

Another Look at the Genesis Flood (Updated 2/2011)

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The great flood in Genesis 6–9 is a puzzle. The author describes it as having taken place in history, but fitting it into history is very difficult. Scholars have suggested many different ways of doing this, from identifying it with a major flood in Mesopotamia, to making it responsible for most of the sedimentary rocks in the earth's crust.¹ Here I take another look at the problem.²

Type of flood

According to Genesis, the waters of the Flood rose and then receded. This immediately eliminates some of the identifications scholars have suggested, e.g. with a surge in the flooding that led to the formation of the Persian Gulf when sea levels rose after the last Ice Age,³ or with a rapid expansion of the Black Sea through a breach of the Bosphorus.⁴

Extent of flood

According to Genesis, God 'saw that the evil of mankind⁵ was great on the land-area (*'erets*)' (6:5) and said, 'I will wipe out mankind whom I have created from the face of the land-area ...' (6:7). He told Noah, 'I will bring a flood of waters upon the land-area to destroy all flesh in which there is the breath of life from under the heavens' (6:17). The resulting flood extended over 'the face of all the land-area' (8:9).

Here I have tried to capture the general sense of the word *'erets*. In Genesis 1–11, the author uses it to refer to land as opposed to sky (1:1) or seas (1:10), to a particular land (2:11–13 etc.), and to the land area occupied by Noah's descendants after their dispersal (10:32, 11:8–9).⁶ He also uses it of the 'world' of Noah's descendants (11:1, 9a). In his account of the Flood, he does not specify a particular land, so he must be referring to land more generally.

¹ See, e.g., John C. Whitcomb, Jr., and Henry M. Morris, *The Genesis Flood* (Philadelphia: Presbyterian and Reformed, 1961); Lloyd R. Bailey, *Noah* (University of South Carolina Press, 1989); Davis A. Young, *The Biblical Flood* (Grand Rapids: Eerdmans / Carlisle: Paternoster, 1995); William Ryan and Walter Pitman, *Noah's Flood* (New York: Simon and Schuster, 1999); Robert M. Best, *Noah's Ark and the Ziusudra Epic* (Fort Myers, Florida: Enil Press, 1999); Carol A. Hill, 'A Time and a Place for Noah,' *Perspectives on Science and Christian Faith* 53 (2001), 24–40, and other articles.

² Cf. P.G. Nelson, *Big Bang, Small Voice: Reconciling Genesis and Modern Science* (Latheronwheel, Caithness, Scotland: Whittles, 1999, repr. 2003), 56–62, 65–78 (distributor: bmdpgn@amservice.com).

³ Walter S. Olson, 'Has Science Dated the Biblical Flood?' *Zygon* 2 (1967), 272–8; Bailey, *Noah*, 40–5; J.T. Teller, K.W. Glennie, N. Lancaster, and A.K. Singhvi, 'Calcareous Dunes of the United Arab Emirates and Noah's Flood: the Postglacial Reflooding of the Persian (Arabian) Gulf,' *Quaternary International* 68–71 (2000) 297–308.

⁴ Ryan and Pitman, *Noah's Flood*.

⁵ Heb. *hā'ādām*, here collective.

⁶ The resulting peoples are listed in 10:2–31. Many cannot be identified with any certainty (see commentaries). Those that can occupied an area encompassing the Eastern Mediterranean and Middle East.

The author also says that the floodwaters at their height covered ‘all the high peaks (*harim*) under all the heavens’ (7:19–20). Here I have tried to capture the general sense of the word *har*, which can refer to a hill or a mountain.⁷

The land area in the narrative includes ‘the peaks of Ararat’ (8:4). Scholars identify these as mountains north of Mesopotamia, on the plateau that runs from modern Turkey through Armenia to Iran. The highest of these, modern Mount Ararat, is 5,200 metres or 17,000 feet above sea level. Thus if ‘all the high peaks’ were covered, the greater part of the earth as we know it today must have been covered.

For the Flood to have been on this scale, God would have had to have acted supernaturally. This he could have done. There is still, however, a problem. This is that Noah would have had to have taken on the ark animals from distant parts of the earth. Now he could certainly have done this if God brought these animals to him supernaturally, but then we would have expected him to report that animals came to him that he had not seen before.

