

# Dataset of the South China Sea U-boundary and the Geographical Names for Part of the Nanhai Zhudao

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**Abstract:** A dataset of the South China Sea (SCS) U-boundary (1948) was obtained by extracting coordinate information for the solid-line U-boundary delineated on the Map of East Indies reported in the *Chinese Science Bulletin* using geographic information system technology. A dataset of the geographical names of Nanhai Zhudao (the SCS Islands) was obtained by extracting the names from the Map of East Indies (and five other maps of the SCS published in the same period). As historical data relating to national boundary delimitation in the South China Sea, the two datasets have important implications for the investigation of the delineation and evolution of China's maritime boundary in the SCS and will serve as important historical evidence for China to protect its territorial sovereignty and maritime rights and interests in the SCS.

**Keywords:** South China Sea U-boundary; geographic name; Map of East Indies; South China Sea Islands; South China Sea

**DOI:** <https://doi.org/10.3974/geodp.2022.01.16>

**CSTR:** <https://cstr.escience.org.cn/CSTR:20146.14.2202.01.16>

## Dataset Availability Statement:

The dataset supporting this paper was published and is accessible through the *Digital Journal of Global Change Data Repository* at: <https://doi.org/10.3974/geodb.2021.08.07.V1> or <https://cstr.escience.org.cn/CSTR:20146.11.2021.08.07.V1>; <https://doi.org/10.3974/geodb.2021.09.06.V1> or <https://cstr.escience.org.cn/CSTR:20146.11.2021.09.06.V1>.

## 1 Introduction

China's Nanhai Zhudao (the South China Sea Islands) consist of the Dongsha Islands, the Xisha Islands, the Zhongsha Islands and the Nansha Islands. China is the first to have

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**Received:** 10-20-2021; **Accepted:** 15-01-2022; **Published:** 25-03-2022

**Foundations:** China Geological Survey Project (DD20191001, DD20189410)

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**Data Citation:** [1] Li, J. M., Zhang, W. Z., Liu, S. H., *et al.* Dataset of the South China Sea U-boundary and the geographical names for part of the Nanhai Zhudao [J]. *Journal of Global Change Data & Discovery*, 2022, 6(1): 118–124. <https://doi.org/10.3974/geodp.2202.01.16>. <https://cstr.escience.org.cn/CSTR:20146.14.2022.01.16>.

[2] Li, J. M., Zhang, W. Z., Liu, S. H., *et al.* Dataset of the South China Sea U-boundary based on the map of East Indies published by Ya Kwang Geographical Institute in 1948[J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. <https://doi.org/10.3974/geodb.2021.08.07.V1>. <https://cstr.escience.org.cn/CSTR:20146.11.2021.08.07.V1>.

[3] Li, J. M., Zhang, W. Z., Liu, S. H., *et al.* Dataset of geographical names of islands from six maps covering South China Sea published from 1940s to 1950s [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. <https://doi.org/10.3974/geodb.2021.09.06.V1>. <https://cstr.escience.org.cn/CSTR:20146.11.2021.09.06.V1>.

discovered, named, and explored and exploited the South China Sea Islands and relevant waters, and the first to have exercised sovereignty and jurisdiction over them continuously, peacefully and effectively, thus establishing territorial sovereignty and relevant rights and interests in the South China Sea<sup>[1]</sup>. The South China Sea (SCS) is rich in resources and has an extremely important strategic status. Territorial sovereignty and maritime boundary delimitation in the SCS are issues involving the core interests of China. Tang *et al.*<sup>[2]</sup> rediscovered that on the New Map of the People's Republic of China<sup>[3]</sup> published in 1951 (on which China's SCS U-boundary was delineated using the solid-line national boundary symbol), the SCS came under the jurisdiction of the South-Central Administrative Region. They verified that both the solid-line and the dashed-line U-boundary were then internationally recognized methods for the delineation of national maritime boundaries and proposed the use of the "South China Sea U-boundary" for describing China's maritime boundary in the SCS. Tang *et al.*<sup>[4]</sup> also raised the problem of the zoning of the ecological environment along the SCS U-boundary. Luo *et al.*<sup>[5]</sup> found another version of the national boundary delimitation in the SCS—also using the solid-line national boundary symbol—in the Map of East Indies<sup>[6]</sup> and further explained the implications of China's sovereignty over the SCS and the SCS U-boundary. As a major medium for representing national boundaries, maps are notable evidence of the formation and evolution of the U-boundary<sup>[7]</sup>. The Map of East Indies is undoubtedly evidence for the boundary delimitation in the SCS. In this paper, based on the Map of East Indies, we provide a dataset for investigating the delineation and evolution of the U-boundary.

