

Location of ancient harbours on the Red Sea – An attempt

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Abstract

This paper aims at listing all known ancient harbours on the Red Sea, encompassing the area between the gulfs of Suez and Aqaba to the north, and Bab-el-Mandeb to the south. The list presented includes over 200 places, many of which are well-known to archaeology, e.g., Myos Hormos, Berenike, Adulis. However, the location of many settlements mentioned by ancient authors is often (very) uncertain, e.g., Leuke Kome, Charmuthas, Iotabe, Ezion Geber. An additional handful of locations might be called “potential harbours” because of their nautical and/or geomorphological interest, but where no archaeological evidence has been found yet, as far as we know.

The issue of the location of Leuke Kome is addressed and the favoured location at this time would be al-Wajh. This does not reduce the importance of remains found in Aynunah bay, 270 km further NW, as this might be another major ancient place. Another difficult issue is that of Iotabe insula, which is provisionally located on Tiran Island, but without any archaeological evidence so far. The case of Aqaba is also rather confusing, as its very long history mixes Biblical, Egyptian, Roman, Byzantine, and Islamic civilisations, to say the least. Special attention is also devoted to the ports along the ancient Nile to Red Sea canal.

The result of this study is thus twofold: i) reconstruction of the linear puzzle of ancient harbours along the Red Sea coastlines, and ii) identification of potential ancient harbours. This challenge has not been taken up before for the whole Red Sea and the last word on ancient harbour locations on the Red Sea is far from being said. We hope this study will help to put things into perspective.

Keywords: Ancient harbours, Red Sea, Leuke Kome, wadi Tumilat, wadi el-Jarf

Index: Suez, wadi el-Jarf, Myos Hormos, Berenike, Adulis, Leuke Kome, al-Wajh, Aynunah, Charmuthas, Iotabe, Tiran, Ezion Geber, Aqaba, wadi Tumilat,

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1. Introduction

The Red Sea is defined from the southern tip of the Sinai in the north, to Bab-el-Mandeb in the south. In the present study, we include the gulfs of Suez and Aqaba yielding a total length of around 2200 km between 30° and 12.5° of latitude north. The length of this coastline is probably well over 6000 km, plus over 1000 islands and many coastal lagoons.

Egyptians have been sailing the Red Sea since the early days of their civilisation in the third millennium BC: Pharaohs Sahure, Pepi-Nakht, Hatshepsut, Rameses III sent expeditions to the fabulous Land of Punt located somewhere in the southern area of the Red Sea. During the Hellenistic period, the Ptolemy's sent expeditions to Sudan for chasing war elephants. Later on, in the Roman era, many sailors sailed the Red Sea to the Somalian, to the Yemenite and to the Indian coasts, for trading purposes (Sartre, 2021).

Although ancient authors mention many ports, only very few port structures have been found so far by archaeology on the Red Sea: galleries containing boat remains at Ayn Sukhna and Wadi el-Jarf, a breakwater at Wadi el-Jarf (Tallet, 2012, 2014, 2015, 2016), a quay at Quseir al-Qadim (Peacock & Blue, 2006), a possible quay and lighthouse at Berenike (Sidebotham & Zych, 2012), a breakwater at Geziret Fara'un (Flinder, 1989) and possibly on Oreine Island (Peacock & Blue, 2007) and at Khor al-Kharrar (Pedersen, 2015). For this reason, we shall speak of harbours, rather than ports.

There are no modern publications on ancient harbours encompassing the whole Red Sea, but several studies report on parts of it (Mauny, 1968, Hinkel, 1992, Schiettecatte, 2008, Obied, 2010, Bukharin, 2012, Zazzaro, 2013, Fadel, 2017, Kotarba, 2019, Sartre, 2021, and Marion de Procé's unpublished Master thesis, 2010).

Much discussion has taken place concerning the route when sailing back north because of the well-known adverse wind conditions (Cooper, 2011, Agius, 2019, de Graauw, 2020). Many merchants had their ships calling at ports like Berenike (near Ras Banas) and Myos Hormos (Quseir al-Qadim) in order to continue their journey by land via Coptos (Qift) and the Nile down to Memphis (Cairo) and Alexandria. Other merchants decided to call at ports on the Arabian side and travel further by land to Petra and Gaza.

The southern part of the Red Sea is subject to reversing monsoon winds and sailors could make use of that. However, north of 20° of latitude (near Port Sudan), northern winds prevail on the Red Sea, making the trip back to the north quite uneasy with N to NW winds prevailing 75% to 95% of the time, with a usual wind force of 3 to 4 Beaufort. The Red Sea Pilot states that, in winter, “you should not count on any south winds from Ras Banas northwards” (Morgan & Davies, Red Sea Pilot, 2002; Arnaud, 2005; Whitewright, 2007 & 2011; Heikell, 2015). This was an excellent nautical reason to call at Berenike (at 24° latitude) or at Myos Hormos (at 26° latitude) in order to avoid the northern one third of the Red Sea¹.

Our aim is to reconstruct the linear puzzle of harbours along the Red Sea coasts in order to come up with a coherent set of places.

A detailed review of all places known to archaeology and ancient literature is beyond our scope because of their number of over 200 places. We shall concentrate here on around 100 places that have an ancient name and we shall mention the ancient and main modern references to enable the reader to get more details on each place. In addition, we identified around 60 “potential harbour places” on the base of nautical and/or geomorphological considerations. Places were selected along the Red Sea coasts for nautical reasons because they are considered ‘good’ or ‘excellent’ shelters by modern sailors using nautical guides called “pilots”. Other places were selected for geomorphological reasons where the coastal reef is interrupted, usually due to the outlet of a freshwater wadi.

2. Methodology

Let's first define what we are looking for. As mentioned by de Graauw (2022), “a ‘harbour’ is a place where ships can seek shelter. The concept of ‘shelter’ has to include i) anchorages, ii) landing places on beaches, and iii) ports with facilities for landing passengers and goods, including structures such as access channels, breakwaters, jetties, landing stages, quays, warehouses for storing commodities and equipment, shipsheds and slipways. Shelters of interest include all places which may have been used by seafarers sailing over long distances. Villae maritimae are also of interest, but shelters the likes of local fishermen, who may have landed their boats on the beach in front of their homes, are of less interest”.

We analysed the (translated) writings of ca. 100 ancient authors, including Agatharchides, Diodorus, Strabo, Pliny, Ptolemy, the Periplus Maris Erythraei (PME), etc., and some epigraphy and papyrology.

We surveyed many publications of modern archaeologists and historians on single ports, including the modern data bases (Pleiades, DARE, Trismegistos, Topostext).

We analysed nautical pilots to identify natural shelters that are considered ‘good’ or ‘excellent’ by modern sailors but not (yet) listed as ancient harbours. This includes some stories of famous

¹ Tidal ranges are rather limited on the Red Sea, usually less than 1 m, except in the Gulf of Suez. Tidal currents are therefore limited also, say no more than one knot (0.5 m/s or 1.8 km/h), except in the straits where they may reach several knots.

modern sailors like Henry de Monfreid (1932) and Dionisius Agius' work on cultural history of seaborne exploration in the Red Sea (2019).

We analysed Google Earth pictures, nautical charts, and online maps (e.g., Mapcarta) to identify wadi outlets, marsas and coves and provide modern names for all places.

3. Results

A list of over 200 ancient settlements is presented in the Appendix. The list follows a counter-clockwise sequence along the coastlines starting at Suez, following the African coast down to Bab el-Mandeb, and from there, following the Arabian coast to the north up to Aqaba. The ancient names are those found in the ancient literature and can therefore be either Greek or Latin, or both.

Many places that will be reviewed below, are included in the following well-known data bases:

- <http://pleiades.stoa.org> , initially based on Richard Talbert's Barrington Atlas (New York, USA),
- <http://imperium.ahlfeldt.se> , by Johan Ahlfeldt (Gothenburg, Sweden),
- <https://www.trismegistos.org> , by Herbert Verreth (Leuven, Belgium),
- <https://topostext.org> , by Brady Kiesling (Athens, Greece).

Ancient placenames are usually found in ancient texts written by ancient authors such as Strabo, Pliny, etc., and anonymous authors of peripli, who describe a portion of a coastline mentioning the settlements and peoples encountered during their trip, but an accurate location is usually not possible. The main information provided by these documents is the sequence of places along the coast (with possible mistakes). Claudius Ptolemy provided a superb system of coordinates with latitudes and longitudes that is still used today. However, large mistakes were made, especially for longitudes, the accuracy of which is often not better than 1 or 2 degrees of longitude (100 to 200 km), even after correction of some known systematic deviations. His latitudes are more accurate as this was an easier measurement. Hence, Ptolemy's coordinates can only be used (with caution) for comparing places that are located close to each other: one minute of latitude is one nautical mile (1852 m) and, in the Red Sea, one minute of longitude is around 1600 m (north of the Red Sea) to 1800 m (south of the Red Sea).

For authors who provide distances in stadia, we may assume that they used Egyptian stadia (157.5 m) in this part of the ancient world, and as for Pliny's steps, we may assume 0.75 m².

3.1. Well-located places

Places that are well-known from archaeology, and often have an ascertained ancient name, are called "well-located places" (e.g., Berenike at Medinet el-Haras). Places that have been excavated, or simply searched for surface objects, but do not yet have an ancient name, are also called well-located (e.g., Wadi Matar, on Farasan Kebir Island). The location of "well-located places" is widely accepted, even if some doubts often persist. Evidence for such locations is usually provided by archaeology and epigraphy, and sometimes by descriptions provided by ancient authors. A port is accurately located within a few meters if archaeology has excavated quay walls or breakwaters. Port structures, like slipways, shipsheds, shipyards or warehouses, may sometimes also help locating a port area. If not, the port may possibly be located within an area of one to two hundred meters corresponding to a wadi outlet or to a marsa or cove.

Where port structures were not available, ships may have remained at anchor in a sheltered area, or just gently grounded near the beach of a coastal settlement (so-called "draft-beaching", Votruba, 2017). Such a place was usually identified by archaeology from ancient anchors found on the seabed and from the remains of buildings, ceramics and objects collected on site, and is also considered well-located. Note that such places have a modern name, but the ancient name is often unknown.

² See: <http://www.ancientportsantiques.com/ancient-measures/>

3.2. Uncertain places

This study focusses on “uncertain places” whose location and/or ancient name is uncertain. If a well-located archaeological place has a speculative ancient name, it is called “uncertain place” and its ancient name will be followed by a “?” (e.g., Saba? at Massawa). Places that are known from ancient texts but are not located, will also be called uncertain and their modern name will be followed by a “?” (e.g., Charmuthas at Sharm Yanbu?). Some places are still subject to so much debate that they will appear in several locations (e.g., Leuke Kome at Yanbu? or at al-Hawra? or al-Wajh? or Aynunah?).

3.3. Potential harbour places

In addition to the places mentioned above, we collected “potential harbour places” that are usually well-located in a khor, a sharm, a marsa³ or at a smaller cove, even if no archaeological evidence has yet been found to our knowledge. These places obviously have no ancient name.

i. Potential harbour places based on nautical considerations.

Many of the well-located ancient harbour sites are not considered very good for sheltering modern yachts, but they were nevertheless used in ancient times. Conversely, *would you believe that a shelter that is considered today as “excellent” from a nautical point of view would not have been used in ancient times, at least as a bad-weather refuge shelter?*

Places that are considered favourable as landing places for ships, are called “potential harbours”. Such places must offer a safe shelter for ships with respect to locally prevailing wind and wave conditions.

Modern yachtsmen use sailing guides, “Pilots”, for each area. These guides provide information on sailing routes, waypoints, services to be found in marinas, etc. Seafarers are intuitive people; they integrate all aspects to provide a judgment on the shelter quality. This judgment is of great value to us here. An excellent shelter provides all-round protection from wind, waves and currents, from all directions and at all times. This kind of protection from offshore waves is usually found inside bays with a narrow entrance and complex shape such as a “dogleg”. Protection from wind is important also and usually depends on the land topography surrounding the shelter. Note that shelters are defined for modern sailing ships with modern sails and some ‘excellent shelters’ might prove not that good for ancient ships with square sails e.g., because of a difficult access.

Out of the hundreds of Red Sea shelters listed by modern sailors, around 100 have been considered as good or excellent.

ii. Potential harbour places based on geomorphological considerations.

Everybody knows that a coral reef borders the Red Sea on almost its entire length. It is known also that the coral reef hates fresh water, polluted water and sediment and that it therefore is interrupted in places where ‘wadis’ have their outlet into the sea. Such discontinuities of the reef provide deep-water coves that can be used as shelters for ships. As a matter of fact, water is very deep (over 10 m) and the reef features a kind of vertical underwater cliff. Such a deep-water cove is not an easy anchorage because of the excessive length of anchor lines, but the small beach at the landward end of the inlet is often suited for beaching.

Archaeological work performed at Marsa Gawasis seems to confirm that this was the location of the ancient port of Philoteris, with archaeological remains about 300 m from the present coastline. If this is correct, *this interruption of the reef and the resulting inlet have been there for 4000 years* (Bard & Fattovich, 2007; Tallet, 2015). This new insight helps to identify other potential harbour places. This does of course not mean that an ancient harbour will be found in each present cove on the Red Sea coast, but it may be worth listing them in order to have a closer look for archaeological

³ Strictly speaking, a sharm or a khor is a narrow fjord-like sea-inlet, a marsa is a wider bay or creek, but these terms are often mixed-up, also depending on the country of use (Morgan & Davies, Red Sea Pilot, 2002).

remains in these places in the future. We limited our search to the stretch between Hurghada and Ras Banas (ca. 400 km) because it is the most likely area where ships would stop fighting against the NW wind when returning from their trip to the Land of Punt and would unload their precious cargo to continue over land to river Nile (Cooper, 2011; de Graauw, 2020).

4. Analysis

At first glance, nearly all places might be called ‘uncertain’ because of the limited number of places that have been surveyed and the lack of firm evidence for place names. Moreover, as mentioned in the introduction, very few places have yielded ancient port structures, leaving all other places mentioned hereafter with a status of a ‘harbour’, but not that of a ‘port’.

In this study, we found 227 places (164 known harbours and 63 potential harbours) which can be subdivided as follows:

- 39 well-located places with an ancient name, which are described hereafter,
- 56 uncertainly-located places with an ancient name, which are described hereafter,
- 69 well-located places with no ancient name, only 8 of which are described hereafter,
- 44 nautical potential harbours, which are listed hereafter,
- 19 geomorphological potential harbours, also listed hereafter.

The complete list is provided in the Appendix hereafter.

4.1. Well-located places on African coast (from north to south)



Fig. 1. Well-located harbours in the Red Sea (based on Google Earth).

(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/RedSeaGreen.kml>)

Places will be listed hereafter as follows: **modern name(s)** (country, area): ancient name(s), (data base(s)). A few explanations with some references.

1. **Ayn Musa**, north of Ras Misallah (G. of Suez): Phoinikon, Poseideion? (see also Pleiades, DARE, Trismegistos). The Poseideion temple is mentioned by Agatharchides and by Diodorus. The location of Phoinikon near the modern resort, north of Ras Misallah is provided by Trismegistos.
2. **Ayn Sukhna**, at Portrait Hotel (G. of Suez): Bat, port of King Khafra/Khefren (see also Trismegistos). Tallet (2012, 2015) and Somaglino (2022) list this place as an intermittent port in the Gulf of Suez, together with Wadi el-Jarf and Maghara, who were involved in

the same transport of turquoise, malachite, and copper. Ayn Sukhna is also known for its hot water and salty (sulphur) springs (Burstein, 1989).

3. **Abu Mereir**, south of Ras Matarma (G. of Suez): Biblical Marah? Medeia? (see also Pleiades, DARE, Trismegistos). The location south of Ras Matarma is provided by Trismegistos.
4. **Wadi el-Jarf** (G. of Suez): Bat, port of King Khufu/Cheops (see also Trismegistos). This is the location of the world's oldest breakwater found to date (ca. 2570 BC). Tallet (2012, 2014, 2015, 2016) and Somaglino (2022) show that several ancient Red Sea ports in the Gulf of Suez were intermittent, i.e., used during part of the year only, and that ships were disassembled and carefully stored locally in rock-cut galleries.
5. **Maghara**, al-Markha, near Ras Budran (G. of Suez): Maghara (see also Trismegistos). This fortress was used for export of turquoise, malachite, and copper from wadi Ameyra, Serabit el-Khadim and wadi Maghara (Mumford, 2003, 2012). Tallet (2015) lists this place as an intermittent port in the Gulf of Suez, together with Wadi el-Jarf and Ayn Sukhna.
6. **El-Tor**, el-Tur, Tor harbour (G. of Suez): Rhaithou, Palm-Grove (see also Pleiades, DARE, Trismegistos). This place is mentioned by Agatharchides and by Diodorus as a "palm grove", but he does not mention any harbour, although the modern place is sheltered from prevailing northern waves.
7. **El-Gouna** (Egypt): Abu Shar (see also Pleiades, DARE, Trismegistos). Roman fort at the end of the Via Hadriana, with an excellent shelter where a modern marina has been built.
8. **Marsa Gawasis**, near wadi Jasus, 26 km south of Safaga port (Egypt): Philoteris portus, Philotere, (city founded by Satyros), port of Aennus, archaic Saww (see also Pleiades, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by Agatharchides, Strabo, Ptolemy, and Stephanus. Pliny speaks of Aennus. A detailed survey of ancient and modern sources provided by Cohen (2006:339) shows that modern authors seem to agree to locate this port at Marsa Gawasis. Bard & Fattovich (2007) show that this place was in contact with the Land of Punt around 2000-1800 BC, located further south. Tallet (2015) lists this place as an intermittent port.
9. **Quseir al-Qadim**, at the Mövenpick hotel, 8 km North of Quseir (Egypt): Myos Hormos, Aphrodite's port, Portus Veneris, Port of the Mouse, Mussel harbour (see also Pleiades, DARE, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by Agatharchides, Strabo, Diodorus and the PME. Ptolemy locates Myos-Hormos at 3°25' of latitude (380 km) north of Berenike, which leads to Hurghada. The PME indicates that this site is at 1800 stadia (ca. 330 km) from Berenike, which would lead near Safaga. Detailed surveys of ancient and modern sources provided by Cohen (2006:332) and Seland (2014) show that modern authors now agree to locate this port at 8 km north of Quseir on the west side of the road, where a jetty made of amphoras was found by Peacock & Blue (2006). Jacotin (1809) from Napoleon's team identified it as "Vieux Qoséir". Myos Hormos is also the end of a major road to Qift (Coptos) on the Nile. This place includes a Roman fort at Qasr Hadie (<https://vici.org/vici/7746/>).
10. **Abu Ghusun**, at outlet of wadi Gamal, Gemal, Gimal (Egypt): Cabalsi, Cabau, Gabaum (see also Pleiades, DARE, Trismegistos). Cuvigny (2018) provides place names from ostraca found upstream in the valley.
11. **Medinet el-Haras**, 4 km south of Bender el-Kebir inside the gulf of Ras Banas and on the Tropic of Cancer (Egypt): *Hellenistic port* of Berenike Troglodytika, Berenice, inside the gulf of Lepte Akra, Acatartos Kolpos, Sinus Immundus, Foul Bay (see also Pleiades, DARE, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by Agatharchides, Strabo, Pliny and the PME. Pliny is most accurate as he indicates that there is no shadow at noon on the day of summer solstice, which is the definition of the tropic located at 23°26' of latitude. The present latitude of Berenike is 23°56' and it is still a port today. A detailed survey of ancient and modern sources provided by Cohen (2006:320) shows that no doubt is left on the location of Berenike. This place is also the end of major roads to Edfu (Apollonopolis) and to Qift (Coptos) on the Nile. Recent surveys

- (Sidebotham & Zych, 2012; Kotarba, 2017; Wozniak, 2022) uncovered a Hellenistic fort (<https://www.livescience.com/64407-ancient-egypt-fortress-war-elephants.html>).
12. **Medinet el-Haras**, 4 km south of Bender el-Kebir inside the gulf of Ras Banas (Egypt): *Roman port* of Berenice. Recent surveys (Sidebotham & Zych, 2012) uncovered a probable Roman quaywall (Trench 7) and a possible Roman lighthouse (Christiansen, 2011) and Roman forts at Siket and at Wadi Kalalat.
 13. **Isle of Zabargat**, Geziret Seberget, St John's Island, off Berenike (Egypt): Ophiodes insula, Topazios, Agathonis, Nekron, Snake Island (see also Pleiades, Trismegistos). This place is mentioned by Agatharchides, Diodorus, Strabo and Pliny, but not as a harbour although ships have landed there to collect the precious topaz stones. The isle of Ophiodes is well located as it seems to be the only one producing topaz in this area. But no good shelters here!
 14. **Bir Girid**, west of Ras Abu Fatma (Sudan): Prionotus Prom. (see also Pleiades, Trismegistos). This place is located by Hinkel (1992).
 15. **Abu Ramad, Ramatte**, east of Ras Abu Fatma, (Sudan): Prionotus Prom. (see also Pleiades, Trismegistos). This place is located by Hinkel (1992).
 16. **Trinkitat**, north of wadi Baraka, Barka, (Sudan): near outlet of R Astaboras mentioned by Strabo and located here by Hinkel (1992).
 17. **Agig, Aqiq**, south of wadi Baraka, Barka (Sudan): Ptolemais Theron, Ptolemais' hunt (for elephants), Epitherias (city founded by Eumedes), Khemtyt? Diodorus' Panormus? South of R Astaboras (see also Pleiades, DARE, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by Agatharchides, Diodorus, the so-called 'Pithom stela' and the PME, but the latter mentions a place limited to small boats only. The PME locates Ptolemais at 4000 stadia (ca. 740 km) south of Berenike, which corresponds to Aqiq. Detailed surveys of ancient and modern sources provided by Cohen (2006:341) and by Thiers (2007) show that Aqiq (more accurately, Adobana) is the best candidate for this place, even if no final proof has been provided so far (<http://www.barnard.nl/desert/ptolemais.html>).
This place must be considered together with Aqiq Kebir and er-Rih islands mentioned hereafter (Crowfoot, 1911).
 18. **Isle of Amarat**, Geziret Marate Island (Sudan): Latomiae insulae. This place is mentioned by Strabo for its quarries, implying quay facilities for transport of rock by ships (Hinkel, 1992, Thiers, 2007).
 19. **Aqiq Kebir**, Bahdur Island, Ibn Abbas Island, in Khor Nawarat, Nowarat (Sudan): Stratonis insula in the bay of Elaea (see also Pleiades). Elaea is mentioned by Stephanus as a navale, and by Strabo, but not as a harbour. Khor Nawarat is one of the best shelters of the Red Sea. Many rock-cut cisterns have been found on the island, but no Hellenistic or Roman evidence was found so far (Crowfoot, 1911; Hinkel, 1992, Thiers, 2007; Zazzaro, 2013).
A small headland was visited by Peacock & Blue (2007) and is believed to show remains of ancient manmade structures.
A few kilometres further SE, er-Rih Island (Gazirat Iri, Airi, Iri, Medieval Badi Island), where many medieval rock-cut cisterns suggest that this place took over from the ancient Aqiq Kebir as a harbour (Hinkel, 1992, Zazzaro, 2013).
 20. **Mandalum**, on wadi Asarai, (Sudan): Lacus Mandalum mentioned by Pliny and located here by Hinkel (1992).
 21. **Dahlak Kebir village** on Dahlak Kebir Island (Eritrea): Alalaei, Alalaiou insulae (see also Pleiades, DARE, Trismegistos). The islands are mentioned by the PME, but not as harbours. The main village is located on the south coast, due north of Shumma Island (Port Smyth) located on the Massawa channel. Many rock-cut cisterns are found in this area suggesting a populated area (Insoll, 2001; Zazzaro, 2013). The entrance to the deep-water crater-type lake Ghubbet Mus Nefit may be subject to strong tidal currents.

