

## Article

# Spatiotemporal Evolution of Buddhist Cultural Landscapes in Mount Jiuhua Under Secularization

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## Abstract

Mount Jiuhua, a sacred Chinese mountain with profound Buddhist heritage, has developed Buddhist cultural landscapes closely linked to the secularization of Chinese Buddhism. The interplay between these landscapes and religious secularization is complex, yet scholarly research into this dynamic remains limited. This study utilizes historical geographical information system (HGIS) technology, integrating multi-source data—including local gazetteers, travelogues, and historical maps—to construct a database of temples and associated historical spatial elements on Mount Jiuhua. Through a combined qualitative and quantitative approach, we analyze the spatiotemporal evolution characteristics and driving mechanisms of Buddhist temples on Mount Jiuhua from the Tang Dynasty onward. The study reveals that the number of temples on Mount Jiuhua has undergone a phased trajectory characterized by “continuous growth-high-level stability-gradual decline”. Spatially, the distribution pattern shifted from an early multi-centered dispersion to a single-core agglomeration centered on Jiuhua Street since the Ming and Qing dynasties, with the spatial centroid of temple distribution progressively converging toward Jiuhua Street and its surrounding core area. This transformation represents a spatial manifestation of Chinese Buddhist secularization within a mountainous landscape, shaped jointly by four interrelated dimensions: natural conditions, political economy, secular demands, and transportation systems. This research offers a novel analytical framework and methodological paradigm from a historical-geographical perspective for studying the secularization of sacred mountains. It also provides scientific insights for the conservation of Buddhist mountain cultural heritage and the restoration of historical landscapes.

**Keywords:** Mount Jiuhua; Buddhist secularization; Buddhist cultural landscape; historical GIS; spatiotemporal evolution



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## 1. Introduction

Mount Jiuhua is located in Chizhou City, Anhui Province, China, adjacent to Zhejiang and Jiangxi Provinces. It is regarded as the sacred site of Di Zang Bodhisattva's manifestation and ranks among China's four most renowned Buddhist mountains, alongside Wutai Mountain in Shanxi, Putuo Mountain in Zhejiang, and Emei Mountain in Sichuan. As a central place of devotion to Di Zang Bodhisattva, Mount Jiuhua holds profound spiritual significance and cross-cultural relevance, attracting a broad base of devotees across China as well as pilgrims from Japan, Korea, and other regions who undertake mountain worship [1].

Weber first articulated the theory of secularization in 1930, systematically explaining the logic of religious retreat from the public sphere, the privatization of religion, and the decline of sacredness during modern societal transformation. His definition and conceptualization have sparked extensive scholarly debate. Interpretations of secularization exhibit notable regional variations: in Europe, secularization manifests as the contraction of religious institutions' social functions and a sustained decline in public adherence to religious beliefs and participation in ritual practices, leading to religion's gradual withdrawal from governance and everyday life [2,3]. Conversely, in regions such as the United States and the Middle East, religious forces remain deeply embedded in public life and social order construction [4]. Within Chinese scholarship, the process of religious transformation is often analyzed through the lens of "Sinicization", which more accurately reflects the integration and adaptation of religious traditions within local sociocultural frameworks [5]. The secularization of Chinese Buddhism is a dynamic process of continuous self-adjustment to align with secular society [6], fundamentally reflecting a shift in its functions and social roles toward greater emphasis on serving secular life and engaging in societal affairs [7]. Despite these regional variations, the Chinese and Western experiences of secularization share a common analytical core: a structural reconfiguration of religious functions and a re-ordering of sacred–secular relations. Their divergence lies in the direction and outcome of this reconfiguration. To capture this commonality and contrast, we compare the two contexts across four dimensions: driving force, institutional relation, evolutionary form, and core outcome. In the classic Western paradigm, secularization—driven by internal functional differentiation and rationalization—manifests institutionally as church–state separation, expresses itself evolutionarily as the privatization of belief and retreat from the public sphere, and often leads to religious decline or societal marginalization [3]. In the Chinese context, in contrast, the driving force is culturally embedded adaptation to societal needs. Institutionally, Buddhism is shaped by interaction with local social structures, and in modernity, by cultural localization and institutional adaptation. Evolutionarily, it has moved through an early phase of historical patronage, temple-based economies, and pilgrimage networks, and a modern phase of Humanistic Buddhism and cultural localization [8,9], thereby transforming monastic space from secluded retreats into open, service-oriented sacred space; its core outcome is not desacralization or decline, but culturally framed, socially embedded spatial reorganization that integrates sacred sites into regional settlement and economic life. Drawing on the "functional differentiation" paradigm from Western secularization theory and incorporating discussions in Chinese Buddhist studies on "social engagement" and "spatial openness", we conceptualize Chinese Buddhist secularization as a transformative process wherein religious authority progressively weakens spatial boundary control and actively aligns its spatial practices with the functional demands of secular society.

Secularization has drawn interest from researchers in religious geography due to its distinct spatial manifestations [10]. Established studies have primarily relied on social survey data, including religious population size, denominational affiliations [11], and levels of religious attendance [12], to explain geographic variations in secularization trends. Recent scholarship on religious spaces, religious heritage, and post-secular cities has yielded rich insights, primarily focusing on the heritagization, adaptive reuse, spatial governance, and public cultural functions of religious sites [13,14]. However, these studies are largely synchronic case analyses, lacking longitudinal research into the evolutionary logic and spatial pattern shifts of religious cultural landscapes throughout the secularization process [15,16]. Meanwhile, heritage studies tend to emphasize the conservation and revitalization of religious landscapes [17] while insufficiently addressing their dynamic evolution under the intertwined influences of secularization and governance transformation.

To address this macro-level issue, religious cultural landscapes offer an ideal entry point. As Kong emphasized, religion does not exist in cultural isolation; religious landscapes must be understood within broader cultural processes [18]. Current work includes comparative analyses of religious landscapes across faiths [19], the interplay between religion and urban environments [20], and the spatial distribution of religious sites along with the factors shaping these patterns [21]. Central to this landscape, Buddhist temples anchor both ritual practice and community engagement, functioning as key social hubs. Changes in temple numbers and locations provide insight into the dynamic relationship between spiritual and secular spheres. Furthermore, political factors such as state power, administrative structures, and religious policies profoundly shape temple spatial forms [22]. Archeological research further indicates that the spatial organization of religious material culture is often closely linked to power hierarchies and resource control; the siting of temples, steles, and ritual facilities frequently reveals state regulation and the instrumentalization of sacred space [23].

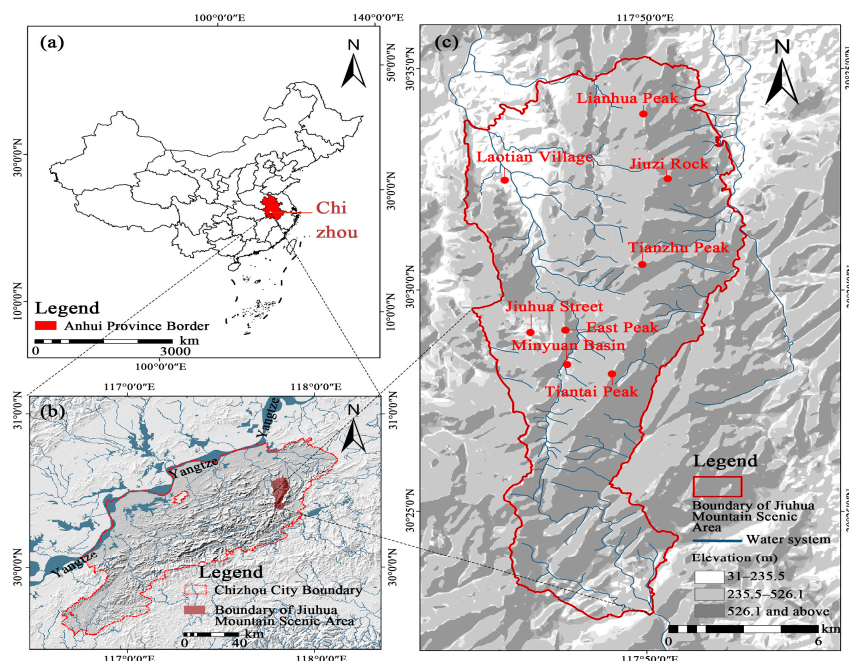
With the application of digital humanities methods such as geographic information systems (GISs), religious landscape studies have shifted from static description to dynamic evolutionary analysis, providing quantitative and visual evidence for uncovering the mechanisms behind the formation, expansion, and relocation of religious spatial patterns [24]. Methodologically, a GIS offers a systematic spatial analytical framework for studying religious landscape evolution [25]. Researchers can construct spatiotemporal databases of religious sites by extracting place names, georeferencing historical maps, and compiling archeological site coordinates. Based on GIS spatial analysis technology, the agglomeration distribution characteristics and spatiotemporal evolution trends of religious sites can be accurately clarified. [26,27]. By integrating natural and socio-environmental variables such as elevation, slope, hydrology, and transportation networks, researchers can further analyze site selection patterns [28,29]. Additionally, tools like viewshed analysis and accessibility modeling allow for a deeper exploration of sacred site visibility, pilgrimage route organization, and devotee spatial practices [30,31]. These technological advances provide quantitative foundations for reconstructing ancient sacred geographies [32].

Nevertheless, current GIS-based analyses remain primarily focused on depicting spatial patterns and identifying driving factors, offering insufficient interpretation of the underlying sociocultural mechanisms—particularly the intrinsic link to religious secularization. Although a few recent studies have begun to bridge this gap by integrating spatial analysis with sociocultural processes such as examining the interplay between Beijing temple distribution and population, commerce, guilds, and ecclesiastical models [33]; analyzing the coupling relationship between temples and traditional villages in the Hehuang region [34]; or revealing connections between Zhejiang Buddhist architectural patterns and secularization or Confucian–Buddhist–Taoist syncretism [35]. These frontier explorations predominantly address urban contexts, regional religious sites, or traditional village conservation. Systematic analysis of the spatial evolution mechanisms of “mountainous religious cultural landscapes” under secularization remains lacking. Therefore, this study aims to fill this research gap by focusing on mountainous religious cultural landscapes and conducting long-term research to systematically examine their spatiotemporal evolution patterns and underlying mechanisms during secularization, thereby deepening our understanding of the religion–space interaction.

Mount Jiuhua lies in the southern mountainous region of the Wanjiang River Basin. From the mid-Tang to the late Northern Song dynasties, this area experienced rapid urban and market town development, sustained population growth, and faster advancement in agriculture, handicrafts, and mining compared to the northern hilly regions [36]. By the Ming and Qing dynasties, regional population density had further increased, yields of

economic crops such as wheat and rice surged, and the development of polder fields and hydraulic infrastructure reached its peak [37,38]. The Buddhist development trajectory of Mount Jiuhua epitomizes the secularization of Chinese Buddhism [39,40]. Its characteristics include: during traditional periods, localization of architecture, publicization of functions, and folk-based economic integration [41–43]; in modern times, under government intervention and the influence of the “Humanistic Buddhism” movement, temple functions have shifted toward public services such as education, healthcare, and tourism (Appendix A) [44–46]. The surrounding environment of temples has also undergone significant transformation (Appendix B). This complete evolutionary process, unfolding within a specific socioeconomic context, renders Mount Jiuhua an ideal case for exploring how Buddhist secularization shapes historical mountain landscapes. This study adopts the Tang dynasty as its temporal starting point for three primary reasons: (1) Following the arrival of Kim Gyo-gak (Jin Dizang) for ascetic practice and the consolidation of sacred narratives, Mount Jiuhua established a stable association with Dizang worship during the Tang, formally initiating its sanctification process; (2) Scholars widely regard the Tang as the initial phase of temple construction on Mount Jiuhua, marking a critical beginning for its religious spatial configuration; (3) Historical records concerning temple construction and Buddhist activities on Mount Jiuhua became sufficiently comprehensive from the Tang onward, providing reliable documentary support for long-term historical GIS analysis.

Taking Mount Jiuhua as a case study (Figure 1), this research employed HGIS methodology to systematically examine the spatiotemporal evolution characteristics of its Buddhist cultural landscape from the Tang dynasty to the present. It further explains the driving mechanisms of this spatial evolution through natural geographical elements, political economy, Buddhist secularization transformation, and transportation systems. This paper addresses two primary questions: (1) What patterns of evolution has the Buddhist cultural landscape on Mount Jiuhua undergone since the Tang dynasty? (2) How is the evolution of Mount Jiuhua’s Buddhist cultural landscape associated with the process of Buddhist secularization, and what factors influence its spatial pattern changes?



