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## **No easy option: Nile *versus* Red Sea in ancient and medieval north-south navigation**

John P. Cooper

The MARES Project, Institute of Arab & Islamic Studies, University of Exeter, Exeter, Devon, EX4 4ND United Kingdom.

j.p.cooper@exeter.ac.uk

### **Abstract**

*Recent scholarship has argued that the more southerly of the ancient ports of Egypt's Red Sea coast, such as Berenike and Myos Hormos, enjoyed inherent navigational advantages over those, such as Clysma, further north. That argument arises from the fact that ancient sailing rigs perform poorly when sailing to windward: by putting in to a more southerly port, the argument goes, vessels arriving at Egypt from the southern Red Sea could avoid a lengthy struggle against the northerly winds prevalent in the sea above 23°N. Goods could instead be transferred by camel caravan to the Nile.*

*This argument rests in part on the implicit assumption that the Nile represented a ready, easy and speedy alternative to the Red Sea. This paper argues that such an appreciation of the Nile as benign is misplaced. It draws upon meteorological and hydrological data – the latter from before the construction of the Aswan High Dam – together with traveller accounts from diverse periods, to present a more nuanced perspective of Nile navigation. It argues that movement on the river, particularly for cargo vessels, was highly seasonal, and that, moreover, this season did not quite mesh seamlessly with the sailing seasons of the Red Sea. It argues that movement on the river was often laborious and sometimes dangerous, with grounding a frequent occurrence and wrecking not uncommon. It argues that Nile travel was much*

*slower than is apparent from such ancient authors as Herodotus. Using Nile travel times and desert crossing times between the river and the sea provided by past travellers, it provides an alternative perspective on the positioning of these ports, which implies no obvious advantage held by these southern locations. In sum, it argues that the advantage of Nile navigation over Red Sea sailing is not nearly as clear-cut as has been argued.*

*Finally, this discussion has implications for our contextualisation of ancient ship technologies. While ancient and medieval vessels may have struggled to make progress to windward, such limitations clearly did not have a determinant effect on the location of ports. A look at the distribution of Egypt's Red Sea ports over the longue durée shows no progression towards sites reflecting greater 'ease' of navigation. Moreover, their locations show that, whatever the limitations of ancient vessels, their navigators were well able to access all areas of the northern Red Sea.*

## Introduction

The Red Sea, particularly in its northern reaches, carries a reputation as a uniquely difficult and challenging navigational space. Part of this hardship was a function of the adjoining landscape – the sea's shores and their hinterlands were mostly harsh and sparsely populated desert, with relatively few supplies of food and water. Greco-Roman authors portrayed the sea's coastal peoples as grotesque barbarians<sup>1</sup>. Beneath the waves, meanwhile, coral reefs and shoals lay just out of sight, ready to hole the hulls of unwary navigators.

However it is the problem of the winds that has most exercised scholars of ancient seafaring in the Red Sea, since some have argued, as we shall see, that these winds had a prescriptive effect on its maritime trade routes.

From a meteorological perspective, the Red Sea can be divided into two unequal parts. Its southern two-thirds come under the influence of the monsoon wind system that is centred on the Indian Ocean. Broadly speaking, during the period that the north-east monsoon is blowing, between November and March, winds in the southern Red Sea blow from the southerly quadrant.<sup>2</sup> In contrast, while the south-west monsoon is blowing between June and September, the prevailing wind is from the opposite, northerly quadrant.<sup>3</sup> In the two transitional periods between the monsoons, wind directions are more variable, and less predictable.<sup>4</sup> In sum, the monsoons induce an annual and localised cyclicity in the wind regime of the southern Red Sea, by which the winds are found to blow in diametrically opposing directions according to season – in each case along the axis of the sea. From November to March, one can expect to be able to sail northward with the assistance of a southerly wind.

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<sup>1</sup> Thomas 2007.

<sup>2</sup> Admiralty 1892, 11; Morgan and Davies 2002, 26-27.

<sup>3</sup> Admiralty 1892, 9; Morgan and Davies, 27-28.

<sup>4</sup> Morgan and Davies 2002, 26-28.

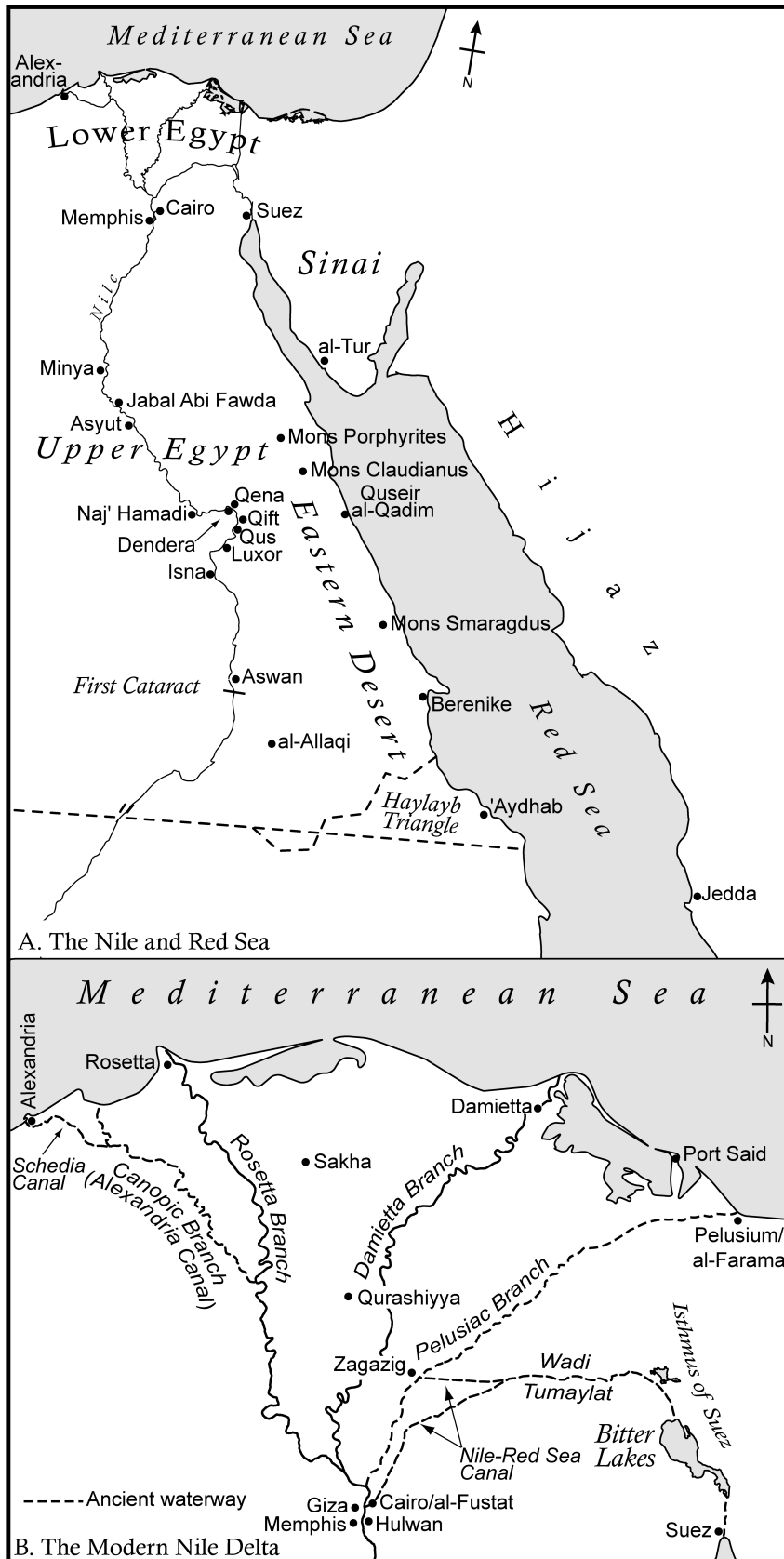


Figure 1: General map of Egypt and the Red Sea, showing locations discussed in the text (Image: Author).

The meteorological situation in the northern third of the Red Sea, where the monsoon regime is not felt, is not so amenable to two-way sailing. Instead, this zone comes under the influence of a large high-pressure system that sits perennially over the Sahara. This stable cyclone generates a pattern of prevailing northerly or north-westerly winds over the northern Red Sea that persists year-round, broken only by the occasional winter/spring anticyclone tracking east along the Mediterranean.<sup>5</sup> Thus, while sailors in the southern Red Sea can, by choosing their seasons, sail with broadly favourable winds, those in its northern reaches are faced with the prospect of contrary winds whenever they decide to sail north.

This summary of Red Sea wind regimes, though brief, sets out the broad characterisations of navigational conditions by which scholars have sought to explain the placement of ancient and medieval ports along Egypt's Red Sea coast.

### **The ports**

Egypt's trade through the Red Sea was served by a variety of ports during antiquity and the medieval period. Those considered in this paper are modern Suez, known in the Ptolemaic period as Arsinoë, in the Roman as Clysma, and in the medieval as al-Qulzum; modern Quseir al-Qadim, known in the Ptolemaic and Roman periods as Myos Hormos and in the medieval as Quṣayr); Ptolemaic and Roman Berenike; and medieval 'Aydhāb (Figure 1). While others existed,<sup>6</sup> the ports listed here provide enough geographical scope, and have sufficiently rich historical and archaeological data associated with them, to enable an investigation of the arguments about their relative navigational advantages.

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<sup>5</sup> Morgan and Davies 2002, 28.

