

Ancient Maritime Dynamics:
Textual and Archaeological *maria* of the Mediterranean
Final Report for the Honor Frost Foundation

Introduction

The Ancient Maritime Dynamics (AMD) program is a suite of investigations that are refining the use and application of maritime archaeological data to reconstruct the life of the Mediterranean maritime community in antiquity. Whereas other components of AMD are comparing our archaeological narrative of maritime life to terrestrial corpora or the historical trajectories of Aegean port cities, the Textual and Archaeological *maria* of the Mediterranean project gauges the relationship between two geographies of the eastern Mediterranean basin. By using the increasing scope and agency of maritime archaeological data to build models of maritime activity in the eastern Mediterranean, these models may be superimposed upon geographies of the sea proposed by writers from the Hellenistic, Roman, and early-Byzantine eras to gauge their similarities or differences.

Background and Context

Key to AMD's progress is the novel interpretive methodology that emerged from the MISAMS (Modeling Inhabited Spaces of the Ancient Mediterranean Sea) project conducted at the University of Birmingham, England, between 2013 and 2015. MISAMS was built upon two premises. First, that the corpus of maritime archaeological data in the Mediterranean Sea is now large enough to generate its own interpretive context. Rather than relying on conventional historical narratives to generate meaning, a practice predominant in the discipline, MISAMS was influenced by approaches common in prehistoric archaeology and analyzed the maritime archaeological corpus independently of textual or epigraphic sources; meaning thus arose from the contextual chain created by archaeological data alone. Second, by decoupling these wreck sites from conventional narratives, ships are no longer perceived as fixed, historical phenomena tied to essentialist identities such as 'Roman' or 'Egyptian', but as mobile phenomena representing the interests and needs of a heterogeneous community of people inhabiting and constructing a maritime landscape around themselves.

With these two premises, and a dataset of approximately 870 assemblages, site catchment analysis was applied to the sources of items in a single assemblage – not only the 'cargo' – to project a polygon representing the *most likely* area of that ship's activity. Repeating this process across the entire dataset, and interpolating the resulting collection of superimposed polygons with a unique GIS algorithm, a series of color-coded models arose that demonstrated, at centennial intervals, gradually fluctuating zones of inter-regional and 'localized' activity. Fundamentally, these are models of the varying density of maritime activity

across the Mediterranean Sea. Importantly, as this method is scalable, patterns of maritime life within parts of the sea may be modeled as well; this characteristic was the foundation for a comparison between these textual and archaeological geographies of the eastern Mediterranean basin.

Data Collection

With the completion of the MISAMS project in September of 2015, there were 871 assemblages available for analysis within the associated dataset. The vast majority of this data was gleaned from A.J. Parker's *Ancient Shipwrecks of the Mediterranean and Roman Provinces* (1992), although some came from sources published after 1990. By Spring of 2016, and the implementation of this component of the AMD project, the dataset had increased to 912 assemblages. By February of 2017, and the completion of this effort focusing on the eastern basin, data from over 1000 assemblages had been collected and was available for analysis. This additional data from 2016 to 2017 was collected from four research libraries: the Cyprus American Archaeological Research Institute (CAARI), the Albright Institute of Archaeological Research (AIAR), the Ankara branch of the American Research Institute Turkey (ARIT), and the Bodrum Research Center of the Institute of Nautical Archaeology.

Importantly, the emphasis in this study – and throughout AMD – is to collect data that meet two criteria. First, the published information must have been professionally vetted in some fashion; most commonly through a formal peer-review process and, less commonly, through a professional editorial process only. Information published in newspapers or on the internet is not used. Second, as a variant of site catchment analysis is a key component of AMD's modeling, information for each assemblage must contain a date for the deposition of the material, the location of the assemblage, and the source or typological style of items in the assemblage.

Whilst applying those criteria, all of the following journals were searched from the 1990 volume onward, to collect data unavailable in Parker's 1992 catalogue. The sources that provided additional information are marked with an asterisk (*). The edited volumes, site reports, and monographs that provided post-1990 data are listed afterwards.

