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Spatiotemporal Distribution and Heritage Corridor Construction of Vernacular Architectural Heritage in the Cao'e River, Jiaojiang River, and Oujiang River Basin

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Abstract

The Cao'e-Jiaojiang-Oujiang River Basin possesses abundant vernacular architectural heritage with significant historical–cultural value. However, challenges like dispersed distribution and inconsistent conservation hinder its systematic protection and utilization within territorial spatial planning, necessitating a deeper understanding of its spatiotemporal patterns. Utilizing 570 identified heritage sites, this study employed ArcGIS spatial analysis (Kernel Density Estimation, Nearest Neighbor Index), correlation analysis with DEM data, and suitability analysis (Minimum Cumulative Resistance model, Gravity Model) to systematically examine spatial distribution characteristics, their evolution, and relationships with the geographical environment and historical context. Results revealed a distinct "four cores and three belts" spatial pattern. Temporally, distribution evolved from "discrete" (Song-Yuan) to "aggregated" (Ming-Qing) and then "diffused" (Modern era). Spatially, heritage showed density in plains, preference for low slopes, and settlement along waterways. Suitability analysis indicated higher corridor potential in the northern section (Cao'e-Jiaojiang) than the south (Oujiang), leading to the identification of a "Northern Segment (Shaoxing-Ningbo-Shengzhou-Taizhou)" and "Southern Segment (Wenzhou-Lishui)" corridor structure. This research provides a scientific basis for systematic conservation and integrated heritage corridor construction of vernacular architectural heritage in the basin, supporting Zhejiang's Poetry Road Cultural Belt initiatives and cultural heritage protection within territorial spatial planning.

Keywords: Cao'e River–Jiaojiang River–Oujiang River Basin; vernacular architectural heritage; spatiotemporal distribution; linear heritage; ArcGIS

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Academic Editors: Bojana Bojanic Obad Scitaroci, Nerma Omićević and Tamara Zaninović

Received: 6 June 2025
Revised: 28 June 2025
Accepted: 13 July 2025
Published: 17 July 2025

Citation: Jiang, L.; Cai, J.; Fan, Y. Spatiotemporal Distribution and Heritage Corridor Construction of Vernacular Architectural Heritage in the Cao'e River, Jiaojiang River, and Oujiang River Basin. *Land* **2025**, *14*, 1484. https://doi.org/10.3390/land14071484

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1. Introduction

Traditional vernacular architectural heritage (defined as a residentially built system spontaneously created by local people that reflects regional cultural genes [1,2]) embodies the genetic and cultural lineage of the Chinese nation, holding significant historical, artistic, and scientific value [3,4]. Exploring this heritage is both an essential pathway for uncovering and transmitting traditional residential culture and an indispensable link for transforming the advantages of residential cultural resources into drivers of heritage-led development [5,6]. The ancestors of Zhejiang Province settled along waterways, thrived, and over time, formed a distinctive local history and culture [7,8]. Based on the province's historical and cultural geography, the Zhejiang Provincial Government, using major water systems (ancient routes) as connecting threads, issued and implemented the Zhejiang

Province Poetry Road Cultural Belt Development Plan (Zhejiang Provincial Government, 2020 [9]). This plan pioneered a spatial strategy for four Poetry Road Cultural Belts, emphasizing that vernacular architectural heritage along these routes "bears the ancient charm of sages" and constitutes a vital foundation for their construction. From the perspective of Cultural Landscape Morphology [10–12], the traditional vernacular heritage clusters in the Cao'e River-Jiaojiang Basin (within the Eastern Zhejiang Tang Poetry Route Belt) and Oujiang River Basin (within the Oujiang River Landscape Poetry Route Belt) are essentially spatial representations of "nature-culture" systemic interactions. Their protection and revitalization directly impact the effectiveness of provincial cultural belt initiatives. However, three critical challenges persist: (1) dispersed spatial distribution and inconsistent conservation status [13]; (2) absence of heritage-led development research [14,15]; and (3) lack of systemic integration for disaster risks and urbanization pressures within resilience management frameworks [16–18]. Within the context of territorial spatial planning emphasizing comprehensive coordination, systematic understanding of spatiotemporal distribution patterns and underlying relationships of vernacular heritage within these basins remains inadequate, hindering the transformation of cultural resource potential.

The Heritage Corridor, as a practical vehicle for New Heritage Approaches (emphasizing cultural heritage as a dynamically evolving "system-process" [19,20]), through linear spatial integration [21], offers an effective pathway for coordinated conservation of cross-regional cultural heritage [22–24]. It integrates dispersed cultural heritage resources, promoting regional sustainable development while safeguarding cultural diversity [25]. In recent years, research on cultural heritage corridors has yielded substantial outcomes across three primary dimensions: (1) spatial relationships in basin settlements: spatial distribution patterns [26,27], cultural connectivity [28,29], and conservation strategies [30,31]; (2) integration of heritage and cultural routes: conceptual frameworks [32,33], functional synergies [34,35] and networked pathways [36–38]; (3) ecology–heritage coordinated development: heritage–ecosystem interdependencies [39,40] and corridor regeneration practices [41,42]. The current heritage conservation paradigm is undergoing a fundamental shift: the traditional UNESCO understanding (focusing on material entity classification, e.g., tangible/intangible [43]) has progressively evolved toward a "system-process"-oriented New Heritage Approach. This evolution is academically grounded in two key developments: (1) the cultural landscape concept bridges the tangible/intangible heritage divide [44], exemplified by river basin vernacular clusters representing "architecture-ecology-culture" tripartite coupling; (2) methods like heritage corridors enable holistic conservation, achieving value regeneration through spatial integration [25,45].

The Cao'e River–Jiaojiang River–Oujiang River basin possesses abundant vernacular architectural heritage resources, boasting outstanding historical-cultural value and revitalization potential. Nevertheless, due to issues like dispersed distribution, varying conservation status, and underutilization, and within the context of contemporary territorial planning and the framework of linear heritage, understanding the spatiotemporal patterns and development potential of vernacular heritage within this specific basin remains relatively scarce existing research inadequately integrates the dual perspectives of cultural landscape morphology and New Heritage Approaches within this linear context, preventing its maximum value from being realized. Therefore, this study integrates the heritage corridor conservation concept integrates the heritage corridor conservation concept with morphological spatial analysis. Focusing on the Cao'e–Jiaojiang–Oujiang Basin and taking vernacular architectural heritage as the research object, it employs methods such as ArcGIS spatial analysis, correlation analysis, and suitability analysis to reveal the spatiotemporal distribution characteristics of the heritage within the basin and its relationships with the geographical environment and historical context. Subsequently, it proposes integrated

heritage corridor construction and conservation strategies, aiming to provide scientific support for the protection and development of vernacular architectural heritage in the Cao'e–Jiaojiang–Oujiang Basin. By constructing heritage corridors, we aim to transform dispersed physical relics into interconnected "memory carriers," thereby enhancing the awareness of cultural continuity amidst rapid spatial changes.

2. Study Area Overview

The geographical scope of this study focuses on the three major river basins of Cao'e River, Jiaojiang River, and Oujiang River in Zhejiang Province (Approx. 44,600 km^2). The delineation of this scope, at the macro level, is based on the "Eastern Zhejiang Tang Poetry Route Cultural Belt" (Cao'e River-Jiaojiang River main route and Ningbo-Zhoushan branch) and the "Oujiang River Landscape Poetry Route Cultural Belt" (Oujiang River main route and Nanxijiang River–Wenruitang River, Songyinxi River branches) as defined in the Zhejiang Province Poetry Road Cultural Belt Development Plan (Zhejiang Provincial Government, 2020 [9]) to reflect their profound cultural route context; at the micro level, to ensure geographical rigor in spatial delineation, the study boundaries strictly adhere to the precise natural watershed divisions of the aforementioned three rivers outlined in the Zhejiang Rivers Handbook [46]. The core coverage area includes Shaoxing City (Cao'e River Basin), Taizhou City (Jiaojiang River Basin), Lishui City and Wenzhou City (Oujiang River Basin), as well as relevant areas within Ningbo City involved in the Tang Poetry Route branches, specifically Fenghua and Yuyao. This study ultimately employs the natural watershed geographic boundaries as its spatial foundation, thereby transcending the limitations of the cultural belts' administrative frameworks (Figure 1).

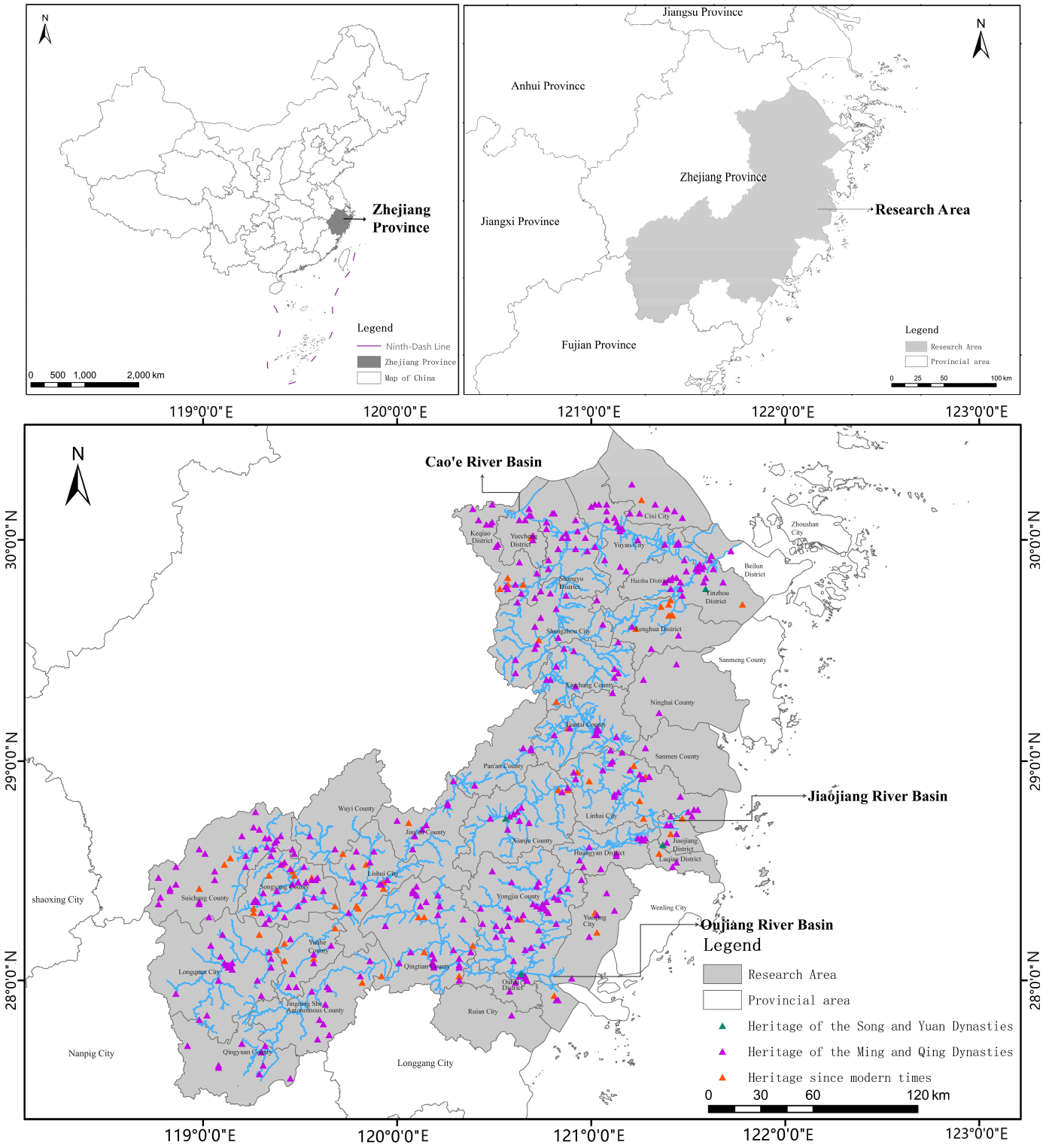


Figure 1. The scope of the Cao'e River–Jiao River–Ou River basin.

