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Research Article

The Japanese Neolithic: The Sea at the Origins of the Jōmon Culture and the Iriae Archaeological Excavations on Tsushima Island

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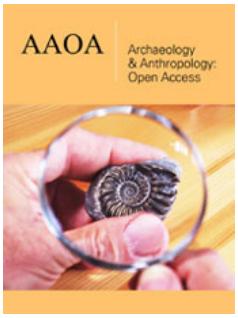

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Abstract

Japanese neolithic, the so called Jōmon Period, represent a vast terrain in which to develop new and exciting research in the archaeological field. This is because there are still many questions that need to be answered to better clarify the evolutionary dynamics of the cultures that characterized it. The further back in time one goes, the more the questions increase and the elements on which to study are few. For this reason, the Jōmon Period represents the one on which it is necessary for modern archaeological science to focus more rigorously. Among these, those most under analysis are related to the origins of the Jōmon culture, a topic that cannot be separated from human and cultural contacts and the relationship with the surrounding environment, which translates into an inseparable binomial: the relationship with the Korean populations and that with the sea. While the importance of the Jōmon People's relationships with their Korean neighbors is now recognized, the nature and extent of these contacts are still debated. The proposal is to deepen an aspect that is still underdeveloped: the relationship with the sea. What was its role in the life of the Jōmon People? How did they adapt to the environmental changes with the advent of the Holocene? How did they move and what boats did they use? What were kaizuka really and what did they mean? IRIAE has developed a new project of archaeological investigation on land and underwater, precisely in relation to these issues, identifying the island of Tsushima (Nagasaki Prefecture) as a crucial point in which to look for answers that can contribute to clarifying this complex situation. The activities will begin at the sites of Meotoishimae and Ongaura, both overlooking the Korean coasts and responding to the geomorphological characteristics of possible landings and/or coastal settlements.

Keywords: Japan; Jōmon; Neolithic; Holocene; Environment; Maritime archaeology; Kaizuka; Settlement

Introduction

The prehistory and protohistory of Japan are an extremely fertile area for archaeological research. In fact, there are still many gaps to be filled in our knowledge of this period. The reasons for this are to be found mainly in three areas: chronologies, the 'ideological' approach of Japanese archaeology, and the lack of syncretism in the numerous studies carried out in the country over the decades [1]. Given the non-specialist nature of this review, I consider it appropriate to outline the cultural subdivision of Japanese prehistory from the Neolithic to the end of the Bronze and Iron Ages. The first period, coinciding with the Japanese Neolithic and which will be the subject of the present text, is called the Jōmon Period, which is made to begin, depending on the school of thought, between 16,000BP and 11,500BP and to end around 1000 BC, when the Early Bronze and Iron Ages begin with the Yayoi Period (around 1000B.C.-middle of 3th century) [2], in which the first social hierarchies and chiefdoms, rice farming, a more complex organisation of villages and the transformation of cults and associated rituals [3] develop. Finally, we have the Kofun Period, which encompasses the time span from the 3rd to the 7th/8th centuries, characterised by the construction of megalithic tombs known as kofun [4] and which opens the door to the historical era and the establishment of the first form of unified state in the archipelago. Here, we will focus on the first of the three periods, or the Jōmon, which personally, I prefer to identify simply as the 'Japanese Neolithic' while using the term Jōmon to indicate the cultural faces that characterised it. This is because, at the

current stage of studies, we are now fully aware that the cultural differences relating to specific geographical areas of the country are so numerous that it is difficult to use the term Jōmon as a collector of all these variants [5]. At most, if one wanted to use the term Jōmon to espouse the convention now assumed in Japan since the end of the 19th century, it would be more appropriate to use the term 'Jōmon Cultures'.

