www.google.com.tw/imgres?imgurl=http://big5.gov.cn/gate/big5/www.gov.cn/jrzg/images/images/00123f321bf108d6049b03.jpg&imgrefurl=http://big5.gov.cn/gate/big5/www.gov.cn/jrzg/2007-12/21/content_840928.htm&h=352&w=500&sz=60&tbnid=ttYve6trKwUYwM:&tbnh=92&tbnw=130&prev=/images%3Fq%3D%25E5%258D%2597%25E6%25B5%25B7%25E4%25B8%2580%25E8%2599%259F&hl=zh-TW&usg=__zRsNSAMxcEPg4jgdzMMmq0pXl6c=&ei=JF7WS7G6Jo3c7AP0lemMAw&sa=X&oi=image_result&resnum=6&ct=image&ved=0CByQ9QEwBQ

萬曆號 The 'Wanli' Shipwreck

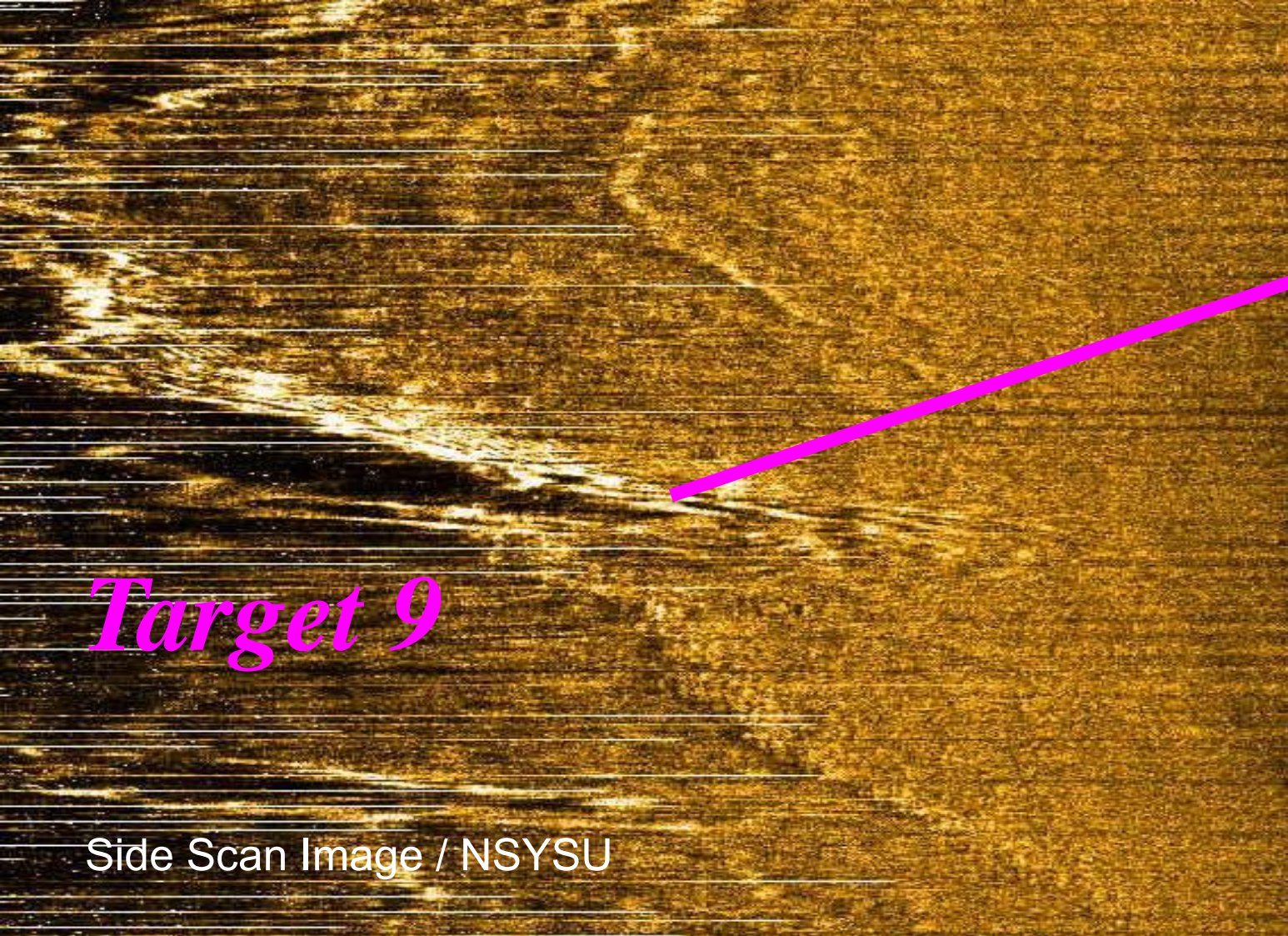
A 17th century shipwreck in the South China Sea