- *Abr-Nahrain*
- *Ägypten und Levante*
- *American Journal of Archaeology*
- *Anadolu Akdenizi Arkeoloji Haberleri / News of Archaeology from Anatolia's Mediterranean Areas* *
- *Anatolian Studies*
- *Anatolica*
- *Ancient Near Eastern Studies*
- *Annual of the American School of Oriental Research*

- *Annual of the British School at Athens**
- *Annual Report of the Department of Antiquities Cyprus **
- *Araştırma Sonuçları Toplantısı*
- *Archaeologia Cypria*
- *Archaeology and History in the Lebanon*
- *'Atiqot **
- *Berytus*
- *Bulletin d'Archéologie et d'Architecture Libanaises*
- *Bulletin d'Études Orientales*
- *Bulletin of the American Schools of Oriental Research*
- *Bulletin of the Anglo-Israel Archaeological Society*
- *Centre d'Études Chyproites*
- *Egyptian Archaeology*
- *ENALIA**
- *Hadashot Arkeologiyot. Excavations and Surveys in Israel **
- *Hesperia*
- *Israel Exploration Journal*
- *Journal of Egyptian Archaeology*
- *Journal of Field Archaeology*
- *Journal of Near Eastern Studies*
- *Journal of Palestinian Archaeology*
- *Journal of Roman Archaeology **
- *Journal of the American Research Center in Egypt*
- *Les Annales Archéologiques Arabes Syriennes*
- *Levant **
- *Mediterranean Archaeology, Australian and New Zealand Journal for the Archaeology of the Mediterranean World*
- *Opuscula Atheniensia*
- *Orient. Reports of the Society for Near Eastern Studies in Japan*
- *Palestine Exploration Quarterly*
- *Progress in Underwater Science **
- *Report of the Department of Antiquities Cyprus **
- *Studies in Ancient Art and Civilization*
- *Syria*
- *Syria. Archéologie, Art et Histoire*
- *Tel Aviv. Journal of the Institute of Archaeology of Tel Aviv University **
- *The International Journal of Nautical Archaeology **

- *Ancient Akamas I. Settlement and Environment*
- *Caesarea. Journal of Roman Archaeology, Supplementary Series*
- *Caesarea Papers. Straton's Tower, Herod's Harbour, and Roman and Byzantine*
- *Egypt's Sunken Treasures*
- *Proceedings of the International Symposium Cyprus and the Sea*

- *Res Maritimae, Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity*
- *The Ancient Harbour and Anchorage at Dor, Israel.*
- *Transport Amphorae and Trade in the Eastern Mediterranean*

There are two notable characteristics about the results of searching these journals and associated volumes. First is the rarity of periodicals for maritime archaeological data within this collection or, conversely, the conservatism of maritime scholars when disseminating data. Only twelve periodicals contained maritime archaeological data although almost four times that many were presumably viable. Moreover, three of those twelve are annual governmental publications, and a fourth is the *Annual* from the British School in Athens. The second characteristic is the ongoing prevalence of new data emerging from work in Israel, southern Cyprus and, along its southern coast, Turkey. Clearly, political obstacles and instability, and funding priorities, are impacting both the collection and dissemination of important information from Lebanon, Egypt, Syria, and the disputed territory of northern Cyprus.

Modifications

Indeed, this geographic skew in the collected data, even once this information was incorporated with the more extensive dataset from the MISAMS project, meant that the original goals of this investigation had to be modified. Based upon earlier work during the MISAMS project, it was already known that the GIS modeling was scalable. Therefore, the original aim of this investigation was to collect data only from the shores of the eastern Mediterranean basin to model patterns of activity only within those geographic bounds, then compare the emerging concentrations of activity to textual geographies of the sea. This geographic concentration of data primarily from Cyprus and Israel, however, naturally generated models with significantly higher concentrations of activity along these two coastlines. Other coasts, as a result, had no representative maritime activity although this was likely not the case in the past.