## 2 Metadata of the Dataset

The metadata of the Dataset of the SCS U-boundary and the names of the SCS Islands<sup>[13,14]</sup> is summarized in Table 1. It includes the dataset full name, short name, authors, year of the dataset, spatial resolution, data format, data size, data files, data publisher, and data sharing policy, etc.

## 3 Methods

Raster image of the Map of East Indies published by the Shanghai Ya Kwang Geographical Institute in 1948 in both Chinese and English<sup>[6]</sup> was digitized using ArcGIS software. Then the SCS U-boundary and the geographic names on this map were extracted into vector line data and text data. Finally, we obtained the SCS U-boundary (1948) and all the geographical names of islands, reefs, shoals, and cays on this map. Data processing is mainly composed of the following steps.

### (1) Data source

The raster image of the Map of East Indies was obtained from the Library of Congress of the United States. This map is a colour map measuring 65 cm × 101 cm drawn at a scale of 1:6,000,000. The main map covers an area of east of 145°E, west of 95°E, south of 10°S, north of 20°N, shows Asia and Oceania, covering the entire area of the SCS<sup>[5]</sup>.

### (2) Geographic coordinate system

Longitudes and latitudes are indicated on the map as perpendicular parallel straight lines, with the spacing 5°. On this basis, a graticule grid covering this area was created in ArcGIS as geographic reference coordinates. The China Geodetic Coordinate System (CGCS2000) was used.

### (3) Preprocessing

The northernmost latitude line indicated on the Map of East Indies is 20°N, and the

**Table 1** Metadata summary of the Dataset of the South China Sea U-boundary and the dataset of part of the names of the South China Sea Islands

Items	Description
Dataset full name /short name	Dataset of the South China Sea U-boundary based on the Map of East Indies published by the Ya Kwang Geographical Institute in 1948/ SouthChinaSeaU_YaKwang1948
Authors	Dataset of Geographical Names of Islands from Six Maps Covering the South China Sea Published from the 1940s to 1950s/GeoNames_SouthChinaSeaIslands Li, J. M. AAN-9018-2021, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, jingminl@163.com Zhang, W. Z. AAP-4127-2021, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, zhangwz1976@foxmail.com Liu, S. H. AAP-2902-2021, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, 18513558076@163.com Luo, Y. G-3354-2014, China Aero Geophysical Survey and Remote Sensing Center for Natural Resources, geophy@vip.qq.com
Geographical region	the South China Sea Islands
Year	1940s–1950s
Spatial resolution	1:6,000,000
Data format	.shp, .kmz, .tif, .xlsx
Data size	280 MB
Data files	The vector data of the South China Sea U-boundary (1948), a digital scan file of the original copy of the Map of East Indies (300 dpi), and a spreadsheet (.xlsx format) of all geographical names on the Map of East Indies and other five maps of the South China Sea Islands published from the 1940s to 1950s
Foundations	China Geological Survey Project (DD20191001, DD20189410)
Data publisher	Global Change Research Data Publishing & Repository, <a href="http://www.geodoi.ac.cn">http://www.geodoi.ac.cn</a>
Address	No. 11A, Datun Road, Chaoyang District, Beijing 100101, China
Data sharing policy	<b>Data</b> from the Global Change Research Data Publishing & Repository includes metadata, datasets (in the <i>Digital Journal of Global Change Data Repository</i> ), and publications (in the <i>Journal of Global Change Data &amp; Discovery</i> ). <b>Data</b> sharing policy includes: (1) <b>Data</b> are openly available and can be free downloaded via the Internet; (2) End users are encouraged to use <b>Data</b> subject to citation; (3) Users, who are by definition also value-added service providers, are welcome to redistribute <b>Data</b> subject to written permission from the GCdataPR Editorial Office and the issuance of a <b>Data</b> redistribution license; and (4) If <b>Data</b> are used to compile new datasets, the ‘ten per cent principal’ should be followed such that <b>Data</b> records utilized should not surpass 10% of the new dataset contents, while sources should be clearly noted in suitable places in the new dataset <sup>[15]</sup>
Communication and searchable system	DOI, CSTR, Crossref, DCI, CSCD, CNKI, SciEngine, WDS/ISC, GEOSS