The first problem that a new scientific approach must address is that of the chronology of this period [6]. To date, there are three theories relating to this point, and the reason for this subdivision is due to the fact that they are based on the appearance, use and diffusion of pottery, the dating of which was carried out, in the past, with methodologies that are now outdated and correct [7]. Firstly, radiocarbon analyses (which are known to be carried out on organic material) were carried out on pottery, but as this is inorganic, they were carried out on the plant microfibres still present in the clay, which however date the 'death' of the fibre and not necessarily the production of the object. Furthermore, as there is no precise stratigraphic analysis, there is also no support for the dating of other finds from the same excavation and layer [1]. Finally, there is an acknowledged problem with the calibration curve [1]. Assuming the correctness of the procedures for C14, this gives an error range that has to be scaled down by comparison with other dating systems, for example dendrochronology, palynology etc. Only recently, Japanese scholars (who are slowly trying to resolve the gaps in the period) have been trying to calibrate the chronological datum [8]. This has led to the emergence of three theories. The first would be based on the 'appearance' of cooking pottery in the archipelago (understanding the act of cooking as a symbol of the evolution of a human group). The oldest of these is the so-called Tōryūmon doki (Figure 1), found at the site of Ōdai Yamamoto I (in Aomori Prefecture), dated to 16,000BP, thus around 14,000BC. Leaving aside the strong doubts about the robustness of the dating performed, this would make Japanese pottery the oldest in the world. In any case, according to this school of thought, the beginning of the Jōmon Period would be dated to 14,000 BC. Apart from the uncertainty over the proposed dating, it must be said that the fragments found of such pottery are so few in number and limited to a single location, that they cannot be explanatory of a large-scale evolution [8]. The second theory would instead place the beginning of the period at 14,500 BP (ca. 12,500 BC), from the dating of the Ryūkisenmon doki (Figure 2) identified as the first pottery type to spread across much of the country, northwards [7]. The third, finally, would place the 'starting point' of the Jōmon Period at 11,500 BP (ca. 9,500 BC), the period to which the Yoriitomon doki (Figure 3) is dated, associated with other elements that highlighted the development, in this period, of gathering, hunting and fishing techniques, as well as the appearance of kaizuka, or the mounds of shells typical of Japanese pre-protohistory [8]. In my opinion, the most acceptable theory is the latter, but the point of view from which my analysis starts is not the appearance of a new pottery form, but another based on the study of the relationship between man and the environment.

Figure 1: Tōryūmon doki.

Figure 2: Ryūkisenmon doki.

Figure 3: Yoriitomon doki.

Trying to understand the origins of the so-called Jōmon Period based on the appearance, evolution or spread of specific pottery types is an outdated methodology. Firstly, because, as we have seen, dating is not completely reliable. Secondly, the study of the development of certain pottery forms or types does not take

into account regional development patterns in other areas of the country. Finally, there are too many variables determining the appearance, evolution and spread of certain pottery classes to be able to comprehensively determine the evolution of an entire cultural horizon. Such an analysis led to the definition of Jōmon societies as 'savage societies' with a nomadic lifestyle, thus based on an extractive or acquisitive economy, with a 'date' of origin framed at an indeterminate point between 14,000 BC and 9,500 BC and ending shortly after 1000 BC (previously the termination of such a culture was identified as 300 BC) [9]. I believe that the identification and 'development' of a new cultural face must instead be based on substantial changes in the relationship between man and the surrounding nature and the ways in which he adapted to it, thus changing the perspective from which to observe the phenomenon. Imagining a circular flowchart (Figure 4), we can base our hypothesis on the fact that the environment inevitably influences the lifestyle of human groups, which produces a 'material culture' that, in turn, favours and enables the adaptation necessary to survive climatic and environmental changes [3].

Figure 4: Circular flowchart.

