

Development of the Spatial Scope Dataset of Zang-Qiang-Yi Corridor

Xing, L. G.¹ Zhang, Y.^{1*} Kan, A. K.^{1,2} Dai, H.³ Cheng, J. L.¹ Chen, Y.¹ Liu, T.³

1. College of Tourism and Urban-Rural Planning, Chengdu University of Technology, Chengdu 610059, China;
2. Research Center for Human Geography of Tibetan Plateau and Its Eastern Slope, Key Research Base of Humanities and Social Sciences of College in Sichuan Province, Chengdu 610059, China;
3. College of Earth Sciences, Chengdu University of Technology, Chengdu 610059, China

Abstract: As one of the five ethnic corridors in China, the Zang-Qiang-Yi corridor is a historical witness to the interaction and exchange among Zang, Qiang, Yi, and other ethnic minorities in southwest China. However, the spatial scope of the corridor has not been clearly defined. This study preliminarily defines the spatial scope of the Zang-Qiang-Yi corridor by considering the natural geographical conditions and human characteristics, and constructing the ethnic minority cultural exchange index as the key index for scope identification. The study uses multiple sources of data, such as basic geographical information, intangible cultural heritage distribution, and national population census, to develop the spatial scope of Zang-Qiang-Yi corridor Dataset. Results show that the spatial scope of the Zang-Qiang-Yi corridor includes 162 county-level administrative regions, involving 25 cities and states in Sichuan province, Yunnan province, Guizhou province, Xizang autonomous region, and Qinghai province. The dataset includes boundary data of the corridor, population proportion of ethnic minorities in the counties (cities) of the corridor, distribution of intangible cultural heritage, and ethnic minority cultural exchange index data. The dataset is archived in .shp and .xlsx formats, consisting of 9 data files, with data size of 4.05 MB (compressed to 1 file, 2.54 MB).

Keywords: Zang-Qiang-Yi corridor; spatial scope; multi-source data; Ethnic minority cultural exchange index

DOI: <https://doi.org/10.3974/geodp.2023.01.04>

CSTR: <https://cstr.science.org.cn/CSTR:20146.14.2023.01.04>

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.2023.02.09.V1> or <https://cstr.science.org.cn/CSTR:20146.11.2023.02.09.V1>.

1 Introduction

The Zang-Qiang-Yi corridor is an ethnographic concept referring to the migration corridor

Received: 08-01-2023; **Accepted:** 15-03-2023; **Published:** 25-03-2023

Foundations: The Education Department of Sichuan Province (RWDL2022-ZD003, RWDL2021-YB004); Chengdu University of Technology (80000-2022ZF11417, ZDJS202219)

***Corresponding Author:** Zhang, Y. HMP-0644-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, zhangyang2020@cdu.edu.cn

Data Citation: [1] Xing, L. G., Zhang, Y., Kan, A. K., et al. Development of the spatially scoped dataset of Zang-Qiang-Yi corridor [J]. *Journal of Global Change Data & Discovery*, 2023, 7(1): 25–32. <https://doi.org/10.3974/geodp.2023.01.04>. <https://cstr.science.org.cn/CSTR:20146.14.2023.01.04>.
[2] Xing, L. G., Zhang, Y., Kan, A. K., et al. Boundary data of Zang-Qiang-Yi corridor [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2023. <https://doi.org/10.3974/geodb.2023.02.09.V1>. <https://cstr.science.org.cn/CSTR:20146.11.2023.02.09.V1>.

of the Zang-Qiang-Yi system in western China, which is dominated by the ancestors of many ethnic groups from the Zang-Qiang-Yi system, running through the great northwest and southwest of China^[1]. In 1978, Mr. FEI Xiaotong proposed the concept of “Tibetan-Yi corridor”, which scholars have enriched to “Zang-Qiang-Yi corridor” in recent years, considering the important historical position of Qiang people in the region^[2-4]. The region is dominated by high mountains and valleys, with many layers of mountains and rivers flowing, and is one of the most complex and diverse natural ecological regions in China. The frequent migratory flows and extensive cultural exchanges of many ethnic groups since the pre-Qin dynasty have made the cultural complexity and diversity of this region outstanding^[5], and it is one of the five important ethnic corridors in China^[6]. The Zang-Qiang-Yi corridor is a vivid portrayal of the pluralistic pattern of the Chinese nation, and the in-depth study of the “Zang-Qiang-Yi corridor” is of great importance for promoting the construction of the common spiritual home of the Chinese nation and cultural self-confidence and self-improvement.

