

When the Rains Failed: Studies in Climatology and the Biblical Text

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CHAPTER 6: THE EXODUS AND CLIMATOLOGY

The Sea Crossing Debate

Few events in the Old Testament have set off more academic debate than Israel's sea crossing in Exodus 14. Countless books and articles have centered their attention on whether,¹ when,² where,³ and how⁴ Israel crossed the sea. A surprising amount of evidence has been gathered on all sides in the debate. If it is assumed that the Israelites did in fact cross the sea, one of the more interesting questions becomes where such an event could have occurred. There have been three main theories about where Israel crossed the sea. All three theories begin Israel's journey in the northeast Nile delta near Wadi Tumilat.

The first theory about the location of Israel's sea crossing suggested that Israel traveled north from Wadi Tumilat. They then would have traveled across a sand ridge that forms a thin arc stretching out into the Mediterranean Sea between the Nile River and Palestine. This ridge of sand formed the outer edge of Lake Sirbonis. After arriving at the east end this sand highway in the sea, they would have crossed directly to Kadesh-barnea. According to this theory, the sea crossing actually happened either in Lake Sirbonis itself or further east in Lake Menzaleh. This theory is strengthened by the fact that a Baal shrine was present much later on the sand ridge around Lake Sirbonis.⁵

There are several problems with this theory. In Exodus 13:17-18, God specifically warned Israel not to travel north by the Way of the Philistines. By travelling north around Lake Sirbonis, the Israelites would still have faced the Egyptians when they arrived at the east end of the lake. The greatest problem with this theory is that there is no archaeological evidence that the sand ridge around Lake Sirbonis existed in the Mosaic age. The earliest artifacts on the ridge were made almost a thousand years later.⁶ A variant form of this position suggests that Israel traveled along the southern shore of Lake Sirbonis. Israel would then have taken the coastal road north into Palestine. This theory is nearly as difficult to sustain as the earlier one. The southern shore

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Robert Luyster, "Myth and History in the Book of Exodus," *Religion* 8.1 (1978): 155-170. A. H. W. Curtis, "The 'Subjugation of the Waters' Motif in the Psalms; Imagery or Polemic?" 245-256 in *Studies in Honour of F. F. Bruce*, (Manchester University Press). Brevard S. Childs, "A Tradition-Historical Study of the Reed Sea Tradition," *Vetus Testamentum* 20 (1970): 406-418. Bernard F. Batto, "The Reed Sea: Requiescat in Pace," *Journal of Biblical Literature* 102.2 (1983): 27-35.

2

John J. Bimson and David Livingstone, "Redating the Exodus," *Biblical Archaeology Review* 13.5 (1987): 40-53. Charles H. Dyer, "The Date of the Exodus Reexamined," *Bibliotheca Sacra* 140 (1983): 225-243. Leon J. Wood, "Date of the Exodus," 66-87 in J. Barton Payne, ed. *New Perspectives on the Old Testament*, (Waco: Word Books, 1970).

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Tommy Briscoe, "The Sinai Peninsula and the Exodus," *Southwestern Journal of Theology* 20 (1977): 23-32.

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George W. Coats, "History and Revelation: The Reed Sea Event," *Lexington Theological Quarterly* 4 (1969): 22-31. Lewis S. Hay, "What Really Happened at the Sea of Reeds?" *Journal of Biblical Literature* 83 (1964): 397-403.

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Henri Cazelles, "Donnees geographiques sur l'Exode," *Revue d'Histoire et de Philosophie Religieuses* 35 (1955): 51-58.

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See the discussion in: Tommy Briscoe, "The Sinai Peninsula and the Exodus," *Southwestern Journal of Theology* 20 (1977): 23-32.

of Lake Sirbonis was very heavily populated. The coastal road north into Palestine was fortified by Thutmose III. Its forts had hardly been finished at the exodus. They were strong and well fortified. So Israel would hardly have traveled along the coastal road into Palestine.⁷

The second main theory about the location of Israel's sea crossing suggests that Israel left Egypt by crossing the Bitter Lakes directly east of Wadi Tumilat. Most versions of this central theory require the Israelites to cross the desert region of Et Tih, which would have been difficult. The best argument for a central route may be Exodus 15:22. This verse noted that Israel traveled from the Sea of Reeds into the wilderness of Shur. It has often been argued that the wilderness of Shur was located northeast of the Bitter Lakes. If that location for the wilderness of Shur is accurate, the Israelites must have crossed near the Bitter Lakes. Unfortunately, the location of Shur is no less certain than the location of other places named in the exodus account. Genesis 25:18 seemed to locate Shur further south than this.

The third main theory for the location of Israel's sea crossing placed it further south, across the Red Sea itself. This position is certainly more easily consistent with the New Testament which claimed that Israel crossed the Red Sea instead of the Reed Sea. A more radical version of this theory can be seen in the Koran. Islam teaches that Israel left Egypt twenty miles south of the Red Sea shoreline where the sea is 600 feet deep. Islam argues that a crossing at that site would be a far greater miracle, and would thus give God far more glory. So it must be right.

Several arguments have been raised against a southern crossing. There are no reeds there, so how could it be a sea of reeds? It may be too far south for the Israelites to have been able to reach in the time allowed. A southern crossing would have forced the Israelites to pass near the Egyptian Sinai mines, and it is assumed that they would have been hesitant to do so. These are weak arguments. Jonah 2:5 demonstrates that the word *sûph* in *yam sûph*, sea of reeds, can be used to describe salt water plants as well as fresh water reeds. The rate of Israel's travel toward the Red Sea can not be determined. There is no way to know how strong a force the Egyptians had at the Sinai mines, or if they were even in use at the time. Mining activity in the Sinai was rather sporadic.

The *Yam Sûph*, and the Red Sea

Exodus 15:4, 22 claimed that Israel crossed the *yam sûph*. In theory, if this *yam sûph* could be identified, then the site of Israel's sea crossing would be known. Unfortunately, the identification of the *yam sûph* has been anything but simple. The *yam sûph* discussion has necessarily been bound up with the broader debate over the sea crossing location, but the debate has not produced a universally accepted understanding of this term.

The *yam sûph* debate has been complicated by the fact that the noun *sûph* is rather rare in Hebrew. Other than the twenty-three instances of the name *yam sûph* in Scripture, the noun only appears three times.⁸ Each time, it clearly refers to reeds, rushes, swamp plants, or marshlands.

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G. I. Davies, "The Way of the Wilderness: A Geographical Study of the Wilderness Itineraries in the Old Testament," *Supplements to Vetus Testamentum* 41.

