

2022 年度高地・流域研究

中国山地高粱川・日野川流域調査報告書

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中谷礼仁建築史研究室編集
高地ゼミ・千年村ゼミ合同報告書

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二〇二二年度 高地・流域研究

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本報告書は日本学術振興会科学研究費助成事業・基盤研究（B）ネパール高地トクチェ村周辺の定住／非定住の研究 高地アジア交易路沿の生存様式（2020-23）（課題番号20H02341）の関連研究として実施し、同研究助成にて出版した。

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第 1 章 調査概要

1-1. はじめに

本研究の申請をおこなってから、その数ヶ月後に COVID-19 が全世界に波及することになった。これによって本研究はその目的としたネパール現地への訪問が不可能になってしまった。状態が幾分改善した 2022 年においても、受け入れ体制が整っておらず、不本意ながら 2021 年から 22 年にかけて、現地調査という最終目標を掲げつつ、その比較研究のために日本国内の高地集落を訪問、その生業や生活に関わる生存様式を研究することとした。また国内での同研究が、ネパールをはじめとする世界各地の高地集落との比較のために有意になるには、それらを比較しうる方法論を試論的にでも構築することが必須と考えられた。そのためには高地集落の定義のためにも、その普遍的な特徴を検討する必要がある。例えばそれはその周囲の山の標高そのままの位置にあるのではなく、その麓、山をえぐる水系付近に位置し、生活と交易経済を成立させてきた（図 1 中華人民共和国の横断山脈の高山と溪谷。 出典：『中国自然地理概要（修正版）』商務院書館 1982）。つまり世界の多くの高地集落には、水系や流通経済活動を可能とする地形等が共通して成立しているのではないか。高地集落を世界的に比較しうる視点とは何か。

ジェームズ・C. スコットの定義では、高地に存する集落の表現であるぞミアは辺境の集落であるが、同時に村人たちは外界から遮断されることのない生活様式を持っている。彼らは低地の支配から逃れながらも、知的努力によって低地とのルートやつながりを作り出している。高地集落は、隠れやすい独自の集落構造を持ちながら、同時に経済中心地との物質交換・交流の様式を持つ。つまり高地集落について検討する場合、その定義は単に標高の高さのみならず、高地での生活を成立させる狭義の共同体様式やより広い社会様式からの裏打ちを必要とする。具体的には、村の位置と地理のみならず、生活様式と生産、村と他の地域との交通のあり方が含まれる。また、文明の発祥地である河川は、高地と低地を結ぶ物質的なリンクとしても機能している。中国の主要河川の分布からわかるように、集落は基本的に河川に沿って分布している。また、耕作限界などの自然的制約から、高地世界の集落は主に標高 1500~2000m の間に分布していた。このことは、本研究における流域を媒介して、低地から河川源流に至るまで、高地と低地のコミュニケーションの隠れたパターンを見出すという新しい視点を既に私たちに提供している。

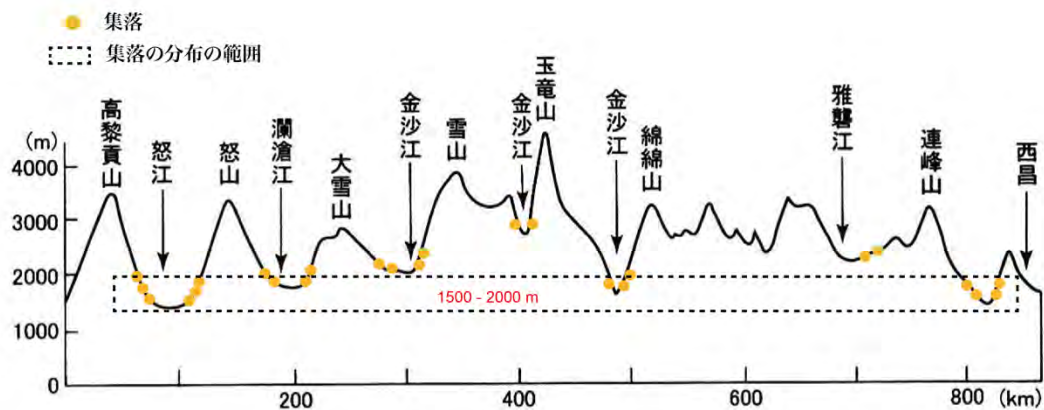


図 1-1 中国雲南省における山、水系、集落立地の高さの関係

そのため 2021 年から、科研費申請時の協力者であった、菊地暁、酒井哲弥、横山智に加え、木下剛、恵谷浩子、前川歩、松田法子、福嶋啓人各氏を加え、オンラインにて、同方法論の構築に向けた検討を行った。

本報告書は、その方法論を用いた初めての現地調査となった。参加者、日程、訪問地は以下の通りである。

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■ 日程と訪問地

9月23日	JR 岡山駅から出発、高梁川に沿って新見市井倉野・新見市足見・新見市中心部・千屋実四つの集落を訪問して日南町に宿泊した。
9月24日	高梁川の上流千屋井原・千屋花見と日野川の上流新屋（多里・新山・野組・湯河）・神戸を調査した。
9月25日	日野川中流根雨・江尾・貝田・溝口と下流の富吉を訪問した。

具体的なスケジュールは、I-6 調査日程に記した。

本報告書の構成について述べる。

第一章で本研究の根幹に関わる方法論を検討、提示した。現地調査を行えるまでの作業仮説とするために、事前に上記関係者からの有効なサジェスションを得た。

第二章においては訪問地域の概要を紹介した。文献による事前のデータを収集し、さらに現地調査による集落の報告を行なっている。

第三章においては、同行いただいた関係者からの考察をいただいた。

第四章結論では、それらをもとに第一章をさらにバージョンアップする目的も含めて今回の調査で得られた知見をまとめた。次に本報告書作成のための方法論を述べる（英文）。ドルマが共同研究者の示唆をもとにまとめ、中谷がその内容を精査した。（中谷礼仁）

1-2. 研究背景 Background

When referred highland/upland, it's a natural thinking to connect plateaus like Tibet, Swiss, or Iran which are all famous for their higher elevations and vertical natural landscapes around the world. From Wikipedia, "highland" has been illustrated as follows:

Highlands or uplands are areas of high elevation such as a mountainous region, elevated mountainous plateau, or high hills. Generally speaking, upland (or uplands) refers to ranges of hills, typically from 300 m (980 ft) up to 500–600 m (1,600–2,000 ft) while highland (or highlands) is usually reserved for ranges of low mountains. However, the two terms are sometimes interchangeable.¹

In Japanese, "Highland/Upland" are called "高地", which has been Its patency is interpreted as mountainous areas with less undulation, well-developed valleys, and generally flat surfaces, shown as follows:

- ・高い土地。海拔が高い土地。また、周囲にくらべ小高く丘になった土地。『五国対照兵語字書 (1881)』
- ・起伏がそれほど大きくなく、谷がよく発達した、全体として表面の平坦な山地をいう。『新版日本国勢地図 (1990)』