<sup>6</sup> Ptolemy Claudius, *Geography*, 4.5.8.

## Suez (Arsinoë/Clyasma/al-Qulzum)

The early chronology of the port at Suez is obscure. Archaeological investigation by Bruyère at Tell Qulzum in the 1930s yielded ample evidence of Ptolemaic, Roman and medieval Islamic occupation,<sup>7</sup> but his curtailed excavations did not venture into earlier stratigraphy, and the site is now lost to urban development.<sup>8</sup> Remains of the extensive ancient harbour at Suez had been surveyed some years earlier by Bourdon.<sup>9</sup> The existence of earlier port activity at Suez is implied by the existence of the Achæmenid canal, built by Darius the Great, from the Nile to the Red Sea near Suez.<sup>10</sup> If the accounts of Greco-Roman authors are to be taken at face value, then earlier attempts to create such a canal were also made under Neccho II (610-595 BC) and the semi-mythical pharaoh Sesostris.<sup>11</sup> It can be inferred from these that Suez was already the destination of navigators in the Pharaonic period, or, at the very least, that navigation to and from Suez was considered technically possible. The renewed excavation of a Nile-Red Sea canal by the emperor Trajan (98-117 AD) testifies to Roman interest in Suez,<sup>12</sup> while the numismatic evidence suggests activity there in late antiquity,<sup>13</sup> by which time the more southerly ports of Myos Hormos and Berenike (discussed below) had been abandoned. For the first century and a half of Islamic rule, Suez was once again the mouth of a newly re-excavated Nile-Red Sea canal. There is a dearth of information on the port in the late-seventh and eighth centuries AD. Thereafter, however, there is evidence that it continued to function – indeed, sometimes prosper – as a harbour serving Egypt<sup>14</sup> as well as the Isthmus

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<sup>7</sup> Bruyère 1966.

<sup>8</sup> Cooper 2008 and 2009.

<sup>9</sup> Bourdon 1925, 142–144.

<sup>10</sup> Redmount 1995; Aubert 2004, 225; Cooper, 2009.

<sup>11</sup> Herodotus, *Histories*, II.158-159; Diodorus Siculus, *Historical Library*, I.33; Aristotle, *Meteorology*, I.XIV.25; Strabo, *Geography*, XVII.I.25; Pliny the Elder, *Natural History*, VI.XXXIII.165.

<sup>12</sup> Redmount 1995; de Romanis 2002; Aubert 2004, 228; Cooper, 2009.

<sup>13</sup> Tomber 2009, 66.

<sup>14</sup> Abū Sālih, *Tārīkh*, vr; al-Muqaddasī, *Aḥsan*, 195-196; al-Ya'qūbī, *Buldān*, 340; al-Iṣṭakhrī, *Masālik*, 33; Ishāq Ibn al-Husayn, *Ākām*, 405; al-Mas'ūdī, *Tanbīh*, 20, 55; Ibn Zulāq, *Faḍā'il*, 3.2.685.

crossing to the Mediterranean<sup>15</sup> until it was largely abandoned under the Fatimids and fell to ruin and banditry.<sup>16</sup>

### **Quseir al-Qadim (Myos Hormos, Quşayr)**

Quseir al-Qadim (Quşayr al-Qadīm), some 450km south of Suez, is the site of Myos Hormos, which was first mentioned in the second century BC by Agatharchides of Knidos (c.116 BC), whose surviving text suggests a greater antiquity for the site.<sup>17</sup> Indeed, it has been suggested that it was founded around 275 BC, at the same time as Berenike.<sup>18</sup> The port appears to have prospered in the Augustan period, and to have persisted until at least the mid-third century AD when, perhaps because of sedimentation of its harbour, the site fell out of use.<sup>19</sup> It was connected by caravan route to the Nile at Coptos (Qift). Revival came in the Ayyubid period (AD 1171-1250),<sup>20</sup> and continued through the Mamluk (AD 1250-1517), after which the harbour shifted to modern Quseir.<sup>21</sup>

### **Berenike (Biranīs)**

Berenike, a further 275 km south along the coast, was founded (or perhaps refounded) by Ptolemy II Philadelphus (282-246 BC), who had a road built to it across the desert from the Nile.<sup>22</sup> At times, Berenike and Myos Hormos appear to have operated in tandem, particularly as ports of the Rome-Indian trade.<sup>23</sup> The scarcity of archaeological evidence for activity at the site during the second and third centuries AD suggests the port was in relative abeyance

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<sup>15</sup> Ibn Khurdādhbih, *Masālik*, 153-154.

<sup>16</sup> Ibn Ṭuwayr, in al-Maqrīzī, *Khīṭaṭ*, 1.579; al-Idrīsī, *Nuzhat*, 4.348. But see also al-Idrīsī, *Nuzhat*: 1.22, 50; 4.348-349, which suggests that at least some activity continued at al-Qulzum.

<sup>17</sup> Agatharchides, *On the Erythraean Sea*, 135 (fragment 83a).

<sup>18</sup> Peacock and Blue 2006, 3.

<sup>19</sup> Peacock and Blue 2006, 174.

<sup>20</sup> Rebecca Bridgeman, *pers. comm.*

<sup>21</sup> Blue 2007, 265-266; Peacock and Blue 2006, 95-115.

<sup>22</sup> Strabo, *Geography*, 17.1.45; Pliny the Elder, *Natural History*, 6.33.168.

<sup>23</sup> Peacock and Blue 2006, 3.

at that time. However, it appears it underwent a revival in the mid-fourth century AD until the late fifth, after which it was abandoned.<sup>24</sup>

## 'Aydhāb

The final port to be considered here, 'Aydhāb lies 200km down the coast from Berenike, and a full 930km from Suez, in the Haylayb Triangle, a territory claimed today by both Egypt and Sudan. Its contemporary political predicament means that very little on-the-ground investigation has been carried out at Sawākin al-Qadīm, the putative site of the port,<sup>25</sup> although nearby alternatives have also been propose.<sup>26</sup> 'Aydhāb appears to have been an Islamic-era foundation, at a time when Berenike was long defunct. Early references to Muslim travel through the Eastern Desert on pilgrimage suggest that Egyptian Muslims had access to a southern Red Sea port from at least the ninth century AD, and probably before.<sup>27</sup> Al-Ya'qūbī, writing around 889 AD, is first to mention the toponym 'Aydhāb, describing it already as a port "from which people sail to Makkah, the Hijāz and Yemen, and to which merchants come, carrying gold, ivory and suchlike in boats."<sup>28</sup> At first, the port appears to have been served by road from Aswan.<sup>29</sup> However, after the Fatimids shifted the administrative capital of upper Upper Egypt from Aswan to Qūs in the 11<sup>th</sup> century AD,<sup>30</sup> 'Aydhāb's Nile connection appears to have shifted with it. It was with this move, and the contemporary abandonment of Suez, that 'Aydhāb became Egypt's principal Red Sea port for commerce and pilgrimage.<sup>31</sup> Egypt's Mamluk rulers showed signs of losing control of 'Aydhāb to the Beja in the early 14<sup>th</sup> century.<sup>32</sup> By the end of that century it was

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<sup>24</sup> Sidebotham and Wendrich 2007, 372-373.

<sup>25</sup> Bent (1896, 336) visited the site in 1895, as did Murray (1926, 239) thirty years later. Murray created a plan of the site.

<sup>26</sup> Peacock and Peacock 2008.

<sup>27</sup> Ibn Ḥawqal, *Ṣūrat*: 52; al-Maqrīzī, *Khīṭaṭ*, 1.531-533.

<sup>28</sup> al-Ya'qūbī, *Buldān*: 335.

<sup>29</sup> al-Ya'qūbī, *Buldān*, 335.

<sup>30</sup> Garcin 1996, 864.

<sup>31</sup> Cooper 2008, 181-183.

<sup>32</sup> Ibn Baṭṭūṭa, *Riḥla*, 2.251.



abandoned,<sup>33</sup> leaving Quşayr, former Myos Hormos, as the main port serving the Nile valley.

With the basic chronology of Egypt's main Red Sea ports established, let us now consider the navigational and land-transport contexts in which they were located.

### **The Red Sea as 'difficult'**

Such was the combination of hostile factors that the Red Sea has long been viewed as uniquely troublesome for navigators. This notion was already being articulated in antiquity: Strabo writes that the desert road from the Nile to Berenike had been constructed because "the Red Sea was hard to navigate, particularly for those who set sail from its innermost recess" – this recess being, one assumes, the Gulf of Suez.<sup>34</sup> This take on Red Sea navigation has also been advanced by modern authors. As early as 1838, the British lieutenant J.R. Wellsted opined that "...the same motive for shortening a dangerous and tedious voyage has at different periods operated in causing the transfer of the trade from the port of Arsinoë, near the modern Suez, successively, to Myos-Hormos, Berenicé, Adulis, and, lastly to Aden, without the Straits of Báb-el-mandeb".<sup>35</sup> Discussing the origins of 'Arab' seafaring, Hourani in 1951 argued that, "Rather than face the terrors of the Red Sea, the [ancient] Arabs developed camel routes along the whole western side of their peninsula."<sup>36</sup> Three decades later, Casson wrote that Berenike's far-south location was a function of navigational prerogatives: "Berenike was well over 200 miles (320km) south of Myos Hormos, which meant, for returning vessels, that much less beating against the northerlies which prevail in the Red Sea above latitude 20 °N."<sup>37</sup> Sidebotham drew on the Red Sea wind regime in his

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<sup>33</sup> Hikoichi 1989, 167-172.