**Figure 1.** Study area. (a) Anhui location in China. (b) Study area location in Chizhou. (c) Research area overview. (c) contains several important place names, such as Laotian Village, Jiuhua Street, East Peak, Tiantai Peak, Minyuan Basin, Jiuzi Rock, Lianhua Peak, and Tianzhu Peak. These place names will appear later in this manuscript.



## 2. Materials and Methods

### 2.1. Research Framework

Temples, as prototypical point-based historical cultural elements, exhibit spatiotemporal evolution characterized by quantifiable spatial patterns and shaped collectively by multiple historical factors including religious diffusion, state policies, transportation networks, and local societal dynamics [47,48]. Spatial statistical methods such as the nearest neighbor index, kernel density estimation (KDE), and standard deviational ellipse (SDE) facilitate the identification of clustering intensity, core area distribution, and directional structures of temples and other religious buildings [49,50]. Concurrently, integrating qualitative historical sources—such as travelogues and historical maps—enriches the historical narrative underlying spatial statistical findings [51]. Combining GIS-based spatial analysis with historical textual analysis establishes an integrated analytical pathway of “pattern identification–process characterization–mechanism explanation”, which proves effective for exploring the spatiotemporal evolution of religious cultural landscapes [52].

This study synthesizes three methodological approaches: historical textual analysis, spatial statistical analysis, and the reconstruction of ancient transportation system. It constructs a comprehensive explanatory framework centered on the spatiotemporal evolution of temples, encompassing four interrelated dimensions: “natural geographical constraints–political-economic external shaping–secularization-driven internal dynamics–transportation system organization” (Figure 2).

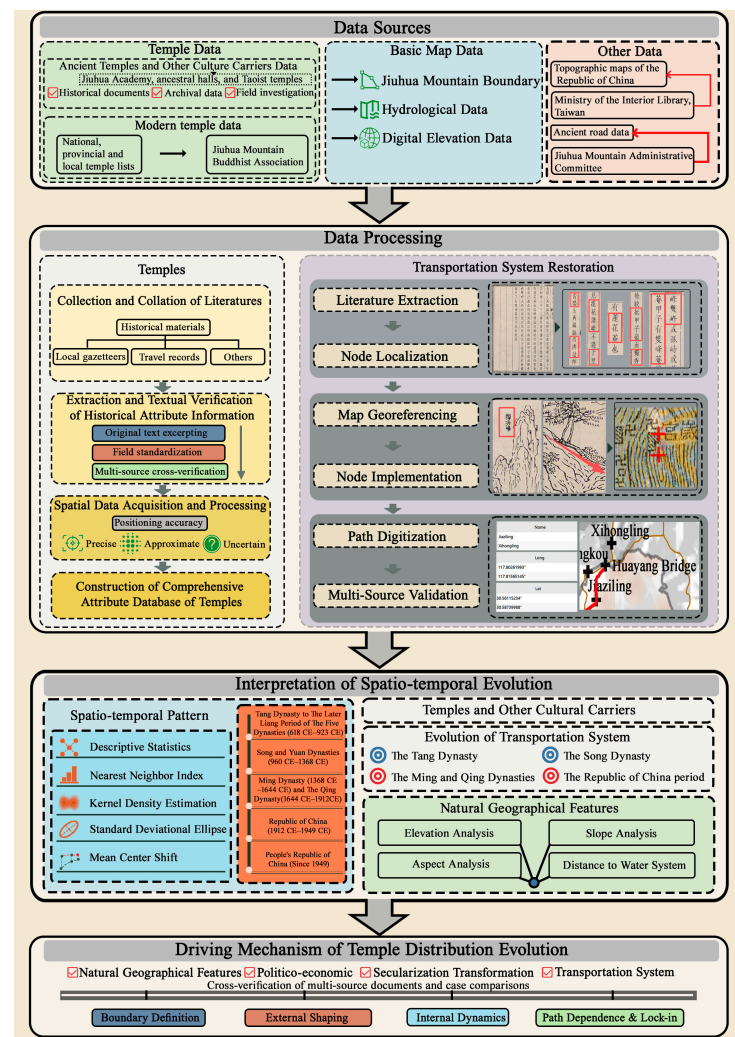


Figure 2. Research framework and procedure.

At the quantitative spatial statistical level, we first compiled the number of temples across historical periods and analyzed their phased changes. Second, we employed GIS-based spatial statistical tools to identify spatial patterns, specifically as follows:

- (1) Average nearest neighbor (ANN) analysis: This method assesses the overall spatial distribution pattern of temples in each period, whether clustered, random, or uniform [53]. We selected ANN over Ripley's K-function or Moran's I because it yields a single, cross-period comparable nearest neighbor index (NNI), enabling systematic evaluation of evolutionary trends from dispersion to randomness and ultimately to clustering [54].
- (2) Kernel density estimation (KDE): This technique identifies temple-dense areas and their temporal shifts [55], addressing a key limitation of ANN—its inability to specify “where” clustering occurs, despite indicating “whether” clustering exists. In this study, we adopted the default bandwidth in ArcGIS 10.8 to balance the representation of core hotspot zones in temple distribution.
- (3) Standard deviational ellipse (SDE) [56] and mean center migration analysis: These methods characterize the dominant orientation, dispersion extent, and centroid migration trajectory of temple spatial layouts, revealing directional features of Mount Jiuhua temple distribution and their variations across historical phases.

Through their complementary strengths, ANN provides an overall assessment of clustering tendency, KDE pinpoints the specific locations of core areas, and SDE delineates the migration trajectory of spatial centroids, collectively forming a systematic analysis of temple spatial patterns in this study. Additionally, based on a digital elevation model (DEM), we extracted elevation, slope, and aspect factors using ArcGIS spatial analysis tools. We also calculated the distance from each temple to the nearest watercourse through buffer analysis, generating foundational data for subsequent natural geographical factor analysis.

At the qualitative historical analysis level, this study employed cross-verification of multi-source documents and case comparisons to reveal the driving mechanisms through which natural geographical factors, political economy, secularization transitions, and transportation system shape the spatiotemporal patterns of Buddhist temples. It specifically examines the constraining influence of natural geographical factors on temple distribution, the institutional and material advantages conferred upon core regions by state policies and regional economies, the functional transformation and spatial agglomeration of temples driven by Buddhist secularization, and the organizational role of transportation system in pilgrimage activities and their stabilizing effect on core spatial configurations.

## 2.2. Data Sources

Modern temple data for Mount Jiuhua were sourced from the national, provincial, and local temple directories provided by the Mount Jiuhua Buddhist Association. Data on ancient temples and other cultural carriers were extracted from relevant historical documents, archival materials, and field surveys. Base map data included the boundary, hydrological network, and digital elevation model (DEM) of Mount Jiuhua. Finally, topographic maps of the Republic of China provided by the Library of the Ministry of the Interior of Taiwan and ancient road data provided by the Mount Jiuhua Administrative Committee were crucial to this study (Table 1).

**Table 1.** Data types and sources.

| Data                                                              | Type                                                             | Sources                                                                   |
|-------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------------------|
| Present temples                                                   | Excel file (later locations were digitized into vector features) | The Mount Jiuhua Buddhist Association                                     |
| Historical temples, academies, ancestral halls and Taoist temples | Excel file (later locations were digitized into vector features) | Historical records and modern documentation (see Appendix C for details)  |
| Mount Jiuhua Boundary and Hydrological Data                       | Vector features                                                  | The Natural Resources and Planning Bureau of Chizhou City, Anhui Province |
| Digital elevation model (DEM)                                     | Raster                                                           | SRTM DEM                                                                  |
| Elevation, slope, and aspect data                                 | Raster                                                           | Derived from SRTM DEM                                                     |
| Topographic maps of the Republic of China                         | Jpeg                                                             | Library of the Ministry of the Interior, Taiwan                           |
| Mount Jiuhua ancient road data                                    | PDF                                                              | Mount Jiuhua Scenic Area Administration Committee                         |

Note: Temples have been classified according to different historical periods in China, based on their time of construction, ranging from the Tang dynasty to the present era of the People's Republic of China. Specifically, these periods are the Tang to the Later Liang dynasty (618 CE–923 CE), Song and Yuan dynasties (960 CE–1368 CE), Ming dynasty (1368 CE–1644 CE), Qing dynasty (1644 CE–1912 CE), Republic of China (1912 CE–1949 CE), and People's Republic of China (1949 CE–present).

### 2.3. Data Processing

#### 2.3.1. Digitization of Historical Resource Elements

##### (1) Temples

Due to variations in information types and positional accuracy across sources, this study extracted historical temple data through four systematic steps: (a) literature collection and organization, (b) historical attribute extraction and verification, (c) spatial data acquisition and processing, and (d) construction of a temple attribute database.

- (a) The literature was categorized into local chronicles, poems, travelogues, and other materials. Local chronicles primarily include mountain, county, and city records compiled by official institutions (Appendix C), while additional sources encompass business and pilgrimage records, as well as maps and reports on cultural relics.
- (b) We employed a workflow of “direct quotation–field standardization–multi-source cross-verification” to extract historical attributes from local gazetteers and other documents, including the name, alias, name change, location, time of foundation, founder, time of construction, constructors, and destruction of temples. A phased extraction strategy was adopted based on source availability. For temples established during the Ming dynasty and later, the primary reference was the Jiuhuashan Zhi, supplemented by county and city records. In cases of conflicting accounts, the version temporally closest to the event was selected. For temples predating the Ming dynasty, we required corroboration from at least two independent sources, assigned reliability ratings to each entry, and clearly flagged uncertain cases. Early temple records, affected by factors such as document loss, often contained missing information; we mitigated the impact of incompleteness through multi-source cross-verification and explicit annotation of uncertain entries. Entries appearing in only a single source, lacking clear dates, or containing unverifiable facts were marked as uncertain (Table 2). The number of early temples reported in this study reflects the count of temples identifiable and verifiable in extant historical sources, not the actual historical total.
- (c) Spatial data acquisition focused on geographic coordinates (latitude and longitude), present-day location descriptions, and positioning accuracy. For temples with extant structures, identifiable ruins, or clearly marked locations on cultural relics maps, spatial coordinates were determined through remote sensing interpretation and field

surveys. For extant temples, the coordinate point was set at the center of the main architectural complex or the primary hall; for temple ruins, the coordinate point was based on the core area of the site, the geometric center of the remaining extent, or the point marked in the cultural relic census. For temples described relative to known landmarks—such as “four miles east of Huacheng Temple” or “in Tiantai Peak”—a fuzzy positioning approach was employed to estimate spatial placement [26]. We extracted reference landmarks, directional terms, and distance information from historical texts, matched them to modern place names, peaks, hydrological features, extant temples, or ruin sites, and constrained candidate areas using DEM terrain data, hydrological distribution, ridge-valley patterns, and slope conditions, excluding unsuitable zones such as cliffs or water bodies. The most historically consistent location was selected as the approximate point. Historical distance units such as li were converted to metric equivalents using Huang Shengzhang’s Historical Conversion Table of Weights and Measures. Temples documented only vaguely in historical texts and lacking physical remains were recorded in statistical tables but excluded from point-based spatial analysis; their latitude and longitude were not assigned. Such temples constitute approximately 4–9% of all records. Given this low proportion, their exclusion has limited impact on the overall spatial pattern assessment. Positioning accuracy was therefore classified into three levels: precise (to the temple site), approximate (to a landmark), and uncertain (fuzzy).

- (d) Using a unique temple ID as the primary key, we linked historical attributes with spatial data—including name, founding period, and damage history—to form a comprehensive historical temple attribute database (Appendix D).