graticules of 5° × 5° are incomplete at the north parts of the map. We added the uncomplete grids of the graticule to the northernmost latitude of 25°N. We also trimmed the image to remove the unnecessary part of the map, which is out of the graticules range of the SCS U-boundary.

(4) Map calibration

We used the graticules created in Step 2 as the reference grids for calibration and the graticule grid nodes as control points. The raster graphic obtained in Step 3 was calibrated using the Georeferencing tool of ArcGIS, and the final graticules of the raster graphic overlapped with the reference grids.

(5) Extracting U-boundary

The SCS U-boundary line was vectorized, thereby obtaining a vector file containing accurate location data for this boundary.

(6) Extracting the geographical names

The names of all islands, reefs, shoals, and cays indicated on the following six maps were compiled and compared in Table 2 and 3: (i) Map of East Indies (1948)<sup>[6]</sup>; (ii) Location Map of the SCS Islands (1:4,000,000) published by the Territorial Administration Division of the Ministry of Interior of the Republic of China in 1947<sup>[7–9]</sup>; (iii) Location Map of the SCS

Islands (1:8,500,000) contained in A Brief Account of the Geography of the SCS Islands (1947)<sup>[10]</sup>; (iv) Location Map of the SCS Islands (1:9,100,000) contained in the Map of the Administrative Districts of the Republic of China (1948)<sup>[11]</sup>; (v) Map of the Hainan Island and the SCS Islands (1:10,000,000) contained in the New Maps of Chinese Provinces (1948)<sup>[12]</sup>; and (vi) Map of the SCS Islands (1:15,000,000) contained in the New Map of the People's Republic of China (1950)<sup>[3]</sup>.

## 4 Data Results and Validation

### 4.1 Data Composition

Dataset 1: This consists of a digital scan of the original copy of the Map of East Indies (.tif format) and a vector file of the SCS U-boundary (1948) (.shp and .kmz formats). The total file size is 280 MB.

Dataset 2: This includes a text table (.xlsx format) of all geographical names on the *Map of East Indies* and the other five maps of the SCS Islands published in the same period. The file size is 16.7 KB.

### 4.2 Data Products

#### (1) Digitized dataset of the SCS U-boundary (1948)

The Map of East Indies uses the solid-line national boundary symbol to delineate China's maritime boundary in the SCS. The SCS Islands are all enclosed within this boundary. The names of the SCS Islands are marked using Chinese names, and four Chinese characters—"中华民国" (the Republic of China) are marked over the waters enclosed by the boundary<sup>[5]</sup>—that proclaim China's sovereignty over the South China Sea. Accurate vector information of the SCS U-boundary on the Map of East Indies was obtained by vectorizing.

#### (2) Dataset of the names of the SCS Islands (1940s–1950s)

The names of all islands, reefs, shoals and cays on the Map of East Indies (1948)<sup>[6]</sup> and the other five maps published in the same period are shown in Tables 2 and 3. All these geographical names (some old names) are included in the Standard Geographical Names for part of Nanhai Zhudao published by the China Geographical Names Committee under the authorization of the State Council of the People's Republic of China in April 1983<sup>[16]</sup>. The dataset of geographic names shows that the Map of East Indies is consistent with two kinds of the Location Map of the SCS Islands. The only difference is that China's maritime boundary in the SCS is delineated on the Map of East Indies using the solid-line national boundary symbol.

### 4.3 Data Validation

Map calibration was performed using the Georeferencing tool of ArcGIS. Using the graticules nodes of the pretreated raster graphic as the source control points and the graticules nodes of the CGCS2000 coordinate system as the target control points, 30 pairs of points were sampled for calibration and correction with the spline method. The final total error was of the order of magnitude  $1.0 \times 10^{-11}$ . After the processing, the nodes and the longitudinal and latitudinal lines of the two graticules overlapped.