22. **Zula**, on wadi Haddas (Eritrea): Adulis, Adoulis, Utulis, port of the Axoumites, on R Taranta (see also Pleiades, DARE, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by the PME, by Procopius and by Cosmas Indicopleustes. The PME locates Adulis at 3000 stadia (ca. 550 km) south of Ptolemais Theron inside a south-facing bay, which corresponds to Zula. Pliny locates it at 5 navigation days from Ptolemais Theron, which leads approximatively to the same location. It may be noted that Ptolemy is widely mistaken when locating it at 40' of latitude north of Dire, leading near Assab, 200 km further South. The site of Zula is now widely accepted by modern authors (Peacock & Blue, 2007; Zazzaro, 2013; Carannante, 2015).
23. **Galala Hills**, 3.5 km SE of Zula (Eritrea): Gabaza, Diodorus insula, not to be confused with Perim Island bearing the same ancient name according to the PME (see Trismegistos). Procopius mentions the port of the Adulites at 20 stadia (ca. 3 km) of Adulis. The sixth century *Martyrium Sancti Arethae* mentions Gabaza owning ships (Zazzaro, 2013; Schörle, in press). Peacock & Blue (2007) speak about the "Galala Hills", which host a rocky outcrop they claim to be Diodorus insula. This port of Adulis was later moved to Orine insula (Dissei Island) for security reasons.
24. **Dissei Island**, Dessei, Dese (Eritrea): Oreine, Orine insula, Mountainous island (see also Pleiades, DARE, Trismegistos). The island is mentioned as a harbour by the PME and is called Oreine chersonesos (Mountainous promontory) by Ptolemy. The island was visited by Peacock & Blue (2007) and the western lagoon is believed to show remains of an ancient breakwater.
25. **Ras Siyan**, on the west side of Bab el-Mandeb, the Gate of Tears (Djibouti): Cape Dire, Deire, Berenice epi-Dires, Orea, Tytis insula possibly in this area (see also Pleiades, DARE, Trismegistos). This place is explicitly mentioned as a harbour by Strabo and Pliny. Strabo indicates Cape Dire is in front of Cape Acila (Cheikh Saïd in Yemen). It is also just in front of the six islands mentioned by Strabo: Ras Siyan is a former island now connected to the mainland, but before that, it was a member of the "Seven Islands" (Sawabi Islands) perhaps called Tytis and producing topaz stones according to Pliny. It provides good shelter against the eastern waves prevailing in this area (Desanges, 1978).
We note that Ptolemy's latitudes are a bit confused in this area and that the latitude given by Ptolemy for Dire (11°00') should probably be reduced by 1° to 10°00'.

4.2. Well-located places on Arabian coast (from south to north)

26. **Perim Island** (Yemen) in the middle of Bab el-Mandeb, the Gate of Tears: Diodorus insula, Adanos Duo, Sadanus insulae (see Trismegistos). The PME mentions Diodorus insula with strong currents and winds. Ptolemy speaks about Adanou and Pliny about Sadanus. The second island ("Duo") may have been the Cheikh Saïd peninsula now connected to the mainland. Trismegistos locates Diodorou nesos at Perim Island.
None of the authors mention a port on this island although Mayyun is a good shelter, but the whole island is now a restricted military area. It is easier to enter the Red Sea than to leave it: due to heavy evaporation of the Red Sea waters, current from the Indian Ocean always refills the Red Sea (current up to 3 knots), but in combination with tidal currents and wind-driven currents, the northward current may reach 6 knots! (Morgan & Davies, Red Sea Pilot, 2002).
27. **Khor Ghuraira**, near Ras Cheikh Saïd, near Murad (Yemen) in front of Ras Siyan, on the east side of Bab el-Mandeb, the Gate of Tears: Acila, Akila, Ocelis, Okelis, Akelis, Maddaban (see also Pleiades, DARE, Trismegistos). This place is explicitly mentioned as a harbour by Strabo, Pliny, the PME and Ptolemy. Strabo tells us that it is opposite Cape Dire, Pliny explains that one can sail to India from this harbour, the PME mentions only an anchorage and Ptolemy qualifies it as an emporium (Schiettecatte, 2008). The anchorage was located inside the Ghurayrah lagoon which is a silted-up area behind the island (Jebel al-Manhali) now connected to the mainland.

28. **Dhubab** (Yemen): Sosippu, Sosippi (see also Pleiades). This place is explicitly mentioned as a harbour by Ptolemy, who locates it, with Pseudokelis, between Okelis and Mouza. This must be Monfreid's Doubab anchorage.
This place is the only natural shelter between Murad (Okelis) and Mokha (Mouza). The Red Sea Pilot mentions an anchorage on the north side of Ras Dhubab that is sheltered from the southern waves (Morgan & Davies, Red Sea Pilot, 2002).
29. **Mokha**, Moka, Muhawan, Makhwan (Yemen): Muza, Mouza, Masala, port of the Himyarites, (see also Pleiades, DARE, Trismegistos). This place is explicitly mentioned as a harbour by Pliny, Ptolemy and the PME. Pliny tells us that this port is not used for Indian traffic, but only for Arabian merchants of incense and aromatics. The PME mentions only an anchorage for traffic with the Horn of Africa and with India, and Ptolemy qualifies the place as an emporium (Schiettecatte, 2008).
30. **al-Hodeidah**, Hudaydah, near the outlet of wadi Siham (Yemen): Adedou Kome (see also Pleiades, DARE). This place is mentioned by Ptolemy, but not as a harbour, although it has obviously been one. In addition, the similarity of the ancient and modern names is striking, and Bukharin (2012) also suggests this place and reports a hoard of Sabaean coins which was found there.
31. **al-Zubayr Islands** (Yemen): Chelonitis, Kardamine insula? (see also Pleiades). Chelonitis insula is mentioned by Pliny and Kardamine insula by Ptolemy who locates it at 120' of latitude north of Mokha, which leads to this place. The location of Chelonitis is provided by Pleiades.
32. **Kamaran Island** (Yemen): Camari insula, Sokratus insula? (see also Pleiades, DARE). Camari insula is mentioned by Pliny and Sokratus insula by Ptolemy who locates it at 160' of latitude north of Mokha, which leads to this place. The location of Camari is provided by Pleiades.
33. **Saiban Island, at-Tair** vulcano island NW of Hodeidah (Yemen): Katakekaumene insula, Exusta, Combusta insula, Ile Brulée, Burnt Island (see also Pleiades, DARE). This place is mentioned by Ptolemy and the PME as a major landmark for ancient sailors, but not as a harbour. Pliny also mentions this island under the name of Exusta. Ptolemy locates it at only 30' of latitude north of Mokha, leading to the Hanish Islands, which is obviously erroneous because the conspicuous at-Tair volcano is around 200 km further NW. The location of this place is provided by Pleiades.
34. **Khor Farasan**, on Farasan Kebir Island (Saudi Arabia): Ferresani portus on Devade insula, Hierakon insula? Pteros insula? (see also Pleiades, DARE, Trismegistos). Pliny mentions Devade insula, but not as a harbour. Ptolemy mentions Hierakon insula at a much further north latitude, but Villeneuve (2004) suggests this might still be Farasan for linguistic reasons. Pliny's Pteros insula might possibly also be located here. This place is mentioned, possibly as a Roman naval base, on a Latin inscription (Villeneuve, 2004). The sixth century *Martyrium Sancti Arethae* mentions Farasan owning ships (Schörle, in press). A detailed survey was carried out in 2010 (Cooper & Zazzaro, 2014) and further investigations are ongoing (Pavlopoulos, 2018). The main harbour was obviously at Khor Farasan, although it has been completely overbuilt, but other places may have been used for anchorage: Tubta and possibly Janaba bay, Qumah Island, Sajid (Marion de Procé, 2022).
35. **Ras Karkuma**, Qurqumah (Saudi Arabia): Raunathou Kome, near Chersonnesos Prom. (see also Pleiades, DARE). Ptolemy locates both the village and the cape at the same latitude. It is mentioned by Nehmé (2014) in her presentation at Collège de France. The location of this place is provided by Pleiades.
36. **Geziret an-Numan** (Saudi Arabia): Ainou, Ainos insula (see also Pleiades). This island is mentioned by Ptolemy who locates it at the same latitude as Hippos Oros. The location of Ainos is provided by Pleiades.
37. **Maqna** (G. of Aqaba): Makna (see also Pleiades, DARE). Ptolemy locates Makna and Ankale at 30' of latitude south of Aqaba, which leads somewhere halfway between Maqna

and Haql. The similarity of the ancient and modern names is striking. The location of this place is provided by Pleiades.

38. **Haql** (G. of Aqaba): Ankale (see also Pleiades, DARE). Ptolemy locates Makna and Ankale at 30' of latitude south of Aqaba, which leads somewhere halfway between Maqna and Haql. The similarity of the ancient and modern names is striking. The location of this place is provided by Pleiades.

Very few shelters from the northern wind are available on this Saudi coast, except, perhaps, Jazirat Ruwayjil, 4 km SW of al-Humaydah, which is not even mentioned in the Red Sea pilot (Morgan & Davies, Red Sea Pilot, 2002).

39. **Aqaba** (G. of Aqaba): Aila, Elaea, Aelana, Elana Kome, Eloth, Elath, Elat, Berenike (see also Pleiades, DARE, Trismegistos, Topostext). This place is explicitly mentioned as a harbour by Josephus and Eusebius. Agatharchides and Marcian only mention the Laeanites Gulf where Nabateans live. Josephus mentions Solomon's ships being built at Ezion Geber "not far from the city of Ailane", i.e., in a nearby but distinct place. Eusebius informs us that cargo was imported from Egypt and from India and that Roman soldiers were stationed there. Cohen (2006:314) also mentions Ezion Geber and Berenike. Excavations have been conducted by Parker (2014). Finkelstein (2014) suggests that all the above-mentioned places were located in several parts of modern Aqaba and that only Ezion Geber may have been the fortress located at Tell el-Kheleifeh (see uncertain places below). It can thus be said that the Roman, the Byzantine and the Islamic settlements are now well located, but that the more ancient settlements are yet to be found.

The local northern wind climate makes it hard to sail against the wind in the Gulf of Aqaba and this was a good reason for travelling overland from Leuke Kome (uncertain location on the NE Red Sea coast).

4.3. Well-located places with no ancient name



Fig. 2. Well-located harbours without ancient name in the Red Sea (based on Google Earth).
(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/RedSeaWhite.kml>)

A list of 69 places known from archaeology but with no ancient name known at this stage, is presented in the Appendix. However, the map above shows clearly that surveys and research was performed in some countries more than in others. Information and references can be found in the databases, and we will go into further details here for only a few places of the southern Red Sea.

40. **Aydhhab, Aidhab**, Zibid, on wadi Yoiyeib (Egypt) (see Trismegistos). This place is known as a major medieval city as from the tenth century, used by pilgrims to sail over to Jeddah under NW winds (Hinkel, 1992). Wozniak (2021) unconvincingly claims this might be the location of ancient Soteira, which we would rather locate at Port Sudan 340 km further south. Peacock (2008) suggests that its port was located at the much better shelter of Marsa Halaib.

41. **Jimhil, Gim'hile** (Dahlak Islands, Eritrea), Monfreid's Djumele anchorage? (see Trismegistos). Remains of a second to third century building and late antique potsherds were found here (Zazzaro, 2013; Insoll, 2001).
42. **Irafalo, Irafayle, Arafali** (Eritrea). Remains of an abandoned medieval port were found 4 km north of Irafalo (Carannante, 2015) but the exact location could not yet be retrieved on Google Earth.
43. **Dellemi, Dilemmi Island** (Eritrea) SW of Port Smyth. This place is mentioned as an anchorage by Monfreid (1932). At ca. 5 km NE, the Black Assarca shipwreck was surveyed by Pedersen's team (2018) showing many Aqaba carrot-shaped amphorae.
44. **Tubta**, near wadi Matar (Farasan Kebir Island, Saudi Arabia). This site is one of several settlements found on the south-eastern part of the island, with many ceramic sherds of various dates. According to a sediment-core, the outlet of wadi Matar may have been silting up since the second millennium BC (Cooper & Zazzaro, 2014; Pavlopoulos, 2018), and a good shelter was probably available on the eastern beach at Tubta.
45. **Sajid** (Farasan Segid, Zekir Island, Saudi Arabia) (see Pleiades). Several settlements were found on this island. Monfreid's Seguid anchorage is located on the south-east side and is confirmed by the Red Sea Pilot (Morgan & Davies, Red Sea Pilot, 2002).
46. **Marsa Ibrahim**, in al-Sharifa lagoon, near al-Lith (Saudi Arabia) (see Pleiades). Cuvigny (1996) citing Wissmann (1964), locates Zambram here and so does Pleiades. However, we preferred locating the ancient city at modern Zahran at the outlet of wadi Fatima, south of the modern industrial port of Jeddah (see uncertain harbours below).
The Red Sea Pilot suggests a good anchorage behind three reefs on the north side of al-Lith, where fishing boats shelter near a modern resort with a jetty (Morgan & Davies, Red Sea Pilot, 2002). Entering al-Sharifa lagoon requires some guts as you will have a narrow 50 m entrance to this perfect shelter and it is safer to sail to the north entrance at Marsa Qishran, 27.5 km further NW (see potential harbours below).
47. **Al-Shoaiba**, ancient port of Mecca, Makka, La Mecque (Saudi Arabia). Although he found "no ancient detritus, such as the broken pottery expected in a harbor site, or signs of ancient use", Pedersen (2015) mentions this place mainly because of its activity in Islamic times, confirmed by shipwrecks.

4.4. Uncertain places on African coast (from north to south)

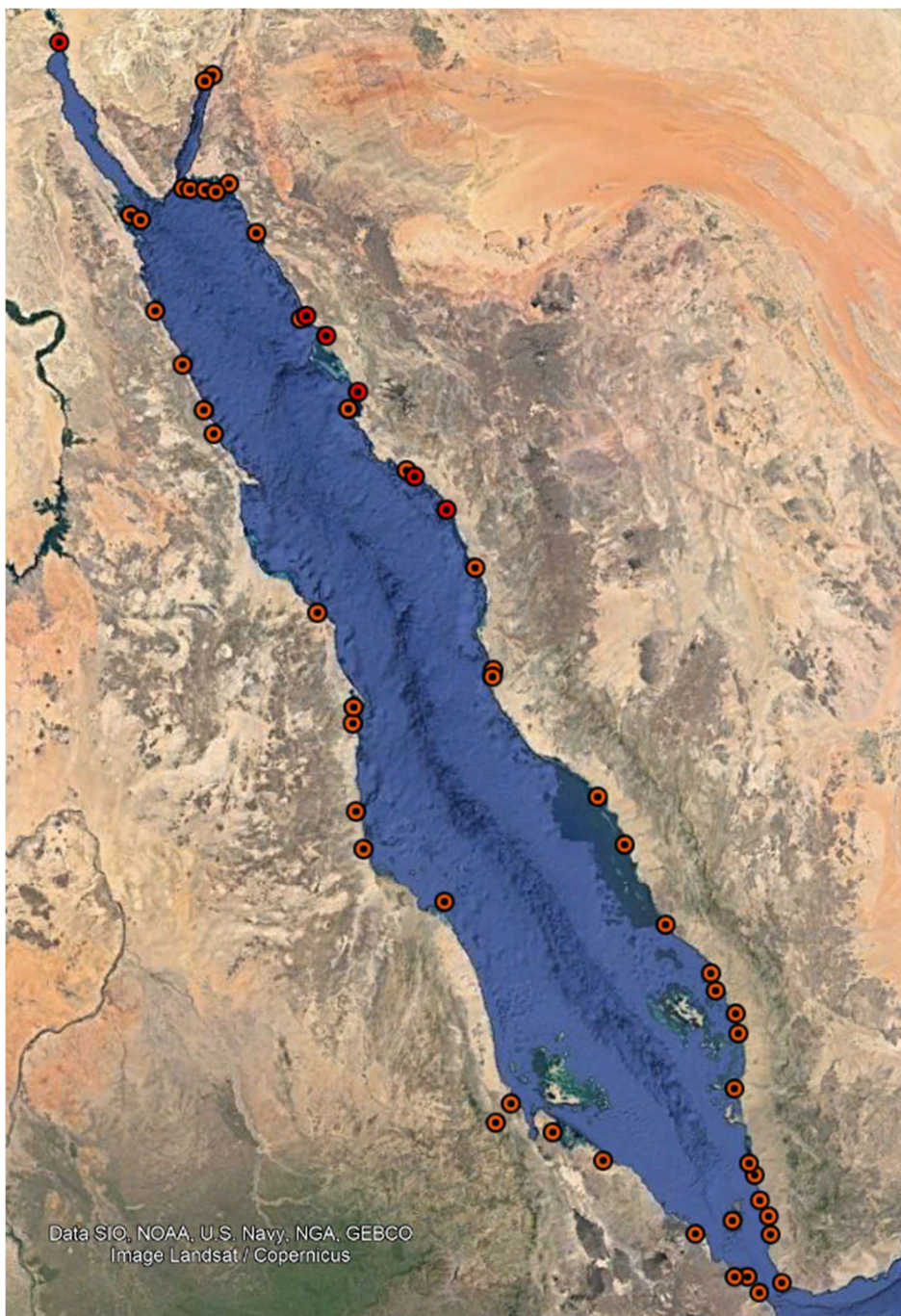


Fig. 3. Uncertainly located harbours in the Red Sea (based on Google Earth)
(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/RedSeaRed.kml>)

A list of 56 places found in ancient literature with an uncertain location on the African or Arabian coasts, is presented in the Appendix. Let's consider them in more detail below, starting north with one of the more complex cases.

1. **Suez, as-Suways, Qulzum, el-Gismel**, (G. of Suez): Arsinoe, Cleopatris, Clysma, Klysm, Calzem, Ovila, Daneon Portus, Port of the Danei? (see also Pleiades, DARE, Trismegistos, Topostext). Some of these places may be at distinct locations. They are obviously related to Necho's Nile to Red Sea canal. They are explicitly mentioned as harbours on the Pithom stela (Arsinoe, Per Atum), and by Agatharchides (Arsinoe), Diodorus (Arsinoe), Strabo (Arsinoe, Cleopatris), Pliny (Daneon Portus) and Lucian of Samosata (Clysma). Herodotus and Aristoteles only mention the Nile to Red Sea canal. Calzem is mentioned by Stephanus in the sixth century and Ovila is mentioned by Dicuil in the ninth century.