**Table 2.** Reliability classification of historical temple records.

| Level                       | Criteria                                                                                                                                                 | Data Processing Approach                                                                                          |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Confirmed Entries           | Corroborated by at least two independent historical sources, or documented in literature and supported by archeological site/cultural relic survey data. | Included in both historical statistics and spatial analysis.                                                      |
| Relatively Reliable Entries | Recorded in authoritative local gazettes or mountain chronicles with relatively complete information, but lacking sufficient cross-verification.         | Included in historical statistics; inclusion in spatial analysis depends on the accuracy of location information. |
| Questionable Entries        | Only mentioned in a single source, or with ambiguous records of dates, names, or locations.                                                              | Marked as uncertain; excluded from core quantitative analysis and point-based spatial analysis.                   |

## (2) Transportation system restoration

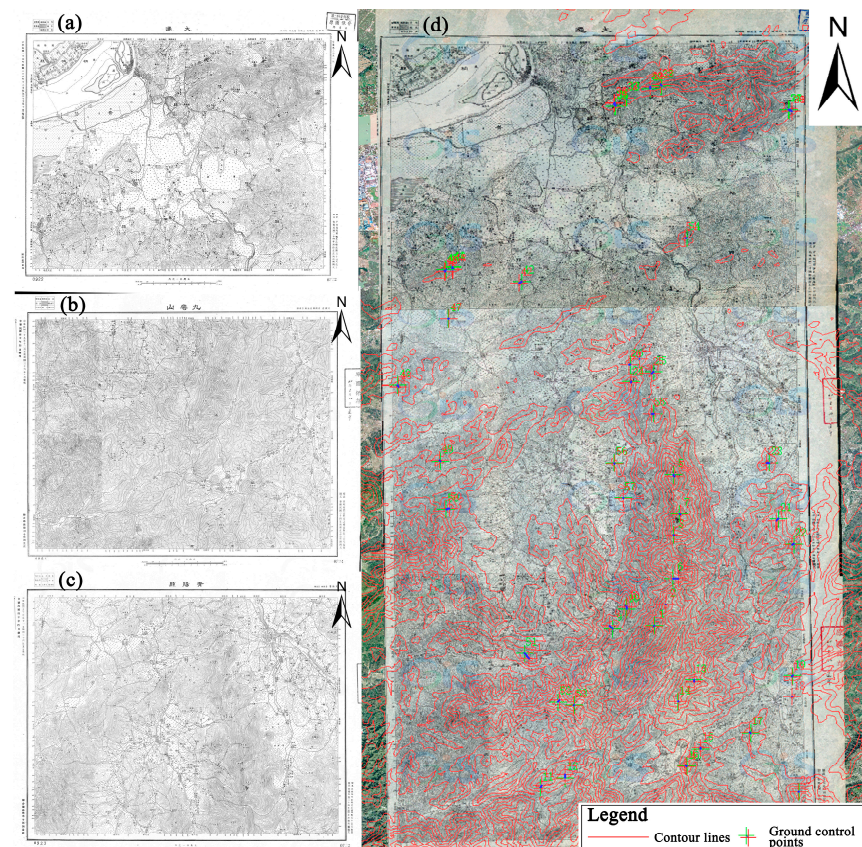
This study followed a technical workflow of “literature extraction–toponymic interpretation–map georeferencing–node localization–path digitization–multi-source validation” to reconstruct ancient mountain access roads.

Literature extraction and node localization: We extracted spatial elements related to roads from historical documents such as the Jiuhuashan Zhi and Canxue Zhijin, including settlements, temples, bridges, ferry crossings, and mountain passes, to create a “Historical Road Node Information Table”. We reconciled historical and modern place names using local toponymic gazetteers and contemporary geographic data. For example, the “Huacheng Ridge” mentioned in Zhou Bida’s Fan Zhou You Shan Lu (Song dynasty), ref. [57] described as “narrow” and leading directly to Huacheng Temple, was confirmed as the same geographic feature through the Qingyang County Toponymic Gazetteer [58], which



records “Huacheng Ridge, located north of Jiuhua Street, with a 5-km ancient stone-paved path”, and verified via DEM data. This node was then precisely geolocated using GIS.

**Historical map georeferencing:** Using Republican-era topographic maps as a base, we stitched and georeferenced individual map sheets for visualization. Initially, we selected 10 control points and compared them against the 2020 Landsat-7 ETM+ image to assess geographic error. We then used stable features such as Tiantai Peak, Wuxi Bridge, and Huacheng Temple as key control points to calibrate all 57 selected control points individually. Overlay results showed the perfect alignment of lakes, peaks, and roads between historical maps and modern data (Figure 3).



**Figure 3.** Mapping and processing. (a) Topographic map of Datong Town in 1935, scale: 1/50,000. (b) Topographic map of Mount Jiuhua in 1940, scale: 1/50,000. (c) Topographic map of Qingyang County in 1942, scale: 1/50,000. (d) Georeferencing.

**Node implementation and path digitization:** Based on the georeferenced historical maps, we projected nodes onto modern geographic space according to the sequence of roads described in historical texts. Specifically, we created a point feature class in GIS, recording settlements, temples, and other nodes as discrete points, and determined their coordinates by interpreting historical texts, modern imagery, DEM terrain maps, and toponymic data to ensure positional accuracy. Path digitization proceeded by translating clearly marked roads from Republican-era maps to extract basic orientations, then snapping verified nodes onto the road topology. Segments were connected and annotated according to textual sequences, e.g., “Yingluo Spring, approximately ten li, leads to Wuxiang Temple”, to reconstruct mountain access routes. For routes explicitly documented but unmarked on historical maps, e.g., “entering the mountain via Ke Village through Liuquan Ridge” as noted in the *Guangxu Jiuhuashan Zhi* [59], we supplemented the route by analyz-

ing DEM slope data, tracing gentle-slope valleys, and inter-village connections to ensure mountain road feasibility.

**Multi-source validation:** To ensure reconstruction accuracy, we overlaid digitized routes with ancient road data provided by the Mount Jiuhua Administrative Committee to verify the alignment of major corridors and key nodes. Additionally, we cross-validated results against studies of Huizhou merchant trails and extant ancient road remains.

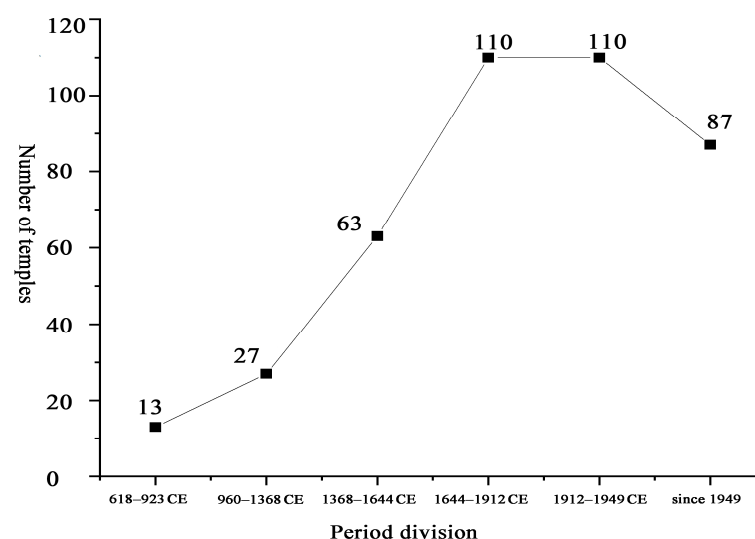
### 2.3.2. Database Construction

Accordingly, this study constructed a three-layer historical GIS database: base map layer, feature layer, and attribute layer. The base map layer includes the study area boundary, hydrological network, DEM, and derived terrain factors. Hydrological and terrain data were incorporated for two primary reasons: first, under historical transportation conditions, mountain temple accessibility was constrained by slope and elevation; second, traditional site selection emphasized principles of “backed by mountains, facing water” and “embracing yin while holding yang”, with water availability directly influencing temple location. The feature layer includes temples, folk cultural carriers, road nodes, and ancient road segments; the attribute layer stores non-spatial information for each feature. All layers were georeferenced to a unified coordinate system and linked via unique IDs to associate spatial features with historical attributes, forming an integrated analytical database.

## 3. Results

### 3.1. Temporal Evolution

The number of temples on Mount Jiuhua exhibited an inverted V-shaped dynamic across historical periods, characterized by “continuous growth-plateau at peak-gradual decline” (Figure 4), with the following phases. (1) Initial Emergence (618–923 CE): During the Tang to Later Liang periods, only 13 temples existed—the lowest count—indicating that Buddhist temple construction on Mount Jiuhua was in its nascent stage. (2) Rapid Expansion (960–1368 CE and 1368–1644 CE): Temple numbers increased from 27 to 63, then surged to 110. From the Song–Yuan to Ming dynasties (960–1368 CE), 36 new temples were added; during the Ming dynasty alone, 47 more were established, reflecting accelerated Buddhist expansion on Mount Jiuhua. (3) Maturation and Decline (1644–1912 CE, 1912–1949 CE, and 1949–present): Temple numbers stabilized at 110 during the Qing to Republican periods—the historical peak—indicating full maturation of the temple complex. After 1949, the count declined to 87, showing a gradual reduction.



**Figure 4.** Number of temples on Mount Jiuhua in each historical period.

This numerical trajectory closely correlates with the secularization of Buddhism. From the Song–Yuan through Ming–Qing periods, expanding lay devotee communities, flourishing pilgrimage economies, and the formation of local belief networks drove accelerated temple construction. The particularly rapid growth during the Ming–Qing era directly reflects the manifestation of Buddhist secularization in Mount Jiuhua’s temple development.

### 3.2. Spatial Transformation

#### 3.2.1. Spatial Distribution Pattern of Temples

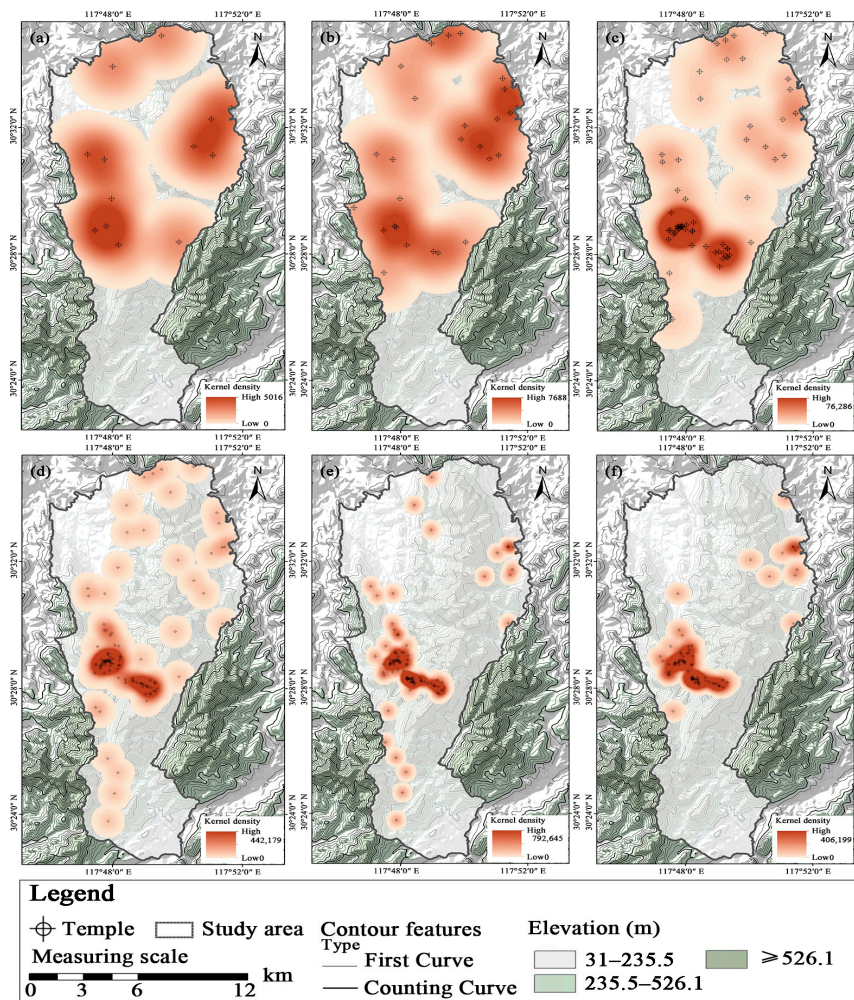
Using ArcGIS’s Average Nearest Neighbor tool, we calculated the nearest neighbor index (NNI) for Mount Jiuhua temples across six historical periods (Table 3). Results show that the NNI for the Tang–Later Liang period was 1.220 ( $>1$ ), indicating a dispersed distribution; for all subsequent periods,  $NNI < 1$ , indicating spatial clustering. Corresponding Z-values reveal that the absolute values for Tang–Later Liang (1.520) and Song–Yuan ( $-0.340$ ) were both  $<1.65$ , implying that clustering or dispersion during these periods lacks statistical significance. In contrast, Z-values for the following four periods were all  $<-2.58$ , confirming statistically significant spatial clustering. From the Ming dynasty onward, with the Republic of China marking a turning point, the nearest neighbor index initially increased and then decreased, suggesting a reduction in clustering intensity after the Republican era. Nevertheless, the overall spatial distribution remained significantly clustered.