3. Data Sources, Research Methods, and Approach

3.1. Data Sources and Processing

(1) Research samples were collected through dual sources. ① Official heritage lists: Given that National Key, Provincial, and Municipal/County Key Cultural Relics Protection Units are selected or designated based on unified standards and represent the most outstanding historical and cultural value [47], this study incorporates: The 1st to 8th batches of National Key Cultural Relics Protection Units in Zhejiang Province (first

batch: March 1961; eighth batch: October 2019) published on the official website of the National Cultural Heritage Administration (http://www.ncha.gov.cn/ (accessed on 30 April 2025)); The 1st to 8th batches of Provincial and Municipal/County Key Cultural Relics Protection Units (first batch: April 1961; eighth batch: July 2023) published by the Zhejiang Provincial Cultural Heritage Bureau (http://www.zj.gov.cn (accessed on 30 April 2025)). ② Supplementary academic literature: Representative vernacular architectural heritage reflecting regional characteristics was added by reviewing monographs such as Ancient Architecture of Zhejiang (Yang Xinping et al., 2015 [48]), Zhejiang Vernacular Dwellings (Institute of Architectural History, China Academy of Building Research, 2018 [49]), Zhejiang Vernacular Dwellings (Ding Junqing et al., 2009 [50]), and local chronicles. After excluding a small number of data points with uncertain dating, 570 valid research samples were finalized as of July 2023. (the vernacular architectural heritage referred to in this paper is an important type of traditional Chinese architecture, encompassing residential houses, ancestral halls, guildhalls, academies, etc. [51]).

(2) Spatiotemporal Characteristics Analysis of Samples. The construction periods of the 570 research samples were categorized into three historical periods: the Song-Yuan Dynasties, the Ming-Qing Dynasties, and the Modern Era (post-Qing). Analysis revealed that the Ming-Qing period has the highest number (465), followed by the Modern Era (101), with only 4 dating from the Song-Yuan period. The preservation status of these heritage sites can be broadly classified into four categories: Category 1: Well-preserved (approx. 5.38% of the total sample), primarily consisting of National Key Protection Units; these dwellings retain their original architectural form, structural system, and decorative features intact, showing no significant natural or anthropogenic damage, possessing complete cultural identifiability and historical authenticity; Category 2: Relatively well-preserved (36.42%); the original form is largely intact, but potential risks from natural disasters exist, necessitating enhanced preventive conservation measures; Category 3: Partially damaged (42.25%), currently the largest category; typically exhibiting damage to local structural components, which somewhat affects the recognition of cultural symbols, yet the overall building structure, spatial layout, and core historical features remain clearly discernible, holding significant historical and cultural research value; Category 4: Functionally adapted or restored (15.95%); having undergone restoration or partial functional changes (e.g., conversion to public spaces), but the main structure and traditional appearance are partially retained; this category reflects the practical characteristics of dynamic conservation and adaptive reuse of cultural heritage (Figure 2).

3.2. Research Methods and Approach

(1) Construction of geographic information database: Based on the 570 samples identified in Section 3.1, longitude/latitude coordinates and spatial attribute data were collected via the Guihuayun platform (http://www.guihuayun.com (accessed on 30 April 2025)). On the ArcGIS 10.8 platform, a Geographic Information System (GIS) database for the basin's vernacular heritage was constructed by integrating core fields such as spatial location, period attributes, and environmental parameters (Figure 3 Step I).

(2) Analysis of heritage spatiotemporal patterns and their relationship with physical geography: Employing Kernel Density Estimation (KDE) (Table 1(a)) with a bandwidth of 5 km to visualize spatial agglomeration trends of the heritage; combining this with the Nearest Neighbor Index (NNI) (Table 1(b)) using distances in kilometers for quantitative identification of distribution patterns; and utilizing DEM and GIS spatial analysis techniques to quantitatively analyze the coupling patterns between

vernacular heritage distribution and factors such as elevation, slope, and hydrology (Figure 3 Step II).

(3) Heritage corridor construction: Firstly, establishing evaluation indicators across three dimensions—natural environment, transportation conditions, and heritage clustering—using the Analytic Hierarchy Process (AHP); secondly, assessing the suitability for heritage corridor construction within the Cao'e–Jiaojiang–Oujiang Basin through the Minimum Cumulative Resistance (MCR) (Table 1(c)) model; and finally, grading the heritage corridors based on the Gravity Model (Table 1(d)) to construct the overall heritage corridor framework for the Cao'e–Jiaojiang–Oujiang Basin vernacular heritage (Figure 3 Step III).



Figure 2. Heritage preservation status.

Table 1. Research methods.

Formula	Research Method	Model
(a)	Kernel Density Estimation F(x)	$f(x) = \frac{1}{nh^d}\sum_{i=1}^{n} k(\frac{x-x_i}{h})$
(b)	Nearest Neighbor Index R	$R = \frac{\overline{r_1}}{r_E} = 2\sqrt{D} \times \overline{r_1}$
(c)	Minimum Cumulative Resistance MCR	$MCR = f_{min}\sum_{j=n}^{i=1} D_{ij} \times R_i$
(d)	Gravity Model F_{ij}	$F_{ij} = \frac{s_i \times s_j}{D_{ij}^{\beta}}$

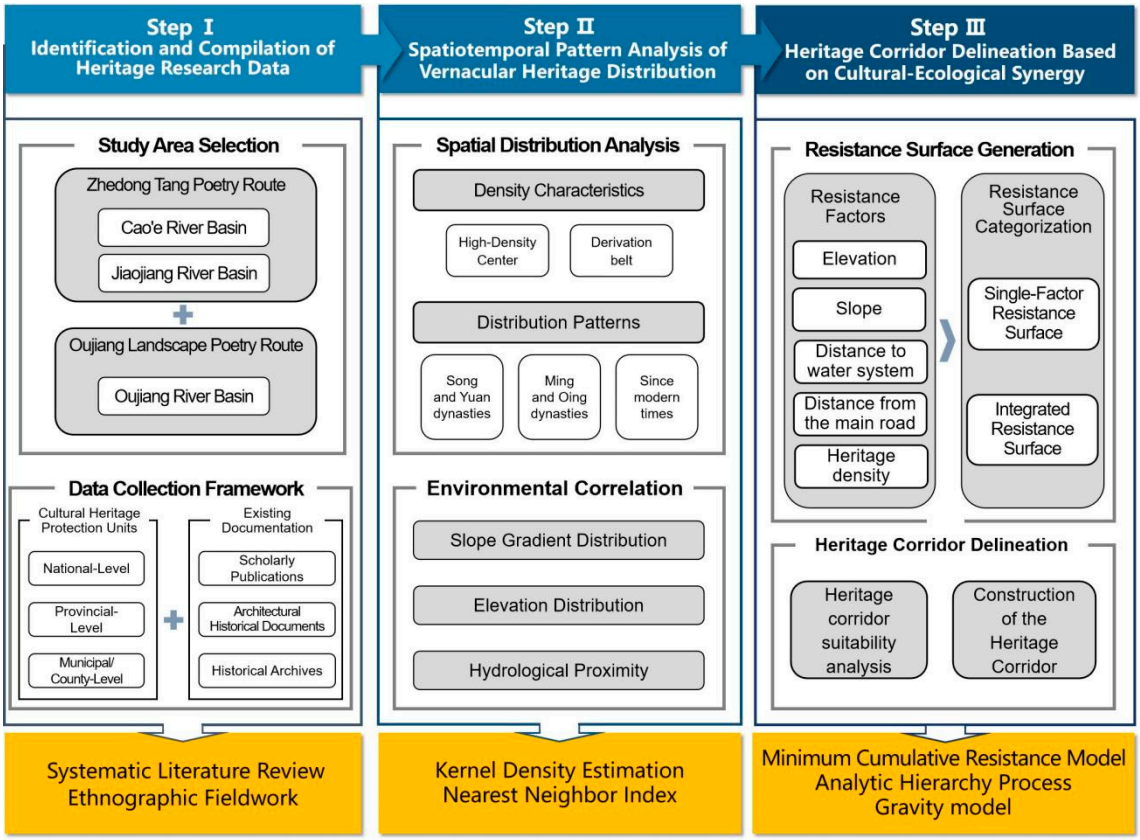


Figure 3. Research design.

4. Spatial Distribution Characteristics of Traditional Vernacular Dwellings

The spatial differentiation pattern of traditional vernacular dwellings within the Cao'e–Jiaojiang–Oujiang River Basin results not only from the long-term filtering effect of physical geographical factors but also manifests as a spatial projection of socio-cultural processes [52,53]. This study employs multi-scale spatial analysis methods to decipher the agglomeration patterns and evolutionary dynamics of vernacular architectural heritage within the basin. The analysis specifically focuses on ① utilizing KDE to reveal the hierarchical structure characterized by "high-density cores and radiating belts"; and ② comparing the dynamic evolution patterns of dwellings across the three historical periods—Song-Yuan, Ming-Qing, and Modern eras—by combining the findings with the NNI.

4.1. Spatial Distribution Density Characteristics

Based on the kernel density analysis using ArcGIS 10.8, the spatial distribution of existing vernacular dwelling heritage in southeastern Zhejiang exhibits a significant "four cores and three belts" agglomeration pattern (Figure 4). The four major agglomeration cores are as follows. Core I (Shaoxing–Ningbo Core): With Shangyu, Haishu, and Yinzhou as its core areas exhibiting the highest peak density value (389.83), it has the largest radiation radius, covering the vast plains from the Cao'e River to the Yong River basin. This reflects the area's role as the economic and cultural center of eastern Zhejiang, where the diffusion of cultural heritage is strongly driven by developed transportation networks (canals, ports) [54] and population agglomeration effects, forming an extensive and continuous radiation belt. Core II (Taizhou Core): Centered on Linhai, it has the lowest peak density value (216.57) among the four cores. Constrained by the semi-enclosed topography of Taizhou Bay, its spatial expansion and agglomeration intensity are limited [55]. Cultural transmission mainly

extends unidirectionally southeastward along the Jiao River. Core III (Wenzhou Core): Centered on Yongjia County with a peak density value of 303.20, it extends in a belt shape along the Ou River water system. Commercial activities have promoted the diffusion of cultural heritage along the watercourse [56], yet its radiation radius remains smaller than that of Core I, significantly constrained by mountainous terrain barriers. Core IV (Lishui Core): Presents a discrete high-density cluster in Songyang-Longquan, with a peak density value (346.51) second only to Core I, but the smallest radiation radius. Located in the mountainous areas of southern Zhejiang, the distribution of cultural heritage is constrained by fragmented topography and influenced by the point-like distribution of resource-based industries (celadon, mining, and metallurgy) [57,58], manifesting as discrete high-density point clusters, making it difficult to form large continuous. The significant differences among the four cores in terms of agglomeration intensity (peak density: Core I > Core IV > Core III > Core II) and spatial scale (radiation radius: Core I > Core III > Core II > Core IV) comprehensively demonstrate that the spatial distribution pattern of vernacular dwelling heritage in southeastern Zhejiang is the result of the combined effects of the scale effects of cultural diffusion and geographical environmental constraints.