In-depth research is necessary to clarify the spatial scope of the Zang-Qiang-Yi corridor. Although most scholars use the corridor in the Six Rivers basin and the Hengduan Mountains as the spatial scope of the Zang-Qiang-Yi corridor^[7,8], many inconsistencies are observed between these scopes and the Zang-Qiang-Yi corridor in terms of ethnic and cultural concepts^[1]. The Zang-Qiang-Yi cultural industry corridor, delineated by the Ministry of Culture, Sichuan province, and relevant cities and states, considers administrative divisions and industrial bases, and belongs to the concept of economic zones. Therefore, the lack of a clear definition of the spatial scope of the Zang-Qiang-Yi corridor, the failure to consider the natural geographical conditions and human characteristics, and the lack of refinement to the county level, make it difficult to guide the formulation of relevant ethnic cultural development policies.

This paper constructs the ethnic minority cultural exchange index based on multiple sources of geographic, ethnic, and cultural data, integrates physical geography and human characteristics, and uses county-level administrative districts as the basic unit to identify the spatial scope of the “Zang-Qiang-Yi corridor” through threshold selection. Thus, the Boundary data of Zang-Qiang-Yi corridor is developed. This dataset can provide necessary data support for ethnographic and sociological research and policy formulation related to ethnic and cultural development in the Zang-Qiang-Yi corridor.

2 Metadata of the Dataset

The metadata of the boundary data of Zang-Qiang-Yi corridor^[9] is summarized in Table 1. It includes the dataset full name, short name, authors, year of publication, spatial resolution, data format, data size, data files, data publisher, and data sharing policy, etc.

3 Methods

3.1 Data Sources

The data used in this study were obtained from three sources: basic geographic information, ethnic population census, and intangible cultural heritage (ICH) flow distribution. The basic geographic information data, which included the extent of the Hengduan Mountains, the extent of the six river basins, and county-level administrative divisions, were obtained from the Resource and Environment Science and Data Center of the Chinese Academy of Sciences. The ethnic population census data, mainly the percentage of minority populations,

Table 1 Metadata summary of the Boundary data of Zang-Qiang-Yi corridor

Items	Description
Dataset full name	Boundary data of Zang-Qiang-Yi corridor
Dataset short name	Zang-Qiang-Yi_Corridor
Authors	Xing, L. G. HMX-0489-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, ruger_xing@sina.com Zhang, Y. HMP-0644-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, zhangyang2020@cdu.edu.cn Kan, A. K. HMP-0479-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, kanaike@cdu.edu.cn Dai, H. HMO-9742-2023, College of Earth Sciences, Chengdu University of Technology, 3043677058@qq.com Cheng, J. L. HMP-1606-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, 2320483087@qq.com Chen, Y. HMO-9810-2023, College of Tourism and Urban-Rural Planning, Chengdu University of Technology, 167375548@qq.com Liu, T. HMO-9750-2023, College of Earth Sciences, Chengdu University of Technology, 625692182@qq.com
Geographical region	21°08'N–36°16'N, 91°41'E–105°19'E, including Guizhou province, Qinghai province, Sichuan province, Xizang autonomous region, part of the county-level administrative regions of Yunnan province
Year	2021
Spatial resolution	county
Data format	.shp, .xlsx
Data size	4.05 MB (2.54 MB after compression)
Data files	(1) boundary data of the Zang-Qiang-Yi corridor; (2) statistics of the proportion of minority population, intangible cultural heritage distribution and ethnic minority cultural exchange index in each county
Data publisher	Global Change Research Data Publishing & Repository, http://www.geodii.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 <i>Digital Journal of Global Change Data Repository</i>), and publications (in the <i>Journal of Global Change Data & Discovery</i>). 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 ^[10]
Communication and searchable system	DOI, CSTR, Crossref, DCI, CSCD, CNKI, SciEngine, WDS/ISC, GEOSS