**Table 3.** Spatial distribution pattern of temples in each historical period.

| Period                                                       | NNI      | z Score      | Distribution Pattern |
|--------------------------------------------------------------|----------|--------------|----------------------|
| Tang dynasty to the Later Liang period of the Five Dynasties | 1.220389 | 1.520172     | Random               |
| Song and Yuan dynasties                                      | 0.965769 | $-0.340276$  | Random               |
| Ming dynasty                                                 | 0.783026 | $-3.294653$  | Clustered            |
| Qing dynasty                                                 | 0.602515 | $-7.975312$  | Clustered            |
| Republic of China                                            | 0.495659 | $-10.119330$ | Clustered            |
| People’s Republic of China                                   | 0.563818 | $-7.783196$  | Clustered            |

Kernel density analysis (Figure 5) revealed a temporal evolution of temple spatial patterns: “multi-center dispersion to dual-center transition to single-core clustering to core stabilization”. During the Tang to Song–Yuan periods (Figure 5a,b), overall clustering density was low, with only three loose, low-density clusters in the northeast (Lianhua Peak to Jiuzi Rock), northwest (Lao Tian Village), and center (Jiuhua Street to TianTai Peak), lacking a stable core. In the Ming dynasty (Figure 5c), rapid temple growth produced a dual-core pattern: a high-density central core and a secondary northern core, marking the initial emergence of clustering effects. From the Qing to Republican periods (Figure 5d,e), clustering density peaked, with temples arranged in concentric zones around the core; simultaneously, distinct linear low-density bands extended north and south of the core, forming a “primary core + multiple north–south nodes” configuration, reflecting the comprehensive expansion and maturation of Mount Jiuhua’s Buddhist system. From 1949 to the present (Figure 5f), clustering intensity slightly declined, but the single-core spatial structure remained unchanged; the retreat of peripheral scattered nodes further reinforced the spatial dominance of the core area.



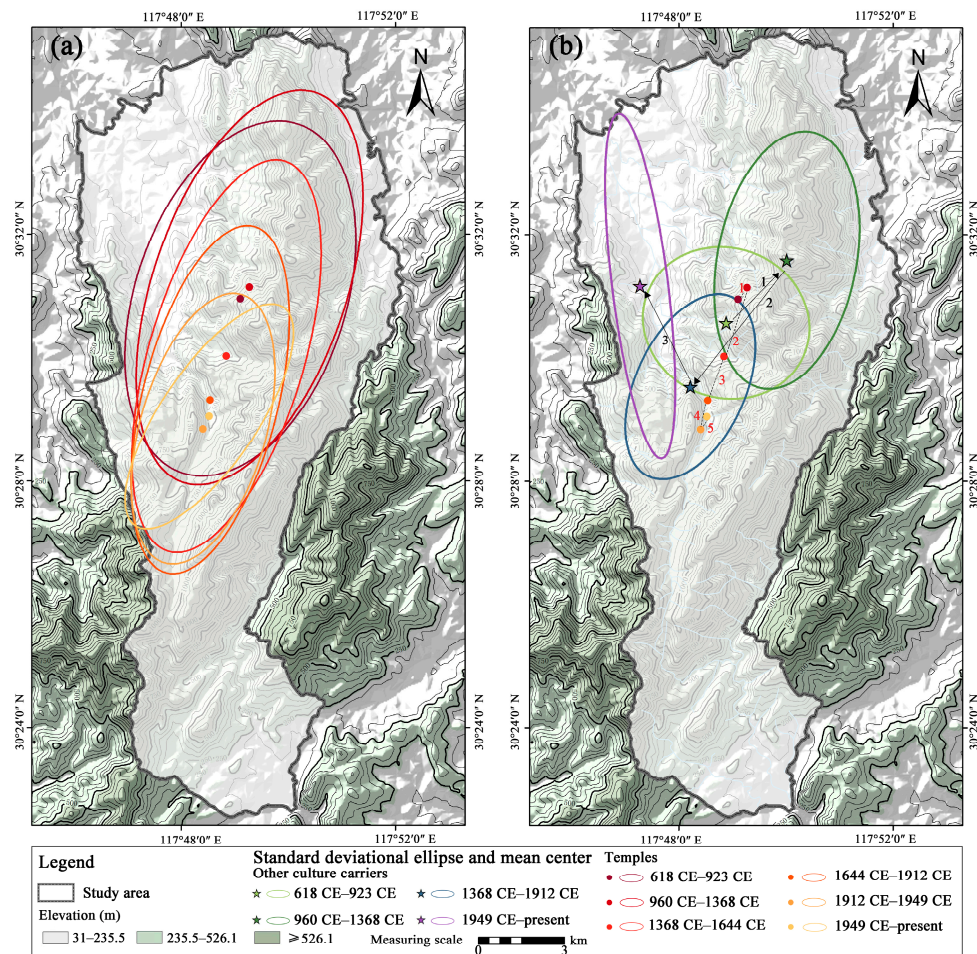


**Figure 5.** Kernel density surfaces of temples in each historical period. (a) Spatial distribution density, Tang to Later Liang dynasties, 618 CE–923 CE. (b) Spatial distribution density, Song and Yuan dynasty, 960 CE–1368 CE. (c) Spatial distribution density, Ming dynasty, 1368 CE–1644 CE. (d) Spatial distribution density, Qing dynasty, 1644 CE–1912 CE. (e) Spatial distribution density, Republic of China, 1912 CE–1949 CE. (f) Spatial distribution density, People's Republic of China, 1949 CE–present.

Standard deviational ellipse and mean center analyses (Figure 6a) revealed directional stability and clustering contraction in temple distribution. All periods showed a predominantly north–south orientation, constrained by mountain alignment, with east–west expansion significantly weaker than north–south. Ellipse area continuously shrank: largest and most elongated in the Tang dynasty, indicating dispersed distribution; gradually tightening from Song–Yuan to Ming, highlighting emerging clustering; and markedly reduced after the Qing, with decreased major–minor axis ratios, reflecting a compact distribution centered on Jiuhua Street.

The mean center trajectory showed a northeastward shift from the Tang to the Song and Yuan periods, corresponding to heightened temple activity near Jiuzi Rock. From the Song and Yuan to the Republic of China periods, a southwestward displacement culminated near the eastern base of East Peak, confirming the vicinity of Jiuhua Street as a sustained temple-clustering hub. The contemporary mean center has shifted slightly back toward the northeast, stabilizing within Minyuan Basin along Jiuhua Street to Tiantai Peak Corridor.

The spatial evolution from “scattered points” to “single-core clustering” reflects a functional transformation of Mount Jiuhua temples from “secluded mountain retreats” to “open public service zones”, closely aligning with the trend in Buddhist secularization toward enhanced social service functions.



**Figure 6.** Spatial distribution shift features. (a) Standard deviation ellipse analysis of temples in each historical period. (b) Spatial relationships between other cultural carriers and Buddhist cultural landscapes.

### 3.2.2. Evolution of Spatial Associations Between Other Cultural Carriers and Buddhist Cultural Landscapes

This study employed a historical sequence to classify and organize data on the Jiuhua Academy, ancestral halls, and Taoist temples—elements integral to local traditional life and belief systems. Conclusions are drawn through superimposed analysis of the spatial distribution and movement trajectories of folk cultural carriers relative to Buddhist temple centers at Mount Jiuhua (Figure 6b).

The two categories exhibited strong spatial correlations in movement trajectories, distribution ranges, and clustering evolution. First, their centroid trajectories were synchronized. In the Tang dynasty, both cultural elements were centered in the northern study area, with proximate initial locations; from the Tang to Song–Yuan, both centroids shifted southward in tandem; from the Song–Yuan to Republican periods, folk cultural carriers migrated toward the central region, while temple centroids also approached the core zone. Second, their distribution ranges contracted synchronously: in the Tang dynasty, standard deviational ellipses were extensive, indicating broad spatial dispersion; from Tang to Song–Yuan, both ranges shrank concurrently; from the Song–Yuan to Republican periods, spatial



coverage further narrowed. Third, their clustering intensity strengthened in parallel: both elements were initially dispersed with weak spatial clustering; over time, clustering effects became increasingly pronounced, peaking during the Song–Yuan to Republican periods.

From a secularization perspective, this phenomenon signifies that secularization does not entail the weakening of religious space, but rather the expansion of its social functions and the strengthening of societal linkages. Temples evolved from secluded mountain retreats into pivotal nodes connecting local education, clan organizations, and folk beliefs.

### 3.3. Evolution of the Transportation System

We reconstructed the historical routes to Mount Jiuhua (Figure 7).

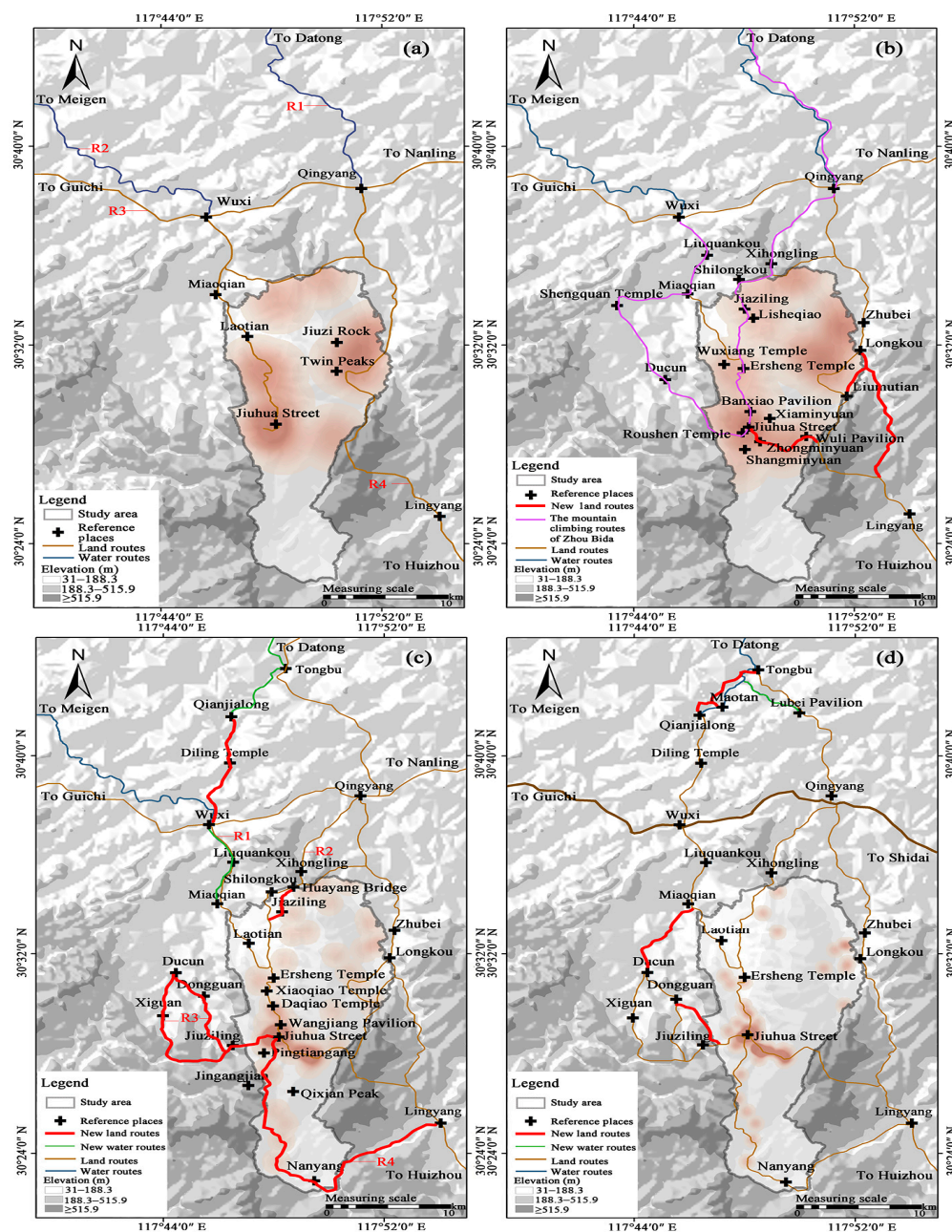
During the Tang dynasty, four main routes led to Mount Jiuhua. Three of these originated from the north and relied on the Yangtze River waterway, while the southern route was entirely overland.

1. The first route (R1, see Figure 7a) followed the waterway from Datong to Qingyang County along the Yangtze River. In the early Tang dynasty, the imperial court established the “Datong Water Relay” in Datong (modern-day Datong Town in Tongling), serving as a key official relay station connecting the Yangtze River to the ancient Huichi Road. Travelers and merchants navigating the Yangtze could proceed along the Qingtong River to Qingyang County, then continue via rugged mountain roads to Mount Jiuhua.
2. The second route (R2, see Figure 7a) involved traveling by water from Meigen Port to Wuxi along the Yangtze River. The “New Book of Tang—Geographical Records” documents Chen Qing’s military campaign to Qianxi, during which he stationed troops at Meigen Port [60]. The watercourse linking Meigen and Wuxi became known as the Meigen River (later renamed the Jiuhua River). After traveling along the river from Meigen to Wuxi, travelers could take an overland path to Mount Jiuhua.
3. The third route (R3, see Figure 7a) entailed disembarking at Guichi Port on the Yangtze River and proceeding along the official road from Qingyang County to Wuxi.
4. The southern route (R4, see Figure 7a) connected to the ancient Huichi Road. According to the “Xin-an Zhi”, the postal route from Shexi extended eastward through Ningguo, Xuancheng, Nanling, Qingyang, Guichi, and Chizhou; a secondary branch ran north through Jiaoling Ridge, passing Taiping, Shidai, and Qingyang before reaching Chizhou [61]. As recorded in the Chronicle of Mount Jiuhua, during the Tang dynasty, the historic Huichi Road extended from ancient Huizhou City (within present-day Shexian County) through Shidai and Qingyang to Lingyang Town, continuing along a rugged mountain path to the foothills of Mount Jiuhua [62] (pp. 397–400).