A possible solution to this problem lies in the conception the ancient Hebrews may have had of the universe. Some references in the Old Testament suggest that they might have thought of the sky as being a solid dome, which rested on the distant mountains of the land area they knew. Thus the author of Genesis describes the sky as a *raqia*‘ (1:6–8), a term derived from a verb meaning ‘to beat, stamp, or spread’, and used of the working of metals.⁸ Elihu asks Job, ‘Can you, like him, spread out the heavens, strong as a cast metal mirror?’ (Job 37:18). Further, David speaks of ‘the foundations of the heavens’ (2 Sam. 22:8), and Job of ‘the pillars of the heavens’ (Job 26:11), which may refer to distant mountains.

These references may all, of course, be figurative or poetic. We speak of a ‘cloudburst’ even though we do not believe that clouds are balloons of water. However, if Noah did have such a conception of the world, then when he said that ‘all the high peaks’ were covered, he might have excluded the distant mountains. If these included the higher mountains of Ararat, the flood waters would not have been as deep, and would have been confined to a smaller area.

Some support for this interpretation is provided by the description of the Flood given by the Jewish philosopher Philo of Alexandria, writing in the first century AD. He visualized the Flood as covering all the mountains within the world as he knew it, but not those on the edge of it:⁹

... the flood was not a trifling outpouring of water but a limitless and immense one, which almost flowed out beyond the Pillars of Hercules and the Great Sea. Therefore the whole earth and the mountainous regions were flooded.

The Pillars of Hercules are the rocks on either side of the Strait of Gibraltar.

⁷ See lexicons.

⁸ Derek Kidner, *Genesis* (London: Tyndale, 1967), 47.

⁹ *Questions and Answers on Genesis* 2:28 (Loeb edn., tr. Ralph Marcus). (Marcus identifies the Great Sea as the Atlantic, but it usually refers to the Mediterranean.)

Where?

If the Flood was confined to the land area known to Noah, where was this?

Genesis gives the impression that the first human population lived around Eden (2:8) and remained in the same general area until the Flood. The author does not refer to the dispersal of populations until after the Flood (Chapters 10–11). Cain settled east of Eden (4:16), but Noah knew enough about his descendents to preserve their history (4:17–24). Jabel’s family were nomads (4:20), but there is no indication that any group moved permanently out of the area. If they did, the author omits these from his narrative.¹⁰

The author says that Eden was ‘in the east’ (2:8). Commentators are generally agreed that this means ‘east of the land of Israel’. This points to Mesopotamia as a possible location. Mesopotamia, however, is not mentioned until Chapters 10–11 (‘Shinar’).

The author also gives the location as the area in which the rivers Pishon, Gihon, Hiddekel (Tigris), and Perath (Euphrates) have their headwaters (2:10–14). The first two rivers cannot be identified, but the Tigris and Euphrates have their headwaters in the highlands north of Mesopotamia, on the Turkish-Iranian plateau. However, Havilah and Cush, the countries around which the author says the Pishon and Gihon flow, are identified elsewhere in the Old Testament as respectively Arabia (Gen. 25:18) and Ethiopia (Ezek. 29:10), south of Mesopotamia.

A reasonable solution to this problem is to focus on the Tigris and Euphrates, whose identification is certain. Anyone knowing these rivers would have at least a general idea of where they flowed from. This places Eden on the highland plateau north of Mesopotamia. The Pishon and the Gihon are then two of the other rivers that have their headwaters in this area, and Havilah and Cush are different from Havilah and Cush elsewhere in the Old Testament. Slight support for this is that Havilah and Cush are descriptive names (‘swirling or sandy’ and ‘dark’ respectively¹¹), which could have been applied to more than one land. Also, *hawilah* carries the definite article in 2:11 (*hahawilah*) but not elsewhere.

Some commentators try to resolve the puzzle by suggesting that the author is describing the river system in an upstream direction.¹² They identify the river in Eden as the Persian Gulf, the ‘heads’ as river mouths, and the direction of flow as that of an incoming tide. The Assyrians called the Gulf a river (*nar marratum*, ‘bitter river’), and the Sumerians apparently thought that high water levels in the Tigris and Euphrates came from the Gulf. However, the narrative (lit. ‘a river [kept] going out from Eden to water the garden, and from there it divided’) describes a river with a continuous (not tidal) flow,¹³ and the watering of Paradise by a ‘bitter’ river seems unlikely. If Eden had been in Mesopotamia, the author could surely have said so.