## 5 Discussion and Conclusion

As another representation of the map of the SCS Islands, the Map of the East Indies delineates the SCS U-boundary using the solid-line national boundary symbol and clearly

**Table 2** List of completely consistent geographical names on the Map of East Indies and five other maps of the South China Sea Islands

No.	Names <sup>[3,6-12]</sup>	Standard names <sup>[16]</sup>	No.	Names <sup>[3,6-12]</sup>	Standard names <sup>[16]</sup>	No.	Names <sup>[3,6-12]</sup>	Standard names <sup>[16]</sup>
1	Dongsha Qundao	Dongsha Qundao	15	Zhongscha Qundao	Zhongscha Qundao	29	Nanwei Tan	Nanwei Tan
2	Dongsha Dao	Dongsha Dao	16	Biwei Ansha	Biwei Ansha	30	Jinghong Dao	Jinghong Dao
3	Beiwei Tan	Beiwei Tan	17	Jimeng Ansha	Jimeng Ansha	31	Bisheng Dao	Bisheng Jiao
4	Nanwei Tan	Nanwei Tan	18	Bengu Ansha	Bengu Ansha	32	Nanhua Jiao	Nanhua Jiao
5	Xisha Qundao	Xisha Qundao	19	Nansha Qundao	Nansha Qundao	33	Yuya Ansha	Yuya Ansha
6	Bei Jiao	Bei Jiao	20	Daoming Qunjiao	Daoming Qunjiao	34	Liwei Dao	Bai Jiao
7	Ganquan Dao	Ganquan Dao	21	Xiyue Dao	Xiyue Dao	35	Andu Tan	Andu Tan
8	Yongle Qundao	Yongle Qundao	22	Zong Tan	Zong Tan	36	Nantong Jiao	Nantong Jiao
9	Guanghua Jiao	Huaguang Jiao	23	Haima Tan	Haima Tan	37	Mengyi Ansha	Mengyi Ansha
10	Zhongjian Dao (Tulaitang Dao)	Zhongjian Dao	24	Xiwei Tan	Xiwei Tan	38	Nan'an Jiao	Nan'an Jiao
11	Xuande Qundao	Xuande Qundao	25	Wan'an Tan	Wan'an Tan	39	Jianzhang Ansha	Jianzhang Jiao
12	Yongxing Dao (Lin Dao)	Yongxing Dao	26	Yongshu Jiao	Yongshu Jiao	40	Banyue Ansha	Banyue Jiao
13	Hewu Dao	Dong Dao	27	Yinqing Qunjiao	Yinqing Qunjiao	41	Duhu Ansha	Duhu Ansha
14	Pengbo Jiao	Langhua Jiao	28	Riji Jiao	Riji Jiao	42	Zengmu Ansha (Zhanmu Sha)	Zengmu Ansha

**Table 3** List of inconsistent geographical names on the Map of East Indies and five other maps of the South China Sea Islands