were obtained from the 2020 China Population Census Subcounty Information. The ICH flow distribution data were obtained from the spatial distribution data set of five batches of national ICH in China. The ICH distribution data were mainly based on the ICH lists in^[11], and the frequency of ICH distribution in each county-level^[12] administrative region was obtained by querying its distribution range on the China ICH website¹.

3.2 Methodology

The spatial scope of the Zang-Qiang-Yi corridor was determined by referring to the spatial scope of the Six Rivers basin and the Hengduan Mountains and a review of related literature to identify the county-level administrative regions involved in the physical geography of the Zang-Qiang-Yi corridor^[13]. To quantitatively measure the core human characteristics of the

¹ China Intangible Cultural Heritage website. <http://old.ihchina.cn/index.html>.

Zang-Qiang-Yi corridor as a region with extensive minority cultural exchange, this study constructed the ethnic minority cultural exchange index (*EMCEI*) as a key indicator to define its spatial scope, calculated as

$$EMCEI = P_i \times N_i \quad (1)$$

where P_i and N_i are the proportion of minority population and the frequency of ICH distribution in county-level administrative region i , respectively. For county-level administrative region i within the Zang-Qiang-Yi corridor, the proportion of minority population is higher than that of the whole country and at least one ICH dissemination is observed, that is, $P_i \geq 8.9\%$, $N_i \geq 1$.

3.3 Technology Route

The data development process for this study (Figure 1) involved three main steps. First, a preliminary selection was made for the county-level administrative districts involved in the physical geography of the Zang-Qiang-Yi corridor based on the 2021 county-level administrative divisions of China, the scope of the Hengduan Mountains, and the scope of the Six River basin. The ethnic minority cultural exchange index of each county-level administrative district in the preliminary selection area was then calculated by using the percentage of minority population and the frequency of ICH flow in 2020 by county. Finally, the range of values and relevant literature were combined to define the spatial scope of the Zang-Qiang-Yi corridor with reasonable thresholds.

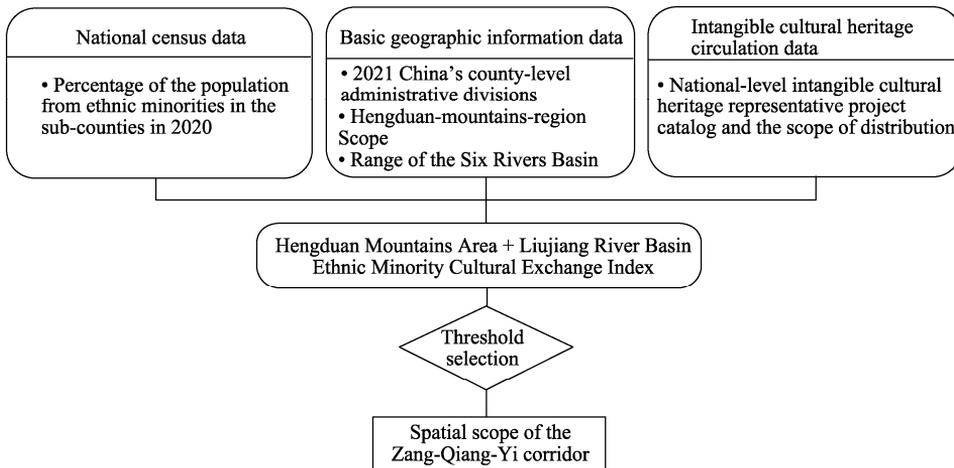


Figure 1 Flowchart of the dataset development

4 Data Results and Validation

4.1 Data Composition

The research obtained three sets of spatial data files (.shp format) and 1 statistical data table (.xlsx format). The three sets of spatial data files were boundary data of the Zang-Qiang-Yi corridor, boundary data of the Liujiang River basin, and boundary data of the Hengduan Mountains. The statistical data table included the proportion of ethnic minority population in the counties (cities) of the Zang-Qiang-Yi corridor, the data of the distribution of ICH, and the ethnic minority cultural exchange index data. Although the data of the Liujiang River basin and Hengduan Mountains are correct, they are irrelevant to the ultimate purpose of the