To counter this bias, the textual geographies of the eastern Mediterranean were not compared to models with only eastern-Mediterranean patterns, but to pan-Mediterranean models that integrated the new data with the old, and portrayed concentrations and gradients across the sea. This is an important difference to note because it means that the archaeological models have a more homogeneous geographic spread of activity across the eastern basin, and a higher number of assemblages representing that activity, although not all of the assemblages are necessarily found in the eastern basin.

A chronological skew in the data arose as well, because the greatest amount of new information was from the 4th to 6th centuries AD. This, too, was countered through the same application of pan-Mediterranean models generated from the expanded dataset, and the subsequent comparison of the models to a wider

collection of textual geographies. Whereas it was originally planned to focus only on Strabo and Pliny the Elder, the final list of authors and texts used was:

- Eratosthenes (3rd to 2nd century BC): *Geographika*
- Polybius (2nd century BC): *Historiai*
- Strabo (1st BC to 1st century AD): *Geographika*
- Pomponius Mela (1st century AD): *Chorography*
- Pliny the Elder (1st century AD): *Naturalis historia*
- Appian (1st to 2nd century AD): *Historia Romana*
- Saint Orosius (5th century AD): *Historiae adversus paganos*
- Isidore of Seville (7th century AD): *Etymologiae (Origines)*

Results

With these changes to the original project structure, more meaningful results emerged, and many of the project's original questions could be addressed. At the most elemental level, these questions revolved around a basic hypothesis: If these writers' maritime geographies embody the everyday use and inhabitation of maritime space, then the *places* they recognize and name in their texts should coordinate with the concentrations of maritime activity emerging from the archaeological models. After all, inherent to the ongoing use of the sea is its structuration by the people that used it. In contrast, if the two geographies do not coordinate, then perhaps they are portraying different phenomena.

What is immediately clear is that despite the almost continual presence of maritime activity in the eastern Mediterranean, these eight authors' geographies portray the eastern basin as relatively empty of any cultural constructs like gulfs (*kolpoi* or *sinus*) or seas (*pelagoi* or *maria*). Polybius, in fact, writes of no seas or gulfs in the eastern basin although he, like Eratosthenes and Strabo, was from the Aegean region. In particular, Eratosthenes served as the head librarian in Alexandria until his death. Equally, Latin authors could be ignorant of the area until after the 1st century BC and Cilicia's conquest by Pompey the Great, but Pomponius Mela and Appian still provide very little information more than a century after Roman incorporation of the area. This broad discontinuity between the archaeological and textual geographies of the eastern Mediterranean basin certainly suggests that these authors' views were not built upon their immediate knowledge of seafaring in the region or patterns of maritime activity. Indeed, the unique amount geographic detail available in Pliny the Elder's work is most likely representative of his seafaring background as an admiral in the Roman navy.

Nevertheless, the eastern basin is not devoid of stable geographic constructs in these texts. Either or both the Egyptian Sea and the Issian Gulf (the present Gulf of Iskenderun) are present in works by seven of the eight authors, suggesting that these elements – unlike the others – are perhaps representative of

concentrations of maritime activity.¹ The port of Alexandria certainly remained a focus of activity, and even if most of the Egyptian coastline is lacking in landmarks, Alexandria and the Nile Delta stand out and easily signify the presence of Egypt and its associated waters. The port city is prominent in Strabo's work, for example, and it loosely represents the western extent of Asia's presence on the southern coastline.² The Issian Gulf, described by Pomponius Mela as 'the deepest recess', was only 120 kilometers from the Cilician Gates – the lowest mountain pass that funneled armies, goods, migrants, and pilgrims through the Taurus mountains that otherwise hindered movement between Asia Minor from the Near East.³ This gulf, and the ports within it, played a key role maintaining this activity.