<sup>34</sup> Strabo, *Geography*, 12.1.45.

<sup>35</sup> Wellsted 1838, 165-166.

<sup>36</sup> Hourani 1951, 5.

<sup>37</sup> Casson 1980, 22, n2.

exploration of the relative roles of the Roman port of Clysma (Suez) on the one hand, compared to Berenike and Myos Hormos on the other<sup>38</sup>. For him, Clysma's effectiveness as a port was tied to its location at the mouth of the Nile-Red Sea canal that flowed through the Wadi Tumilat (*Ṭumaylāt*). That canal enabled bulk goods – grain, wine, textiles – to be delivered to the Red Sea more easily than across the desert routes. The ease of canal transportation compensated for the difficulty of sailing in the northern reaches of the Red Sea. Sidebotham asks:

“Is it possible that Clysma was mainly an emporium exporting bulky agricultural and “industrial cargoes” [taking advantage of the inexpensive transport by canal from the Nile] and that few ships actually sailed into the port thereby avoiding the prevailing northerly winds? Is it possible that the more southerly Egyptian Red Sea ports served as both importing and exporting ports for mainly – though not exclusively – less bulky, more “luxury” type commodities which could more easily absorb trans-desert transportation costs? These hypotheses would be possible explanations for the continued use of Clysma as a port in late antiquity despite its disadvantageous location vis-à-vis the prevailing wind patterns at the northern end of the Red Sea.”

More recently, Facey has asserted a direct causative relationship between these winds and a putative failure of northern ports to flourish: ‘It is this fact, that it is easy to sail south out of the Red Sea but hard to sail north, that provides some explanation why, in antiquity and Islamic times, ports on the Egyptian side show a tendency to be some way down the coast’. Indeed, he goes so far as to argue that “... the place now known as Suez and in antiquity as Arsinoë and Clysma/Qulzum has played a relatively minor role in Red Sea trade.”<sup>39</sup>

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<sup>38</sup> Sidebotham 1989, 198-201.

<sup>39</sup> Facey 2004, 7.

Essentially, the arguments presented by these scholars rest on assumptions about time, human labour, the sailing capabilities of ancient and medieval vessels, and, less explicitly than these logistical factors, their economic implications. By putting in at Berenike, Myos Hormos, or 'Aydhāb, the argument runs, merchants taking goods to Ptolemaic Alexandria or Fatimid Cairo could foreshorten their northward struggle. Halting at a more southerly port, they could transfer goods first onto camel caravans that would take their goods to the Nile, and then onto boats at river ports such as Aswan, Coptos or Qus [Qūṣ], depending on the era in question. It was by various permutations of these routes that, *inter alia*, Ptolemaic, Roman, Fatimid and Mamluk trade was conducted with destinations across the Red Sea and beyond. For some modern scholars, such as Wellsted and Facey, it is also explicitly about navigational optimisation – ports were placed south in order to ease navigation.

### **An easy Nile?**

If navigating in the northern Red Sea was so troublesome and slow that an alternative north-south route was sought out, then that alternative must, presumably, have been easier and faster. That presumption requires investigation. On first enquiry, the auguries are good. Many scholars do indeed often portray the Nile as a river of auspicious felicity, a function of the apparent fact that, while the river flows mostly from south to north, the prevailing winds are from the northerly quadrant.<sup>40</sup> Indeed, it is often the case that the only difficulty noted on the Nile is around the Dendera–Qena bend, where towing or rowing was required,<sup>41</sup> and through the turbulent First

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<sup>40</sup> See, for example, Mayhoub and Azzam 1997; Semple 1932, 159; Willcocks 1890, 39; Lane 2000, 30; Vinson 1994, 7; McGrail 2001, 16.

<sup>41</sup> Kees 1961, 98-9; Vinson 1994, 7-8.

Cataract. Otherwise, as Semple baldly puts it: “Navigating the Nile was easy”.<sup>42</sup>

Recent research by a number of authors has recently started question this notion of the Nile as an inherently benign waterway offering easy sailing and demanding little in the way of skill or labour from its navigators.<sup>43</sup> Graham and I have argued (separately) that sailing the Nile brought its own particular set of challenges. Indeed, just as Facey<sup>44</sup> characterises the northern Red Sea as demanding “muscular seamanship, and special local knowledge of weather, winds and coastal hazards”, so too the Nile required hard physical labour and a wealth of expertise in the vicissitudes of the fluvial environment. Let us examine the key factors in turn.

#### **a) Seasonality**

The Nile’s annual flood and its influence on the development of human societies on its banks has been a staple of scholarly curiosity about Egypt’s past since Herodotus.<sup>45</sup> The impact of that flood on Nile navigation has been the subject of far less enquiry, yet navigating the Nile was fundamentally a seasonal occupation, closely tied to the cycle of the flood.

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<sup>42</sup> Semple, 1932: 159.

<sup>43</sup> Graham 2004; Cooper 2008.

<sup>44</sup> Facey 2004: 11.

<sup>45</sup> Herodotus, *Histories*, 2.5.

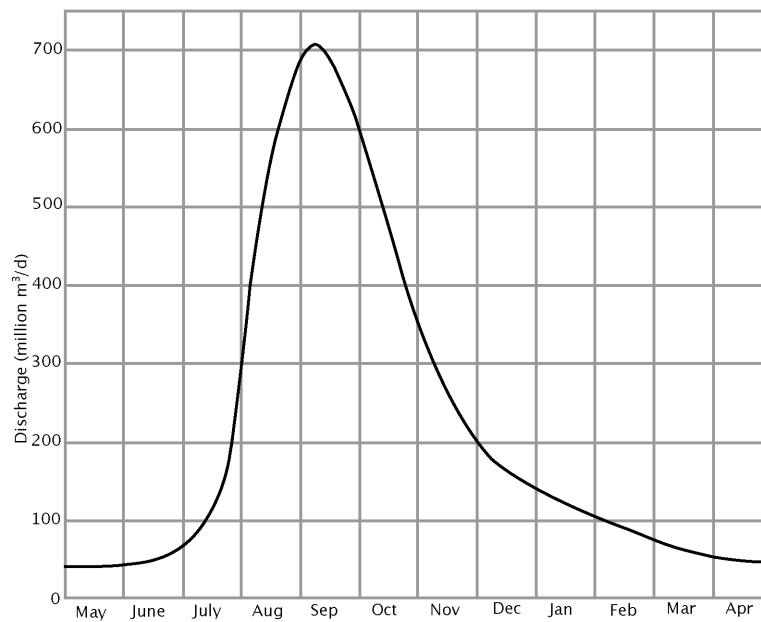


Figure 2: Typical annual through-flow of the Nile at Aswan, before construction of the Aswan High Dam. After Hurst (1952, 241).

Changing water levels meant variable navigability in the river channel, especially for larger cargo vessels. The optimal time for sailing was during the height of the inundation: the first stirrings of the flood were usually detected in Lower Egypt just after St Michael's Day, 12 June.<sup>46</sup> The rise accelerated during July and August, peaked in September, and fell away again sharply during October to December (Figure 2). Low Nile lasted, broadly, from February until June, during which time the flow of water was barely 7% of what it had been at its peak. Seasonal irrigation and navigational canals – important among them the Nile-Red Sea canal, and, in the medieval period at least, the canal to Alexandria – were opened in a co-ordinated fashion near the peak of the flood,<sup>47</sup> and remained navigable for some three-to-five months, depending on the magnitude of that year's inundation.<sup>48</sup>

However, the navigational impact of the flood cycle was felt far beyond just these seasonal canals. Even in the main channel of the Nile, water levels

<sup>46</sup> Al-Qalqashandī, *Subḥ*, 3.293

<sup>47</sup> al-Qazwīnī, *'Ajā'ib*, 175; Lane 2000, 28; Baron de Tott 1786, 4.26-27.

<sup>48</sup> Cooper 2008, 87-88.

effected navigability. A dwindling river made sand banks an increasing hazard, threatening not only to block a vessel's passage, but also to trap it and, at worst, capsize and wreck it.<sup>49</sup> Here the reports of Nile travellers – Aquilante Rocchetta,<sup>50</sup> George Sandys,<sup>51</sup> Frederick Norden,<sup>52</sup> Edward Pococke,<sup>53</sup> Edward Lane<sup>54</sup>, and Hillary Swinburne<sup>55</sup> among them – are illuminating, if too numerous to quote individually.

As the flood ebbed, navigation ceased progressively, depending on the amount of water a vessel drew.<sup>56</sup> A table from the Napoleonic *Description de l'Égypte* is uniquely informative in this regard (Table 1). It shows that the largest Nile vessels of its time, the 160t *falūka* and 200t *markab*, drew over 2m of water<sup>57</sup>, and could navigate for only five months of the year in Upper

Vessel type	Dimensions								Navigable period	
	Draught		Length		Width		Cargo			
	ft	m	ft	m	ft	m	Ardebs	Tonnes	Months	
<b>Upper Egypt:</b>										
Markab	7.7	2.5	54.7	17.8	18.3	5.9	1000	200	5	
Faluka	7.0	2.3	50.5	16.4	16.5	5.4	800	160	5	
Nusf faluka	6.0	1.9	47.7	15.5	15.3	5.0	500	100	7	
Faluka	from:	4.5	1.5	37.0	12.0	10.0	3.2	200	40	9
sughayr	to:	1.5	0.5	19.0	6.2	7.0	2.3	30	6	12
<b>Lower Egypt:</b>										
Qanja Kabir	4.5	1.5	50.5	16.4	13.8	4.5	300	60	7	
Nusf- Qanja	3.8	1.2	43.8	14.2	12.5	4.1	150	30	10	
Qanja Sughayr	1.5	0.5	40.5	13.2	5.0	1.6	40	8	12	
Kabir Qayyas	4.0	1.3	48.0	15.6	13.0	4.2	300	60	8	
Nusf Qayyas	1.7	0.5	39.0	12.7	11.5	3.7	150	30	11	
Qayas Sughayr	1.5	0.5	19.0	6.2	7.0	2.3	30	6	12	

Table 1: Table of vessels navigating on the Nile waterways, showing their tonnage and the period, in months, that they can navigate the river, according to the *Description de l'Égypte* (Jomard 1809-28, *État Moderne* 1.123).

