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THE PREHISTORIC VILLAGES OF THE AEOLIAN ARCHIPELAGO AND MILAZZO: ASTRONOMY AND LANDSCAPE, PRELIMINARY RESULT

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ABSTRACT

The archipelago of the Aeolian Islands is located in the Tyrrhenian Sea, to North of the Sicilian coast. Since 2000 the Aeolian Islands are an UNESCO World Heritage Site. The human presence in the archipelago is attested since very ancient times (Bernabò Brea, 1958). The prehistoric people were in fact attracted by the presence of large quantities of obsidian, glassy substance of volcanic origin through which the Aeolian Islands were the center of flourishing trade routes (Tusa, 1999).

In this paper we analyze the positioning of the prehistoric villages of the Eolian Islands taking into account archaeoastronomy and the aspects of landscape archeology. In particular, the study is aimed at understanding if in the choice of the site used for the construction of the various villages, the profile of eastern or western horizons may have played a determining role or not. Here we present preliminary results of the study made with the satellite data (Google Earth) and data measured by the first measurement campaigns in the field (april 2017). The in situ measurement campaign will be completed in autumn 2018.

KEYWORDS Aeolian Islands, prehistoric villages, Bernabò Brea, Capo Graziano, Punta Milazzese, topographic orientation, astronomical orientation.

1. INTRODUCTION

The Aeolian Islands are a volcanic archipelago in the Tyrrhenian Sea (North of Sicily). The Aeolian Islands consisting of seven real islands, to which are added islets and rocks emerging from the sea. The seven islands are arranged in Y-shaped form, with the rod pointing westward (Figure 1). There are two active volcanoes, Stromboli and Vulcano; Milazzo instead, with its beautiful promontory, is considered the natural 'access door' to the Aeolian Islands.



Figure 1. Map of the Aeolian archipelago with its position.

The seven islands are Lipari, Salina, Vulcano, Stromboli, Panarea, Alicudi and Filicudi. First of all, it is worth remembering that the chronology of Sicil-

ian prehistory is different from the Italian chronology (Gulli, 2009), so we show a summary of the various periods in table 1. The prehistoric villages involved in the study are the following:

- to Lipari - *Castellaro* (Middle Neolithic) (Bernabò Brea and Cavalier, 1957) and *Acropoli* (Late Bronze Age) (Bernabò Brea and Cavalier, 1979);
- to Panarea - *Punta Milazzese-Cala Junco* (Middle Bronze Age) (Bernabò Brea and Cavalier, 1968);
- to Stromboli - *San Vincenzo* (Ancient-Middle Bronze Age) (Cavalier, 1981);
- to Salina - *Portella* (Middle Bronze Age) (Bernabò Brea and Cavalier, 1968);
- to Filicudi - *Filo Braccio* (Ancient Bronze Age) (Martinelli et al., 2010) and *Capo Graziano* (Ancient Bronze Age) (Bernabò Brea and Cavalier, 1991);
- to Milazzo - *Viale dei Cipressi* (Ancient Bronze Age) (Tigano, 2009).

A similar study about the orientation of a prehistoric village in Sicily was realized in Ustica island. As regards the *Villaggio dei Faraglioni* (Middle Bronze Age) was proposed that the site might have been selected because it allowed a quite privileged position enabling to follow the rising and setting of the Sun in the months close to the winter solstice (Martin and Magli, 2016).

Table 1. Chronological table of Sicilian prehistory.

| Period | Years (BC) | Facies |
|-------------------------------------|----------------|---|
| Lower Paleolithic | 2.5 millions | |
| Medium Paleolithic | 120.000-40.000 | |
| Upper Paleolithic | 30.000-10.000 | Epigravettian |
| Mesolithic | 10.000-7.000 | |
| Ancient Neolithic | 6.500-5.500 | |
| Middle Neolithic | 5.500-4.500 | Stentinello |
| Late Neolithic | 4.500-3.500 | Diana |
| Early Copper Age | 3.500-3.000 | San Cono-Piano Notaro-Grotta Zubbia-Malpasso-Serraferlicchio- |
| Late Copper Age | 3.000-2.000 | Sant'Ippolito |
| Ancient Bronze Age | 2.000-1.450 | Castelluccio |
| Middle Bronze Age | 1.450-1.250 | Thapsos |
| | 1.250-1.150 | Pantalica I |
| Late Bronze Age | 1.150-1050 | Pantalica II |
| Final Bronze Age | 1.050-900 | Pantalica III-Cassibile |
| Iron Age | 900-734 | Pantalica Sud-Finocchito |
| Beginning of the Greek colonization | 734 | Licodia Eubia |