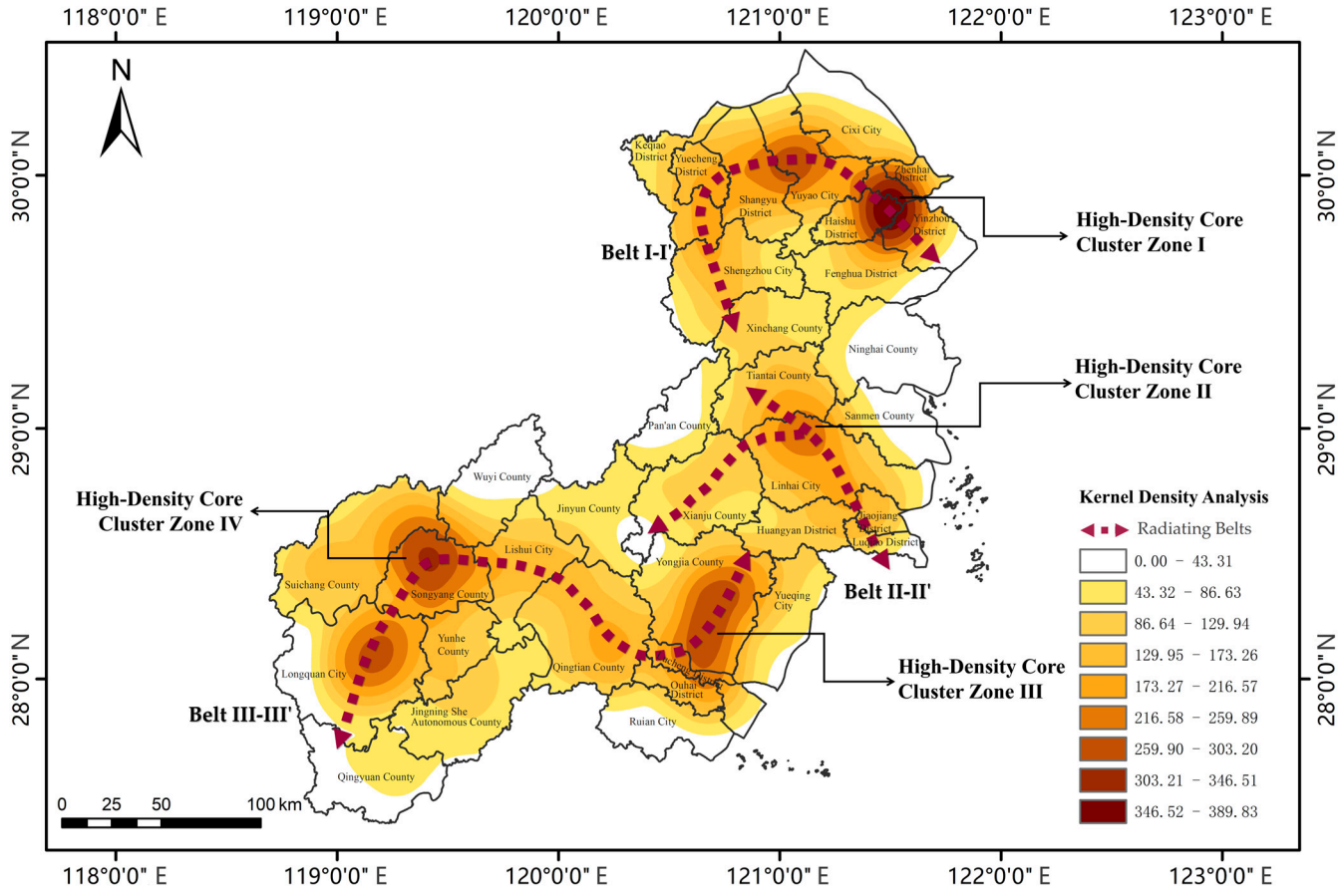
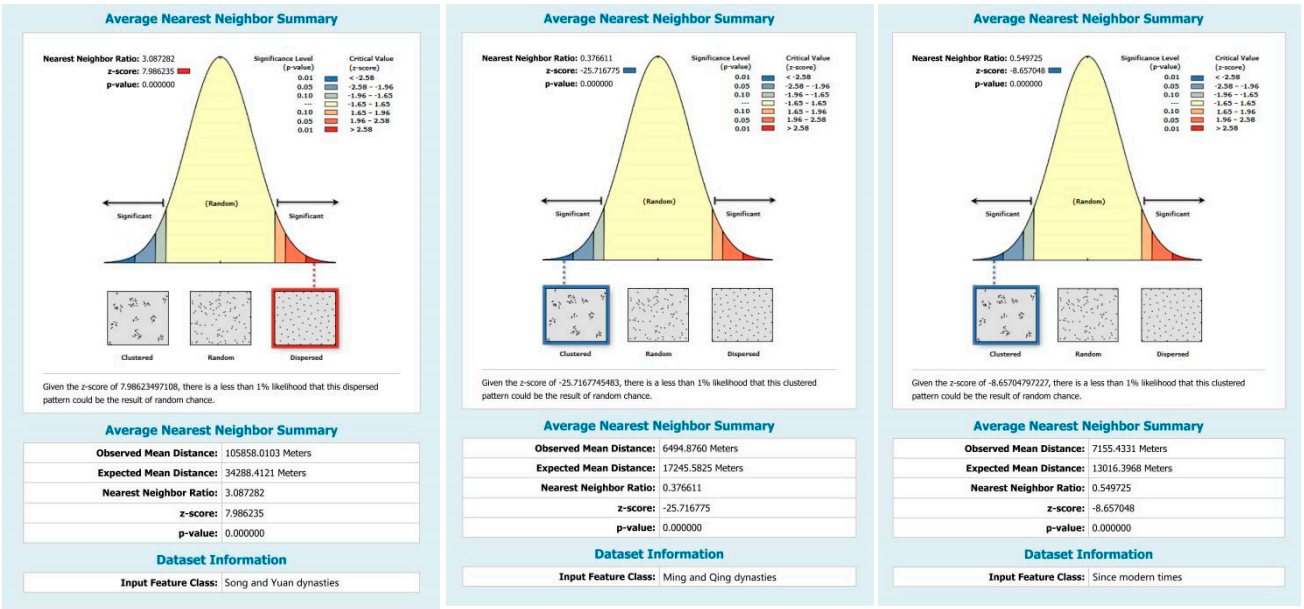


Figure 4. Spatial pattern of the "Four Cores and Three Belts".

4.2. Spatial Distribution Pattern Characteristics

The Nearest Neighbor Analysis method was employed to effectively quantify the spatial distribution patterns of vernacular architectural heritage across different historical periods within the Cao'e–Jiaojiang–Oujiang River Basin [59]. Based on calculation formula (2), the Nearest Neighbor Index (NNI) for distinct temporal cross-sections were computed, and corresponding Nearest Neighbor Distance analysis diagrams were generated (Figure 5). These reveal a dynamic evolution in spatial distribution patterns transitioning from "dis-

crete" to "aggregated" and then to "diffused," as detailed below: During the Song-Yuan period, a discrete pattern dominated, with the actual mean nearest neighbor distance (105.8580 km) significantly exceeding the theoretical random value (34.2884 km), indicating widespread scattered distribution of heritage points (Figure 5a). The Ming-Qing period exhibited highly significant aggregation, where the actual mean nearest neighbor distance (6.4949 km) plummeted to only 37.7% of the theoretical random value. Heritage points formed high-density clusters concentrated along river valley plains, establishing distinct "clustered" core zones (Figure 5b). Since modern times, the degree of aggregation weakened; the actual mean nearest neighbor distance (7.1554 km) increased by 10.2% compared to the Ming-Qing period, exhibiting a "core-periphery" diffusion trend (Figure 5c). Overall, the high degree of dispersion during the Song-Yuan period (Z = 7.9862) directly reflects the spatial predicament described in the Yudi Jisheng ("Records of Renowned Sites") as "high mountains and rushing waters, settlements scattered like stars." The extreme and highly significant aggregation during the Ming-Qing era (Z = −25.7168) corresponds to the implementation of the Lijia system (household registration and collective responsibility system) in 1381 and the flourishing of market town economies. The Wanli Shaoxing Prefecture Gazetteer vividly depicts "a thousand hearths and ten thousand inhabitants, densely packed structures like fish scales and comb teeth," revealing the profound shaping effect of administrative integration and economic intensification on heritage clustering. Accompanying the end of feudal society, the construction of the Shanghai-Hangzhou-Ningbo Railway (opened in 1909) and highway networks broke through topographical barriers, driving the outward spillover of settlements along major transportation corridors. This reflects how technological innovation overcame natural obstacles while simultaneously intensifying the centrifugal tendency within traditional settlement structures.



(**a**) (**b**) (**c**)

Figure 5. Nearest Neighbor Index of Vernacular Architectural Heritage Across Temporal Cross-Sections: (**a**) Song-Yuan Dynasties; (**b**) Ming-Qing Dynasties; (**c**) Since Modern Times.

