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Dataset of National and Provincial Levels Development Zones in China (2006–2018)

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Abstract: Development zones (DZs) are the core spatial tools of China's economic and industrial layout and play a key role in supporting long-term economic growth. Based on the catalogue of China's development zone in 2006 and 2018 as jointly issued by the National Development and Reform Commission of the People's Republic of China and other government departments, and references from relevant official and online materials, this paper identifies DZs' position and scale, clarifies the change in level and type between 2006 and 2018 (no data was available for Hong Kong, Macao, and Taiwan), and collects the dataset of national and provincial levels development zones in China (2006–2018) with ArcGIS. This dataset collected the following data: (1) location data (.shp); (2) attribute data of DZs above the provincial level, including the name, approved year, approved area, level, type, state, and established year (.xlsx). The dataset is archived in .xlsx and .shp format and consists of nine data files with a data size of 10.9 MB (compressed to one file of 444 KB).

Keywords: China; development zones; change; land and space use control; 2006–2018

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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.2021.06.03.V1 or https://cstr.escience.org.cn/CSTR:20146.11.2021.06.03.V1.

1 Introduction

The establishment of national and provincial development zones to attract foreign investment and foster high-tech industries is an important spatial tool to promote economic development in China, and plays a role as a core engine in the process of economic take-off after the Reform and Opening Up[1]. Therefore, the development zones occupy a crucial position in the government of territorial space. Over the past few decades, the number of development zones in China has increased, now covering most of the country. At the same

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time, China has changed them from an economic and technological development zone to a variety of types, and is forming a spatial carrier system to drive diversified industries[2].

Academia has long paid attention to the setup and development of China's development zones. From a spatial perspective, scholars have focused on the spatial and temporal distribution patterns[3], location evolution[4], industrial characteristics[5,6], layout driving factors[7], development efficiency[8], and other aspects of China's development zones above the provincial level. Related studies mostly use kernel density analysis[9], Ripley's K-function analysis[10,11], standard elliptic analysis[4], nearest neighbor distance index[7], and others to explore the spatial distribution and evolving laws of various development zones in China. Some scholars have further analysed the driving factors of the distribution of development zones in different regions using statistical models such as the geographic detectors[12]. China promoted the renovation of development zones between 2006 and 2018. The government department standardised the park catalogue by integrating, cancelling, merging, and upgrading for older constructions, and creating norms for new construction. Hence, there have been significant changes in the growth of the development zones. This shift also reflects a turn in China's priorities for land use.

Optimising the spatial distribution of development zones and rational configuration development projects is of great significance in the establishment of land and space use control and territorial space governance systems. This dataset focuses on the spatial evolution of China's development zones above the provincial level. This research can provide strong support for the study of spatial governance issues, such as the layout trend of development zones, optimisation of territorial spatial functions, and allocation of natural resources, and consequently contribute to the formation of a national spatial governance system, and ease the problems of regional development imbalance and inadequate spatial efficiency.

2 Metadata of the Dataset

The metadata of the Dataset of national and provincial levels development zones in China (2006–2018)[13] is summarised in Table 1. It includes the full name, short name, authors, year of the dataset, temporal resolution, data format, data size, data files, data publisher, and data sharing policy, etc.

3 Methods

3.1 Data Sources

Attribute data of the development zones above the provincial level in China are derived from the China Development Zone Audit Announcement Catalogue (2006 edition and 2018 edition)[15,16]. These catalogues are jointly issued by the National Development and Reform Commission and several other departments. The data includes the name, approval time, approved area, and other attribute data of national and provincial development zones[4]. Government documents, news reports, and other online public data are also used to determine the changing status of the grade and type of each development zone. It should be noted that no data was available for Hong Kong, Macao, and Taiwan.

3.2 Data Processing

The geographic coordinates of development zones can be identified using geographic coding technology[4]. Because the multi-block development zones are usually located in the same administrative region, they are set to encompass where the main park lies. Through the collection of the status change of zones from official documents, public news, and other

online information, the original grade and type of development zones are classified into different types. Because of massive mergers and expansion, the scale of the development zone is constantly changing, so only the final approved scale is provided. Moreover, scattered public information cannot provide a full list of sources. The status change of development zones is divided into five types: (1) the reserved type with the same name and grade, (2) the renamed type with only the name changed, (3) the upgraded type with the grade rising, (4) the newly established type, and (5) the revoked type, which is no longer certified or transformed into other development zones.