<sup>49</sup> Dempster 1917, 1.

<sup>50</sup> Rocchetta 1974, 65.

<sup>51</sup> Sandys 1615, 117.

<sup>52</sup> Norden 1757, 1.9, 18, 32, 34; 2.177, 192-193, 197, 200-204, 207, 210-211.

<sup>53</sup> Pococke 1763, 1.116.

<sup>54</sup> Lane 1890, 302.

<sup>55</sup> Swinburne 1850-51, entries for 24 November, 4 December, 9 December.

<sup>56</sup> Jomard 1809-28, *État Moderne* 1.112; Willcocks 1889, 39.

<sup>57</sup> The units of the original table – labelled 'ds.' and 'o.' are obscure – but the quantity of subdivisions of the major unit (apparently 12) and the footnotes accompanying the table suggest that what are intended are French feet and inches.

Egypt. The 100t *nuṣf-falūka*, could sail for seven months in Upper Egypt, as could the 60t *qanja kabīr* in the Delta. The 60t *kabīr qayyās* drew 1.3m, and could sail the Delta for eight months. The 30t *nuṣf-qanja* displaced 1.2m, and could sail the Delta for 10 months. Year-round sailing was limited to boats drawing less than 0.5m.

The impact of low Nile on navigation and trade is also noted in a letter from the Cairo Geniza written in the 1060s AD from a trader in al-Fuṣṭāṭ to another in Alexandria. He writes: “The city is at a complete standstill. There is no buying or selling, and no one is spending a single dirham. All the people’s eyes are turned towards the Nile. May God in his mercy raise its waters.”<sup>58</sup>

It is therefore surely for reasons of navigability that Ibn Ḥawqal writes: “Most navigation takes place with the rise of the Nile.”<sup>59</sup>

## **b) Current and wind**

As water levels varied, so did current velocity. Broadly speaking, a navigator could expect currents of around 6 km/h (3.2 knots) at the peak of the flood, and less than 2km/h (1.1 knots) during low Nile.<sup>60</sup> All other things being equal, that would imply that journeying downstream would be considerably easier – and upstream concomitantly harder – during the Nile flood, compared to low Nile situations. Thus, at the very season when the Nile was deep enough for cargo vessels to navigate safely, their upstream journey, at least, was against a river that was flowing three times faster than at low Nile.

By happy coincidence, it is also during this high-Nile season that the maxim of ‘current from the south, wind from the north’ is most valid. The Nile valley and the Nile Delta are subject to two quite different wind regimes. The former comes under the influence of cyclonic highs that sit over the Sahara desert all year, resulting in the dominance of northerly winds in all seasons. The Delta,

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<sup>58</sup> Udovitch 1977, 153.

<sup>59</sup> Ibn Ḥawqal, *Ṣūrat*, 137.

<sup>60</sup> Phillips 1924, 8-11.

meanwhile, falls under the influence of Mediterranean weather systems, resulting in the dominance of northerlies and north-westerlies during the summer, and a more mixed situation in the winter, as anticyclones track east across the Mediterranean.

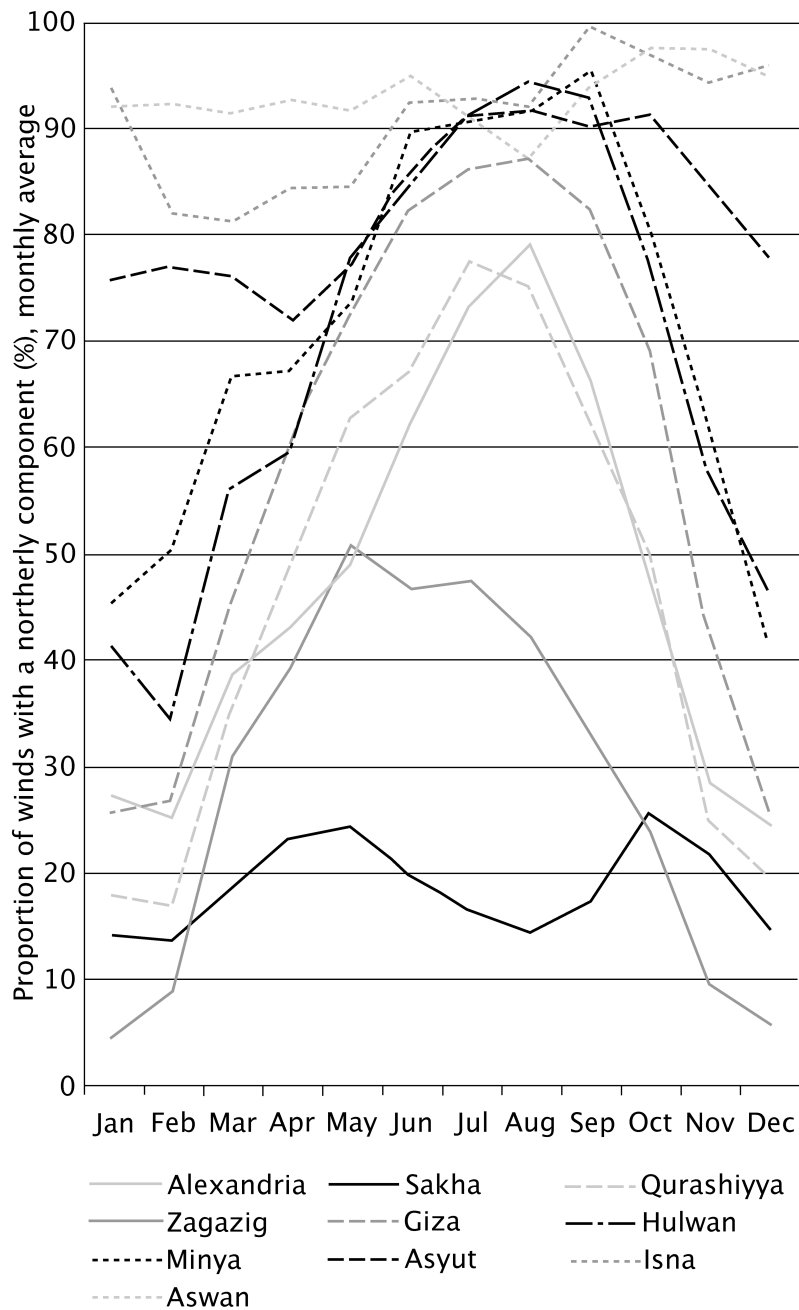


Figure 3: The frequency of winds blowing from the northerly quadrant (NW, N, NE) at locations in the Nile Delta and Upper Egypt, expressed as a percentage (Ministry of Public Works 1922: 13, 17, 23, 25, 29, 31, 33, and 35).



The first thing to note is that high Nile – when larger vessels can navigate the river – coincides with a period during which winds prevail from the northerly quadrant in both the Delta and the Nile valley (Figure 3). Moreover, the northerly winds are not only more frequent, but also stronger (Figure 4). For example, at Minya in Upper Egypt, wind speeds average over 15km/h (8 knots) in September, while the frequency of winds blowing from the northerly quadrant rises to around 95%. In contrast, wind speeds are typically less than 10km/h (5.4 knots) in December-January, and blow for less than half of the time. Thus, not only does average wind speed maintain a positive differential over average speed of the countervailing current during the period of optimal water levels, but also these winds are almost always favourable. It is surely of this season that those scholars who have argued that the Nile was an easy navigation were thinking. Lane, in the 19<sup>th</sup> century AD, portrays it thus:

“... while vessels with furled sails are carried down by the stream with great speed others ascend the river at almost equal rate, favoured by the strong northerly winds, which prevail most when the current is most rapid.”<sup>61</sup>

Similar conditions are seen to hold for the entire Nile valley between Cairo and the start of the Dendera bend at Nāj' Ḥamādī. Further upstream, however, conditions become more difficult. In September, daily wind speeds at Qīna, Luxor and Isnā average 6.1-7.7 km/h (3.2-4.2 knots), barely outstripping the mean current velocity. Hence, the differential between wind speed and current falls to 1.45 km/h (0.8 knots) at Isnā, 0.75 km/h (0.4 knots) at Qīna, and to almost zero at Luxor (Figure 4). This may be due to the sheltering effect of the elevated ground on either side of the valley around this bend, which runs for some 175 km. Moreover, the assistance that the overwhelmingly northerly

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<sup>61</sup> Lane 2000, 30.