study. Therefore, only the boundary data and statistical data tables of the Zang-Qiang-Yi corridor were retained in the final dataset, which will be published later.

4.2 Data Products

The Six Rivers basin involves 33 cities and states in Sichuan, Yunnan, Qinghai, and Xizang autonomous regions, including 228 county-level administrative districts, covering all county-level administrative districts involved in the Hengduan Mountains. Therefore, the natural geographical area of the Zang-Qiang-Yi corridor is the area of the Six Rivers basin, which is also the primary area for the ethnic minority cultural exchange index calculation in this study (Figures 2 and 3). In this region, the population ratio of ethnic minorities is spatially distributed with high values in the northwest and low values in the southeast, and its boundary is relatively consistent with the HU Huanyong line (Figure 4). The frequency of ICH distribution is characterized by high value areas and low value areas, reflecting the diversity and complexity of culture in this region (Figure 5). The high value area of the ethnic minority cultural exchange index is relatively consistent with the range of the Hengduan Mountains, whereas the areas downstream of major rivers, such as the Jinsha and Min rivers, which are dominated by Han culture (e.g., most of the districts and counties under Chengdu, Meishan, and Yibin), are low value areas (Figure 6).

The scope of the Zang-Qiang-Yi corridor was identified by using 0.2 as the threshold of ethnic minority cultural exchange index and combining the requirement of spatial distribution contiguity (Figure 7). This range includes 161 county-level administrative regions, involving 25 cities and states in Sichuan, Yunnan, Guizhou, Xizang autonomous region, and Qinghai provinces (Table 2).

4.3 Data Validation

Comparing the scope of the Zang-Qiang-Yi corridor identified in this study with the scope of the Zang-Qiang-Yi cultural industry corridor in the published “Zang-Qiang-Yi cultural industry corridor master plan”, the major cities and states involved are more consistent with the core areas in the “Zang-Qiang-Yi cultural industry corridor master plan”. Considering that the scope of the Zang-Qiang-Yi cultural industry corridor master plan focuses more on the development conditions of cultural industries and the smallest delineated unit is the city and state, the scope of the Zang-Qiang-Yi corridor identified in this study can be considered more scientific and reasonable.

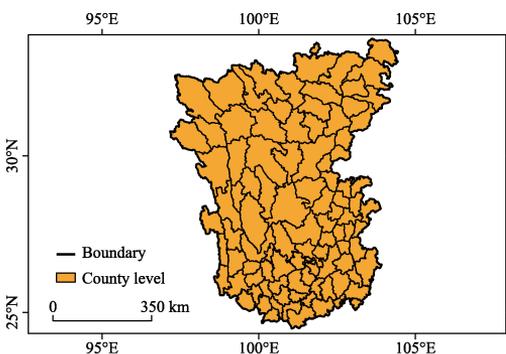


Figure 2 Map of transverse mountain area involving county-level administrative regions