Simultaneously, however, these authors do not portray the Issian Gulf or the Egyptian Sea within a context of activity. Instead, the gulf is often a fixed spatial referent used to define or measure the world around it. For Eratosthenes, Strabo, and Pliny, the gulf is used to define the eastern-most extent of the Mediterranean Sea, or to define the shape and extent of the Asian landmass.⁴ Orosius and Isidore, in contrast, use the gulf to clarify the location of Cyprus in the eastern basin.⁵ Moreover, the Egyptian Sea is defined by the places around it, such as Alexandria, Cyprus, or Phoenicia.⁶ The localities of the Egyptian Sea and the Issian Gulf, then, may have been centers of maritime activity in antiquity – and likely enabled that activity – but it seems that their presence in these geographies is not prompted by their importance to a maritime community.

In summary, it seems that these textual geographies of the eastern basin are relatively independent of the maritime activity within the same space; the social or intellectual phenomena recorded and presented by these authors, in turn, seems removed from the everyday activity of the seafarers who inhabited the same space. More broadly, only Pomponius Mela set out to create a true geography for his readers whereas the other texts were topographic contexts for events.⁷ Strabo's and Pliny's texts are examples of Roman triumphalism, equating the glory of the new empire with the physical extent of its expanse, whereas Orosius' study is Christian triumphalism that documents the present and

¹ For the Egyptian Sea, see Eratosthenes (quoted in Strabo) I.2.22-24, VII.3.6-7; Strabo II.5.20, II.5.24, XIV.6.1; Pliny V.10-12, V.28; Appian II.5; Isidore XIV.iii.38. For the Issian Gulf, see Eratosthenes (quoted in Strabo) I.3.1-2, II.1.1-3, II.5.14; Strabo II.4.3, II.5.24-25, XI.11.7, XIV.6.1; Pomponius Mela I.70; Pliny II.112, V.18, V.22, VI.2, VI.8, VI.12, VI.38; Orosius XLIX; Isidore XIV.iv.14, XIV.vi.15.

² Strabo II.5.24.

³ Pomponius I.70.

⁴ Eratosthenes (quoted in Strabo) II.5.25; Strabo II.4.3, II.5.24, XI.11.7, XIV.6.1; Pliny II.112, VI.2, VI.38.

⁵ Orosius XLIX; Isidore XIV.iii.45.

⁶ Strabo II.5.24, XIV.6.1; Pliny V.11, V.28.

⁷ Romer 1998, 4-9.

eventual extent of the Christian world.⁸ As a part of an encyclopedic tradition, Isidore's work included geography within a range of topics: warfare, shipbuilding, the cosmos, geology, and vocabulary.⁹ In addition, seven of the eight authors relied on a traditional division between Europe and Asia along a corridor between the Black Sea and the Aegean.¹⁰ To them, this physical divide was also a cultural and ethnic division yet, within the seafaring community, this distinction seems irrelevant. Instead, the archaeological models propose that the most important gradient was approximately 1300 kilometers away at Sicily, which repeatedly distinguished the localized western activity from other loci of maritime activity farther to the east.

Conclusions

Three key results emerged from this investigation. In relation to MISAMS' methodology and its further application within the AMD program, it is clear that as the models are built upon published data, the presence or absence of that data – for whatever reason – will have a direct impact upon the models themselves. As obvious as this is, it is important to remember both for this project and for related efforts modeling other types of activity in the Mediterranean; we may perceive a preponderance of trade connections between southern Cyprus and Israel simply because that is the data available. Further work in Egypt, Syria, Lebanon, and northern Cyprus is thus necessary simply to counter this bias.

Also, the broad survey through the periodicals and related publications available in Turkey, Cyprus, and Israel has revealed a second, more curious, bias within the discipline. Either maritime archaeologists are submitting their publications to a rather limited set of venues, or a wide variety of venues are rejecting submissions from maritime archaeologists. It is unclear why maritime archaeological data is available in only a handful of sources, and not more widely reported.