No matter in English or Japanese, we can confirm that there is no proper easier way to find the academic definition of highland/upland. In addition, we identified that highland is a non-absolute concept compared to the lowland. Especially different countries created various definitions according to local cognitive, regardless of geography or landscape concepts. For example, England views the highland area as above 500 meters from sea level, while the Swiss define upland as 1,000 meters above sea level. The section maps of China from east to west can be divided into three stages and the upland area always refers to the Tibet plateau of 3,000 meters. When it comes to Japan where the highest mountain Mount Fuji reaches only 3,700 meters, academics have basically concluded that there are no highland areas in Japan. During the past whole year of research trips spent in Japan, this research group found some mountainous villages (ex. Kito village of Shikoku or Matagi village of Akita) owning similar structures, cultures and living styles to highland villages, and the villagers also viewed their land as "Tibet in Japan". The incomplete definition of highland and the findings of the rural practice surveys afford a new research perspective that we can create a new research method to search and redefine highland settlements in Japan. Before building the hypothesis, we are going to figure out the reason for Japanese inconspicuous features of highland villages precisely on the strength of the subtle elevation differences that cannot directly show a clear image. To extract the characteristics of Japanese upland areas that require us to base our research framework on the comparison with the lowlands. Ultimately, we aspire to find an intermediate material that connects the highlands

¹ Cited from Wikipedia: <https://en.wikipedia.org/wiki/Highland>

to the lowlands. Accordingly, the following questions arise and need to be solved before the research start.

• Why research highland villages in Japan?

- 1) The inadequate research examples and definitions of highland settlements worldwide cannot afford a complete research system, so it needs to be expanded.

It is not perfect for defining high-altitude settlements purely in terms of absolute altitude because the above content has demonstrated the different definitions in different regional boundaries. Some are described as high ground at 500 meters, while others are defined as the high ground at 3,000 meters. In addition to the elevation difference, Zomia² and other highland research³ have been constantly carried out in the mountains of South Asia such as Vietnam⁴, Laos⁵, Malaysia⁶, etc. Africa⁷ has also become the research sites of highland settlements. But so far, there is still no integrated methodological system yet.

- 2) There are gaps in the research system of Japanese highland settlements.

Japan is a country with many mountains, which are as high as 80% or more of the national land area⁸. Japanese scholars have done a lot of research on mountain settlements⁹⁻¹⁰, but it's hard to tell the difference between mountains and highlands. Although scholars such as Tanaka Masataka¹¹ mentioned the highland settlement of Nagano Prefecture in their report, the highland settlement has become an uninhabited wasteland. It is affirmed that the research system regarding highlands has so far been a blank in Japan. It is challenging to study upland settlements in Japan without a change in perspective. Besides, as the aging problems of mountain villages are becoming increasingly significant, research from different perspectives is needed to provide more empirical references for the development of mountain villages in Japan.

- 3) Highland settlements exist not only in the Himalayan world but probably in Japan as well.

The upland settlements we are looking for and defining are not just about elevation. Instead, we focus on the highland villages themselves. That is the location and geography of the village, the way of life and production of the villagers, the way of communication between the village and other villages, etc. We try to explore and define the patterns of upland

² Scott J C. The art of not being governed: An anarchist history of upland Southeast Asia[M]. Nus Press, 2010.

³ Pain C F, Scott G A J. Highland-lowland interactive systems in Enga Province, Papua New Guinea[J]. Mountain Research and Development, 1981: 71-78.

⁴ Moving mountains: Ethnicity and livelihoods in highland China, Vietnam, and Laos[M]. UBC Press, 2011.

⁵ Petit P. History, memory, and territorial cults in the highlands of Laos: the past inside the present[M]. Routledge, 2019.

⁶ Gasim M B, Ismail Sahid E T, Pereira J J, et al. Integrated water resource management and pollution sources in Cameron Highlands, Pahang, Malaysia[J]. American-Eurasian J Agric Environ Sci, 2009, 5: 725-732.

⁷ Africa: Brooke C. The rural village in the Ethiopian highlands[J]. Geographical Review, 1959, 49(1): 58-75.

⁸ Okahashi H. Development of Mountain Village Studies in Postwar Japan Depopulation, Peripheralization and Village Renaissance[J]. Geographical review of Japan, Series B., 1996, 69(1): 60-69.

⁹ 矢嶋仁吉. 集落地理学[M]. 古今書院, 1956.

¹⁰ 木内 信蔵, 藤岡 謙二郎, 矢嶋 仁吉. 集落地理講座. 第 4 卷 / 木内信蔵, 藤岡謙二郎, 矢嶋仁吉 編集. 東京: 朝倉書店, 1959.

¹¹ 田中雅孝. 飯田市美術博物館・柳田国男記念伊那民俗学研究所編 『飯田市地域史研究事業民俗報告書 3 遠山谷南部の民俗』 [J]. 飯田市歴史研究所年報, 2009, 7: 210-211.

settlements in terms of exchanges and transitions between upland and lowland civilizations. This pattern of high-low communication exists all over the world, including in Japan. The river in this research as a medium takes us from the lowlands to the river source to find a hidden pattern of communication between high and low.

To sum up, studying highland settlements in Japan firstly provides a new perspective for the research system of highland villages in Japan and secondly expands the sample of highland settlements in the world.

- Why chooses watershed?

Rivers spreading worldwide have the same features as rising from mountains and flowing into the ocean. The Brahmaputra, which links Southeast Asia to the Himalayas. The Amazon, which connects the Andes etc. No matter size, rivers serve the same function for upland and lowland ecologically and geographically. Geographically, rivers connect mountains and plains; Culturally, it joints the upper, middle, and lower reaches of different civilized groups. The bridging role of the vertical culture and geography determines the best research medium for rivers from the perspective of the connection between upland and lowland. River/Watershed is the most satisfactory starting point to research highland and lowland. So, this is where we come in to study the highland villages in Japan. On this basis, highland and watershed studies are extended.

- Where to conduct the research in Japan and the reason why?

- 1) We are finding the possibility of comparative study between different highland areas in earth and linking the way to compare different areas

The ultimate goal is to study highland settlements in Japan, so the study area was automatically placed in the mountainous regions, including the Shikoku Mountains and the Chugoku Mountains. Second, the region closest to the Highland world is selected based on prior research. When checking the literature review that many comparative studies have provided the basis for us to discover proper study areas in Japan. In 1984, Qidong Deng and Yipeng Wang¹² studied the topography of both the Himalayan region and southwestern Japan. By drawing cross-sectional maps, they found the geographical shape of southwest Japan was precisely similar to that of the Himalayas. Among them, the Tibetan plateau matches the form of the Chugoku Mountain area. In addition, Nagatanigawa¹³ also found through geological research that the geological layers of the Tibet Plateau and the Chugoku Mountain area are Miocene granite¹⁴. Although Yoshikawa's paper¹⁵ demonstrated the geological and geomorphological similarities

¹² 鄧起東. 中国復活変動帯. アジアの変動帯-ヒマラヤと日本海溝の間[J]. 藤田和夫退官記念論文集, 1984: 29-65.

¹³ Ranjan Kumar Dahal, 長谷川修一. ネパール・ヒマラヤ、カリガンダキ川トレッキング・ルートの応用地質学.[J]. 第15回海外応用地質学調査団報告書, ネパール 第II回 IAEG アジア地域会議. 2018.