No.	(i) <sup>[6]</sup>	(ii) <sup>[7-9]</sup>	(iii) <sup>[10]</sup>	(iv) <sup>[11]</sup>	(v) <sup>[12]</sup>	(vi) <sup>[3]</sup>	Standard names <sup>[16]</sup>
1	Yinji Tan	Yinji Tan	Yinji Tan	Yinji Tan	Yinji Tan	Yinji Dao	Yinji Tan
2	Paihong Tan	Paihong Ansha	Paihong Tan	Paihong Tan	Paihong Ansha	Paihong Ansha	Paihong Tan
3	Bofu Ansha	—	Bofu Ansha	Bofu Ansha	—	—	Bofu Ansha
4	—	Paibo Ansha	—	—	Paibo Ansha	Paibo Ansha	Paibo Ansha
5	Nanshi	—	—	—	—	—	Huangyan Dao (Minzhu Jiao)
6	Shuangzi Qunjiao	Shuangzi Jiao	Shuangzi Qunjiao	Shuangzi Jiao	Shuangzi Jiao	Shuangzi Jiao	Shuangzi Qunjiao
7	Zhongye Qunjiao	—	Zhongye Qunjiao	Zhongye Qunjiao	—	—	Zhongye Qunjiao
8	—	Zhongye Dao (Didu Dao)	—	—	Zhongye Dao (Didu Dao)	Zhongye Dao (Didu Dao)	Zhongye Dao
9	Taiping Dao (Chang Dao)	Taiping Dao (Chang Dao)	Taiping Dao (Chang Dao)	Taiping Dao (Chang Dao)	Taiping Dao (Chang Dao)	Taiping Dao	Taiping Dao
10	Yongdeng Ansha	Yongdeng Ansha	Yongdeng Ansha	Yongdeng Ansha	Yongdeng Ansha	—	Yongdeng Ansha
11	Zhenghe Qunjiao Tuansha Qundao	Zhenghe Qunjiao	Zhenghe Qunjiao (Tuansha Qundao)	Zhenghe Qunjiao (Tuansha Qundao)	Zhenghe Qunjiao	Zhenghe Qunjiao	Zhenghe Qunjiao
12	—	Anda Jiao	—	—	Anda Jiao	Anda Jiao	Anda Jiao
13	Liyue Tan	Liyue Tan	Liyue Tan	Liyue Tan	Liyue Tan	—	Liyue Tan
14	Feixin Dao	—	Feixin Dao	Feixin Dao	Feixin Dao	Feixin Dao	Feixin Dao
15	Antang Dao	—	Antang Dao	Antang Dao	Antang Dao	Antang Dao	Antang Jiao
16	Zhongxiao Tan	—	Zhongxiao Tan	Zhongxiao Tan	Zhongxiao Tan	Zhongxiao Tan	Zhongxiao Tan
17	Xianhou Tan	—	Xianhou Tan	Xianhou Tan	Xianhou Tan	—	Xianhou Tan
18	—	Mahuan Dao	—	—	Mahuan Dao	Mahuan Dao	Mahuan Dao
19	—	Shenxian Ansha	—	—	Shenxian Ansha	—	Shenxian Ansha
20	—	Heping Ansha	—	—	Heping Ansha	—	Heping Ansha
21	—	Dongpo Jiao	—	—	Dongpo Jiao	—	Dongpo Jiao
22	—	Beiheng Jiao	—	—	Beiheng Jiao	—	Beiheng Jiao

(To be continued one the next page)

(Continued)