<http://www.mingwrecks.com/Wanli.html>

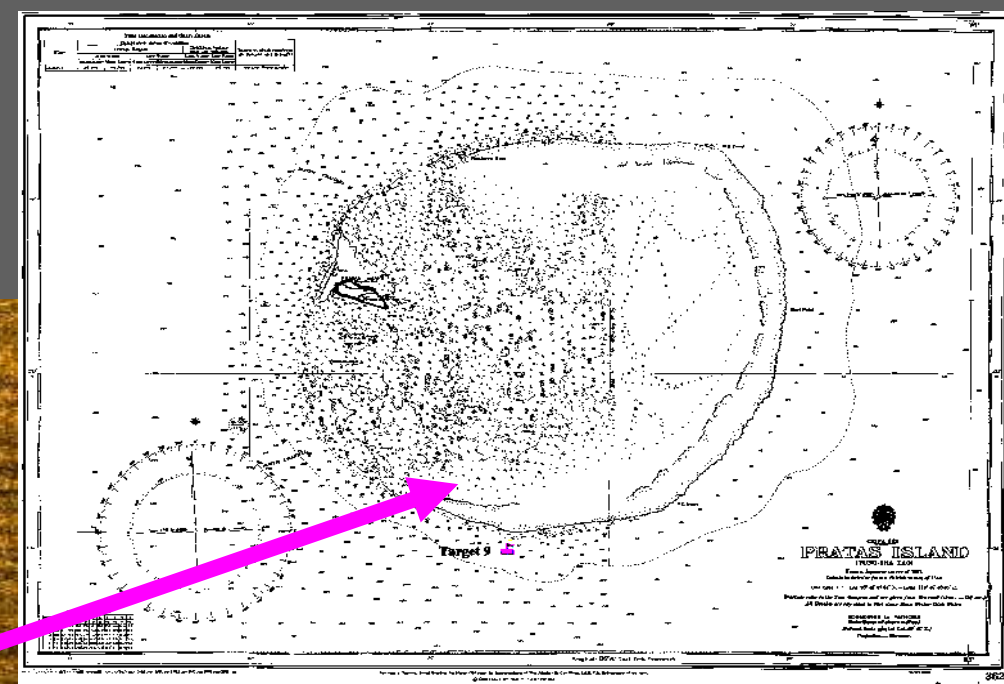


Taiwan has enacted and put the *Underwater Cultural Heritage Preservation Act* into force in December 2015.