¹⁰ Cf. Discussion.

¹¹ See lexicons.

¹² E.A. Spieser, ‘The Rivers of Paradise,’ in *Oriental and Biblical Studies*, ed. J.J. Finkelstein and M. Greenberg (Philadelphia: University of Pennsylvania Press, 1967), 23–34; Kidner, *Genesis*, 63–4.

¹³ Gordon J. Wenham, *Genesis 1–15* (Waco, Texas: Word Books, 1987), 46, note 10.b.

Another possibility is that Genesis describes the geography of Eden before sea levels rose after the last Ice Age and flooded the basin that now forms the Persian Gulf. This basin was watered mainly by the Tigris, Euphrates, Karun, and Wadi Batin Rivers, which came together to form the Ur-Schatt River, now under the sea.¹⁴ The Karun runs down the mountains east of the Tigris, through an area Speiser identified as the Cush of 2:13.¹⁵ The Wadi Batin comes in from Arabia in the west, a country that was noted for its gold and called Havilah in 25:18.¹⁶ The basin was also watered by subterranean aquifers, calling to mind the ‘springs of the great deep’ in 7:11 and 8:2. The correspondence here with Genesis is very striking, and suggests that the Genesis flood was a temporary deluge of the basin and Tigris/Euphrates valley before the permanent flooding that formed the Gulf. Against this, however, is the fact that the author describes one river dividing into four, not four rivers converging into one.¹⁷ Tidal flows cannot be invoked in this case since the Tigris, Euphrates, Karun, and Wadi Batin converged above sea level.

This takes us back to the plateau north of Mesopotamia. Bolder scholars have identified the Pishon and the Gihon with particular rivers on this plateau. The most convincing is the identification of the Gihon with the Araxes/Aras, which flows into the Caspian Sea.¹⁸ This river was once called the Gaihun. Also, *b^edōlah* and *šōham* in 2:12 (LXX *anthrax* and *prasinus*) could refer respectively to obsidian and jadeite, which are found, along with gold, on the plateau.¹⁹

There is, of course, no river on the plateau that divides into the Tigris, Euphrates, and two other rivers. All the main rivers have separate sources. These do, however, lie in the same general region, along with the mountains of Ararat. It is possible, therefore, that Noah’s world lay somewhere in this region, with peaks rising within it, and more distant peaks around it.

Rain on the plateau for ‘forty days and forty nights’ (Gen.7:12) would have caused widespread flooding. If rivers became dammed, a large area could have been covered. Areas around the plateau could also have been hit. Even where waters did not accumulate, there could still have been loss of life.

When?

A date for the Flood can be calculated from the genealogy in Genesis 11 and other data in the Old Testament. The calculation assumes that the genealogy is complete and that the numbers in it are real.²⁰ Ussher obtained 2349 BC in this way. Driver

¹⁴ Jeffrey I. Rose, ‘New Light on Human Prehistory in the Arabo-Persian Gulf Oasis,’ *Current Anthropology* 51 (2010), 849–83.

¹⁵ ‘The Rivers of Paradise,’ 25–6.

¹⁶ Wenham, *Genesis 1–15*, 65.

¹⁷ S.R. Driver, *The Book of Genesis*, 14th edn. (London: Methuen, 1943), 39.

¹⁸ See David M. Rohl, *A Test of Time*, Vol. 2, *Legend* (London: Century, 1998), Chap. 1.

¹⁹ James Mellaart, *The Neolithic of the Near East* (London: Thames and Hudson, 1975), *passim*.

²⁰ Some scholars think that the numbers in the Genesis genealogies are symbolic, but this is doubtful [see my note, ‘Numerology in Genesis,’ *Perspectives on Science and Christian Faith* 60 (2008), 70–1]. Many of the numbers could be rounded, hence the non-random distribution of last digits [cf. Carol A. Hill, ‘Response to P.G. Nelson’s “Numerology in Genesis”,’ *ibid.* 60 (2008), 144]. If numbers ending in 0 and 5 are omitted, the chances of the remaining numbers ending with the digits they do are relatively high (one in only 4⁵ in the case considered by Hill).

revised his calculations and obtained 2501, 2936, or 3066 BC depending on the version (Hebrew, Samaritan, or Greek respectively).²¹ The same calculations gave 1491 BC for the date of the Exodus.