In fact, the changes that occurred in Japan with the advent of the Holocene were particularly impactful on the human groups that inhabited it. This was because the archipelago was somehow 'trapped' by its new insularity. To understand what has been said, let us take a look at the climatic-environmental landscape from which it came. What we might call the Japanese Palaeolithic, occurred during the last glacial phase, the Würm, characterised by alternating warmer and colder periods known as the Pleistocene (Figure 5). The latter is said to begin around 16,000BP and end with the last cold peak, between 12,500 and 11,500 BP, the Recent Dryas [10]. With the end of the latter there is a significant rise in temperatures that will lead to the current climatic condition. The so-called Holocene begins, we are now in 11,500 BP (or 14,500 BC), the same period in which the 'third theory' above would start the Jōmon Period. During the last phase of the Würm, Japan was still connected to the continent. Around 25,000 B.P., the northern area and headlands were still invaded by tundra vegetation and sub-Arctic forests, while downstream of the central-southern headlands, a different vegetation composed of deciduous broadleaf forests was gradually developing, which, with the advent of the Holocene and the consequent rise in temperatures, would push the sub-Arctic forests further and further north. This process will be completed around 7,000 B.P. when deciduous broadleaf trees will also cover the headlands while, on the coasts, evergreen forests will develop [11]. As we have said, during the last Würm, Japan was still connected to the continent, and this favoured the migration of large animals such as Mammoths. But with the rising temperatures that marked the beginning of the Holocene and the consequent melting of the glaciers, the sea level rose, giving Japan its peculiar insularity. The sea submerged the land communication routes, preventing the migratory movements of animals that were stranded in a territory that radically changed its climate and flora, favouring their gradual extinction [11]. The new environmental condition of the new-born archipelago, however, favoured the proliferation of smaller mammals, such as deer and wild boar, which did not make large migratory movements, especially in a geo-climatic context such as Japan.

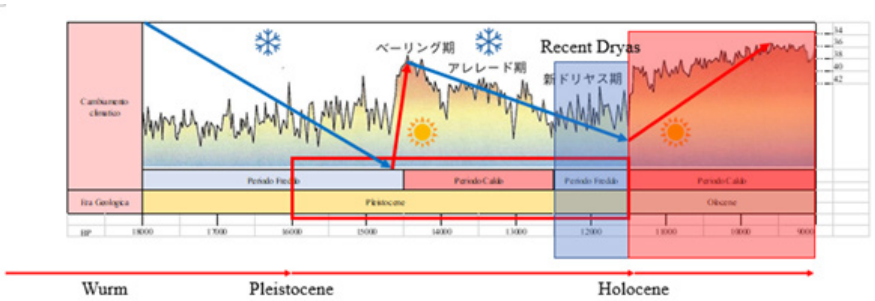

Figure 5: Climatic oscillation.

Adaptation to the Great Holocene Climate Change

With the advent of the Holocene and the drastic climatic and geo-morphological change, there were four major changes that conditioned and forced human groups in the area to change their 'habits' [12]. The first was the rise in sea level that separated Japan from the continent, causing its insularity and preventing large migratory flows. Internal travel was also made difficult by the presence of major mountain systems that stretched across the surface of the archipelago. The second was the stabilisation of edible plants. In fact, as we have already noted, with the climatic change that characterised the Holocene, from the south-western coast to Hokkaidō, the country became covered with evergreens and deciduous broadleaf trees that produced acorns and hard fruits such as horse chestnuts and chestnuts that, together with rhizomes such as kudzu and bracken, required special processing to be eaten. In fact, we see the appearance of milling tools and the development of kitchen pottery. These are all objects that are difficult to transport and may therefore be indicators of the increased sedentarisation of human groups [7]. In addition, unlike coeval but more extensive areas of the world, the lack of a sufficiently large territory in which to look for new fruits or seeds once they were exhausted, favoured learning to cultivate on one's own [13].