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Ex. 2:3, 5 refers to the reeds where the infant Moses was placed. Is. 19:6 describes God's judgment on Egypt, promising that the reeds and Sûph will be dried up. Then Jonah 2:6 uses the noun Sûph to describe vegetation wrapped about the prophet's head. Authors who have understood *yam sûph* as a Sea of Reeds have tried to determine what kind of plants these *sûph* may have been, and where they may have been found. On this, see Francisco, "The Exodus in its

The academic discussion has drawn heavily on two possibly related Hebrew words, the hollow verb *sûph* and the noun *soph*. The verb describes bringing things to a complete end.⁹ The noun appears rather often, and describes the end of a great many things.¹⁰

While these words look much like the *sûph* of Exodus, their meaning is quite different. Various suggestions have been proposed for bridging this gap. Maurice Copisarow suggested that a patriarchal age root *sûph*, end, evolved forms of meaning marsh, end, tempest, and Red Sea.¹¹ He then suggested that the name *yam sûph* was misunderstood by the Massoretic tradition and vocalized incorrectly as Sea of Reeds rather than End Sea. William A. Ward disagreed, suggesting that the original root was the Semitic biconsonantal word *sph*, bowl. He suggested that the idea bowl gave rise to marsh, a very large bowl. He then suggested that marsh gave rise to the meaning end or border because journeys normally ended at one marshland or another.¹² Both of these suggestions are rather speculative.¹³ Interpreting *yam sûph* as an End Sea has led to

Historical Setting," 17, and Shafei, "Historical Notes on the Pelusiac Branch, the Red Sea Canal and the Route of the Exodus," 260. The results of this discussion have not been conclusive. The Red Sea water level has changed since the Mosaic age. The salinity and water level of the inland lakes have changed greatly. Canals in use in antiquity have silted up and dried out. Coastal regions have sunk and have become saline. So plant life patterns present today do not duplicate plant life patterns seen in the Mosaic age. See Montet, *Eternal Egypt*, 4, and William H. Shea, "A Date for the Recently Discovered Eastern Canal of Egypt," *Bulletin of the American Schools of Oriental Research* 226 (1977): 34. Further confusing the issue is the question of exegesis. When Jonah spoke of *sûph* beneath the sea in Jonah 2:5, he could have been reflecting current usage, interpreting *sûph* as seaweed. However, he also could have been describing his experience by using traditional imagery which had its roots in Near Eastern mythology. The same verses do speak of the *tehóm*, the bars of the earth, and the bases of the mountains. See Bernard F. Batto, "Reed Sea: Requiescat in Pace," *Journal of Biblical Literature*, vol. 102 (1983): 32, 33.

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The hollow verb appears in Est. 9:28; Ps. 73:19, and Is. 66:17. Other possible examples can be found in Jer. 8:13 and Zeph. 1:2, 3, although these could be based on a different root. Solomon Mandelkern, *Concordantiae Hebraicae atque Chaldaicae*, (Tel Aviv: Hierosolymis, 1978), 794.

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The noun appears in 2 Chron. 20:16; Dan. 4:8; 4:19; 7:28; Num. 21:14; Ecc. 3:11; 7:2, and Joel 2:22. Saebo noted that the Qumran literature also reads as "end" in three texts. See G. Johannes Botterweck, Helmer Ringgren and Heinz-Josef Fabry, eds., *Theologisches Wörterbuch zum Alten Testament*, 5 vols. (Stuttgart: W. Kohlhammer, 1986), 5: 794.

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Copisarow, "The Ancient Egyptian, Greek and Hebrew Concept of the Red Sea," 12.

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William A. Ward, "The Semitic Biconsonantal Root *SP* and the Common Origin of Egyptian *CWF* and Hebrew *SUP*: 'Marsh(-Plant)'," *Vetus Testamentum* 24 (1974): 344, 345.

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Another possibility is that *sûph* may be drawn from a Semitic final aleph root *sp'* which means to feed. This root appears in the Canaanite verb to eat, *sp'*, the PostBiblical Hebrew and Aramaic verb to eat, *sp'*, *spy*, and the Hebrew noun *mispo*. See Stanislav Segert, *A Basic Grammar of the Ugaritic Language*, (Berkeley: University of California Press, 1984), 19. The Hebrew noun *mispo* is especially interesting. In Gen. 42:27; 43:24 and Judg. 19:19, it describes marsh plants used as fodder in Egypt and Canaan. On marsh plants used as fodder in Egypt, see Papyrus Sallier I, 4, 9. On marsh plants in Canaan, see Harold N. and Alma L. Moldenke, *Plants of the Bible*, (Waltham: Chronica Botanica, 1952), 40, 50, 62, 92, 120, 121. Final aleph roots do not normally form biconsonantal nouns, but there are exceptions to this rule. Other examples can be seen in Ex. 17:16; Job 15:31, and Dan. 6:18. The double stroke sign in the Egyptian *cwfy* could be taken as evidence for a final aleph in the Semitic prototype. However, it is not clear whether this sign should be interpreted as a *y* or simply as an unvocalized place holder. See Ward's arguments against vocalizing it. Ward, "The Semitic Biconsonantal Root *SP*," 339, 340.

the suggestion that the Exodus account may be an example of a Near Eastern creation myth.¹⁴ Positions similar to this have been defended recently by Batto, Hyatt, and others.¹⁵

The *yam sūph* debate has drawn heavily on a late Egyptian word *cwfy* which is usually understood to be a hieroglyphic spelling of *sūph*.¹⁶ This word became rather common in Egyptian texts after the Eighteenth Dynasty flooded Egypt with Semitic captives.¹⁷ Since *cwfy* did not appear in Egyptian texts before this time, it appears to be a foreign word brought into Egypt rather than an Egyptian noun which spread into the Semitic world.¹⁸

The Egyptian word *cwfy* was used in contexts where the word "marsh" would be expected to appear. Sometimes *cwfy* appeared with the article, indicating that a specific area was in view. In these cases, the noun would mean something like "the marshlands near _____," with the blank filled in by any of several locations bordering on swamp areas.¹⁹ The most famous example of *cwfy* in the texts comes from Papyrus Anastasi III, 2:11-12, which described the delta city of Pi-Rameses. This papyrus claimed that the *cwfy* came to the city with papyrus reeds, and the waters of Horus with rushes.²⁰ A variety of other texts have been cited by Gardiner and others. One text described Egyptian workers who cut marsh plants in the *cwfy*. In another, Horus hid from Seth in the *cwfy*.²¹ Still another visualized the Nile valley as an ox standing with its tail resting on *cwfy*.²² Another listed *cwfy* as a festival offering given to the gods.²³

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Snaith, "Yam Suph: The Sea of Reeds: The Red Sea," 397.

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See Batto, "The Reed Sea: Requiescat in Pace," 32, and Hyatt, *Commentary on Exodus*, 164.

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J. Simmons expressed doubts about the validity of this identification because the Egyptian rope sign would not normally become a Hebrew *sameck*. Simmons, *The Geographical and Topographical Texts of the Old Testament*, 78.

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This word is spelled with four signs, the rope, the chick, the horned snake or snail, and the double stroke. See Adolf Erman and Hermann Grapow, *Wörterbuch der ägyptischen Sprache*, 5 vols. (Berlin: Akademie, 1955), 5: 359. This word has been transliterated in a variety of ways, including: *cwf*, *cwfy*, *twfi*, *toofi*, *tufi*, and *soofy*.

