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Emplazamiento, infraestructuras y organización de los puertos romanos

Mertxe Urteaga
Antonio Pizzo
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Harbours of the Karian *Chersonesos* (Rhodian *Peraia*)

Puertos de la *Chersonesos* de Caria (*Perea* rodia)*

Harun Özdaş[**], **Nilhan Kızıldağ**[**], **Winfried Held**[***]

Abstract

The Karian *Chersonesos*, a rough peninsula in southwestern Asia Minor, is rich in archaeological findings including a well-preserved coastal landscape with a large number of small harbours or landing places. Most of them are simple quay structures built from a rough quay wall that is backfilled with large rubble stones. They are datable only through their archaeological context, while the construction technique seems to be more or less unchanged between at least the Hellenistic and the Early Byzantine periods. A selection of these simple harbours is presented in this paper.

Keywords: Small harbours, Karian *Chersonesos*, Bozburun peninsula, Rhodian *Peraia*.

Resumen

Chersonesos de Caria, una áspera península en el suroeste de Asia Menor, es rica en hallazgos arqueológicos, incluyendo un paisaje costero bien conservado con un gran número de pequeños puertos o lugares de desembarco. La mayoría de ellos son simples estructuras de muelle construidas a partir de un muro tosco que se rellena con grandes piedras de escombros. La técnica de construcción parece haber permanecido más o menos inalterada al menos entre el periodo helenístico y el bizantino temprano. En este artículo se presenta una selección de esos pequeños embarcaderos.

Palabras clave: Pequeños embarcaderos, *Chersonesos* cariano, península de Bozburun, *Perea* rodia.

* La traducción del título al castellano, el resumen y palabras clave se deben a los editores.

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The harbour sites presented in this paper were documented during the marine survey as part of the project "The Coasts of the Karian Chersonesos" (Özdaş *et al.,* 2020). This multidisciplinary project was organized in collaboration of Dokuz Eylül University, Izmir, and Philipps-Universität Marburg. It also brings together two formerly independent survey projects in the same area in order to understand the connections between land and sea. The Turkish underwater survey team (Özdaş and Kızıldağ, 2016; Özdaş and Kızıldağ, 2017) comes together with the German land survey team (Held, 2009; Held, 2011; Held, 2014; Held, 2019; Held and Wilkening-Aumann, 2015), and both work together. The project has started in 2019 and was interrupted by the Covid pandemic, therefore most of the following results have preliminary character.

The Karian Chersonesos is the most southwestern peninsula of Asia Minor or modern Turkey which became the core of the Rhodian Peraia around 300 BC. Today, it is also known as Loryma peninsula or Bozburun peninsula. Due to its rough geological appearance, the shores of the Chersonesos are characterised by many small bays that provide the natural space for a dense network of many small harbours (Fig. 1). These share a common feature: quays along the shores that are constructed from large rubble stones. This is a rough and simple way of harbour construction, attested here already in the Bronze Age (Kızıldağ *et al.,* 2023) and continuing into the early Byzantine period; occasionally it is combined with breakwaters and/or jetties.

Today, all of these structures are submerged. The sea level of the Hellenistic to early Byzantine period has been ca. 1.5 m below the present sea level (Kızıldağ *et al.,* 2012; Kızıldağ, 2019; Kızıldağ and Özdaş, 2021; Kızıldağ *et al.,* 2023). The surface of the harbour constructions is located between 0.5 m and 1.7 m below present sea level. They all most probably have submerged with one or more strong earthquakes in the 6th or 7th century AD.

Kapıcıkada

Kapıcıkada is a settlement with three harbours, with occupation phases from the Archaic to the Hellenistic periods (Held, 2014, 369-372, figs.15-17; Held and Wilkening-Aumann, 2015, 78-79, 92, fig. 5). Only the west harbour seems to have been used until the Late Roman period. It consists of a rough quay of ca. 20 m width and 80 m length. Its surface is now at –0.5 m, which for the Roman period corresponds to 1 m above sea level.

Lines of walls parallel to the shore are visible within the quay structure showing that the rubble stones have been stabilised with internal walls. The walls are erected as single-shell retaining walls with their straight outline at the sea side. They hence can be interpreted as a sequence of retaining walls which have extended over time the width of the quay towards the sea, thus providing not only a larger quay area but also allowing ships with larger draught to berth.

At the present shoreline, there is a series of six small buildings of up to ca. 5 m x 5 m size. At least some of them are constructed with walls using mortar and indicating a Roman Imperial or Late Roman date. They can be interpreted as store rooms or other facilities related to the harbour.

Arap Mezarı Koyu and Sucağız Koyu

The neighbouring bays Arap Mezarı Koyu and Sucağız Koyu are situated at the northern shore of the Hisarönü Gulf (Held, 2014, 372-374, figs.19-20). At both, remains of ancient kilns for pottery production have been documented; the production is attested from the Hellenistic to the Late Roman period. In front of the well-preserved kiln at Arap Mezarı Koyu are many large rubble stones which may have belonged to a simple quay construction like the one of Kapıcıkada. A better preserved quay is documented at Sucağız Koyu where rubble stones along the shore are covered with mortar. In the

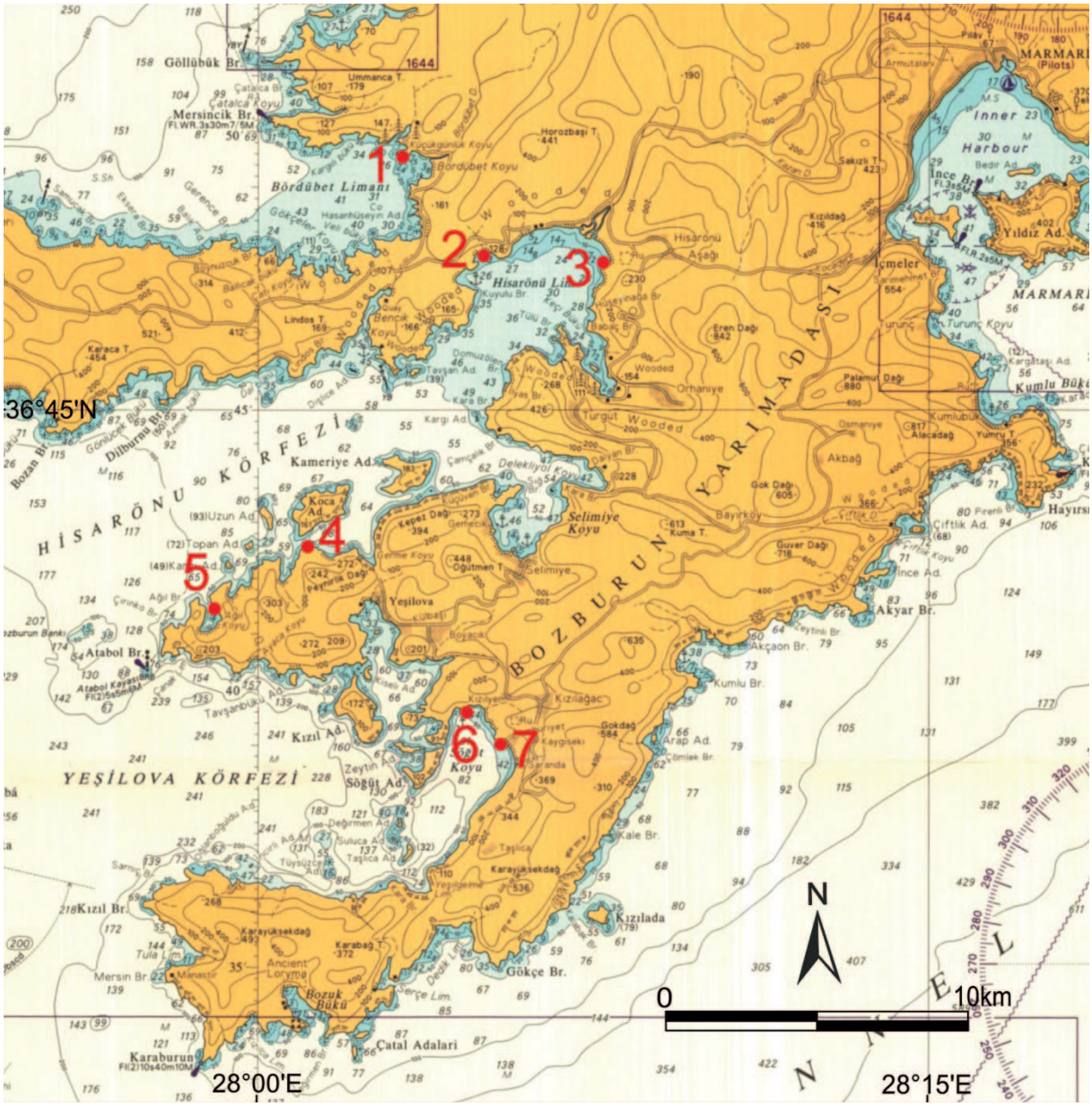

Fig. 1. The Karian Chersonesos, with the harbours indicated according to their chapter numbers (British Admiralty Nautical Chart 1055: Rhodes Channel and Gökova Körfezi 1:150 000, 1993, detail).

natural profile of the shore, remains of two kilns are visible. The mortar indicating the original surface of the quay is now at the present sea level; hence it has been about 1.5 m above the ancient sea level. Since there is no settlement nearby, this has to be interpreted as an isolated production site which took advantage of the natural water sources available at both bays.