The third change was related to the increase in the populations of smaller mammals following the extinction of the larger ones that, due to the isolation of the archipelago, could no longer migrate to places with more suitable temperatures. On the other hand, small mammals such as deer and wild boar did not make large migrations. Wild boars do not live at very high altitudes, while deer live both in hills and downhill from them and, in some cases, even in more swampy environments. This translates into the fact that hunter groups had their prey constantly at their disposal, not requiring large movements to 'chase' them [14]. Finally, the fourth major change, also implemented by the insularisation of Japan, was related to the raising of the waters and characterised the Jōmon cultures in an emblematic manner. I am talking about the exploitation of an important and fundamental resource: the sea. Firstly, the products of the sea represented a new source of food supply that not only contributed to the general needs of the populations, but also compensated for seasonal food fluctuations [15]. The sea provided several sources of supply. Firstly, the molluscs that characterised the formation of kaizuka (mounds of shells), the study of which has made it possible to understand, through the study of nutritional intake and the types of shells excavated, that it was a 'support' food and that it covered, in particular, specific seasons to support the seasonal deficiencies of the other foods provided by the land [16]. The kaizuka were formed by the accumulation of shells in the same place and over time, so as to create a chronological stratigraphy. It is difficult to establish a precise chronological sequence of the accumulation layers, but thanks to the other materials contained in them, it is possible to establish a lifespan of the kaizuka, although not absolutely precise, which has allowed us to establish that they appeared from the Incipient Jomon [8]. The shells keep the soil alkaline, and the calcium carbonate dissolved in the water acts as a protective agent, preserving human remains, fish bones and other animal remains that are difficult to find in ordinary sites with acidic soil [7]. Thanks to this phenomenon, not only pottery, lithic and wooden materials were preserved, but also animal and human bones. The latter were collected in actual burials, some preserving skeletons in primary deposition, others in secondary deposition, then moved from another location. In addition, some of them accompanied by whole vessels clasped in their arms [8]. However, there are still many questions about kaizuka that need to be answered. For instance, what was their real meaning and use. Were they heaps of rubbish or deposits of shells for later use? Why were other artefacts found in some of them such as pottery, wooden objects, entire boats, paddles, axe handles, bows, etc.? Why did they start burying bodies in them? And why only certain individuals? Why some in primary deposition and others in secondary? Was there some form of primordial cult behind these types of burials? One of our aims is to answer these questions by re-examining the finds and comparing the Japanese kaizuka with the shell mounds studied in the rest of the world (South America, Africa, Northern Europe, etc.). A careful and synchronic analysis of all this evidence gives us a different picture of the Jōmon populations, supporting the hypothesis that they were sedentary or semi-sedentary societies of a seasonal type. For example, pumpkin, mung bean and perilla seeds, which were considered cultivated plants, were found in many kaizuka. In addition to pit-dwellings for storage [15]. As well as the presence of complex living structures that are difficult to correlate with a nomadic way of life. Consider, for example, the huge multi-storey structure at the Sannai-Maruyama site in Aomori Prefecture [17], whose post holes are over a metre in diameter. Or the complex dwelling or cultic structures of the Musashidai site, in Tōkyō. Or the complex organisation of dwellings at the Uenohara site in Kagoshima Prefecture [1].

The Sea and Waterways

The geo-morphological changes that occurred with the advent of the Holocene led the inhabitants of the Japanese islands to become increasingly dependent on the sea and waterways in general. Rivers represented the main routes for internal movements, given the mountainous nature of most of the territory. Lakes, on the other hand, represented an important source of supply for inland areas further from the coasts [18]. The sea, on the other hand, served for cabotage and island-to-island travel, but of great importance was the supply of food. Excavations carried out in various areas of Japan relating to the various phases of the Jōmon Period have uncovered not only normal fish remains, but also bones of large marine mammals and large fish, such as whales and tuna, involving highly evolved fishing techniques and technologies [19]. These were large fish and marine mammals that often-followed currents and were caught through deep-sea fishing that required organisation, strategies and technologies that only a more evolved society could introduce. Japan, with the advent of the Holocene, became a territory with a temperate climate, rich in vegetation and raw materials and particularly suitable for both fishing and hunting [20]. This led to waves of migration to its