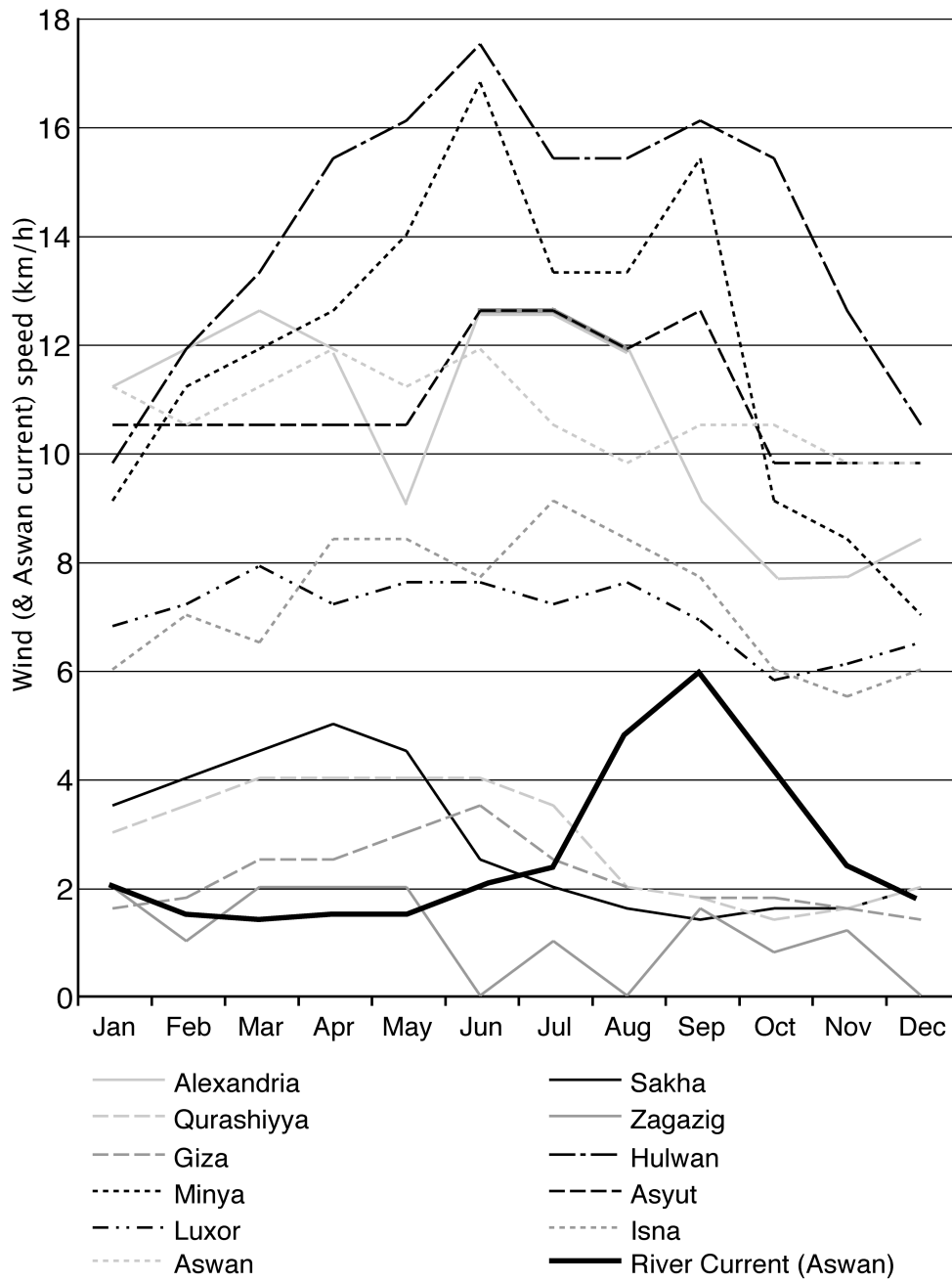


Figure 4: Monthly mean wind speed at locations in the Nile Delta and Upper Egypt, and the monthly mean speed of the Nile at a point below Aswan (Ministry of Public Works 1922, 13, 17, 23, 25, 29, 31, 33, 35; Phillips 1924, 8-11).

wind afforded those sailing upstream through the bend was undermined by the fact that wind and current were no longer countervailing for long sections

of it – around 30km in total. In fact, referring to modern topography, both wind and water would have been acting against upstream navigators for around 18km of this section.

Moving further south towards Aswan, the peak-season differential of mean wind speed over mean current speed recovers again to over 4 km/h (2.1 knots), with northerly winds prevailing for 90% of the time in September.<sup>62</sup> However, that does little to compensate for the difficulties of moving boats around the Dendera bend in order to reach this section. Indeed, it is worth considering that the relative difficulty of sailing upstream between Nāj' Ḥamādī and Isnā might have informed the choice of caravan routes leading from the Nile to Roman and Ptolemaic Berenike and Fatimid 'Aydhāb: if it can be argued that Red Sea navigators put in at these 'southern' harbours to avoid having to battle further northward against deteriorating conditions, then might it not also be argued that ancient and medieval Nile navigators often favoured Coptos or Qūṣ, rather than at Aswan – the latter closer by land to both Red Sea ports – because that foreshortened their southerly struggle upriver?

### **c) River navigation as labour**

And struggle it often was. A study of the accounts of travellers on the Nile indicates that movement on the river was far from easy, particularly outside the optimal season already identified, when the waters were deep, the river relatively broad,<sup>63</sup> seasonal canals open, and wind and current at their best for upstream and downstream navigators. It was not so all year round. Even at the height of the Nile sailing season, prevailing winds did not always blow: outside of that peak season, they often did not. Once again, the accounts of travellers on the Nile are rich in references to the hardships faced by Nile crews when the wind failed them. Towing is attested from various sources in

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<sup>62</sup> Ministry of Public Works 1922: ,35.

<sup>63</sup> Said 1993, 96.

the Pharaonic period. The Ramesside Ship's Log Papyrus<sup>64</sup> names a 'chief of towing men', and Herodotus<sup>65</sup> says the practice was common. The practice of towing is also encountered frequently in traveller accounts of the 18<sup>th</sup> and 19<sup>th</sup> centuries AD. In 1873, two days into a journey up the Nile valley from Cairo, Emelia Edward's tourist party decided to remain at Memphis, even though a brisk, favourable wind was blowing. Her captain told her:

"You will come to learn the value of a wind, when you have been longer on the Nile."<sup>66</sup>

The next morning, appearing on deck, Edwards:

" ... found nine of our poor fellows harnessed to a rope like barge-horses, towing the huge boat against the current. Seven of the ... crew [also towing] followed at a few yards' distance."<sup>67</sup>

More than a century earlier, Pococke marvelled that his Muslim crew towed all day even during the Ramadan fast.<sup>68</sup> These and many other accounts underline the frequency by which vessels had to be towed,<sup>69</sup> and also rowed,<sup>70</sup> in order to make progress along the river. Hilary Swinburne's rapid 19-day ascent to Aswan was achieved only through extensive use of human power, with towing or punting taking place on 12 days: on five of these days, the boat was towed all day, and on one of them it made no more than twelve miles (19.2km).

As water levels fell, crews had also to work hard to avoid grounding on sandbanks. They did not always succeed. Again, traveller accounts provide an insight into the problems faced. In the 19<sup>th</sup> century, Swinburne, notes that,

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<sup>64</sup> P. Leiden I 359 v III, 9, 5; Jansenn 1961, 33 and 35.

<sup>65</sup> Herodotus, *Histories*, II.29, 96.

<sup>66</sup> Edwards 1878, 104.

<sup>67</sup> Edwards 1878, 105.

<sup>68</sup> Pococke 1763, 1.72.

<sup>69</sup> Norden 1757: 2.183, 188, 191, 196-8, 200, 211; Swinburne 1850-51, entry for 12 November; Edwards 1878, 67, 105.

<sup>70</sup> Swinburne 1850-51, entries for 11-24 December.

in the Nile valley south of Asyūt, "...we have been continually running aground far from the shores".<sup>71</sup>

Lane reports that:

"... even the most experienced pilot is liable frequently to run his vessel aground; on such an occurrence, it is often necessary for the crew to descend into the water, to shove off the boat with their backs and shoulders."<sup>72</sup>

Norden describes his downstream journey in January-February 1738, sailing in a vessel a cargo vessel that drew 'no more than a foot and some inches water when empty'.<sup>73</sup> It was, however, laden to capacity with dates, and became stuck fast on several occasions. It was only by poling and towing that Norden's vessel did not suffer the same fate – irretrievable grounding – of other vessels he saw.<sup>74</sup>

If sailing on the Red Sea could be dangerous, as well as hard work, so too could navigation on the Nile. Particular locations had particular difficulties associated with them. The dangers of the Nile's Mediterranean mouths I have discussed elsewhere, and are not directly relevant here.<sup>75</sup> The cataracts above Aswan, and the rapids and winds around Jabal Abū Fawḍa presented their own hazards. In addition, storms were not infrequent, particularly during winter and the Spring *khamsīn* season, when hot dusty southerly storms blow from the desert. When Jean Coppin arrived at Alexandria in January 1638, he learned that "more than 80 barques had been lost on the Nile in a storm" that had just blown through.<sup>76</sup> De Monconyon<sup>77</sup> in the 17<sup>th</sup> century and Warburton<sup>78</sup> in the 19<sup>th</sup> both narrowly avoided capsizing. Caught in a storm in

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<sup>71</sup> Swinburne 1850-51, entry for 9 December.

<sup>72</sup> Lane 1890, 302.

<sup>73</sup> Norden 1757, 2.177.

<sup>74</sup> Norden 1757, 2.207.

<sup>75</sup> Cooper 2008, 108-115.