Driver, however, calculated the date of the Exodus from Egyptian historical data to be about 1230 BC. Scholars are divided over whether the earlier or the later date is correct.²² The later date gives about 2240, 2675, or 2805 BC for the Flood.

Radiocarbon dating does not help.²³ If the proportion of radiocarbon in the atmosphere is set equal to the present-day value, the dates obtained agree with those derived from Egyptian historical data by conventional methods. When, however, dates are calibrated by matching and counting tree rings (dendrochronology), significantly earlier dates are obtained (about 300 years earlier at the time of the Exodus). This supports the Biblical dating, but creates problems for Egyptologists, especially for those who think that even the conventional historical dates are too early.²⁴

Because of this, I shall in the following discussion give two dates for events. The later one will be the conventional historical date or an uncalibrated radiocarbon date; the earlier one will be a calibrated radiocarbon date or the conventional historical date adjusted to be consistent with calibrated radiocarbon dates.²⁵ This avoids the problem of inadvertently comparing dates on different scales. The dates in bold print are those given by authors.

Now a problem with all of the above dates for the Flood is that they fall in a period of history when a wide area of the ancient world was known, and no flooding of the whole area took place. There were repeated floods in Mesopotamia, including one that left deposits of clay at Shuruppak and Kish in about 3600/**2900** BC, near to the Biblical date.²⁶ There are also flood stories from the area, and a reference to a flood in a king list.²⁷ However, there are no signs of a widespread flood (a layer of clay or, where clay has been washed away, a break in culture) in the Middle East at this time.²⁸ The history of Egypt, for example, is unbroken from the beginning of the Naqada period (about **4000/3300** BC) onwards.²⁹ The Nile overflowed annually, in some years more than others, but the population was never wiped out.

²¹ Driver, *The Book of Genesis*, xxv–xxxii.

²² K.A. Kitchen, *Ancient Orient and Old Testament* (London: Tyndale, 1966), *On the Reliability of the Old Testament* (Grand Rapids: Eerdmans, 2003); David M. Rohl, *A Test of Time*, Vol. 1 (London: Century, 1995).

²³ See *Big Bang, Small Voice*, 65–7.

²⁴ See, e.g., Rohl, *A Test of Time*, Vol. 1, App. C. For a review of chronologies based on historical data, see John Bimson, *(When) Did It Happen?* (Cambridge: Grove, 2003).

²⁵ See *Big Bang, Small Voice*, 66, Table 5.1. I have rounded very approximate dates.

²⁶ M.E.L. Mallowan, 'Noah's Flood Reconsidered,' *Iraq* 26 (1964), 62–82.

²⁷ James B. Pritchard (ed.), *Ancient Near Eastern Texts* (Princeton University Press, 2nd edn., 1955), 42–4, 93–7, 104–6, 265–6; Samuel Noah Kramer, 'Reflections on the Mesopotamian Flood: The Cuneiform Data New and Old,' *Expedition* 9, No.4 (1967), 12–8.

²⁸ See James Mellaart, *Earliest Civilizations of the Near East* (London: Thames and Hudson, 1965), 12.

²⁹ Stephen Quirke and Jeffrey Spencer (eds.), *The British Museum Book of Ancient Egypt* (London: British Museum Press, 1992).

Many scholars resolve this problem by confining the Flood to Mesopotamia.³⁰ The flood stories from this area are in some ways very similar to the one in Genesis.³¹ A man builds a boat to escape from the flood, and takes on to it his family and animals. When the flood subsides, he sends out birds to see whether they return. However, there are also big differences. Besides the polytheism in the stories, the floodwaters take only seven days to rise, and seven or so days to fall (the Genesis flood lasted over a year). The boat grounds on 'Mount Nisir/Nimush', identified as a peak on the Turkish-Iranian plateau *east* of Mesopotamia.³² The hero's descendents do not go on to become the nations listed in Genesis 10. The two events were evidently therefore different. If the Flood had been in Mesopotamia, the author could have stated this, as in 11:2.

An alternative approach is to take the genealogy in Genesis 11 as selective, and dating the Flood earlier. Many genealogies in the Bible are selective, and use 'X fathered Y' to mean 'X fathered the line that led to Y'.³³ However, those in Genesis 5 and 11 are exceptional in providing information (the age at which each man fathers a named son) that enables a chronology to be constructed from them if they are complete, but which serves no obvious purpose otherwise.