By the Song dynasty, Chizhou, Wuxi, Qingyang, and Lingyang were interconnected by roads. Zhou Bida, Minister of the Ministry of Personnel, documented his pilgrimage to Mount Jiuhua with local officials in 1167 in the “Records of Mount Jiuhua”. They departed from the south gate of Chizhou City, passed through Qi Shan and Tie Quan Shan to Qingyang County, then ascended to Huacheng Temple via Xihong Ridge, Xuetan, and Ersheng Temple. Thereafter, they turned westward, traversing Shenpan Ridge, Chongshou Temple, Shengquan Temple, and Mushan Town (now Miaoqian Town), continued onward to Wuxi, and finally returned westward through Maya and Baishaling to Chizhou City [63]. Zhou Bida also noted that their boat docked at Datong Town, after which he traveled overland to Qingyang County [57], indicating that a land connection already existed between Datong and Qingyang. With the establishment of Tiantai Temple during the Song dynasty, the mountain route from Lingyang Town to the base of Mount Jiuhua extended further westward through Tiantai Peak to Huacheng Temple (Figure 7b).

During the Ming and Qing periods, four principal routes accessed Mount Jiuhua:

1. The northern route (Figure 7c R1) from Wuxi to Huacheng Temple;
2. The eastern route (Figure 7c R2) extended from Qingyang County over Xihong Ridge, Jiazi Ridge, and Ersheng Temple to Huacheng Temple;
3. The western route (Figure 7c R3) extended from Ducun, passing Dongguan, Xiguan, and Jiuzi Ridge to Huacheng Temple;
4. The southern route (Figure 7c R4) proceeded from Nanyang Bay through Seven Sages Peak and Pinggang to Huacheng Temple [64].



**Figure 7.** Reconstruction of the historical routes into Mount Jiuhua. (a) Routes to Mount Jiuhua in the Tang dynasty. R1: from Datong, R2: from Meigen Port, R3: from Guichi Port, R4: from Huizhou; (b) Routes to Mount Jiuhua in the Song dynasty; (c) Routes to Mount Jiuhua in the Ming and Qing dynasties. R1: from Wuxi, R2: from Qingyang County, R3: from Ducun, R4: from Nanyang; (d) Routes to Mount Jiuhua in the Republic of China period.

The addition of the southern mountain route from Nanyang Bay to Huacheng Temple rendered the older path from Lingyang Town via Wuliting and Tiantai Peak less frequently

used due to its steep and arduous terrain. In addition to the Qingtong Ancient Road connecting Datong Town to Qingyang, a new overland route emerged westward from Tongbu, where boats arrived at Qianjialong and travelers continued southward via Diling to Wuxi. Official records confirm that the overland route from Chizhou City to Wuxi remained in use during this era, and the Jiuhua River was navigable as far as Miaoqian Town during flood season (Figure 7c) [65].

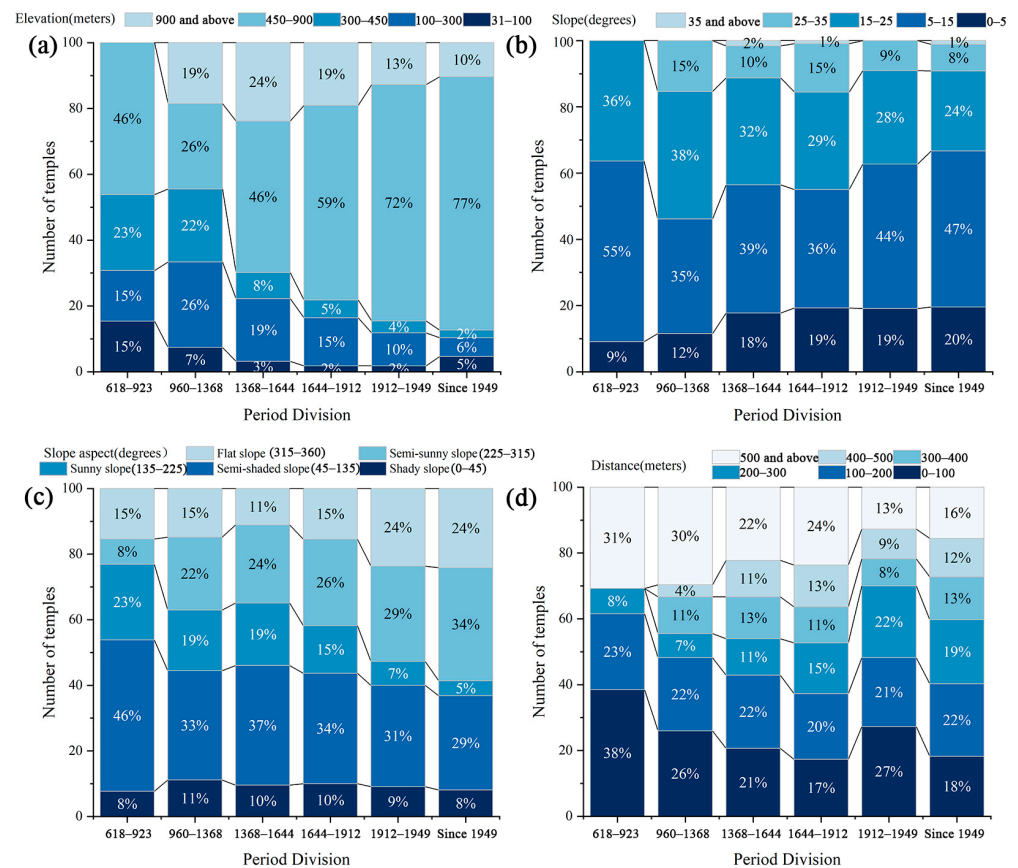
In the Republic of China, access routes to Mount Jiuhua largely mirrored those of the Ming and Qing periods (Figure 7d). With increased national investment in road construction, highways from Chizhou and Wuxi to Qingyang were widened to accommodate motor vehicles. Although reduced water levels rendered the Jiuhua River unnavigable to Wuxi by the late Qing period, the water route from Datong to Tongbu remained active. However, the segment from Tongbu to Qingyang and Qianjialong was only passable during flood season, with overland routes used otherwise.

Integrating ancient route reconstruction with kernel density analysis revealed the following characteristics of road–temple co-evolution across historical periods: in the Tang dynasty, the road network was divided east–west with weak connectivity, and temples clustered along ancient routes. During the Song–Yuan periods, connectivity between eastern and western networks improved, with new branches extending toward Jiuhua Street, and temple clusters expanded outward along these routes. From the Ming–Qing periods to the present, roads converged toward Jiuhua Street, establishing a “single-core, high-density clustering” pattern, with new temples concentrated near the Jiuhua Street terminus. Thus, early road construction provided foundational conditions for temple establishment, while post-Ming temple growth reciprocally drove the optimization of mountain access routes toward the faith core, forming a spatial coupling between temples and roads.

### 3.4. Natural Geographic Features and Temple Spatial Distribution

Temple distribution exhibits strong correlations with elevation, slope gradient, aspect, and proximity to water systems, with the following specific characteristics. Regarding elevation, temples are predominantly concentrated between 450 and 900 m. The Jiuhua Street Basin also falls within this range, featuring gentle topography and abundant flat land, making it an optimal core area for construction. From the Tang to Yuan dynasties, temples were densely clustered below 450 m. After the Ming dynasty, both the number and proportion of temples within the 450–900 m range increased significantly (Figure 8a). In terms of slope gradient, temples primarily aggregate within the 5–25° range. Only a limited number of temples are found in steep areas such as Tiantai Peak and Dongya Cliff (Figure 8b). Steep terrain is fragmented and offers scarce buildable land, constraining both construction and habitation. Consequently, temple siting generally avoids high-gradient slopes. Concerning aspect, slope orientations were classified into five categories based on DEM data: north-facing slopes (0–45°), semi-north-facing slopes (45–135°), south-facing slopes (135–225°), semi-south-facing slopes (225–315°), and gentle slopes (315–360°). From the Tang to Yuan dynasties, the proportion of temples on south- and semi-south-facing slopes rose by approximately 10%. After the Yuan dynasty, the combined number of temples on north- and semi-south-facing slopes fell below the total of the other three categories (Figure 8c), indicating a clear preference for sun-exposed, gently sloping areas in temple siting. With respect to water systems, temple distribution varied significantly across buffer zones. Temples from all historical periods were relatively concentrated within 200 m of waterways. After the Tang dynasty, the number of temples near water systems continued to increase, and the proportion within the 200–500 m buffer zone gradually rose. Prior to the Republican era, the share of temples beyond 500 m from water systems steadily declined. Subsequently, improvements in water storage and transportation infrastructure

compensated for the previously constrained land conditions in areas distant from waterways, leading to a renewed increase in temple proportions in this zone (Figure 8d).



**Figure 8.** Natural geographic features and temple spatial distribution. (a) Distribution of temples at different altitudes in each period. (b) Distribution of temples on different slopes in each period. (c) Distribution of temples with different slope aspects in each period. (d) Distribution of temples at different distances from water systems in each period.

As Buddhist secularization deepened over time, the temple environment shifted from secluded, shaded slopes toward flatter terrain with superior land conditions, better suited for human habitation and large-scale construction on sun-exposed, gentle slopes. This transition further confirms the filtering role of buildable land availability in shaping the spatiotemporal distribution of temples.

## 4. Discussion

### 4.1. Driving Mechanisms of the Spatiotemporal Evolution of Temples on Mount Jiuhua

#### 4.1.1. Natural Geographic Conditions: Geographic Constraints on Temple Distribution

Elevation, slope gradient, aspect, and water systems collectively form the geographic baseline for temple siting, imposing long-term rigid constraints. Research indicates that temples are highly concentrated in the Jiuhua Street Basin and surrounding gentle slopes, specifically within the 450–900 m elevation and 5–25° slope ranges. This pattern arises because steep slopes offer limited flat land, entail high construction costs, and provide poor living conditions, thereby naturally discouraging large-scale development. The evolution of aspect preferences further validates this natural selection: early siting favored north- and semi-north-facing slopes, but from the Ming and Qing dynasties onward, temples increasingly clustered on sun-exposed, gentle slopes—a shift reflecting the functional transition of monastic practice from individual asceticism to social service. Regarding water systems,



temples in all periods were significantly concentrated within 200 m of waterways, while the proportion beyond 500 m continuously declined, underscoring a rigid dependence on water access. These constraints collectively define the geographic boundaries of temple distribution and provide the material foundation explaining why political and economic forces selected the Jiuhua Street Basin as the anchor point for resource allocation.

#### 4.1.2. Political Institutions and Regional Economy: External Structural Drivers of Temple Agglomeration

Political institutions confer institutional advantages to core nodes through legitimacy recognition and targeted resource allocation, while the regional economy establishes the material basis for temple densification via material supply networks and population flows.

Political influence, spanning from the Tang to the Qing dynasties, evolved from general support to targeted reinforcement. The Tang dynasty marked the starting point of institutional legitimacy: in the 8th century, frequent Buddhist exchanges occurred between Tang China and Silla, with the imperial court repeatedly honoring Silla monks and encouraging their study in China [66]. Against this backdrop, Kim Gyo-gak (Jin Qiaojue) arrived in Tang China and settled on Mount Jiuhua, later being popularly recognized as an incarnation of Ksitigarbha, which attracted numerous monks to the mountain for practice [67]. In the early Zhenyuan era, Zhang Yan, the prefect of Chizhou, petitioned to transfer the official designation to Huacheng Temple, formally incorporating Mount Jiuhua Buddhism into the state temple system. During the Song and Yuan dynasties, the Chan Buddhist center shifted southward from northern Anhui (e.g., Sikong and Tianzhu mountains) to Jiangnan, positioning Mount Jiuhua as a key recipient of dharma lineages [40]. Temple numbers grew steadily, with over ten receiving imperial plaques. However, the Southern Song's political retreat and late-Yuan warfare repeatedly disrupted spatial patterns, preventing the formation of a stable core agglomeration. The Ming and Qing dynasties marked a decisive turning point toward core concentration: first, the Ming court allocated funds in 1391, 1427, 1583, and 1603 for renovating Huacheng Temple and the Corporeal Relic Hall. By 1391, Huacheng Temple and its affiliated temples already numbered 24. Centralized resource allocation enabled Huacheng Temple to administer subordinate temples, drawing new temples to cluster around it. Second, during the Kangxi reign, Mount Jiuhua was officially incorporated into the "Four Sacred Mountains" system, triggering a surge in cross-regional pilgrimage. At its peak, Huacheng Temple oversaw 72 branch temples [64]. National recognition ensured that only temples near the core sacred area could sustainably access resources.