¹⁴ Miocene granite, 中新世 花崗岩

¹⁵ 吉川宏一, 大野博之, 稲垣秀輝, 等. オムニスケーブジオロジー—ネパールと四国の比較—[J]. 応用地質, 2003, 44(1): 14-24.

between Nepal and Shikoku, he also discusses that the origin of the uplift of the Chugoku mountains and the Tibetan Plateau is similar.

All the above studies focused on the mountainous region and proved the consistency between the mountainous Japanese world and the highland world from the morphology. By catching the keywords: uplands, lowlands, mountains, and rivers, we eventually placed our research area on the Chugoku mountains where connects the Seto Inland Sea in the south and the Nippon Sea in the north.

2) Transversely

Crossing the mountain from continental sea to broad ocean would be the best way to find upland villages hiding in the middle mountains. Meanwhile, it can highlight the connection between upland, river, and lowland. There are many rivers in Chugoku mountains which connected the inland and outland as well. We focused on transversely¹⁶ and locked five rivers down by checking the geographical altitude maps, including Takahashi River, Hino River, Hii River, Gono River, and Ashida River, shown as figure 1-2 (Drawn by the author based on Google Maps.) .



図 1-2 The geographic location of research area.

In June of the team's first survey, we conducted preliminary investigations of all five rivers. According to the survey responses, the eastern side rivers are higher than the western two. Besides, there are more geological and cultural changes in the vertical view. In addition, we visualized the elevation of all five rivers based on Dem elevation data. It turned out that the settlements upstream of the three eastern rivers (Hii River (斐伊川) , Takahashi River (高梁川) , Hino River (日野川)) had higher elevations.

¹⁶ Transversely, 日本語は“横断”である。

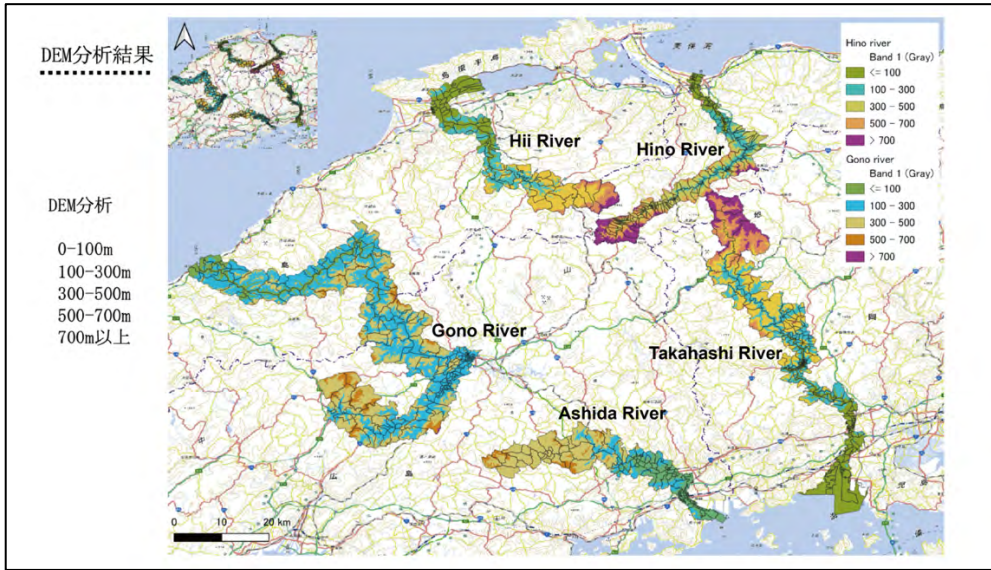


図 1- 3 The result of DEM data of five rivers

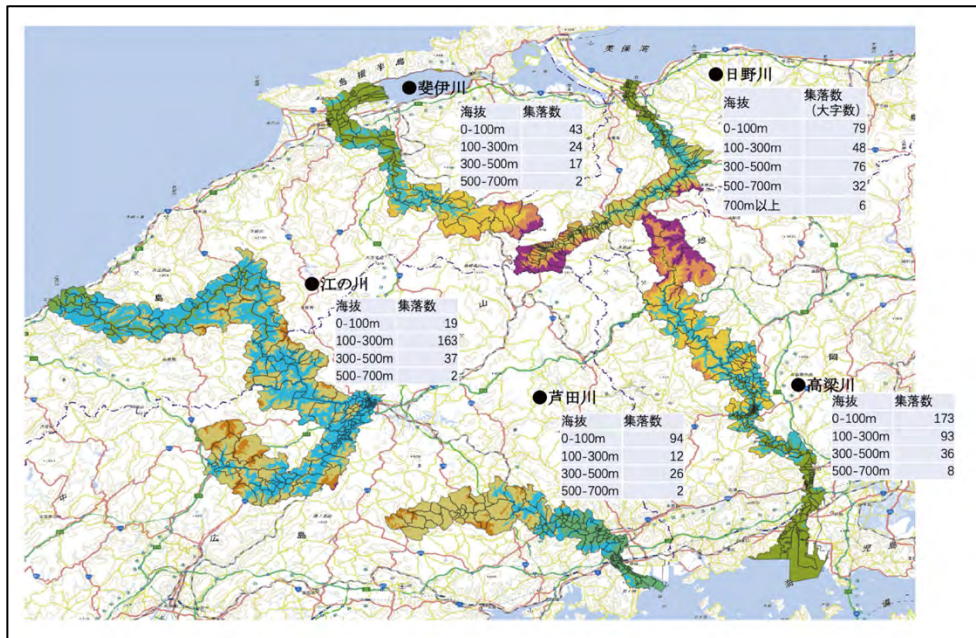


図 1- 4 The elevations of settlements in research area

Therefore, in the second survey in August, we placed the study area on the settlements of the three rivers with altitudes higher than 500 meters (shown as figure 1- 3 and 1-4, all drawn by author based on Arc Gis.). Since we are finding rivers that can eventually span the Chugoku Mountains and connect the Seto Inland Sea with the Nippon Sea as the altitude changes. While the lower reaches of the Hii River are not directly connected to the ocean. Hence, the final study area falls on the Hino River and Takahashi River in terms of river morphology^[14]. The concept of river morphology is used in geography mainly to represent river forms and geological structures^[15]. However, we try to expand the concept in this study, namely, it is not merely concerned about geography but closely connected to each settlement structure. We are aiming to show the common cross-section result of river form and settlement structure.

According to all the above contents, we finally selected the Takahashi River and Hino River as the practice objects, as shown in Figure 1-5 (drawn by author based on Geospatial Information Authority of Japan). And the “Transversely” has been presented in Figure 1-6 (cited from 『岡山県地学ガイド』, re-editing by author).