The significance of the main results lies in revealing the fundamental spatiotemporal patterns ("four cores and three belts" and the evolution from discrete to aggregated to diffused) governing vernacular heritage distribution within the basin. These patterns provide the essential theoretical basis for identifying high-density heritage clusters as core

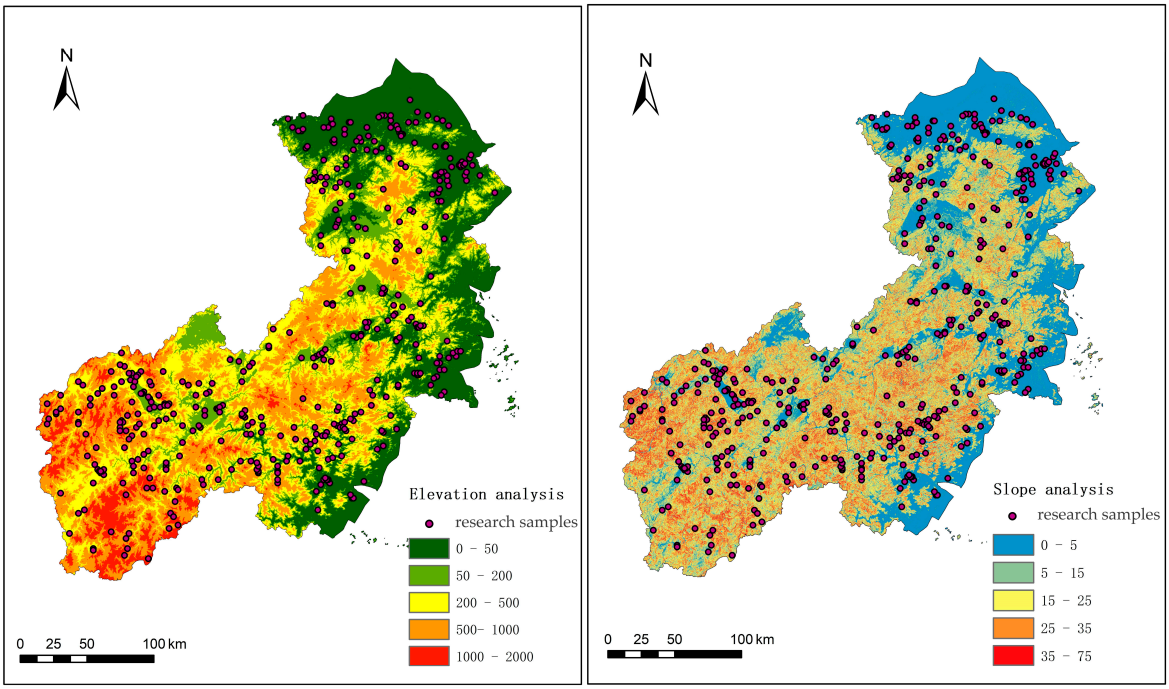
nodes and understanding their historical formation dynamics, which directly inform the spatial structure and prioritization strategy for the heritage corridor construction proposed.

5. Association Between Traditional Vernacular Dwelling Distribution and the Natural Environment

The Cao'e-Jiaojiang-Oujiang River Basin is characterized by being "nestled against mountains and sea, embraced by rivers and marshes" [60]. This synergistic interaction of "mountains-waters-sea" profoundly influenced the site selection and construction of traditional vernacular dwellings. Leveraging Digital Elevation Models (DEM) and GIS spatial analysis techniques, this study quantitatively analyzes the coupling patterns between the distribution of vernacular architectural heritage and factors of elevation, slope, and hydrology. The analysis specifically focuses on the following: ① the constraining effect of altitudinal gradients on the vertical distribution of building clusters; ② the correlation mechanism between terrain slope and settlement engineering adaptability; and ③ the spatial shaping role of river buffer zones on heritage corridors. By revealing the spatial regulatory characteristics of physical geographical elements on cultural heritage distribution, this research provides geographical support for basin-wide heritage conservation.

5.1. Association with Topography and Geomorphology

Quantitative analysis of the vertical distribution of vernacular heritage within the basin using a Digital Elevation Model (DEM) reveals a distinct pattern: "density in plains-extension along rivers-decrease in mountains." (Figure 6a) The specific characteristics are as follows. (1) Dominance of Plains and Estuarine Zones: The 0–50 m elevation band concentrates 40.88% of the heritage sites (233 sites). This zone covers the estuarine alluvial plains of rivers like the Jiaojiang and Oujiang, primarily featuring heritage types such as salt field settlements (e.g., Luqiao Jinqing Salt Village, Taizhou) and coastal defense forts (e.g., Taozhu Ancient City, Linhai). (2) Low Elevation Belt (50–200 m): Accounting for 21.05% (139 sites), this belt is dominated by river-network commercial settlements (e.g., Cichen Ancient Town, Ningbo). Leveraging water transport networks, these formed regional material distribution centers, exhibiting a "beaded string" hierarchical distribution along the Cao'e River and Lingjiang River—gentry residences clustered near wharves, with tenant farmers inhabiting the periphery, reflecting the Ming-Qing "dual control system of water transport and patriarchal clan organization." (3) Sub-Peak Distribution in Hilly and Platform Belts: The 200–500 m elevation band forms a secondary peak with 22.63% of heritage sites (129 sites), revealing the adaptive strategy of "elevating to avoid disasters." Distributed along the foothills of the Tiantai Mountains and Kuocang Mountains, typical heritage includes terraced field villages (e.g., Furong Village, Yongjia) and mining/metallurgy settlements (e.g., Cangshan Silver Mining Village, Tiantai). These utilized platform farming to avoid floods while exploiting mountain resources for specialized industries. (4) Marginal Presence in Mid-High to High Mountains: The 500–1000 m mid-mountain belt (11.05%, 63 sites) features heritage sparsely distributed in a "beaded" pattern along ancient passes and strategic points. For example, the Ming Jiajing-era Huangyan Fushan Beacon Tower chain (elevation 600–850 m), spaced 5–8 km apart, formed a military early-warning network. Only 1.05% of heritage sites (6 sites) exist above 1000 m, yet they possess unique functional significance. Examples include Taoist cliff dwellings (e.g., Huading Mountain Taoist Hermitage, Tiantai, Qing Kangxi era), where "rock was carved into niches" to overcome building height limitations, reflecting the religious spatial philosophy of "proving the Way through peril." (Table 2).



(**a**) (**b**)

Figure 6. Association between spatial distribution of vernacular architectural heritage and topography and geomorphology: (**a**) elevation analysis; (**b**) slope analysis.

Table 2. Statistics of Elevation of Vernacular Architectural Heritage.

Elevation Belts	Elevation Range/m	Number of Heritage/pcs	Percentage /%	Spatial Distribution Patterns
Plains and Estuarine Belt	0–50	233	40.88	Ribbon-like Density with Distance-Decay from Waterways
Lowland Plains Belt	50–200	139	21.05	Scattered Distribution along Secondary Tributaries
Hilly and Platform Belts	200–500	129	22.63	Isolated Clusters Anchored to Resource Nodes
Mid-Mountain Canyon Belt	500–1000	63	11.05	Beaded Pattern along Ancient Passes and Mountain Defiles
Alpine Peaks Belt	>1000	6	1.05	Isolated Point Pattern Dominating Strategic High Points

Based on slope data extracted from the Digital Elevation Model (DEM) for the study area, a graded statistical analysis of slope suitability for vernacular architectural heritage in the Cao'e–Jiaojiang–Oujiang River Basin was conducted (Figure 6b), yielding the following results: (1) Flat Areas (<5°) as Core Distribution Zones: Over half (54.91%, 313 sites) of heritage sites concentrate in flat areas with slopes below 5°, confirming the universal siting principle of "preference for low slopes"; such areas predominantly distribute across valley alluvial fans and coastal plains, where gentle terrain facilitates farming and construction while enabling material transport via natural waterways (e.g., Zhang'an Ancient Town, Jiaojiang), embodying a trade-off between agricultural efficiency and minimized construction costs. (2) Negative Correlation Between Slope Gradient and Heritage Density: Heritage density exhibits an exponential decay trend with increasing slope: gentle slopes (5°–15°) account for 21.05% (120 sites), typically occurring on piedmont platforms where

slight gradients enable natural drainage and mitigate soil erosion (e.g., terraced system of Cangpo Village, Nanxijiang River); moderate slopes (15°–25°) comprise 13.51% (77 sites), often situated in hilly transition zones leveraging elevation differentials to form defensive spatial configurations (e.g., stepped alleyways in Pan'an Ancient Town, Xianju); steep slopes (25°–35°) and extreme slopes (>35°) collectively represent 10.53% (60 sites), where intensive settlement is inhibited by significant engineering challenges and scarce arable land, reflecting limited human adaptation to extreme terrain (Table 3).

Table 3. Statistics of Slope of Vernacular Architectural Heritage.

Slope Grading	Slope Range	Number of Heritage/pcs	Percentage /%	Typical Functions
Flat Areas	<5°	313	54.91	Agricultural settlements, Trade wharves
Gentle Slope Zone	5°–15°	120	21.05	Terraced villages, Piedmont stilt houses
Moderate Slope Zone	15°–25°	77	13.51	Mountain settlements, Fortified dwellings
Steep Slope Zone	25°–35°	47	8.25	Mining/metallurgy sites, Mountain pass outposts
Extremely Steep Slope Zone	>35°	13	2.28	Plank-road stations, Extreme dwellings

5.2. Association Between Spatial Distribution and Hydrology

Utilizing ArcGIS's Buffer tool for hydrological analysis, river buffer zones within the Cao'e–Jiaojiang–Oujiang River Basin were delineated at 500 m intervals (Figure 7). Combined with Straight-Line Distance analysis, the proportional distribution of architectural heritage across these zones was quantified (Table 4). The analysis reveals a significant gradient distribution pattern of vernacular architectural heritage along river systems: 29.47% of heritage sites cluster within the 0–500 m buffer zone, while the 500–1000 m buffer zone holds the highest concentration (38.07%). Beyond this, proportions decrease progressively: 1000–1500 m (16.84%) > 1500–2000 m (9.30%) > beyond 2000 m (6.32%). This spatial pattern underscores the intrinsic link between human settlement location and water resource accessibility. Approximately 67.54% of heritage sites fall within 1000 m of rivers, validating the traditional siting principle of "settlement along waterways". Notably, the distribution peak occurs in the 500–1000 m buffer rather than the immediate 0–500 m zone, likely due to the following: ① ecological sensitivity of riparian areas limiting large-scale construction; ② historical technical constraints in flood control and drainage; and ③ compromises between agricultural irrigation needs and flood risk mitigation. Beyond 1000 m, heritage density exhibits an exponential decline, plummeting to 16.84% (1000–1500 m), 9.30% (1500–2000 m), and 6.32% (beyond 2000 m), aligning with the spatial constraint effect of diminishing water resource accessibility on settlement scale. Collectively, these results elucidate the deep coupling mechanism between watershed habitation environments and hydrological systems. The distribution pattern corroborates the "water-settlement co-evolution" principle, highlighting the formative role of river networks in shaping cultural heritage landscapes and providing a spatial decision-making basis for conserving vernacular architectural heritage in the basin.