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Ward noted that *cwfy* may have been in use long before it appeared in print. Ward, "The Semitic Biconsonantal Root SP," 348, 349. Foreign words would have been spoken in Egypt long before they were accepted as Egyptian words, and the 19th Dynasty could have turned such Semitic words into standard usage. See also Redford, "The Relations between Egypt and Israel from El-Amarna to the Babylonian Conquest," 197.

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In these contexts, *cwfy* sometimes appeared with the town determinative, even though a swamp clearly was in view. See Gardiner, *Ancient Hebrew Onomastica*, 2:201-204 for a list of places where the noun *cwfy* appeared in the Egyptian texts. His work is normally cited in current discussions of the question. Ward mentioned a text where *p3-cwf* seemed to describe the area near Lake Menzaleh. Ward, "The Semitic Biconsonantal Root SP," 341.

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Since this text mentions both Per-Raamses and *sūph*, it has been translated and cited in many sources. See Ward, "The Semitic Biconsonantal Root SP," 341, and Shafei, "Historical Notes on the Pelusiac Branch," 237, 259.

21

Ward, "The Semitic Biconsonantal Root SP," 342.

22

Gardiner, *Ancient Egyptian Onomastica*, 2:168. Gardiner identified this reference as part of a fictional story called the *Blinding of Truth*.

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See Lambdin, "Egyptian Loan Words in the Old Testament," 153, Ehlen, "Deliverance at the Sea: Diversity and Unity in a Biblical Theme," 169, and J. D. Douglas, ed. *The Illustrated Bible Dictionary*, 3 vols. (Wheaton: Tyndale House Publishers, 1980), 3:1323.

How did an Egyptian area come to be called a *yam sūph*? While no definite answer can be given, the parallel with the Fayum is quite instructive. The Fayum is a large depression west of the Nile and south of the delta. In the Biblical period, this depression contained an enormous reed filled lake which was fed by a branch of the Nile. It also contained some of the best farm land in Egypt. The Egyptian names for this region included *ta-she*, Lake Land and *sha-t Asar*, the Lake of Osiris.²⁴ During the empire age, the Fayum was filled with Asiatic slaves, including captives from Syria and Palestine. At this time, a new name came into use for the region. It came to be called *pa-ym*, The Sea.²⁵ There can be no doubt that *yam* was a Semitic loanword imported into Egyptian. The name of the Canaanite sea god Yam appeared ten times in the Astarte Papyrus alone. The Astarte Papyrus seems to be a hieroglyphic version of the Canaanite Baal Yam myth. So this papyrus illustrates Yam being brought into the Egyptian language.²⁶ So the name *pa-ym*, The Sea, probably was a name given to the region by its Semitic inhabitants. This name was handed down among Semitic speaking peoples, and was preserved down to the present time as Fayum. However, along side of this Semitic name, the traditional Egyptian names for the region also continued in use. For example, the Ptolemaic era shrine of El-'Arish still called the Fayum by the traditional name of *ta she*.²⁷

The name *yam sūph* probably arose in a similar way. The Semitic peoples living in the eastern delta and in Wadi Tumilat needed a name to describe the vast marshy areas around them. They chose a Semitic name which accurately described those regions, and which probably approximated Egyptian names in use at the time. So instead of calling the swamps an Egyptian name like *sh.t 'i3rw*, Field of Reeds, *sh.t htp*, Field of Offerings, or *mr nh3*, Winding Waterway, they chose the Semitic name *yam sūph*, Sea of Reeds. If so, then John Towers is quite justified in claiming that *sh.t 'i3rw* and *yam sūph* are identical in meaning. Towers may also be correct in suggesting that the name *yam sūph* could have carried overtones drawn from Egyptian theology.²⁸ When Yahweh destroyed Pharaoh's army in the *yam sūph*, that event would have turned those Egyptian overtones into an effective polemic against Egyptian theology.

The name Red Sea is also an important part of the debate about the location of Israel's sea crossing. The earliest known appearance of the name Red Sea can be found in the writings of Herodotus. He was a Greek historian who was a contemporary of Esther in the Old Testament.²⁹ For Herodotus, the body of water now called the Red Sea was only a gulf of the real Red Sea. Herodotus used the name *eruthra thalassa*, or Red Sea, to describe a much larger region including the current Red Sea, the Persian Gulf, and the Indian Ocean. The name Red Sea

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See Gardiner, "The Name of Lake Moeris," 37-51, David, *The Pyramid Builders of Ancient Egypt*, 254, and Budge, *An Egyptian Hieroglyphic Dictionary*, 2: 720.

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Montet, *Eternal Egypt*, 3.

26

Gardiner, "The Astarte Papyrus," 74-85, Gardiner, *Late-Egyptian Stories*, 76-81, and Wilson, *The Culture of Ancient Egypt*, 320.

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Griffith, *The Antiquities of Tell El Yahûjîyeh*, 70-73.

28

Towers, "The Red Sea," 150-153

29

Herodotus lived from 484 B.C. to 425 BC. He has been called the Father of History. He wrote the history of the Persian Empire. George Rawlinson, trans. *The History of Herodotus*, (New York: Tudor, 1941).

referred to the southern sea which surrounded Africa and India.³⁰ This southern sea was part of the sea which surrounded the whole earth in classical cosmologies.

The Red Sea was also mentioned by the Roman historian Titus Livy, a contemporary of Christ.³¹ Livy used the name Red Sea to describe the Indian Ocean.³² He called the Red Sea the Ocean which held the earth in its embrace,³³ and claimed that it reached the farthest shores of India (*de ultimis Indiae oris*), and the uttermost ends of the earth (*terrarum ultimos*).³⁴ In the earliest texts, the name Red Sea described quite a large area of water without dividing it up into specific seas. It also clearly was associated with the ends of the earth and with at least the southern part of the primal sea that surrounded the earth.³⁵ It may be significant that the name Red Sea described the primal deep instead of a smaller region, especially since the color red was associated with so many Egyptian marshland and underworld motifs.

Both the Septuagint Greek text and the New Testament Greek text claim that Israel crossed the *eruthra thalassa* which means Red Sea.³⁶ This has led many scholars to defend a southern location for Israel's sea crossing across the Red Sea itself. Many other authors have defended a variety of northern routes for the exodus that are all based on the Hebrew text's claim that Israel crossed the *yam sūph*, which means the Sea of Reeds.³⁷ This creates quite a problem if both the New Testament and the Old Testament are assumed to be inspired and inerrant. Some way must

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Herodotus, II, 158. See also the maps in Rawlinson, *The History of Herodotus*, 317-319. The best survey of the classical authors is John Ball, *Egypt in the Classical Geographers*, (Cairo: Government Press, Bulaq, 1942). Komroff, ed. *The History of Herodotus*, 137.

31

Foster gives Livy's probable dates as 59 BC to 17 AD. See B. O. Foster, *Livy*, vol. 1, (Cambridge: Harvard University Press, 1939).