Table 1 Metadata summary of the Dataset of national and provincial levels development zones in China (2006–2018)

Items	Description
Dataset full name	Dataset of national and provincial levels development zones in China (2006–2018)
Dataset short name	DevelopmentZonesChina_2006-2018
Authors	Nie, J. X. AAK-1121-2021, School of Architecture and Urban Planning, Huazhong University of Science and Technology, njx1991@hust.edu.cn Liu, H. L. AAL-5430-2021, School of Architecture and Urban Planning, Huazhong University of Science and Technology, hl362@hust.edu.cn
Geographical region	China (There is no data in Hong Kong, Macao and Taiwan)
Year	2006–2018
Temporal resolution	Year
Data format	.xlsx, .shp
Data size	10.9 MB (compressed into a file, 444 KB)
Data files	(1) Location data of the development zones (.shp) (2) Attribute data of the development zones (.xlsx)
Foundation(s)	National Natural Science Foundation of China (D1218006); Ministry of Education of P. R. China (19GBQY083)
Data computing environment	ArcGIS
Data publisher	Global Change Research Data Publishing & Repository, http://www.geodoi.ac.cn
Address	No. 11A, Datun Road, Chaoyang District, Beijing 100101, China
Data sharing policy	***Data*** from the Global Change Research Data Publishing & Repository includes metadata, datasets (in the *Digital Journal of Global Change Data Repository*), and publications (in the *Journal of Global Change Data & Discovery*). ***Data*** sharing policy includes: (1) ***Data*** are openly available and can be free downloaded via the Internet; (2) End users are encouraged to use ***Data*** subject to citation; (3) Users, who are by definition also value-added service providers, are welcome to redistribute ***Data*** subject to written permission from the GCdataPR Editorial Office and the issuance of a ***Data*** redistribution license; and (4) If ***Data*** are used to compile new datasets, the 'ten per cent principal' should be followed such that ***Data*** records utilized should not surpass 10% of the new dataset contents, while sources should be clearly noted in suitable places in the new dataset[14]
Communication and searchable system	DOI, CSTR, Crossref, DCI, CSCD, CNKI, SciEngine, WDS/ISC, GEOSS

3.3 Technical Route

To study the changing distribution pattern of development zones from the perspective of land and space use control, the development zones above the provincial level in China in 2006 and 2018 were collected and sorted, and the spatial coordinates of the development zones were obtained with geo-coding software, and the location distribution outcome was visualised with the support of ArcGIS. There are two steps to fully mine the value of dataset to the dynamics of development zones. First, the spatial and temporal pattern change of development zones is evaluated according to the number of development zones and the approved area. Second, the spatial distribution of development zones in 2006 and 2018 was visualised, and the dynamics of the quantitative structure and spatial location of zones

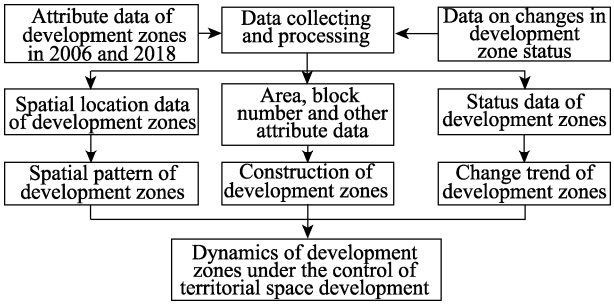

Figure 1 The technology roadmap of dataset development

during 2006–2018 were analysed, and the law of spatial distribution change was summarised. This technical route is illustrated in Figure 1.

4 Data Results

4.1 Data Composition

Dataset of national and provincial levels development zones in China (2006–2018) consists of two parts: (1) the location data of development zones (.shp), (2) the attribute data of the development zones, including their name, approved year, approved area, grade, type, status, and establishment year (.xlsx).

4.2 Data Products

The distribution data of China's national and provincial development zones show that 1,576 zones were audited in 2006 and 2,551 zones in 2018. The number of development zones was dominated by provincial-level zones. After the process of revoking, merging, integrating, and expanding, the number of each type of development zone was changed. During that 12-year period, the number of zones increased by 1,180. As shown in Table 2, the net increase in zones at the national level was 330, while it was 850 at the provincial level. Among the five state types, the largest was the newly established type, with 1,031 zones. This was followed by 850 remaining and 521 revoked zones. Therefore, development zones above the provincial level in China have a complex dynamic process, revealing a quantity distribution trend of total increase and internal optimisation.