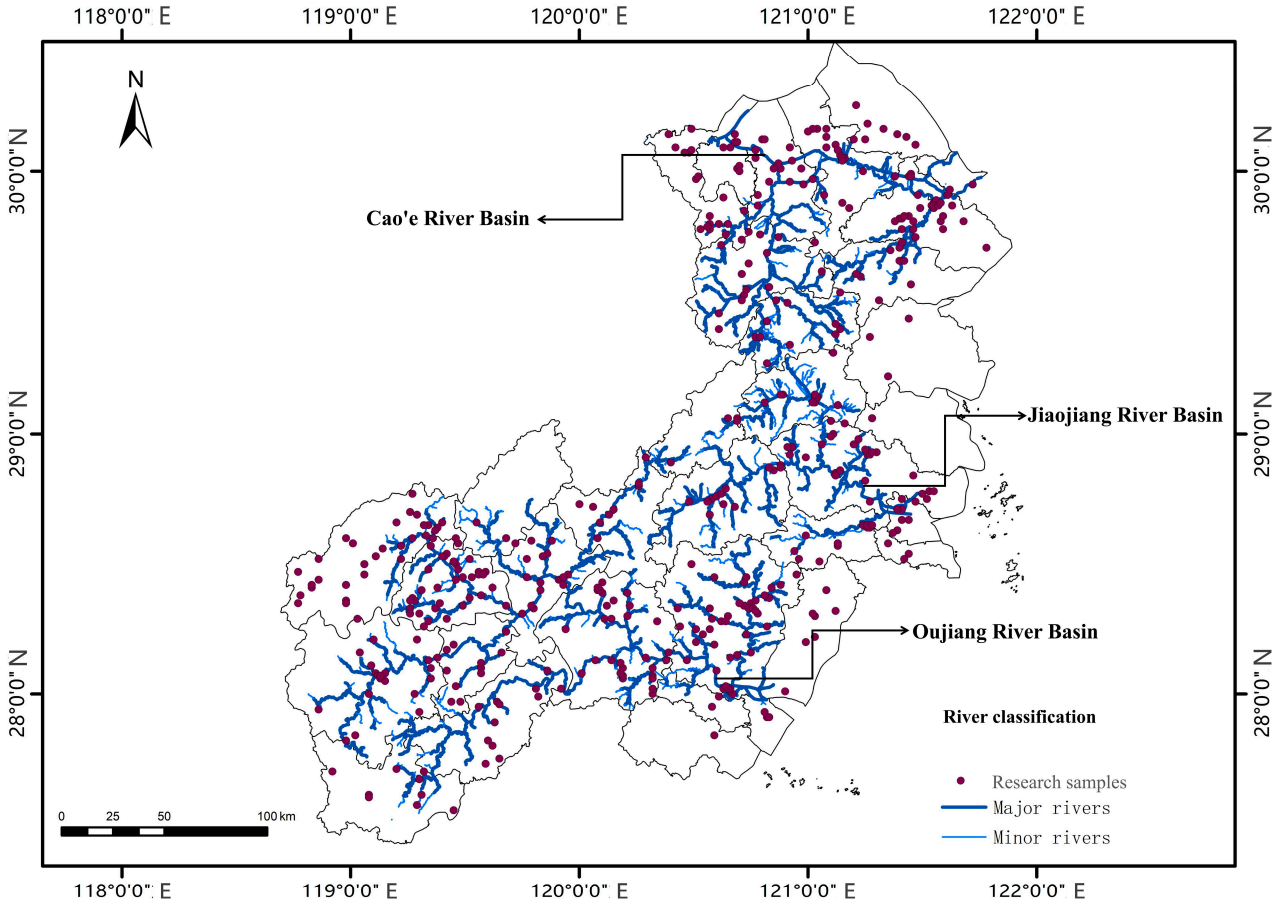


Figure 7. Analysis of hydrological characteristics of vernacular architectural heritage.

Table 4. Statistics on the distance distribution of vernacular architectural heritage.

Distance from River/m	Below 500	500–1000	1000–1500	1500–2000	Above 2000
Number of Heritage/pcs	168	217	96	53	36
Percentage/%	29.47	38.07	16.84	9.30	6.32

6. Heritage Corridor Construction

Heritage corridors integrate scattered vernacular architectural heritage resources through linear spatial organization, protecting cultural diversity while promoting regional sustainable development [61–63]. The construction process involves two key steps: firstly, evaluating the suitability for heritage corridor development within the Cao'e-Jiaojiang-Oujiang River Basin using the Minimum Cumulative Resistance (MCR) model; secondly, classifying heritage corridors hierarchically based on the Gravity Model, thereby establishing an integrated heritage corridor framework for the basin's vernacular architectural heritage.

6.1. Resistance Factor Selection

Based on the spatial distribution characteristics of vernacular architectural heritage in the Cao'e–Jiaojiang–Oujiang River Basin and synthesizing regional cultural heritage patterns with existing research, an evaluation system for corridor suitability was constructed across three dimensions: natural environment [64,65], transportation conditions [66,67], and cultural heritage accumulation [68–70]. Five core factors shaping the integrated resis-

tance surface were identified: elevation, slope, Land use type, distance to water systems, distance to major roads, heritage cluster density and value of the heritage entity.

To ensure objectivity and accuracy in resistance surface generation, the Analytic Hierarchy Process (AHP) was employed for factor weighting: ① Hierarchical Structuring: Systematizing the evaluation framework into a three-tiered hierarchy comprising the objective layer (corridor suitability), criterion layer (7 factors), and sub-factor layer (22 spatialized indicators); ② Judgment Matrix Construction: Determining relative importance ratios (using the 1–9 scale method) between factors via consultation with 15 experts in cultural heritage conservation, regional planning, and spatial geography, combined with literature review, forming 5 judgment matrices; ③ Weight Calculation and Validation: Computing factor weights using Yaahp software(12.7) and verifying consistency (Consistency Ratio, CR < 0.1 for all matrices, satisfying Saaty's threshold) to ensure logical validity; ④ Resistance Value Standardization: Applying a 1–5 graded resistance scale where lower values denote reduced resistance and higher corridor suitability (Table 5).

6.2. Corridor Suitability Analysis

Based on the spatial heterogeneity of multiple factors, an integrated resistance model for heritage corridor siting in the Cao'e-Jiaojiang-Oujiang River Basin was constructed. Utilizing ArcGIS 10.8, seven key resistance factors—elevation, slope, Land use type, distance to water systems, distance to major roads, heritage cluster density and value of the heritage entity–were quantified through the following workflow: first, generating single-factor cost rasters based on each factor's geospatial attributes; then extracting individual resistance surfaces (elevation resistance, slope resistance, land use type resistance, water proximity resistance, road proximity resistance, heritage clustering resistance and value of the heritage entity resistance) via the Reclassify tool; subsequently, applying weighted overlay with factor-specific weights to derive the integrated resistance surface for the basin's vernacular architectural heritage corridors (Figure 8).

Based on the spatial differentiation characteristics of this integrated resistance surface, corridor suitability was classified into five grades using the Natural Break method: High Suitability, Moderately High Suitability, Medium Suitability, Low Suitability, and Unsuitable Zones. Spatial analysis reveals pronounced north–south gradient differentiation and axial extension along water systems: High Suitability Zones concentrate in core cultural nodes including Yuecheng–Shangyu–Shengzhou (Shaoxing), Zhenhai District (Ningbo), Xianju–Jiaojiang District (Taizhou), Longwan–Lucheng District (Wenzhou), and Liandu District (Lishui); Moderately High Suitability Zones form continuous corridor skeletons with High Suitability Zones along the Cao'e River, Jiaojiang River, and Oujiang River, exhibiting spatial coupling with the Eastern Zhejiang Tang Poetry Route and Oujiang River Landscape Poetry Route cultural heritage belts. Spatial correlation analysis reveals that High Suitability Zones predominantly occur in river valley plains (<200 m elevation, <15° slope) and demonstrate significant alignment with high-density heritage clusters (cluster density >259.90), validating the synergistic potential of ecological-cultural corridors for heritage revitalization (Figure 9).

6.3. Heritage Corridor Establishment

The construction process commenced by identifying potential corridors for vernacular heritage in the Cao'e–Jiaojiang–Oujiang River Basin. Using the Build Network and Map Linkages tool within Linkage Mapper, spatial relationships among the 570 heritage sites were analyzed by integrating topographic, hydrological, and geomorphic factors with the integrated resistance surface, thereby generating data-driven potential corridors (Figure 10). Subsequently, corridors were classified hierarchically via the Gravity Model, which quan-

tifies inter-node connectivity strength to prioritize corridor development—higher grades indicate greater suitability for heritage-based activities (Figure 11).

Table 5. Resistance factor classification, value assignment, and weights.

Target Level	Standards Level	Sub-Factor Layer	Assignment	Weight
Natural Environment	Elevation	<50	1	0.20
		50–200	2	
		200–500	3	
		500–1000	4	
		>1000	5	
	Slope	<5	1	0.18
		5–15	2	
		15–25	3	
		25–35	4	
		>35	5	
	Land use type	Construction land	1	0.12
		Grassland	2	
		Forest land	3	
		Cultivated land	4	
		Bare land	5	
Traffic conditions	Distance to water system	<500	1	0.10
		500–1000	2	
		1000–1500	3	
		1500–2000	4	
		>2000	5	
	Distance from the main road	<500	1	0.10
		500–1000	2	
		1000–1500	3	
		1500–2000	4	
		>2000	5	
Cultural Heritage Accumulation	Heritage density	0–86.63	1	0.10
		86.63–173.36	2	
		173.36–259.89	3	
		259.89–303.20	4	
		303.20–389.83	5	
	Value of the Heritage Entity	National Heritage Site	1	0.15
		Provincial Heritage Site	2	
		Municipal/County Heritage Sites and Local Heritage	3	

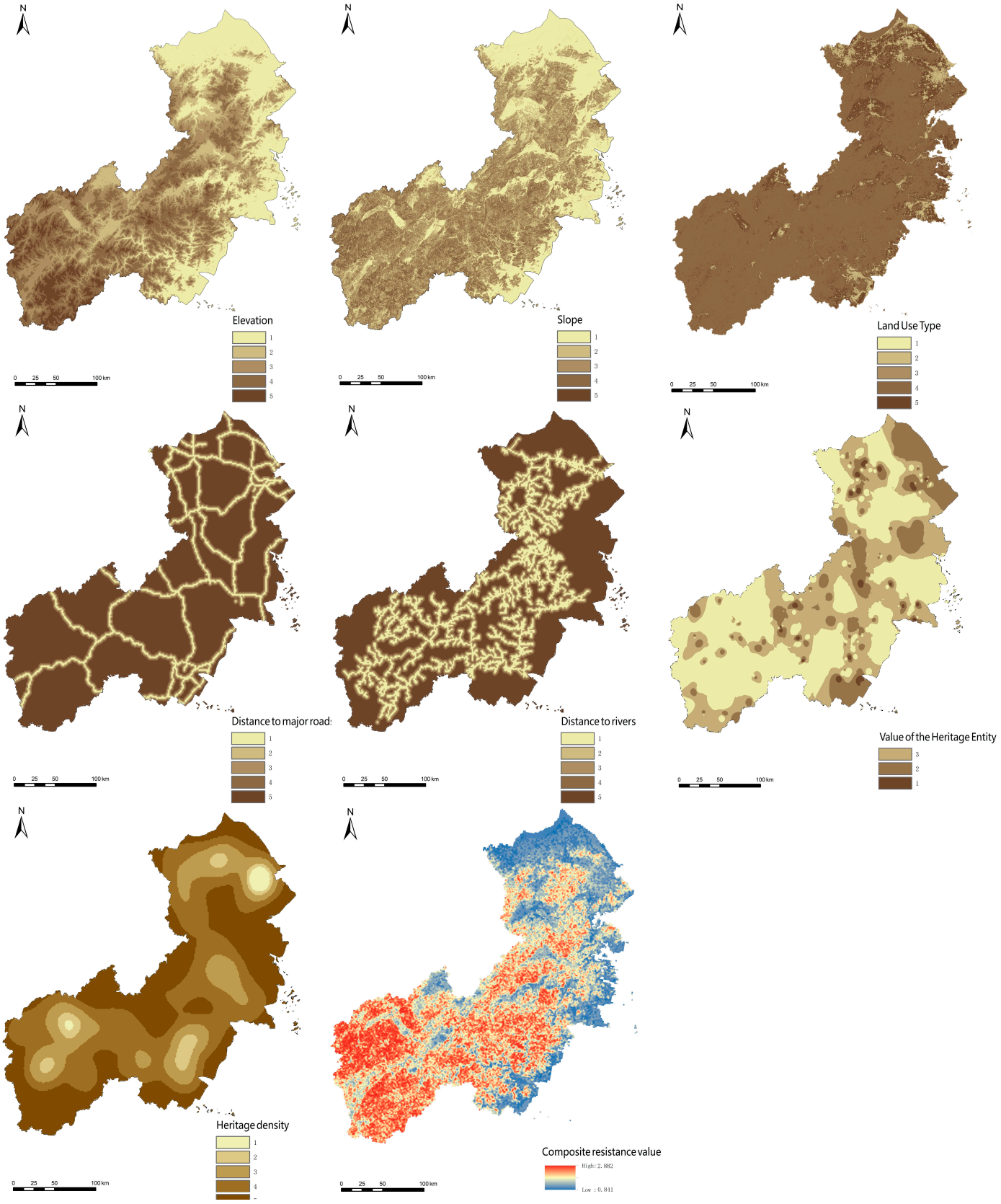


Figure 8. Raster-based integrated resistance surface.