<sup>76</sup> Coppin 1970, 13.

<sup>77</sup> De Monconyon 1973, 33.

<sup>78</sup> Warburton 1845, 226.

December 1849, Florence Nightingale saw the capsized *dhahabiyya* of some fellow travellers floating back down the river.<sup>79</sup>

It can be concluded from these accounts that river travel was not only physically hard work, but also risky, and requiring skill. Navigators need to be aware of the seasonal variability of the river and its navigable channels, of localised wind conditions, of the ways of avoiding and escaping danger. It was not, in sum, inherently 'easy'. Nor were all the dangers environmental.

Robbery and theft from vessels at night is described by numerous medieval and early modern travellers, among them, Emelia Edwards,<sup>80</sup> Jean de Palerne,<sup>81</sup> Christophe Harant,<sup>82</sup> and Johan Wild.<sup>83</sup> Lewis characterises banditry in Roman Egypt as endemic.<sup>84</sup>

**A. Nile and Desert journey times between (the site of) Cairo and Red Sea ports (days)**

(i) Absolute values	Outbound			Inbound		
Destination	By Nile	By land	Total	By Nile	By land	Total
Suez	0	3	<b>3</b>	0	3	<b>3</b>
Quseir al-Qadim	14-22	6-7	<b>20-29</b>	9-17	6-7	<b>15-24</b>
Berenike	14-22	12	<b>26-34</b>	9-17	12	<b>21-28</b>
'Aydhāb	14-22	19-23	<b>33-45</b>	9-17	19-23	<b>28-40</b>

(ii) Additional journey time required relative to Suez (midpoint value, days)

Suez	<b>0</b>	<b>0</b>
Quseir al-Qadim	<b>+22</b>	<b>+17</b>
Berenike	<b>+27</b>	<b>+21</b>
'Aydhāb	<b>+36</b>	<b>+31</b>

**B. Inbound journey times between the Red Sea at the level of 'Aydhāb and the site of Cairo (days).**

Port used	By sea		By land	By Nile	Total	
	24hr sailing	Day only			24hr sailing	Day only
'Aydhāb	0	0	19-23	9-17	<b>28-40</b>	<b>28-40</b>
Berenike	3	6	12	9-17	<b>24-32</b>	<b>27-35</b>
Quseir al-Qadim	6	12	6-7	9-17	<b>21-30</b>	<b>27-36</b>
Suez	12	24	3	9-17	<b>24-32</b>	<b>36-44</b>

**Table 2 (A&B): Summary tables of the typical-journey time calculations used in this article (from Cooper 2008, 97).**

<sup>79</sup> Nightingale 1854, 65.

<sup>80</sup> Edwards 1887, 113-114.

<sup>81</sup> De Palerne 1971, 26.

<sup>82</sup> Harant 1972, 54.

<sup>83</sup> Wild 1973, 16.

<sup>84</sup> Lewis 1983, 203-5.

## Journey times

If sailing on the Nile cannot be seen as physically or intellectually *easy*, was it at least demonstrably faster than travelling the Red Sea? The radical changes unleashed on the Nile by the construction of the Aswan High Dam have rendered any form of experimental archaeology meaningless, since the conditions encountered have changed radically. Once again, one must turn to traveller accounts, which provide a useful data set on journey times.

For the purposes of this exercise, let us take modern Cairo, Roman Babylon, as our northern reference point, since it represents a central node of trans-Egyptian river traffic. Analysis of a number of journeys show that a typical journey time up Nile from Cairo to Qūs, near Coptos – the latter towns being the ancient and medieval departure points for Myos Hormos, Berenike and ‘Aydhāb – was just under three weeks (Table 2(A)). To Aswan, it took just over a month. These are considerably slower than the nine days that Herodotus claims it took to get from Heliopolis (now a suburb of Cairo) to Thebes (Luxor),<sup>85</sup> or the frankly remarkable “eight days or less” that the Napoleonic *Description de l’Égypte*, claims it took to get from Cairo to the First Cataract.<sup>86</sup> If these speeds were at all achievable, it must surely have been by élite rowed vessels of some kind. Meanwhile, returning to our journey-time analysis, the downstream journey from Aswan to Cairo took between 19 and 27 days, and from Qūs, 9-17 days (Table 2(B)).

Some caveats should be noted here. The journeys analysed here were mostly made in early modern sailing vessels, sometimes in relatively swift tourist *dhahabiyyas*<sup>87</sup>, rather than ancient or medieval craft. Moreover, these journeys were often made in the winter or spring months rather than the peak of the flood, at which time journeys might have been faster. However, such

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<sup>85</sup> Herodotus *History*, 2.9.

<sup>86</sup> Jomard 1809-28, *État Moderne* 1, 122)

<sup>87</sup> This was not always the case: Norden (1757, 2.177) travelled in a cargo vessel.

data is the best available. If anything, more ancient merchant boats might be expected to be slower, not faster, than the vessels for which times are recorded here. Moreover, most Red Sea connections would have been made during this winter-spring period (see below).

To these river journey times must be added the desert crossing times (Table 2A-B). The journey from Roman Coptos to Myos Hormos, i.e. from Medieval Qūṣ to Quṣayr, through the Wadi Ḥammāmāt was six-seven days.<sup>88</sup> That from Roman Coptos to Berenike took 12 days.<sup>89</sup> The journey from Medieval Qūṣ to ‘Aydhāb was even longer: al-Idrīsī gives the journey time at less than 20 days.<sup>90</sup> Nasir i Khusraw did it in 16,<sup>91</sup> but Ibn Jubayr took 23.<sup>92</sup> By not travelling on the Nile at all from our Cairo reference point, but rather crossing the desert to Suez, the journey time is cut to three days or less,<sup>93</sup> as indeed is the northward crossing along the Isthmus of Suez to the Roman and early Islamic Mediterranean port of Pelusium/al-Faramā for those bypassing the Nile entirely.<sup>94</sup> Stringing the land and river components of these journeys together, it can be seen that the journey from our reference point at Cairo to Myos Hormos or Quṣayr would typically take 20-29 days outbound, and 15-24 days inbound. From Cairo to Berenike would take 26-34 days outbound, and 21-28 days inbound. Cairo to ‘Aydhāb would take up to 45 days outbound, and up to 40 inbound (Table 2A-B).

Considering only the journey segments between Cairo and the Red Sea (in both directions), it would appear that, of Egypt’s ‘southern’ ports, Roman Myos Hormos had an advantage of around five days over Roman Berenike on the outbound and return journeys, while medieval Quṣayr had an advantage

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<sup>88</sup> Whitewright 2007, 85-86.

<sup>89</sup> Pliny, *Natural History*: 6.26.102-103.

<sup>90</sup> Idrīsī, *Nuzhat*, 1.134.

<sup>91</sup> Nasir i Khusraw, *Safarnama*, 64-65.

<sup>92</sup> Ibn Jubayr, *Rihla*, 57-65.

<sup>93</sup> Al-Mas’ūdī, *Murūj*, 1.237-8; Ibn Ḥawqal, *Ṣūrat*, 9; Ibn Duqmāq, *Intisār*, 2.54; Rooke 1783, 126; Al-Iṣṭakhārī, *Masālik*, 7; al-Quḍā’ī, in al-Maqrīzī, *Khīṭaṭ*, 1.40.

<sup>94</sup> Al-Nuwayrī, *Nihāyat*: 231; Maqrīzī, *Khīṭaṭ*: 1.579.



over 'Aydhāb of around 15 days in both directions. Add the contemporary port at Suez into the mix, and it can be seen that this northern port had an advantage of 22 days over Myos Hormos/Quṣayr on the outbound journey, 27 days over Berenike, and a full 36 days over 'Aydhāb. On the return, it had an advantage of 17 days over Myos Hormos/Quṣayr, 22 days over Berenike, and 31 days over 'Aydhāb.

These comparisons, based on combined river-and-desert journey times between Cairo and each of the ports port under consideration. We have seen that travelling on the Nile was not necessarily easy or risk free. To this should be added the comparative expense of land transportation compared to waterborne freight, and the consequence that the longer journeys associated with the southern ports must have incurred additional costs. For inbound ships stopping at more southerly Red Sea ports, did the abbreviated northbound sail on the sea justify the extra time and cost inherent in the onward land and Nile journey?

The first observation to make is that, for *southbound* journeys, there was apparently no merit at all – in terms of winds – in avoiding the northern Red Sea, since outbound voyages enjoyed prevailing northerly winds that were firmly in the navigator's favour. Thus, for goods originating in Lower Egypt or the Mediterranean, Suez offered a route by which movers of merchandise could swap the potentially arduous journey up the Nile, followed by a long and costly trip through the Eastern Desert, for a much shorter three-day (or less) caravan journey – from Mediterranean at Pelusium/al-Faramā or the Nile at Cairo – followed by an uninterrupted journey south on the Red Sea, backed by a prevailing following wind. From this southbound perspective, the southern ports seem to offer no navigational advantage whatsoever, but rather impose additional burdens of time and logistics to the journey.