A detailed survey of ancient and modern sources provided by Cohen (2006:327) shows that Arsinoe, Cleopatra and Clysma may have been ‘close’, but distinct settlements. Strabo first equates the cities of Arsinoe and Cleopatra (Geog. 17.1.25), but later seems to make a distinction between both (Geog. 17.1.26). It seems plausible that the initial Arsinoe was later renamed Cleopatra, after the names of successive Ptolemaic queens. Therefore, Ptolemaic Arsinoe-Cleopatra, Roman Clysma and medieval Ovilla are probably all near Kom el-Qulzum, in the northern outskirts of Suez (further discussion on the ancient Nile to Red Sea canal in a section below).

2. **Geziret Tawila** Island (Egypt): Saspirene Nesos, Sapirine insula? (see also Pleiades, Trismegistos). Pliny mentions the isles of Sapirine and Scytala between Philoteris and Myos Hormos, but no islands can be found in that area today, except two reefs in front of Quei. Burstein (1989) locates both islands at Tawila and Shadwan, but that was before Philoteris and Myos Hormos were located at the places they are now, further south. Hence, we have no clue where these islands may be located.

Nevertheless, Endeavour Harbour on Tawila Island is mentioned in the Red Sea Pilot for “excellent protection in all winds” (Morgan & Davies, Red Sea Pilot, 2002) and is on a very strategic position at the entrance of the Gulf of Suez.

3. **Geziret Shadwan**, Shaker Island, ile Cheduan (Egypt): Scytala, Skytala? Phocarum insula?? (see also Pleiades, Trismegistos). See also comments in section above on Geziret Tawila. Pleiades suggests this island might be Diodorus’ Phocarum insula, but Tiran Island is perhaps a better choice.

Shaker Island is a conspicuous, 250 m high, island and was mentioned by Jacotin (1809) from Napoleon’s team. Its south side is mentioned in the Red Sea Pilot for “good protection” (Morgan & Davies, Red Sea Pilot, 2002) and its strategic position in front of Ras Muhammad (ancient Poseidion promontory, 33 km NE) is obvious.

4. **Hamrawein** (Egypt): Arsinoe Troglodytika? (see also Trismegistos). Strabo is the only ancient author mentioning a city called Arsinoe south of Philoteris and north of Myos Hormos (by the way, he misplaces the Ayn Sukhna hot-water springs). Other ancient authors (Pliny, Ptolemy) mention only the Arsinoe located near Clysma (Suez) and Arsinoe epi-Dires, much further south (near Bab el-Mandeb). A detailed survey of ancient and modern sources provided by Cohen (2006:310) concludes that “we do not know the precise location of this Arsinoe”.

Although this place is not referred to as a harbour by Strabo, we might look for a shelter on the coast between Marsa Gawasis (Philoteris) and Quseir al-Qadim (Myos Hormos) where we can find four marsas: Kalawy Imperial resort, Quei, Hamrawein and Abu Sawatir Rocky Valley. Quei and Hamrawein are both mentioned in the Red Sea Pilot, but Hamrawein is preferred as a shelter (Morgan & Davies, Red Sea Pilot, 2002) and is used by modern 200 m long phosphate carriers.

5. **Port Ghalib**, Marsa Imbarak (Egypt): Leukos Limen, Albus portus, Port Blanc? (see also Trismegistos). ‘Albus Portus’ is just a translation of ‘Leukos Limen’ into Latin, meaning ‘White Harbour’. Ptolemy mentions Leukos Limen at 45’ of latitude south of Myos Hormos and at 30’ of latitude north of Nechesia, which leads to Port Ghalib, if Nechesia is correctly located at Marsa Nakari. A detailed survey of ancient and modern sources provided by Cohen (2006:330) shows that some scholars suggest Ptolemy may have mixed up Leukos Limen and Leuke Kome (although they are most probably not on the same side of the Red Sea!) and that some scholars locate it at Myos Hormos, although Ptolemy clearly makes a distinction between Leukos Limen and Myos Hormos. Jacotin (1809) from Napoleon’s team places Port Galibou nearby Marsa Mubarak, and locates Port Blanc much further north, but Obied (2010) strongly suggests Port Ghalib was Leucos Limen.

Marsa Imbarak was one of the longest marsas in this area with a length of around 600 m from the coral reef line to the inner beach, before it was turned into a modern marina renamed Port Ghalib. However, other nearby marsas might be considered too: Marsa

Toronbi, Coraya Bay, north of Port Ghalib, and Marsa Mubarak, Marsa Mooray, south of Port Ghalib.

6. **Marsa Nakari** (Egypt): Nechesia? (see also Pleiades, DARE, Trismegistos). Ptolemy mentions Nechesia at 110' of latitude north of Lepte Akra (Ras Banas) which leads to Port Ghalib, further north, but the similarity of the ancient and modern names leads us to favour Marsa Nakari. This place is also the end of a major road to Edfu (Apollonopolis) on the Nile. A detailed survey of ancient and modern sources provided by Cohen (2006:338) shows "evidence for activity during the first century AD ("and perhaps earlier") and the fourth century". This place was possibly called Chaouinah by Jacotin (1809) from Napoleon's team because they found "Ruines d'une ancienne ville" which are indeed scattered all around (Seeger, 2001).
7. **Geziret Wadi el-Gamal**, in front of Sharm Luli (Egypt): Iambe insula? Aphrodites Nesos?? (see also Pleiades, Trismegistos, Topostext). Sharm Luli has sometimes been taken for Myos Hormos, also called Aphrodites Hormos, because of Strabo's description involving an oblique entrance with three islands in front. The largest island was therefore supposed to be Aphrodite's Island. In the meantime, Myos Hormos has been located at Quseir al-Qadim and Strabo's islands are to be located there (now connected to the mainland) and the Wadi el-Gamal Islands are not related anymore to Myos Hormos or to Aphrodite. On the other hand, Pliny mentions Iambe insula between Myos Hormos and Berenike, and this island would fit this well, especially as some ancient remains have been found there ([Wikipedia](#)). Belzoni (1822:328) calls the island Gambe which may show the linguistic link between 'Iambe' and 'Gamal'. Sharm Luli is called Sharm el-Koman by Jacotin (1809) from Napoleon's team.
The Red Sea Pilot mentions good anchorage both inside Sharm Luli and SW of the island (Morgan & Davies, Red Sea Pilot, 2002).
8. **Geziret Hala'ib**, in front of Marsa Halaib (Egypt): Astarte insula? (see also Pleiades, Trismegistos). Ptolemy locates the island at 80' of latitude north of Bathus profundus portus, which leads to this area. Marcian mentions this place with the words "Here begins Ethiopia" (now Sudan).
The Red Sea Pilot mentions a sheltered area used by the Egyptian Navy as this place is part of a disputed area (Morgan & Davies, Red Sea Pilot, 2002). Peacock (2008) suggests this might be Aydhab's port.
9. **Marsa Umbeila**, on wadi Gabatit, Igidid, south of Ras Hadarba (Sudan): Bathus profundus portus? (see also Pleiades). Ptolemy locates Bathus (deep port) at 170' of latitude south of Berenike, which leads to the bay of Dungunab. Hinkel (1992) locates Bathus at this marsa, north of Dungunab.
10. **Marsa Mar'ob** (Sudan): Dioscuror, Dioskoron Limen? (see also Pleiades). Ptolemy locates Dioscuror at only 10' of latitude south of Bathus and is located by Hinkel (1992) at this marsa.
11. **Port Sudan**, in Marsa Sheikh Barud (Sudan): Theon Soteiron Limen, Deorum Salutarium, Soteira, Sotira? (see also Pleiades, Trismegistos). Ptolemy locates Theon Soterum at 30' of latitude north of Evangelon, which corresponds to Port Sudan if the location of Evangelon at Suakin is correct. Strabo and Diodorus locate the place between the isle of Ophiodes and Ptolemais Theron (over 600 km!). Hazlitt (1851) just mentions Soter Limen, Salutaris portus, without locating it. Hinkel (1992) locates it at Port Sudan.
The Port Sudan and Suakin fjords are both the best shelters for ships between Dioskoron and Ptolemais Theron (over 300 km), and they *must* have been used since Antiquity. Note that a somewhat smaller fjord is found at Marsa Gwiyai, about 5 km north of Port Sudan, where the modern naval base Port Dradart is located.
12. **Suakin** (Sudan): Evangeliorum portus, Evangelon Limen, Bonorum nunciorum portus? Ptolemy locates Evangelon at 35' of latitude north of Ptolemais Theron, but 55' would better fit Suakin. Hinkel (1992) locates it at Suakin. Breen (2011) informs us that no archaeological evidence for Roman activity was found to date on the island, but much

research remains to be done. Scholars nevertheless identify Suakin with ancient Evangelon Limen ([Wikipedia](#)).

The Suakin and Port Sudan fjords are both the best shelters for ships between Dioskoron and Ptolemais Theron (over 300 km), and they *must* have been used since Antiquity. However, since construction of a modern port at Port Sudan in the early 20th c., the much older port of Suakin (at least tenth century) has been quasi-abandoned and limited information is available on this place (Hinkel, 1992).

13. **Massawa** (Eritrea): Saba? (see also Trismegistos). Ptolemy locates Saba at 50' of latitude north of Adulis, which could be Massawa at only 20'. Strabo mentions Saba next south of Stratonis Island. Zazzaro (2013) mentions some remains on the isle of Taulud and on the peninsula of el-Gerar.

The shelter provided by the isle of Taulud and the peninsula of el-Gerar is excellent. A similarity between the ancient name and the modern name is noted.

14. **Area between Massawa and Djibouti** (Eritrea): Land of Punt, Pount, Ta Netjer, Taneter, Pwenet, Pwene, Pouen, Ophir? This mysterious country is mentioned as a goal for expeditions of several pharaohs (Sahure, Pepi-Nakht, Hatshepsut, Rameses III). It is also mentioned in the Tale of the shipwrecked sailor and in the Bible (King Solomon). The location is unclear in all texts and is probably somewhere in East Africa, possibly in the area of the Afar people, on the location of the ancient D'mt (Da'amat) kingdom and close to the Kush kingdom and its gold mines, where they could also find silver, ivory, apes, and peacocks (Philips, 1997; Leser, 2010; Glazer, 2012). Its capital city could be Adulis (?). Other possible locations for Punt such as Mundus, Mosylius and Opone (Somalia) are less probable as they are in the Indian Ocean, but they are closer to the Somalian frankincense hills ([Wikipedia](#)).

15. **Howakil bay**, Hauakil bay (Eritrea): unnamed "large bay" with obsidian, Portus Melinus? (see also Pleiades, Trismegistos). Strabo mentions Portus Melinus in this area. The PME mentions a large bay with obsidian at 800 stadia (ca. 150 km) from Adulis, but half of that would better fit Howakil bay. Beyin (2011) found many prehistoric obsidian tools and artefacts NW of Gelalo (Ghelaelo). Zazzaro (2013) mentions polished obsidian fragments found near Arena. Mauny (1968) locates this bay at Anfile bay, 70 km further SE. According to the Red Sea Pilot, this bay offers many anchorage possibilities (Morgan & Davies, Red Sea Pilot, 2002).

16. **Hanfileh**, Anfile bay (Eritrea): Antiphilou Limen, Antiphilus portus? (see also Pleiades, Trismegistos). This place is explicitly mentioned as a harbour by Strabo, between Portus Melinus and Colobonalsos. This location was chosen because of the striking similarity of the modern and ancient names (Zazzaro, 2013).

17. **Tio at Ras Anrata** (Eritrea): Port of Colobonalsos, Cape Kolobon? (see also Pleiades, Trismegistos). Ptolemy locates Colobon promontory at 120' of latitude north of Adulis, which does not correspond to any cape. This is probably the reason why Trismegistos chose Ras Harb located further south (60 km north of Zula and 20 km north of Massawa), However, Strabo locates this port very close to Antiphilus portus, hence, Tio might be the right location, even if the Red Sea Pilot notes that this anchorage "is more exposed than it looks" (Morgan & Davies, Red Sea Pilot, 2002). Zazzaro (2013) reports Ayla-Aksum amphorae found at Tio.

18. **Bera'isole** in Bahar Assoli, Bahir Assoli bay (Eritrea): Berenice of Saba? Strabo just mentions a city which is assumed to be close to the larger city of Saba. Zazzaro (2013) informs on somewhat contradictory evidence about ancient remains.

The Red Sea Pilot informs about a good anchorage in the inner bay which is now a restricted military area (Morgan & Davies, Red Sea Pilot, 2002). In addition, the bay entrance is marked by the 60 m high Tekay Deset Island. Some similarity between the modern and ancient names may also be noted.

19. **Assab**, near wadi Arsile, Harsile (Eritrea): Sabae, Sabath? (see also Pleiades, Trismegistos). Ptolemy locates Sabat city at 50' of latitude north of Adulis, which leads

north of Massawa. We note that Ptolemy's latitudes are a bit confused in this area and that the latitude given by Ptolemy for Sabat city (12°30') should probably be reduced by 2° to 10°30'. Anyway, Strabo mentions Sabae as a large city located somewhere between Antiphilus and Dire. Assab is mentioned as an anchorage by Monfreid (1932), and Zazzaro (2013) informs on ancient remains on wadi Harsile (perhaps a dam?). Pleiades and Trismegistos locate ancient Avalites at this location, but the city of Zeila (ca. 200 km further SE) is usually preferred.

Assab is still a large and well-sheltered port today and was most probably used in ancient times. Furthermore, the similarity of the ancient and modern names is striking.

20. **Area between Assab and Ras Dumeira** (Eritrea): Eumenous Alsos, Port of Eumenes? (see also Pleiades). Strabo mentions it as a harbour located somewhere between Sabae (Assab?) and Arsinoe epi-Dires (Ras Dumeira?). Hazlitt (1851) locates Eumenes portus at Orine.

The Red Sea Pilot mentions good anchorage in Rubetino channel SE of Dercos Island and north of Halba Deset Island (Morgan & Davies, Red Sea Pilot, 2002). As this is the only shelter in the area mentioned by Strabo, we suggest choosing that location for the port of Eumenes.

21. **Ras Dumeira**, near Rahayta (Eritrea): Arsinoe Epi-Dires? (see also Pleiades, DARE, Trismegistos). Ptolemy locates Arsinoe at 20' of latitude south of Dire, which corresponds to the lagoon of Godoria on the north coast of Djibouti. He nevertheless mentions it north of Dire on his list and Strabo mentions it north of Dire too... which makes some authors think the site is at Ras Dumeira, Monfreid's Raheita anchorage. Here again, Ptolemy's latitudes are a bit confused in this area. Zazzaro (2013) informs about some archaeological evidence found around Raheita.

The Red Sea Pilot mentions an anchorage north of Dumeira Island that is sheltered from the south-eastern waves (Morgan & Davies, Red Sea Pilot, 2002) and we may assume that a location north of Ras Dumeira is similarly sheltered.

4.5. Uncertain places on Arabian coast (from south to north)

22. **Area between Murad and Dhubab** (Yemen): Pseudokelis (see also Pleiades). Ptolemy locates this place between Okelis emporion and Sosippou Limen, without calling it a port. No harbour can be seen today on Google Earth, and it is suspected that heavy sedimentation occurs from the numerous wadis flowing in this area.

23. **Az-Zahari**, 4 km south of Marsa Fajrah (Yemen): Sacacia, Sakatiapolis? (see also Pleiades). Ptolemy locates Sakatia city halfway between Mouza emporion and Napegous Kome, without calling it a port.

Az-Zahari is located 4 km south of a wide bay called Marsa Fajrah which is mentioned in the Red Sea Pilot with a somewhat difficult access (Morgan & Davies, Red Sea Pilot, 2002). It can be seen on Google Earth that az-Zahari also offers shelter to many local boats today. This shelter probably moves around depending on sedimentation due to wave action, but we may perhaps assume that the ancient place was located in this area, even if Bukharin (2012) rejects this idea on philological grounds.

24. **Abu Zahr**, 2 km north of al-Khawkhah, Khokha (Yemen): Napegous Kome? (see also Pleiades). Ptolemy locates Napegous Kome at 60' of latitude north of Mouza emporion, without calling it a port. However, Ptolemy's distances are too large in this area because he gives 190' of latitude (351 km) between Mouza and Adedou, where we measure only 165 km between respectively Mokha and Hodeidah. Bukharin (2012) suggests locating Napegous at Maushij, 17 km further north.

Abu Zahr is mentioned as al-Khawkhah with a good shelter from S and SE winds in the Red Sea Pilots (Morgan & Davies, Red Sea Pilot, 2002). This bay was generated in the twentieth century by a sand spit growing northwards under the action of local waves. It can be seen on older Google Earth pictures that the sand spit connected to the mainland around 2010, thereby closing the bay off from the Red Sea and creating a coastal lagoon. Such a

scenario may be generated at a time-scale of a century, suggesting that a bay may have existed intermittently in this area during Antiquity.

25. **Hanish Islands** (Yemen): Malichos Duo insulae, Maliachou nesoi? (see also Pleiades). These islands are mentioned by Ptolemy and Pliny, but not as ports. Pliny gives a distance of 1 500 000 steps in a straight line from Lepte Akra (Ras Banas) to Malichu (ca. 1100 km) which nearly leads to these islands located at 1300 km from Ras Banas. It may be noted also that the archipelago consists of two main islands (“Duo”).
26. **Al-Midamman**, near al-Fazah (Yemen): Port of Zabida? Ailou Kome? (see also Pleiades, DARE). Ptolemy locates Poudnou city and Ailou Kome at the same 40’ of latitude south of Adedou Kome, without calling them ports. Bukharin (2012) locates both places near Hodeidah without further explanation.
A Neolithic settlement was found at al-Midamman, near Zabid (see also Pleiades) where Giumlia-Mair (2002) analysed a copper hoard, and it might perhaps be suggested that the port of Zabida and Ptolemy’s Ailou Kome were located at Ras al-Hisy where a submerged reef generates some shelter for many ships at anchor today.
27. **Al-Ghulayfiqa** (Yemen): Bolicas, Bulicas? Laupas? Poudnou Polis, Pudnu? port of the Himyarites, Homerites, Omerites (see also Pleiades). Procopius mentions Bulicas as the port of the Himyarites from where they travel to Adulis (Eritrea). Pliny calls it Portus Laupas. The location is provided by Schiettecatte (2008).
This very long bay (ca. 10 km) must have been used in Antiquity and was probably also known to Ptolemy and it might perhaps be suggested that Ptolemy’s Poudnou polis is located here as one of the larger cities in this area.
28. **Mujamila Island** (Yemen): Are insula? (see also Pleiades). Are insula is mentioned by Ptolemy at 80’ of latitude north of Mokha, which leads to Mujamila.
29. **Al-Luhayyah**, Loheia (Yemen): Mamala Kome? (see also Pleiades). Mamala Kome is mentioned by Ptolemy at 60’ of latitude north of Hodeidah, which leads to this place, but Bukharin (2012) suggests a place called Mimla-Mamla (13.634°N, 43.283°E), 230 km south of al-Luhayyah.
30. **Zamzam** (Saudi Arabia): Akme? Ambe? (see also Pleiades). Ambe is mentioned by Ptolemy at 150’ of latitude north of Hodeidah, which leads to Jazan Economic City. Villeneuve (2004) and Marion de Procé, (2022) locate Ambe at Jizan. Bukharin (2012) considers that Akme and Ambe are the same place. This location of Akme 30 km south of Jizan, is provided by Pleiades.
31. **Khor al-Wahlan**, near al-Madaya (Saudi Arabia): Badeo Basileion? Fons Coralis? (see also Pleiades). This place is mentioned by Ptolemy at 25’ of latitude south of R Baitios, which leads to this location. Ptolemy qualifies it as a palace, but not as a harbour. This may be Pliny’s Fons Coralis. This location for Badeo is also provided by Pleiades. Considering the similarity of names, this place is probably Monfreid's Medy anchorage.
32. **Wadi Baysh**, Athr, Aththar, near Khor Abu as-Saba, Dana Bay east of Ras Turfa (Saudi Arabia): R Baitios? Sambrachate? Athrida? (see also Pleiades, DARE). Ptolemy mentions this R Baitios and modern scholars usually accept to locate it at wadi Baysh (Cuvigny & Robin, 1996). This may be Agatharchides’ “deep water harbour into which empty several springs”, which Burstein (1989) locates at Khur al-Wahla. This may be Pliny’s Sambrachate and Athrida (Robin, 2022).
The bay located east of Ras Turfa is over 15 km long and provides excellent shelter. Shelter is found on the east side of Ras Turfa and further inside, in the second bay called Khor al-Ja’afirah where fishing boats gather today (Morgan & Davies, Red Sea Pilot, 2002).
33. **Jazan Economic City** (Saudi Arabia): Marma? on Mamaeum Litus (see also Pleiades, DARE). This place is mentioned by Pliny, but not as a harbour. This location of Marma is provided by Pleiades.
Before 2015, when this area was reclaimed from the sea, a bell-shaped coastal feature offered shelter to fishing boats on its northern side, as can be seen on older Google Earth pictures.