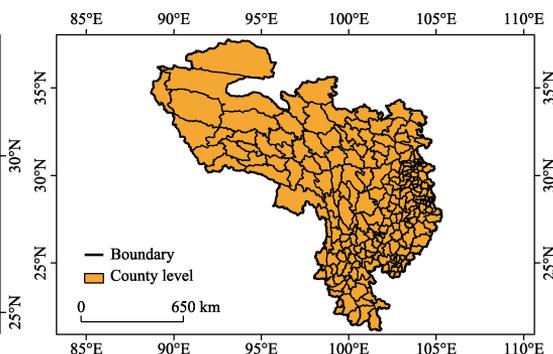


Figure 3 Map of six river basins involving county-level administrative districts

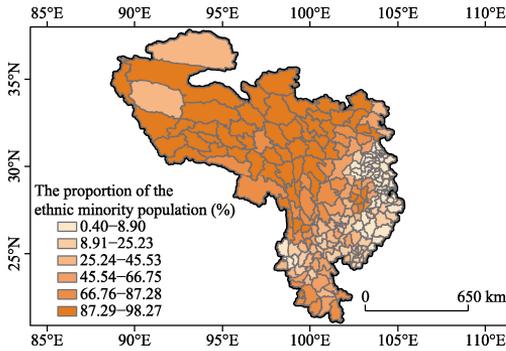


Figure 4 Map of percentage of minority population in primary districts

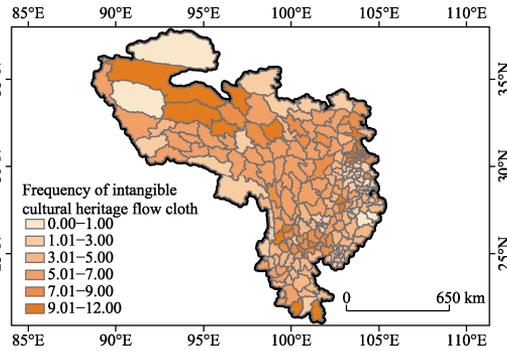


Figure 5 Map of frequency of intangible cultural heritage flow in primary districts

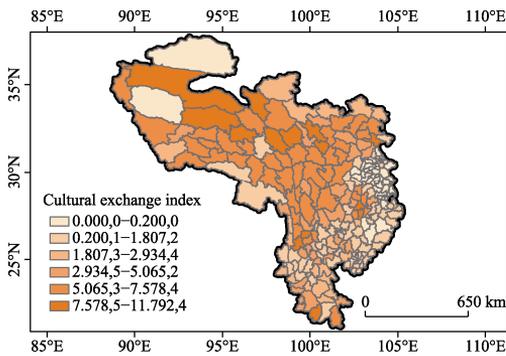


Figure 6 Map of cultural exchange index for primary election districts

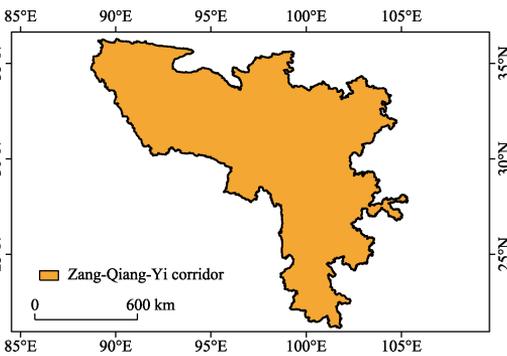


Figure 7 Map of spatial scope of the Zang-Qiang-Yi corridor

Table 2 County-level administrative regions within the Zang-Qiang-Yi corridor

Province (Autonomous region)	City (State)	County (City-level, District)
Sichuan province	Aba Zang and Qiang autonomous prefecture	Aba , Heishui , Hongyuan , Jinchuan, Jiuzhaigou, Lixian, Maerkang, Maoxian, Rantang, Ruoergai, Songpan, Wenchuan, Xiaojin
	Garze Zang autonomous prefecture	Batang, Baiyu, Danba, Daofu, Daocheng, Derong, Dege, Ganzi, Jiulong, Kangding, Litang, Luhuo, Luding, Seda, Shiqu, Xiangcheng, Xinlong, Yajiang
	Leshan	Ebian Yi autonomous county, Mabian Yi autonomous county
	Liangshan Yi autonomous prefecture	Butu, Dechang, Ganluo, Huili, Jinyang, Leibo, Meigu, Mianning, Muli Zang autonomous county, Ningnan, Puge, Xichang, Xide, Yanyuan, Yuexi, Zhaojue
	Mianyang	Beichuan Qiang autonomous county
	Panzhihua	Dongqu, Miyi, Renhe, Xiqu, Yanbian
	Yaan	Baoxing, Shimian
Yunnan province	Baoshan	Changning, Longyang
	Chuxiong Yi autonomous prefecture	Chuxiong, Dayao, Lufeng, Muding, Nanhua, Wuding, Yaoan, Yongren, Yuanmou
	Dali Bai autonomous prefecture	Binchuan, Dali, Eryuan, Heqing, Jianchuan, Midu, Nanjian Yi autonomous county, Weishan Yi-Hui autonomous county, Xiangyun, Yangbi Yi autonomous county, Yongping, Yunlong
	Diqing Zang autonomous prefecture	Deqin, Weixi Lisu autonomous county, Shangri-La