islands, specifically, from the north, populations from Siberia and the American territories; from the south-west, from Korea; and from the south, small migrations from the South-East Asian Island group [21]. However, there are still many questions about the use of waterways in the period, for example which vessels were used. At the current stage of our knowledge, the human groups living in Japan at that time used one-person dugouts (marukibune). The few dugout pirogues that have been found have been found in wet environments, during urban infrastructure works, but have never been searched for and found at sea [22]. We still have no evidence of the existence of more complex boats; in fact, the first composite boats (fukuzaikuribune) are dated to the later Yayoi period, but only in reference to graphemes on the face of some dōtaku (bronze bells) [22]. In any case, we have archaeological evidence on the island of Tsushima of materials from places that could only be reached by sea, such as obsidian from northern Kyūshū. In fact, there were no obsidian quarries in Tsushima and analyses have confirmed the provenance from northern Kyūshū where, instead, axes have been found that, according to Japanese scholars, have the technological characteristics of those produced in Tsushima [23]. All the elements mentioned so far structure a new image of Jōmon cultures. The changes following the advent of the Holocene period marked the beginning of a new cultural face that found ways to adapt to the new conditions from 11,500 BP onwards. Thus, human groups inhabiting the Japanese islands were more 'sedentary' than previously imagined. This is evidenced by the appearance of advanced hunting and fishing techniques, construction techniques and technologies together with the organisation of villages, etc. These were cultures that looked to the sea and waterways as rich sources of supply and where they structured complex and organised deep-sea fishing activities. Beyond this, however, they represented the main communication routes for the 'flow of goods, people and information' [2] not only within the archipelago itself, but also from outside. In fact, Japan became a sort of 'oasis' in the midst of territories that were not as rich, a destination for migratory flows of foreign cultures that greatly influenced the development of the aforementioned groups [5].

The Tsushima Island Research Project

The reconsideration of these two elements, or adaptation to environmental changes and the importance and use of the sea and waterways, led to the birth of the project 'Jōmon Sea: Navigation in the Origins of Japan' by the International Research Institute for Archaeology and Ethnology, in collaboration with the Tōkyō University of Marine Science and Technology and the Asian Research Institute of Underwater Archaeology (ARIUA), under the patronage of UNESCO and with the financial support of the Italian Ministry of Foreign Affairs and International Cooperation. The project is divided into three phases: JS1 will focus on understanding the nature of early relations with Korea and how these influenced the evolution of Jōmon cultures. JS2, on the other hand, will deal with relations with northern cultures, while JS3, will approach the study of internal contacts within the country (Figure 6). The first project will focus, as we have seen, on relations with the Korean peninsula, going to investigate what for us is a key point in these relations, the island of Tsushima (Nagasaki Prefecture), located in the centre of the Sea of Japan, perfectly on the route between Kyūshū and Korea, from whose coastline it is only 47km away. It is likely that this island was intercepted by explorers from the peninsula in search of richer territories. Tsushima represents a veritable 'treasure chest' for archaeological research because it has been the crossroads of all cultural dynamics between Japan and surrounding cultures since antiquity, just as Sicily has been in the centre of the Mediterranean (Figure 7). In any case, there have been numerous investigations carried out on the island over the past decades by Japanese scholars, who certainly confirmed the strong Korean presence on its territory and that there were exchanges with northern Kyūshū, but that it was a place where Korean and local populations influenced each other [23]. For us, on the other hand, from studying the data collected, the situation is significantly different. After analysing the reports of all the excavations and investigations carried out on the island, we chose to start with the north-western area, i.e. the area facing Korea. There are two extremely interesting areas in this area (Figure 8). These are the Yabitsu area, located in the far north, and the Shishimi Bay area, slightly further south [24]. The former has been and still is being investigated by ARIUA, and numerous quantities of obsidian, pottery dated to the Early Jōmon, a lot of Korean pottery but, above all, the first, and so far, only, Jōmon landing place in Japan has been identified [25]. The investigations were further deepened through the use of technologies for thermographic analysis and, thanks to the Italian team, through a new satellite survey software (Figure 9). Shishimi Bay and its landings, however, were apparently already well known to the Koreans, as reported in the text Haedong Jegukgi [23]. The most important site in the bay is the Meotoishi Iseki, excavated between the end of the 1970s and 1993, where a very large number of Neolithic Korean pottery of the Sugari type (from the name of the Korean shell midden called Sugali which is located near Busan airport), and a few fragments of Ataka-style Jōmon pottery, a type of pottery dating back to the Middle Jōmon [26], were found. The quantitative difference between the two pottery types is significant: there are thousands of Korean sherds compared to only a dozen Jōmon pieces.