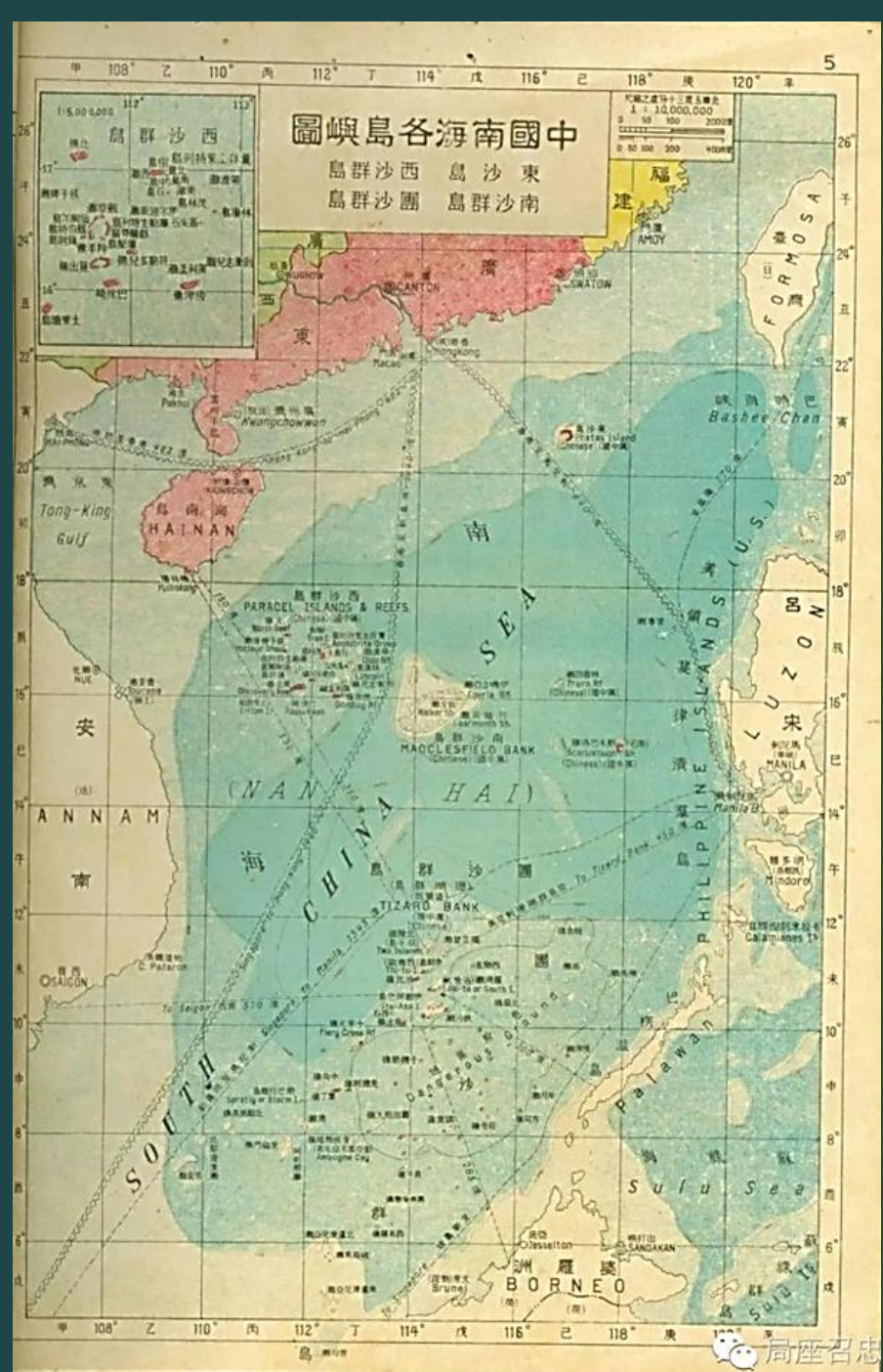


Target 9

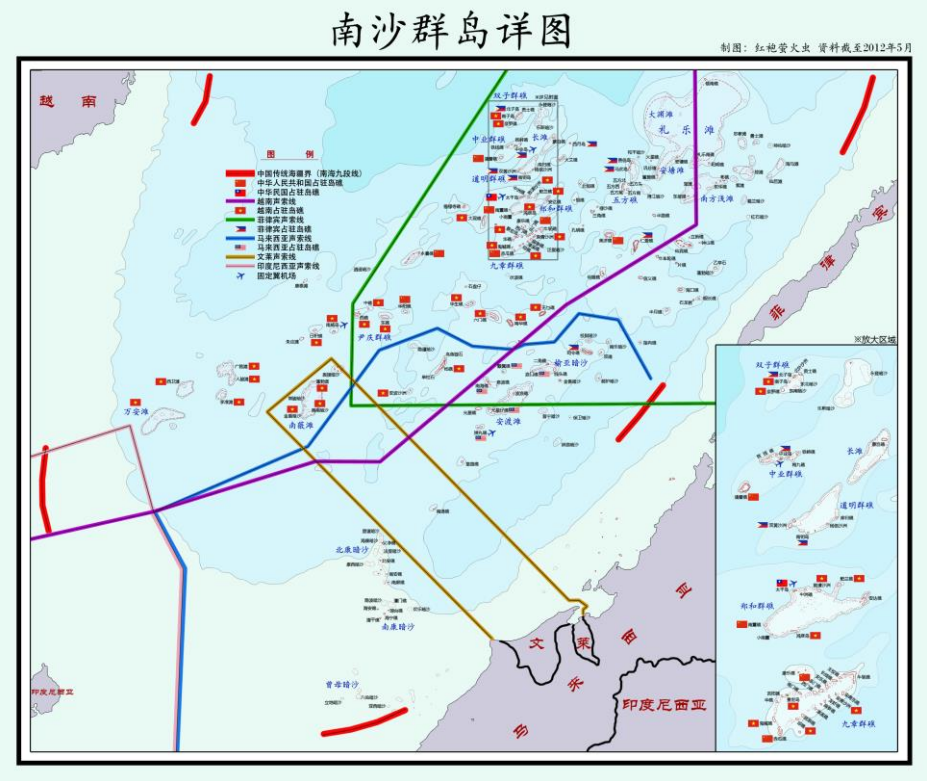
Side Scan Image / NSYSU



VI. Opportunities for Cooperation

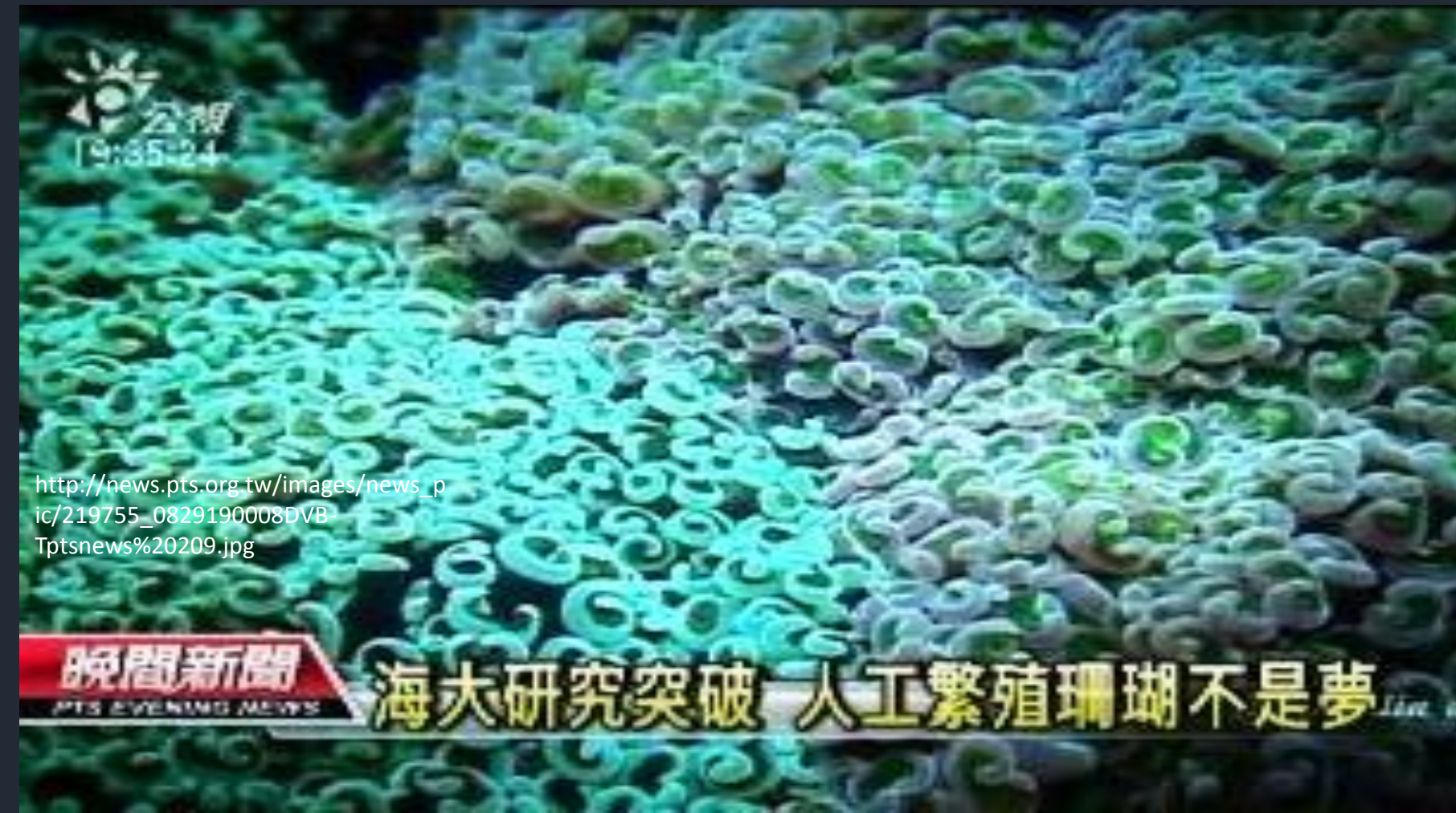


Having stated its position on the South China Sea Arbitration, Taiwan urges that disputes in the South China Sea be settled peacefully through multilateral negotiations.



<https://upload.wikimedia.org/wikipedia/commons/1/1f/%E5%8D%97%E6%B2%99%E7%BE%A4%E5%B2%9B2012%E5%B9%B4%E5%BD%A2%E5%8A%BF%E5%9B%BE.gif>

(1) Conduct ecological restoration in the degraded areas, especially for adapting to the impact of climate change;