Bybassos, Late Roman harbour

At Bybassos, the large Hellenistic harbour has been silted up since the Late Hellenistic or Early Roman Imperial period. Therefore, a new harbour was constructed in the 4th century AD (Held, 2014, 364-365, figs. 9-10). It is a ca. 90 m long structure again constructed from large rubble stones, including Hellenistic spolia. It is ca. 15 m wide, and from it five projecting jetties are visible, with about 10 m length beyond the quay. The retaining walls of the quay and jetties, constructed from large

rough blocks, are partially preserved. In some areas, the original surface of the quay is visible, consisting of mortar mixed with small stones and pottery sherds. The quay surface lies between the present sea level and –0.5 m, which corresponds to 1–1.5 m above the Late Roman sea level. There are at least five small buildings at the present shore, i.e. along the ancient quay. The harbour seems to have been abandoned after the 6th century AD.

Kargıncık Koyu

The construction of this type of quay and jetty structure becomes clearer at the site of Kargıncık Koyu. Here, a very long quay structure is preserved, now with a clear retaining wall towards the sea. There are again five jetties, which have been constructed from rubble stones, projecting from this quay (Fig. 2). Enclosing walls are not preserved at the jetties but they may have existed and collapsed through the movement of the sea. The surface of the quay is located at 1.7 m below the present sea level. Some amphora sherds dated to Hellenistic period were found within the quay structure, which are naturally concreted and cemented with stones.

The function of this site is still unclear because it is not attached to a settlement. There are again many walls of small buildings along the shoreline, some with watertight plaster, and many small shells, which points towards some kind of marine production site. The pottery finds are attesting its use from about the 2nd century BC to the 6th century AD.

Ağıl Koyu

A very large quay of the same construction technique, with partially preserved retaining walls, is visible at Ağıl Koyu (Fig. 3). The surface of the quay is at 0.5 m below the present sea level. Its context is unclear since there is no settlement next to it. The only ruin is that of a square building erected from regular large blocks indicating a Late Classical or Hellenistic date. The date of the quay is yet unknown.

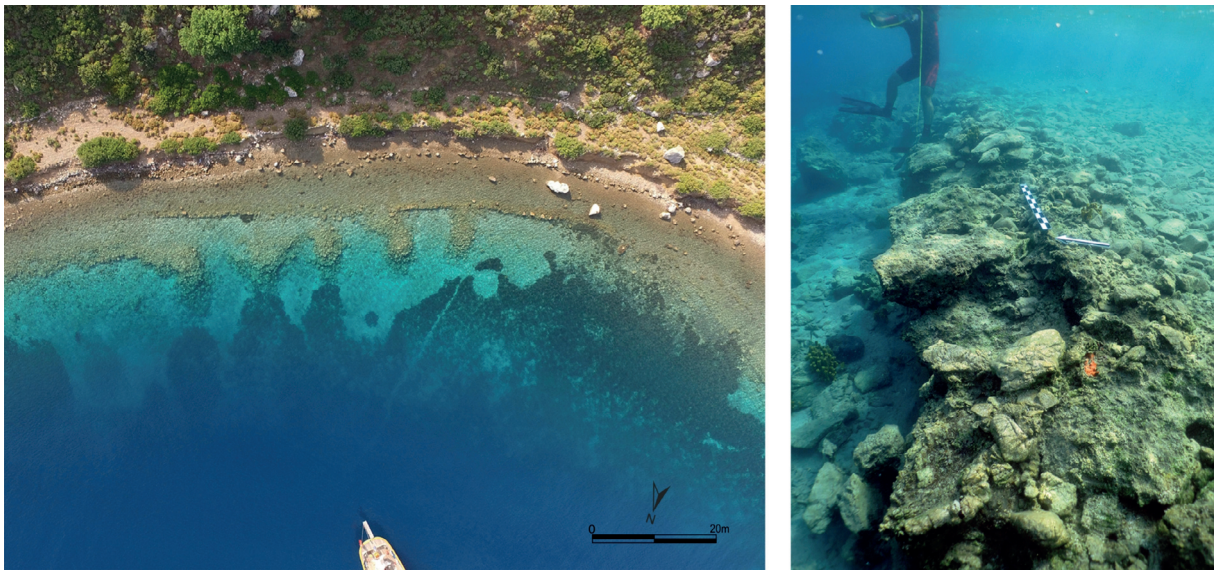

Fig. 2. Kargıncık Koyu, quay with retaining wall and five jetties (Çağatay Erciyes / authors).

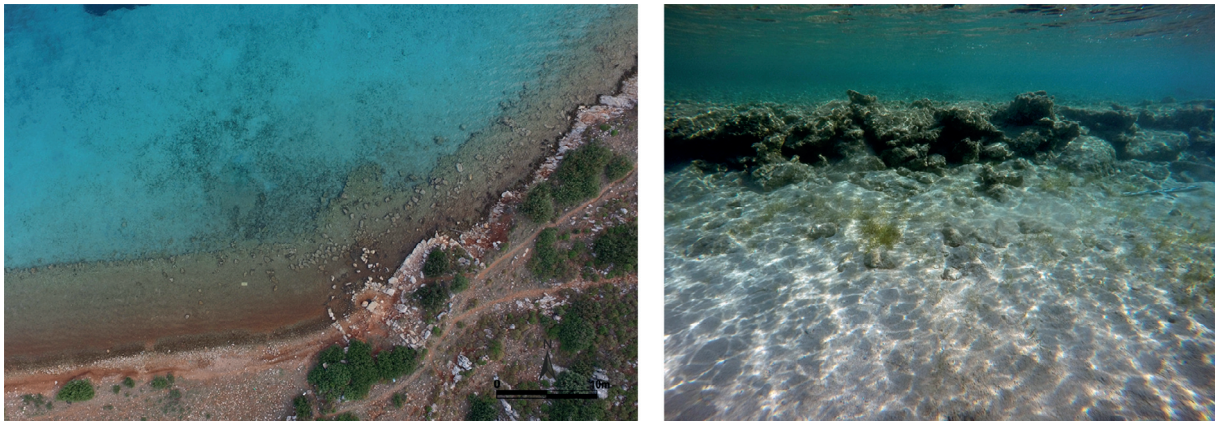

Fig. 3. Ağıl Koyu, quay with retaining wall (Çağatay Erciyes / authors).

Söğüt Kissebükü (Thyssanous)

At Söğüt Kissebükü, a small harbour has been constructed consisting of two small moles which are rounded towards the interior of the small bay, thus also functioning as breakwaters (Fig. 4). Their length is about 15 m, and they are constructed from rubble stones. On land, there is an early Byzantine basilica erected on top of a terrace made of large rough blocks which may predate the church. In the basilica, ancient spolia from the Roman Imperial period are reused. The moles again are submerged with their surface at 0,7 m below the present sea level. One of them has been overbuilt by a modern layer and is today again used as a mole. Their date is yet unknown. Since they are submerged, they are Early Byzantine at the latest, but possibly have been erected earlier in the Roman Imperial period.

Söğüt Saranda (Thyssanous)

Further to the south within the same bay, at Söğüt Saranda, another site consists of three submerged moles with breakwaters built from rubble stones and of a shape similar to those of Kissebükü (Fig. 5). They seem to form three small harbour basins for small boats. At the inner side of the middle mole, a retaining wall is partially preserved. So far there is no indication of their date or function, but the fact that they are submerged points again towards an ancient date, possibly in the Roman Imperial or Late Roman period.