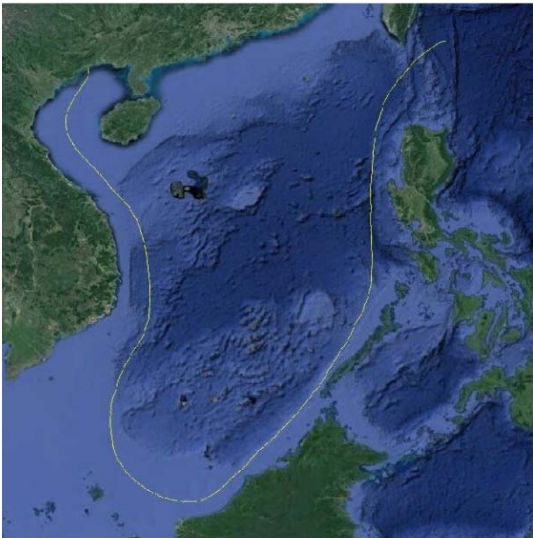
Nos.	(i) <sup>[6]</sup>	(ii) <sup>[7-9]</sup>	(iii) <sup>[10]</sup>	(iv) <sup>[11]</sup>	(v) <sup>[12]</sup>	(vi) <sup>[3]</sup>	Standard names <sup>[16]</sup>
23	—	Kongming Jiao	—	—	Kongming Jiao	Kongming Jiao	Kongming Jiao
24	—	Daxian Jiao	—	—	Daxian Jiao	Daxian Jiao	Daxian Jiao
25	—	Fulusi Jiao	—	—	Fulusi Jiao	—	Fulusi Jiao
26	—	—	—	—	Hongshi Ansha	—	Hongshi Ansha
27	Xiaoyao Ansha	—	Xiaoyao Ansha	Xiaoyao Ansha	Xiaoyao Ansha	—	Xiaoyao Ansha
28	Jindun Ansha	—	Jindun Ansha	Jindun Ansha	Jindun Ansha	—	Jindun Ansha
29	—	Nanwei Dao	Nanwei Dao	Nanwei Dao	Nanwei Dao	Nanwei Dao	Nanwei Dao
30	—	Dong Jiao	—	—	Dong Jiao	—	Dong Jiao
31	—	Xi Jiao	—	—	Xi Jiao	—	Xi Jiao
32	—	—	Aoyuan Ansha	Aoyuan Ansha	Aoyuan Ansha	Aoyuan Ansha	Aoyuan Ansha
33	Fubo Jiao	—	Fubo Jiao	Fubo Jiao	Fubo Jiao	Fubo Jiao	Fubo Jiao
34	Yunuo Dao	Yunuo Dao	Yunuo Dao	Yunuo Dao	Yunuo Dao	—	Yunuo Jiao
35	Nanhai Jiao	Nanhai Jiao	Nanhai Jiao	Nanhai Jiao	Nanhai Jiao	—	Nanhai Jiao
36	Anbo AnDao	Anbo Shazhou	Anbo Ansha	Anbo Ansha	Anbo Shazhou	Anbo Shazhou	Anbo Shazhou
37	Danwan Jiao	—	Danwan Jiao	Danwan Jiao	Danwan Jiao	Danwan Jiao	Danwan Jiao
38	Huanglu Jiao	—	Huanglu Jiao	Huanglu Jiao	Huanglu Jiao	Huanglu Jiao	Huanglu Jiao
39	Xianbin Ansha	—	Xianbin Ansha	Xianbin Ansha	Xianbin Ansha	—	Xianbin Jiao
40	Xian'e Jiao	Xian'e Jiao	Xian'e Jiao	Xian'e Jiao	Xian'e Tan	—	Xian'e Jiao
41	—	Meiji Jiao	—	—	Meiji Jiao	—	Meiji Jiao
42	—	Ren'ai Ansha	—	—	Ren'ai Ansha	Ren'ai Ansha	Ren'ai Jiao
43	Pengbo Ansha	—	Pengbo Ansha	Pengbo Ansha	Pengbo Ansha	Pengbo Ansha	Pengbo Ansha
44	—	Xinyi Ansha	—	—	Xinyi Ansha	—	Xinyi Jiao
45	Haikou Ansha	—	Haikou Ansha	Haikou Ansha	Haikou Ansha	—	Haikou Jiao
46	Zhixiang Jiao	—	Zhixiang Jiao	Zhixiang Jiao	Zhixiang Jiao	—	Zhixiang Jiao
47	—	Nanle Ansha	—	—	Nanle Ansha	Nanle Ansha	Nanle Ansha
48	—	Siling Jiao	—	—	Siling Jiao	Siling Jiao	Siling Jiao
49	—	Xiaowei Ansha	—	—	Xiaowei Ansha	—	Xiaowei Ansha
50	Haining Jiao	—	Haining Jiao	Haining Jiao	Haining Jiao	Haining Jiao	Haining Jiao

Note: “—” indicates that the geographic name is not used on a map, and the maps indicated by Roman numerals in the header are listed in section 3.

indicates the national boundary delimitation in the SCS in 1948. The map clearly indicates China’s territorial sovereignty over the SCS Islands and is historical evidence of China’s territorial sovereignty and maritime rights and interests in the SCS.

In this study, a digitized dataset of the SCS U-boundary delineated on the Map of East Indies published by the Ya Kwang Geographical Institute in 1948 was obtained (Figure 1). The geographical names on the Map of East Indies were compared with those on five other maps of the SCS Islands published in the same period, thereby obtaining the Dataset of Geographical Names of Islands from Six Maps Covering the SCS Published from the 1940s to the 1950s.

Our results show that the following maps



**Figure 1** Map of the East Indies delineates the SCS U-boundary

of the same origin in the delineation of China's territory in the South China Sea: the Map of East Indies (published in January 1948), the Location Map of the SCS Islands contained in A Brief Account of the Geography of the SCS Islands (published in November 1947), the Location Map of the SCS Islands contained in the Map of the Administrative Districts of the Republic of China (produced in December 1947 and published in February 1948). The only difference is that China's maritime boundary in the SCS is delineated on the Map of East Indies using the solid-line national boundary symbol. These two datasets have important implications for the investigation of the national boundary delimitation and evolution in the SCS and will serve as basic data and important evidence for research into the SCS problem.