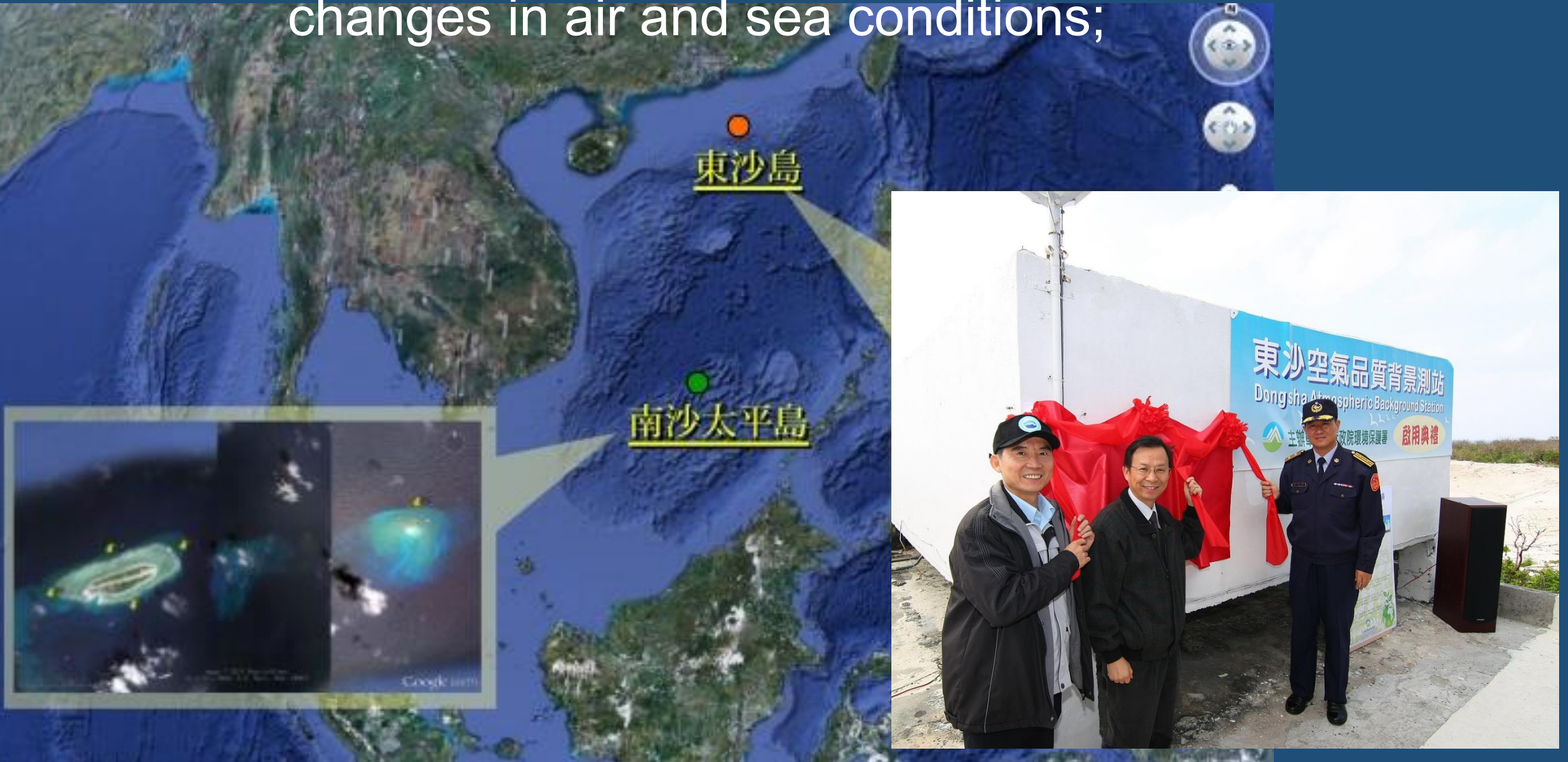


攝影 / 林裕洋

(2) Initiate cooperative projects to prevent and control marine pollution;



(3) Establish an environmental monitoring network for changes in air and sea conditions;



(4) Coordinate a search and rescue system,
based on risk analysis, for humanity sake;

Taiwan holds rescue drill off Taiping Island in South China Sea

2016/11/29 13:02:58

<http://focustaiwan.tw/news/aip/201611290007.aspx>

中馬舉行聯合軍事演習，主題為人道主義救援聯合
行動“和平友誼-2016”中國-馬來西亞聯合軍事演
習於11月22日至25日在馬來西亞巴耶英達附近地域
舉行。 <http://www.chinanews.com/gn/2016/11-25/8074959.shtml>



http://inews.gtimg.com/newsapp_bt/0/835585008/641



(5) Follow the principles of the UNESCO convention and initiate cooperative projects on research, investigation, training, education and protection of underwater cultural heritage;



UNESCO Convention on the Protection of the Underwater Cultural Heritage

<http://islandfreepress.org/2015Archives/03.25.2015-GraveyardOfTheAtlanticMuseumToHostUnderwaterHeritageSymposium.jpg>



<http://digitalanatolia.etc.ucla.edu/UCH/wp-content/uploads/2014/05/%C2%A9-2009-SAD-Tahsin-Ceylan-5-805x525.jpg>