All these sites are small harbours or landing places, therefore their construction technique is not comparable to the structures of the harbours of Roman cities. The specific characteristic of these sites is the rare case of a well-preserved coastal landscape with its maritime network and related installations. Especially the simple quay structures built from a rough quay wall of large stones, and backfilled with only slightly smaller rubble stones is rarely described. They are datable only through their archaeological context, and similar structures may exist in sites with more occupation phases that obscure their identification and date.

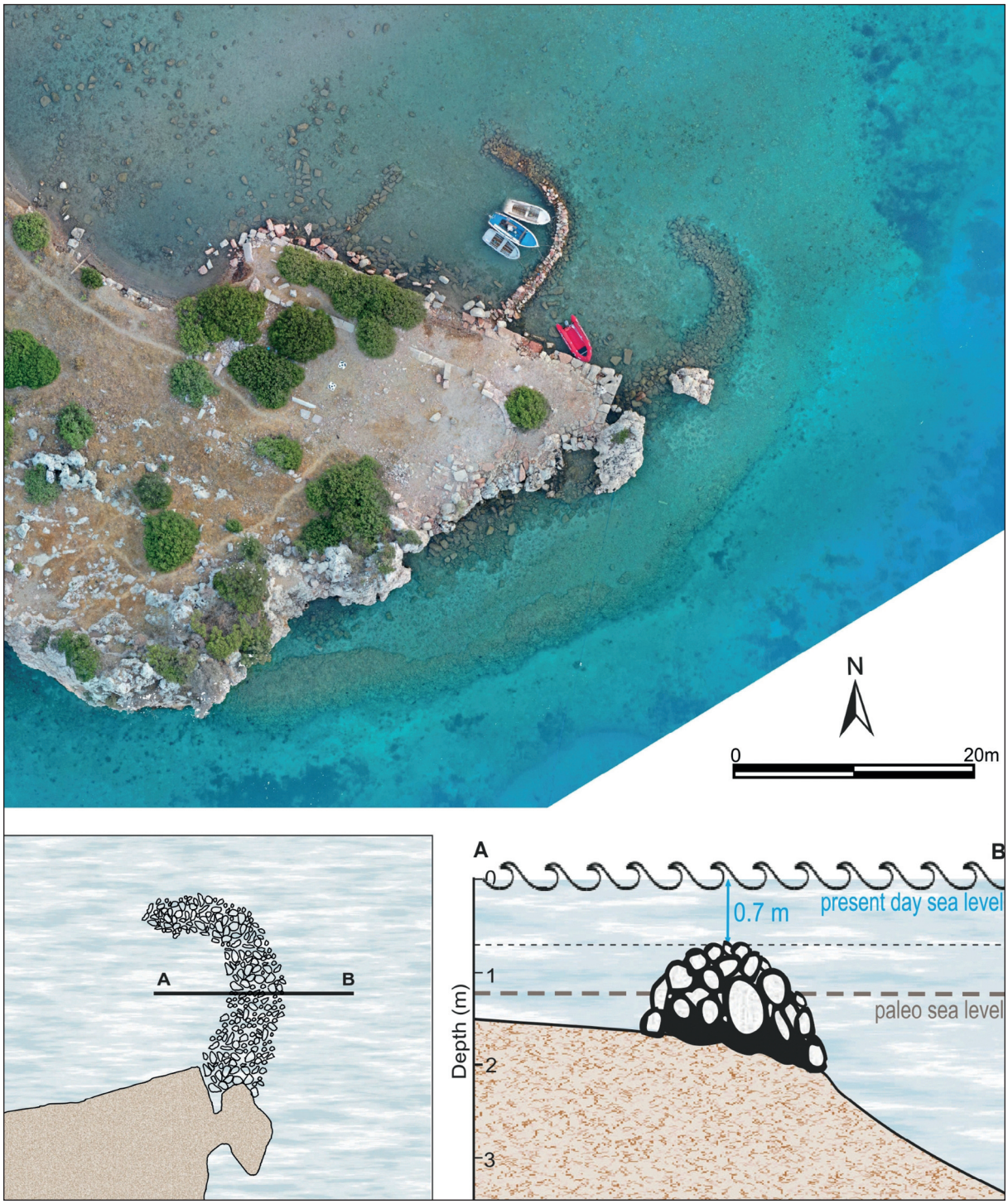

Fig. 4. Söğüt Kissebükü, orthophoto of the harbour with two moles/breakwaters (Nils Schnorr), and sketch of the eastern mole with section at ancient and present sea level (Nilhan Kızıldağ).

Fig. 5. Söğüt Saranda, three submerged jetties with breakwaters (Çağatay Erciyes).

Bibliography

Held, W. (2009). "Die Karer und die Rhodische Peraia". In: Rumscheid, F. (ed.). *Die Karer und die Anderen, Kolloquium Berlin 2005*. Bonn: Habelt, 121-134.

Held, W. (2011). "Der Hafen von Bybassos". In: *Côtes de Carie et de Lycie: état de la question, Table Ronde Bordeaux 2007, Anatolia Antiqua,* 19, 441-451.

Held, W. (2014). "Häfen der Rhodischen Peraia". In: Ladstätter, S., Pirson, F. and Schmidts, Th. (eds.). *Häfen und Hafenstädte im östlichen Mittelmeerraum von der Antike bis in byzantinische Zeit. Neue Entdeckungen und aktuelle Forschungsansätze. Symposion Istanbul 30.5.-1.6.2011.* Byzas, 19, vol. 1. Istanbul: Ege Yayınları, 357-375.

Held, W. (ed.) (2019). *Die Karische Chersones vom Chalkolithikum bis in die byzantinische Zeit. Beiträge zu den Surveys in Loryma und Bybassos.* Forschungen auf der Karischen Chersones 1. Marburg: Eigenverlag des Archäologischen Seminars.

Held, W. and Wilkening-Aumann, Ch. (2015). "Vom Karischen Bund zur Griechischen Polis. Archäologischer Survey in Bybassos und Kastabos auf der Karischen Chersones". In: Matthaei, A. and Zimmermann, M. (eds.). *Urbane Strukturen und bürgerliche Identität im Hellenismus.* Die hellenistische Polis als Lebensform 5. Heidelberg: Verlag Antike, 74–98.

Kizildağ, N. Özdas, A. H. and Uluğ, A. (2012). "Late Pleistocene and Holocene Sea Level Changes in the Hisarönü Gulf. Southeast Aegean Sea". *Geoarchaeology*, 27, 3, 220-236.

Kizildağ, N. (2019). "Late Holocene sea level change along the coast of Fethiye Gulf in southwestern Turkey". *Geoarchaeology*, 34(3), 295-310.

KIZILDAĞ, N. AND ÖZDAŞ, H. (2021). "Relative sea-level changes along the Fethiye coast (SW Turkey) based on recent archaeological data". *Geoarchaeology*, 36(3), 474-489.

KIZILDAĞ, N., ÖZDAŞ, H., HELD, W., SPADA, G. AND MELINI, D. (2023). "Novel insights into the sea level evolution along the coast of Bozburun Peninsula (Turkey): A study on submerged Bronze Age harbor in Çamçalık", *Geoarchaeology*, 38(2) 246-260.

ÖZDAŞ, H. AND KIZILDAĞ, N. (2016). "Hisarönü Bronze Age Shipwreck Excavation. 2016 Campaign". *TINA*, 6, 102-107.

ÖZDAŞ, H. AND KIZILDAĞ, N. (2017). "Campaign of the Bozburun Underwater Excavations in Marmaris", *TINA*, 8, 40-45.

ÖZDAŞ. H., KIZILDAĞ, N. AND HELD, W. (2020). "Survey of the Coasts of the Karian Chersonesos. The Coastal Necropolis of Thyssanous". *Skyllis*, 20, 108-118.

