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## MISENUM: THE HARBOUR AND THE CITY. LANDSCAPES IN CONTEXT

### 1. GEOGRAPHICAL AND HISTORICAL BACKGROUND

The peninsula between Baiae to the N and Cape Miseno to the S is a very interesting area from the historical point of view in the wide coastal region enclosed by the Gulf of Naples (Fig. 1). Abundant are the archaeological traces, sometimes monumental, that have always attracted the attention of researchers, and still suggest a fragmented image of the settlement complexities in this part of the so called Campi Flegrei, the Phlegraean Fields (MAIURI 1958, 66-101).

One of the themes dear to scholars was – and partly still is – the study of the monumental traces of the Roman “living by-the-sea” that, through the architectural language expressed by the *otium villas*, reached very high levels of wealth in this region from the first Imperial Age (DE CARO 2008, 57). The resonance, in ancient literary sources, of the most influential names of the Roman elite as owners of seaside villas oriented the historical research for several decades, contributing greatly to increase our knowledge regarding the architecture of the sumptuous residences, and more generally on the complex socio-economic dynamics of the so-called “villa society” (D’ARMS 1970; 1976, 347-363).

Considerable attention has been devoted to the study of archaeological remains of villas that characterized the coastal landscape of ancient Baiae, exclusive vacation suburb of Cumae (BORRIELLO, D’AMBROSIO 1979, 18-19; AMALFITANO *et al.* 1990, 185-193): the many fishponds, private harbours and docks in *opus caementicium*, colonnades, thermal buildings – we recall that, together with the mild climate and the sublime landscape the area enjoyed, the hot water springs first attracted the Roman *nobilitas* since the end of the 2<sup>nd</sup> century BC – that are still preserved among and inside modern buildings and, in some cases, submerged by the sea (DI FRAIA 1993, 21-48), return only an incomplete picture of the opulence that shaped the landscape through the use of an imposing and exuberant architecture (GIULIANI 1976, 365-375).

Another historical event that catalyzed further economic forces in the Phlegraean peninsula was the installation of the military port by Augustus between the 1<sup>st</sup> century BC and the 1<sup>st</sup> century AD (MINIERO 2008, 174-184): following the transfer of the fleet in Misenum from the nearby Portus Iulius we witness the birth of a new town – later on designated as *municipium* – that, getting out of the jurisdiction of Cumae, will become the new urban heart of this sector of the Phlegraean Fields. The soldiers in service in Misenum – about 6,000 according to recent figures (MINIERO 2008, 177) – became



Fig. 1 – The area of the Gulf of Naples.

rooted more or less intensely in the Phlegraean area, creating their own families and offspring that are now partly visible in the epigraphic documents coming from the necropolis outside the town (PARMA 1994, 43-59). Not least in municipal politics was the role of the *collegia*, most notably that of the *Augustales*, which greatly contributed to the figurative representation of power, by the construction of sacred places for the Imperial cult, public buildings and community spaces that shaped Misenum urban layout (MINIERO 2008, 185-189; PENSABENE 2008, 190-192; ZEVİ 2008, 212-218).

## 2. RESEARCH STRATEGIES

Within the wide context of archaeological researches in the area of interest is, however, absent an analytical approach to the study of the territory and of the ways of living that characterized the landscape of the Phlegraean Fields throughout the Imperial Age (CICALA, ILLIANO 2017). The anthropological phenomenon of “living in the Bay of Naples”, subject of authoritative