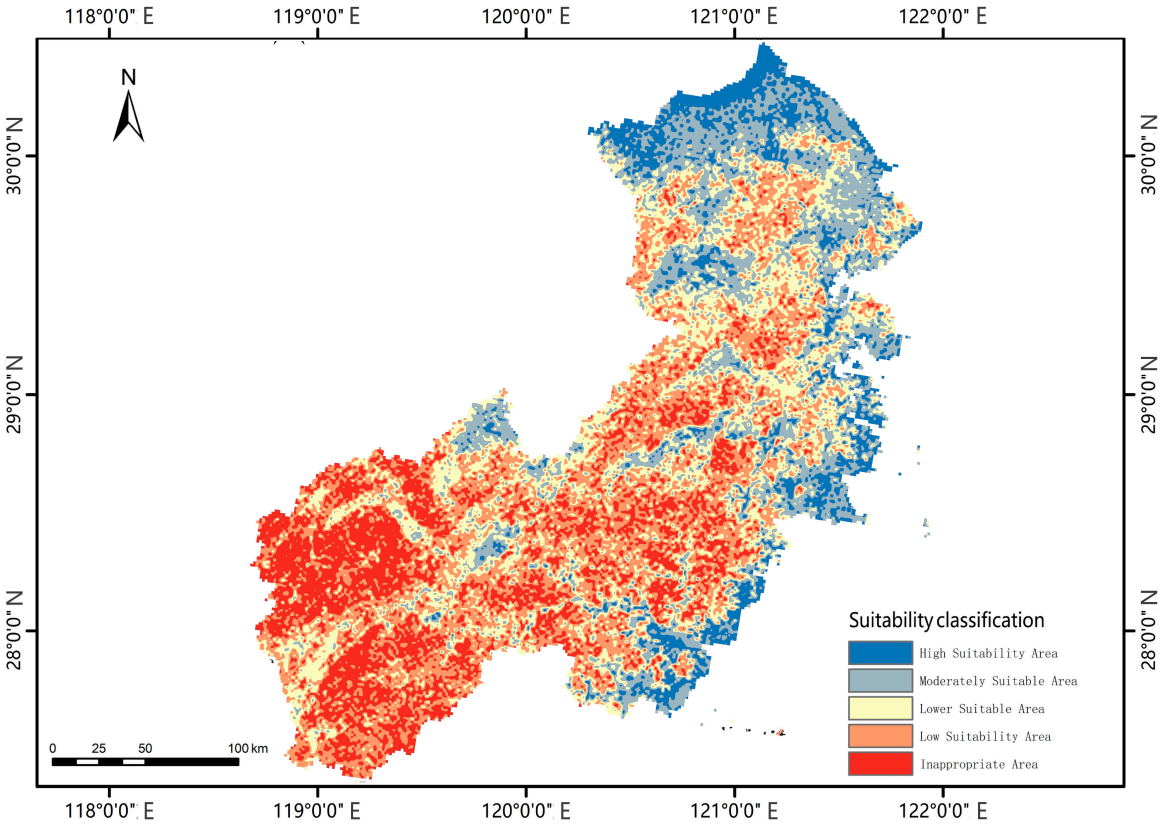


Figure 9. Heritage corridor suitability zoning.

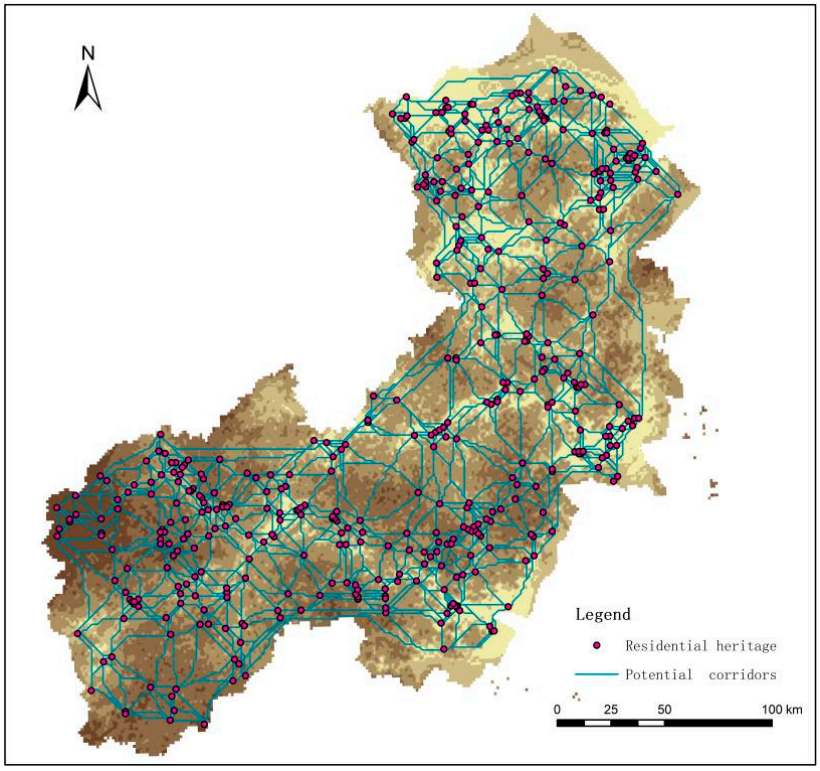


Figure 10. Potential heritage corridors in the Cao'e–Jiaojiang–Oujiang River Basin.

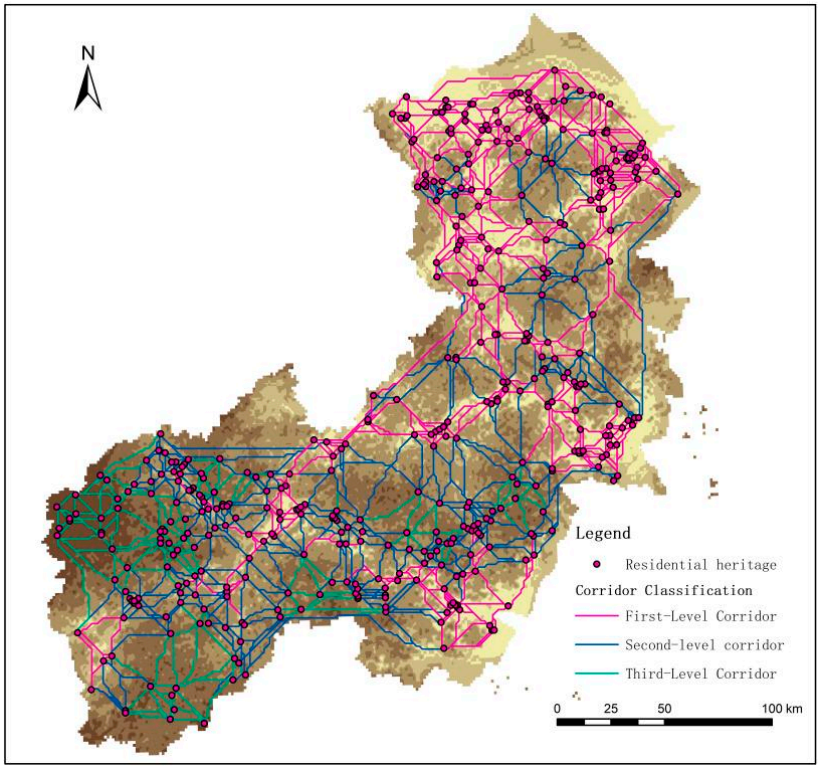


Figure 11. Hierarchical classification of heritage corridors in the Cao'e–Jiaojiang–Oujiang River Basin.

The graded corridor system reveals three distinct tiers: ① Primary Corridors strategically connect regional central cities including Shaoxing, Ningbo, Wenzhou, and Lishui, integrating 73% of high-value heritage nodes (particularly national and provincial-level protected sites). These primary corridors strategically align with key regional expressways, notably the Hangzhou–Shaoxing–Ningbo Expressway (G92N) traversing the Northern Segment and the Yongtaiwen Expressway (G15) serving the Southern Segment. These corridors function as principal arteries for cross-regional cultural dissemination and heritage tourism, warranting prioritization in provincial-level cultural route planning. ② Secondary Corridors radiate through secondary nodes (e.g., Songyang and Jingning in Lishui, Yongjia in Wenzhou), linking distinctive heritage typologies such as She ethnic villages and Ming-Qing salt merchant mansions. These enhance regional network connectivity while facilitating localized cultural experiences aligned with municipal tourism development. ③ Tertiary Corridors concentrate in remote mountainous zones (e.g., Suichang and Qingyuan), integrating scattered traditional dwellings (e.g., Qingyuan's covered bridge villages) with an emphasis on cultural continuity and ecological conservation through community-participatory models. The primary corridors bifurcate into two core segments: Northern Segment (Shaoxing–Ningbo–Shengzhou–Taizhou) linearly integrates the basin's two major water systems, anchoring water-town vernacular clusters (e.g., Shaoxing's Anchang, Ningbo's Cicheng); while the Southern Segment (Wenzhou-Lishui) traverses the Oujiang River mainstream, linking mountainous valley heritage (e.g., Yongjia's Nanxijiang villages). Collectively, these segments form dual "Cultural Polar Nuclei": a Northern Nucleus radiating from Shaoxing through water networks to Ningbo-Taizhou ("Yue Vernacular Cultural Sphere"), and a Southern Nucleus anchored in Wenzhou ("Mountain Settlement Cultural Sphere")-with spatial linkage enhanced through the Jinyun–Xianju transitional zone (Figure 12).