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Enregistrement

Harbours of the Karian Chersonesos (Rhodian Peraia)

Philipps Universität Marburg

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*Marburg University, Germany

**Dokuz Eyül University, Turkey

DOKUZ EYLÜL ÜNİVERSİTESİ
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Paramètres audio
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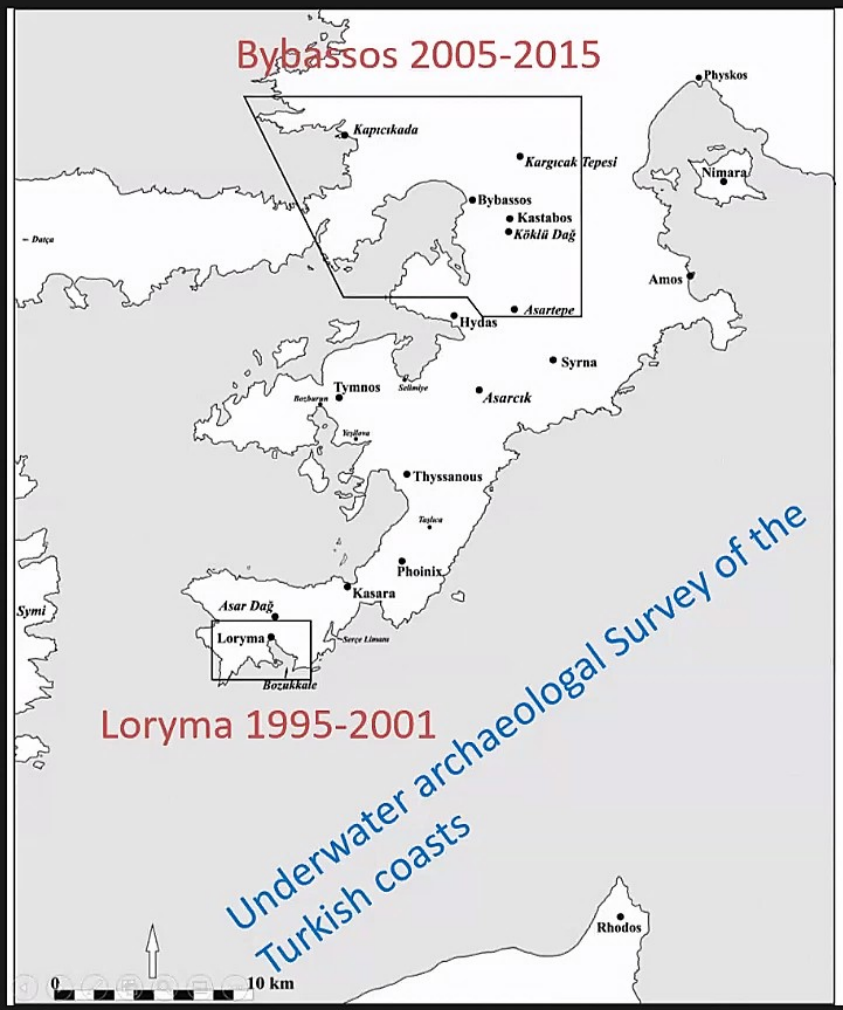
Enregistrement



2019-
Project:
The Coasts of the Karian Chersonesos

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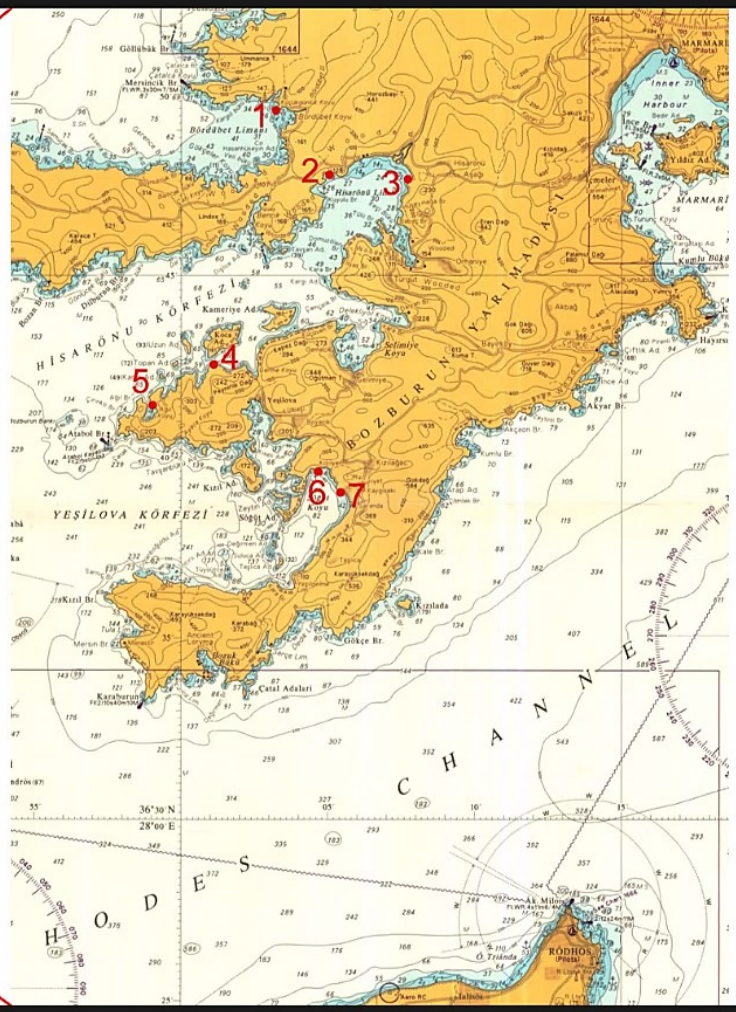
Location / Investigated Sites



1 Kapıcıkada
2 Arapmezarı Koyu
3 Bybassos
4 Kargıncık Burnu
5 Ağıl Koyu
6 Söğüt Kissebükü (Thyssanous)
7 Söğüt Saranda (Thyssanous)

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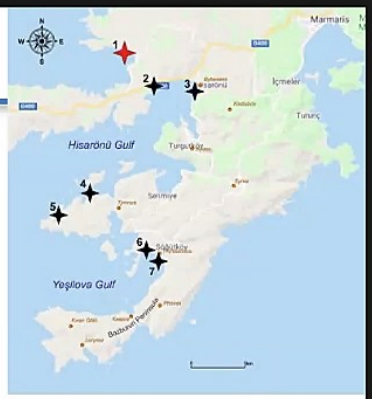

Paramètres audio

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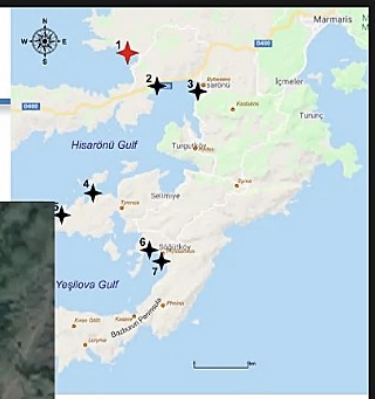