(To be continued on the next page)

(Continued)

Province (Autonomous region)	City (State)	County (City, District)
Yunnan province	Kunming	Anning, Chenggong, Fumin, Guandu, Jinning, Luquan Yi-Miao autonomous county, Panlong, Songming, Wuhua, Xishan, Xundian Hui-Yi autonomous county, Yiliang
	Lijiang	Gucheng, Huaping, Ninglang Yi autonomous county, Yongsheng, Yulong Naxi autonomous county
	Lincang	Cangyuan Wa autonomous county, Fengqing, Gengma Dai-Wa autonomous county, linxiang, Shuangjiang Lahu-Wa-Bulang-Dai autonomous county, Yongde, Yunxian, Zhenkang
	Nujiang Lisu autonomous prefecture	Fugong, Gongshan Dulong-Nu autonomous county, Lanping Bai-Pumi autonomous county, Lushui
	Pu'er	Jiangcheng Hani-Yi autonomous county, Jingdong Yi autonomous county, Jinggu Dai-Yi autonomous county, Lancang Lahu autonomous county, Menglian Dai-Lahu-Wa autonomous county, Ninger Hani-Yi autonomous county, Simao, Ximeng Wa autonomous county, Zhenyuan Yi-Hani-Lahu autonomous county
	Xishuangbanna Dai autonomous prefecture	Jinghong, Menghai, Mengla
	Yuxi	Chengjiang, Hongta, Yimen
Guizhou province	Zhaotong	Ludian, Weixin, Yiliang, Zhaoyang
	Bijie	Hezhang
Xizang autonomous region	Qamdo	Baxoi, Banbar, Chagyab, Dengqen, Konjo, Jomda, Karub, Riwoqe, Lhorong, Markam, Zogang
	Nyingchi	Bome, Zayu
	Naqu	Amdo, Baqen, Biru, Lhari, Nyainrong, Seni, Sog
Qinghai province	Guoluo Tibetan autonomous prefecture	Banma, Dari, Jiuzhi, Maduo
	Haixi Mongol-Tibetan autonomous prefecture	Golmud
	Yushu Tibetan autonomous prefecture	Chengduo, Baoqian, Yushu, Zado, Zhiduo

5 Discussion and Conclusion

The Zang-Qiang-Yi corridor is an important ethnic cultural area in southwest China, but its spatial scope definition is still controversial in academic circles. This study considers the physical geographic conditions and human characteristics of the region, and based on multiple sources of data, such as basic geographic information, ICH distribution, and national population census. The spatial scope of the Zang-Qiang-Yi corridor is identified by constructing the ethnic minority cultural exchange index and setting thresholds on the basis of the initial selection of the physical geographic scope. The identified Zang-Qiang-Yi corridor includes 162 county-level administrative regions, involving 25 cities and states in Sichuan, Yunnan, Guizhou, Xizang autonomous region, and Qinghai provinces, which is more consistent with the scope of the core area of the Zang-Qiang-Yi cultural industry corridor in the Zang-Qiang-Yi cultural industry corridor master plan. This study is an exploration of the application of integrating multisource data for ethnographic and sociological research, and innovatively constructs the ethnic minority cultural exchange index, which has certain implications for related research. The developed spatial scope dataset of the Zang-Qiang-Yi corridor can provide necessary basic data for the research on the Zang-Qiang-Yi corridor and support the formulation of policies related to cultural industries in the region.