34. **Al-Qahma**, in Khor al-Wasm (Saudi Arabia): Thebai, Tabis? Country of the Debai (see also Pleiades, Trismegistos). Agatharchides only mentions the Debae people but is unclear about the location of their city. Ptolemy locates the city at 20' of latitude north of the outlet of R Baitios. Cuvigny & Robin (1996) place it a bit further north where al-Qahma, inside Khor al-Wasm, provides good shelter for ships (Morgan & Davies, Red Sea Pilot, 2002) with a conspicuous 100 m high conic mount at the entrance. Bukharin (2012) suggests Dhabhan, 490 km further north where a modern town called Taiba is found with a superb fjord-like shelter at Sharm Abhur, but this place is far outside the country of the Debai. Note two potential harbours at Khor al-Birk and Khor Nahud, around 30 km further north.
35. **Al-Qunfuda**, Qunfudhah, Qunfida, on wadi Kanawna, Qanauna, Qununa (Saudi Arabia): Kentos Kome? on R Canauna known for gold mining (see also Pleiades). Agatharchides, Diodorus and Pliny mention the gold carried by the river. Ptolemy locates the village at 50' of latitude north of the outlet of R Baitios, which leads to this place where the name of the modern river is similar to the ancient name. Cuvigny & Robin (1996) also place it at al-Qunfuda, but Bukharin (2012) suggests Jeddah 320 km further north. Al-Qunfuda is protected by an offshore reef at 15 km from the coast. Acceptable shelter is provided by the small triangular island in front of the city and a modern marina was built there around 2010.
36. **Ghubbat al-Mahasin**, Mohaisen, Khor al-Humara, Ras Kinnateis (Saudi Arabia): Circular gulf with trapezoidal shaped hill? (not mentioned in the databases). Agatharchides and Diodorus both mention this large bay with an island in the middle with three temples on it. Burstein (1989) locates this bay at al-Mahasin bay. The Red Sea Pilot confirms several anchorages are available in this bay (Morgan & Davies, Red Sea Pilot, 2002).
37. **Zahrān** at outlet of wadi Fatima, South of modern industrial port of Jeddah (Saudi Arabia): Zambram, Zabram Basileion, Zadrame? (see also Pleiades). Marcian mentions Zadrame in his periplus. Ptolemy qualifies it as a palace, but not as a harbour and locates it at 80' of latitude north of the outlet of R Baitios, which leads to a place south of al-Qunfuda. Bukharin (2012) suggests Mastoorah, 190 km further north and Pleiades locates it 115 km further south. Cuvigny & Robin (1996) place it near Jeddah because of the similarity of the modern and ancient names.
38. **Jeddah**, al-Balad old town (Saudi Arabia): Goudda, Gidda, Quda'a (see also Pleiades, Trismegistos). The ancient name of Jeddah is not mentioned by the ancient authors we surveyed. Jeddah is the modern port of Mecqua and the Ministry of Hajj claims the city was founded 2500 years ago. The initial tell is located at al-Balad, with a port on its NW side in the twentieth century ([Wikipedia, 1938 picture](#)). A shipwreck carrying pre-Islamic Aqaba amphorae was surveyed near Jeddah in 2013, suggesting maritime traffic in this area (Pedersen, 2015). It would indeed have been a pity not to use this good shelter.
39. **Khor al-Kharrar**, near Rabigh (Saudi Arabia): Agar? Arga Kome? Ptolemy locates Arga Kome at 40' of latitude north of Zabram and at 80' of latitude south of Iambia Kome. Cuvigny & Robin (1996) suggest Rabigh, where Pedersen (2015) found some kind of breakwater structure at the southern end of Khor al-Kharrar. Bukharin (2012) suggests al-Rayyis, 85 km further north. The entrance of this large coastal lagoon (ca. 18 x 3 km) is at its northern end. It is ca. 100 m wide and used by local fishing boats. This lagoon might have had a southern entrance during Antiquity.
40. **Sharm Burayqah**, Buraykah, al-Jar (Saudi Arabia): Kopar Kome? Coboea, Coboris? (see also Pleiades). Kopar Kome is mentioned by Ptolemy, Coboea is mentioned by Pliny and Coboris is mentioned by Pleiades without a location. Ptolemy locates the village at 45' of latitude south of Iambia Kome. Cuvigny & Robin (1996) suggest "al-Jar, at around 100 km south of Yanbu". Bukharin (2012) also suggests this place. Pedersen (2015) locates al-Jar at Sharm Burayqah where a small port is still found today near the entrance of the access channel to the modern port of Yanbu. Ghabban (2011) locates the archaeological site inside Sharm Burayqah.

41. **Yanbu al-Bahr** (Saudi Arabia): Iambia Kome? Ptolemy locates Iambia at 100' of latitude south of Ras Karkuma, which leads to Yanbu. Cuvigny & Robin (1996), Bukharin (2012) and Pedersen (2015) also suggest Yanbu. In addition, the similarity of the ancient and modern names is striking.
42. **Sharm Yanbu**, 15 km NW of Yanbu (Saudi Arabia): Charmuthas, Charmute? (see also Pleiades). This harbour corresponds very well to the descriptions by Agatharchides, Strabo and Diodorus:
- the total circumference is 23 km (close to his 100 stades);
 - the central island might be now connected to the mainland on the NE side where siltation occurred over time, near the outlet of wadi Qarrah;
 - the total area might have been between 2000 and 3000 ha (ample space for his 2000 ships);
 - the entrance is 300 m wide (more than his 200 feet = 60 m) but this depends much on coral growth which may have varied in time and with urbanisation.

Pedersen (2015) also suggests this place for Charmuthas.

This place is still a good anchorage today (Morgan & Davies, Red Sea Pilot, 2002).



Fig. 4. Sharm Yanbu with possible extend of ancient harbour and island now connected to the mainland.

43. **Al-Hassani Island** (Saudi Arabia): Zygaina, Zygaena, Zygena insula? (not mentioned in the databases). Ptolemy mentions it as an island and locates it 20' of latitude north of Iambia, which leads to this conspicuous 160 m high island, located somewhat further north at ca. 50' of latitude north of Iambia.
44. **Al-Hawra**, Haura, al-Duqm near Umluj, Umm Lajj? (Saudi Arabia): Leuke Kome? (see also Pleiades, DARE). Several locations are suggested for Leuke Kome and this is one is suggested by Hazlitt (1851) although it is located quite far south with respect to Myos Hormos. Pedersen (2015) mentions this place as one of the possible locations for Leuke Kome (more in section on Leuke Kome below). Pleiades locates al-Haura at al-Duqm beach, just north of Umm Lujj.
45. **Al-Qusayr**, Qassir, on wadi al-Hamd (Saudi Arabia): Egra Kome, Aigra, Agra, Akra, port of Hegra and Dedan and Qurh? (see also Pleiades, DARE). Egra Kome is explicitly mentioned by Strabo as the port from where he returned to Myos Hormos (Egypt) with Gallus and his army. Nehmé (2009) reports Ghabban's discovery of remains that might be

interpreted as Egra Kome, which would be the port of Hegra (inland at Mada'in Saleh, al-Hijr) and Dedan (inland at al-'Ula) and Qurh (inland at al-Mabiyat), all located on the famous Incense Route.

46. **Raiyikhah Island**, west of al-Wajh? (Saudi Arabia): Timagenes insula (see also Pleiades). This island is located by Ptolemy at 5' of latitude north of Raunathou Kome and although this island is located around 35 km north of Ras Karkuma, we suggest to choose this location because there are no other islands in this area (many "reefs" though).
47. **al-Wajh**, Sharm Wejh, on wadi al-Zarib (Saudi Arabia): Phoinikon Kome, Port of Hegra and Dedan and Qurh? Leuke Kome? Ampelone? (see also Pleiades, DARE). Phoinikon Kome is mentioned by Ptolemy but not as a harbour. Pliny mentions Ampelone, which may have been an earlier name for Leuke Kome (Cohen, 2006:307). This location of Phoinikon Kome, about 40 km NW of Egra Kome, is provided by Pleiades. Several locations are suggested for Leuke Kome and this is one is preferred by Nappo (2010), Bukharin (2012), Nehmé (2014), Pedersen (2015) and Fiema (2020). Hence, Strabo's round trip with Gallus would have arrived from Egypt at al-Wajh (Leuke Kome) and later have returned to Egypt from al-Qusayr (Egra Kome). More on this subject in the section on Leuke Kome below.
48. **Dhuba**, Duba, Sharm Qafafah (Saudi Arabia): Hippos Kome? (see also Pleiades, DARE). Hippos Kome is mentioned by Ptolemy but not as a harbour. He locates it at 40' of latitude south of Mount Hippos Oros. Burton (1878:128) suggested that this mount might be Jebel as-Sar, Ash-Shar, that is shaped like a horse. Several places might correspond to Ptolemy's description, e.g., Sharm Antar proposed by Pleiades. Sharm Dumaygh also provides a good shelter. We suggest Dhuba because this place is located closer south of Mount Hippos and because it became a fairly large city with a marsa providing good shelter for ships.
49. **Ash-Sharma**, (Saudi Arabia): Modiana? Madian? (see also Pleiades, DARE, Trismegistos). Modiana is mentioned by Ptolemy but not as a harbour. He locates it at 25' of latitude north of Mount Hippos Oros, which leads to the area of as-Sharma on the east side of Aynunah bay. Remains of a Nabataean settlement with many ceramics have been found there, the oldest dated ca. 1000 BC (Ingraham, 1981).
50. **Al-Khuraybah** in Aynunah bay (Saudi Arabia): Modiana? Madian? Onne? Leuke Kome? (see also Pleiades, DARE, Trismegistos). Strabo and the PME both mention Leuke Kome as a harbour, but its location is not provided. Agatharchides and Diodorus speak about "a bay" extending far inland, but Diodorus adds that "its mouth is twisting and difficult of egress, for a rock which juts out to the sea, blocks the entrance and makes it impossible to sail in or out of the gulf" (Burstein, 1989) which fits the entrance channel of Aynunah bay. Ptolemy and Marcian mention Onne as the first place on the Arabian Red Sea coast and a road to Petra starts here. Gawlikowski (2022) claims this place is the location of Leuke Kome and Cohen (2006:329) concludes his survey of ancient and modern sources with "most authorities place it [Leuke Kome] in the region of Aynunah". However, it might perhaps be suggested here that Aynunah bay hosts Ptolemy's and Marcian's Onne, but not Leuke Kome, which must be looked for further south (more in section on Leuke Kome below).
51. **Barqan Island**? (Saudi Arabia): Salydo insula (see Pleiades). This island is mentioned by Agatharchides as part of a group of three islands located offshore of a large bay believed to be Aynunah bay. Diodorus also mentions three islands, but names only one of them, Isis. Strabo just mentions three islands without naming them. Burstein (1989) locates this island here.
52. **Shusha Island**? (Saudi Arabia): Soukabuya insula (see Pleiades). This island is mentioned by Agatharchides as part of a group of three islands located offshore of a large bay believed to be Aynunah bay. Diodorus also mentions three islands, but names only one of them, Isis. Strabo just mentions three islands without naming them. Burstein (1989) locates this island here.

53. **Sanafir, Sinafir Island?** (Saudi Arabia): Isis insula (see Pleiades). This island is mentioned by Agatharchides as part of a group of three islands located offshore of a large bay believed to be Aynunah bay. Strabo just mentions three islands without naming them. Diodorus also mentions three islands, but names only this one. Burstein (1989) and Pleiades provide this location.
- This island is the largest of this group of three islands, but it is smaller than Tiran Island. It has an Isis temple and its ancient Egyptian name “s.t-n-nfr.t” means "place of good profit" ([Wikipedia](#)). Diodorus reports existence of “stone foundations of ancient dwellings and stelae which are inscribed with letters in a barbarian tongue”. Furthermore, it has a 2 km long bay providing shelter from north and NW winds and waves. This island therefore has strategic advantages similar to the neighbouring Tiran Island. Could Sanafir island be Procopius’ ancient Iotabe, rather than Tiran Island??
54. **Tiran Island**, at the entrance of the gulf of Aqaba (Saudi Arabia): Isle of sea-calves (dugongs), Phocarum insula? Dia insula? Iotabe? Jotabe? (see Pleiades). Diodorus calls it Seal Island, Isle of sea-calves (dugongs). According to Burstein (1989), Photius erroneously translated Agatharchides by calling this place 'Duck Country' but he locates it on Tiran Island. Strabo mentions Dia insula with a wording very similar to Agatharchides’. Procopius mentions Iotabe Island at the south end of the Gulf of Aqaba at a distance of 1000 stadia (ca. 180 km) from Aila, which leads precisely to Tiran Island. Iotabe is also mentioned by Choricus. The sixth century *Martyrium Sancti Arethae* mentions Iotabe owning ships (Schörle, in press).
- With two navigation channels, each ca. 1 km wide, this is a very strategic location for controlling sea trade entering the Gulf of Aqaba (it still is today) and for levying taxes... However, this island yielded no archaeological evidence at all for such a settlement (Mayerson, 1992). Nappo (2015) suggested that Iotabe took over from Leuke Kome as a tax-station, but he fails to locate either place.
- Some scholars have suggested that Iotabe would be at Fara’un Island, but that island seems too small as a trading post (ca. 350 x 150 m). As mentioned above, Sanafir might perhaps be a better option, according to Diodorus’ report. Another option would be at Ras Muhammad (ca. 5 x 2 km ancient Poseidion promontory, see Pleiades), which is even more strategic as it controls both the gulfs of Suez and Aqaba and has a very nice, but shallow, 1600 x 150 m shelter which is now silted-up (today’s ‘Hidden bay’).
55. **Geziret Fara'un**, Jazirat Firawn, Pharaoh's Island, Coral Island (G. of Aqaba): Ezion Geber? Gasion Gabel? (see Pleiades). Josephus Flavius mentions Solomon’s ships being built at Gasion Gabel “not far from the city of Ailane”, i.e., in a nearby but distinct place. This island has been settled since the Late Bronze Age. Flinder (1989) mentions two ancient breakwaters and clearly concludes this island is the Biblical Ezion Geber used by King Solomon to build his fleet. However, such a small and steep island (ca. 350 x 150 m) seems not really adapted for construction of a fleet as all materials and man-power would have to be brought over from the mainland. Flinder’s suggestion that the island was used later as a warehouse for transshipment of cargo with destination Aqaba makes more sense.
56. **Tell el-Kheleifeh**, Tell al-Khulayfa (G. of Aqaba): Ezion Geber? Gasion Gabel? (see Pleiades, DARE). Josephus Flavius mentions Solomon’s ships being built at Gasion Gabel “not far from the city of Ailane”, i.e., in a nearby but distinct place. An ancient fortress was uncovered in the forties and the findings were reassessed by Pratico (1985). Finkelstein (2014) suggests that this fortress was Ezion Geber. This would indeed be an acceptable place to build King Solomon’s fleet.

4.6. Potential harbour places based on nautical considerations

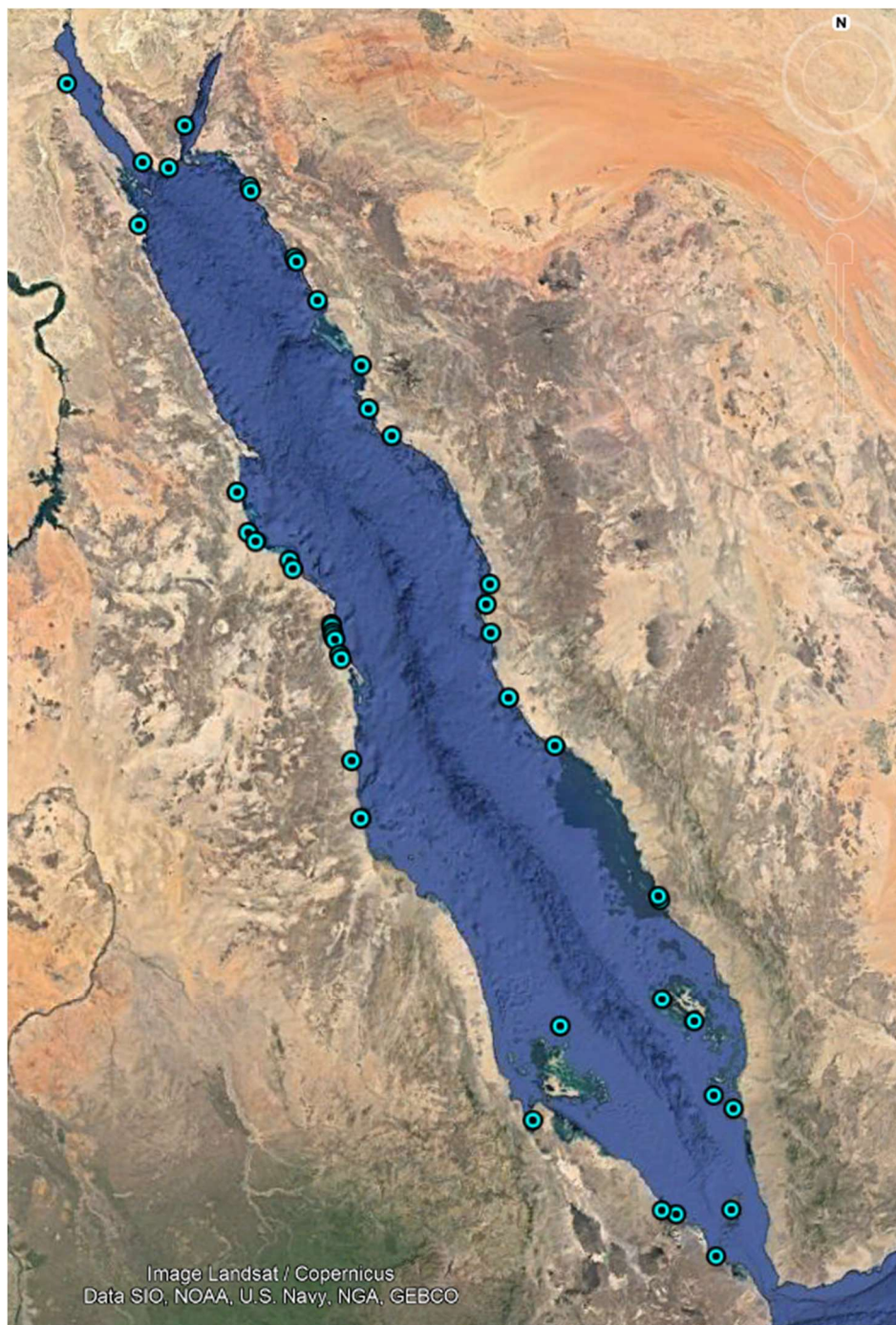


Fig. 5. Nautical potential harbour locations in the Red Sea (based on Google Earth).
(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/RedSeaBlue.kml>)

A list of 44 potential harbour places is presented in the Appendix.

Nearly all of these places are taken from the Red Sea Pilot (Morgan & Davies, Red Sea Pilot, 2002) where we selected good and excellent shelters that are not yet identified as ancient harbours. We also added a few large industrial ports and a few places mentioned by Monfreid (1932).

We may distinguish various shapes for these potential harbours:

- **Khors and marsas looking like a fjord with a long and narrow body of water:**

Marsa Gwilaib (Marsa Ribda), Marsa Oseif (Khor Abu Asal), Marsa Hamsiat, Marsa Wasia, Marsa Halaka (near Abu Imama), Marsa Shinab (Khor Abu Mishmish), Saso (Sarso

Island), Khor al-Birk, Khor Nahud, Sharm Abhur (Bihar), Sharm Hasy, Harrat Qalib, Sharm Habban, Sharm Jubbah (industrial port of Duba), Sharm Yahar (Al Harr).

This is the largest group of potential harbours. They usually offer very good shelter with a length of 1 to 10 km and a width of 100 to 200 m. Their depth often reaches 10 m and more, which may be a problem for anchoring ships.

- **Smaller coves protected by reefs:**

Bodkin reef, Marsa el Qad, Marsa Abu Naam, Marsa Gafatir, Marsa Ata, Sharm Antar.

These places are a few hundreds of meters long and may offer limited shelter or difficult access.

- **Lagoons with a narrow entrance or with a dogleg entrance channel:**

Sharm el-Madfa (Marsa Hasa), Marsa Shaab, Marsa Fijja, Fijab (Bahia de Fuca).

These places are very well sheltered because of their narrow entrance, and access may be tricky in some cases (Sharm el-Madfa). Furthermore, the width of the entrance may have changed since Antiquity as coral reefs are living creatures.