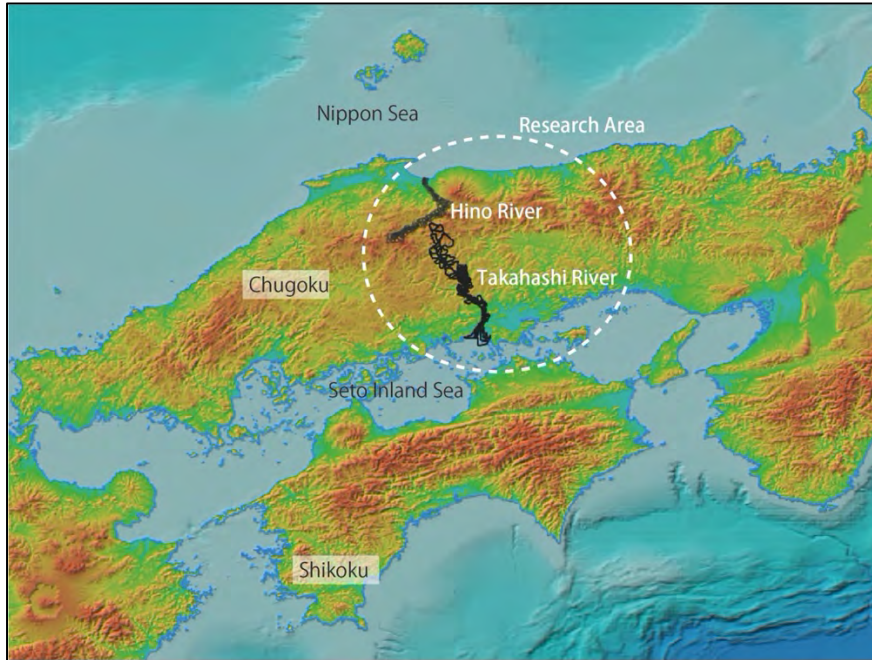


図 1-5 The location of Research Area: Takahashi River and Hino River of Chugoku Mountains.

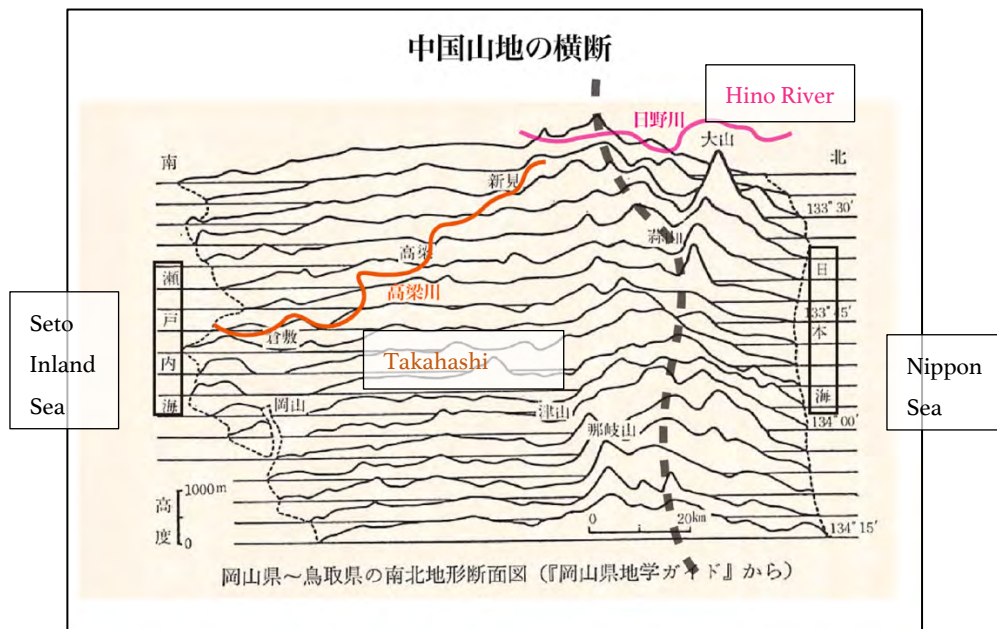


図 1-6 The Image of Transversely of the Takahashi River and Hino River

- How to conduct the research in the research areas?

After the study area is determined, the specific problem of how to execute the settlement research comes.

So far, the study of Japanese mountainous settlements has almost reached a state close to saturation, whether in the conceptual research of the representative figures Miyamoto Tsuneichi¹⁷ or Yanagita Kunio¹⁸, or the specific plane analysis¹⁹⁻²⁰ and spatial analysis²¹⁻²². However, most of the research types take the settlement monomer as the object, and the scale of the research is relatively small. Moreover, all the analysis stayed in 2D and did not enter the large-scale 3D analysis form. In order to accomplish highland research in Japan, the scale and scope of research claim to be expanded accordingly. Therefore, we try to conduct a holistic study in a large-scale and cross-sectional way, which is a fresh perspective in the research of villages. Therefore, based on the previous survey and related literature, we selected villages along the river basin. The selection reason is mainly based on the survival living continuous factors and characteristics of villages. Factors have been considered, such as transport (traffic fortress or street node), industry (formerly carried out distinctive production industry), altitude (settlement has a relatively high elevation), economic factors (once or now is one of the economic circles of the basin), special topography (located in the granite, limestone and other special geographic). Therefore, the final 13 settlement was chosen. The specific explanations are shown in the table 1 and the locations are shown in figure 1-15 next chapter.

Name of village	Established era	Features of areas
井倉 Ihara	近世	石灰岩帯、高梁川蛇形帯
足見 Tarumi	近世	石灰岩帯
新見市 Niimi	古代	経済中心部、昔の高梁川舟運出発場所
千屋実 Chiya Sane	近世	花崗岩帯、昔の鉄穴流し
千屋井原 Chiya Ihara	近世	花崗岩帯、昔の鉄穴流し
千屋花見 Chiya Hanami	近世	花崗岩帯、昔の鉄穴流し、今牧場がある
神戸上 Kadonokami	古代	日野川と高梁川交通の結ぶ場所、昔の鉄穴流し、千年村
新屋 Niiya: 多里 Tari、野組 Nogumi、湯河 Yukawa、新山 Shinyama	近世	日野川の上流、昔鉱山がある場所、多里に鉱山町がある
根雨 Neu	近世	経済中心部、昔の宿場、塩の道と日野街道の経済型集落
江尾 Ebi	中世	経済中心部、昔の宿場
貝田 Kaida	近世	大山下の集落
溝口 Mizoguchi	中世	経済中心部、昔の宿場、塩の道と日野街道の経済型集落
富吉 Tomiyoshi	中世	日野川下流の平野部集落、昔海岸かたちによる展開された農村

表 1. The features of the settlements

¹⁷ 宮本常一. 山に生きる人びと[M]. 河出書房新社, 2011.

¹⁸ 柳田国男. 日本の民俗学 / 柳田國男著. 東京: 中央公論新社, 2019.

¹⁹ 森朋子. 近代における集落形成プロセスから見た山村集落の空間構成原理 五箇山地域相倉集落における水利システムと集落社会の関係性に着目して[J]. 日本建築学会計画系論文集, 2014, 79(706): 2671-2678.

²⁰ 寺門征男. 空間言語 (地景名) からみた集落空間の組織化と構成原理について: 農村集落の空間的秩序性に関する研究・その1[J]. 日本建築学会計画系論文報告集, 1990, 416: 55-65.