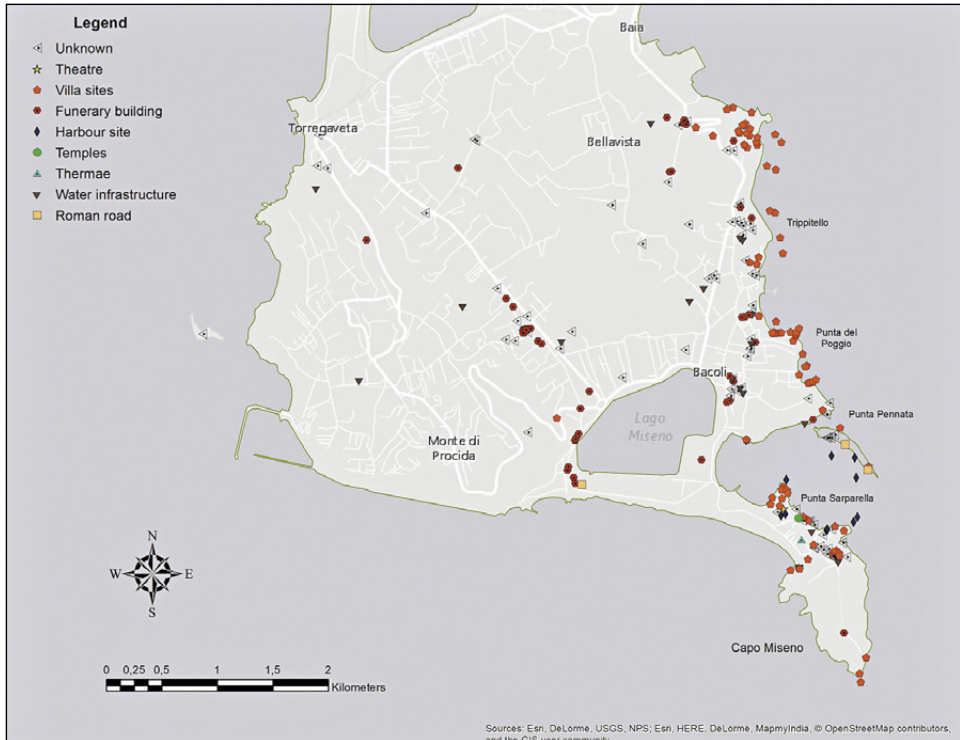


Fig. 2 – Misenum archaeological map as visualized in GIS platform.

studies (D'ARMS 1970) favoured the philological side of the debate, seeking – within a panorama of extremely fragmented archaeological evidence – the location of villas owned by the wealthy members of the Roman aristocracy mentioned in ancient sources.

The destruction that affected the archaeological landscape, caused by natural factors – such as volcanic activity and bradisism (PAPPALARDO, RUSSO 2001) that still characterize the area – and anthropic factors – as represented by ceaseless urbanization in the last decades –, does not allow to have a complete perception of territorial patterns during the Roman Age. This has denied a chance to precisely reconstruct the relationship between man and landscape that regulated the settlement strategies and the criteria of exploitation of the territory and its resources.

On this basis and considering the need to bridge a gap in the historical knowledge of the examined area – within the limits imposed by external factors of visibility – a deep research on the Baiae-Misenum peninsula has been