- **Bays protected from the dominant wind direction:**

Merset el-Qad Yahya, Melita bay (near Ras Nasiracurra), Tongue Island (near Monfreid's Zoukour, Zuqar), As-Salif, Uqban Island (Monfreid's Okban), Dumsuq Island (Monfreid's Dumsuk), Marsa Qishran, Abu Shauk, Al Jazeerah (near Ras Hatiba), Al Qadimah, Sharm Al Khawr, Sharm Dumaygh, Sharm el-Sheikh, El-Kura.

These bays are usually protected by reefs leaving an opening allowing navigation. They are usually several hundreds of meters long and the longest reach several kilometres. Some are used for modern ports (As-Salif, Al Jazeerah, Al Qadimah).

- **Beaches protected from the dominant wind direction:**

Mersa Thelemet, Marsa Abu Makhadiq, Harmil Island, Edd, Mersa Dudo, Ras Terma.

The length of these sheltered beaches varies from 100 m to more than 2000 m (respectively at Ras Terma and at Marsa Abu Makhadiq). They are obviously unsheltered in case the wind turns away from its usual direction and sailors have to stay alert.

More generally speaking, the khors and marsas are concentrated in Sudan and Saudi Arabia, and the sheltered bays are mainly in Yemen and Saudi Arabia.

4.7. Potential harbour places based on geomorphological considerations



Fig. 6. Geomorphological potential harbour locations in the Red Sea (based on Google Earth).
(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/RedSeaYellow.kml>)

A list of 19 additional potential harbour places is presented in the Appendix.

The following places were identified between Hurghada and Ras Banas:

Makadi Bay, Sharm el-Arab (Al Nabila), Sharm Rashid, Sharm el-Abd, Wadi Gasus (Coral Garden resort), Kalawy Imperial, Abu Sawatir Rocky Valley, Sharm el-Bahari (Mangrove Bay), Santido Resort, Marsa Wizr, Marsa Toronbi, Coraya Bay, Marsa Mubarak, Marsa Mooray, Marsa Abu Dabbab, Marsa Fokairi, Shams Alam Resort, Wadi Umm al Abas, Kala'an Gulf.

Most of these places qualify as coves. Sharm el-Arab is a 450 m long marsa. Marsa Mubarak and Wadi Umm al Abas are sheltered beaches. All places, except Sharm el-Bahari, are not very good shelters for ships, although many of these coves are used today for holiday resorts and diving centres using motorised ships in good weather.

5. Nile to Red Sea canal

The ancient Nile to Red Sea canal was called Nekou Diorux and located in the archaic Tjekou valley, today's wadi Tumilat, connecting the Pelusiac Nile branch to the Bitter Lakes.



Fig. 7. Eastern part of the Nile to red Sea canal showing the location of the Darius stelae (based on Google Earth). (kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/Nile-RedSeaCanal.kml>)

As a possible lead for the location of this canal, we might consider that when Darius had it (re)dug, he placed his commemorative quadri-lingual stelae at places where many people would see them, e.g., at ports on the Nile to Red Sea canal. Four stelae were recovered so far (Tuplin, 1991, Semenenko, 2021). The first stela was found near Tell el-Maskhuta (Heroonpolis) which is the closest to the Pelusiac branch of the Nile Delta. The 2nd stela was located at Serapeion, Serapeum, about 10 km south of Ismailia. The 3rd stela was near the promontory called Mahattat al Kibrit, Kabret, located between the Small and the Great Bitter Lakes, at Chalouf, Shaluf. The 4th stela was at Koubri, 6 Km north of Suez. But let's widen our perspective on the available documentation:

- *The four Darius stelae (ca. 500 BC)* inform us that Darius had a canal dug from Tell el-Maskhuta to Koubri, if we assume the four stelae have been placed along the canal.
- *Herodotus (ca. 450 BC)* describes a canal first built by Necho (ca. 600 BC) from the Pelusiac branch of the Nile near Bubastis, to the Red Sea which he locates near Patumos.
- *Aristotle (ca. 350 BC)* notes that both Sesostris and Darius feared an inundation of the Nile Delta if they finalised the Nile to Red Sea canal.
- *The Pithom stela (264 BC)* tells us that Ptolemy II founded Arsinoe in Kemwer province (the latter probably located near the Bitter Lakes, acc. to Thiers, 2007) from where his ships left to the southern Red Sea, returning laden with elephants and precious goods, and welcomed back by the king at Per Atum.
- *Diodorus (first century BC)* mentions the same canal ending with locks at Arsinoe.
- *Strabo (ca. 25 BC)* tells us about the lock closing the canal built by Ptolemy II. Strabo also talks about the construction of Aelius Gallus' fleet at "Cleopatris, which is near the old canal which extends from the Nile", not excluding Cleopatris to be located somewhere upstream. Furthermore, he informs that the canal could be used by large ships and that it was connected to the Pelusiac branch at Phakoussa, which is 30 km downstream of Bubastis, requiring a fairly impossible south-north connection crossing a 30 m high hill east of al-Qorin.
- *Pliny (ca. 75 AD)* might be slightly reinterpreted for Daneon Portus from where a canal of 62 500 paces (92.5 km) would lead to the Pelusiac branch (near Bubastis), but only 37 500 paces (55.5 km) were built by Ptolemy II from the Pelusiac branch to Tell el-Maskhuta. The distance from Déversoir (northern end of the Great Bitter Lake, near Difarsuwar air base) to the Pelusiac branch near Bubastis is around 87 km and Daneon Portus might therefore be located near Déversoir.
- *Claudius Ptolemy (ca. 150 AD)* mentions Arsinoe at 20' of latitude due north of Clysma, which leads near Mahattat al Kibrit, which may have been a fort and where a major modern police station on the Suez Canal is still located today.
- *Lucian (ca. 175 AD)* mentions navigation from the Nile to Clysma, inducing an operational canal in the second century AD.

Aubert (2004) provides a superb review of the history of the Nile to Red Sea canal. Excavations were conducted at Qulzum in 1930-32 and reported by Bruyère (1966). Cooper (2009) provides an estimated route of the canal and a redrawing of a survey by Bourdon (1928) showing the location of the supposed lock at the Suez entrance of the ancient canal, next to an inner- and an outer-harbour and next to a ford crossing over to the Sinai Peninsula.

As reported by Strabo (Geog. 17.1.25), we can understand fears to jeopardise the water quality of the Bitter Lakes, the Nile to Red Sea canal and even the Nile Delta, but we can confirm today that a lock preventing the risk of inundating the Nile Delta during high Red Sea water levels (only 1 or 2 m above its Mean Sea Level, resulting from high tide combined with a rare southern wind) was not required. However, the risk of changing the existing fresh water Bitter Lakes into saltwater lakes was real when creating a connection with the Red Sea, and this justified a lock. Such a lock was useful as long as the Nile would provide a volume of fresh water large enough to compensate the severe evaporation on the Bitter Lakes⁴.

When both Bitter Lakes were freshwater lakes, they could not be considered as a marine area and Clysma (Suez) must therefore have been the only true seaport at the northern end of the Red Sea since archaic times. Cargo was most probably transhipped there on- or from large sea-going ships onto smaller vessels sailing on the Nile to Red Sea canal, even if Strabo notes that the canal could be used by large ships. The location of the eastern end of this canal was depending on its

⁴ The modern Suez Canal (opened in 1869, initially 8 m deep, now 24 m) changed this situation completely as no locks were included and salt water could flow freely into the Bitter Lakes, and due to above mentioned evaporation, the Bitter Lakes are now even more salty than the Red Sea.

sedimentation and on the Nile floods. It could therefore be at Tell el-Maskhuta in Necho's days, at Qulzum in Darius' days and back at Tell el-Maskhuta in Ptolemy II's days.

Concluding, it might perhaps be suggested here that Ptolemaic Arsinoe-Cleopatra and Greco-Roman Clysma are located near Kom el-Qulzum, but locating Arsinoe-Cleopatra at Kabret (or even at Déversoir) also makes sense. Déversoir, might be another, not yet found, port on the canal, possibly Pliny's Daneon Portus, at ca. 87 km of the Pelusiatic branch. Serapeion might also be a port at ca. 75 km of the Pelusiatic branch. Further upstream, Tell el-Maskhuta is Greco-Roman Heroonpolis, at ca. 54 km of the Pelusiatic branch, and Tell el Retabeh is archaic Per Atum, Pithom Pitoum, Patumos, at ca. 40 km of the Pelusiatic branch (Thiers, 2007).

6. Leuke Kome

The issue of the location of Leuke Kome has been much debated, and still is today.



Fig. 8. Possible locations for Leuke Kome on the Arabian coast, with respect to the Incense Route (green line) and to Myos Hormos and Berenike on the African coast (based on Google Earth).

(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDESarchivees/RedSea/Maps/LeukeKome.kml>)

Leuke Kome is mentioned by Cosmas Indicopleustes as a coastal settlement, but not as a harbour. Leuke Kome is mentioned as a harbour only by Strabo and the PME. Strabo explains that his trip with Gallus from Suez to Leuke Kome took 15 days. Strabo also informs that the road between Leuke Kome and Petra was travelled back and forth by camel-traders. The PME informs us that there is a Roman fort with a tax collector and a road to Petra, that Arabia starts there, and that Leuke Kome is 2-3 days sailing *eastwards* from Myos Hormos, which clearly points at the al-Wajh area (by the way, this route is still favoured today acc. to Agius, 2019). However, several other locations have nevertheless been suggested, the most popular being, from south to north: al-Hawra near 25.2° of latitude (Hazlitt, 1851), al-Qusayr near 26° of latitude and al-Wajh near 26.2° of latitude, both near the outlet of wadi al-Hamd (Nappo, 2010), and al-Khuraybah in Aynunah

bay near 28° of latitude (Cohen, 2006, Gawlikowski, 2022). The sites of Yanbu and of al-Jar (Sharm Burayqah) near 24° of latitude, should perhaps be added to this short-list because of their fairly short track to Medina, but they are located too far south with respect to Myos Hormos.

As mentioned before, the wind climate changes when sailors travel from south to north on the Red Sea and the northern one third of the Red Sea is subject to N to NW winds for 75% to 95% of the time (Morgan & Davies, Red Sea Pilot, 2002). Hence, it is tempting to transfer cargo from ships to inland routes. On the African side, Berenike is near 23.9° of latitude and was the favoured place for transshipment of cargo arriving from India. Myos Hormos is near 26.2° of latitude and may have been a preferred place for leaving to India. Both Berenike and Myos Hormos had a land route to the Nile valley, but the Berenike land route was twice as long. However, goods that did not have to go to Egypt and Alexandria, but rather go to Petra and Gaza for further export on the Mediterranean Sea, could travel by land on the Arabian side, using the famous Incense Route which is located east of the mountain ridge along the Arabian coast (Robin, 2014).

From a nautical point of view, all locations, except Aynunah, are quite favourable: al-Jar (Sharm Burayqah), Yanbu and al-Wajh all offer good shelter and good access for ships. Al-Hawra provides the smallest shelter. Al-Qusayr is probably completely silted-up today.

An interesting discussion about Gallus' expedition (26-25 BC) is also provided by Mayerson (1995). The distance from Suez to Ras Muhammad (southern tip of the Sinai) is around 180 nautical miles, which can be sailed within a few days with the NW wind prevailing in the Gulf of Suez. Sailing from Ras Muhammad to Aynunah bay is another 50 nautical miles to NE, which is normally sailed within a single day, even if winds in the area between the gulfs of Suez and Aqaba may be treacherous. However, with the locally prevailing NW wind, this means sailing with beam wind, which is all right for Gallus' 130 transport ships, but catastrophic for his 80 war ships that are not able to operate in waves and with strong winds. This may explain why Strabo notes that Gallus 'lost many of his ships on account of difficult sailing' during this 14-day trip.

Aynunah bay shows a large sheltered area (ca. 20 x 3 km) that can easily host hundreds of ships. Today's entrance is 150 m wide which is large enough for sailing boats, if the pilot knows the way (!). Although it may have been different in ancient times, it is a difficult and dangerous entrance, as already noted by Diodorus, and it must have taken quite some time and effort to enter ca. 200 ships into the bay. We should perhaps assume that Gallus would never be foolish enough to be trapped in there. Furthermore, we understand from Strabo's comments, that Syllaeus, the Nabatean guide, preferred having this impressive Roman army landing at the southern end of his country (near Mada'in Saleh, ancient Hegra) instead of marching right through the whole length of it.

It is also interesting to note that Strabo reports that Gallus sailed (from Cleopatra) to Leuke Kome on his way to Arabia, and that he sailed from Egra Kome (to Myos Hormos) on his way back to Egypt. Both places are obviously distinct, but it would make sense if they were close to each other because Gallus would have travelled on foot in known terrain with his army on his way back. Furthermore, his fleet would have been waiting for him at al-Wajh where the ca. 200 ships would be sheltered, and then move to al-Qusayr (only 23 nautical miles away) upon Gallus' arrival back from his unsuccessful expedition in south Arabia (Arbach, 2017). Strabo also notes that Gallus sailed back from Egra Kome to Myos Hormos in 11 days and as he does not mention any specific problem during that trip, it may be assumed that everything went smoothly for the fleet. Nevertheless, sailing in a direct diagonal at close reach, "beating to windward", for several days is a really exhausting experience for men and ship (Heikell, 2015) and for this reason, today's Arab sailors favour sailing north along the Saudi coastline up to Dhuba or Muweilah, before turning SW to Quseir (Agius, 2019). Considering the coastal reefs and islets and the lack of shelters, such a trip must be guided by a very experienced pilot, but it cannot be excluded that Gallus proceeded this way.

From a logistical point of view, the southern locations all have a 175 to 225 km road connection from the coast to the portion of the Incense Route running between Medina (ancient Yathrib) and

Mada'in Saleh (ancient Hegra). The al-Wajh location, near the outlet of wadi al-Hamd, is favoured by some scholars (Nappo, 2010) because the track leading from al-Qusayr (ancient Egra Kome?) along wadi al-Hamd and wadi al-Jizl does not reach an altitude higher than ca. 400 m. The other tracks showed on the map above (white lines) lead through passes located at altitudes of 850 to 1750 m which are obviously more difficult for camel caravans.

From an archaeological point of view, only Aynunah bay shows abundant ancient remains at as-Sharma and al-Khuraybah (Ghabban, 2011, Gawlikowski, 2022) and few ancient remains were found at the southern locations, except for Stone Age remains at Yanbu and Nabataean remains at al-Qusayr (Ghabban, 2011, Pedersen, 2015, Fiema, 2020).

Finally, it should be noted that Leukos Limen (White Port) on the African coast and Leuke Kome (White Village) on the Arabian coast may have sometimes been mixed up. However, Ptolemy is quite clear on this matter as he locates Leukos Limen at 64°30' of longitude and 26°00' of latitude, south of Myos hormos at 64°15', 26°45' on the African side. It is, indeed, surprising that Ptolemy does not mention Leuke Kome on the Arabian coast, but we can have no doubt that Leuke Kome is on the east side of the Red Sea as this is confirmed by Strabo and the PME who mention the road from Leuke Kome to Petra (Fiema, 2020).

Concluding, the following overall picture might be suggested: Leuke Kome (al-Wajh?) surely was an important port of call for cargo transiting to Petra and further on, because it had a fort with a Roman tax collector. Nearby Egra Kome (al-Qusayr?) was probably also a major harbour because of its easy road connection to the Incense Route. Al-Hawra had a somewhat steeper road connection. Ancient Iambia (Yanbu?) and Kopar Kome (al-Jar at Sharm Burayqah?) may have been alternative ports of call, because they also had a road connexion to Yathrib (Medina) on the Incense Route.

7. Red Sea versus Nile sailing

Much discussion has taken place concerning the route when sailing back from the Indian coast, the Somalian and the Yemenite coasts. The southern part of the Red Sea is subject to reversing monsoon winds and sailors could make use of that. However, north of 20° of latitude, the northern winds blow all year round on the Red Sea, making the trip back to the north quite uneasy. Some merchants therefore had their ships calling at ports like Berenike (near Ras Banas), Myos Hormos (Quseir al-Qadim) and Saww (Marsa Gawasis) in order to continue the journey by land via Coptos (Qift) and the Nile down to Memphis (Cairo) and Alexandria. Other merchants decided to call at Leuke Kome (possibly Sharm al-Wajh in Saudi Arabia, acc. to Nehmé, 2014) and further by land to Petra and Gaza. These routes were an alternative to sailing (or rowing) to Clysma (Suez), Ayn Sukhna or Wadi el-Jarf with continuous northerlies, or to Charax Spasinou (Jebel Khayabir, about 50 km north of Basra), via the Gulf, in order to reach the Mediterranean coast near Palmyra, but with lots of NW winds also.

Physical conditions concern current and wind. Schematically, the current in the Nile varies between 1 knot (ca. 2 km/h) in the low water season (December to June) and 3 knots (ca. 6 km/h) at the peak of the flood season (September). The wind is blowing from north, against the current, most of the time in the Nile valley (note that the Nile delta is subject to seasonal variations with its famous summer northerlies). The Red Sea is subjected to a similar wind regime in its northern part (say north of Port Sudan at 20° latitude) and the Red Sea Pilot states that "you should not count on any south winds from Ras Banas northwards" (at 24° latitude). The southern Red Sea has seasonal variations due to the monsoon regime and winds can be strong in the Straits of Bab el-Mandeb.

Cooper (2011) shows that both routes had pros and cons. The journey time from Berenike to Memphis was quite similar for both routes (at best around 3-4 weeks). Both routes induced a number of risks (grounding at sea and on the Nile, pirates at sea and on land, etc.). Sidebotham

(1989) suggested that bulky agricultural cargoes might have travelled through Clysma, while more luxury cargoes might have taken the land route and the Nile.

The final answer may not yet be given but the sketch below will provide a summary of the physical conditions and approximate journey times.

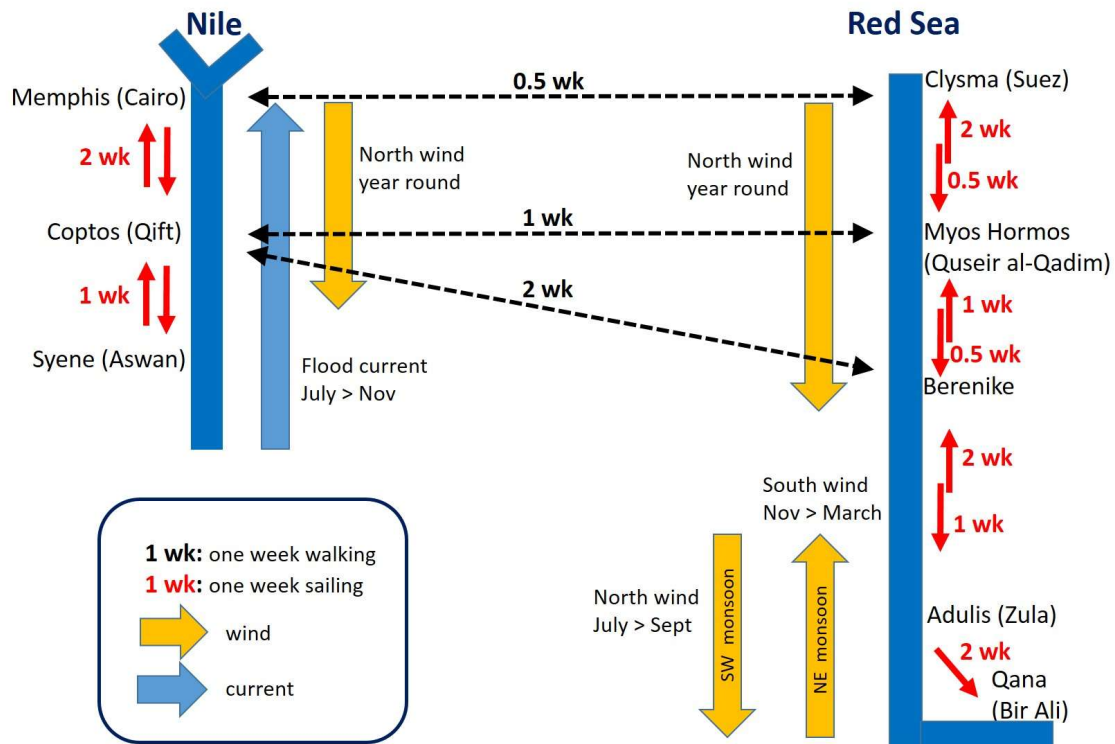


Fig. 9. Physical conditions and journey times on the Red Sea and on the Nile.

Journey times for northbound and southbound shipping are shown on the sketch. These are of course approximate times without stops at ports. Southbound on the Red Sea is pretty fast with around 50 to 80 nautical miles per day (i.e., 4 to 6.5 knots assuming 12 hours/day sailing time). Northbound on the Red Sea is very slow as sailing is not possible in a straight line and no more than 20 to 25 nautical miles/day can be done (i.e., less than 2 knots assuming 12 hours/day sailing or rowing time). These values are confirmed by Pascal Arnaud who is a Roman historian *and a sailor* himself (Arnaud, 2005, 2014, Tammuz, 2005).

Journey times on land between the Red Sea ports and the Nile are provided also.