²¹ 山崎寿一, 重村力. 生活地名からみた中久保集落の空間意識の構成: 共同性の空間構成[J]. 日本建築学会計画系論文報告集, 1993, 451: 167-176.

²² 貞方昇. 斐伊川流域における鉄穴流しによる地形改変[J]. 地理学評論, 1982, 55(10): 690-706.

1-3. 調査の目的 Purpose

This research aims to find the highland settlements in Japan via a river basin research view, and to express the structure of villages through a cross-section map.

We conducted three field studies in 2022. The first survey's scope is broad, concluding with the Takahashi River, Hino River, Hii River, Gono River, and Ashita River in Chugoku Sanchi. We aimed to understand the study area and grasp the basic knowledge of the villages and the culture along the river basin. The second survey was based on the elevation analysis results of DEM, mainly focusing on the settlements of relatively high-altitude mountain villages in the Takahashi River and Hino River and interviewing people familiar with the village's history. The third survey mainly investigated the villages along the Takahashi River and Hino River detailly, intending to find the characteristics of highland settlements from the perspective of the river basin.

Hinged on three field studies, we finally committed to researching from the Seto Inland Sea to the Sea of Japan, which represents studying from the lowlands across the highlands to the lowlands. We intend to analyze the morphology of different villages by focusing on the villages' architecture, geomorphology, geology, and natural resources. The ultimate goal is to draw a watershed cross-map to express the particular structures of highland villages. Besides, for the 3rd research trip operated on September, we settled different proposes each day, displayed as following.

Day 1	高梁（たかはし）川下流都市部から川を上り、中流の石灰岩帯を経て上流の花崗岩帯に位置する高地集落までを概観する。水系による共通性と各地の違いの双方を比較することで、最終的に高地集落の特徴を検討する。特に、沿岸部から、高地集落までの集落の生活・経済と集落のかたちの変化をも注目する。また中流にある経済中心地として新見市西方を訪問し、その地理的・歴史的的存在意義も検討する。
Day 2	同一標高（500m 以上）、水系の異なる（高梁川・日野川）複数の高地集落（千屋花見、千屋井原、千屋実、神戸、新屋）を訪問調査。地形・地質、生業、集落構造などを基準に比較調査を行う。高地集落の存続要因としての生業の変化も注目する。
Day 3	日野川周辺の集落を訪問。上流の集落から中流の経済・交通中心部（根雨、江尾、溝口）を経て、下流集落（富吉）に至る。昔の宿場根雨・江尾と物質交流地溝口を調査して、高地集落との関係性を分析する。

表 2. The purpose of each research trip day in September

1-4. 調査地の概説

Based on the site investigation conducted in July and August, basic information has been obtained. Combing with the literature review, the features of the Takahashi River and Hino River have been listed as follows:

- ① The conjunction of essential information in the Chugoku Mountains
 - The steel industry in Chugoku Mountains – Tataru System
(たたら製鉄について)

Granite is the best raw material for producing iron products and Chugoku Mountains are the biggest distribution areas of Japan. From ancient times, the iron making system was famous at this place. The development and production of iron in the Chugoku Mountains date back to around the sixth century AD (Kōfu Period in Japan). It is believed to have grown to become Japan's most prominent iron producer during the Muromachi period (1336-1573). The iron-making method in the Chugoku Mountains is Tataru system²³, which is a unique and traditional Japanese furnace adopted to smelt iron and steel. In simple terms, the Tataru system works by burning and melting sand iron from the mountain and then purifying it, the furnace structure is shown below. In conclusion, mountain sand-iron (山砂鉄), wood (木炭), and natural wind (風) are the most critical components of the Tataru system.



図 1-7 Reproduction model of a Tataru furnace dating from the latter half of the 6th century, owned by the Wako Museum²⁴

²³ たたら製鉄, [https://en.wikipedia.org/wiki/Tataru_\(furnace\)](https://en.wikipedia.org/wiki/Tataru_(furnace))

²⁴ Cited from 出雲国たたら風土記, <https://tetsunomichi.gr.jp/history-and-tradition/tataru-outline/part-1/>



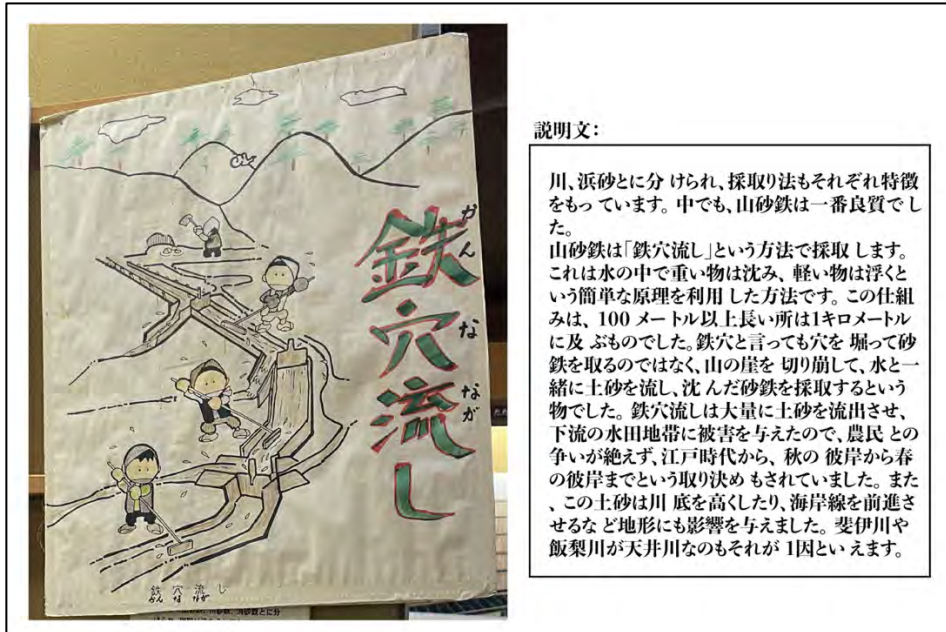
図 1-8 The model of Tataru furnace at Yoshida chou, Shimane Ken. Photos taken by Kishimoto Toru.

- 鉄穴流し Kannanagashi

The excavation of the mountain sand iron led to the concept of Kannanagashi, which means iron sinks in English. The iron sinks are collected after increasing the purity of iron sand through two major processes: "collecting" and "iron washing". First, a mountain with suitable geological features is selected, and a waterway created drawn near the hill. Then, people cut weathered iron sand-rich rocks such as granite and pour the cut rocks into the channel. As the iron sand-rich rocks flow through the track, they are crushed and separated into different washing pools. At each pond, water is added and stirred to separate the light sediment from the iron sand based on differences in specific gravity. The specific channel (大池、中池、乙池など) and shape are shown in the figure below:



図 1-9 The structure of Kannanagashi, Yokoda Chou, Izumo city. (Photo taken by author.)