Economically, the establishment of Chizhou Prefecture and Qingyang County during the Tang dynasty spurred population concentration and commercial development [63]. In the Ming and Qing dynasties, the rise of Huizhou merchants transformed foothill market towns, such as Lingyang, Miaoqian, and Wuxi, into hubs for goods distribution and pilgrim transit. Temple economies shifted from reliance on land rents to diversified income streams, including alms, ritual services, and merit-based donations [68–70]. To compete for pilgrim patronage, temples prioritized locations in the high-traffic Jiuhua Street core. Economic returns from this strategy funded infrastructure improvements, which in turn reinforced the core's attractiveness, creating a positive feedback loop of "pilgrim concentration to revenue growth to facility enhancement" that spatially locked in a single-core agglomeration pattern.

#### 4.1.3. Secularization Transition: Endogenous Driver of Spatial Reorganization

The external structural conditions provided by politics and economy were transformed into sustained spatial agglomeration energy through Buddhist secularization—

specifically, the process by which religious authority weakened spatial boundary control and actively aligned with secular functional demands.

The flourishing of Mount Jiuhua as a Ksitigarbha sacred site paralleled the broader trend of Buddhist secularization in China. By the Ming–Qing transition, the core values of the Four Sacred Mountains’ bodhisattva cults were reinterpreted as the “Four Virtues” to align with social ethics [71], and Chinese Buddhism shifted from pre-Song scholastic exegesis toward a popular, folk-oriented form [72]. Mount Jiuhua’s formal recognition as a Ksitigarbha sanctuary during the early Qing Kangxi era coincided with this wave of popular Buddhism, catalyzing its temple-building zenith.

Within this macro-process, secularization drove spatial reorganization through three mechanisms. First, mass pilgrimage imposed carrying-capacity filtering. From the Tang to Song–Yuan periods, Mount Jiuhua Buddhism relied on Kim Gyo-gak’s personal ascetic reputation and literati spiritual patronage, limiting pilgrim numbers to scholars and elite monks. From the Ming–Qing onward, Ksitigarbha devotion was reconfigured as a symbol of “filial piety” and “salvation”, drawing “no fewer than ten thousand pilgrims annually”. High-elevation temples, constrained by poor accessibility and scarce flat land, could not exceed reception thresholds. The Jiuhua Street Basin, with its open terrain and transport hub status, became the sole space capable of accommodating mass pilgrimage flows. Second, service-oriented functional diversification reinforced agglomeration. Temples evolved from meditation sites into integrated centers offering lodging, meals, and rituals, requiring a steady pilgrim transportation system for operational sustainability. As the mandatory passage and primary stopover for pilgrims, Jiuhua Street offered the richest clientele; remote mountain temples, with sparse visitors, struggled to survive. Consequently, new and relocated temples continuously concentrated in Jiuhua Street, forming a high-density agglomeration. Third, cultural integration and social embeddedness solidified the core’s position. Folk cultural carriers and temples exhibited high synergy in spatial convergence, distribution focus, and agglomeration intensity. Huacheng Temple hosted lectures by Wang Yangming and Zhan Ruoshui [65]; Buddhism absorbed folk belief elements, achieving spatial symbiosis with ancestral halls and Daoist temples. Temples intermingled with residences, shops, and academies, blurring sacred–secular boundaries and creating an open “temple–market coexistence” pattern. Additionally, since the Tang dynasty’s establishment of Jiuhua Gate and Jiuhua Tower in Chizhou City, the western peaks of Mount Jiuhua were integrated into the urban borrowed scenery system, adapting sacred landscapes to serve public aesthetic and spiritual needs.

#### 4.1.4. Transportation System: Bridges Between Sacred and Secular Realms

In the early stage, four Tang dynasty pilgrimage routes originated from settlements or docks, framing temple activity spaces. Although temples aligned with these routes, single-core agglomeration had not yet emerged, indicating that “accessibility” was merely a necessary condition. The true spatial turning point arose from the aforementioned structural anchors: state patronage and sacred status jointly stimulated cross-regional pilgrimage demand. The Jiuhua Street Basin, uniquely combining terrain capacity, road convergence, and service space, became the sole node capable of accommodating expanded demand. In this process, ancient trails progressively converged on Jiuhua Street, upgrading road functions from “entry connection” to “flow organization”, systematically channeling pilgrim transportation system, goods, and religious activities toward the core node. In the later stage, Jiuhua Street’s core status became institutionalized through sustained pilgrimage practice, state recognition, and transport convergence, creating irreversible path dependence. Subsequent highway construction merely reinforced this preexisting spatial frame-

work, anchoring new temple construction within the historical “Jiuhua Street–Minyuan–Tiantai Peak” corridor and suppressing the emergence of new secondary cores.

#### 4.2. *Situating the Mount Jiuhua Case in Existing Scholarship*

The evolutionary mechanism of temple landscapes on Mount Jiuhua provides a valuable mountain-based reference for research on religious landscapes, Buddhist secularization, and historical GIS. Existing studies have explored the formation of religious spaces from diverse perspectives. From the perspective of religious geography, religious landscapes are not isolated cultural relics, but organic entities deeply embedded in social and cultural contexts [18]. Existing urban or regional studies attribute temple distribution changes to the combined effects of natural conditions, Buddhist diffusion, state politics, or the integration of the Three Teachings (Confucianism, Buddhism, Daoism) [27,28,35]. The Mount Jiuhua case reveals that micro-level factors—such as temple functions, economic dynamics, pilgrimage activities, and mountain access routes—must also be considered, as they concretely embody the interaction between sacred culture and secular society. Meanwhile, these factors do not function independently, but operate as a progressive and mutually reinforcing mechanism.

Methodologically, this study’s integration of multi-source historical data through HGIS, combining quantitative and qualitative approaches, merits emphasis. When applying GIS for spatial analysis, various statistical methods exhibit inherent limitations: ANN is sensitive to study area boundaries and reflects only global clustering, failing to reveal local structures; KDE results depend heavily on bandwidth selection, potentially blurring or exaggerating local density features; SDE simplifies spatial trends into ellipses, possibly obscuring complex multi-core patterns [54]. To address this, we adopted a synergistic approach integrating all three methods, establishing a “global-local, trend-detail” spatial analysis framework that effectively mitigates bias from any single method. This study also benefited from several types of historical sources whose combined use remains relatively uncommon in GIS-based religious landscape research. The mature gazetteer compilation practices of Ming–Qing China preserved detailed textual and cartographic descriptions of settlements, cultural beliefs, and mountain access routes, providing a valuable foundation for spatial reconstruction [73]. Republican-era Chinese maps, which have previously been applied to morphological studies of Ming–Qing cities such as Nanjing [74], offered a temporally proximate cartographic baseline for this mountainous study area. Merchant-compiled route guides, such as Huang Bian’s *Yitong Lucheng Tuji*, record distances, transport conditions, and scenic sites along historical trade and pilgrimage corridors [75]. The 56 pilgrimage routes documented in *Canxue Zhijin* further helped reconstruct the 19th-century itinerant monk network in China [76]. These sources jointly informed the collection of spatial reference points and the reconstruction of historical access routes. Their integration helps compensate for the scarcity and positional ambiguity frequently encountered in mountain-specific historical records, and suggests that multi-source corroboration can serve as a useful strategy for spatial information verification in sacred landscape studies.

#### 4.3. *Study Limitations and Future Work*

(1) The ambiguity and uncertainty of historical data present unavoidable challenges in HGIS construction [26]. Despite multi-source data integration, early record gaps may affect the precision of spatial analyses such as kernel density estimation. (2) Our study focuses on overall changes in temple point distributions, lacking detailed analysis of individual temple structures and spatial organization. Future work could employ space syntax tools to conduct fine-grained comparative analyses between temple and traditional settlement spatial structures, elucidating how secularization manifests at the individual spatial

level. (3) Our research emphasizes material elements while giving less attention to intangible information. To construct a multidimensional understanding of sacred mountain secularization, future studies will develop HGIS layers for intangible elements—such as historical events, legends, and poetry—to link with material systems, enabling visualized expression and integrated analysis of multidimensional secular influences.

## 5. Conclusions

This study employed HGIS and multi-source historical materials to reconstruct the long-term spatiotemporal evolution of Buddhist temples on Mount Jiuhua from the Tang dynasty to the present.

The spatiotemporal evolution of Mount Jiuhua temples exhibits clear phased agglomeration characteristics. During the Tang to Later Liang periods, temples displayed a “point-and-area coexistence” pattern, with distribution centers between Jiuhua Street and Jiuzi Rock. In the Song–Yuan periods, the pattern shifted to scattered areal distribution, with the spatial centroid moving to the rear mountain near Jiuzi Rock. During the Ming–Qing periods, point-like agglomeration intensified, gradually solidifying Jiuhua Street’s core status and shifting the spatial centroid further eastward toward Dongya Cliff in the front mountain. In the Republic of China, the concentrated construction of nunneries in the Minyuan Basin ultimately established the contiguous agglomeration pattern of “Minyuan–Jiuhua Street–Tiantai Peak”, which persists to this day. This transformation was shaped by the combined effects of natural geographic suitability, political recognition, regional economic development, secular transformation, and the convergence of transportation systems.

By introducing secularization theory into the long-term spatial interpretation of mountain Buddhist cultural landscapes, this study demonstrates that Chinese Buddhist secularization manifests not only as conceptual, institutional, and functional transformation but also as a concrete reconfiguration of sacred–secular spatial relationships through temple spatiotemporal evolution. This framework provides a methodological reference for sacred mountain landscape research and offers practical implications for Buddhist heritage conservation, historical route interpretation, and spatial governance of Mount Jiuhua. By bridging historical geography, religious geography, and landscape architecture, this study delivers a solid interdisciplinary empirical case for mountain religious cultural landscape studies.

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**Data Availability Statement:** The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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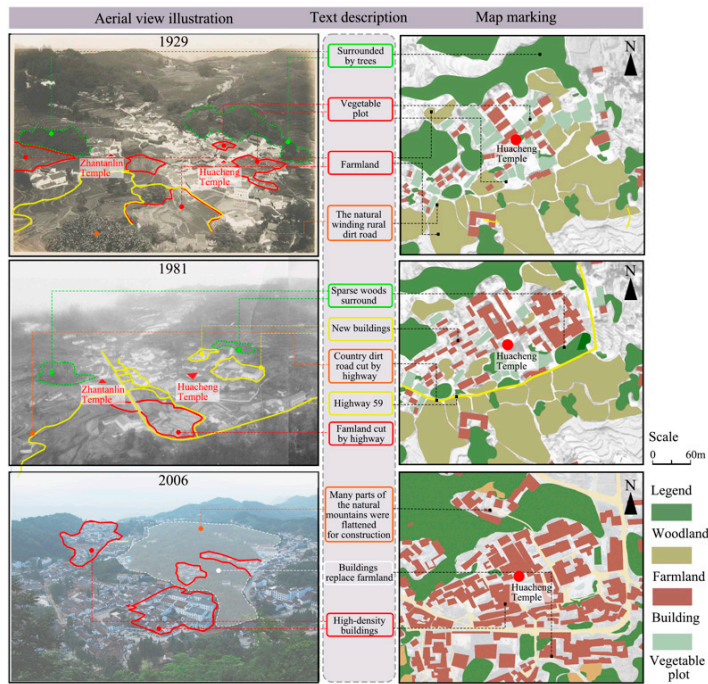
**Conflicts of Interest:** The authors declare no conflicts of interest.