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Livy, Book 45, IX, 6.

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Livy, Book 34, XVII, 15.

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Livy, Book 42, LII, 14 and 45, IX, 6.

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One Midrashic tradition is very interesting here. This tradition claimed that Jonah traveled through the Red Sea while in the fish's belly. Ibn Ezra and Kinchi held that this was possible because the Red Sea waters extended to the northern Mediterranean Sea. If this pointed back to an earlier tradition, it could reinforce associating the Red Sea with the Great Green and Nun. See Bernard F. Batto, "Red Sea or Reed Sea?" *Biblical Archaeology Review* 10 (1984): 61. Batto used this Midrashic tradition to argue that the Red Sea was a part of the primal deep.

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Ex. 15:4 in the LXX, and Acts 7:36; Heb. 11:29 in the New Testament.

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For example, Eakin argued that the Red Sea had to be ruled out because it had no reeds, and because the lengthy route would have enabled Pharaoh to catch Israel. Eakin, "The Reed Sea and Baalism," 378. The length of Israel's route makes a rather strange argument. There is no way to know when Pharaoh sent his forces against Israel. Also, the whole isthmus was fortified to prevent Asiatic incursions. Pharaoh probably could have dispatched forces quite rapidly from any of several sites. Israel crossed the *sūph* near Migdol which was almost certainly one such border fortress. However, it can be questioned whether Israel could have traveled the required distance in the time allowed. On the presence of *sūph* in the Red Sea, Francisco argued that *sūph* could be seaweed according to Jonah 2:5, and that the northern Red Sea does have sea weed. Francisco, "The Exodus in its Historical Setting," 17, 18. John Murray argued that the word *sūph* came from the name of a common form of sea weed that resembled wool, the *Eytiphloea Pinastroides*. John Murray, *A Handbook for Travellers in Egypt*, (London: John Murray, 1873), 227.

be found for Israel's sea crossing to have occurred over both the Red Sea and the Sea of Reeds at the same time.

A Proposed Location for the Exodus

One location deserves more attention than it has received of late. That location is the vast dry basin stretching south from the Shalûf (a ridge of Tertiary limestone south of the Bitter Lakes) to the current Red Sea shoreline. A century ago, it was common for authors to locate Israel's sea crossing in this basin because they assumed that Red Sea waters had filled it in the Mosaic age.³⁸ The nature of this basin suggests that this was not an unreasonable assumption. Since the Suez Canal has changed the whole character of this region,³⁹ its geology can best be appreciated by reading descriptions of it written before the Suez Canal was dug. One of the most interesting accounts of this region was written by Edward Robinson. In 1838, he traveled north of the current Red Sea shoreline and described it in detail. He noted that the ground gave every sign of being occasionally flooded. The sand was packed hard by water action, and was covered in places by the kind of saline efflorescence produced by sea water. He noted that this kind of flood packed sand extended a great distance to the northeast. Above the narrows at Suez, he noted that this flood packed floor opened out into a very large bay stretching far north of the present water line. Observing this, he concluded that the gulf originally stretched much further north than its current shoreline.⁴⁰

Robinson's observation is plausible. The area south of the Shalûf is a very low clay basin with sand dunes blown in from the east.⁴¹ The average height of this basin's clay floor is only about four feet above the current Red Sea high tide level. Since the basin is this close to sea level, the whole region is occasionally flooded by storm surges from the Red Sea.⁴² Menashe

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As recently as 1978, Alessandra Nibbi argued that the Red Sea extended 30 miles further north in the Mosaic age. Nibbi, "The Lake of Reeds of the Pyramid Texts and Yam Sûph," 96. Nibbi footnoted G. Posener, "Le Canal du Nil à la Mer Rouge avant les Ptolomées," *Chronique d'Egypte* 13 (1938): 260-262.

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When the Suez Canal was dug, the ancient fresh water canal was also reopened to provide drinking water for canal workers. Fresh water from this canal has allowed over 70,000 acres of land to be irrigated for farming, and has made possible a farming population in the region of over 35,000 people. For a discussion, see Glen E. Edgerton, "An Engineer's View of the Suez Canal," *National Geographic Magazine*, 111 (1957): 124.

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Edward Robinson, *Biblical Researches in Palestine, and in the Adjacent Regions*, 2 vols., (Boston: Crocker and Brewster, 1860), 60, 61.

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S. R. Driver described this region in 1911. He noted that the soil north of Suez consisted of sand blown in from the eastern desert. Driver, *The Book of Exodus*, 125.

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Rady et al studied storm surges in the Gulf of Suez and concluded that storms accompanied by strong winds from the northwest would lower gulf water levels, but not create higher storm surges. M. A. Rady, et al. "Tide-Surge Interaction in the Gulf of Suez, Egypt." *Mar. Geod* 17 (1994): 45-62. However, their study did not discuss storms whose winds blew from the opposite direction. It should not be surprising that such a large tract of land stood within two meters of sea level. If it were not for the coastal dunes, a sea level rise of only one meter would flood parts of the northern delta up to 30 km inland. On the northern coast, see G. Sestini, "Implications of Climatic Changes for the Nile Delta," in L. Jetic, J. D. Milliman, C. Sestini, eds. *Climatic Change and the Mediterranean*, 535, (New York: United Nations Environmental Programme, 1992).

Harel notes that in stormy weather, sea water sometimes spreads north five or six miles and reaches a depth of six feet.⁴³ About once every twenty years, a storm sweeps north enough water to flood the whole plain south of the Shalûf. S. C. Bartlett observed such a storm in 1879. He traveled five miles north of Suez several days after the storm. He found that pools of water six and a half feet deep had stood behind the canal station even at that distance from Suez, and great stretches of water still stretched far north of his position.⁴⁴

If this basin was flooded in the Mosaic age, it certainly could not have been crossed. The basin had such a deep clay floor that when the Suez Canal was dug through the region, earth moving machines could not budge it. The clay had to be broken up with pick axes and removed with baskets.⁴⁵ Sea water covering this clay floor would have turned it into a quagmire. An interesting parallel can be drawn here to Egyptian Field of Reeds theology. The Egyptian Pyramid Texts stressed repeatedly that Pharaoh could only cross the Field of Reeds when the marshes were flooded. Then he could float across the marsh on a reed float.⁴⁶ Egyptian Coffin Spell 622 noted that those who tried to cross the Field of Reeds when it was not flooded sank into the quagmire and died.⁴⁷

This mythological motif describes Nile delta marshland soil quite accurately. Marsh muck is very dangerous. It can not be crossed on foot because it is too waterlogged to support a man's weight. Those who step into it sink in the muck.⁴⁸ It can, however, be crossed when it is dried. An interesting historical example of this can be seen in a pre-Mosaic Egyptian work called *The Admonition of an Egyptian Sage*. This text records that the Egyptian priests were appalled to find that a drought had so dried the marsh that commoners could cross it on foot. The priests were appalled by this because all of the secret Egyptian marshland shrines were open to public inspection.⁴⁹ If the region south of the Shalûf was a tidal basin in the Mosaic age, its marshland could have been blown dry in a similar way allowing Israel to cross.⁵⁰ A Red Sea storm surge

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Harel, "The Route of the Exodus of the Israelites from Egypt and their Wanderings in the Sinai desert: A Geographic Study," 87.