説明文:

川、浜砂とに分けられ、採取法もそれぞれ特徴をもっています。中でも、山砂鉄が一番良質でした。山砂鉄は「鉄穴流し」という方法で採取します。これは水の中で重い物は沈み、軽い物は浮くという簡単な原理を利用した方法です。この仕組みは、100メートル以上長い所は1キロメートルに及ぶものでした。鉄穴と言っても穴を掘って砂鉄を取るのではなく、山の崖を切り崩して、水と一緒に土砂を流し、沈んだ砂鉄を採取するという物でした。鉄穴流しは大量に土砂を流出させ、下流の水田地帯に被害を与えたので、農民との争いが絶えず、江戸時代から、秋の彼岸から春の彼岸までという取り決めもされていました。また、この土砂は川底を高くしたり、海岸線を前進させるなど地形にも影響を与えました。斐伊川や飯梨川が天井川なのもそれが1因といえます。

図 1- 10 The imagination of Kannanagashi, Yoshida Chou, Unnan City. (Photo taken by Ayaka Yoshida.)

Throughout the series of Kannanagashi, the result turns that Kananagashi made a big difference to the terrain. Many scholars have done relevant research on this, such as Yoshihiko Akagi who researched the influences created by Kannanagashi on Hii River²⁵ and Takahashi River²⁶. In general, the Kannanagashi first changes the shape of the mountain by digging it up and then raises the riverbed downstream by separating mountain sand layer by layer. Although it significantly promoted and improved the economy of mountain villages at that time, it changed people's living environment due to the change of terrain and the impact on downstream villages.

- Forestry

In the calcination of iron, charcoal is another necessary material except for sand iron. In all the records, there is a sentence described as "砂鉄 7 里に木炭 3 里", which is enough to show the importance of forestry in the Tataru system. If iron sand could not be provided within 28 km and charcoal within 12 km, the Tataru system would not be viable. The Chugoku Mountains have evergreen coniferous broad-leaved forests, which can make charcoal that burns for a long time and is of high quality. After the iron industry ceased, the forestry in Chugoku Mountains continued to flourish and provide excellent timber for building materials throughout Japan. (Especially Nichinan Chou in the Hino River)²⁷.

- The conclusion of essential information

The remarkable geographical location of the Chugoku Mountains provided rich natural resources for the survival of human beings in hundred years ago, and thus human beings can survive. Nonetheless, the iron-making system gradually moved from the Seto Inland Sea to the

²⁵ 貞方昇. 斐伊川流域における鉄穴流しによる地形改変[J]. 地理学評論, 1982, 55(10): 690-706.

²⁶ 赤木祥彦, 貞方昇. 高梁川流域の鉄穴流しによる地形改変と水田開発[J]. 人文地理, 1988, 40(3): 197-220.

²⁷ 中国山地の森林とたたら製鉄の関係 https://note.com/chugoku_sanchi/n/nf51a9066afdd

Nippon Sea which led today's Hii River has a stronger legacy of iron making culture in Chugoku Mountains²⁸. Although iron production finally ceased in 1930, the effect of the Tataru system was still visible in the settlements along the river or trade route and thus many scholars conducted research.

The keywords of Chugoku Mountains can be concluded as Tataru iron culture, mines (such as iron), and forestry. We summarized the previous studies on related rivers, as shown in the following table 3.

	高梁川 Takahashi River	日野川 Hino Rive
概要・ Introduction	高梁川は、岡山県の西部に位置し、その源を岡山・鳥取県境の花見山に発し、新見市において西川、熊谷川、小坂部川等支川を合わせながら南流した。瀬戸内海に注ぐ、流路延長 111km、流域面積 2,670 km ² の一級河川である	日野川は、鳥取県日野郡日南町にある三国山にその源を発し、幾つもの溪流を合わせながら、岸本町で山峡の地を離れ、以後米子市、日吉津村の中心を北に流下し、日本海に注ぐ流域面積 870km ² 、流路延長 77km の河川である。
鉱山に関する参考文献	鉄穴流し：赤木祥彦・貞方昇： 高梁川流域の鉄穴流しによる地形改変と水田開発 ；貞方昇： 鉄穴流しに由来する中国山地・臨海平野の景観変容とその今日的意義 鉄穴流し跡地の分布 P75： 岡山県の鉱山リスト	鉄穴流し：貞方昇： 鉄穴流しに由来する中国山地・臨海平野の景観変容とその今日的意義 鉄穴流し跡地の分布 P75 中国地方の鉱山
石材に関する参考文献	万成石：沼野忠之『 岡山の鉱物 』 高梁川上流域花崗岩類の 分布 花崗岩類の分布：木下卓也 岡山県の主要3河川の水質と地質の関係	日野川上流域花崗岩類の分布 P12
交通に関する参考文献	①江戸時代の舟運：下り輸送物資（米・大豆・小豆）上り輸送物資（塩・海産物）： 苦瀬博仁 江戸時代から明治時代まで、上流部盛んに生産されていた ベンガラ は高瀬舟を利用し全国に運ばれた。 ②塩の道：岡山の海岸部から新見方面へ運ばれた。出典：『塩の民俗学』 P162	①日野往来街道 ②塩の道

表 3. The elementary literature review of Takahashi River and Hino River

²⁸ 雲南市たたらプロジェクト会議, 雲南のたたら文化, 2022.

② Features and history of Takahashi River

By checking related research, we discovered the upper reaches of the Takahashi River are one of the granite distribution areas of the Chugoku Mountains. Therefore, the villages upstream have been influenced by the Tataru system previously. We confirmed that Chiya village used to be the iron-making village of the Takahashi River from literature. While Kannanagashi brought money to the villages upstream like Chiya, it also carried sand downstream which causes the towns to flood for years.

For the sake of flooding problems, the existence of the iron industry led to a constant state of antagonism between the upper and lower river villages. This antagonism shows a struggle between highland civilization and lowland civilization fighting for a better living environment, similar to highland areas in South Asia researched by Scott, James. C.

引用：高梁川上流の鑪製鉄に伴う鉄穴流しによって土砂が流出し、下流では河床の上昇と、洪水の増加がおこり...そして、上流の鉄穴流しの村々と下流の村々が対立して...さらに弘化2-3年(1845-46)には、上流の村と下流の村の対立が激化し、江戸訴訟にまで発展した。²⁹