2. ARCHAEOASTRONOMICAL ANALYSIS: FIRST DATA

A first analysis using satellite data (Google Earth) was carried out in December 2017, while a first survey on Salina, Filicudi and Panarea islands was carried out in April 2017. For the prehistoric villages visited we show the panoramic view of the principal horizons with azimuth data obtained with a professional compass. For the others villages that are on Stromboli and Lipari islands and Milazzo promontory we will only do a few preliminary considerations.

2.1. Salina island

Salina is formed by six ancient volcanoes, it has the first and third highest reliefs of the archipelago. The *Portella village* is located in the North-East part of the island (Figure 2a). The prehistoric village is of the Middle Bronze Age. In the map of the village (Figure 2b) it is possible to see the huts and the chosen point (red hot) for the observations of the horizons. This point has an altitude of 197 meters about sea level.

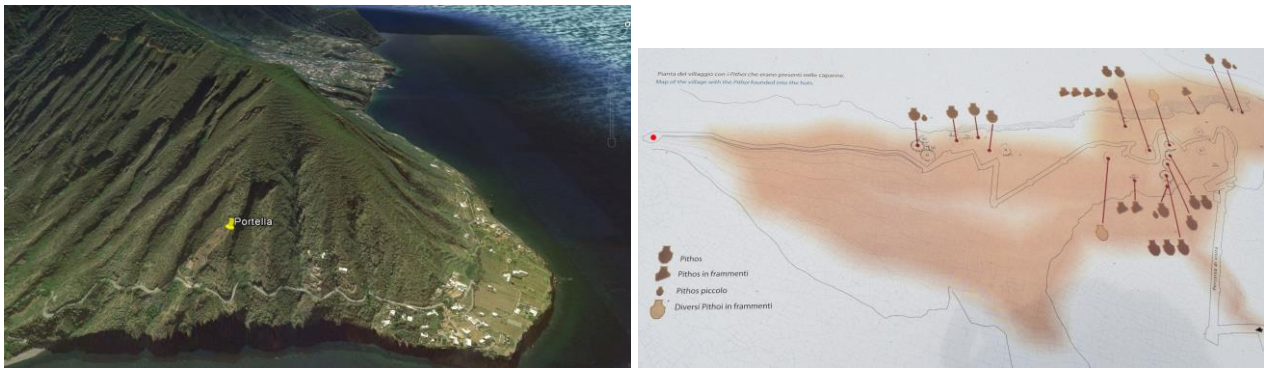


Figure 2. a (up) The position of the Portella village from Google Earth; b (down) map of the village with the position of the pithoi founded into the huts (from Martinelli, 2005).

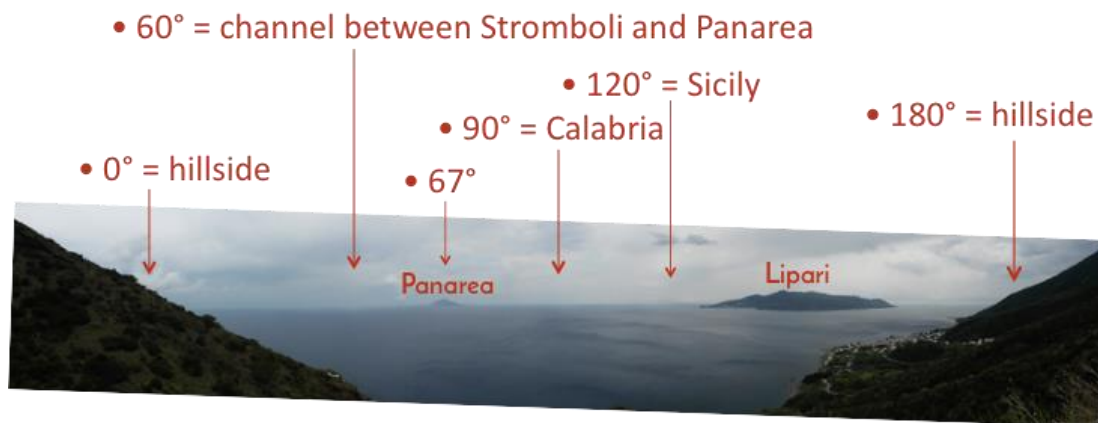


Figure 3. Panoramic view with azimuth data from Portella village (photo and elaboration by authors).