3 harbours

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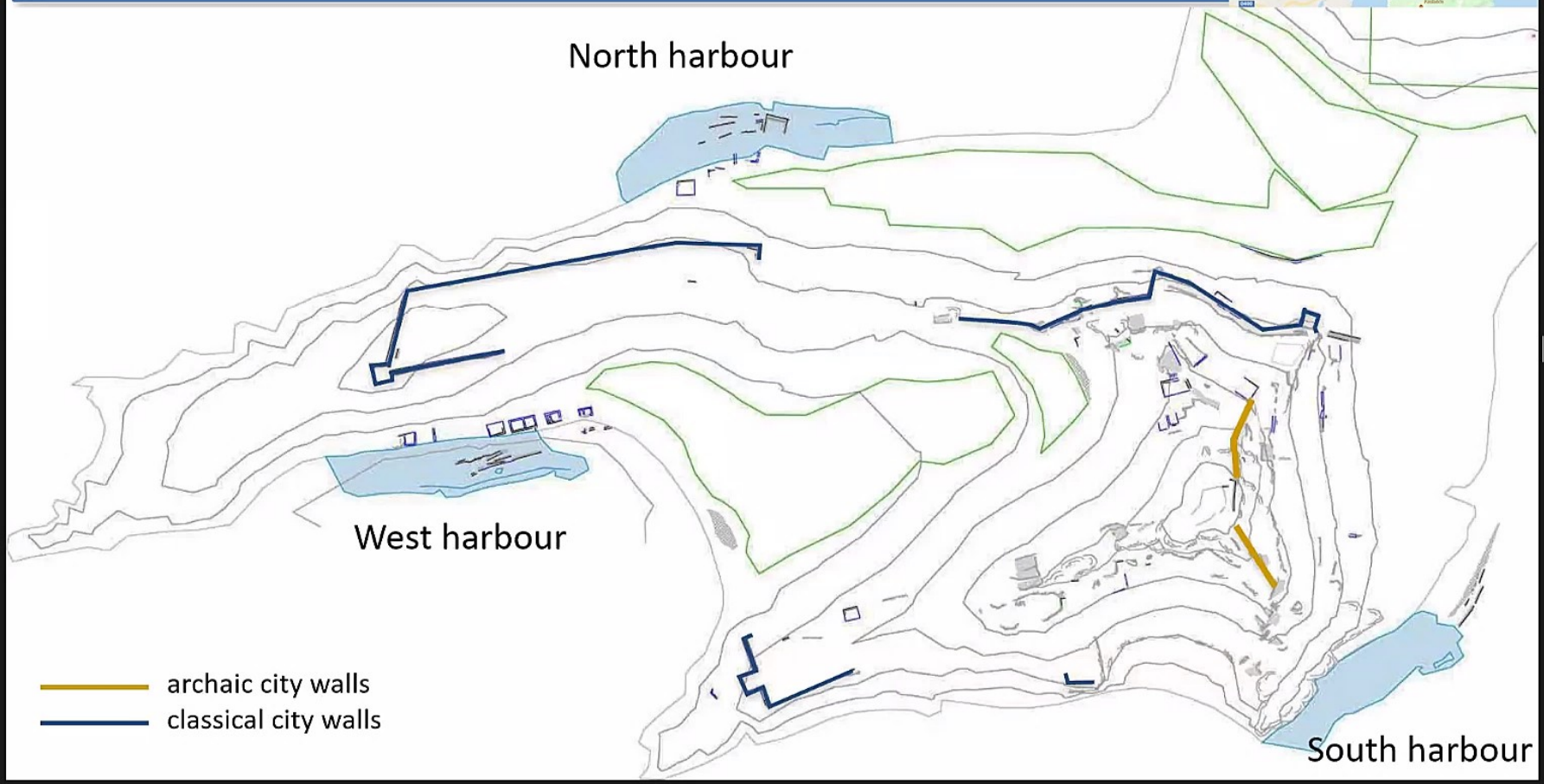

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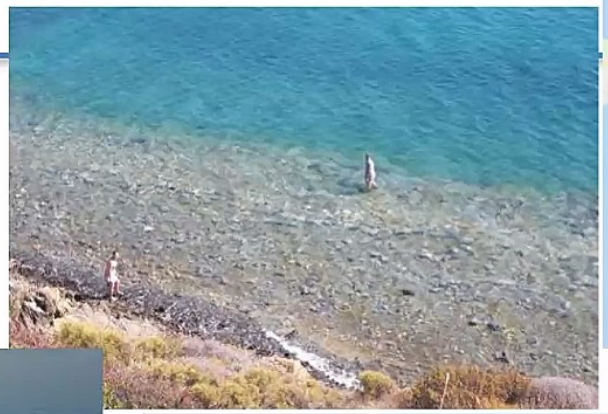
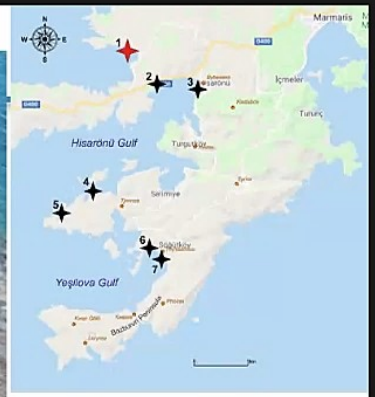
1. Kapıcıkada

West harbour





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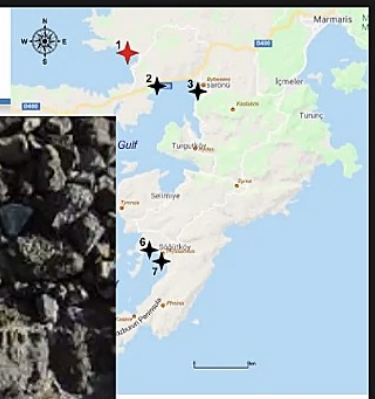

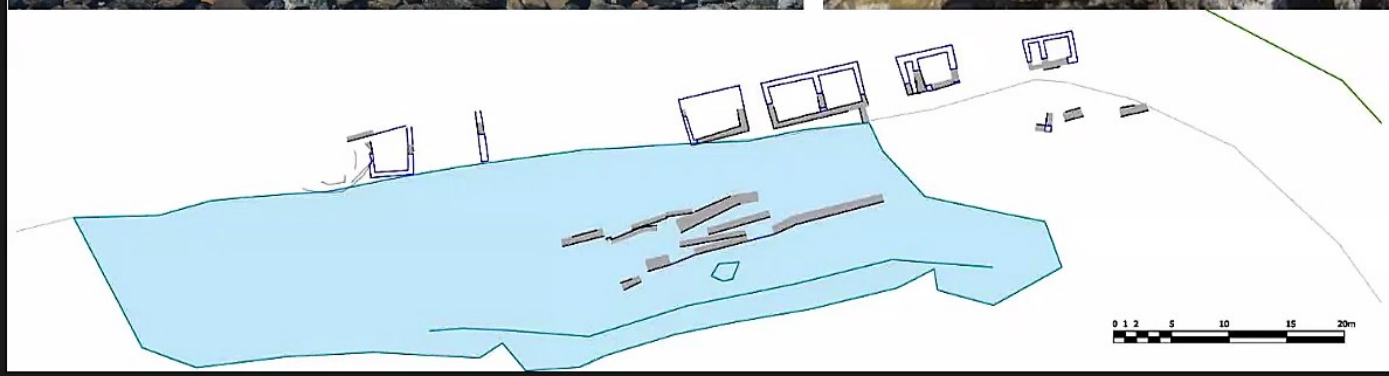

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2. Arapmezarı Koyu

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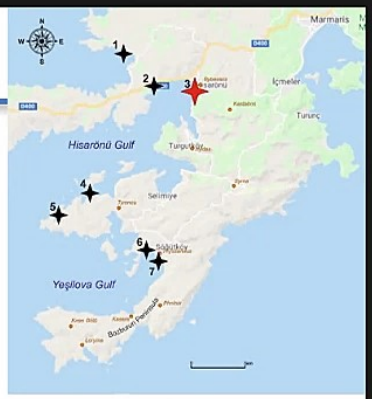
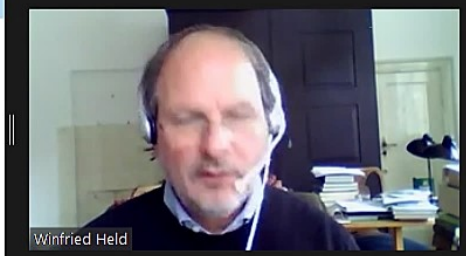
3. Bybassos