However, the Zang-Qiang-Yi corridor is dynamic in nature, and the scope identified in this study is the current spatial boundary obtained by taking county-level administrative districts as the basic division unit. In addition, the ethnic minority cultural exchange index constructed in this study only considers the proportion of minority populations and the frequency of ICH distribution, Future research can further enrich the spatial scope identification and zoning research results of the Zang-Qiang-Yi corridor by including more humanistic elements, such as major ancient road (channel) networks, language (dialect) areas, traditional villages, and archaeological relics.

Author Contributions

Zhang, Y. and Kan, A. K. did the overall design of the dataset development; Cheng, J. L. and Liu, T. collected and processed the source data; Dai, H. and Chen, Y designed the model and algorithm; Dai, H. and Xing, L. G. did the data validation; Xing, L. G., *et al.* wrote the data paper.

Conflicts of Interest

The authors declare no conflicts of interest.

References

- [1] Xu, X. S. The concept of “Zang-Qiang-Yi corridor” and its definition [J]. *Journal of Southwest Minzu University (Humanities and Social Science)*, 2016, 37(7): 9–13.
- [2] Fei, X. T. On the identification of ethnic groups in China [J]. *Social Sciences in China*, 1980, (1): 147–162.
- [3] Li, S. M. The study of “Tibetan-Yi corridor” and the doctrine of ethnic corridor [J]. *Journal of Tibetology*, 2005(2): 2–7.
- [4] Shi, S. Three perspectives and research ideas on understanding the Tibetan-Yi corridor [J]. *Journal of Guangxi University for Nationalities (Philosophy and Social Science Edition)*, 2008, 30(6): 29–34.
- [5] Shi, S. A review of the study on the origin of Zang and Burmese languages in the Tibetan-Yi corridor [J]. *Thinking*, 2008(2): 15–19.
- [6] Li, X. X. On the “National corridor” and the pattern of “two vertical and three horizontal” [J]. *Journal of Chinese Culture*, 2005(3): 124–130.
- [7] Zhang, X. The research path of Zang-Qiang-Yi corridor [J]. *Northwestern Journal of Ethnology*, 2012(3): 188–197.
- [8] Shi, S. The “Tibetan-Yi corridor”: A unique value of ethnic regions: a discussion on the concept and region of “Tibetan-Yi corridor” proposed by Mr. Fei Xiaotong [J]. *Journal of Tibetology*, 2005(00): 8–17.
- [9] Xing, L. G., Zhang, Y., Kan, A. K., *et al.* Boundary data of Zang-Qiang-Yi corridor [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2023. <https://doi.org/10.3974/geodb.2023.02.09.V1>. <https://cstr.science.org.cn/CSTR:20146.11.2023.02.09.V1>.
- [10] GCdataPR Editorial Office. GCdataPR data sharing policy [OL]. <https://doi.org/10.3974/dp.policy.2014.05> (Updated 2017).
- [11] Guo, Y., Yan, J. Y., Wang, Z. B., *et al.* Spatial distribution data set of 3610 national intangible cultural heritages in five batches in China [J/DB/OL]. *Digital Journal of Global Change Data Repository*, 2021. <https://doi.org/10.3974/geodb.2021.12.01.V1>. <https://cstr.science.org.cn/CSTR:20146.11.2021.12.01.V1>.
- [12] Li, J. X., Wang, Z. B. Study on the spatial distribution and genealogical dating of national-level non-heritage items [J]. *Acta Geographica Sinica*, 2022, 77(12): 3162–3179.
- [13] Shi, Z. Q., Deng, W., Zhang, S. Y. Study on the spatial pattern and spatio-temporal changes of the national land in the Hengduan Mountains in the past 25 years [J]. *Geographical Research*, 2018, 37(3): 607–621.