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S. C. Bartlett, *From Egypt to Palestine*, (New York: Harper & Brothers, 1879), 152. A. P. Schick noted an example of wind blown high water in the Gulf of Aqaba. A. P. Schick, "Tiran: the Straits, the Island, and its Terraces," *Israel Exploration Journal* 8 (1958): 127.

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Murray, *Handbook for Travellers in Egypt*, 236.

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See for example Pyramid Texts 340 and 351-353.

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This interpretation may be supported by an interesting claim by Moses in Ex. 15:12. Moses claimed that God had stretched out His hand, and the earth swallowed Pharaoh's army. This claim would be quite accurate if Pharaoh's forces sank into the marsh slime and died there. Of course, the *erets* of Ex. 15:12 is often taken to be the underworld, and is paralleled with passages like Num. 16:1-32; 1 Sam. 28:13, and Is. 29:4. See Hyatt, *Exodus*, 165.

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S. C. Bartlett described an example of this. He recorded an interview with M. de Lesseps who designed and dug the Suez Canal. De Lesseps notes that while riding his horse near the Bitter Lakes, he became entangled in such a morass and had great difficulty escaping from it. Bartlett, *From Egypt to Palestine*, 149.

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Gardiner, *The Admonition of an Egyptian Sage*, 38.

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Against this interpretation, it could be argued that Ex. 15:4, 5 and Neh. 9:11 associate Israel's sea crossing with the abyss. These verses are sometimes taken as evidence for a deep water crossing. See on this, Gispén, *Exodus*, 147, 148.

could then have drowned the Egyptians. Contemporary examples suggest that waves of sea water between six and ten feet high could have roared north from the Red Sea. Such a storm surge would also have restored the marsh muck's natural viscosity and made the trap inescapable.⁵¹

The really critical question is whether this long basin was actually covered with water in the Mosaic age. Was the sea level high enough in that region to flood the basin? It has become fashionable among Old Testament scholars to answer that question in the negative and to justify this answer by citing one of William F. Albright's articles. For example, John J. Davis claimed that the Bitter Lakes region could not have been connected to the Gulf of Suez in the 15th century BC. Davis' evidence for this claim was Albright's conclusion that the sea level in the Gulf could not have been very much higher in the 15th century BC, if it was higher at all.⁵² Davis then went on to quote the relevant paragraph from Albright's article. The problem with this is in Albright's article itself.

Albright's expedition toured the Sinai for a month. The expedition stopped briefly at a coastal site near Merkhah. Albright identified this site as a small temporary settlement formed in the 15th century BC as a landing and embarkation point for mining expeditions. Albright noted that the edge of this settlement was only five meters above the mean Red Sea level and only two meters above the high tide line. Albright concluded from this that the Red Sea level could not have been more than two meters higher than present in the past 3500 years.⁵³ Albright's article is all well and good as far as it goes. However it does not address the question of whether the region south of the Shalûf was a tidal basin in the Mosaic age. It is not surprising that a temporary settlement intended as an embarkation point would have built its lowest structures close to the high tide line. An additional meter or two of sea water in the Mosaic age would have turned the whole basin into either a tidal or salt marsh.

This point has not been missed completely by recent Old Testament scholarship. For example, G. I. Davies wrote in his book *The Way of the Wilderness* that several authors have used the evidence from Tell el-Kheleifeh and Abu Zenima to argue that the sea level could not have been higher than present norms in the Mosaic Age. Tell el-Kheleifeh and Abu Zenima were the sites that Albright visited on the Red Sea shore. Davies argued that the evidence from these sites was compatible with a sea level two meters higher than present norms, and that was all that proponents of a northern extension of the Red Sea actually envisaged.⁵⁴

Beyond Albright's article, there is also a large body of evidence bearing on this question that is often overlooked in Old Testament academic discussions. That body of evidence comes from the fields of Climatology and Marine Archaeology. The last three decades have seen the growth

However, if Israel's sea crossing mimicked Field of Reeds theology, the marshes crossed would have been associated with Nun, the abyss, and the underworld Field of Reeds locations. So drowning in the Field of Reeds was also drowning in the great primal abyss. Faulkner's translation of Coffin Spell 279 is quite interesting here. This spell promised that Pharaoh will "bathe in the basin of the Abyss." If the Abyss here is the Nun, the Great Deep, it contains a shallow basin for bathing in the Field of Reeds.

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This interpretation may be supported by Ex. 15:12. Moses claimed that the earth had swallowed Pharaoh's army. This claim would be quite accurate if Pharaoh's forces sank into the marsh slime and drowned.

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Davis, *Moses and the Gods of Egypt*, 170, 171.

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Albright, "Exploring the Sinai with the University of California African Expedition," 14, 15.

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Davies, *The Way of the Wilderness*, 73, 74.

of quite a large literature on the topic of global climate change.⁵⁵ A significant part of this discussion has centered on sea level change. There are dozens of books and articles in print that deal with sea level change either directly or indirectly. Unfortunately, none of this new data gives a clear and certain picture of Red Sea levels in the Mosaic age. While this data can not now pin down the site of Israel's sea crossing, it does provide one arena in which future discussions of the Exodus must take place.

Climatological studies analyze sea level changes by looking for fossil shorelines and then using a variety of dating techniques to date the shoreline. Fossil shorelines point to a long period of stable sea level at that point. Almost every sea shore in the world contains a series of such fossil shorelines both above the sea surface and below it. Tracing and dating these fossil shorelines can reveal much about the history of the site. Unfortunately, there are at least four factors which influence where these shorelines are cut. The interplay of these factors limit how firmly conclusions can be drawn from any site despite the high degree of confidence which many authors display when reporting their findings.

The first factor effecting the location of fossil shorelines is the global sea level itself. The earth's oceans do not have a fixed sea level, but their level changes as land ice is formed and melted. It tends to remain rather constant for long periods then change rather rapidly. At the height of the last glacial period at 16,000 BC, the world ocean level was somewhere between 65 and 130 meters below its current stand. Nearly 10% of the earth's surface was covered by ice, and the glaciers held somewhere between 84,000 and 98,000 cubic kilometers of ice.⁵⁶ This ice melted especially rapidly in two periods. It melted at an amazing rate between 14,000 and 11,000 BC producing a very rapid rise in sea level. This melting was interrupted by a thousand years of full glacial cold in the Younger Dryas with stable sea levels. Then very rapid melting returned between 8000 and 5000 BC. By 4000 BC, the last of the Glacial Age continental ice had melted away. Fossil shorelines were created in periods when the sea level was fairly stable.