## Appendix A. Functional Transformations of Selected Temples Since the Republic of China

| Temple Name       | Construction Period                                 | Functional Change Date | Changes of Function                                                                                                    |
|-------------------|-----------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------|
| Huacheng Temple   | Tang dynasty                                        | 1981                   | Rebuilt by the Mount Jiuhua Administration as the Mount Jiuhua Historical Museum                                       |
| Fuhai Temple      | Tang dynasty                                        | 1967                   | Converted into a private residence                                                                                     |
| Jingju Temple     | Tang dynasty                                        | 1940                   | Burned down                                                                                                            |
|                   |                                                     | 1945                   | Rebuilt as a thatched hut; later became a residential building                                                         |
| Long'an Temple    | The Five Dynasties and Ten Kingdoms (Southern Tang) | 1965                   | Rebuilt as a residential building                                                                                      |
| Changsheng'an     | Ming dynasty                                        | 1999                   | Converted into Mount Jiuhua Buddhist Nursing Home                                                                      |
| Yisu'an           | Ming dynasty                                        | From 1950 to 1979      | Converted into Mount Jiuhua Tea School                                                                                 |
| Yongqing'an       | Ming dynasty                                        | 1966                   | Converted into residential buildings                                                                                   |
| Jiulong'an        | Ming dynasty                                        | 1978                   | Converted into the Jiulong Hotel                                                                                       |
|                   |                                                     | 1987                   | Became part of the Mount Jiuhua Management Office Buildings                                                            |
| Ganlu Temple      | Qing dynasty                                        | 1990                   | The Mount Jiuhua Buddhist College was established here                                                                 |
| Zhantanlin Temple | Qing dynasty                                        | From 1958 to 1977      | Became the headquarters of the Mount Jiuhua Buddhist Brigade                                                           |
|                   |                                                     | From 1978 to 1985      | Headquarters of the Mount Jiuhua Buddhist Association                                                                  |
| Huiju Temple      | Qing dynasty                                        | During World War II    | The Qingyang Middle School moved here                                                                                  |
| Li'an             | Qing dynasty                                        | 1988                   | Rebuilt by the Mount Jiuhua Buddhist Association and used as its headquarters                                          |
| Baijingtai        | Qing dynasty                                        | 1982                   | Rebuilt by the Mount Jiuhua Management Office; used as the reception station for the Mount Jiuhua Buddhist Association |
| Xizhu'an          | Qing dynasty                                        | 1960                   | Converted into the Wuhu Yijishan Hospital sanatorium                                                                   |
| Fotuoli           | Qing dynasty                                        | 1958                   | Converted into the Mount Jiuhua Production Brigade team house                                                          |
| Tianran'an        | Qing dynasty                                        | 1957                   | Converted into Mount Jiuhua Primary School                                                                             |
|                   |                                                     | 1986                   | Converted into a staff dormitory for Dongya Hotel                                                                      |
| Haidu'an          | Qing dynasty                                        | 1984                   | Converted by the Mount Jiuhua Management Office into a cultural center                                                 |
| Yinzhitang        | Qing dynasty                                        | After 1949             | Converted into the Mount Jiuhua Friendship Store                                                                       |
| Santianmen        | Qing dynasty                                        | After 1958             | Previously uninhabited; now used for agriculture                                                                       |
| Jiguangjingshe    | 1928                                                | 1966                   | Converted into a residential building                                                                                  |
| Jiuhualianshe     | 1931                                                | 1982                   | Converted into the Minyuan Buddhist Reception Society                                                                  |
| Yuantong'an       | 1934                                                | After 1953             | Converted into a residential building                                                                                  |

Appendix B. Changes in the Surrounding Environment of Temples on Jiuhua Street Since 1929



Appendix C. Summary of Local Chronicles

| Type                | Title           | Date and Author                                                   |
|---------------------|-----------------|-------------------------------------------------------------------|
| Mountain chronicles | Jiuhuashan Zhi  | 1526 Wang Yihuai                                                  |
|                     | Jiuhuashan Zhi  | 1579 Su Wanmin                                                    |
|                     | Jiuhuashan Zhi  | 1593 Cai Lishen                                                   |
|                     | Jiuhuashan Zhi  | 1629 Gu Yuanjing                                                  |
|                     | Jiuhuashan Zhi  | 1689 Li Can                                                       |
|                     | Jiuhuashan Zhi  | 1739 Li Zhang                                                     |
|                     | Jiuhua Jisheng  | 1821 Chen Wei                                                     |
|                     | Jiuhuashan Zhi  | 1900 Zhou Yun                                                     |
|                     | Jiuhuashan Zhi  | 1938 Master Yin Guang                                             |
|                     | Jiuhuashan Zhi  | 1990 Mount Jiuhua Records<br>Compilation Committee                |
| County chronicles   | Qingyanxian Zhi | 1594 Cai Lishen                                                   |
|                     | Qingyanxian Zhi | 1891 Zhou Yun                                                     |
|                     | Qingyanxian Zhi | 1992 Qingyang County Local<br>Chronicles Compilation<br>Committee |
| City chronicles     | Chizhoufu Zhi   | 1518 He Shaozheng                                                 |
|                     | Chizhoufu Zhi   | 1545 Wang Chong                                                   |
|                     | Chizhoufu Zhi   | 1612 Li Sigong                                                    |
|                     | Chizhoufu Zhi   | 1673 Pu Huaiyu                                                    |
|                     | Chizhoufu Zhi   | 1711 Ma Shiyong                                                   |
|                     | Chizhoufu Zhi   | 1778 Liu Quanzhi                                                  |
|                     | Chizhou Diquzhi | 1996 Chizhou Local<br>Chronicles Compilation<br>Committee         |

## Appendix D. The Data Structure of the Historical Attribute Database for Temples

| Field Name                          | Field Explanation                                                                                                                             | Examples                                                                                                                                                                                                                                                                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temple name                         | The official name of the temple as used in documentary sources                                                                                | Palace of Roushen                                                                                                                                                                                                                                                                      |
| Alias                               | Other names by which the temple has been known in different periods of history or different literature                                        | Golden Di Zang Pagoda, Di Zang Tomb, Roushen Pagoda                                                                                                                                                                                                                                    |
| Name change                         | Record of name changes that the temple name has undergone during its history                                                                  | It was initially the Di Zang Pagoda and was named “Palace of Roushen” during the reign of Emperor Wanli of the Ming dynasty                                                                                                                                                            |
| Location                            | Geographic location of the temple as recorded in ancient documents, including place names and related descriptions                            | On the right side of Huacheng Temple                                                                                                                                                                                                                                                   |
| Time of foundation                  | The era when the temple was first built                                                                                                       | During the Zhenyuan Period of the Tang dynasty                                                                                                                                                                                                                                         |
| Founder                             | Name of the person or organization that originally built the temple                                                                           | Disciple of Jin Dizang                                                                                                                                                                                                                                                                 |
| Date of construction                | Specific years in which the temple was renovated, extended, or rebuilt                                                                        | Originally a three-story stone pagoda, the pagoda courtyard was built in the Song dynasty and the palace in the Ming dynasty. The pagoda palace was rebuilt and given a plaque during the Wanli period, and it was rebuilt again in the 22nd year of Kangxi in the Qing dynasty (1683) |
| Constructors                        | Name of the person or organization responsible for the renovation, extension, or reconstruction of the temple                                 | The exact builders during the Song and Ming dynasties are unknown. The builder in 1683 was Yu Chenglong, in 1864, the monk Chi Guang and others, and in 1874, the monk Ding Chan and others                                                                                            |
| Destruction of temples              | Records of temples that have suffered destruction, abandonment, or other significant damage during their history                              | It was destroyed by war in the seventh year of Emperor Xianfeng’s reign (1857) and by fire in the sixth year of Emperor Tongzhi’s reign (1867)                                                                                                                                         |
| Longitude                           | The longitude of the temple                                                                                                                   | 117.791111                                                                                                                                                                                                                                                                             |
| Latitude                            | The latitude of the temple                                                                                                                    | 30.479167                                                                                                                                                                                                                                                                              |
| Description of the current location | A description of the specific location of the temple in present-day geography, often including information on modern administrative divisions | On Shenguang Ridge in Mount Jiuhua Scenic Area, Jiuhua Town, Qingyang County, Chizhou City                                                                                                                                                                                             |
| Position accuracy                   | The accuracy of the temple’s latitude and longitude records                                                                                   | Accurate to the temple                                                                                                                                                                                                                                                                 |

## References

- Ouyang, N. *The Making of a Sacred Place: The Rise of Mt. Jiuhua in the Late Imperial and Republican Eras (1368–1949)*. Doctoral Dissertation, University of Arizona, Tucson, AZ, USA, 2019.
- Wallace, A. *Religion: An Anthropological View*, 1st ed.; Random House: New York, NY, USA, 1966; pp. 216–264.
- Berger, P.L. *The Sacred Canopy: Elements of a Sociological Theory of Religion*, 1st ed.; Open Road Media: New York, NY, USA, 2011.
- Habermas, J. Notes on Post-Secular Society. *New Perspect. Q.* **2008**, *25*, 17–29. [[CrossRef](#)]
- Lai, W. Toward a Periodization of Chinese Religion. *Soc. Study Chin. Rel. Bull.* **1980**, *8*, 79–90. [[CrossRef](#)]
- Chen, L. The Secularization of Buddhism in Song Dynasty and Its Enlightenment. *Ningxia Soc. Sci.* **2019**, *5*, 157–163.
- Ch’en, K.K.S. *Buddhism in China: A Historical Survey*, 1st ed.; Princeton University Press: Princeton, NJ, USA, 1965; pp. 471–487. [[CrossRef](#)]

8. Yu, H.W. Secularization of Chinese Buddhism and “Mundane Buddhism”. *East China Univ. Sci. Technol. J. (Soc. Sci. Ed.)* **2006**, *2*, 99–102.
9. Chi, S. Analysis of the Sinicization and Secularization of Buddhism. *World Relig. Cult.* **2023**, *6*, 60–67.
10. Wilford, J. Sacred Archipelagos: Geographies of Secularization. *Prog. Hum. Geogr.* **2010**, *34*, 328–348. [[CrossRef](#)]
11. Diller, C.; Gareis, P. Secularization, Religious Denominations, and Differences in Regional Characteristics: The State of Research and a Regional Statistical Investigation for Germany. *Religions* **2020**, *11*, 657. [[CrossRef](#)]
12. Dhima, K.; Golder, M. Secularization Theory and Religion. *Politics Relig.* **2021**, *14*, 37–53. [[CrossRef](#)]
13. Van De Kamp, L. Churches and Urban Regeneration in Postindustrial Amsterdam. *Space Cult.* **2022**, *26*, 204–214. [[CrossRef](#)]
14. Silva Leite, J.; Fernandes, S.; Dias Coelho, C. The Sacred Building and the City: Decoding the Formal Interface between Public Space and Community. *Religions* **2024**, *15*, 246. [[CrossRef](#)]
15. Yin, J.; Jia, M. Historical Traceability, Diverse Development, and Spatial Construction of Religious Culture in Macau. *Religions* **2024**, *15*, 656. [[CrossRef](#)]
16. Jiang, B.; Jiang, T.; Si, J.; Huang, Y.; Du, Y.; Chen, Y. Mechanism of the Connection between Sacred and Secular Space: Settlement Morphology Characteristics in the Multi-Ethnic Areas of the Gansu-Qinghai Plateau. *Front. Earth Sci.* **2025**, *13*, 1674493. [[CrossRef](#)]
17. Zhu, Y. Evolving Heritage in Modern China: Transforming Religious Sites for Preservation and Development. *Built Herit.* **2024**, *8*, 39. [[CrossRef](#)]
18. Kong, L. Religious Landscapes. In *A Companion to Cultural Geography*; Duncan, J.S., Johnson, N.C., Schein, R.H., Eds.; Blackwell Publishing: Malden, MA, USA, 2004; pp. 365–381. [[CrossRef](#)]
19. Qiu, M.; Pei, Q.; Lin, Z. The Geography of Religions: Comparing Buddhist and Taoist Sacred Mountains in China. *Geogr. Res.* **2023**, *61*, 58–70. [[CrossRef](#)]
20. Grier, M.; Müller, T.; Martínez-Ariño, J. The Politics of Mapping Religion: Locating, Counting, and Categorizing Places of Worship in European Cities. *Space Cult.* **2023**, *26*, 167–179. [[CrossRef](#)]
21. Chen, G.; Cheng, C.; Wang, M. Study on The Influencing Factors of The Spatial Distribution of Ancient Religious Sites in Inner Mongolia. *Acad. J. Environ. Earth Sci.* **2021**, *3*, 67–76. [[CrossRef](#)]
22. Zhu, Y. Contested Sacred Space: State Power, Spatial Politics, and Heritage Tourism. *Tour. Geogr.* **2025**, 1–25. [[CrossRef](#)]
23. Lu, R.; Pei, C.; Zheng, X.; Zhou, L. Mediating the Sacred, Order, and Power: Tai 臺 [Terrace] as Religio-Political Interface in Pre-Imperial China. *J. Asian Archit. Build. Eng.* **2025**, 1–14. [[CrossRef](#)]
24. Murrieta-Flores, P.; Martins, B. The Geospatial Humanities: Past, Present and Future. *Int. J. Geogr. Inf. Sci.* **2019**, *33*, 2424–2429. [[CrossRef](#)]
25. Xu, X.; Arshad, M.A.; Liu, H.; Zhao, M.; Yang, J.; Cao, S.; Luo, G.; Chen, M.; Chen, Q. Spatiotemporal Analysis and Forecasting of Public Attention to China’s Five Major Religions. *Sci. Rep.* **2025**, *15*, 29116. [[CrossRef](#)]
26. Fang, S.; Zhao, Y.; Chao, Z.; Kang, X. Spatial Distribution Characteristics and Influencing Factors of Tibetan Buddhist Monasteries in Amdo Tibetan Inhabited Regions, China. *J. Geovis. Spat. Anal.* **2022**, *6*, 29. [[CrossRef](#)]
27. Fan, L.; Cao, M.; Li, X. Analysis of the Temporal and Spatial Distribution Characteristics and Influencing Factors of Religious Sites on the Maritime Silk Road: A Case Study of Quanzhou. *J. Tour. Manag. Res.* **2022**, *9*, 110–124. [[CrossRef](#)]
28. Chen, Y.; Wu, H.; Wei, W. Different Patterns of Religious Settlements Based on the Historic Landscape Approach: Cases of Buddhist Grottoes in Hexi Corridor. *Religions* **2024**, *15*, 1531. [[CrossRef](#)]
29. Vaz de Freitas, I.; Lopes, H.S.; Albuquerque, H. Historical Landscape: A Methodological Proposal to Analyse the Settlements of Monasteries in the Birth of Portugal. *Religions* **2024**, *15*, 1158. [[CrossRef](#)]
30. Harroucha, R.; Chaouni, A.A. GIS-Based Approach Evaluating Sustainable Spatio-Functional Accessibility to Mosques. *Ann. GIS* **2023**, *29*, 429–439. [[CrossRef](#)]
31. Ristić, N.D.; Čulafić, I.K. Sacred Networks and Spiritual Resilience: Sustainable Management of Studenica Monastery’s Cultural Landscape. *Land* **2025**, *14*, 1011. [[CrossRef](#)]
32. Gibbon, S.J.; Moore, J. Storyways: Visualising Sainly Impact in a North Atlantic Maritime Landscape. *Open Archaeol.* **2019**, *5*, 235–262. [[CrossRef](#)]
33. Zhang, P.; Lin, H.; Chitty, N.; Cao, K. Beijing Temples and Their Social Matrix—A GIS Reconstruction of the 1912–1937 Social Scape. *Ann. GIS* **2016**, *22*, 129–140. [[CrossRef](#)]
34. Zhang, Y.; Li, J.; Wang, J.; A, X. Spatial Correlation between Traditional Villages and Religious Cultural Heritage in the Hehuang Region, Northwest China. *J. Asian Archit. Build. Eng.* **2025**, *24*, 3190–3202. [[CrossRef](#)]
35. Ju, F. Gathering Southward under Secularization and Syncretism: Study of the Spatial-Temporal Distribution and Influencing Factors of Chinese Historical Buddhist Architecture in Zhejiang. *Religions* **2023**, *14*, 1398. [[CrossRef](#)]
36. Dong, M. Economic Development in the Wanjiang Region from the Mid-Tang Dynasty to the Late Northern Song Dynasty. Doctoral Dissertation, Shanghai Normal University, Shanghai, China, 2015.