Lastly, the archaeological and textual geographies of the eastern Mediterranean basin do not coordinate well. This may be attributed to a variety of reasons, but the most compelling is that the studies created by past historians and clergy did not incorporate, or bear a relation to, the geography of the sea created by the community that used it. These individuals from the upper, literate classes in Mediterranean society did not use information and knowledge generated by the people that worked and inhabited the sea on an everyday basis. This is an important conclusion because it not only gauges the accuracy and usefulness of

⁸ Strabo *Geography* 1.2.1, 11.6.4; Pliny *Natural History* 14.2; Dueck 2000, 107, 110; Murphy 2004, 5, 130; Koelsch 2004; Merrills 2005, 37-39.

⁹ Barney et al. 2006.

¹⁰ Polybius III.36, IV.43; Strabo VII.1, VII.4.5; Pomponius I.7-9; Pliny III.1.5, VI.1; Appian IV.87, as Brutus and Cassius arrive in Sestus on the Hellespont; Isidore, the transition from Book XIV.iii to XIV.iv; Merrills 2005, Appendix Part II. Eratosthenes may have also perceived this division, but as his text is now incomplete, this perception may only be inferred.

these textual sources for our understanding of the sea's use (Pliny the Elder is the most helpful), it also counters previous studies that used these textual models as contexts for the interpretation of archaeological data.¹¹ Fundamentally, these models are an alternative narrative of the history of the Mediterranean equal in scale and scope to that presented in the available texts.

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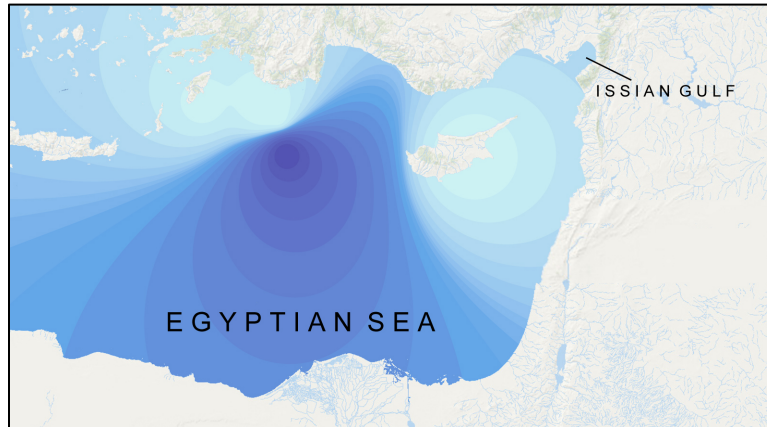
Roller, D. 2010. *Eratosthenes' Geography. Fragments Collected and Translated, with Commentary and Additional Material*. Princeton: Princeton University Press.

Strabo (trans. H.L. Jones). *The Geography of Strabo*. Cambridge, MA.: Harvard University Press.

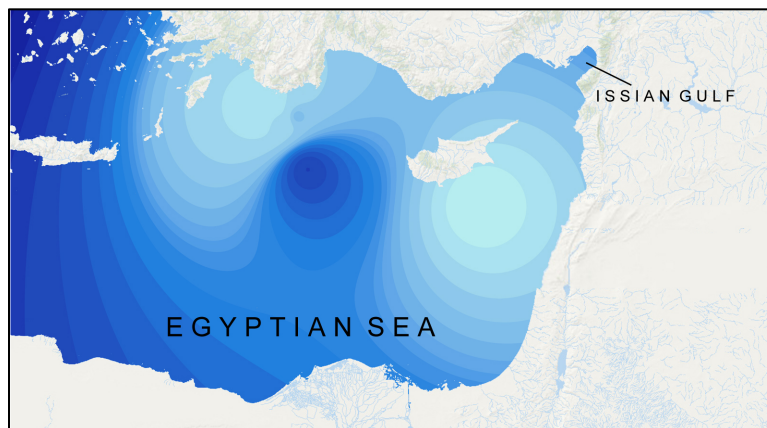
¹¹ Parker 2008.