(6) Encourage the delineation of marine protected areas (MPAs) and negotiate the establishment of a MPAs network for mutual benefits in the region;



<http://www.isvolunteers.org/blog/wp-content/uploads/2012/11/Blog-marine-reserves-300x222.jpg>

MARINE PROTECTED AREAS

SMART INVESTMENTS IN OCEAN HEALTH

MPAs ARE AN ESSENTIAL TOOL FOR THE RECOVERY AND PROTECTION OF OUR OCEAN AND THE VITAL SERVICES IT PROVIDES, BUT DO THEY MAKE ECONOMIC SENSE?

THE STUDY
A NEW STUDY EXPLORES THE BENEFITS OF MARINE PROTECTED AREA (MPA) EXPANSION BASED ON 6 EXPLORATORY SCENARIOS AND EXAMINES WHETHER AN ECONOMIC CASE CAN BE MADE GLOBALLY FOR EXPANSION OF MPAs.

6 EXPLORATORY SCENARIOS
EXPANDING MPAs TO COVER:
10% & 30%

INTO AREAS OF:
• LOW BIODIVERSITY & LOW HUMAN IMPACT
• HIGH BIODIVERSITY & LOW HUMAN IMPACT
• HIGH BIODIVERSITY & HIGH HUMAN IMPACT

HABITATS
THE HABITATS INCLUDED IN THIS STUDY ARE LIMITED TO:
MANGROVES, CORAL REEFS, SEAGRASS, COASTAL WETLANDS

BENEFITS
THE BENEFITS OF ECOSYSTEMS ARE LIMITED TO INCLUDE:
COASTAL PROTECTION, FISHERIES, TOURISM, RECREATION, CARBON STORAGE