### Author Contributions

Li, J. M. formulated the overall design for the data development and collected and treated the data of the SCS U-boundary (1948). Luo, Y. extracted some of the names of the SCS Islands on the maps. Liu, S. H. and Zhang, W. Z. performed data verification. Li, J. M., Zhang, W. Z., Liu, S. H., and Luo, Y. co-authored the paper.

### Conflicts of Interest

The authors declare no conflicts of interest.

### References

- [1] Government of the People's Republic of China. Statement of the Government of the People's Republic of China on China's Territorial Sovereignty and Maritime Rights and Interests in the South China Sea [N]. People's Daily, 2016-7-13(1).
- [2] Tang, D. L., Liu, Y. P., Hao, X. G., *et al.* A newly-discovered historical map using both national boundary and administrative line to represent the U-boundary in the South China Sea [J]. *Chinese Science Bulletin*, 2018, 63(9): 856–864.
- [3] Guanhua Geographical Institute. New Map of the People's Republic of China [M]. Shanghai: SDX Joint Publishing, 1950.
- [4] Liu, Y. P., Tang, D. L., Wu, C. X., *et al.* Zoning of the U-boundary in the South China Sea and its ecological environment characteristics [J]. *Haiyang Xuebao*, 2019, 41(2): 14–30.
- [5] Luo, Y., Li, J. M., Zhang, W. Z., *et al.* A historical map of East Indies representing the U-boundary in the South China Sea as an international boundary [J]. *Chinese Science Bulletin*, 2019, 64(23): 2390–2394.
- [6] King, L. W., King, L. H. Map of East Indies [M]. Shanghai: Ya Kwang Geographical Institute, 1948.
- [7] Zhang, Y. G., Liu, K., Liu, G. C. The evolvement of the state maritime boundary in South China Sea by maps: China's nine-dotted maritime boundary line in South China Sea [J]. *Scientia Geographica Sinica*, 2012, 32(9): 1033–1040.
- [8] Tang, M., Ma, J. S., Wang, Y., *et al.* Spatial demarcation principles of the dotted line in the South China Sea [J]. *Acta Geographica Sinica*, 2016, 71: 914–927.
- [9] Wang, Y., Ge, C. D., Zou, X. Q. Evidence of China's sea boundary in the South China Sea [J]. *Acta Oceanol Sinica*, 2017, 36: 1–12.
- [10] Fu, J. J., Zheng, Z. Y. A Brief Account of the Geography of the South China Sea Islands [M]. Shanghai: The Commercial Press, 1947.
- [11] Fu, J. J. Map of the Administrative Districts of the Republic of China [M]. Shanghai: The Commercial Press, 1948.
- [12] King, C. Y. New Map of China by Province [M]. Shanghai: Ya Kwang Geographical Institute, 1948.
- [13] Li, J. M., Zhang, W. Z., Liu, S. H., *et al.* Dataset of the South China Sea U-boundary based on the map of East Indies published by Ya Kwang Geographical Institute in 1948 [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. <https://doi.org/10.3974/geodb.2021.08.07.V1>. <https://cstr.escience.org.cn/CSTR:20146.11.2021.08.07.V1>.
- [14] Li, J. M., Zhang, W. Z., Liu, S. H., *et al.* Dataset of geographical names of islands from six maps covering South China Sea published from 1940s to 1950s[J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. <https://doi.org/10.3974/geodb.2021.09.06.V1>. <https://cstr.escience.org.cn/CSTR:20146.11.2021.09.06.V1>.
- [15] GCdataPR Editorial Office. GCdataPR data sharing policy [OL]. <https://doi.org/10.3974/dp.policy.2014.05> (Updated 2017).
- [16] The State Council of the People's Republic of China. China Committee on Geographical Names was authorized to publish standard geographical names for part of Nanhai Zhudao [J]. *Gazette of the State Council of the People's Republic of China*, 1983(10): 452–463.