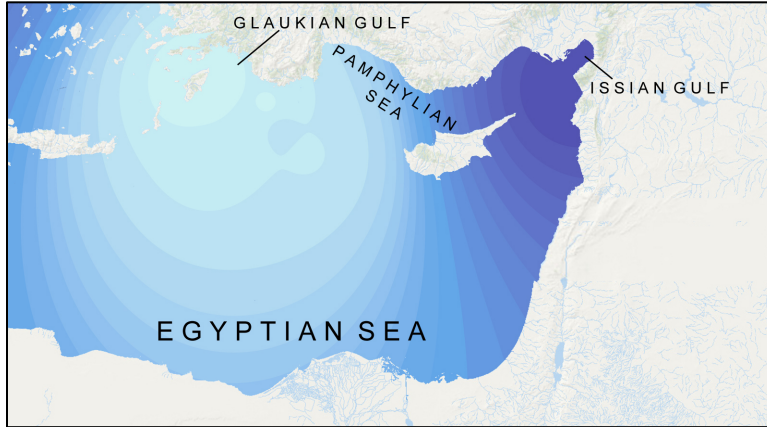
Illustrations

One element of the GIS modeling in AMD is the ability to portray higher and lower densities of maritime activity at various scales. In the following images, dark blue represents a higher concentration of maritime activity and, presumably, a place created by the maritime community that conducted that activity, whereas lighter blues represent lower levels of activity. The comparative study at the heart of this investigation was conducted by comparing these archaeological models of maritime activity to the geographies proposed by the authors listed previously.

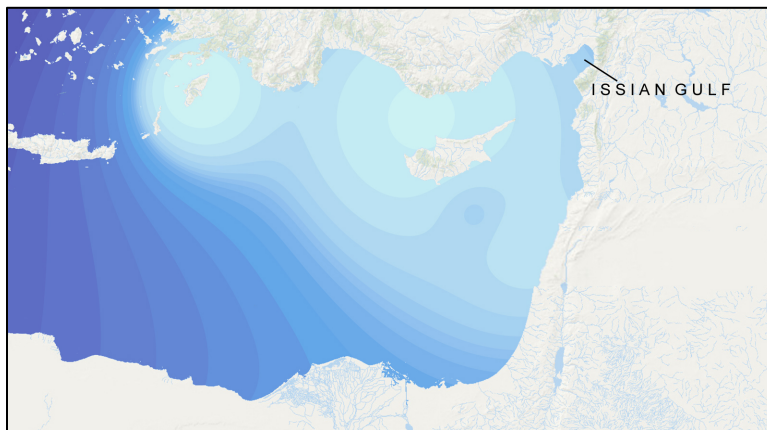
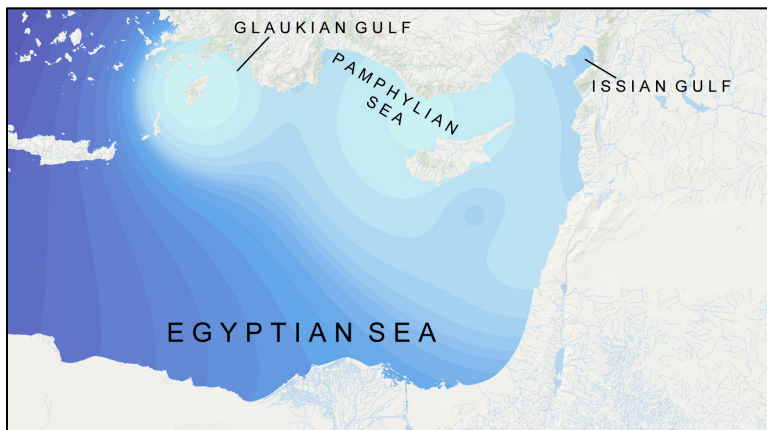


Eratosthenes' *Geographika* was either compiled and distributed at once, in the 2nd century BC, or over time, from the late 3rd to early 2nd century BC. As a result, his geography of the eastern basin is compared to the AMD density models of the basin in the 3rd and 2nd centuries BC. Above is the 3rd century BC, and below is the 2nd century.