As a result, the journey time from Berenike to Memphis was ca 3.5 weeks by the Red Sea via Clysma, and ca 4 weeks by the Nile, which is finally quite similar.

8. Summary and conclusions

In our search for ancient ports on the Red Sea, we found ‘harbours’ rather than ‘ports’, as only very few port structures have been found so far by archaeology: galleries containing boat remains at Ayn Sukhna, Wadi Gawasis and Wadi el-Jarf, a breakwater at Wadi el-Jarf, a quay at Quseir al-Qadim, a possible quay and lighthouse at Berenike and a breakwater at Geziret Fara’un and possibly on Oreine Island and at Khor al-Kharrar.

The complete list consists of 227 places (164 known harbours and 63 potential harbours) and coordinates are given in the Appendix. It is realised that each place would be worth a more detailed study, but our aim here is to provide a bird’s eye view.

Around one third of the 164 places that are archaeologically attested have no ancient name yet because the archaeological surveys and literature studies did not yet provide one.

Out of the 108 well-located places, we provided details on 39 places having an ancient name and 8 places without an ancient name, leaving aside 61 places that are described elsewhere by archaeology. The well-located places are typically places like Myos Hormos at Quseir el-Qadim, Berenike, etc, but also places like Ptolemais Theron at Aqiq and Diodorus insula at Galala Hills near Zula. Hence, we have integrated as many places as possible as ‘well-located’ places, even when some discussions may still be ongoing among a few scholars.

The uncertainly located places yield more discussions among scholars, which we tried to summarise.

Descriptions provided by ancient authors usually do not enable an accurate location of the places, although we have at least one exception with Agatharchides’ description of Charmuthas which we suggest locating at Sharm Yanbu. Another interesting case is Hippos Kome located by Ptolemy near a mountain he calls Hippos Oros, which was suggested to be located at the conspicuous Jebel Ash-Shar, north of the modern Dhuba with a good shelter for ships.

Some places are located by ancient authors between two well-located places, and a good shelter was sometimes found in that area by means of the Red Sea Pilot, enabling us to propose a location (Arsinoe Troglodyka, Iambe Island, Napegous Kome). Similarly, some natural shelters are so good in an otherwise hostile coastline, that we cannot imagine they were not used in Antiquity (Port Sudan, Suakin, Jeddah).

When Ptolemy locates two places very close to each other, we may assume they really are (Bathus and Dioscuror).

Without any philological pretensions, the name of ancient places sometimes tells us about their possible location because of a similarity with the modern name or because of the meaning of the name (Adedou Kome, Makna, Ankale, Nechesia, Antiphillou, Sabae, Zabram, and Bathus profundus portus, Katakekaumene nesos, Iambia Kome, Hippos Kome).

Some places like the Land of Punt have been discussed at length by scholars and no accurate answer is available yet, even if we may suspect its location somewhere between Zula and Djibouti.

Most ancient island names are very difficult to locate due to the lack of adequate descriptions. Some exceptions exist such as the island with topaz stones in front of Berenike and the so-called ‘Burnt Island’ where it can be shown that Ptolemy can make large mistakes of hundreds of kilometres. Some islands may have been connected to the mainland since ancient times and are not clearly visible anymore (Aphrodite’s Islands).

Some places just fit together as a group like a puzzle (Sabae & Port of Eumenes & Arsinoe Epidires-Dire), but such a deduction may be discussed! Another group of places seems to fit Necho’s ancient Nile to Red Sea canal: Arsinoe-Cleoptris, Clysma and Ovila are all near Suez, but Daneon Portus, Serapeion and Pithom are further upstream on the canal.

The issue of the location of Leuke Kome has been addressed and the favoured location at this time would be al-Wajh, but a lot more archaeological research would be needed on this subject. This does not reduce the importance of remains found in Aynunah bay, 270 km further NW, as this might be another major ancient place, e.g., Modiana at ash-Sharma.

Another difficult issue is that of Iotabe insula, which is provisionally located on Tiran Island, but without any archaeological evidence so far. An alternative location might be Sanafir Island, a few kilometres to the east. Another very strategic location would be Ras Muhammad from where the access to both the Gulf of Suez and the Gulf of Aqaba could be controlled. This is not an island but a 5 km peninsula with a narrow sandy isthmus and a very good, but shallow, shelter which now silted-up (today’s ‘Hidden Bay’).

The case of Aqaba is also rather confusing, as its very long history mixes Biblical, Egyptian, Roman, Byzantine, and Islamic civilisations, to say the least. The answer is perhaps given by

Finkelstein (2014) suggesting that the Roman, the Byzantine and the Islamic settlements are now well located in Aqaba, and that Ezion Geber is at Tell el-Kheleifeh.

A list of 44 potential harbour places is proposed based on nautical considerations. Nearly all these places are taken from the Red Sea Pilot (Morgan & Davies, Red Sea Pilot, 2002) where we selected good and excellent shelters that are not yet identified as ancient harbours. An additional list of 19 potential harbour places is proposed between Hurghada and Ras Banas, based on geomorphological considerations. These potential harbour places might be worth a closer look for archaeological remains in these places in the future.

It appears from the above that the descriptions provided by ancient authors are of limited help, but they usually put the places in linear order along the coastline (with some mistakes). Ptolemy's coordinates are also of limited help, but they give orders of magnitude of distances, such as 'this place is halfway between that place and that place'. The modern Red Sea Pilot and nautical charts are of great help to find 'good' shelters for ships depending on the local wind- and wave climate, supposing you have some knowledge of sailing. Like the modern nautical charts, Google Earth is of invaluable help, especially as the most recent pictures enable to see details the size of a car.

A better knowledge of the location of ancient ports will allow new navigation studies on the Red Sea, such as the Red Sea versus Nile sailing options. As a result, the journey time from Berenike to Memphis was estimated to ca 3.5 weeks by the Red Sea via Clysmas, and ca 4 weeks by the Nile. A small difference that may not have been that important in ancient times when "time is money" was less important than "have a safe trip back home" ...

Many uncertainties remain after this study and many changes of harbour locations may still occur in the future, but our result is hopefully closer to reality than it was about one century ago (Murray, 1925). Anyway, the last word on ancient harbour locations on the Red Sea is far from being said and we hope this study will help to put things into perspective.

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Bios

Arthur de Graauw is a coastal engineer with extensive experience in the Mediterranean area. He has compiled a list of ancient ports and harbours with latitude/longitude positioning, based on ancient and modern authors. His catalogue of ancient coastal settlements, ports and harbours contains nearly 6000 sites. It can be viewed on: <http://www.AncientPortsAntiques.com> .

Appendix – Details of the ancient harbours on the Red Sea

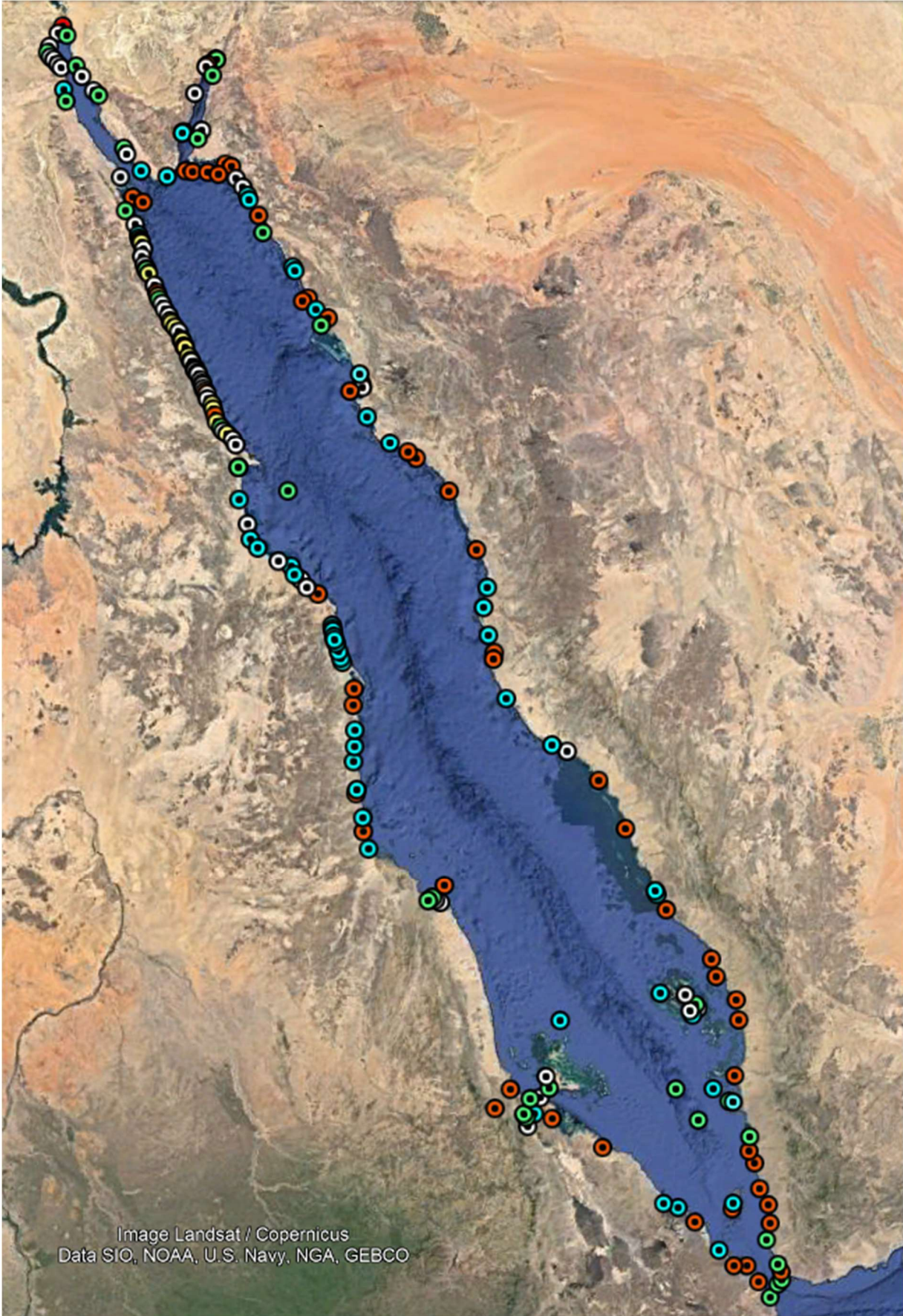


Fig. 10. Ancient harbours in the Red Sea (based on Google Earth).
(kml file: <http://ancientportsantiques.com/wp-content/uploads/Documents/ETUDEsarchivees/RedSea/Maps/RedSeaAll.kml>)

Key to Columns	
NAME	Ancient name: several names may be given but exhaustivity is not sought
NAME_MOD	Modern name: city or approximate location
COUNTRY	Country & region in 2023
LATITUDE	Latitude in decimal degrees. Positive latitudes are North
LONGITUDE	Longitude in decimal degrees. Positive longitudes are East
Note on Naming	
<p>According to Pleiades (http://pleiades.stoa.org): Places are geographical and historical contexts for Names and Locations. Places may have within their core some features of the physical world – a sea, a bay, a river, a mountain range, a pass, a road, a settlement or an ethnic region – but their primary quality is that, in the words of Yi-fu Tuan, they are constructed by human experience. Places may be no larger than a family dwelling or as big as an empire, be temporally enduring or fleeting. They may expand, contract and evolve over time. A place may be unnamed, unlocated, falsely attested or even mythical.</p>	
<p>A place is defined by its name and its location. - A Location is a current or former, concrete spatial entity. The midline of a river channel is a location. The centre of a bridge's span is a location. The perimeter of a walled settlement is a location. Every location belongs to a place. The highest point of a mountain summit, for example, would be a location while the entirety of the mountain: its faces, ridges, couloirs, and forested slopes – and its significance in human history – would be the place context.</p>	
<p>The position of a location is defined on a map by its latitude/longitude coordinates in degrees. In this work, we use the World Geodetic System 1984 (WGS 84) with decimal degrees with 5 decimal digits. The 5th decimal digit yields an accuracy in the order of one meter (for latitudes).</p>	
	Color code:
	well-located places with an ancient name
	uncertainly-located places with an ancient name
	well-located places without an ancient name
	nautical potential harbours
	geomorphological potential harbours

Appendix: Details of the ancient harbours on the Red Sea

NAME	NAME_MOD	COUNTRY	LATITUDE	LONGITUDE	FOUND.	AUTH Anc	AUTH_MOD	DOC1_Papers	DOC2_papers	DOC3	DOC4	WIKIPEDIA	PLEIADES	DARE	TRISMEGISTOS	TOPOSText
Arsinoe, Cleopatri, Klyzma, Clyzma, Calzem, Ovila, on the Heroopolite Gulf	Suez, Qulzum, el-Gismel, on the Gulf of Suez	G. of Suez	29.9794	32.5563	-330	Pithom stela, THI 258 ; Strabo, Geogr, 16, 4 ; Lucian, Alexandre, 44	Cohen, Burstein	Cooper (2009)	Thiers (2007)	Maverson (1995)	Aubert (2004)	https://en.wikipedia.org/wiki/Clyzma	http://pleiades.stoa.org/places/727101	http://imperiolum.ahlfeldt.se/places/21705	https://www.trismegistos.org/place/2794	https://topostext.org/place/300326Uars
Phoinikon, Poseideion?	Ayn Musa, north of Ras Misallah	G. of Suez	29.84120	32.62920	-330	Agatharchides (in Photius, Codex 250, Frag. 87) ; Diodorus, Hist, 3, 42	Burstein						746794	42456	37065	
	Adabiya bay	G. of Suez	29.87000	32.49000											4874	
	Bir Odeib & Bir Themada	G. of Suez	29.67400	32.36800											54707	
Bat, port of King Khafra, Khefren	Ayn Sukhna, at Portrait Hotel, with ship remains in galleries	G. of Suez	29.58430	32.34400	-2550	Pepi-Nakht's expedition?		Tallet (2012)	Tallet (2015)	Somaglino (2022)		https://en.wikipedia.org/wiki/Ain_Sokhna			37058	
	Bir Umm Reiga & Bir Aheimar	G. of Suez	29.52100	32.39300											54711	
	Bir Abu Daraj	G. of Suez	29.48500	32.45100											3539	
	Bir Abu Sundug	G. of Suez	29.41580	32.52000											54717	
	Wadi Abu Ashayir el-Rayyan	G. of Suez	29.36960	32.57330											54921	
Biblical Marah? Medeia?	Abu Mereir, south of Ras Matarma	G. of Suez	29.39843	32.80550	300								746778	23394	40998	
Biblical Elim?	Surandala fort, near wadi Ghurundel, Gharandel	G. of Suez	29.25030	32.90590									746713	36224	11714	
	Mersa Thelemet	G. of Suez	29.05451	32.63519			AdG									
	Abu Zenima	G. of Suez	29.05000	33.10000											4871	
Bat, port of King Khufu, Cheops	Wadi el-Jarf, the oldest breakwater found to date & with ship remains in galleries	G. of Suez	28.88887	32.68094	-2570			Tallet (2014)	Tallet (2017b)	Tallet (2015)	Somaglino (2022)	https://en.wikipedia.org/wiki/Wadi_al-Jarf			55459	
Maghara (export of turquoise, malachite & copper from wadi Ameyra, Serabit el-Khadim & wadi Maghara in "Turquoise Land")	Maghara, al-Markha, near Ras Budran in Sinai	G. of Suez	28.98435	33.18163	-2570			Mumford (2012)	Mumford (2003)	Tallet (2015)	Tallet (2016)	https://www.academia.edu/vid eo/lyOeg1			4872	

NAME	NAME_MOD	COUNTRY	LATITUDE	LONGITUDE	FOUND.	AUTH Anc	AUTH MOD	DOC1_Papers	DOC2_papers	DOC3	DOC4	WIKIPEDIA	PLEIADES	DARE	TRISMEGISTOS	TOPOSText
Rhithou, Palm-Grove	El-Tor, el-Tur, Tor harbour	G. of Suez	28.23950	33.61340	-330	Agatharchides (in Photius, Codex 250, Frag. 87); Diodorus, Hist, 3, 21 & 42 does not mention the port but locates the place	Bustein					https://en.wikipedia.org/wiki/El_Tor_Egypt	746806	28682	7000	
	Tell el-Raya, Sheikh Riyah Harbour	G. of Suez	28.15878	33.66071	-30								746820	28686		
	Merset el-Qad Yahya	G. of Suez	27.92955	33.89363			AdG									
	Marsa Zeitiya	G. of Suez	27.83431	33.58349											4972	
Saspeirene Nesos, Sapirine insula?	Endeavour Harbour, on Geziret Tawila Island	Egypt	27.56038	33.78201									767857		11192	
Scytala, Skytala, Phocarum insula?	Geziret Shadwan, Shaker Island, ile Cheduan	Egypt	27.49261	33.94198			Jacotin				https://pleiades.stoa.org/places/767852		767858		7212	
	Abu Shar, Roman fort at the end of the Via Hadriana, at el-Gouna which is an excellent shelter	Egypt	27.36879	33.68286	300							https://en.wikipedia.org/wiki/El_Gouna	766332	34447	2727	
	Hurghada, in front of Geziret Giftun, Gifatin Island, ile Gafatina	Egypt	27.18078	33.83795			Jacotin					https://en.wikipedia.org/wiki/Hurghada			55176	
	Marsa Abu Makhadiq	Egypt	27.04182	33.89331			AdG									
	Makadi Bay	Egypt	26.99200	33.90500			AdG									
	Sharm el-Arab, Al Nabila	Egypt	26.96630	33.92160			AdG									
	Sharm Rashid	Egypt	26.94470	33.93370			AdG									
	Sharm al-Abd	Egypt	26.92910	33.94260			AdG									
	Ras Abu Soma	Egypt	26.84545	33.97852											54447	
	Mina Safaga	Egypt	26.74003	33.95637								https://en.wikipedia.org/wiki/Safaga			55237	
	Wadi Safaga	Egypt	26.62868	33.99875	-30								766428	36340	52955	
	Wadi Gasus, at Coral Garden resort	Egypt	26.57180	34.03200			AdG	Nibbi (1976)				https://de.m.wikipedia.org/wiki/Wadi_Gasus				

NAME	NAME_MOD	COUNTRY	LATITUDE	LONGITUDE	FOUND.	AUTH Anc	AUTH MOD	DOC1_Papers	DOC2_papers	DOC3	DOC4	WIKIPEDIA	PLEIADES	DARE	TRISMEGISTOS	TOPOSText	
Philoteris portus, Philotere, (city founded by Satyros), port of Aennus, archaic Saww used during 12th Dynasty for expeditions to Land of Punt	Marsa Gawasis, near wadi Jasus, 26 km south of Safaga port. Pliny speaks of Aennus. Modern authors seem to agree to locate this port at Marsa Gawasis near Safaga.	Egypt	26.55650	34.03340	-1940	Agatharchides (in Photius, Codex 250, Probable Frag. 2) ; Ptol, Geogr, 4, 5 ; Strabo, Geogr, 16, 4 ; Stephanus, Ethnica	Cohen, Burstein	Bard & Fattovich (2007)	Obied (2010)	Tallet (2015)			https://en.wikipedia.org/wiki/Mersa_Gawasis	767851		1777	267339UPhi
	Kalawy Imperial	Egypt	26.50810	34.06890			AdG										
	Quei, Quway, Kuwe	Egypt	26.34970	34.16230	-30								766396	36335	52958		
Arsinoe Troglodytika?	unlocalized between Philoteris and Myos Hormos, perhaps Hamrawein?	Egypt	26.25280	34.20472			Cohen								55300		
	Abu Sawatir Rocky Valley	Egypt	26.20550	34.22010			AdG										
Myos Hormos, Aphrodite's port, Portus Veneris, Port of the mouse, Mussel harbour	Quseir al-Qadim, at the Mövenpick hotel, 8 km North of Quseir. Ptolemy locates Myos-Hormos at 3°25' of latitude (380 km) North of Berenike, which leads to Hurghada. The Periplus Maris Erythraei indicates that this site is at 1800 stadia (330 km) from Berenike, which would lead near Safaga. However, modern authors agree to locate this port 8 km North of Quseir on the West side of the road, and a jetty made of amphoras was found by Peacock & Blue. Napoleon's team identified it as "Vieux Qoséir". Roman fort at Qasr Hadie	Egypt	26.15635	34.24040	-275	Agatharchides (in Photius, Codex 250, Frag. 83) ; Strabo, Geogr, 2, 5 & 16, 4 ; PME, 1 ; Diodorus, Hist, 3, 39	Cohen, Hazlitt, Seland, Burstein, Jacotin	Peacock & Blue (2006)	Obied (2010)		https://vici.org/vici/7746/	https://en.wikipedia.org/wiki/Myos_Hormos	786069	30590	3156	262342UMwo	