COSTS
THE COSTS OF EXPANDING MPAs THAT WERE INCLUDED IN THE STUDY ARE:
SET UP COSTS + OPERATING COSTS + OPPORTUNITY COSTS TO FISHERIES

MPAs ARE VITAL FOR HEALTHY, RESILIENT & PRODUCTIVE ECOSYSTEMS THAT SUPPORT HUMAN WELL-BEING

THE RESULTS
THIS STUDY OF THE ECONOMIC IMPACT OF EXTENDING MPAs GLOBALLY SUGGESTS ECONOMIC BENEFITS OUTWEIGH THE COSTS

BENEFIT: COST RATIO
ACROSS ALL SIX SCENARIOS, BENEFITS OUTWEIGH THE COSTS RANGING BETWEEN
3:1 & 20:1

ECONOMIC BENEFITS
THE NET ECONOMIC BENEFIT OF EACH SCENARIO IS ESTIMATED TO BE IN THE RANGE OF USD 490-920 BILLION OVER THE PERIOD 2015-2050
THIS ADDS AN IMPORTANT REASON FOR GOVERNMENTS, BUSINESS, COMMUNITIES AND FINANCIAL INSTITUTIONS TO INCREASE INVESTMENT IN MPA IMPLEMENTATION

TOTAL NET BENEFITS
BENEFITS:
THE SCENARIO OF EXPANDING TO 10% OF OCEAN AREA: US\$622-923 BILLION
THE SCENARIO OF EXPANDING TO 30% OF OCEAN AREA: US\$791-1,145 BILLION
MINUS COSTS:
US\$45-47 BILLION
US\$223-228 BILLION

EQUALS TOTAL NET BENEFITS FROM 2015 TO 2050
US\$490-920 BILLION
NET IMPROVEMENT ACROSS THE SCENARIOS AS MEASURED BY THE BENEFITS MINUS THE COSTS

This infographic is based on: the study: Brander, L., Dulacomb, C., van der Leij, J. A. C., Eppink, E., McVittie, A., Nijssen, L., van Duinker, P. 2015. The benefits to people of expanding Marine Protected Areas. VU University, Amsterdam, The Netherlands.

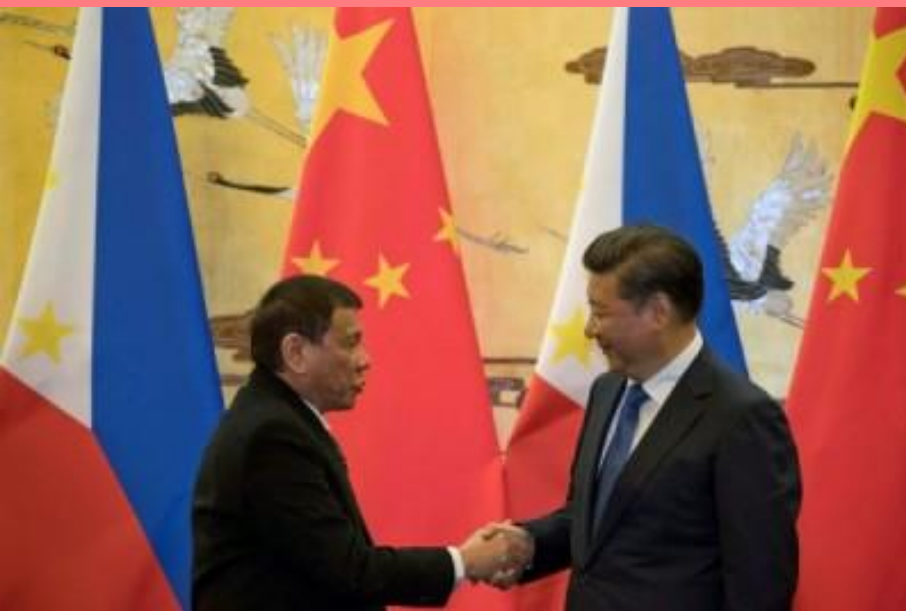


Philippines to Declare Marine Sanctuary in South China Sea

The New York Times / NOV. 21, 2016

China's Xi Jinping open to Duterte's proposal of marine sanctuary

Xi said China and Philippines should see the disputed Scarborough Shoal as a "symbol of cooperation."