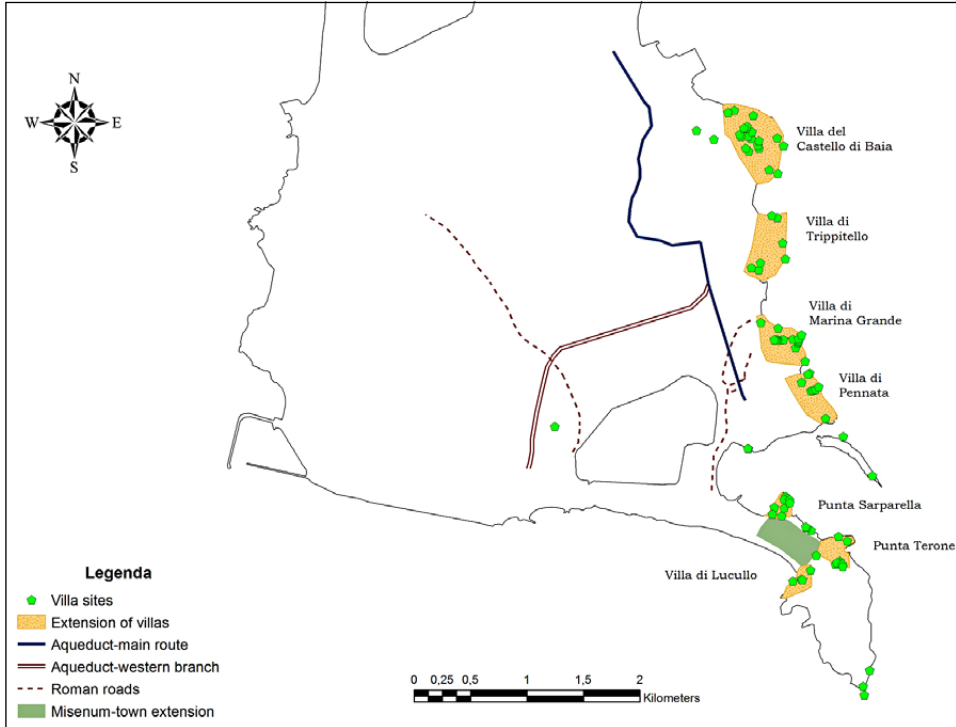


Fig. 3 – Landscape reconstruction after GIS analysis.

undertaken: the main aim is to analytically consider the many archaeological documents and various historical phenomena already investigated by previous researches, within an overall contextualization of the landscape.

Specifically, the primary task is the understanding of the topography of Misenum, investigating its organization in districts (military headquarter, urban centre, residential areas, suburb and periphery) and the level of interaction between centre and periphery, highlighting the criteria that “designed” the new town, and the role of the military port as an urbanization boost.

The layout of this powerful military infrastructure is well known as a system of two communicating basins, separated by two lines of piers in *opus caementicium* placed at the foot of the cliffs of Punta Sarparella, Punta Terone and Punta Pennata (MINIERO 2008, 177; BENINI, LANTERI 2010, 109-116). The archaeological underwater explorations have also identified a system of tunnels along the Pennata island that allowed to link the inner and outer side of the bay, in connection with a raised walkway above the quay intercepted along the southern flank of the island (BENINI, LANTERI 2010, 113-115).

Together with the port and the military headquarter, the forum and the civic centre, the residential quarter, the productive suburb and the many seaside villas seem to have been the main districts the town was provided.

By collecting data from field surveys, analysis of literary, cartographic, iconographic and archives sources, we proceeded to the creation of GIS geodatabase which first allowed to draw a new archaeological map of the territory (Fig. 2). The database is organized into fields to record the largest amount of information as possible for each site, making reference to the model provided by the Istituto Centrale per il Catalogo e la Documentazione (ICCD) for the *Monumento Archeologico/Complesso Archeologico* (MA/CA) form in digital format (<http://www.iccd.beniculturali.it/index.php?it/473/standard-catalografici>; accessed: 31/03/2017).

The digital cartographic tool can be used to display the classification of archaeological evidence for those parameters useful to the first stage of spatial analysis, such as architectural category, function, building technique, chronology.

From the analysis of the distribution of archaeological evidence, classified by attributes, we started the first step of spatial analysis, concerning the reconstruction of settlement dynamics within the territory of Misenum (Fig. 3).

### 3. COASTAL VILLAS

A relevant role in the archaeological debate regards the numerous *otium* villas that crowded the Gulf of Naples, and in particular the stretch of coast between Baiae and Misenum. As anticipated, about these villas only few traces remain today, however, difficult to interpret. Indeed, the overlap of the modern settlement of the town of Bacoli has concealed large part of the ancient structures, greatly limiting their level of conservation. The panorama of archaeological traces, consequently, shows a dichotomy between those evidence that still retain a character of monumentality (see, for example, the theatre/nymphaeum commonly called “Tomb of Agrippina”, belonging to a private villa in Marina Grande, Bacoli: BORRIELLO, D’AMBROSIO 1979, 102-105) and several “anonymous” marks for which the quantity and quality of information is low.