37. Lyu, J.L.; Chen, E.H.; Guo, C.M. Population Fluctuation and Land Development in the Wanjiang Basin during the Ming and Qing Dynasties. *J. Anhui Agric. Univ. (Soc. Sci. Ed.)* **2018**, *27*, 113–121. [\[CrossRef\]](#)
38. Zhang, L. River System Changes and Spatial-Temporal Distribution of Ancient Cities in Anhui: A Comparative Study of Ancient Cities in Three Major River Basins of Anhui. *Hist. Rev.* **2014**, *1*, 1–9+189.
39. Sheng, K. On the Veneration of the Four Sacred Buddhist Mountains in China. *East. Buddh.* **2013**, *44*, 121–143.
40. Li, X. On the Changes of Cultural Identity in Wanjiang Area as the Center for the Dissemination of Buddhism. *J. Anhui Univ. (Philos. Soc. Sci. Ed.)* **2009**, *33*, 31–36.
41. Xu, A. Typologies of Secularism in China: Religion, Superstition, and Secularization. *Comp. Stud. Soc. Hist.* **2024**, *66*, 57–80. [\[CrossRef\]](#)
42. Zhang, D.X.; Liu, D.P.; Wei, X.R.; Xiao, M. Research of Chinese Buddhist Temples Space Design. *Adv. Mater. Res.* **2011**, *311*, 1569–1572. [\[CrossRef\]](#)
43. Wang, S. *The Complete Works of Wang Yangming (Simplified Chinese Annotated Edition) Chronicle and Shide*, 1st ed.; Huazhong University of Science & Technology Press: Wuhan, China, 2015.
44. Liao, X. China: Some Exceptions of Secularization Thesis. *Religions* **2019**, *10*, 56. [\[CrossRef\]](#)
45. Wei, D.-R.; Cheng, J.M.-K. Buddhism in China and Modern Society: An Introduction Centering around the Teachings of Taixu and Yinshun. *J. Orient. Stud.* **2010**, *20*, 171–182.
46. Liu, Y. Sacred Resurgence: Revitalizing Buddhist Temples in Modern China. *Religions* **2024**, *15*, 627. [\[CrossRef\]](#)
47. Li, Y. Analysis of the relationship between the temporal and spatial evolution of henan grotto temples and their geographical and cultural environment based on GIS. *Herit. Sci.* **2023**, *11*, 216. [\[CrossRef\]](#)
48. Ma, Q.; Liu, T.; Yang, Z.; Zhang, S.; Zhang, X.; Sun, M.; Hou, X. The Spatio-Temporal Distribution and Influencing Factors of Cave Temples and Stone Carvings in China. *npj Herit. Sci.* **2025**, *13*, 311. [\[CrossRef\]](#)
49. Yan, Y.; Bai, Z.; Hu, X.; Wang, Y. How Do Natural Environmental Factors Influence the Spatial Patterns and Site Selection of Famous Mountain Temple Complexes in China? Quantitative Research on Wudang Mountain in the Ming Dynasty. *Land* **2025**, *14*, 1441. [\[CrossRef\]](#)
50. Zhang, H.; Li, X.; Zhang, B.B.; Li, Y.; Liu, H. Spatiotemporal Dynamics of Catholic Church Heritage in Sichuan Using Density Weighted Historical Segmentation and SHAP. *npj Herit. Sci.* **2025**, *13*, 356. [\[CrossRef\]](#)
51. Liu, H.S.; Fu, J.J. The Research Progress and Prospects of Historical Geography: A Systematic Review of the Disciplinary Framework, Research Content, and Methodology. *Geogr. Res. Bull.* **2025**, *4*, 610–642. [\[CrossRef\]](#)
52. Yang, Y.; Zhao, Y.; Fang, S.; Liu, X.; Li, X.; Chen, D. Deciphering Evolutionary Patterns and Multifaceted Drivers of Tibetan Buddhist Monasteries in Amdo's Tibetan Inhabited Area, China. *Trans. GIS* **2025**, *29*, e13279. [\[CrossRef\]](#)
53. Wang, Y.; Ge, D.; Zhang, T.; Wang, Y. The Sustainable Development of Choronymic Cultural Landscapes in China Based on Geo-Informatic Tupu. *Sustainability* **2019**, *11*, 4302. [\[CrossRef\]](#)
54. Schabenberger, O.; Gotway, C.A. *Statistical Methods for Spatial Data Analysis*, 1st ed.; Chapman and Hall/CRC: Boca Raton, FL, USA, 2005. [\[CrossRef\]](#)
55. Liu, Y.; Wang, Y.-L.; Peng, J.; Yuan, Y.; Ma, J.; Wei, H. Selection of Different Clustering Algorithms for Settlement Landscape Aggregation in Suburb. *Sci. Geol. Sin.* **2015**, *35*, 674–682. Available online: <https://www.sciengine.com/doi/10.13249/j.cnki.sgs.2015.06.674> (accessed on 3 June 2026).
56. Yuill, R.S. The Standard Deviation Ellipse: An Updated Tool for Spatial Description. *Geogr. Ann. Ser. B Hum. Geogr.* **1971**, *53*, 28–39. [\[CrossRef\]](#)
57. Zhou, B. Fan Zhou You Shan Lu. In *Songdai Riji Congbian [A Collection of Song Dynasty Diaries]*, 1st ed.; Gu, H., Li, W., Eds.; Shanghai Bookstore Publishing House: Shanghai, China, 2013; pp. 924–997.
58. Zou, R.S.; Luo, J.L.; Zhai, D.J.; Zhu, S.R.; Huang, Z.X. *Directory of Place Names in Qingyang County, Anhui Province*, 1st ed.; Qingyang County Place Name Committee Office: Chizhou, China, 1986.
59. Zhou, Y. *Qing Guangxu Jiuhuashan Zhi [Jiuhua Mountain Gazetteer, Guangxu Period]*, 1st ed.; Anhui Literature and Art Publishing House: Hefei, China, 2019.
60. Ouyang, X.; Song, Q. *Xin Tang Shu [The Newer Book of the Tang Dynasty]*, 1st ed.; Zhonghua Book Company: Beijing, China, 1975.
61. Luo, Y. *Xin'an Zhi Zhengli Yu Yanjiu [Collection and Research of Xin'an Chronicle]*, 1st ed.; Huangshan Publishing House: Hefei, China, 2008.
62. Jiuhuashan Records Compilation Committee. *Local Chronicles of Jiuhua Mountain*, 1st ed.; Huangshan Publishing House: Hefei, China, 1990.
63. Wang, C. *Ming Jiajing Chizhou Fu Zhi [Chizhou Prefecture Chronicle, Jiajing Period]*, block-printed ed.; Chizhou Prefecture Government: Chizhou, China, 1545.
64. Li, C. *Qing Kangxi Jiuhuashan Zhi (Jiuhua Mountain Gazetteer, Kangxi Period)*, block-printed ed.; Qingyang County Government: Qingyang, China, 1689; Volume 1.
65. Shen, P. *Jiuhuashan Da Cidian*, 1st ed.; Huangshan Publishing House: Hefei, China, 2001.

66. So, H. The Relationship between Buddhist Sculpture of the Unified Silla Period and Tang Dynasty Painting: A Study of the Buddha and Bodhisattva Sculptures from Gamsansa Temple. *J. Korean Art Archaeol.* **2016**, *10*, 26–45. [[CrossRef](#)]
67. Lu, Z. Study on the Causes of the Famous Buddhist Mt. Jiuhua During the Ming and Qing Dynasties. *Chin. Soc. Hist. Rev.* **2021**, *26*, 12–34+244–245.
68. Meulenbeld, M. Chinese Religion in the Ming and Qing Dynasties. In *The Wiley-Blackwell Companion to Chinese Religions*, 1st ed.; Nadeau, R.L., Ed.; Wiley-Blackwell: Hoboken, NJ, USA, 2012; Volume 6, pp. 125–144. [[CrossRef](#)]
69. Chu, W. Bodhisattva Precepts in the Ming Society: Factors behind Their Success and Propagation. *J. Buddh. Ethics* **2006**, *13*, 1–36.
70. Wu, B. From the Underworld to the Pure Land: Contemporary Ksitigarbha (Dizang)-Related Rituals on Mount Jiuhua. Doctoral Dissertation, University of the West, Los Angeles, CA, USA, 2016.
71. Sheng, K. Buddhist Faith and Lifestyles in the Ming and Qing Dynasties. In *A History of Chinese Buddhist Faith and Life*, 1st ed.; Chen, J., Ed.; Brill: Boston, MA, USA, 2020; Volume 3, pp. 440–547. [[CrossRef](#)]
72. Wright, A.F. Buddhism and Chinese Culture: Phases of Interaction. *J. Asian Stud.* **1957**, *17*, 17–42. [[CrossRef](#)]
73. He, J. Compilation of Local Chronicles and New Directions in Research of Chinese Religious History. *Stud. Chin. Relig.* **2016**, *2*, 1–17. [[CrossRef](#)]
74. Bai, X.; Jiao, X.; Sakai, T.; Xu, H. Mapping the Past with Historical Geographic Information Systems: Layered Characteristics of the Historic Urban Landscape of Nanjing, China, since the Ming Dynasty (1368–2024). *Herit. Sci.* **2024**, *12*, 283. [[CrossRef](#)]
75. Zurndorfer, H.T. Ritual Opera and Mercantile Lineage: The Confucian Transformation of Popular Culture in Late Imperial Huizhou. *Harv. J. Asiat. Stud.* **2007**, *67*, 229–237.
76. Bingenheimer, M. Knowing the Paths of Pilgrimage: The Network of Pilgrimage Routes in Nineteenth-Century China. *Rev. Relig. Chin. Soc.* **2016**, *3*, 189. [[CrossRef](#)]

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