Figure 6: The Jōmon sea projects.

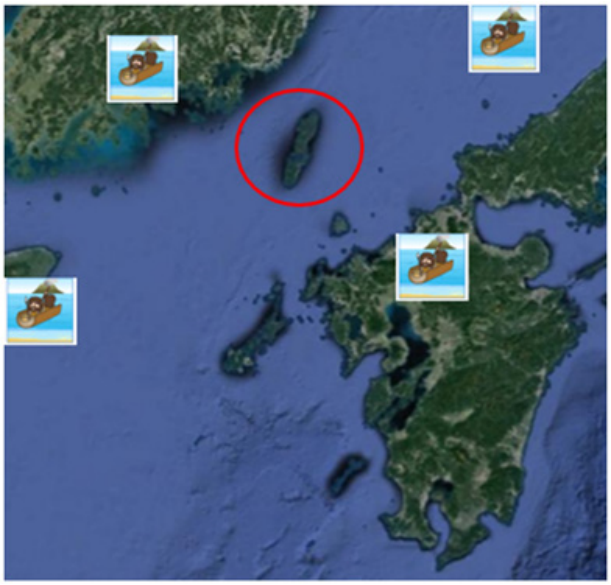

Figure 7: Tsushima Island.

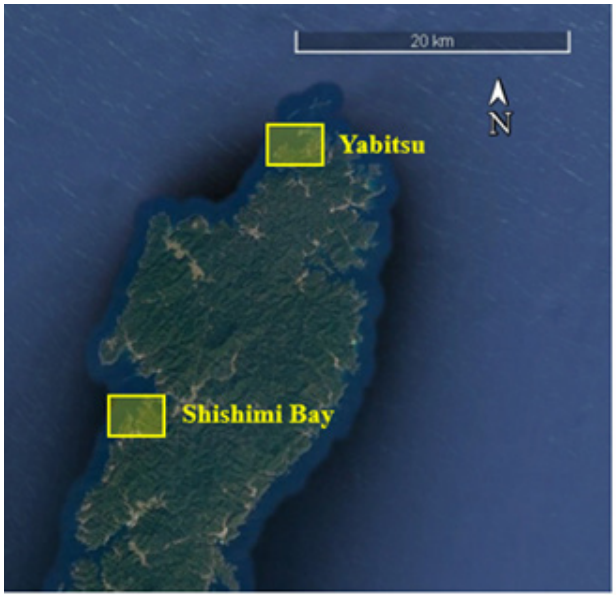

Figure 8: Yabitsu area and Shishimi bay.

Figure 9: Satellite imagines.