It may be concluded, therefore, that the image we have of these villas is strictly limited to the version given by the ancient literary sources, as well as by some better preserved contexts in the Vesuvius area (PESANDO, GUIDOBALDI 2006, 410-437; BONIFACIO 2008, 565-569), together with many fresco depictions of coastal residences found in Pompeii and Herculaneum (BRAGANTINI, SAMPAOLO 2009, 386-401).

Nevertheless, in the course of this work we have tried to overcome this remarkable limit of visibility, by analyzing other aspects of the phenomenon of maritime villas that have not been adequately considered so far. For the first time, with GIS is possible to display the areas where the evidence supposedly

belonging to the seaside villas are concentrated, and consequently to analyze their topographical features.

By relating this category of archaeological evidence with traces of fishponds and other underwater structures – identified by previous diving surveys (DI FRAIA 1993, 21-48) and/or through the use of satellite photos – we proceeded to the creation of buffer zones that could suggest the extension area of each seaside villa (Fig. 3). By calibrating the result with the general context of the archaeological evidence, it was possible to obtain an image that might be quite similar to the real coastal landscape of the Imperial Age: it is immediately visible that the *otium* estates just N of the port of Misenum have an extension considerably higher (average 9 ha) than those that were placed within the urban area (only few ha). This aspect, besides shedding light on the various building dynamics inside and outside the town of Misenum – it may be argued that the villas inside the town were more constraint between the urban spaces than the villas in periphery – becomes even more useful to delineate the boundaries between urban area and suburb: the latter, according to the layout thus defined, would eventually start along the northern side of the harbour, by the hill of Pennata.

#### 4. ANCIENT AND MODERN ROAD NETWORK

Another interesting phenomenon to be analyzed is the ancient road network and the relationship with the modern street system. In literature it is proposed long since the path of two important extra-urban roads (MINIERO 2008, 175) which run along the eastern and western sides of the Maremorto Lake, linking Misenum to Cumae and Baiae. The presence of these streets is without any doubt witnessed by funerary buildings, of the type of *columbaria*, that in both cases are quite clearly aligned along a NS axis.

The two cemeteries, then, are indirect indicators of two road routes that are now retraced almost entirely by modern streets: the Cumis-Misenum road to the W is now traced by the modern Via Mercato di Sabato, and the road to the E of the lake which lead to Baiae has turned into Via Miseno and Via Gaetano de Rosa.

The GIS visualization of the distribution of the various surviving funerary buildings not only reinforces the reconstruction of the Roman roads already proposed in the literature, helping to highlight this particular interweaving of ancient and modern landscapes (CICALA, ILLIANO 2017), but it also provides more data about the correlation between the various topographical units of the area with the road system. It has been found, indeed, that some funerary buildings were located away from the highway path, as often happened in similar contexts (VON HESBERG 1994, 50-55), creating a dense network of secondary roads and alleys that went up the hills of Monte di Procida to the W and Pennata to the E. At this stage, also, it has been possible to highlight

the ways in which the villas of the coast were connected with the extra-urban main roads (Fig. 3): as it is natural to imagine, the wealthy *otium* buildings along the coast between Punta Pennata and the castle of Baiae were not separated from the surrounding landscape, but were well connected to it through a much more complex network than what has been proposed so far.

## 5. THE CASTRUM AND THE URBAN CENTRE

The recent archaeological research has drawn attention, albeit in a limited way, on the question of the location of the forum of Misenum, political core of the new town. Becoming a real town, not just a military base, the legal dignity was displayed by a series of urban and architectural programs to provide the city an adequate corpus of public buildings for the manifestation of power and the *Romanitas*.

Of this project we know only few episodes that, at the end of the 1<sup>st</sup> century AD led to the construction of a temple for the imperial cult – the well-known Shrine of the *Augustales* – and, later on, a theatre (MINIERO 2008, 177-180). The epigraphic sources, also, inform us – as one may expect – that the forum area was monumentalised thanks to a massive economic effort of the most distinguished members of the local community, which dedicated statues to the gods of the Roman pantheon (ZEVI 2008, 212-234). The results of archaeological investigations lead to locate the public square, political heart of the new municipium, between Punta Sarparella, near the theatre, and the Shrine of the *Augustales* by Punta Terone to the E (MINIERO 2008, 175).