Late Roman harbour



Paramètres audio

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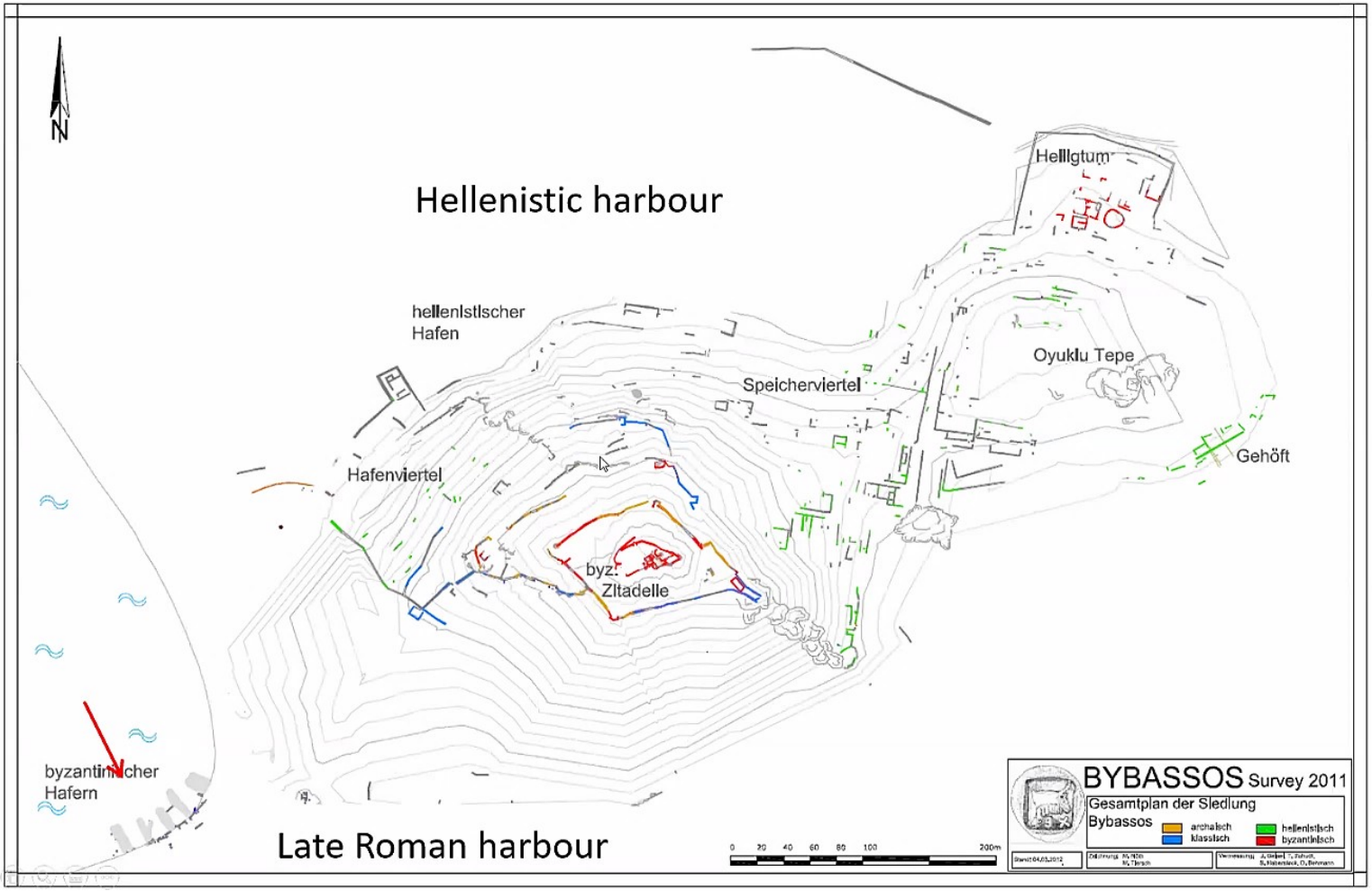

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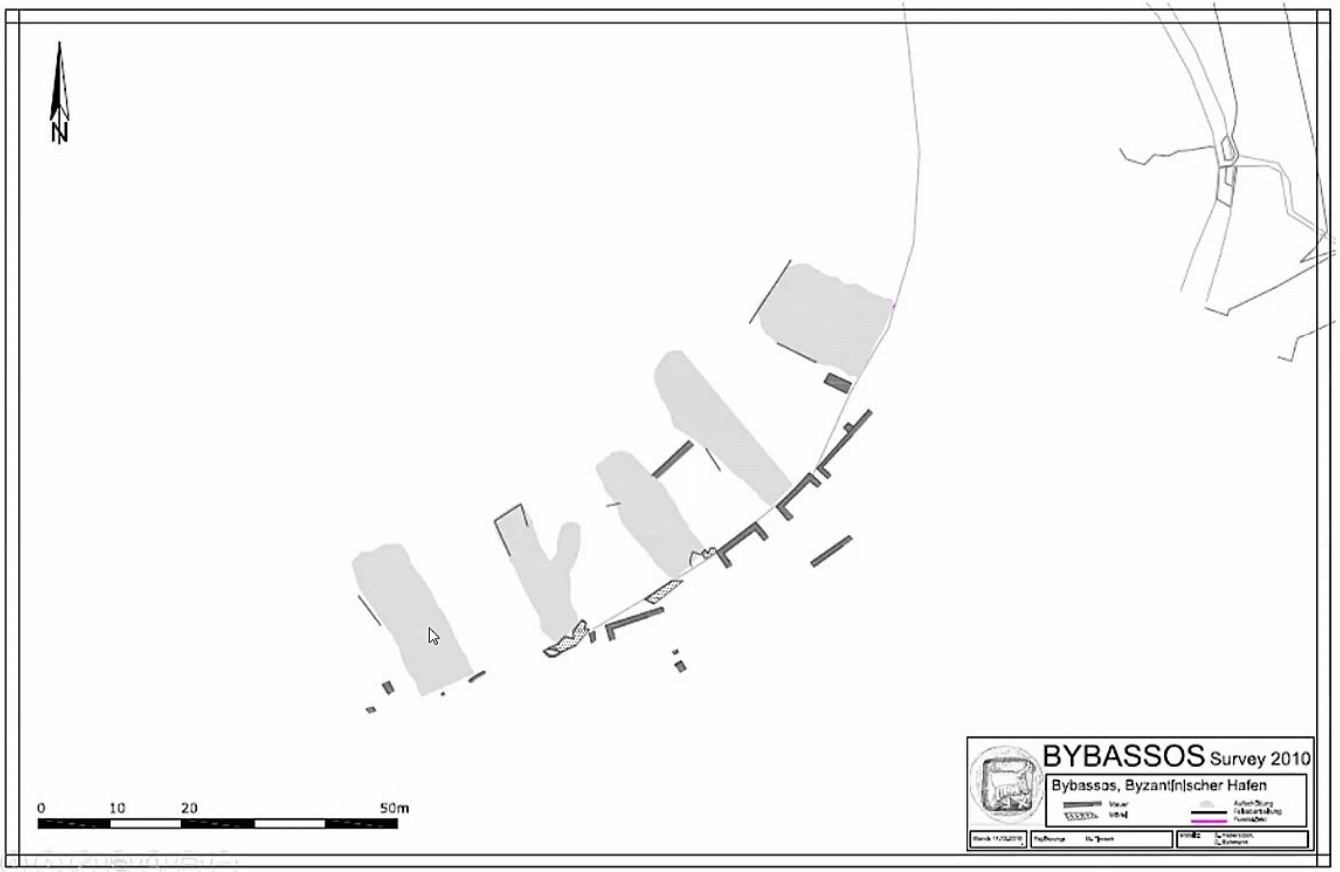

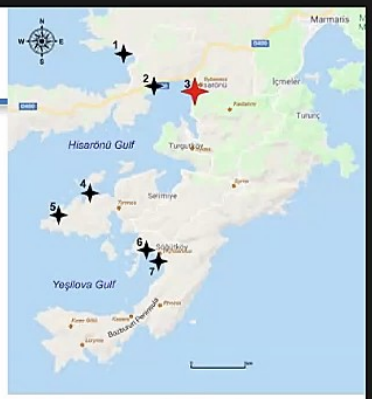

Late Roman harbour

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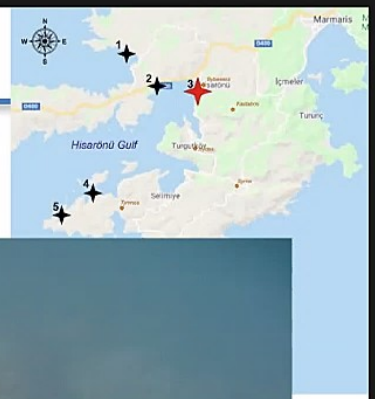
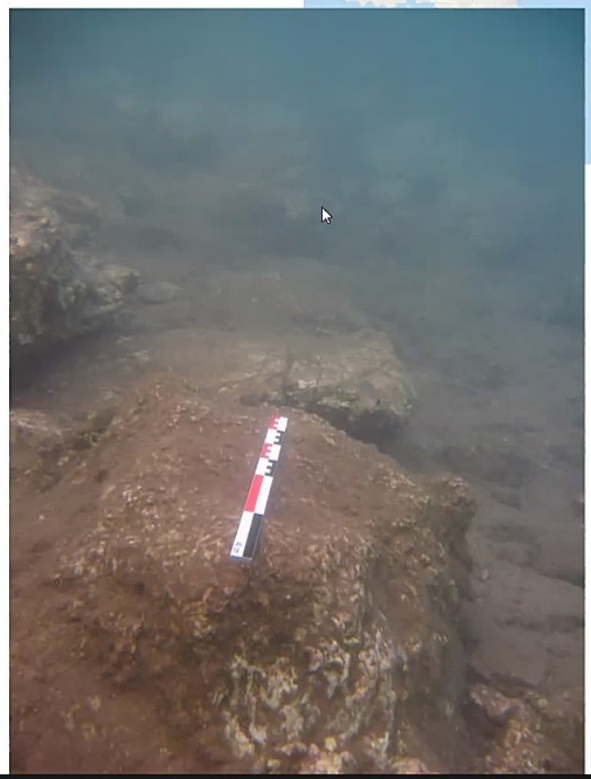
3. Bybassos