The second factor effecting the location of fossil shorelines is subsidence. Shorelines can sometimes sink for a variety of reasons including sediment loading, the flow of underconsolidated sediments, and compaction. This can be seen in the Nile delta where older sediments are often rather far below sea level.⁵⁷ Another example is the coastal shelf of Delaware and Maryland that has subsided due to the hydroisostatic effect of "water loading." This is a

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There are several ways to get into this discussion. One way is to peruse the "Climatology" subheading in each annual subject index volume of *Physical Abstracts*. It is also useful to read through journals like *Climate Change*, and *Pollen et Spores*. There are good multi-author works like P. M. Masters, N. C. Flemming (eds.), *Quaternary Coastlines and Marine Archaeology: Towards the Prehistory of Land Bridges and Continental Shelves*, (London: Academic Press, 1983). E. J. Cushing, H. E. Wright, Jr. (eds.), *Quaternary Paleoecology*, (New Haven: Yale University Press, 1967).

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Quite a few figures have been given both for the total volume of ice created in the glacial periods, and for the degree to which the ocean surface was lowered by its formation. One useful study is Roger G. Barry, "The Significance of Global Snow and Ice Cover for Global Change Studies," *GeoJournal*, 27 (1992): 293-297.

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See for example, D. J. Stanley, D. Arnold, A. G. Warne, "Oldest Pharaonic Site," *Research & Exploration*, 8 (1992): 264. D. J. Stanley, "Subsidence in the Northeastern Nile Delta: Rapid Rates, Possible Causes, and Consequences," *Science* 240 (1988): 497-500.

clear example of an ocean shoreline that has been lowered in comparison with other shorelines of similar age.⁵⁸

The third factor effecting the location of fossil shorelines in the vertical movement of crustal plates produced by plate subduction zones. As one plate dives beneath another, it pushes the second plate up. This process forms mountains and volcanoes along the subduction zone. While crustal plates move quite slowly, this movement causes earthquakes which can change shore levels greatly in a very short time. It is often difficult to tell whether the height of a fossil shoreline should be explained by rising sea water or rising land. There has been an ongoing debate between scholars like Neev and Ronen over the extent to which fossil shorelines off the coast of Israel should be explained by plate tectonics.⁵⁹

The fourth factor effecting the location of fossil shorelines is closely related to this. Continental plate rock is relatively light. The continental plates more or less float on the heavier basalt magma beneath them. When a two mile thick layer of ice forms on one part of a continental plate, the weight of the ice pushes that part of the plate down into the magma. As the covered sections sink, uncovered areas near the ice tend to rise above normal levels. Van Andel suggests that crustal plates can be depressed to a depth equal to more than a quarter of the ice thickness covering them. When the ice is removed they rebound rather rapidly at first, then much more slowly.⁶⁰ This also creates fossil shorelines both above and below the current sea level.⁶¹

Given these complicating factors, it is not surprising that climate change studies often disagree with each other. Sea level changes in the Holocene Era have been reconstructed in a variety of ways.⁶² It may be convenient to divide these studies into two groups. The first group claims that the world's sea level has not been higher than present at any time since the last ice age. One example of this approach can be seen in an article by D. J. Stanley titled "Nile Delta." Stanley claimed that the Mediterranean Sea level rose between 5500 BC and 500 BC. Stanley claimed that the sea level was about ten feet lower in 5500 BC than it was in 500 BC when it arrived at its current sea level. As a general rule, climatologists working in the Americas tend to deny that the sea level stood higher in the Mosaic age than it stands today.⁶³ If authors in this

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J. C. Kraft, D. F. Belknap, and I. Kayan, "Potentials of Discovery of Human Occupation Sites on the Continental Shelves and Nearshore Coastal Zone," in P. M. Masters, N. C. Fleming, eds., *Quaternary Coastlines and Marine Archaeology: Toward the Prehistory of Land Bridges and Continental Shelves*, (London: Academic Press, 1983), 106.

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See for example, Avraham Ronen, "Comment on *Mediterranean Coasts of Israel and North Sinai. Holocene Tectonism from Geology, Geophysics and Archaeology*," *The International Journal of Nautical Archaeology* 18 (1989): 263-265. See also Douglas L. Inman, "Application of Coastal Dynamics to the Reconstruction of Paleocoastlines in the Vicinity of La Jolla, California," P. M. Masters, N. C. Flemming, eds., *Quaternary Coastlines and Marine Archaeology*, 1-49. Kraft, Belknap and Kayan, "Potentials of Discovery of Human Occupation Sites on the Continental Shelves and Nearshore Coastal Zone," 93.

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Tjeerd H. Van Andel, "Late Quaternary Sea-Level Changes and Archaeology," *Antiquity* 63 (1989): 734.

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For a discussion of this phenomenon, see Inman, "Application of Coastal Dynamics," 6-10

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One of the better surveys of the question comes from S. Jelgersma, "Sea-Level Changes during the Last 10,000 Years," in *World Climate from 8000 to 0 B.C.: Proceeding of the International Symposium Held at Imperial College, London, 18 and 19 April 1966*, (London: The Royal Meteorological Society), 34-71.

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D. J. Stanley, A. G. Warne, H. R. Davis, M. P. Bernasconi, Z. Chen, "Nile Delta," *Research and Exploration* 8 (1992): 34. D. L. Inman claims that the majority of coastal sites in the world follow this pattern. Inman, "Application

group are correct, it is quite unlikely that seawater could have flooded the basin south of the Shalûf in the Mosaic age. If so, the site of Israel's crossing probably must be sought elsewhere.

The second group consists of a large number of writers who hold that the world sea level rose so far during the post-glacial climate optimum (roughly 7000 to 4000 BC) that it passed the current sea level and rose to a higher sea stand.⁶⁴ As a general rule, climatologists working in Europe and the Near East tend to support this perspective. The current debate over climate warming has brought new attention to this group since sea levels are already rising world wide. A rise of twenty feet would be possible if the Ross Ice Shelf melted in Antarctica. The whole ice shelf has been moving toward the sea by a few inches a year.

Climatologists who argue for a higher sea level in antiquity differ from each other on how much higher the sea level rose. They differ on when the highest sea level was reached. They differ especially on the rate at which this high sea level fell to current norms. These differences result from the particular characteristics of the sites at which each author has worked.⁶⁵ A few of these writers would suggest that the sea level had already fallen to the present level, or even below it, by the Mosaic age.⁶⁶ Others would affirm that there was indeed a higher sea stand in the second millennium BC. Several current writers in this group are worth noting.