As part of the current research, a campaign of geophysical survey has been planned over two sample areas considered of primary importance for understanding the dynamics of urban development of the military town. Specifically, it was decided to investigate, with the combined use of Ground Penetrating Radar (GPR) and geoelectrical survey, the area near the Roman theatre, and the field on the southern side of the harbour basin. From both areas we expect to find – for the first time through non-invasive investigations – new data on the organization of urban spaces. In addition, it is important to recall that the strategic choice of the sample areas is increased by the centrality of their location: near the port and the civic centre, at the foot of a seaside villa that once stood on the Sarparella hill, the areas to be investigated may provide interesting data for understanding the key features of Misenum urban landscape.

Besides detecting the forum location and exploring the organization of spaces around the civic centre, we hope to find an answer to the question concerning the development of Misenum from castrum to municipium. The generally accepted location of the town between Punta Terone and Punta Sarparella (TOCCO 1987, 180) raise, in fact, some questions: the GIS shows that the size of the hypothetical Augustan Age castrum – about 13 ha – is

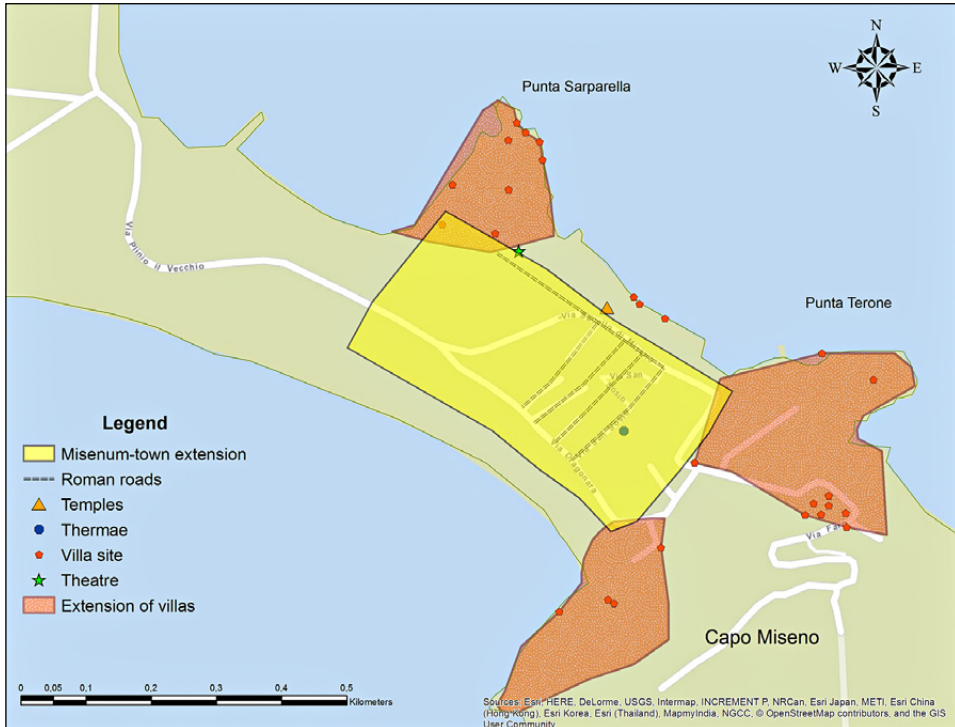


Fig. 4 – The supposed location of Misenum town centre.

actually disproportionate to a military camp (Fig. 4). It is legitimate to speculate whether a re-calibration of the data is necessary, assuming the presence of a smaller castrum, only later extended over a wider surface, or if it was originally designed a very large camp to host a large fleet, being able from its origin to deal with the forthcoming urban growth of the new colony. Anyhow, what is striking – and that on one side may suggest the presence of a town planning strategy – is the evidence of a modern road network that might have traced that of the Roman time: a grid of perpendicular streets positioned at a distance of about 30 m that finds a comparison in the dimensional criteria of the nearby 2<sup>nd</sup> century BC coastal *castra* of Puteoli (GIALANELLA 2012, 348).