This condition is also repeated at other sites in the area, such as Koshitaka, slightly north of Shishimi Bay, where 2461 sherds of Neolithic Korean pottery and only seven sherds of Jōmon pottery in the Maebira style have been unearthed [23]. The huge difference between the number of Korean and Jōmon finds leaves little doubt that these were not simply points where the two cultures had exchanges, as claimed by many Japanese scholars, but actual Korean settlements. Therefore, the most solid hypothesis seems to be structured as follows: people from Korea sailed in search of richer territories and therefore settled in Tsushima. In time, they influenced and merged with small local populations, and, from this merger, a hybrid culture was born that only during the Early/Middle Jōmon looked further east, towards the coast of Kyūshū, which they reached by activating important cultural exchanges. In order to substantiate this thesis, our team began new archaeological excavations, both by land and sea, on Tsushima Island, identifying two areas, connected to those described above. These are the so-called F Point [24] of the Yabitsu area (Figures 10 & 11), or Ongaura Bay and the bay in front of the Meotoishi site, which we have renamed Meotoishimae (Figures 12 & 13). Both sites display the typical characteristics of what could be Neolithic landfalls or maritime settlements, i.e. effective protection from wind and other adverse conditions; the presence behind them of a forest for wood, food and other supplies; and, above all, an ancient freshwater stream for supplies and internal movement [27], whose original estuary is now below sea level. Investigations will take place on land, with the aim of identifying wetland vessels, traces of coastal settlement and probable kaizuka. While at sea, through diving and the use of underwater sonar, the ancient estuary and possible traces of Neolithic landings and boats will be identified. In addition, a team of archaeometers will carry out the appropriate analyses on the artefacts that come to light, such as C14, thermoluminescence, DNA analysis, pedological analyses, XRF spectroscopy, Potassium-Argon dating, etc. Thanks to this project, which is currently underway, the team of researchers has set itself a number of objectives, such as helping to further clarify the still incomplete knowledge on the chronology of the early stages of the development of the Jōmon cultures; obtaining as much data as possible to understand the nature of the relationship between the Tsushima inhabitants and the Korean populations; contributing to a greater understanding of the importance and use of the sea and waterways; understanding the Neolithic navigation, landing and maritime settlement systems; and attempting to create a comparative model for future studies.

Figure 10: Ongaura Bay (F Point).

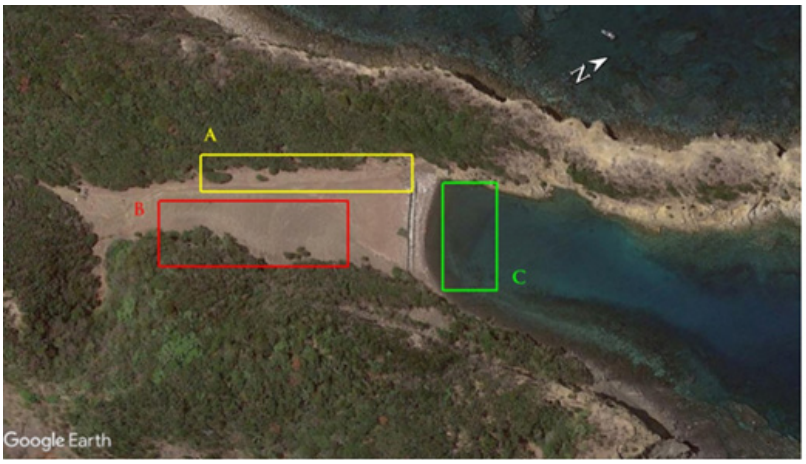

Figure 11: Ongaura Bay with survey areas..

Figure 12: Meotoishimae site.

Figure 13: Meotoishimae site with survey areas.

Conclusion

The so-called Jōmon Period has long been (and unfortunately still is) considered the chronological span in which nomadic hunter-gatherer populations lived, and still generates debates about its date of origin, which is identified on the basis of the appearance, evolution and spread of pottery. On the other hand, a closer study of the data collected so far over decades of studies seems to give the Jōmon People a new face, characterising them as semi-sedentary human groups with seasonal cycles. Moreover, this would seem to fit in perfectly with the idea that the new cultural faces that are identified as Jōmon are the result of processes of adaptation of human groups to environmental changes following the advent of the Holocene, as happened in other areas of the planet. The

undisputed protagonist of the aforementioned changes is definitely the sea, as well as the other waterways, which will certainly become the common denominator to synchronise the many studies carried out in the past decades. In addition, the sea will be the bridge to external cultures that will influence the local populations, allowing them to develop more rapidly. Certainly, the main one of these is the Korean one, which will have its first encounter with the Jōmon People on Tsushima Island, the research ground of our project. We are certain that the data we will obtain from the archaeological investigations on the island will contribute significantly to a greater understanding of the human, social, economic, and evolutionary dynamics of those cultures at the origin of Japanese history.

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