NAME	NAME_MOD	COUNTRY	LATITUDE	LONGITUDE	FOUND.	AUTH Anc	AUTH MOD	DOC1_Papers	DOC2_papers	DOC3	DOC4	WIKIPEDIA	PLEIADES	DARE	TRISMEGISTOS	TOPOSText
	Bir el-Uwaynah, Quseir port, at the outlet of wadi Hammamat leading to ancient Coptos on the Nile.	Egypt	26.10000	34.28500								https://en.wikipedia.org/wiki/El_Qoseir			54686	
	Bir el-Zirayb, Sharm el Lole, Zerib Kebir	Egypt	26.02300	34.32500											54687	
	Bir Asal, Utopia Beach	Egypt	25.94240	34.39040											55227	
	Sharm el-Bahari, Mangrove Bay	Egypt	25.86800	34.41800			AdG									
	Santido Resort	Egypt	25.83930	34.43750			AdG									
	Marsa Wizr	Egypt	25.78600	34.48930			AdG									
	Marsa Umm Gheig	Egypt	25.72620	34.54690											54448	
	Marsa Toronbi	Egypt	25.62070	34.58880			AdG									
	Coraya Bay	Egypt	25.60210	34.60600			AdG									
Leukos Limen, Albus portus?	Marsa Imbarak, Port Ghalib, Port Galibou	Egypt	25.53090	34.63400		Ptol, Geogr, 4, 5	Jacotin	Obied (2010)				https://www.trismegistos.org/place/55286			54464	
	Marsa Mubarak, Three Corners Fayrouz Plaza	Egypt	25.51200	34.65100			AdG									
	Marsa Mooray	Egypt	25.39600	34.70300			AdG									
	Marsa Abu Dabbab	Egypt	25.33900	34.74000			AdG									
	Marsa Dabr	Egypt	25.32200	34.74780	-30								786068	36352	53001	
	Marsa Shajra	Egypt	25.24480	34.79720											55067	
	Marsa Abu Irayki, Brayka Bay	Egypt	25.21750	34.80400											55069	
	Marsa Tarafi	Egypt	25.20505	34.80896											56448	
	Marsa Eglā, Tomb of El-Sheikh Sakin el-Ijlāh	Egypt	25.17340	34.84350											56419	
	Marsa Asalay	Egypt	25.15600	34.85400											55071	
	Marsa Alam	Egypt	25.07765	34.89259								https://en.wikipedia.org/wiki/Marsa_Alam	786148	36365	53006	
	Wadi Abu Sabakhay	Egypt	25.03500	34.91600											55079	
	Marsa Samaday	Egypt	25.01310	34.92660											55078	
	Marsa Tundaba, Khor Umm Shahawt	Egypt	24.96172	34.93652											55082	
Nechesia?	Marsa Nakari, 18 km South of Marsa Alam, possibly called Chaouinah by Jacotin	Egypt	24.92490	34.96220	-30	Ptol, Geogr, 4, 5 does not mention the port but locates the place	Cohen	Obied (2010)	Seeger (2001)				786074	30592	56331	

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	Ras Dirra, Ras el-Dirri	Egypt	24.89434	34.99039											55138		
	Wadi Ghadir	Egypt	24.82420	35.00000											54601		
	Marsa Fokairi	Egypt	24.75550	35.06760			AdG										
	Shams Alam Resort	Egypt	24.69000	35.08700			AdG										
Iambe insula? Aphrodites Nesos??	Sharm Luli, in front of Wadi el-Gamal Islands, this place has been taken for Myos Hormos because of Strabo's description, but Pliny mentions Iambe insula between Myos Hormos and Berenike. Jacotin (1809) calls it Sharm el-Koman. Belzoni (1822:328) calls the Island Gambe.	Egypt	24.60943	35.11542			Strabo, Geogr, 16, 4, describes the entrance of Myos Hormos which is located further north; Pliny, Hist Nat, 6, 33, mentions Iambe insula between Myos	Jacotin					https://en.wikipedia.org/wiki/Wadi_El_Gamal_National_Park	785972		8793	247352Iaph
	Wadi Umm al Abas	Egypt	24.51950	35.14100			AdG										
Cabalsi, Cabau, Gabaum	Abu Ghusun, at outlet of wadi Gamal, Gemal, Gimal	Egypt	24.44900	35.20560				Cuvigny (2018)					786003	34473	4690		
	Wadi Ranga	Egypt	24.39770	35.24100											54660		
	Kala'an Gulf	Egypt	24.36000	35.29800			AdG										
	Hamata port, near Wadi Ridah	Egypt	24.28900	35.38100											54810		
	Wadi Lahami	Egypt	24.21230	35.42900											14388		

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Hellenistic port of Berenike Troglodytika, Berenice, inside the gulf of Lepte Akra, Acahartos Kolpos, Sinus Immundus, Foul Bay	Medinet el-Haras, 4 km South of Bender el-Kebir inside the gulf of Ras Banas and on the Tropic of Cancer. Pliny is most accurate as he indicates that there is no shadow at noon on the day of summer solstice, which is the definition of the tropic located at 23°26' of latitude. The present latitude of Berenike is 23°56' and it is still a port today. With Hellenistic fort and roads to Nile valley.	Egypt	23.90860	35.47260	-275	Agatharchides (in Photius, Codex 250, Frag. 84); Pliny, Hist Nat, 2, 75 & 6, 26; Strabo, Geogr, 16, 4; PME, 2	Cohen, Bustein, Christiansen, Mauny, Seland, Burstein, Jacotin	Sidebotham (2010)	Wozniak (2022)	Kotarba (2018)	https://pcma.uw.edu.pl/en/2019/04/17/berenice-2/	https://en.wikipedia.org/wiki/Berenice_Troglodytika	785986	23388	416	239355Uber
Roman port of Berenike Troglodytika, Berenice, inside the gulf of Lepte Akra, Acahartos Kolpos, Sinus Immundus, Foul Bay	Medinet el-Haras, 4 km South of Bender el-Kebir inside the gulf of Ras Banas and on the Tropic of Cancer. Pliny is most accurate as he indicates that there is no shadow at noon on the day of summer solstice, which is the definition of the tropic located at 23°26' of latitude. The present latitude of Berenike is 23°56' and it is still a port today. With probable quaywall (Trench 7) and possible ancient lighthouse. Roman forts at Siket and at Wadi Kalalat.	Egypt	23.91160	35.47570	50	Agatharchides (in Photius, Codex 250, Frag. 84); Pliny, Hist Nat, 2, 75 & 6, 26; Strabo, Geogr, 16, 4; PME, 2	Cohen, Bustein, Christiansen, Trethewey, Mauny, Seland, Jacotin	Sidebotham (2010)	Wozniak (2022)	Kotarba (2018)	https://pcma.uw.edu.pl/en/2019/04/17/berenice-2/	https://en.wikipedia.org/wiki/Berenice_Troglodytika	785986	23388	416	239355Uber

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Ophiodes insula, Topazios, Agathonis, Nekron, Snake Island	Isle of Zabargat, Geziret Seberget, St John's Island, the island with topaz, off Berenike. The isle of Ophiodes is well located as it seems to be the only one producing topaz in this area. No good shelter here!	Egypt	23.60815	36.19667		Agatharchides (in Photius, Codex 250, Frag. 84); Strabo, Geogr, 16, 4; Pliny, Hist Nat, 6, 34; Diodorus, Hist, 3, 39	Burstein					https://en.wikipedia.org/wiki/Zabargad_Island	789002572		6148	
	Bodkin reef	Egypt	23.47898	35.49357			AdG									
	Bir Shalatein, Shalateen, Shalatin	Egypt	23.15600	35.62400											54751	
	Sharm el-Madfa, Marsa Hasa	Egypt	22.95617	35.66851			AdG									
	Marsa Shaab	Egypt	22.84259	35.77715			AdG									
	Bir Adaldeib	Egypt	22.67640	36.07500					Hinkel (1992)						54758	
	Marsa el-Qad	Egypt	22.60773	36.26030			AdG									
	Marsa Abu Naam	Egypt	22.49757	36.30929			AdG									
Prionotus Prom.	Bir Girid, west of Ras Abu Fatma	Egypt	22.43500	36.40200					Hinkel (1992)				40258		54759	
Prionotus Prom.	Abu Ramad, Ramatte, east of Ras Abu Fatma	Egypt	22.41250	36.42220					Hinkel (1992)				40258		54760	
	Aydhab, Aidhab, Zibid, on wadi Yoiyeib, a major Medieval port	Egypt	22.33170	36.49070					Wozniak (2021)	Hinkel (1992)		https://en.wikipedia.org/wiki/%CA%BFaydhab			4888	
Astarte insula?	Marsa Halaib, Halayeb, in front of Geziret Hala'ib	Egypt	22.24700	36.65100		Marcian, Peripl, 1, 14; Ptol, Geogr, 4, 7 does not mention the port but locates the place			Wozniak (2021) claims this is Sotira	Hinkel (1992)		https://en.wikipedia.org/wiki/Halaib_Triangle	40057		54766	
Bathus profundus portus? south of Mnemeum Prom.	Marsa Umbeila, on wadi Gabatit, Igidid, south of Ras Hadarba	Sudan	21.97500	36.86400		Ptol, Geogr, 4, 7				Hinkel (1992)			40224			
Dioscuror, Dioskoron Limen?	Marsa Mar'ob	Sudan	21.83400	36.85940		Ptol, Geogr, 4, 7				Hinkel (1992)						
	Marsa Gwilaib, Marsa Ribda	Sudan	21.79016	36.86598			AdG									
	Marsa Oseif, Khor Abu Asal	Sudan	21.75972	36.87182			AdG									
	Marsa Hamsiat	Sudan	21.68679	36.88660			AdG									
	Marsa Wasia	Sudan	21.64310	36.89592			AdG									
	Marsa Gafatir	Sudan	21.59522	36.91970			AdG									

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	Marsa Delwein, Delau, Dullow	Sudan	21.48942	36.95424					Hinkel (1992)							
	Marsa Halaka, near Abu Imama	Sudan	21.40186	36.98701			AdG									
	Marsa Shinab, Khor Abu Mishmish	Sudan	21.34918	37.01072			AdG									
	Dungunab	Sudan	21.106	37.123					Hinkel (1992)			https://en.wikipedia.org/wiki/Dungonab_Bay				
	Muhammad Qol	Sudan	20.9004	37.1612					Hinkel (1992)							
in front of Gypsitis insula	Marsa Inkeifal, in front of Jazirat Mukkawar Island, Margarcao	Sudan	20.78155	37.17181					Hinkel (1992)			https://en.wikipedia.org/wiki/Dungonab_Bay	40123			
	Marsa Salak	Sudan	20.45029	37.19943					Hinkel (1992)							
	Marsa Arakiyai, Port Salvadora	Sudan	20.23329	37.19874					Hinkel (1992)							
	Marsa Aweitir, on wadi Garar to Eira	Sudan	20.17490	37.21000					Hinkel (1992)							
	Marsa Fijja, Fijab, Bahía de Fuca	Sudan	20.03503	37.18598			AdG									
	Marsa Darur, Durur, Durhour	Sudan	19.84400	37.26200					Hinkel (1992)							
	Marsa Gwiyai, Port Dradart	Sudan	19.66147	37.23853					Hinkel (1992)							
Theon Soteiron Limen, Deorum Salutarium, Soteria, Sotira?	Port Sudan, in Marsa Sheikh Barghud, Ptolemy locates Theon Soterum at 30' of latitude north of Evangelon, which corresponds to Port Sudan, on wadi Sugudet	Sudan	19.60916	37.22748			Ptol, Geogr, 4, 7 ; Strabo, Geogr, 16, 4 ; Diodorus, Hist, 3, 40		Hinkel (1992)			https://www.trismegistos.org/place/11207	40336			5081
	Marsa Amid, on wadi Okwat	Sudan	19.40540	37.30500					Hinkel (1992)							
	Marsa Ata	Sudan	19.28929	37.32819			AdG									
	Marsa Kuwai, on wadi Handub	Sudan	19.21050	37.33740					Hinkel (1992)							
Evangeliorum, Evangelon, Bonorum nunciorum?	Suakin, Ptolemy locates Evangelon at only 35' of latitude north of Ptolemais	Sudan	19.10723	37.33856			Ptol, Geogr, 4, 7	Berg (1993)	Breen (2011)	Hinkel (1992)		https://en.wikipedia.org/wiki/Suakin				
	Marsa Esh Sheikh Ibrahim, on wadi Tehela	Sudan	18.87537	37.41580						Hinkel (1992)						
R Astaboras	Trinkitat, north of wadi Baraka, Barka, river outlet mentioned by Strabo, Geogr, 16, 4	Sudan	18.67880	37.75000						Hinkel (1992)						

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Ptolemais Theron, Ptolemais' hunt (for elephants), Epitherias (city founded by Eumedes), Khemyt? Diodorus' Panormus?? South of R Astaboras	Agig, Aqiq, south of wadi Baraka, Barka. The Periplus Maris Erythraei locates Ptolemais at 4000 stadia (740 km) south of Berenike, which corresponds to Aqiq	Sudan	18.22870	38.19900	-30	Agatharchides (in Photius, Codex 250, Frag. 81 & 86) ; Pithom stela, THI 258 ; Diodorus, Hist, 3, 20 ;	Cohen, Mauny, Seland, Burstein	Crowfoot (1911)	Hinkel (1992)	Thiers (2007)	http://www.bard.nl/desert/ptolemais.html	https://en.wikipedia.org/wiki/Ptolemais_Theron	39409	27324	3190	191373UPto
	Isaderheib, 3 km west of Agig, Aqiq	Sudan	18.21670	38.16670				Thiers (2007)	Hinkel (1992)							
Latoniae insulae	Gazirat Amarat, Marate Island	Sudan	18.30560	38.23480		Strabo, Geogr, 16, 4 mentions the island quarries		Thiers (2007)	Hinkel (1992)							
	Adobana, 8.5 km SE of Agig, Aqiq	Sudan	18.18110	38.26570					Hinkel (1992)							
Stratonis insula in bay of Elaia	Aqiq Kebir, Bahdur Island, Ibn Abbas Island, in Khor Nowarat, Nowarat, with rock-cut cisterns	Sudan	18.22093	38.32560		Strabo, Geogr, 16, 4 ; Stephanus, Ethnica		Zazzaro (2013)	Crowfoot (1911:539)	Thiers (2007)	Hinkel (1992)		40323			
	small headland in Khor Nowarat, Nowarat, visited by Peacock & Blue (2007)	Sudan	18.18840	38.36630				Obied (2010)								
	Er-Rih Island, Gazirat Iri, Airi, Iri, Medieval Badi Island, with many Medieval rock-cut cisterns	Sudan	18.15460	38.43530				Zazzaro (2013)	Crowfoot (1911:543)	Hinkel (1992)		https://en.wikipedia.org/wiki/Badi_Sudan				
Lacus Mandalum	Mandalum, on wadi Asarai, mentioned by Pliny, Hist Nat, 6, 172	Eritrea	17.73400	38.72000				Hinkel (1992)								
	Marsa Taklai	Eritrea	17.63000	38.80400				Hinkel (1992)								
	Harmil Island	Eritrea	16.53871	40.15320			AdG, Monfreid									
	Jimhil, Gim'hile on the Dahlak Islands, Monfreid's Djumele?	Eritrea	15.77366	39.96554			Monfreid	Insoll (2001)	Zazzaro (2013)						4911	
Alalaei, Alalaiou insulae	Dahlak Kebir village on the Dahlak Islands, with many rock-cut cisterns on Dahlak Kebir	Eritrea	15.61220	40.01300	-30	PME, 4	Mauny	Insoll (2001)	Zazzaro (2013)			https://en.wikipedia.org/wiki/Dahlak_Archipelago	39281	41317	8384	

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	Massawa, Ptolemy locates Saba at 50' of latitude North of Adulis, which could be Massawa at only 20 nautical miles	Eritrea	15.60981	39.46311		Strabo, Geogr, 16, 4 ; Ptol, Geogr, 4, 7 does not mention the port but locates the place		Zazzaro (2013)				https://en.wikipedia.org/wiki/Massawa			4910	
Land of Punt, Pount, Ta Netjer, Taneter, Pwenet, Pwene, Pouen, Ophir?	Probably somewhere in East Africa, possibly in the area of the Afar people, between Adulis and Djibouti, on the location of the ancient D'mt (Da'amat) kingdom and close to the Kush kingdom and its gold mines, where they could also find silver, ivory, apes, and peacocks. Other possible locations for Punt such as Mundus, Mosylius and Opone (Somalia) are less probable as they are in the Indian Ocean	Eritrea	15.35000	39.25000		Bible, 1 Kings, 9:28 & 10:22 & 22:48 do not locate the place ; Sahure's expedition ; Pepi-Nakht's expedition ; Henu's expedition ; Tale of shipwrecked sailor ; Hatshepsut's expedition ; Rameses III's expedition		Glazer (2012)	Leser (2010)	Philips (1997)		https://en.wikipedia.org/wiki/Land_of_Punt				
Adulis, Adoulis, Utulis, port of the Axoumites, capital city of Land of Punt? on R Taranta	Zula, on wadi Haddas. The Periplus Maris Erythraei locates Adulis at 3000 stadia (ca. 550 km) south of Ptolemais inside a south facing bay, which corresponds to Zula. Pliny locates it at 5 navigation days from Ptolemais, which leads to more or less the same location. It may be noted that Ptolemy is widely mistaken when locating it at 40' of latitude North of Dire, leading near Assab, 200 km further south. The site of Zula is now widely accepted by modern authors.	Eritrea	15.26360	39.66050	-1500	Procopius, Guerres, 1, 19 ; PME, 4 ; Cosmas, 2, 51 ; Pliny, 6, 34 & Ptol, Geogr, 4, 7 do not mention the port but locate the place	Mauny, Seland	Carannante (2015)	Obied (2010)	Zazzaro (2013)	https://www.ancient-origins.net/ancient-places-africa/adulis-0012642	https://en.wikipedia.org/wiki/Adulis	39271	27291	47	152396UAdo

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Gabaza, port of Adulis, Diodorus insula	Island located in the bay of Zula and and now included into the continent under the name « Galala Hills » 3.5 km SE of Zula. Not to be confused with Perim Island bearing the same ancient name	Eritrea	15.21600	39.69750		PME, 25 ; Procopius, Guerres, 1, 19	Trismegistos locates it at Perim Island	Peacock & Blue (2007)	Zazzaro (2013)	Carannante (2015)	Pereira (1899, p.65)					
	Irafalo, Irafayle, Arafali	Eritrea	15.09000	39.72000				Carannante (2015)								
	Melita bay near Ras Nasiracurra, on Buri peninsula	Eritrea	15.26434	39.81145			AdG									
Oreine, Orine insula, Mountainous island, called Oreine chersonesos by Ptolemy (Mountainous promontory)	Dissei Island, Dessei, Dese	Eritrea	15.47200	39.74650	-30	PME, 4 ; Ptol, Geogr, 4, 7 mentions "Oreine chersonesos"	Mauny	Peacock & Blue (2007)	Zazzaro (2013)	Bukharin (2012)			39404	41318	6117	
	Dellemi, Dilemmi Island, SW of Port Smyth	Eritrea	15.48559	39.88917			Monfreid, shipwreck at Assarca Island				https://www.asor.org/onetoday/2018/02/Echoes-Nabataean-Seafaring					
unnamed "large bay" with obsidian, Portus Melinus?	Howakil bay, Hauakil bay, near Ghelaelo, with Harena, Arena Island	Eritrea	15.19000	40.06500		Strabo, Geogr, 16, 4 ; PME, 5	Mauny locates this bay in Anfile bay	Zazzaro (2013)	Bevin (2011)	Peacock & Blue (2007)			40218		5747	
Antiphilus portus, Antiphilou Limen?	Hanfileh, Anfile bay, NW of Thio, Tio	Eritrea	14.76497	40.79393		Strabo, Geogr, 16, 4	Mauny	Zazzaro (2013)					40045		53073	
Port of Colobonalsos, Cape Kolobon	Tio at Ras Anrata? Ptolemy locates Colobon at 2° of latitude North of Adulis, which does not correspond to any cape or promontory, but Strabo locates it very close to Antiphilus portus, hence Tio might be the right location	Eritrea	18.38242	38.48928		Strabo, Geogr, 16, 4 ; Ptol, Geogr, 4, 7 mentions a promontory much further north	Trismegistos locates it at Ras Harb, north of Massawa						40180		5285	