Late Roman harbour





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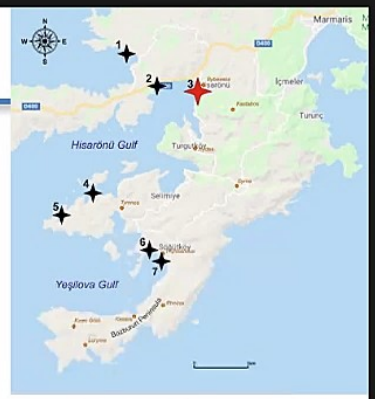
Enregistrement

3. Bybassos

Late Roman harbour



Paramètres audio

Discussion

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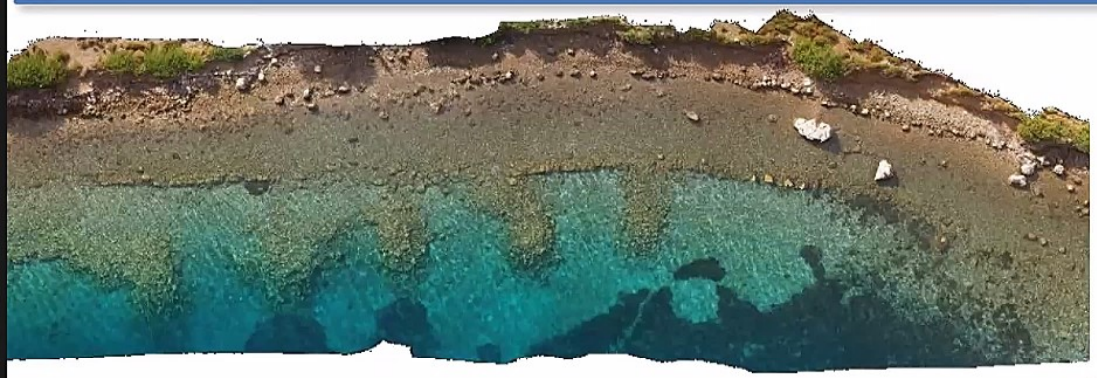
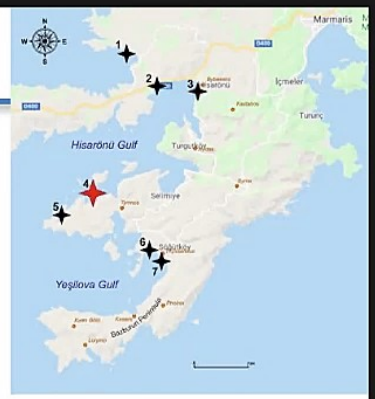
Enregistrement

4. Kargıncık Koyu





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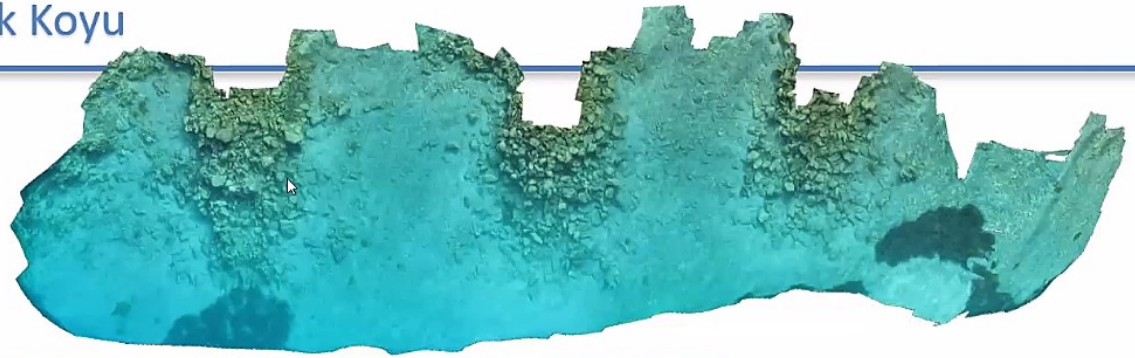
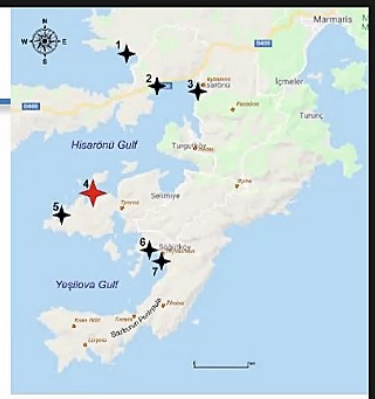
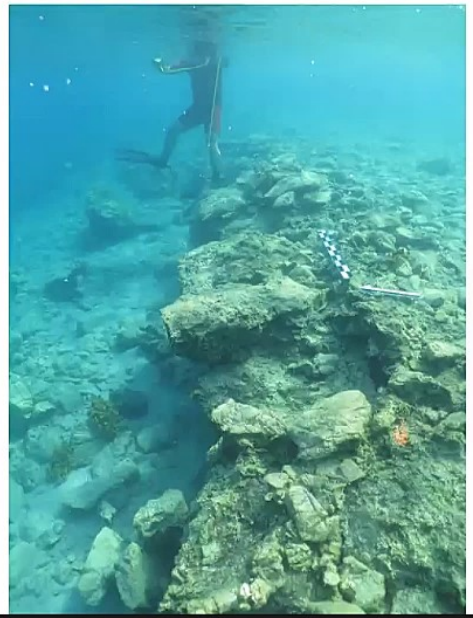
4. Kargıncık Koyu







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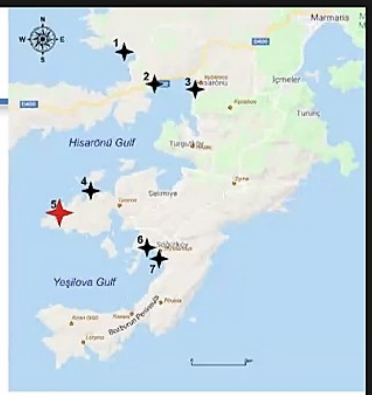

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5. Ağıl Koyu

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6. Söğüt Kissebükü (Thyssanous)