The azimuth data are shown in Figure 3. The observation point has been chosen considering the highest point of the village, at the height of the staircase that joins the various huts today visible.

From the Portella village the Eastern horizon is completely visible while the Western horizon is covered by the mountain behind the village (Fossa delle Felci Mount, 962 masl). As it is possible to see in Figure 3 there is one topographic point (the Panarea island) that is situated inside the solar sunrise range. From the horizon's observation, the azimuth of about 60° (linked to Stromboli-Panarea channel) is interesting, while the azimuth linked to the East and to the sunrise of the winter solstice are in correspondence of unspecified (covered by clouds) points on the Calabria and Sicily mountains.

2.2. Filicudi island

Filicudi is dominated by the Fossa Felci Mount, a volcano off high 773 meters. In the island there are two important prehistoric villages: *Capo Graziano* and *Filo Braccio*, both of the Ancient Bronze Age. *Capo Graziano* is located on the Montagnola promontory (South-East of the island) (Figure 4a), where there is a village with 27 huts (Figure 4).

In the map of the prehistoric village (Figure 4b) it is possible to see the huts and the chosen point (red

hot) for the observations of the horizons. This point has an altitude of 102 meters about sea level.



Figure 4. a (up) The position of Capo Graziano village from Google Earth; b (down) map of the village (from Martinelli, 2015).

From the Capo Graziano village the Western horizon is partially visible while the Eastern horizon is

covered by the mountain behind the village (Montagnola - 174 masl). As it is possible to see in the panoramic photo (Figure 5) there is one topographic point (Alicudi island) that is located inside the solar sunrise range and in particular it seems to be linked to

the sunset at the equinoxes (Alicudi - Punta Stimpagnato channel). There are also a U-shaped depression and a V-shaped depression that could be interesting at the summer solstice sunset.



Figure 5. Panoramic view with azimuth data from Capo Graziano (photo and elaboration by authors).

The village of *Filo Braccio* extends on the coast of the peninsula of the Piano del Porto, that is on the Filo Braccio, one of the crags on the lava flows forming the island of Filicudi (Figure 6). It was excavated by two great archaeologists of the 20th century: Luigi Bernabò Brea and Madeline Cavalier, who dug up most of the Aeolian prehistoric villages between the 50s and 60s of the last century. In the map of the village (Figure 7) it is possible to see the huts and the chosen point (red hot) for the observations of the horizons. This point has an altitude of 12 meters about sea level.



Figure 6. The position of Filo Braccio village from Google Earth.



Fig. 2 - Filicudi, Filo Braccio: Pianta generale (rilievi G. Arrigo, L. Lopes).

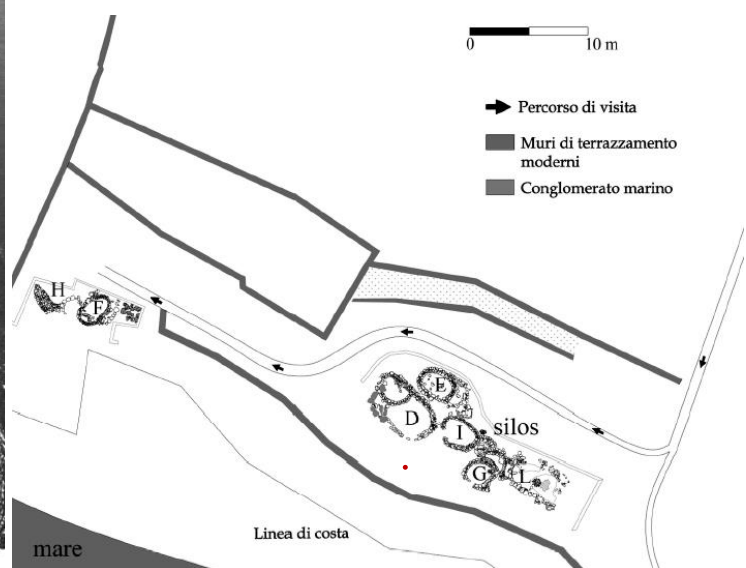


Figure 7. A (up) aerial view of Filo Braccio village (from Martinelli et al, 2010); b (down) map of the village (from Martinelli et al, 2010).