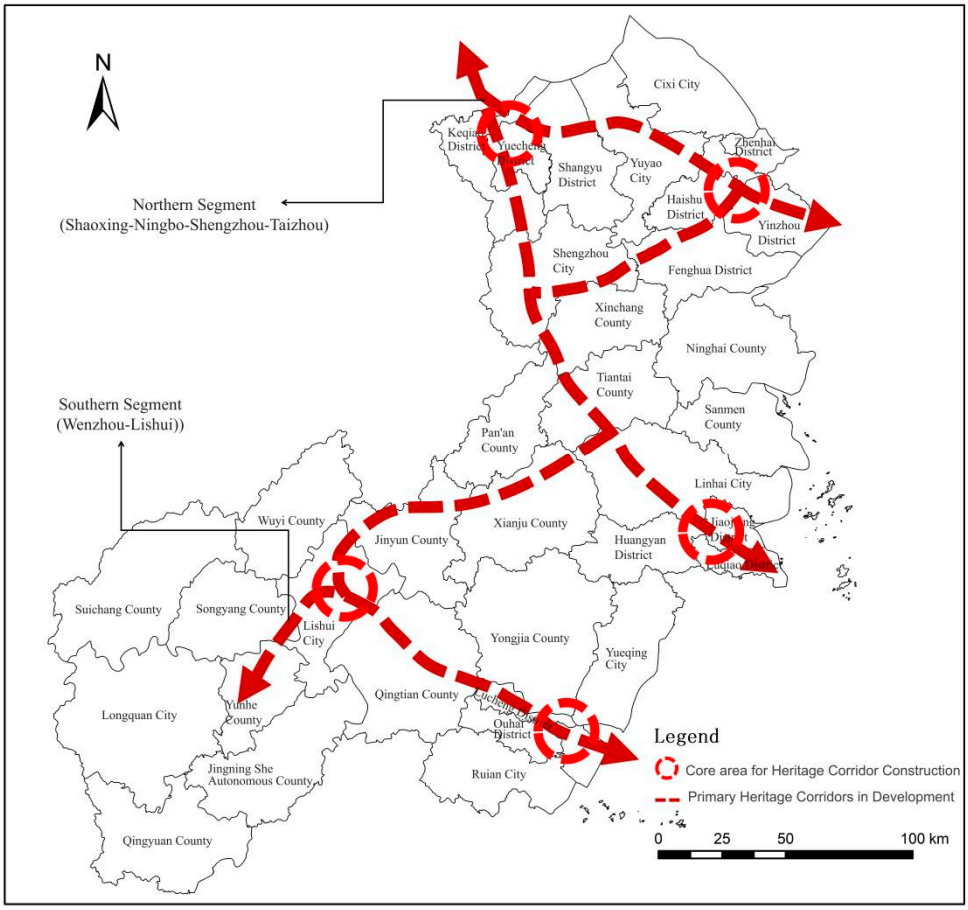


Figure 12. Conservation and development pattern of heritage corridors: northern segment (Shaoxing–Ningbo–Shengzhou–Taizhou) and southern segment (Wenzhou–Lishui).

7. Conclusions and Outlook

7.1. Conclusions

Traditional vernacular architectural heritage continuously adapts to changes in the natural environment and socio-cultural transformations throughout history, embodying the harmony between humanistic landscapes and natural landscapes in traditional Chinese society. This study integrates the dual theoretical frameworks of Cultural Landscape Morphology and the New Heritage Approach, making innovative knowledge contributions in the following three aspects:

(1) Theoretical dimension: For the first time, this paper proposes the "four cores and three belts" spatial differentiation pattern of vernacular heritage in river basins, revealing the symbiotic mechanism between the scale effects of cultural diffusion and geographical constraints, thereby deepening the understanding of heritage spatial evolution in the Jiangnan water network region.

(2) Methodological dimension: This paper constructs a "dual-model evaluation system" (MCR resistance model + Gravity Model classification), achieving multi-factor quantitative assessment and spatial grading of heritage corridor suitability, and providing a reusable technical pathway for linear cultural heritage conservation.

(3) Practical dimension: This paper proposes a dual-segment corridor structure (Shaoxing–Taizhou/Wenzhou–Lishui), transforming dispersed vernacular heritage into interconnected "memory carriers" of linear cultural landscapes. This strategy directly supports Zhejiang Province's "Eastern Zhejiang Tang Poetry Route" and "Oujiang

River Landscape Poetry Route" initiatives, providing a scientific basis for integrating cultural heritage conservation into territorial spatial planning.

7.2. Outlook

Zhejiang Province ranks first nationally in total historical buildings, with vernacular heritage constituting a significant proportion. During field investigations of traditional vernacular dwellings in the basin, the author observed that heritage conservation faces multiple challenges: property rights coordination dilemmas, funding gaps, and imbalances between revitalization and protection. Thus, based on this study, the following outlooks are proposed:

(1) Current conservation efforts urgently need to transcend individual restoration and elevate to regional cultural heritage network construction. It is recommended to integrate vernacular heritage protection into Zhejiang's territorial spatial planning framework, prioritizing alignment with two provincial cultural routes—"Zhedong Tang Poetry Route" and "Oujiang River Landscape Poetry Route". Using heritage corridor theory, establish a multi-level protection system of "Cultural Route → Heritage Node → Traditional Vernacular Cluster" to provide spatial scientific basis for policymaking.

(2) The formation of vernacular heritage in the basin results from interactions between geographical constraints and human factors. Interdisciplinary integration of historical geography, architectural archaeology, and environmental science is needed to achieve fine-grained understanding of these factors, thereby refining regional genes to support corridor construction logic centered on intrinsic heritage value.

(3) Large-scale linear heritage corridor development in China currently lacks mature paradigms, yet its strategic value and potential are significant. Future work should expand theoretical and practical research to establish cultural corridor theoretical models adapted to China's urban–rural development context.

Additionally, this study has certain limitations: (1) data sources rely on official heritage lists and supplementary literature, resulting in a sample dominated by Ming-Qing period heritage (465 out of 570 cases). This temporal imbalance may affect the representativeness of spatial pattern analysis, particularly for earlier dynasties. Additionally, unregistered vernacular architectural remains were potentially omitted; future work should refine the sample database through field surveys. (2) Corridor resistance factor weights were determined via AHP; although consistency was validated (CR < 0.1), subjectivity remains. Subsequent studies could optimize weight allocation using the entropy method. (3) Climate change impacts (e.g., flood risks) on the long-term resilience of heritage corridors were not quantitatively assessed; future research should integrate scenario simulation analysis. We encourage future research addressing these gaps to advance heritage urbanism and resilience within Zhejiang's linear cultural landscapes.

Author Contributions: L.J. is responsible for organizing data, writing articles, and other related tasks. J.C. is responsible for the supervision and quality control of the research progress. Y.F. is responsible for assisting with the collection of reference literature materials. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the Major Project of the Later Stage Funding for Philosophy and Social Science Research of the Ministry of Education, China: "Research on the Origins and Evolution of Traditional Chinese Wooden Construction Techniques Based on Historical Records of Classical Chinese Architecture" (No. 22JHQ024); and the National Natural Science Foundation of China: "Regional Partitioning and Genealogy of Timber Structural Design Systems in Jiangnan Area Under Multi-Craftsmanship Contexts" (No. 51978394).

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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

References

1. Lu, Y. Research on Chinese Vernacular Dwellings over Fifty Years. *J. Archit.* **2007**, *11*, 66–69.
2. Lanier, G.M. Vernacular Architecture in the Twenty-First Century: Theory, Education and Practice. *J. Archit. Educ.* **2009**, *63*, 160–161. [CrossRef]
3. Jiang, L.; Cai, J. Research on the Spatial and Temporal Distribution and Evolution Characteristics of Ancient Architectural Heritage in Southeastern Zhejiang. *Sustainability* **2023**, *15*, 16618. [CrossRef]
4. Setijanti, P.; Defiana, I.; Setyawan, W.; Silas, J.; Firmaningtyas, S.; Ernawati, R. Traditional Settlement Livability in Creating Sustainable Living. *Procedia-Soc. Behav. Sci.* **2015**, *179*, 204–211. [CrossRef]
5. Taylor, K. The Historic Urban Landscape. Managing Heritage in an Urban Century. *Landsc. Res.* **2014**, *39*, 326–329.
6. Palang, H.; Helmfrid, S.; Antrop, M.; Alumäe, H. Rural Landscapes: Past processes and future strategies. *Landsc. Urban Plan.* **2005**, *70*, 3–8. [CrossRef]
7. Zhu, G. On the Architectural Culture of the Yue Region. *Built Herit.* **2021**, *2*, 70–80.
8. Anderson, B. Cultural geography III: The concept of 'culture'. *Prog. Hum. Geogr.* **2020**, *44*, 608–617. [CrossRef]
9. Zhejiang Provincial People's Government. *Zhejiang Provincial Poetry Road Cultural Belt Development Plan*; Zhejiang Provincial People's Government: Hangzhou, China, 2020.
10. Conzen, M.R.G. *Alnwick, Northumberland: A Study in Town-Plan Analysis*; Institute of British Geographers: London, UK, 1960; pp. 6–12.
11. Schulp, C.J.E.; Levers, C.; Kuemmerle, T.; Tieskens, K.F.; Verburg, P.H. Mapping and modelling past and future land use change in Europe's cultural landscapes. *Land Use Policy* **2019**, *80*, 332–344. [CrossRef]
12. Hoppert, M.; Bahn, B.; Bergmeier, E.; Deutsch, M.; Epperlein, K.; Hallmann, C.; Müller, A.; Platz, T.V.; Reeh, T.; Stück, H.; et al. The Saale-Unstrut cultural landscape corridor. *Environ. Earth Sci.* **2018**, *77*, 58. [CrossRef]
13. Jin, A.; Zhang, S.; Wang, X. Spatio-temporal pattern of cultural heritage in Zhejiang Province and its association with natural environment: A case study of cultural relics protection units. *Chin. Landsc. Archit.* **2022**, *38*, 22–28.
14. Sun, Y.; Chen, T.; Zhang, M. Research on the development mode of protective tourism in rural landscape heritage sites: A case study of Longmen Ancient Town in Zhejiang. *Chin. J. Geogr.* **2009**, *29*, 840–845.
15. Wu, X. Strategies for Strengthening the Protection of Natural and Cultural Heritage in Zhejiang. *Zhejiang Econ.* **2003**, *24*, 44–45.
16. Zhang, S.; Zou, Y.; Yao, S.; Cao, X. Evaluation and optimization of ecosystem cultural services in rural areas from the perspective of residents: A case study of the Shishili River valley in Zhejiang. *Acta Ecol. Sin.* **2024**, *44*, 9458–9469.
17. Li, M. Disaster risk management of cultural heritage: A global scale analysis of characteristics, multiple hazards, lessons learned from historical disasters, and issues in current DRR measures in world heritage sites. *Int. J. Disaster Risk Reduct.* **2024**, *110*, 104633. [CrossRef]
18. Perez-Alvaro, E. Climate change and underwater cultural heritage: Impacts and challenges. *J. Cult. Herit.* **2016**, *21*, 842–848. [CrossRef]
19. UNESCO. *Convention for the Safeguarding of the Intangible Cultural Heritage*; UNESCO: Paris, France, 2003.
20. Loren-méndez, M.; Mata-olmo, R.; Ruiz, R.; Pinzón-ayala, D. An Interdisciplinary Methodology for the Characterization and Visualization of the Heritage of Roadway Corridors. *Geogr. Rev.* **2016**, *106*, 489–515. [CrossRef]
21. Yu, K.; Xi, X.; Li, D.; Li, H.-L.; Liu, K. Construction of the National Linear Cultural Heritage Network of China. *Hum. Geogr.* **2009**, *24*, 11–16.
22. Ahern, J. Greenways as a planning strategy. *Landsc. Urban Plan.* **1995**, *33*, 131–155. [CrossRef]
23. Laven, D.; Ventriss, C.; Manning, R.; Mitchell, N. Evaluating U.S. National Heritage Areas: Theory, Methods, and Application. *Environ. Manag.* **2010**, *46*, 195–212. [CrossRef] [PubMed]
24. Oikonomopoulou, E.; Delegou, E.T.; Sayas, J.; Moropoulou, A. An innovative approach to the protection of cultural heritage: The case of cultural routes in Chios Island, Greece. *J. Archaeol. Sci. Rep.* **2017**, *14*, 742–757. [CrossRef]
25. Wang, Z.; Sun, P. Heritage Corridors—A Relatively New Approach to Heritage Conservation. *Chin. Landsc. Archit.* **2001**, *5*, 86–89.
26. Chen, L.; Hu, X.; Wei, B.; Long, J.; Luo, Z. Spatial distribution of traditional settlements and suitability analysis of heritage corridors in the Yuan River Basin, Hunan. *Mod. Urban Res.* **2022**, *7*, 112–119.
27. Zhang, J.; Jiang, L.; Wang, X.; Chen, Z.; Xu, S. A Study on the Spatiotemporal Aggregation and Corridor Distribution Characteristics of Cultural Heritage: The Case of Fuzhou, China. *Buildings* **2024**, *14*, 121. [CrossRef]
28. Li, J.; Shan, M.; Qi, J. Coupling coordination development of culture-ecology-tourism in cities along the grand canal cultural belt. *Econ. Geogr.* **2022**, *42*, 201–207.