Table 2 Status types of development zones above provincial level in China in 2018

Level	Development zone type	Type					Net increment
		Remained	Revoked	Renamed	Upgraded	Newly established	
National	High-tech industrial development zone	56	5	4	102	2	103
	Economic and technological development zone	53	0	0	155	11	166
	Export processing zone	0	34	0	0	0	–34
	Bonded area	39	4	2	34	60	92
	Border economic cooperation zone	14	0	0	1	4	5
	Other national development zone	20	5	0	0	3	–2
Provincial	Provincial economic development zone	415	393	96	148	327	178
	Provincial characteristic industrial park	243	25	19	55	531	580
	Provincial High-Tech Industrial Park	10	55	51	3	93	92
Total		850	850	521	172	498	1,031

As shown in Figure 2, the distribution change of development zones in China mainly includes three approaches, namely; (1) type adjustment, (2) merit-based upgrading, and (3) extensive establishment, to improve the efficient operation of the development zone system. Among them, type adjustment of development zones refers to the overall replacement of another type. Specifically, export processing zone, a type of national-level development zone,

no longer remained and was converted into bonded zones as a whole. Merit-based upgrading means that qualified zones are promoted from the provincial level to the national level, while those that do not meet the assessment requirement will be eliminated (or merged into others). For example, 292 development zones were upgraded to national-level development zones during the study period (2006–2018), exceeding the number of newly established national development zones. In this time-period, 48 national-level and 473 provincial-level zones were revoked or merged because of their poor economic performance. Extensive establishment, which means under the guidance of policies such as "one county, one zone", multi-level governments established many development zones from 2006 to 2018, to better drive the agglomeration of different regions, and enhance the impetus of economy. Consequently, 80 development zones were established at the national level and 951 at the provincial level.

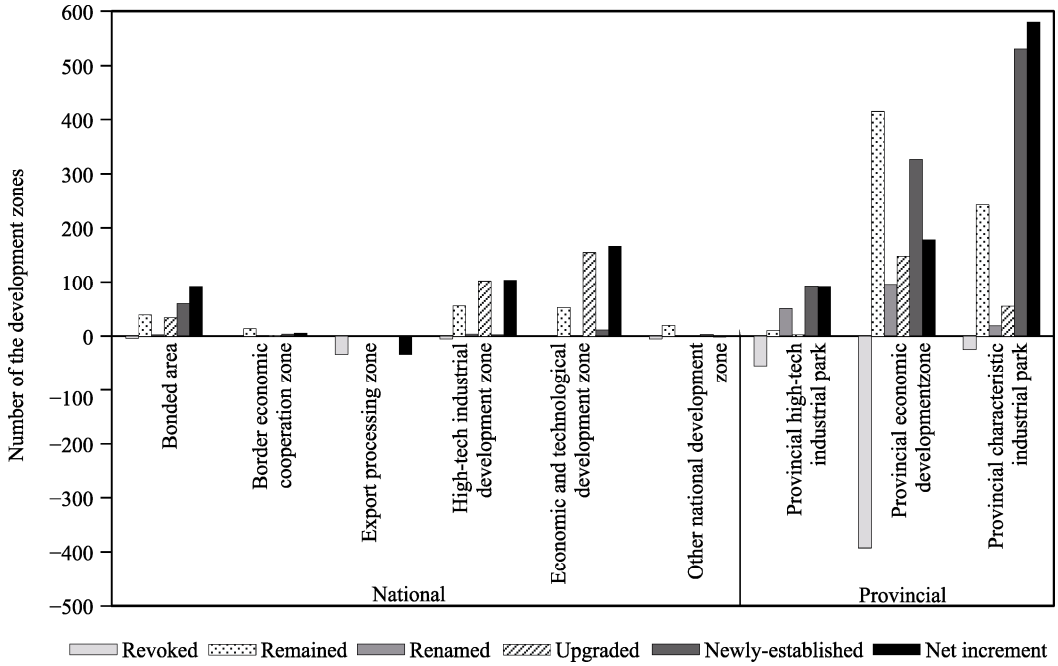

Figure 2 Types of changes in development zones above provincial level in China in 2018