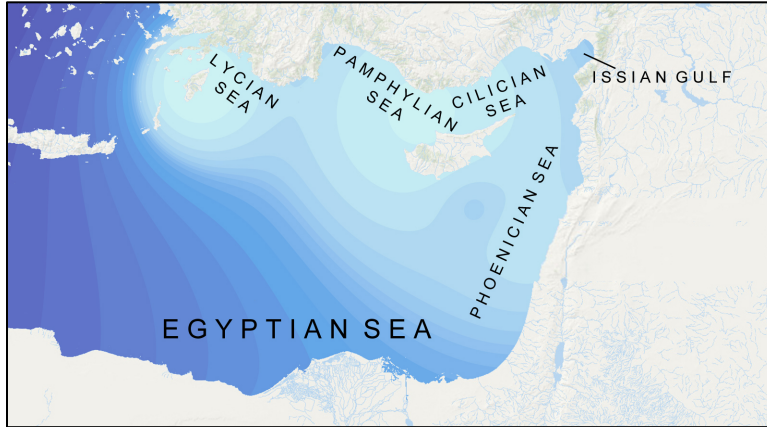




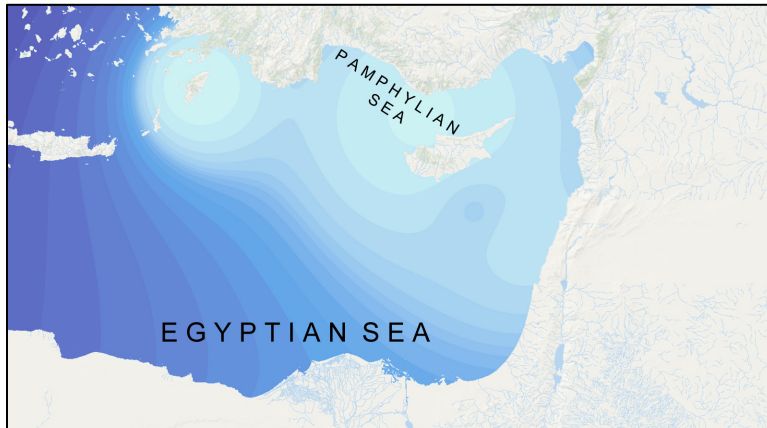
Like Eratosthenes, Strabo's *Geographika* was either distributed over time, starting in the 1st century BC, or released in one volume, in the 1st century AD. As a result, his geography is compared to models of the 1st century BC (above) and 1st century AD (below).



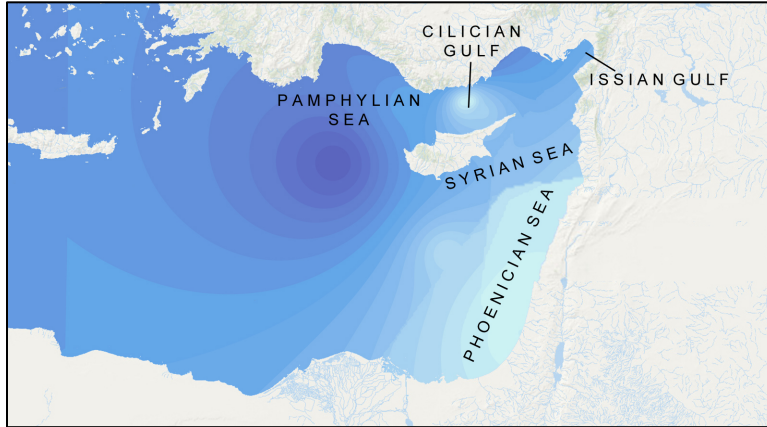
Pomponius Mela's 1st century AD maritime geography of the eastern basin, in comparison to the 1st century AD model of activity (above).



Pliny the Elder's 1st-century AD geography of the eastern basin, superimposed over AMD's model of 1st-century AD activity (above).



Appian's maritime geography of the eastern basin in the 1st century AD superimposed over AMD's model of activity (above).



Orosius's 5th-century AD geography of the eastern basin in comparison to AMD's model of activity (above).

Isidore of Seville's 7th-century AD geography of the eastern basin in comparison to AMD's model of activity (below).