## 6. FUTURE PERSPECTIVES

Hereafter, the research will increase data collection through different research procedures. On the one hand, geophysical surveys could allow to obtain a more accurate picture of the possible presence of still buried archaeological



constructions at the boundary between military and public districts. On the other side, it will be possible to guide future archaeological researches in a more targeted way, finalizing any excavation work to the exploration and understanding of the focal points of the urban fabric.

Furthermore, aerial surveys by drone will also map the underwater evidence along the coast from Misenum to Baiae: the photo-mosaic will be geo-referenced to easily visualize into the GIS the aerial mapping. In this way, for the first time, we will obtain high resolution images of the many – and in some cases still unknown – submerged archaeological constructions. It will, therefore, achieved a complete and cost-effective mapping of the maritime archaeological heritage, which is not only a useful documentary tool, but also a fundamental element for the reconstruction of the complex jigsaw-puzzle of building units that made up the urban landscape and seascape during the Imperial era.

GIS role will be twofold: on one hand, a spatial analysis will be conducted in order to shed light on important territorial dynamics that characterized the investigated area, such as density analysis, cost-path reconstruction of the routes linking Misenum to the nearby towns, and visibility investigation to better understand the communication strategies between the different ports in the Gulf of Naples.

On the other hand, collected information and the recently designed archaeological map will be uploaded into a further web-GIS platform easier to use even for non-experts, creating an innovative story-telling app to develop historical knowledge to the public: archaeological sites will be displayed on a basemap making it possible for users to query datasets and obtain information about the local heritage.

It is, therefore, hoped to significantly implement the degree of knowledge about the topography of this complex area, shifting the attention from the analysis of individual monuments – always considered as isolated evidences – toward the contextualization of the archaeological traces within the landscape, toward an analytical understanding of the settlement dynamics in the Baiae-Misenum peninsula.

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## REFERENCES

- AMALFITANO P., CAMODECA G., MEDRI M. (eds.) 1990, *I Campi Flegrei. Un itinerario archeologico*, Venezia, Marsilio.
- BENINI A., LANTERI L. 2010, *Il porto romano di Misenum: nuove acquisizioni*, in D.J. BLACKMAN, M.C. LENTINI (eds.), *Ricoveri per navi militari nei porti del Mediterraneo antico e medievale. Atti del Workshop (Ravello 2005)*, Bari, Edipuglia, 109-116.