The spatial distribution of development zones maintains an unbalanced pattern of "more east and less west, more south and less north", which is essentially consistent with the comprehensive pattern of China's economic geography[4,7] and has broken through Hu's Line (Figure 3). The areas with a high density of development zones are located in the eastern coastal areas, most densely distributed in the periphery of Beijing-Tianjin-Hebei, Yangtze River Delta, and Pearl River Delta. Meanwhile, there are also numerous development zones in the core provincial capital cities such as Wuhan, Jinan, and Fuzhou. By 2018, more development zones were located to the west of Hu's Line, making Urumqi, Kasha, and some other western cities gain a higher agglomeration advantage. The development zones in the central and eastern parts are generally encrypted, showing a trend of regional integration. In terms of the spatial distribution change, the central and eastern parts were optimised and improved, while western and north-eastern China made up for weaknesses. Among them, the revoked and remaining development zones are mainly located in the central and the east, the renamed zones are mostly in the central part, and the

upgraded zones are more likely to lie in the north-east. Finally, the newly established zones have a wide range of distribution, with a particularly considerable increase in the west and northeast. This indicates that China's development zone policy is inclined to the west and north-east parts in an attempt to ease regional imbalance.

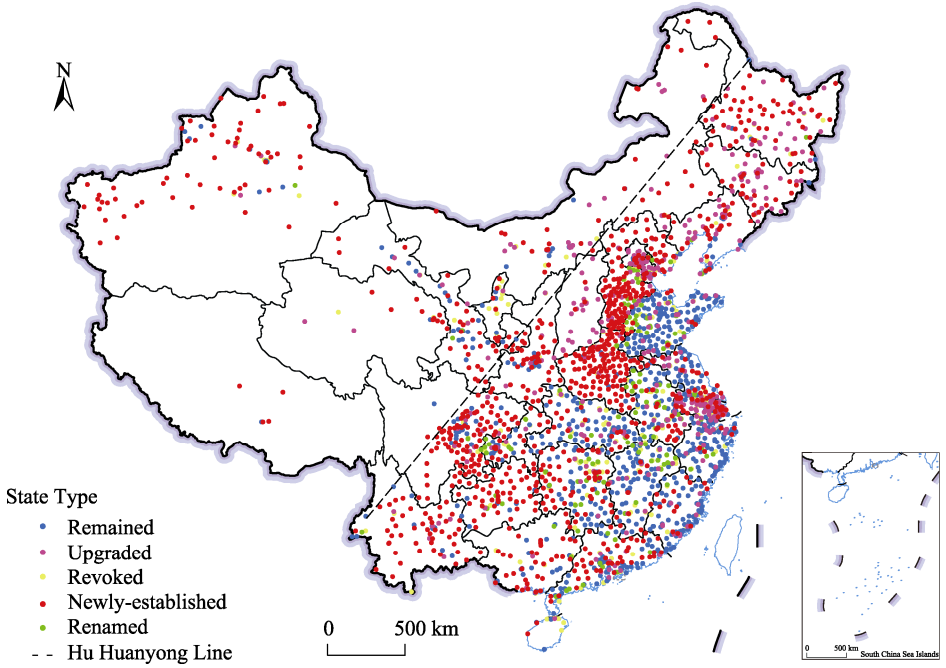

Figure 3 Spatial distribution change of development zones above the provincial level in China

5 Discussion and Conclusion

After rapid growth and reform and opening up in recent years, China now faces serious challenges, including ecological and environmental problems and industrial transformation, which asks for a more efficient and orderly development pattern of its territorial space. Industrial greening and innovation upgrading of development zones are of great significance in solving these problems. Based on the data of the distribution and scale of national and provincial level development zones in China, this dataset aims to analyse their spatial and temporal distribution evolution and provide new research materials and data support for the macro-level optimisation of China's land and space use control. The distribution of development zones is related to multidimensional and multi-scale factors. This paper only conducts visual processing on the location and scale of the development zone, an important territorial spatial unit, and carries out necessary data explanation and spatial analysis. In-depth data mining and wide-area analysis could be carried out in combination with related factors, such as policy, economic, and geographical conditions. Thus, this data provides a one-sided description of China's spatial governance in the new era. Therefore, this dataset only provides a feasible data basis for in-depth research on related issues, but the relevant factors that drive the layout of development zones need to be further investigated. Based on this dataset, future explorations should focus on the influence mechanism behind the distribution changes, the social and economic effects, the leading mode of China's land use, and the resulting social and environmental problems, such as industry-city separation, land waste, homogeneous competition, and ecological destruction. This will serve as a reference for the Chinese government to further implement the functional zoning system and

build a sound space governance system.

Author Contributions

Liu, H. L. designed the development of the dataset; Nie, J. X. contributed to the data processing and analysis, and wrote the paper. Liu H. L. reviewed the paper.

Conflicts of Interest

The authors declare no conflicts of interest.

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