From the Filo Braccio village the Western horizon is partially visible while the Eastern horizon is covered by the mountain behind the village (Montagnola of Capo Graziano). As it is possible to see in Figure 8 there is one topographic point (Alicudi island)

that seems to be a sunset marker for the equinoxes. There are also Punta Stimpagnato and a U-shaped depression that could be interesting (azimuth connected to the sunset of the equinoxes and the summer solstice respectively).



Figure 8. Panoramic view with azimuth data from Filo Braccio (photo and elaboration by authors).

2.3. Panarea island

Panarea is the smallest and the lowest island of the Aeolian archipelago. On the promontory of *Punta Milazzese*, at South-West of the island, there is the village of the Middle Bronze Age of Cala Junco (Figure 9a). The particular position of the little plateau, stretched out to the sea and protected by high walls facing the sea made it an ideal place for settlement.

In the village, where the remains of about twenty huts can be seen and visited, have been found materials of Mycenaean origins, bearing in mind the role played, even in antiquity, by the Aeolian archipelago, at the heart of the main commercial routes of the Mediterranean Sea. In the map of the village (Figure 9b) it is possible to see the huts and the chosen point (red dot) for the observations of the horizons. This point has an altitude of 10 meters about sea level.

From the Punta Milazzese village the eastern and western horizons are visible. As it is possible to see in the panoramic photo (Figure 10) there are two topographic points (Dattilo islet and Punta di Lingua on Salina island), moreover there is a rocky peak near 270° that could be interesting, as linked to the sunset of the equinoxes. This site, with the characteristics of the horizons just exposed, may have been chosen precisely for its peculiarity to create a true calendar of the horizon.



Figure 9. a (up) aerial view of Punta Milazzese with the prehistoric village; b (down) map of the village (from Martinelli and Mastelloni, 2015).



Figure 10. Panoramic view with azimuth data from Punta Milazzese (photo and elaboration by authors).

2.4. Stromboli island

In Stromboli we find the San Vincenzo village (Ancient/Middle Bronze Age) (Figure 11), which has been excavated in recent years and was then covered (Cannavò *et al.*, 2017). The eastern horizon is visible, and it is possible to see the Calabria coast, while the western horizon is mainly covered by the volcano cone (the highest point is 926 masl). The field surveys will be carried out in autumn 2018.

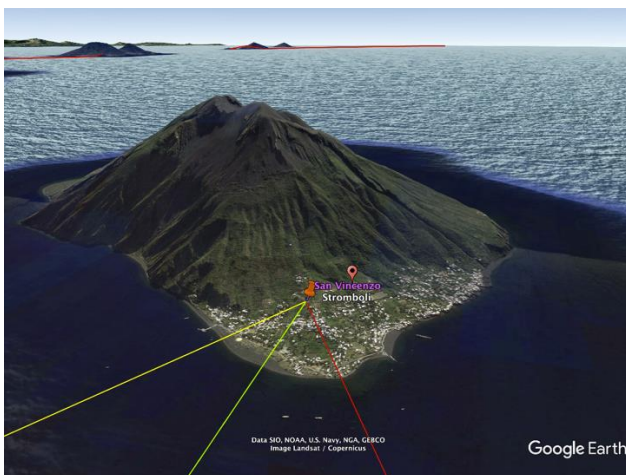


Figure 11. The position of Filo Braccio village from Google Earth.

2.5. Lipari island

Lipari is the main island of the archipelago. It has two prehistoric sites, one situated in the western part of the island, the *Castellaro site* (of the Middle Neolithic Age), where excavations of the last years have returned lithic and ceramic materials, while the huts have never been traced; the other site is the *Acropoli*, situated in the eastern part of the island, on the hill that dominates the city center of Lipari (Figure 12).