29. Shao, Y.; Huang, Y. Planning and governance of regional historical and cultural space conservation and development: A case study of the Loire Valley in France. *Urban Plan. Inter.* **2022**, *37*, 111–121.
30. Du, Y.; Shi, C.; Tang, Y.; Chen, C. Research on the spatial construction of heritage corridors in the Yellow River Basin from a watershed perspective. *Wenbo* **2024**, *4*, 103–112.
31. Zhu, Y.J.; Li, Y.H.; Liu, M.N.; Liu, Y.C. Analysis of Major Protection Approaches for Canal World Heritage Sites at Home and Abroad—With Discussion on Protection Strategies for the Grand Canal Cultural Belt in China. *Urban Dev. Stud.* **2024**, *31*, 23–27.
32. Yue, N.; Li, J. Protection Pathways of Cultural Heritage Along the Yellow River Ferry Crossings in Shanxi from the Perspective of Cultural Routes—An Exploratory Study Based on Grounded Theory. *J. Arid. Land Resour. Environ.* **2023**, *37*, 102–110.
33. Zhang, D.; Feng, T.; Zhang, J. Construction of the Wei River Water System Heritage Corridor System in Greater Xi'an. *Chin. Landsc. Archit.* **2016**, *32*, 52–56.
34. Li, W.; Yu, K.; Li, D. Theoretical Framework for Heritage Corridors and the Holistic Protection of the Grand Canal. *Urban Probl.* **2004**, *1*, 28–31+54.
35. Wang, X.; Bi, J. A Preliminary Study on the Construction of the "Eight Rivers" Heritage Corridor in Greater Xi'an. *J. Northwest Univ.* **2015**, *45*, 837–841.
36. Li, X.; Zhu, R.; Shi, C.; Yang, X.; Chen, J.; Wei, K. Research on the construction of intangible cultural heritage corridors in the Yellow River Basin based on geographic information system (GIS) technology and the minimum cumulative resistance (MCR) model. *Herit. Sci.* **2024**, *12*, 271. [CrossRef]
37. Jiang, A.; Sun, F.; Zhang, B.; Wu, Q.; Cai, S.; Yang, Z.; Chang, Y.; Han, R.; Yu, S. Spatiotemporal dynamics and driving factors of vegetation coverage around linear cultural heritage: A case study of the Beijing-Hangzhou Grand Canal. *J. Environ. Manag.* **2024**, *349*, 119431. [CrossRef] [PubMed]
38. Severo, M. *Heritage Networks. Managing Network Cultural Heritage with the Web*; VDM Verlag Dr. Müller: Saarbrücken, Germany, 2012.
39. Zhang, S.; Yu, W. Canal Heritage Tourism Utilization Models: Experience and Inspirations from the Grand Canal (Beijing Section). *Land* **2024**, *13*, 860. [CrossRef]
40. Zhang, S.; Liu, J.; Pei, T.; Chan, C.S.; Wang, M.; Meng, B. Tourism value assessment of linear cultural heritage: The case of the Beijing–Hangzhou Grand Canal in China. *Curr. Issues Tour.* **2021**, *26*, 47–69. [CrossRef]
41. Yang, P.; Lu, Y.; Yang, D.; Zhang, Q.Y. Protection and revitalization of cultural heritage from the perspective of heritage corridors—A case study of the Dazhangxi River corridor (Fuzhou section). *Planners* **2024**, *40*, 123–130.
42. Conzen, M.P.; Wulfestieg, B.M. Metropolitan Chicago's Regional Cultural Park: Assessing the Development of the Illinois & Michigan Canal National Heritage Corridor. *J. Geogr.* **2001**, *100*, 111–117.
43. UNESCO. *Convention Concerning the Protection of the World Cultural and Natural Heritage*; UNESCO: Paris, France, 1972.
44. Taylor, K. Cultural landscapes and Asia: Reconciling international and Southeast Asian regional values. *Landsc. Res.* **2009**, *34*, 7–31. [CrossRef]
45. Orbali, D.A.; Woodward, S. A Railway 'Route' as a Linear Heritage Attraction: The Hijaz Railway in the Kingdom of Saudi Arabia. *J. Herit. Tour.* **2008**, *3*, 159–175. [CrossRef]
46. Zhejiang Provincial Water Resources Department. *Zhejiang River Handbook*; Water & Power Press: Beijing, China, 2006.
47. State Administration of Cultural Heritage. *Measures for the Accreditation of National Key Cultural Relics Protection Units*; China State Administration of Cultural Heritage: Beijing, China, 2006.
48. Yang, X. *Ancient Architecture of Zhejiang*; China Architecture & Building Press: Beijing, China, 2015.
49. China Academy of Building Research, Architectural History Institute. *Zhejiang Traditional Dwellings*; Architecture & Building Press: Beijing, China, 2018.
50. Ding, J.; Yang, X. *Zhejiang Traditional Dwellings*; Architecture & Building Press: Beijing, China, 2009.
51. Lu, Y.D. Exploring Research Methodology for Vernacular Dwellings through the Formation Principles of Traditional Residential Architecture. *Architect* **2005**, *3*, 5–7.
52. Wang, X.G.; Jia, B.Q. Overseas Historical and Cultural Heritage Protection Mechanisms and Their Enlightenment for China. *Guangxi Ethn. Stud.* **2008**, *1*, 178–185.
53. Fang, W.; Zhuoqi, L.; Ying, D.; Leye, W. Cultural Heritage Conservation from the Perspective of River Basin. *Herit. Archit.* **2024**, *12*, 44.
54. Xiaoya, Y.; Yi, H.; Wei, D. The Historical and Cultural Spatial Characteristics and Protection Insights of the 'City-Transportation' Pattern of the Zhejiang East Canal. *Urban Dev. Res.* **2024**, *31*, 30–37.
55. Liang, F. A Study on the Topography of Taizhou's Mountains and Rivers. *J. Taizhou Teach. Coll.* **1995**, *1*, 64–66.
56. Zhou, X. The Civilization of Ouhai River in Chuzhou and the 'Maritime Silk Road'. *East. Collect.* **2018**, *18*, 19–29.
57. Wang, J. Exploring the Methodological System for Recognizing the Historical and Cultural Values of Cities: A Case Study of the Historic City of Traditional Handicrafts, Longquan, Zhejiang. *Urban Dev. Res.* **2016**, *23*, 30–38.

58. Li, Y. Practice and thinking on the living protection of mountainous villages in southern Zhejiang: A case study of Songyang County, Zhejiang Province. *Zhejiang Soc. Sci.* **2016**, *161*, 143–150.
59. Li, J.; Wang, X.; Li, X. Spatial distribution characteristics and influencing fac tors of Chinese traditional villages. *Econ Geogr.* **2020**, *40*, 143–153.
60. Xiang, Y. Regional Water Environment and the Evolution of Prehistoric Culture in Zhejiang. *Zhejiang Acad. J.* **2015**, *4*, 44–52.
61. Lin, F.; Zhang, X.; Ma, Z.; Zhang, Y. Spatial Structure and Corridor Construction of Intangible Cultural Heritage: A Case Study of the Ming Great Wall. *Land* **2022**, *11*, 1478. [CrossRef]
62. Ye, H.; Yang, Z.; Xu, X. Ecological Corridors Analysis Based on MSPA and MCR Model—A Case Study of the Tomur World Natural Heritage Region. *Sustainability* **2020**, *12*, 959. [CrossRef]
63. Sun, Y.; Wang, Y.; Liu, L.; Wei, Z.; Li, J.; Cheng, X. Large-scale cultural heritage conservation and utilization based on cultural ecology corridors: A case study of the Dongjiang-Hanjiang River Basin in Guangdong, China. *Herit. Sci.* **2024**, *12*, 44. [CrossRef]
64. Yue, F.; Li, X.; Huang, Q.; Li, D. A Framework for the Construction of a Heritage Corridor System: A Case Study of the Shu Road in China. *Remote Sens.* **2023**, *15*, 4650. [CrossRef]
65. Wang, J.C.; Zhang, H.Y.; Xie, C.Y.; Chen, M. GIS-Based Suitability Evaluation for Constructing the Intangible Cultural Heritage Corridor of the Grand Canal Cultural Belt. *Acta Ecol. Sin.* **2025**, *45*, 5322–5339.
66. Zhang, Q.; Ge, J. Research on the Construction of Huizhou Heritage Corridor Network from the Perspective of Cultural Ecology. *Ind. Constr.* **2025**, *54*, 20–29. [CrossRef]
67. Zhao, X.; Tang, C.; Dong, P. Research on the Construction of Linear Heritage Composite Tourism Corridors. *J. Arid Land Resour. Environ.* **2023**, *37*, 190–199.
68. He, D.; Wang, Z.; Wu, H. Research on the Construction of Jingdezhen Porcelain Industry Heritage Corridor System Based on MCR and MCA Models. *Geogr. Geo-Inf. Sci.* **2022**, *38*, 74–82.
69. Zhang, Z.; Cao, R.; Kang, F. Spatiotemporal Distribution Characteristics and Heritage Corridor Suitability Construction of Industrial Heritage Along the Taibai Railway. *J. Arid Land Resour. Environ.* **2024**, *38*, 40–51.
70. Zhan, Q.; Guo, H. Suitability Analysis Method for Heritage Corridors Based on GIS and RS. *Planners* **2015**, *31* (Suppl. 1), 318–322.

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