It follows that if the southern locations of Quseir al-Qadim, Berenike, and 'Aydhāb are to be explained by reason of navigational advantage, then that advantage surely has to be based on the *inbound* (i.e. northbound) journeys of Red Sea ships. We have seen that the total land-and-river journey from Roman Myos Hormos to our Cairo reference point was some five days shorter than that journey from Roman Berenike. Whitewright has calculated – based on Roman textual evidence and the experimental performance of square sails – that Roman square-rigged vessels would have been able to travel at a voyage-made-good speed of 1.9 knots in upwind conditions.<sup>95</sup> He concludes, therefore, that the journey by Red Sea from the level of Berenike to Myos Hormos, beating against the wind, would have taken around 3.5 days, assuming night sailing.<sup>96</sup> If one assumes that vessels stopped at night, then the same northbound journey might have taken, perhaps twice as long. In either case, the relative time advantage of one port over the other is a negligible, being 3 days in either scenario. Thus, taking into account the onward land and Nile journey as far as our reference point at Cairo, Roman Berenike had no appreciable advantage over Myos Hormos. Nor, indeed, did Myos Hormos over Berenike.

What then of medieval 'Aydhāb versus Quṣayr? 'Aydhāb gave way to Quṣayr, 250 nautical miles to the north, some time in the late Ayyubid or early Mamluk periods. We have seen that Quṣayr has a typical advantage of some 14 days over 'Aydhāb considering only the northbound land-and-Nile journey to Cairo. By Whitewright's measure, the northbound Red Sea journey from the latitude of 'Aydhāb to Quṣayr would have taken an average of 5.5 days if travelling day and night, and perhaps 11 days if anchoring at night. Thus the inbound Red Sea journey to Cairo via Quṣayr is seen to be around 8.5 days shorter than that via 'Aydhāb, presuming night-time sailing, and perhaps 2.5

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<sup>95</sup> Whitewright 2007, 84.

<sup>96</sup> Whitewright 2007, 85.

days shorter allowing for night-time stops. Hence it is the more northerly of these two ports, requiring a journey with the longest battle against problematic Red Sea northerlies, that appears to be superior on these terms. Any respite from the unremittingly contrary winds assumed in this scenario could only have boosted Quṣayr's advantage in terms of journey time.

Now let us bring Suez into consideration. Using the same methodology, we find that arriving at our Cairo reference point via this northern port as the continuation of a northbound Red Sea journey is seen to be typically 11 days faster than arriving via Quseir al-Qadim, assuming night-time sailing, or 5 days faster allowing for night-time stops. Reaching Cairo via Suez is about 14 days faster than arriving via Berenike, assuming night sailing, or five days faster if halting at night. The Suez route is 19 days shorter than the 'Aydhāb route if travelling also by night, or seven days shorter if stopping at night. If the objective on arrival at Suez was to then take the goods directly to the Mediterranean, then the three-day onward journey to Pelusium/al-Faramā would be several days shorter again than taking goods via the Nile Delta branches or canals,<sup>97</sup> making this an even more superior route by this scenario.

One more factor should be added to this model. We have considered the seasonality of Nile navigation – noting in particular the serious problems facing would-be navigators of cargo vessels on the river as water levels dwindled into the low Nile period between February and June. Red Sea navigation also had its seasons: according to Ibn Mājjid, departures from the southern part of the Red Sea towards India and the southern coast of Arabia took place in two periods between late-March and early August. The first lasted from late-March until 7 May if going to India, and until 10 June if going

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<sup>97</sup> Cooper 2008, 105-108.

no further than Hormuz.<sup>98</sup> The second ran between early July and early August.<sup>99</sup> The *Periplus Maris Erythraei*<sup>100</sup> says that, at its time, departures from Egypt to Horn-of-Africa ports took place in July. Pliny puts the departure time of India-bound ships from Berenike at “midsummer, before the rising of the Dog-star”.<sup>101</sup>

During these departure seasons, however, the Nile was not easily navigable for cargo vessels. This raises a number of questions. Did this fact mean that goods for export had to be shipped upriver *before* the end of the previous high Nile in order to reach the southern ports? Were they then warehoused until the Red Sea sailing season began? The Muziris papyrus mentions the existence of “public tax-receiving warehouses at Koptos”.<sup>102</sup> Did this disjoint between the Nile sailing season and the outbound Red Sea sailing season give Suez a further advantage in outbound trade? Certainly, Suez reduced or indeed eliminated the exposure to river transportation during this low-Nile period: those Mediterranean goods arriving at Pelusium/al-Faramā during the middle of the Mediterranean sailing season could bypass the low river entirely by crossing the Isthmus to Suez.

Meanwhile, arrivals at Egypt's Red Sea ports from the south occurred during the early or late northeast monsoon, during which time southerly winds blew in the southern Red Sea. In general, sailing could take place throughout the season, although Ibn Mājid advises that its stormy peak was to be avoided in the southern Red Sea, “especially with a large ship”.<sup>103</sup> He says that the time to leave India for Arabia was mid-October, with the start of the monsoon.<sup>104</sup> However, he also says that those bound for Jidda – and probably therefore also Egypt, a country his guide does not cover – were better off

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<sup>98</sup> Ibn Mājid, *Fawā'id*, 225-226.

<sup>99</sup> Ibn Mājid, *Fawā'id*, 243-244.

<sup>100</sup> Casson, 1989, 59.

<sup>101</sup> Pliny the Elder, *Natural History*, 6.26.104.

<sup>102</sup> Rathbone 2000, 40; SB XVIII 13167, ll. 4.

<sup>103</sup> Ibn Mājid, *Fawā'id*, 230-231.

<sup>104</sup> Ibn Mājid, *Fawā'id*, 228-229.

leaving on 2 March, and no later than 11 April: mariners following that advice could expect to arrive in Jidda in July.<sup>105</sup> Pliny reports that Egypt-bound vessels in the Roman era departed India in December or January,<sup>106</sup> somewhat earlier than Ibn Mājid's timing. Indeed, when the 12<sup>th</sup> century traveller Ibn Jubayr passed through the desert to 'Aydhāb during the month of May, he found the road teeming with caravans of pepper bound for the Nile.<sup>107</sup> Goods arriving at 'Aydhāb, Berenike and Myos Hormos/Quṣayr on southerly winds in the *early* northeast monsoon could have made their way across the desert to find a Nile with adequate water levels for cargo vessels. However, those arriving from India, by Pliny's or Ibn Mājid's measure, might have arrived at their Red Sea ports a little too early for the new flood. This implies some need to wait for the Nile to rise. Some of the potential wait would be taken up by the desert journey. Nevertheless, any delay can only have reduced further the time-effectiveness of the 'southern' ports relative to Suez. Indeed, once Cairo had been founded as the capital of the Fatimid and Mamluk empires, making it the ultimate destination for so much Red Sea trade, then Suez represented a point at which the Red Sea could be used to bypass problems of the low-Nile season entirely.

## Discussion and conclusion

Where does this discussion leave the relative merits of the Egyptian Nile on the one hand, and the northern Red Sea on the other? The Nile was not the unequivocally 'easy' and risk-free alternative to the Red Sea as has been argued elsewhere. Like the Red Sea itself, the river demanded effort, skill and knowledge, albeit of a different and particular kind. Moreover, diverting one's goods from the sea to the Nile reduced one's exposure to the storms, labour, coral reefs and deserts of the former, but instead exposed one to the storms,

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<sup>105</sup> Ibn Mājid, *Fawā'id*, 230-232.

<sup>106</sup> Pliny, *Natural History*, 6.26.

<sup>107</sup> Ibn Jubayr, *Riḥla*, 67-9.

labour, groundings and robbers of the latter. Already, from a purely logistical perspective, this discussion narrows considerably the apparent merit gap between the two potential routes. In addition, neither departures from those 'southern' Red Sea ports, nor all arrivals at them, occurred during the optimal period of Nile navigation. Depending on the ultimate destination, departures took place between late-March and Early August – covering the low Nile period, and only the start of the rise of the river. Arrivals came during the northwest monsoon, and into the transition period – Early arrivals from the southern Red Sea could have connected directly to a high Nile, but not those from India arriving in the later arrival period: they might have had to wait. If so, then why not use that time to press northward on the Red Sea, thereby obtaining a time advantage on the land route?

Certainly, we can infer from the very existence of a Achaemenid, Ptolemaic, Roman and Islamic-era Nile-Red Sea canal at Suez, alongside evidence for extensive ancient port infrastructure and settlement activity at the site, and backed up with ample historical reference to its use, that ancient and medieval navigators sailed on ships with the technological capability to move north in the Red Sea. Since scholarly doubt has been cast upon the capacity of such ships to make any ground against a northerly wind,<sup>108</sup> then one must assume that the crew of these vessels knew how to circumvent the technical limitations of their craft, by drawing on fine-grained knowledge of local wind conditions that mitigated the slog of sailing upwind. Indeed, while winds in the northern Red Sea *prevailed* from the north, that does not entail that they *always* blew from that direction. During the northeast monsoon, when vessels were arriving in Egypt, winds with a southerly component blow at least 10% of

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<sup>108</sup> Palmer 2008.