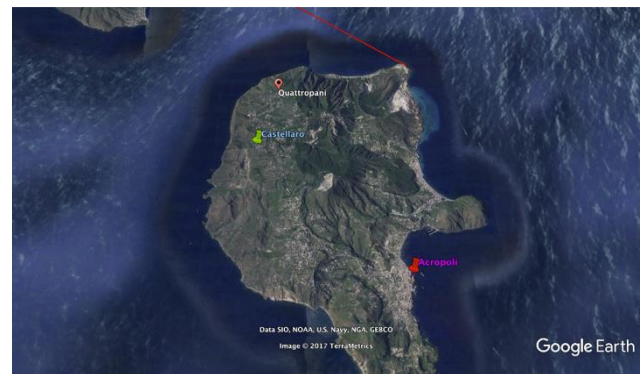


Figure 12. The positions of Filo Castellaro and Acropoli villages from Google Earth.

Today on the *Acropoli* (Figure 13) it is possible to see the prehistoric village of the Late Bronze Age, but the site is surrounded by modern buildings, including the archaeological museum, the most important of Sicily, along with that of Syracuse. Using satellite data we will study only the eastern horizon, because the western is covered by hills.



Figure 13. Aerial view of Acropoli village from Google Earth.

2.6. Milazzo

And finally we will consider the Ancient Bronze Age village which is located at Milazzo in Viale dei Cipressi, in eastern part of the promontory (Figure 14). For about 5 years a tensile structure has been installed to protect the village, which has a particular hut (Figure 15), in fact some studies have emphasized its ritual character. The main's hut (called 1) entrance bisector has an azimuth of 202° , a value out of the solar range. In addition to the orientation of the village, the orientation of the entrance of this hut will be studied.



Figure 14. The position of Viale dei Cipressi village from Google Earth.

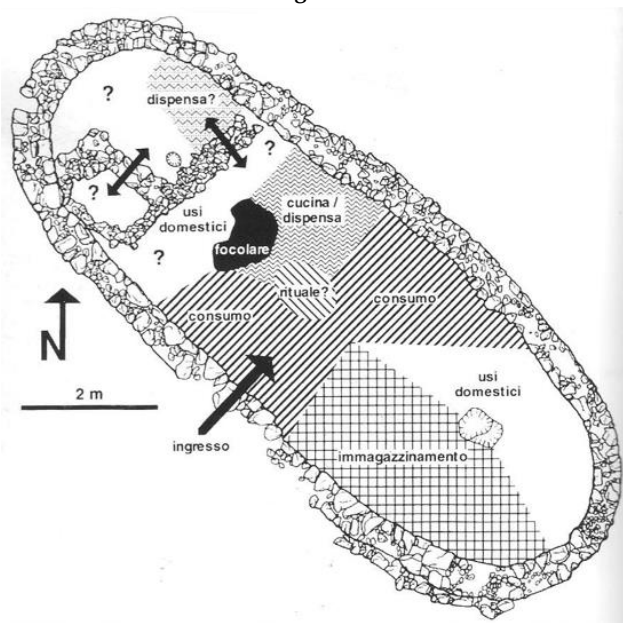


Figure 15. a (up) Milazzo, Viale dei Cipressi village: the main hut; b (down) relief of the main hut (from Tigano, 2009).

3. CONCLUSIONS

In conclusion we can do some very preliminary observations:

a) first of all the horizon profiles are in most cases characterized by the topography of the islands. Observe markers linked to the landscape and to the apparent movement of the Sun during the year is in many cases evident, in fact the rising and setting of the Sun at the equinoxes and solstices is often linked to topographic points;

b) Panarea's village seems to have a complete "horizon calendar" (from East to West), which could lead to thinking that the choice of the site has been conditioned by this aspect as well;

c) the villages of Filicudi have interesting western profile, where there seems to be a rather evident

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marker (Alicudi island) for sunset observation to equinoxes.

It should also be noted that until recently, only an archaeoastronomical study on a Sicilian prehistoric village was carried out, ie the Bronze Age village of Ustica (Martin and Magli, 2016). The preliminary study proposed on prehistoric villages of the Aeolian Islands can open new scenarios of scientific research, for example to understand if the choice of sites for the construction of the villages was also dictated by astronomical knowledge. The in situ measurement campaign that we will carry out in the autumn 2018 will allow us to complete the study and conclusions, also considering a possible astronomical orientation of the urban layout of each prehistoric villages present in the Aeolian archipelago and in Milazzo.

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