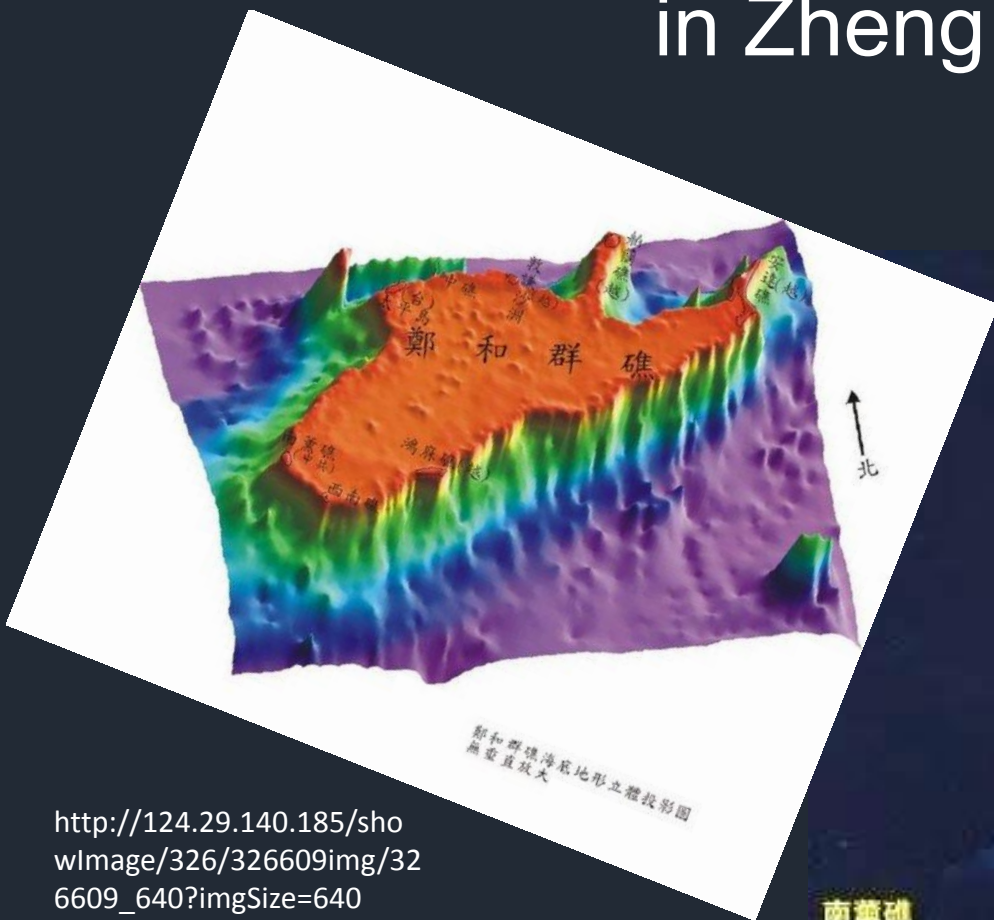
(7) Facilitate dialog to reach consensus via adequate international mechanisms, and consider to establish an international peace park in the South China Sea.



https://en.wikipedia.org/wiki/Waterton-Glacier_International_Peace_Park#/media/File:MK02244_Waterton_Glacier_International_Peace_Park.jpg



Establish the Zheng He International Peace Park in Zheng He Atoll ??



http://124.29.140.185/showImage/326/326609img/326609_640?imgSize=640

http://mmbiz.qpic.cn/mmbiz_jpg/4xfVDEKuv2wA1MKTF3qGfQm81PR4vgcicnicmRjrlXqys6XTDhGMsM3OQOXsVB9zx14YmOz2FibcnGNSEADhYwF3A/0?/1.jpg



郑和群礁
微信号: ifenghistory



和平之海、合作之海、豐澤之海

“a sea of peace, cooperation and productivity”

Photo / W. Y. Chiau

Thank You



太平島 Taiping Island, April 11, 2003