Paramètres audio

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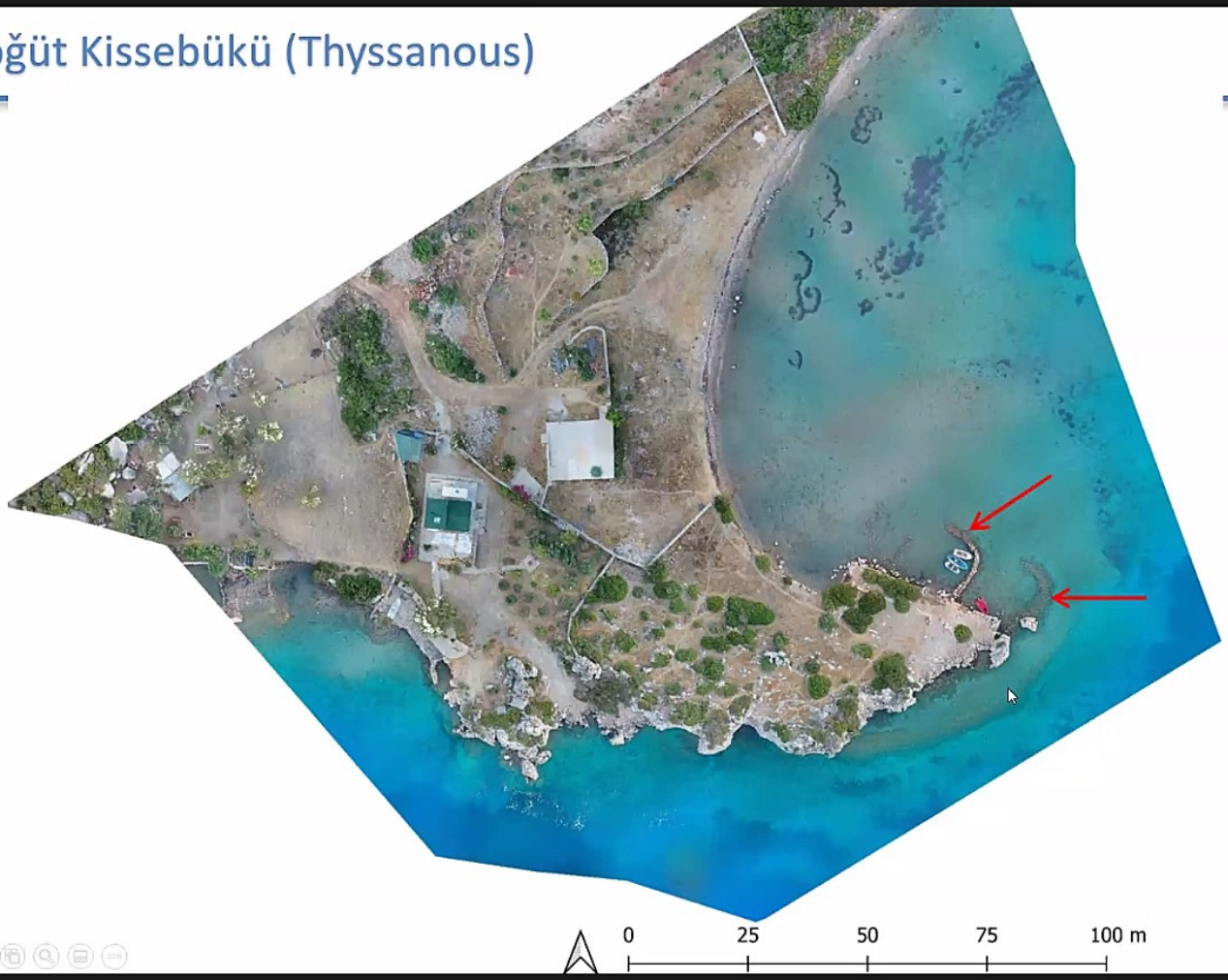
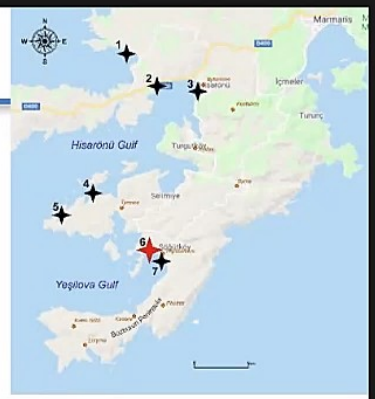
Enregistrement

6. Söğüt Kissebükü (Thyssanous)





Paramètres audio

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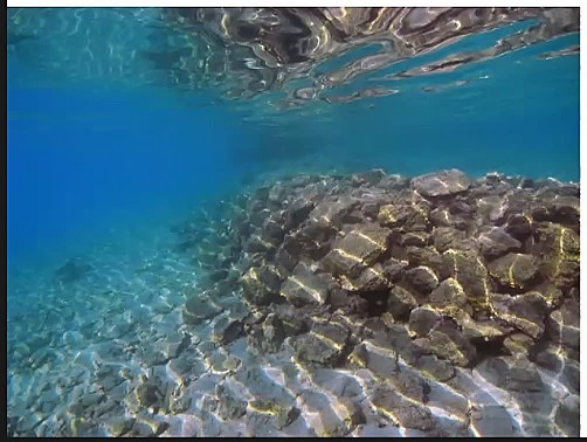
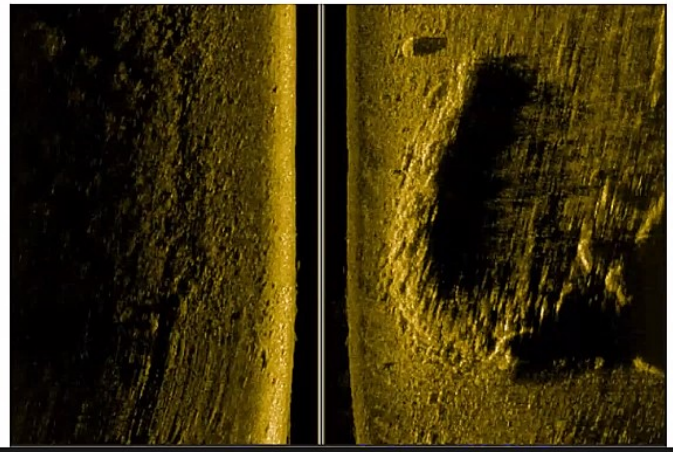
6. Söğüt Kissebükü (Thyssanous)





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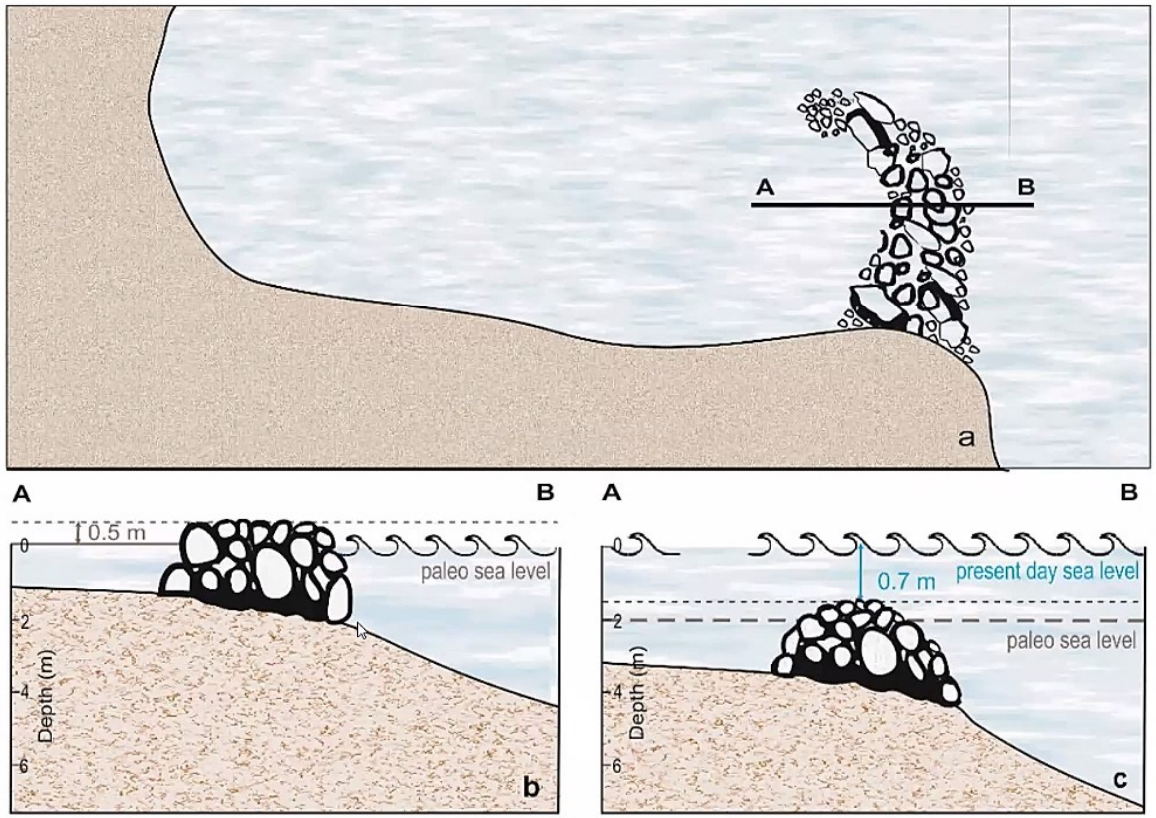
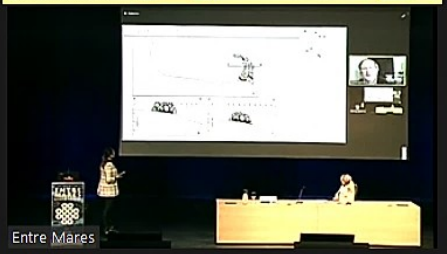
6. Söğüt Kissebükü (Thyssanous)





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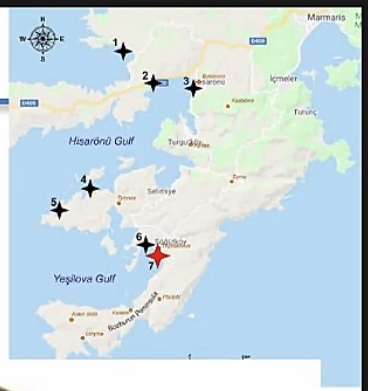

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