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	Edd, beach sheltered from south	Eritrea	13.93348	41.69475			AdG, Monfreid									
	Mersa Dudo	Eritrea	13.86493	41.90706			AdG									
Berenice of Saba	Bera'isole? in Bahar Assoli, Bahir Assoli bay	Eritrea	13.64392	42.15869			Strabo, Geogr, 16, 4 does not mention the port	Zazzaro (2013)								
	Ras Terma, east of Beylul	Eritrea	13.21461	42.52675			AdG									
Sabae, Sabath	Assab? Near wadi Arsile, Harsile	Eritrea	12.97338	42.75543			Strabo, Geogr, 16, 4 does not mention the port	Zazzaro (2013)				https://en.wikipedia.org/wiki/Assab	39304	36126	8273	
Eumenous Alsos, Port of Eumenes	Unlocated between Saba and Arsinoe, possibly near Halba Deset?	Eritrea	12.96000	42.95000			Strabo, Geogr, 16, 4						40141			
Arsinoe epi-Dires	Ras Dumeira at Rahayta? Ptolemy locates Arsinoe at 20' of latitude South of Dire, which corresponds to the lagoon of Godoria on the North coast of Djibouti near 12°09' of latitude. He nevertheless mentions it north of Dire on his list, as does Strabo ... which makes some authors think the site is at Ras Dumeira. Monfreid's Raheita	Eritrea	12.71110	43.13050	-30		Strabo, Geogr, 16, 4 ; Ptol, Geogr, 4, 7 does not mention the port but locates the place	Zazzaro (2013)				https://en.wikipedia.org/wiki/Arsinoe_(Eritrea)	39295	36125	3662	
Cape Dire, Deire, Berenice epi-Dires, Orea, Tytis insula possibly in this area	Ras Siyan, on the west side of Bab el-Mandeb, the Gate of Tears. Cape Dire is located in front of Cape Acila (Cheikh Saïd in Yemen) as Strabo indicates. It is also just in front of the six islands mentioned by Strabo: Ras Siyan is a former island now connected to the mainland, but before that, it was a member of the "Seven Islands" (Sawabi islands). It provides good shelter against the south-eastern waves prevailing in this area.	Djibouti	12.46780	43.31450	-30		Strabo, Geogr, 16, 4 ; Pliny, Hist Nat, 6, 34 mentions topaz on Tytis	Desanges (1978)			https://en.wikipedia.org/wiki/Berenice_Epides	https://en.wikipedia.org/wiki/Ras_Siyan	39335	27304	4004	

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Diodorus insula, Adanos Duo, Sadanus insulae	Mayyun, on Perim island, and the second island ("Duo") may have been the Cheikh Saïd peninsula now connected to the mainland	Yemen	12.65310	43.42024		PME, 25	Marion	Bukharin (2012)				https://en.wikipedia.org/wiki/Perim			3616	
Acila, Akila, Ocelis, Okelis, Akelis, Maddaban	Khor Ghuraira, near Ras Cheikh Saïd, near Murad, in front of Ras Siyan	Yemen	12.71198	43.47702	-30	Strabo, Geogr, 16, 4 ; Ptol, Geogr, 6, 7 ; Pliny, Hist Nat, 6, 26 ; PME, 7 & 25	Monfreid, Mauny, Marion	Schiettecatte (2008)	Bukharin (2012)			https://en.wikipedia.org/wiki/Ocelis	39279	36124	11785	
Pseudokelis	between Murad and Dhubab	Yemen	12.83100	43.46400	-30		Marion						40259			
Sosippu Limen, Sosippi	Monfreid's Dhubab, Dhubab is the only natural shelter between Murad/Ocelis and Mokha/Mouza.	Yemen	12.94797	43.40931		Ptol, Geogr, 6, 7	Monfreid, Marion					https://en.wikipedia.org/wiki/Dhubab	40320			
Muza, Mouza, Masala, port of the Himyarites	Mokha, Moka, Muhawan, Makhwan	Yemen	13.31902	43.22584	-330	Ptol, Geogr, 6, 7 ; Pliny, Hist Nat, 2, 75 & 6, 26 ; PME, 7 & 24	Mauny, Marion	Schiettecatte (2008)	Bukharin (2012)			https://en.wikipedia.org/wiki/Mocha_Yemen	39390	36129	46676	
Sacacia, Sakatiapolis	Az Zahari? 4 km south of Marsa Fajrah	Yemen	13.55800	43.27100	-30		Marion	Bukharin (2012)				https://en.wikipedia.org/wiki/Az-Zahari	40283			
Napegous Kome	Abu Zahr? 2 km north of al-Khawkhah, Khokha	Yemen	13.82700	43.23500	-30		Marion	Bukharin (2012)					40234			
Malichos Duo insulae, Maliachou nesoi	Hanish Islands?	Yemen	13.80000	42.70000			Marion					https://en.wikipedia.org/wiki/Hanish_Islands	39376			
	Tongue Island, near Monfreid's Zoukour, Zuqar Island	Yemen	13.88127	42.71369			AdG, Monfreid									
Ailou Kome? port of Zabida?	al-Midamman, near Zabid, Neolithic settlement	Yemen	14.06760	43.09750	-1000		Marion	Giulia-Mair (2002)			http://pleiades.stoa.org/places/39277	https://en.wikipedia.org/wiki/Zabid	39439	27292		
Bolicas, Bulicas? Laupas? Poudnou Polis, Pudnu? port of the Himyarites, Homerites, Omerites	al-Ghulayfiqa?	Yemen	14.43796	43.01291		Procopius, Guerre Perses, 1, 19 ; Pliny, Hist Nat, 6, 32	Marion	Schiettecatte (2008)			https://pleiades.stoa.org/places/40263		39368			
Are insula	Mujamila Island?	Yemen	14.61272	42.92546			Marion						40314			
Adedou Kome	al-Hodeidah, Hudaydah, near outlet of wadi Siham	Yemen	14.81600	42.93100	-30		Marion	Bukharin (2012)				https://en.wikipedia.org/wiki/Al_Hudaydah	39270	27290		

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Chelonitis, Kardamine insula?	al-Zubayr Islands	Yemen	15.09000	42.17000			Marion					https://en.wikipedia.org/wiki/Zubair_Group	39330			
Camari insula, Sokratus insula?	Kamaran Island	Yemen	15.33388	42.61408	-30		Marion					https://en.wikipedia.org/wiki/Kamaran	39318	41313		
	As-Salif, near al-Qaryah	Yemen	15.32000	42.67500			AdG					https://en.wikipedia.org/wiki/As-Salif				
	Uqban Island, Monfreid's Okban	Yemen	15.51962	42.37880			AdG, Monfreid									
Katakekaumene insula, Exusta, Combusta insula, Ile Brulee, Burnt Island	Saiban island, at-Tair vulcano island NW of Hodeidah, not a port but a major landmark	Yemen	15.54064	41.83366	-30	PME, 20	Marion					https://en.wikipedia.org/wiki/Jabal_al-Tair_Island	39345	41314		
Mamala Kome?	al-Luhayyah, Loheia, other possible locations: as-Shuqaiq, 230 km further north and Mimla, 230 km further south	Yemen	15.69500	42.68700			Marion	Bukharin (2012)	Marion (2022)			https://en.wikipedia.org/wiki/Al_Lu%E1%B8%A9ayyah	39377			
Akme, Ambe	near Zamzam? Jizan?	Saudi Arabia	16.45700	42.73900			Marion	Bukharin (2012)	Marion (2022)				39280			
	Dumsuq Island, Monfreid's Dumsuk	Saudi Arabia	16.55317	42.06075			AdG, Monfreid									
	Qumah, Kumakh Island	Saudi Arabia	16.61400	42.02300			Marion									
Ferresani portus on Devade insula, Hierakon insula? Pteron insula?	Roman naval base (?) at Khor Farasan, on Farasan Kebir Island	Saudi Arabia	16.69746	42.10419	100	Latin inscription (see Villeneuve, 2004)	Seland, Marion	Villeneuve (2004)	Cooper (2014)	Marion (2022)	Pereira (1899, p.65)	https://en.wikipedia.org/wiki/Farasan_Island	39337	41316	16524	
	Tubta, port of wadi Matar, on Farasan Kebir Island	Saudi Arabia	16.65450	42.17850	-1000		Marion	Pavlopoulos (2018)	Cooper (2014)			https://en.wikipedia.org/wiki/Farasan_Island				
	Sajid, on Farasan Segid, Zekir Island, Monfreid's Seguid	Saudi Arabia	16.83656	41.95112			Monfreid					https://en.wikipedia.org/wiki/Farasan_Island	39337			
	Saso, Sarso Island	Saudi Arabia	16.87126	41.58762			AdG, Monfreid									
Badeo Basileion, Fons Coralis?	Khor al-Wahlan? near al-Madaya, Monfreid's Medy	Saudi Arabia	16.73516	42.69818			Monfreid, Marion	Bukharin (2012)					39311			
R Baitios, Sambrachate? Athrida?	Wadi Baysh? Athr, Aththar, near Khor Abu as-Saba, Dana Bay east of Ras Turfa	Saudi Arabia	17.06757	42.40069	-30	Agatharchides (in Photius, Codex 250, Frag. 99)	Marion, Bustein	Cuvigny (1996)	Bukharin (2012)	Robin (2022)	https://pleiades.stoa.org/places/39331		39312	27300		

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Marma, on Mamaeum Litus	Jazan Economic City?	Saudi Arabia	17.31000	42.33000	-550							https://en.wikipedia.org/wiki/Jizan	39382	27315		
Thebai, Tabis? Country of the Debai	al-Qahma, in Khor al-Wasm? 13 km SE of Dhahban	Saudi Arabia	18.00200	41.66500			Marion	Cuvigny (1996)	Bukharin (2012)				39334		4001	
	Khor al-Birk	Saudi Arabia	18.21400	41.52900			AdG									
	Khor Nahud	Saudi Arabia	18.26300	41.50400			AdG									
Caunana, Kentos Komé? on R Canauna (known for gold mining)	al-Qunfuda, Qunfudhah, Qunfida, on wadi Kanawna, Qanauna, Qununa	Saudi Arabia	19.12030	41.07160	-30		Marion	Cuvigny (1996)	Bukharin (2012)			https://en.wikipedia.org/wiki/Al_Qunfudhah	40175			
Circular gulf with trapezoidal shaped hill	Ghubbat al-Mahasin, Mohaisin, Khor al-Humara, Ras Kinnateis?	Saudi Arabia	19.72200	40.73200		Agatharchides (in Photius, Codex 250, Frag. 95); Diodorus, Hist, 3, 45	Burstein									
	Marsa Ibrahim, in al-Sharifa lagoon, near al-Lith	Saudi Arabia	20.16846	40.22958			Marion	Cuvigny (1996)					39438			
	Marsa Qishran, in al-Sharifa lagoon	Saudi Arabia	20.25463	40.01182			AdG									
	Al-Shoaiba, ancient port of Mecca, Makka, La Mecque	Saudi Arabia	20.72860	39.48940				Pedersen (2015)								
	Abu Shauk	Saudi Arabia	20.87642	39.35498			AdG									
Zambram, Zabram Basileion, Zadrame?	Zahrn at outlet of wadi Fatima, South of modern industrial port of Jeddah	Saudi Arabia	21.40120	39.17120		Marcian, Peripl, 1, 18	Marion	Cuvigny (1996)	Bukharin (2012)				39438			
Goudda, Gidda, Quda'a	Jeddah, al-Balad old town	Saudi Arabia	21.48850	39.18240				Pedersen (2015)			https://www.asor.org/onetoday/2018/02/Echoes-Nabataean-Seafaring	https://en.wikipedia.org/wiki/Jeddah	97875560		3962	
	Sharm Abhur, Bihar	Saudi Arabia	21.71735	39.09844			AdG									
	al-Jazeera, near Ras Hatiba	Saudi Arabia	22.08806	39.03093			AdG									
	al-Qadimah	Saudi Arabia	22.35304	39.08447			AdG									
Agar? Arga Kome?	Khor al-Kharrar, near Rabigh	Saudi Arabia	22.85320	38.93110			Marion	Cuvigny (1996)	Bukharin (2012)	Pedersen (2015)		https://en.wikipedia.org/wiki/Rabigh				
Kopar Kome? Coboea, Coboris?	Sharm Burayqah, Buraykah, "al-Jar"	Saudi Arabia	23.63180	38.53400			Marion	Cuvigny (1996)	Bukharin (2012)	Pedersen (2015)	Ghabban (2011)		40104			
Iambia Kome?	Yanbu al-Bahr	Saudi Arabia	24.06998	38.05704			Marion	Cuvigny (1996)	Bukharin (2012)	Pedersen (2015)		https://en.wikipedia.org/wiki/Yanbu				

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Charmuthas, Charmute	Sharm Yanbu? 15 km NW of Yanbu. This hypothetical area is close to Diodorus' description: > the total circumference is 23 km (close to his 100 stades); > the central island might be now connected to the mainland on the NE side where siltation occurred over time, near the outlet of the wadi ; > the total area might have been between 2000 and 3000 ha (ample space for his 2000 ships) ; > the entrance is 300 m wide (more than his 200 feet = 60 m) but this depends much on coral growth which may have varied in time and with urbanisation.	Saudi Arabia	24.15323	37.93766		Agatharchide s (in Photius, Codex 250, Frag. 95) ; Strabo, Geogr, 16, 4 ; Diodorus, Hist, 3, 21	Marion, Burstein	Pedersen (2015)					40100				
	Sharm al-Khawr	Saudi Arabia	24.27391	37.67365			AdG										
	Sharm Hasy	Saudi Arabia	24.62587	37.33731			AdG										
Zygaina, Zygaena, Zygena insula	Al-Hassani Island?	Saudi Arabia	24.97000	37.08500			Marion										
	Umm Lajj, Ummlejj, Umluj Marina	Saudi Arabia	25.02150	37.26550	-30			Pedersen (2015)					814746	30702			
Leuke Kome?	al-Hawra, Haura, al-Duqm?	Saudi Arabia	25.07240	37.25590	-30		Hazlitt, Marion	Pedersen (2015)					814681	30683			
	Harrat Qalib	Saudi Arabia	25.20120	37.22600			AdG										
Raunathou Kome, near Chersonnesos Prom.	near Ras Karkuma, Qurqumah	Saudi Arabia	25.85400	36.65300	-330		Marion	Nehme (2014)					814726	30697			
Egra Kome, Aigra, Agra, Akra, port of Hegra and Dedan and Qurh?	al-Qusayr, Qassir, on wadi al-Hamd	Saudi Arabia	25.95400	36.75430	-330	Strabo, Geogr, 16, 4	Marion	Unesco (2007)	Nehme (2009)			https://en.wikipedia.org/wiki/Mada%27in_Salah	40025	30673			

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	Sharm Habban	Saudi Arabia	26.06742	36.57216			AdG										
Timagenes insula	Raiyikhah Island west of al-Wajh?	Saudi Arabia	26.18000	36.37300			Marion						767841				
Phoinikon Kome, Port of Hegra and Dedan and Qurh? Leuke Kome? Ampelone?	Sharm Wejh, al-Wajh, on wadi al-Zurayb, this location for Leuke Kome is preferred by Nappo and Nehmé	Saudi Arabia	26.22500	36.46100	-330	Ptol, Geogr, 4, 5 locates Phoinikon but not as a port ; Strabo, Geogr, 16, 4 ; PME, 19-20 ; Cosmas, 2, 64	Cohen, Seland, Marion	Fiema (2020)	Nehme (2014)	Nappo (2010)	Pedersen (2015)	https://en.wikipedia.org/wiki/Mada%27in_Saleh	814719	30696			
	Sharm Antar	Saudi Arabia	26.59236	36.25100			AdG										
	Sharm Dumaygh	Saudi Arabia	26.64281	36.21932			AdG										
Ainos insula	Geziret an-Numan	Saudi Arabia	27.10900	35.76300			Marion						814649				
Hippos Kome?	Dhuba, Duba, Sharm Qafafah, south of Jebel as-Sar, Ash-Shar, shaped like a horse	Saudi Arabia	27.34520	35.69420	-330	Ptol, Geogr, 6, 7, locates Hippos Kome at 40' of latitude south of Hippos Oros	Pauly, Marion, Batlas places it at Sharm Antar					https://en.wikipedia.org/wiki/Duba,_Saudi_Arabia	814684	30685			
	Sharm Jubbah, industrial port of Duba	Saudi Arabia	27.55970	35.54400	-330		AdG										
	Sharm Yahar, al-Harr	Saudi Arabia	27.62170	35.52098			AdG										
	al-Muwaylih, Muwailah	Saudi Arabia	27.67500	35.46800	-330								814710		55189		
	as-Sawra, Alsourah	Saudi Arabia	27.85500	35.34000			Marion										
Modiana? Madian?	ash-Sharma	Saudi Arabia	28.02090	35.26600	-750	Ptol, Geogr, 6, 7, locates Modiana at 25' of latitude north of Mount Hippos Oros	Marion		Ingraham (1981)				814707	30693	55189		
Modiana? Madian? Onne? Leuke Kome?	al-Khuraybah in Aynunah bay, a road to Petra starts there. Some scholars locate Leuke Kome at al-Wajh, 240 km further south.	Saudi Arabia	28.08670	35.18310	-330	Strabo, Geogr, 16, 4 ; PME, 19-20 ; Diodorus, Hist, 3,44 ; Marcian, Peripl, 1, 18	Cohen, Hazlitt, Seland, Marion, Burstein	Gawlikowski (2022)	Nappo (2010)	Maverson (1995)	Ghabban (2011)	https://en.wikipedia.org/wiki/Leuke_Kome	814698	30690	10862		

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Salydo insula	Barqan Island?	Saudi Arabia	27.90600	35.07200		Agatharchide s (in Photius, Codex 250, Frag. 93)	Marion, Burstein						767856			
Soukabya insula	Shusha Island?	Saudi Arabia	27.93250	34.90650		Agatharchide s (in Photius, Codex 250, Frag. 93)	Marion, Burstein						767859			
Isis insula	Sanafir, Sinafir Island?	Saudi Arabia	27.93400	34.67700		Agatharchide s (in Photius, Codex 250, Frag. 93) ; Diodorus, Hist, 3,44	Marion, Burstein					https://en.wikipedia.org/wiki/Sanafir_Island	290587550			
lotabe? Jotabe? Isle of sea-calves (dugongs), Phocarum insula? called Dia insula by Strabo? erroneously called 'Duck Country' by Photius	Tiran Island, at the entrance of the gulf of Aqaba? a very strategic location for controlling sea trade entering the Gulf of Aqaba and levying taxes ... Another option would be at Ras Mohammed	G. of Aqaba	27.94629	34.56818		Agatharchide s (in Photius, Codex 250, Frag. 89 & 90) ; Diodorus, Hist, 3, 21 & 42 ; Strabo, Geogr, 16, 4 ; Procopius, Guerre Perses, 1, 19 ; Choricus of Gaza, Declamations Aratius, 65, 22-23	Burstein	Nappo (2015)	Maverson (1992)	Pereira (1899, p.65)	https://pleiades.stoa.org/places/767852	https://en.wikipedia.org/wiki/Tiran_Island	746747			
	Sharm el-Sheikh	G. of Aqaba	27.85935	34.29197			AdG					https://en.wikipedia.org/wiki/Sharm_el-Sheikh				
Makna	near Maqna	G. of Aqaba	28.40080	34.73940	-330		Marion					https://en.wikipedia.org/wiki/Makna_Saudi_Arabia	746777	28680		
	eI-Kura	G. of Aqaba	28.47512	34.49953			AdG									
	Tell el-Mashraba, near Dahab	G. of Aqaba	28.49410	34.51720	-30		Marion					https://en.wikipedia.org/wiki/Dahab	746819	28685		
	Tayyib al-Isim	G. of Aqaba	28.52260	34.79545	-750		Marion						746818	28684		
	Nuweiba	G. of Aqaba	29.04360	34.67130	-30							https://en.wikipedia.org/wiki/Nuweiba	746788	28681		
Ankale	near Haql	G. of Aqaba	29.30825	34.93766	-330							https://en.wikipedia.org/wiki/Haql	746709	28664		
	Marsa al-Marakh, Fjord bay Taba, 5 km NE of the Taba resort, near wadi Tuweiba	G. of Aqaba	29.42880	34.83030			Marion					https://en.wikipedia.org/wiki/Taba_Egypt				

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Ezion Geber? Gasion Gabel?	Geziret Fara'un, Jazirat Firawn, Pharaoh's Island, Coral Island	G. of Aqaba	29.46240	34.85884			Carayon, Marion	Flinder (1989)			https://en.wikipedia.org/wiki/Ezion-Geber	https://en.wikipedia.org/wiki/Pharaoh's Island	746700			
Ezion Geber? Gasion Gabel?	Tell el-Kheleifeh, Tell al-Khulayfa, with square casemate fort	G. of Aqaba	29.54720	34.98030	-1000	Bible, 1 Kings, 9:26 & 22:48 ; Josephus Flavius, Antiquites, 8, 6	Marion	Finkelstein (2014)	Pratico (1985)		https://en.wikipedia.org/wiki/Ezion-Geber	https://en.wikipedia.org/wiki/Tell el-Kheleifeh	746754	28668		
Aila, Elaea, Aelana, Elana Kome, Eloth, Elath, Elat, Berenike, in the Laeanites Gulf	Aqaba	G. of Aqaba	29.53700	34.99400	-750	Eusebius, Onomasticon ; Agatharchide s (in Photius, Codex 250, Frag. 90) ; Marcian, Peripl, 1, 9	Cohen, Pauly, Marion, Burstein	Glazer (2012)	Parker (1997)	Parker (2014)		https://en.wikipedia.org/wiki/Aqaba	746700	21749	8852	295350UAil