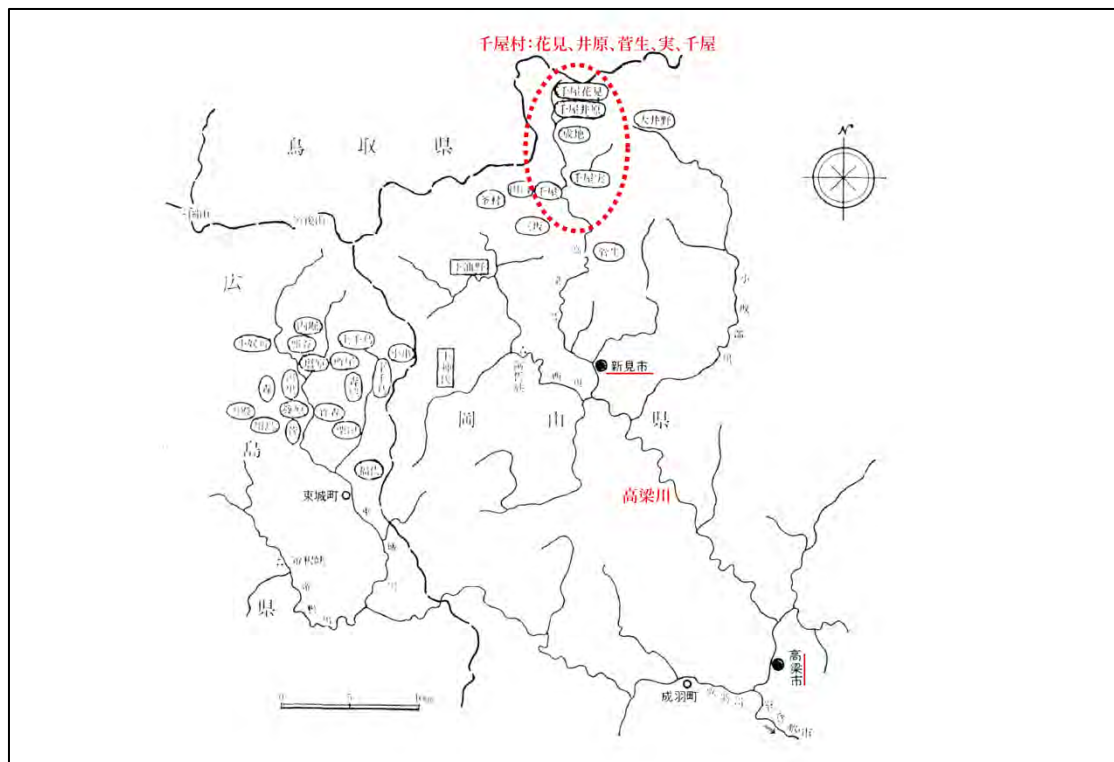


図 1-11 高梁川上流で鉄穴流しを行った村の位置図³⁰

It's worth noting that the upstream versus downstream confrontation didn't work very well. As the riverbed was gradually raised downstream, the new extension land had to be developed from 1724 in Kurashiki City. One of the most considerable effects is that the original east and west,

²⁹ 高橋一康. 近世における高梁川の河床変動[J]. 人文地理, 1971, 23(6): 596-618.

³⁰ Cited from: 高橋一康. 近世における高梁川の河床変動[J]. 人文地理, 1971, 23(6): 596-618.

two downstream tributaries, were eventually left only on the west side. Because the eastern riverbed was filled and diverted, eventually forming the Takahashi River we see today.

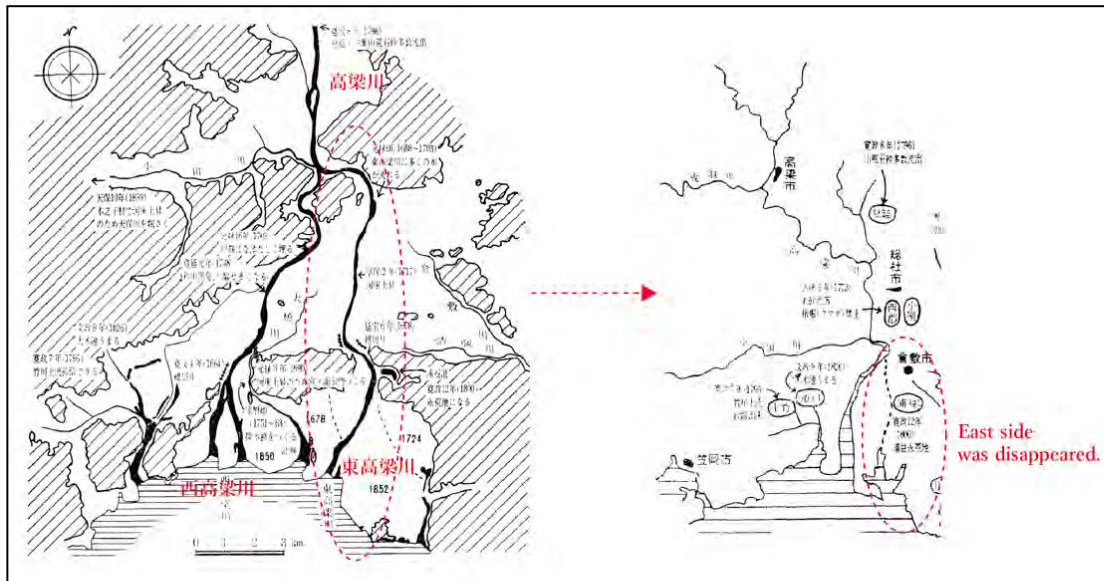


図 1- 12 The changing historical paths of Takahashi River. ³¹

The watershed connects the upper and lower reaches and generates linkage based on industrial changes. This change made it clear that Kurashiki city was downstream and Chiya village was upstream. Another point worth noting is that production must be accompanied by consumption. As a medium method, there must be a way for things to circulate. So water transportation should be focused on as well.

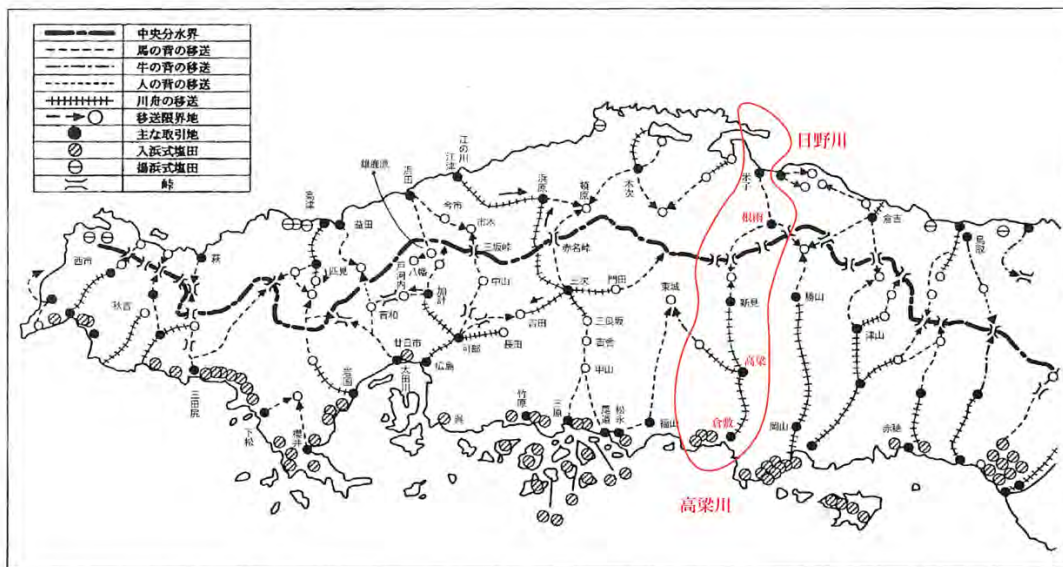


図 1- 13 The salt-route of Chugoku Mountains³²

舟運ルート：倉敷→高梁→新見

³¹ From references 高橋一康. 近世における高梁川の河床変動[J]. 人文地理, 1971, 23(6): 596-618.