- BONIFACIO G. 2008, *Castellammare di Stabia: indagini archeologiche nell'area del pianoro di Varano*, in P.G. GUZZO, M.P. GUIDOBALDI (eds.), *Nuove ricerche archeologiche nell'area vesuviana (scavi 2003-2006)*, Roma, L'Erma di Bretschneider, 565-569.
- BORRIELLO M., D'AMBROSIO A. 1979, *Baiae – Misenum. Forma Italiae. Regio I, XIV*, Firenze, Olschki.
- BRAGANTINI I., SAMPALO V. 2009, *La pittura pompeiana*, Napoli, Electa.
- CICALA L., ILLIANO G. 2017, *Paesaggio archeologico e paesaggi urbani tra Baia e Miseno*, in A. AVETA, B.G. MARINO, R. AMORE (eds.), *La Baia di Napoli. Strategie integrate per la conservazione e la fruizione del paesaggio culturale*, Napoli, Artstudiopaparo, 358-362.
- D'ARMS J.H. 1970, *Romans in the Bay of Naples*, Cambridge, Harvard University Press.
- D'ARMS J.H. 1976, *Proprietari e ville nel golfo di Napoli*, in *I Campi Flegrei nell'archeologia e nella storia. Convegno Internazionale (Roma 1976)*, Roma, Accademia Nazionale dei Lincei, 347-363.
- DE CARO S. 2008, *I Campi Flegrei in età romana*, in F. ZEVI (ed.), *Museo archeologico dei Campi Flegrei. Catalogo Generale. 1, Cuma*, Napoli, Electa, 53-64.
- DI FRAIA G. 1993, *Baia sommersa: nuove evidenze topografiche e monumentali*, «Archeologia subacquea. Studi, ricerche e documenti», 1, 21-48.
- GIALANELLA C. 2012, *Pozzuoli*, in H. VON HESBERG, P. ZANKER (eds.), *Storia dell'architettura italiana. Le città in Italia*, Milano, Electa, 348-359.
- GIULIANI C.F. 1976, *Note sull'architettura nei Campi Flegrei*, in *I Campi Flegrei nell'archeologia e nella storia. Convegno Internazionale (Roma 1976)*, Roma, Accademia Nazionale dei Lincei, 365-375.
- MAIURI A. 1958, *I Campi Flegrei*, Roma, Istituto Poligrafico e Zecca dello Stato.
- MINIERO P. 2008, *Miseno. Introduzione e nuove scoperte*, in F. ZEVI (ed.) *Museo archeologico dei Campi Flegrei. Catalogo Generale. 1, Cuma*, Napoli, Electa, 174-184.
- PAPPALARDO U., RUSSO F. 2001, *Il bradisismo dei Campi Flegrei (Campania): dati geomorfologici ed evidenze archeologiche*, in P.A. GIANFROTTA, F. MANISCALCO (eds.) *Forma maris. Atti del Forum Internazionale di Archeologia Subacquea (Pozzuoli 1998)*, Napoli, Massa, 103-121.
- PARMA A. 1994, *Classiari, veterani e società cittadina a Misenum*, «Ostraka», 1, 43-59.
- PENSABENE P. 2008, *La decorazione architettonica del Sacello*, in F. ZEVI (ed.) *Museo archeologico dei Campi Flegrei. Catalogo Generale. 1, Cuma*, Napoli, Electa, 190-195.
- PESANDO F., GUIDOBALDI M.P. 2006, *Pompei, Oplontis, Ercolano, Stabiae*, Roma, Laterza.
- TOCCO G. 1987, *Cuma-Baia-Miseno*, in F. ZEVI, G. LUONGO, P.A. GIANFROTTA (eds.), *I Campi Flegrei*, Napoli, G. Macchiaroli, 155-182.
- VON HESBERG H. 1994, *Monumenta. I sepolcri romani e la loro architettura*, Milano, Longanesi.
- ZEVI F. 2008, *Miseno. Le basi iscritte del Sacello*, in F. ZEVI (ed.) *Museo archeologico dei Campi Flegrei. Catalogo Generale. 1, Cuma*, Napoli, Electa, 212-238.

## ABSTRACT

The interest of archaeological research on the Phlegraean Fields, in the Gulf of Naples, has been often concentrated on different topics: monumental architecture, thermalism, coastal *otium* villas. However, we are still missing a reasonable reconstruction of the ancient landscapes of the area with special regard to the peninsula between Baiae and Misenum. The recent PhD project at the Vrije Universiteit Amsterdam has had the task of filling in the gap in local modern archaeology, and shifting the level of analysis from the “site” to the “territory”: the study of individual monuments and surviving archaeological assemblages of the Roman town of Misenum, the main harbour for the Imperial navy, is now a part of the investigation of the urban organization of the municipium. The use of a dynamic and multidisciplinary research strategy has led to the creation of a new archaeological map for the area being investigated.

Furthermore, geophysical surveys over the area near the military port and the town centre has implemented the data available, contributing, for the very first time, toward a better and more detailed understanding of the organization of the harbour district, in relation with the political and civic core of Roman Misenum. Thanks to GIS applications it is now possible to launch an analytical examination of the urban fabric within the Misenum peninsula. On one hand, it has been possible to increase the amount of information at our disposal and, on the other hand, to propose a panorama of landscape dynamics for the Misenum territory whose massive amount of archaeological evidence appear to be extremely fragmented by human (modern urbanization) and natural factors (bradyseism).