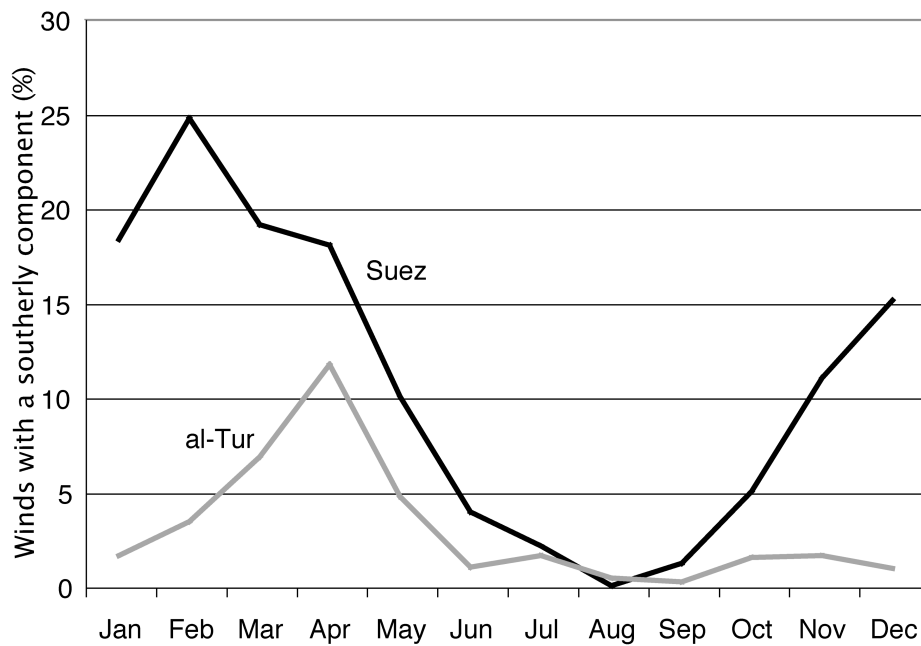


Figure 5: The monthly average frequency of winds with a southerly component at Suez and al-Ṭūr, both in the Gulf of Suez.

the time at Suez, peaking at 25% in March.<sup>109</sup> Further south, at al-Ṭūr, the situation is not so favourable, but still, winds with a southerly component blow for 12pc of the time in April,<sup>110</sup> an important period for arrivals into Egyptian ports (Figure 5). Add to this the assistance provided by current patterns in the Red Sea,<sup>111</sup> as well as the potential of utilising diurnal winds, and the northbound journey, even in the northern Red Sea, might not have been as unremittingly gruelling as the generalised picture that scholars have inferred from the prevailing winds data.

A glance at the broad chronology of the ports under consideration here shows that, of all them, it was Suez – supposedly the most difficult destination – that endured longest as a port. Even when it was abandonment by the Fatimid régime in the 11<sup>th</sup> century AD,<sup>112</sup> the move appears to have been one driven by geopolitical threat – from the Crusader Kingdom of Jerusalem and the

<sup>109</sup> Ministry of Public Works 1922, 29.

<sup>110</sup> Ministry of Public Works 1922, 15.

<sup>111</sup> Whitewright 2007.

<sup>112</sup> Al-Maqrīzī, *Khiṭaṭ*, 1.549-550.

growing threat of the Seljuk Turks – rather than by navigational priorities that favoured more southerly ports. Having dealt with those threats, the Mamluks restored Suez as a military harbour, and under the Ottomans it became a supply centre for the Red Sea navy.<sup>113</sup> Therafter, Suez persisted until the end of the days of sail. In contrast, the more southerly ports under consideration here are characterised by sporadic use – at least over the *longue durée* – and lengthy periods of disuse. Certainly, the pattern of occupation of these ports does not reflect a process of navigational optimisation that progressively favoured those more southerly ports. Indeed, in different periods, Egypt's premier Red Sea port has variously been as far north as possible, at Suez, as far south as possible, at 'Aydhāb, and somewhere in the middle, at Quseir al-Qadim. In different periods, the north-south route has variously maximised exposure to the Red Sea, to the Nile alternative, as well compromising by using the Quseir al-Qadim route.

Rather than seek purely navigational explanations for the placement of these ports, it is perhaps better to consider the broader picture of state interests in the Eastern Desert as a whole. Historical evidence from the early Islamic period suggests that the early development of 'Aydhāb as a port was closely linked to Muslim settlement of the Eastern Desert, and in particular to the colonisation of the gold mines of the Wadi al-Allaqi (al-'Allāqī) in the eighth century.<sup>114</sup> Indeed, until the Fatimid abandonment of Suez/al-Qulzum in favour of 'Aydhāb in the 11th century, the main route to the latter port appears to have been from Aswan, the first capital of upper Upper Egypt<sup>115</sup>, via the al-'Allāqī mining settlements. Thus, military and logistical resources deployed in securing 'Aydhāb were, for much of that route, also securing communications to and from the mines. Only when al-Qulzum was forcibly abandoned did the Fatimid state invest in a new route across the desert, and the capital of upper

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<sup>113</sup> Schulze 2009.

<sup>114</sup> Al-Maqrīzī, *Khiṭaṭ*, 1.530.

<sup>115</sup> Ibn 'Abd al-Ḥakam, *Futūḥ*, 173.



Upper Egypt shift to Qūs. By this time, the al-‘Allāqī mines appear to have been abandoned, so the advantage of combining the route through the desert was no more.

Securing the route through the desert appears always to have been a combination of force and persuasion directed at the Beja population. Muslim historical accounts addressing the 7<sup>th</sup>-9<sup>th</sup> centuries AD report a series of Muslim incursions, Muslim-Beja pacts, Beja “violations” and mutual conflicts that identify the Eastern Desert as a contested space.<sup>116</sup> Even during ‘Aydhāb’s Fatimid heyday, the state had to share revenues from the port equally with the Beja “king”.<sup>117</sup> By the mid-fourteenth century, Ibn Baṭṭūṭa recalls the split as 2:1 in favour of the Beja.<sup>118</sup> The ultimate abandonment of the port appears to be connected with renewed conflict with the Beja.<sup>119</sup>

Can the same be said for Egypt’s earlier ‘southern’ ports, such as Myos Hormos and Berenike? Certainly, these ports should be contextualised in terms of the wider state interests in the Eastern Desert. In the Roman era, this did include the trade in luxury goods with south Arabia, Adulis, the Horn of Africa and India, as depicted in the *Periplus Maris Erythraei*. But, this trade could have equally have been conducted through Suez, and probably was in the later Roman period. Perhaps, as Sidebotham has suggested,<sup>120</sup> the movement of lighter, luxury goods passed through these ports, while bulky goods – grain, textiles – went through Suez. That would have made the onward journey on the Nile more feasible for inbound goods arriving at southern ports, given that they arrived during low Nile, or at least at a time when the river had not yet fully risen.

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<sup>116</sup> Ibn ‘Abd al-Ḥakam, *Futūḥ*, 169-70, 189; al-Ṭabarī, *Tārīkh*, 3.3.1429, 1433; Ibn Ḥawqal, *Ṣūrat*, 52; al-Maqrīzī, *Khīṭaṭ*, 1.530-534.

<sup>117</sup> Al-Idrīsī, *Nuzhat*, 2.135.

<sup>118</sup> Ibn Baṭṭūṭa, *Rihla*, 1.110.

<sup>119</sup> Hikoichi 1989, 167-172.

<sup>120</sup> Sidebotham 1989, 198-201.

Again, however, Roman interests in the Eastern Desert went beyond merely the southern ports. The desert routes that served the ports served also, in part, the routes to and from the great imperial quarries – Mons Porphyrites, Mons Claudianus, Mons Smaragdus, the emerald mines,<sup>121</sup> etc – that so attracted Roman interest in the region. Augustan-era development of Myos Hormos coincides with new investment in quarries around the Wādī Ḥammāmāt and its decline follows with the abandonment of forts through the wadi in the late second-early third centuries AD.<sup>122</sup> The quarries at Mons Claudianus were exploited from the mid first-century AD through to the third, peaking under Trajan.<sup>123</sup> Those at Mons Porphyrites were occupied from the first to the early fifth centuries, peaking in the late-second/early third.<sup>124</sup> The Beryl mines of Mons Smaragdus (Khesm Umm Kabu), en route to Berenike, were exploited until the fifth century AD.<sup>125</sup> Thus the state infrastructure – military, watering stops, roads, caravanserais – that supported these mining enterprises also enabled and controlled access to the southern ports, which would otherwise have been inaccessible to merchant transport through hostile territory. Moreover, they provided the means by which taxation of cross-Desert traffic could be effected, creating an incentive to the state in ensuring that mercantile traffic passed through ports of its choosing.

In sum, the logistical advantages of Egypt's southern Red Sea ports cannot be clearly demonstrated with reference solely to our current understanding of Nile and Red Sea navigation, and of the logistics of Eastern Desert crossings. In terms of journey times, there appears to be little, beyond a week here or there, to separate the various routes used in antiquity and the medieval period to move along the north-south axes presented by the Nile and Red Sea. Given the seasonality of Nile and Red Sea navigation, it is worth recalling

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<sup>121</sup> Strabo, *Geography*, 17.1.45.

<sup>122</sup> Brun 2003, 192, 201.

<sup>123</sup> Maxfield & Peacock 2001, 423-452.

<sup>124</sup> Maxfield & Peacock 2007, 413-431.

<sup>125</sup> Sidebotham et al. 2000, 356.

Udovitch's observation with reference to the Mediterranean, that "... the significant unit of time was the sailing season."<sup>126</sup> In other words, on long-haul voyages, the seasons only allowed for a single round trip to or from Egypt in any case. In that context, the relative time advantage in days to be gained from one port over another appears marginal. In terms of effort and technological capability, the very existence of a port of great longevity at Suez suggests that neither labour nor technology presented an insurmountable obstacle to moving north. The conclusion must be that it was other factors that drove the placement of ports along Egypt's Red Sea coast over the *longue durée*, and that for these one should look to the wider economic and geopolitical picture informing the state's interests in securing and raising taxes from the Eastern Desert routes – the vital factor in making Egypt's southern Red Sea ports viable.

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<sup>126</sup> Udovitch 1978: 514.

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