³² From references 広島県立歴史民俗資料館. くらしと道の歴史: 中国山地の鉄・塩・銀の道 / 広島県立歴史民俗資料館 編. 三次: 広島県立歴史民俗資料館, 1999.

From the point view of water transport, Niimi is the upstream, Takahashi as a midstream area plays a cohesive role, and Kurashiki is downstream. From the two sides of old village relations and water transport, Kurashiki is the unquestionable downstream area of the Takahashi River. But the up stream's location has paradoxically diverged. To confirm the specific boundary position of highland settlements in rivers, we must first clarify the relationship between highland villages and the upstream. This is the most critical part of the research trip on the Takahashi River, that is, how can we find visible elements to define the geographical relationship between upstream and highland settlements.

③ Features and history of Hino River

The Hino River also developed and produced iron products early due to its upstream location in the granite belt. So the upstream area has been opposed by the downstream due to the flooding problems. However, the Hino River does not have a history of shipping. This point precisely highlighted the particular property of trade or labor exchange characteristics of the settlements along the Hino River. The old trading path and the worship path are thus formed. Therefore, the middle stream settlements in the Hino River are the main areas for material exchange and labor convergence. Highland communities often gathered here to collect the things they needed for life. Understanding the trade relationships among the settlements in the basin can help us better search for upland towns upstream. Therefore, we chose three significant trading settlements [Neu, Ebi, Mizoguchi] for this research trip in September.

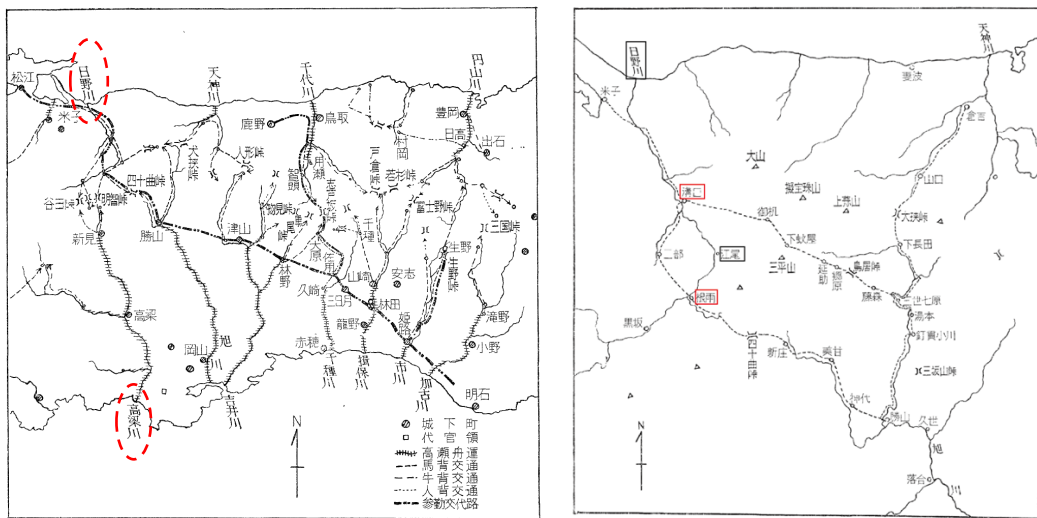


图 1-14 The Salt route of the Hino River³³

³³ Cited from: 富岡儀八. 近世の内陸都市と交通路の問題[J]. Geographical Review of Japan, 1964, 37(8): 450-468.

1-5. 調査方法 Survey method

Through the viewpoint of the watershed, the settlements along the different elevation differences were compared and studied. Combined the structure of the villages, the change of the building plane, the survival factors of the towns, culture, history, and other aspects to conduct the horizon and vertical analysis.

Twelve settlements were selected for the study based on the following reasons:

- Upstream mountain settlements with an altitude of over 500 meters.
- The economic and trading center of the basin.
- Carried out iron-related industries in the past.
- Lower elevation plain settlements downstream.
- Owing geological features (limestone, granite).



図 1- 15 Map of research area

1-6. 調査日程 Survey schedules

■ 調査行程について

9月23日（中谷班） 中谷、菊地、ドルマ、二上	
12:00	JR岡山駅に集合
12:30	調査に出発
14:00	井倉野にて調査
15:50	足見にて調査
16:50	新見市昔中心部にて調査
18:00	車で千屋村を見学
18:30	千屋温泉で夕食、打ち合わせ
19:30	深津旅館、井谷旅館チェックイン

9月23日（前川班） 前川、吉田、塚原	
12:00	岡山駅に集合
12:30	調査に出発
14:00	井倉野にて調査
15:50	足見にて調査
16:50	新見市昔中心部にて調査
17:30	新見市西方にて調査
18:30	千屋温泉で夕食、打ち合わせ
19:30	深津旅館、井谷旅館チェックイン

9月24日（中谷班） 中谷、菊地、前川、塚原	
07:30	朝食
08:00	調査内容、日程の打ち合わせ
08:40	調査に出発
10:00	斐伊川上流吉田村にて調査、博物館を見学
13:00	新屋多里にて調査
14:30	神戸上にて調査、村民と聞き取り
15:30	千屋花見にて調査、峠田さんに聞き取り
17:00	千屋神社にて調査
17:30	生山へ車で移動
20:00	井谷旅館にて会議

9月24日（ドルマ班） ドルマ、吉田、二上	
07:30	朝食
08:00	調査内容、日程の打ち合わせ
08:40	調査に出発
09:20	新屋新山にて調査、村民と聞き取り
10:40	新屋野組にて調査、村民と聞き取り
11:10	新屋湯川にて調査、村民と聞き取り
12:30	昼ご飯

13:00	新屋多里にて調査
14:30	神戸上にて調査、村民と聞き取り
15:30	千屋花見にて調査、峠田さんに聞き取り
17:30	千屋井原にて調査、村民と聞き取り
18:30	井谷旅館へ車で移動
19:00	ご飯
20:00	井谷旅館にて会議

9月25日	中谷、菊地、酒井、ドルマ、吉田、二上、塚原
07:30	朝食
08:00	調査内容、日程の打ち合わせ 酒井先生から中国山地の地質基礎知識を紹介
08:40	根雨街道を見る
10:40	江尾にて調査、棚田を見る、貝田を発見
11:20	貝田にて調査、村民と聞き取り
12:40	昼ご飯
14:30	富吉にて調査、村民と聞き取り
16:30	淀江海岸を車で見る
17:00	米子駅に調査のまとめ会議を行う

After the settlements were determined, we investigated the structure and living system of the settlement from various aspects, such as architecture, culture, geology, etc., to search for highland settlements, and finally finished this report.

1-7. 執筆概要 Writing Outline

Every chapter of the report and writers are as follows:

執筆担当は以下の通りである。

- ・第一章 調査概要：中谷礼仁、HUA YILING
- ・第二章 各地域の報告
 - 地域概要、断面図：HUA YILING
 - インフラ：塚原朋輝
 - 村落・建築配置、建築の特徴：二上匠太郎
 - 聞き取り：吉田彩華
- ・考察：菊地暁、前川歩、酒井哲弥、中谷礼仁、HUA YILING、塚原朋輝