Sirri Erinç analyzed seashore levels along the Black Sea and the Mediterranean coast of Turkey in 1978. He concluded that the sea level along Turkey's coast stood two to three meters higher near the post-glacial climatic optimum than it stands at present. He offered as proof of this conclusion widespread and well developed coastal terraces, old beach-rock formations, and coastal caves filled with marine sands and related objects. He concluded that the sea-level off the coast of Turkey has slowly regressed until the present level was reached sometime between 3000-2000 years BP (which is 1000 to 0 BC).⁶⁷ Ronald Pearson surveyed the question of sea level change in 1978. He noted authors who argued both for and against a higher sea stand in the post-glacial period. He noted that Buddemeier's dating of coral reefs pointed to a higher global

of Coastal Dynamics," 8. This is also the pattern implied by D. Prigent, L. Visset, M. T. Morzadec-Kerfourn, J. P. Lautrido, "Human Occupation of the Submerged Coast of the Massif Armoricaïn and Postglacial Sea Level Changes," In P. M. Masters, N. C. Flemming, *Quaternary Coastlines and Marine Archaeology: Towards the Prehistory of Land Bridges and Continental Shelves*, (London: Academic Press, 1983), 303-324.

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Evidence for the post-glacial climate optimum can also be seen in the fact that 6,000 years B.P., boreal forests extended north of the current tree line. Foley et al attribute this to warmer temperatures caused by variations in the Earth's orbit. See on this, J. A. Foley, et al., "Feedbacks between Climate and Boreal Forests during the Holocene Epoch," *Nature* 371 (1994): 52-54.

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It is striking that there is so much difference between sites. It is also striking that evidence for a higher sea stand comes largely from Europe and the Near East. There is almost no evidence for a higher sea stand in the Americas. It may well be that the higher shorelines were caused by chaotic geological conditions after the end of the ice age as the small European plates attempted to balance themselves after the weight of the ice was removed.

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Wreschner, for example, suggests that the sea level may have been up to three meters above its current stand between 8000 and 6500 BC. He then suggests that the sea level fell to five meters below its current stand by 4000 BC. Ernst E. Wreschner, "Sea Level Changes and Settlement Location in the Coastal Plain of Israel during the Holocene," *Eretz-Israel* 13 (1977): 277-282.

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Sirri Erinç, "Changes in the Physical Environment in Turkey since the End of the Last Glacial," In William C. Brice (ed.), *The Environmental History of the Near and Middle East Since the Last Ice Age*, (London: Academic Press, 1978), 96.

sea level. Buddemeier argued from his study of coral reefs that the world sea level stood significantly more than one meter above its present height from 3500-2000 BP (which is 1500 to 0 BC).⁶⁸

In 1985, A. Raban and E. Galili wrote an article on recent marine archaeological finds off the coast of Israel. They described a retaining wall at Tel Dor 2.5 meters above the current sea stand that had layers of wave deposited sea shells behind it. They concluded that the sea level must have stood higher than it presently does for the first half of the second millennium BCE.⁶⁹ C. E. Larsen and G. Evans surveyed sea level changes in the Persian Gulf in 1978. They noted evidence for a post-glacial sea level in the Persian Gulf approximately a meter higher than present levels, though the date of that higher level is unclear. This is interesting because the Persian Gulf and Red Sea water levels may have been comparable.⁷⁰ T. Al-Asfour described fossil shorelines along the coast of Kuwait. He noted that material from the most recent fossil shoreline above the current sea level was carbon dated roughly between 4570 and 3250 BP. He did not mention the height of this fossil shoreline above sea level.⁷¹

A key part of the sea level discussion is the rate at which glaciers formed after the post-glacial climate optimum.⁷² Glacial ice can be dated with some confidence. Its formation lowers the world sea level. So the age of glacial ice gives strong evidence for the rate at which the sea level fell to its current stand. A number of authors have commented on the age of glacial ice, and there is among them general agreement to the position which H. H. Lamb presented in his book *Climate: Present, Past and Future*.⁷³ Lamb noted that after the last ice age, the course of deglaciation necessarily lagged behind the warming trend in global temperature. He noted that the highest sea level was actually reached 4000 years ago at the end of the period of highest global temperature. He noted also that the glaciers and ice sheets were at their post-glacial minimum between 2000 and 1500 B.C. After that time, there was a major re-advance of glacial ice. In 1982, H. H. Lamb published another book surveying the history of global climate change entitled *Climate, History and the Modern World*. In this volume, he tied the higher post-glacial Red Sea level to Israel's exodus from Egypt. He claimed that the sea level should have been close to its highest level during the Mosaic age. He claimed that Israel's exodus from Egypt

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Ronald Pearson, *Climate and Evolution*, (London: Academic Press, 1978), 204.

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Avner Raban, Ehud Galili, "Recent Maritime Archaeological Research in Israel-A Preliminary Report," *The International Journal of Nautical Archaeology* 14 (1985): 335.

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Curtis W. Larsen, Graham Evans, "The Holocene Geological History of the Tigris-Euphrates-Karun Delta," In William C Brice (ed.), *The Environmental History of the Near and Middle East Since the Last Ice Age*, (London: Academic Press, 1978), 232.

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Taiba Al-Asfour, "The Marine Terraces of the Bay of Kuwait," In William C. Brice (ed.), *The Environmental History of the Near and Middle East Since the Last Ice Age*, (London: Academic Press, 1978), 245.

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For a discussion of the post-glacial climate optimum, see Foley, et al., "Feedbacks between Climate and Boreal Forests during the Holocene Epoch," 52-54. M. Schwarzbach, "The Climatic History of Europe and North America," in A. E. M. Nairn, ed. *Descriptive Palaeoclimatology*, (New York: Interscience Publishers Inc., 1961), 255-291.

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H. H. Lamb, *Climate: Present, Past and Future*, vol. 2, (New York: Barnes & Noble, 1977), 363. Felix G. Sulman, *Short- and Long-Term Changes in Climate*, (Boca Raton: CRC Press, 1982), II: 107.

could be explained by a short term fluctuation in the Red Sea level caused by a storm surge or a tidal wave in conjunction with the higher sea levels of that age⁷⁴

This position is not without its problems. The first is that it depends heavily on Climatological evidence. Climatology is still in many ways an infant science, and there is a great deal of skepticism in exegetical circles about the validity of its conclusions. For example, David Hopkins argued in his book *The Highlands of Canaan* that the correlation of various kinds of data only multiplies probable error.⁷⁵ It can only be hoped that as evidence continues to mount, climatologist will be able to draw a more consistent picture of past events.

The second problem with this position has rather more substance. If this region was a tidal basin in the Mosaic age, it is not completely clear what kind of vegetation would have grown in it. This fact raises a problem pointed out by Maurice Copisarow. He noted that the field of reeds could resemble the marshes of Egypt. However, the Red Sea shore is a very different kind of place. It is arid and saline, and no reeds grow there. So any attempt to link the Red Sea and the Bitter Lakes is unwarranted and unnecessary.⁷⁶ This is a strong argument. Reeds grow in fresh water, not in salt water. There are no reeds on the Red Sea coast. If the region south of the Shalûf was covered with sea water in the Mosaic age, the salt in this water may well have prevented the growth of reeds. If there were no reeds south of the Shalûf, how could this area have been the Yam Sûph, whatever its water level?

Three points can be raised in response to this argument. First, authors like Copisarow assume that reeds were not present south of the Shalûf in the Mosaic age because they are not present in the region today. This assumption is not at all safe. In marginal areas, even slight changes in precipitation can cause great changes in ecosystems. It is not at all clear whether fresh water plants were present south of the Shalûf when Israel left Egypt.

There are several possible ways that enough fresh water could have been present in this region to grow reeds. 1) Rainfall levels may have been higher at that time since Moses lived so much closer to the post-glacial climate maximum. 2) If Sesostris III did dig a Red Sea canal down to the basin, a substantial amount of fresh Nile water could have flowed into the north end of the basin. After the ancient fresh water canal was reopened in the last century, over 70,000 acres of land were irrigated with its water.⁷⁷ So such a canal could have created quite a large area of fresh water marsh plants. Karl Butzer noted that Egypt saw a period of unusually high Nile floods between 1800 and 1150 B.C.⁷⁸ So if a canal did exist down to the north end of this basin, it could have created an unusually great amount of water. The higher sea levels covering the south end of this region would have limited fresh water drainage from the north end. 3) While the amount of fresh ground water in the Mosaic age is very difficult to estimate, a dozen fresh

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H. H. Lamb, *Climate, History and the Modern World*, (New York: Methuen, 1982), 118, 119.

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David C. Hopkins, *The Highlands of Canaan*, (Decatur: Almond Press, 1985), 106. See also his discussion of climate change on pages 99-108.

76

Copisarow, "The Ancient Egyptian, Greek and Hebrew Concept of the Red Sea," 10.

77

Egerton, "An Engineer's View of the Suez Canal," 124.

78

Butzer, *Early Hydraulic Civilization in Egypt*, 33.

water wells can still be found near this basin.⁷⁹ This suggests that more water may have been present at an earlier time. 4) The thick clay floor of this basin points to abundant vegetation which must have grown in periods of increased moisture in the region.⁸⁰ 5) The crocodile and hippopotami bones found in the Shalûf sands suggest marsh conditions at some point in the past,⁸¹ though there is no clear evidence that either the clay or the bones date to the Mosaic age. So it is not impossible that there may have been enough fresh water in the region to support salt tolerant varieties of reeds, especially if Sesostris III actually did dig a Red Sea canal in the 12th Dynasty.

The second response to Copisarow's position is that it may not matter whether or not there were reeds south of the Shalûf. It makes little difference whether Israel crossed a fresh or salt water marsh. The conditions of Israel's sea crossing would have been quite similar either way. Either kind of marsh would have created an impassible quagmire preventing Israel's passage and drowning anyone attempting to cross.⁸² Either kind of marsh could have been blown dry by God's wind, and could have been flooded by a returning storm tide. The only questions are whether a salt marsh could have been called a *yam sûph*, and whether such a quagmire would have met the event's polemical purpose.⁸³

The final response to Copisarow's position is that the name *yam sûph* itself had a wider range of meaning than his position suggests. Several scholars have pointed out that the name *yam sûph* was clearly applied to the Red Sea in Numbers 33:10 and to the Gulf of Aqabah in 1 Kings 9:26.⁸⁴ It is possible that these references could either describe wadis where the influx of fresh water made small marshes possible, or shallow seashore areas where salt tolerant plants once

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Harel, "The Route of the Exodus," 40.

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Clay deposits can result from sediments in standing water, either fresh or marine. They can also result from the breakdown of soil feldspars by the acids resulting from rotting vegetation. Clay deposits are quite stable and hard to date. Ralph E. Grim, *Clay Mineralogy*, (New York: McGraw-Hill), 528-551. Jean-Claude Gall, *Ancient Sedimentary Environments and the Habitats of Living Organisms*, (Berlin: Springer, 1983), 48-54.

81

Karl Baedeker, *Egypt and the Sudan*, (Leipzig: Karl Baedeker, 1908), 182. At the height of the last ice age, hippopotami were common both in the Nile delta and in the rivers of Palestine. It is not clear how long they survived in the Isthmus of Suez. See on this, Llorca Kolska Horwitz, Eitan Tchernov, "Cultural and Environmental Implications of Hippopotamus Bone Remains in Archaeological Contexts in the Levant," *Bulletin of the American Schools of Oriental Research* 280 (1990): 67-76.

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It is very interesting that there were no roads or caravan routes across this region in antiquity. All caravan routes passed north by the Bitter Lakes, even routes heading south into Sinai. The implication of this is that the region south of the Bitter Lakes was impassable. See on this, Bartlett, *From Egypt to Palestine*, 162.

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The theological implications of this must be considered. Would a salt quagmire have made an appropriate polemic against Field of Reeds theology? It probably would not. Throughout Egypt's history, pictures and sculptures using this imagery always depicted fresh water plants.

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Davis, *Moses and the Gods of Egypt*, 169. James Montgomery suggested that the LXX translation of End Sea in 1 Kings 9:26 may point to a Hebrew original of *soph* instead of *sûph*. James A. Montgomery, "Hebraica: (2) *Yam Sûp* ('the Red Sea')=Ultimum Mare?" *Journal of the American Oriental Society* 58 (1938): 131-132. J. Simons suggested that *yam sûph* may have also been used to describe the Gulf of Aqabah in Num. 21:4, Deut. 1:40 and 2:1. Simons, *The Geographical and Topographical Texts of the Old Testament*, 258, 259. It is unclear in the text whether these references refer to the Red Sea or the Gulf of Aqabah, though one or the other must be in view.

lived. However it is much more likely that they point to a use of the term to describe salt water plants. Several authors have noted that Jonah 2:5 clearly used the word *sûph* to describe salt water sea weed.⁸⁵ G. I. Davies noted that some Nineteenth Century authors identified the *yam sûph* in terms of the great quantities of vegetation observed in the Gulfs of Suez and Aqabah.⁸⁶ Several kinds of water plants have been suggested as *sûph*, and the shallow marsh north of Suez may well have been a sea of such *sûph* in the Mosaic age.

It is fair to say that H. H. Lamb's observation in *Climate, History and the Modern World* is well taken. It can not be proven that the Gulf of Suez saw a higher sea level in the Mosaic age than it sees today. However, there is ample evidence that such a higher sea level might have existed. If sea level in the gulf was a meter or two higher in the Mosaic age, the Red Sea would have flooded the great basin south of the Shalûf. This basin would have been a clay quagmire which could not have been crossed on foot. It may have been a Sea of Reeds, though the basin's actual vegetation is difficult to determine. It could have been blown dry by a strong east wind, enabling Israel to cross. Then a Red Sea storm surge could easily have drowned Pharaoh's forces.

While this sea crossing location can not be proven to be correct, there is much to commend it. It is consistent with the Old Testament's description of the region as a Sea of Reeds. It is also consistent with claims by both the LXX and the New Testament that Israel crossed the Red Sea. This explanation also requires only a limited appeal to the miraculous. While God can do very unusual things, He does seem to work through natural means more often than not. It is therefore appealing to see this event as a miracle of timing rather than a gross violation of the natural physical laws which God has written into His creation.

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Francisco, "The Exodus in its Historical Setting," 17.

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Davies, *The Way of the Wilderness*, 70.