However, a possible indication that these genealogies are selective is the occurrence of an extra name (Cainan) in the ancient Greek version of Genesis 11 as compared with the Hebrew and the Samaritan version.³⁴ This could mean that all three versions are shortened versions of a longer one.³⁵ There is also a comment by an early Armenian scholar on Noah being the tenth from Adam in Genesis 5: 'Some used to say that there were innumerable aeons from Adam to Noah'.³⁶

Now there were floods in Mesopotamia before the Biblical date. There was one that left a layer of clay at Ur, which is dated about 4800/**4000** BC, and one that left a layer at Nineveh, dated about 5100/**4300** BC.³⁷ David Rohl associates the Genesis flood with the first,³⁸ and Victor Pearce with the second.³⁹ Once again, however, while there may have been flooding elsewhere, there are no signs that this extended right across the ancient world.⁴⁰

An alternative approach to dating the Flood is to match events in Genesis *before and after* the Flood with archaeology. There are two events that match very well. One is

³⁰ Among recent authors, Best, *Noah's Ark and the Ziusudra Epic*; Hill, 'A Time and a Place for Noah,' and other articles.

³¹ Pritchard, *Ancient Near Eastern Texts*, 42-4, 93-7, 104-6.

³² See Ephraim A. Speiser, 'Southern Kurdistan,' *Annual of the American Schools of Oriental Research* 8 (1926/7), 1-42 (17-8). Best thinks the reference is to a sand bank in the Persian Gulf (*Noah's Ark and the Ziusudra Epic*, 277).

³³ Francis A. Schaeffer, *No Final Conflict* (London: Hodder and Stoughton, 1975), Chap. 4.

³⁴ Driver, *The Book of Genesis*, 138. Luke includes Cainan (3:36).

³⁵ Jude will have used a standard version in Jude 14.

³⁶ Insertion in Philo's *Questions and Answers on Genesis* 1.87 (Loeb edn., 55, note *i*).

³⁷ William H. Stiebing, Jr., 'A Futile Quest: The Search for Noah's Ark,' *The Biblical Archaeology Review* 2, No. 2 (1976), 1, 13-20. I am very grateful to Carol Hill for this reference.

³⁸ Rohl, *A Test of Time*, Vol. 2, Chap. 5.

³⁹ E.K. Victor Pearce, *Who Was Adam?* 3rd edn. (Walkerville, South Africa: Africa Centre for World Mission, 1987), Chap. 9; *Evidence for Truth*, Vol. 1 (Eastbourne: Evidence Programmes, 1993), Chaps. 12-5.

⁴⁰ See Mellaart, *Earliest Civilizations of the Near East*, 12.

the beginning of farming and metalworking, which Genesis sets before the Flood.⁴¹ The other is the movement of population from the Turkish-Iranian plateau into Mesopotamia, which follows the Flood.

According to archaeologists, human beings began to cultivate wheat and barley, domesticate sheep and goats, and work native copper and iron, in the highlands north of Mesopotamia.⁴² It is on the Turkish-Iranian plateau that wild forms of wheat and barley grow, there are wild sheep and goats, and copper and meteoritic iron occur naturally. There was early farming also in the neighbouring Levant, where wild wheat and barley grow. The author of Genesis gives the impression that these activities originated in and around Eden (3:23; 4:1–2, 20–22).⁴³ If Eden was on the plateau, and early farming spread from the plateau to the Levant, these accounts match.

Archaeologists have evidence of cultivation of wild forms of barley and wheat from about **9500/8500 BC**,⁴⁴ and of domesticated forms from about **9000/8000 BC**.⁴⁵ They have evidence of metalworking from about **8500/7500 BC**.⁴⁶ Genesis sets the beginning of metalworking (4:22) after that of farming. (3:23, 4:1–2).

These activities could, of course, have begun earlier than these dates and not left any evidence. Indeed, if anthropologists are right with their date of origin of modern humans, some humans must have tilled the ground before 9500/8500 BC, because Adam did (3:23).⁴⁷ I shall assume, however, that, by the time of the Flood, these activities had become sufficiently well established as to leave evidence. This dates the Flood to after about 8500/7500 BC.⁴⁸

Consider now the movement of population described in Genesis. As we have seen, the author gives the impression that the first human population lived around Eden, which we have located on the plateau north of Mesopotamia. Then came the Flood, and the grounding of the ark on ‘the peaks of Ararat’ (8:4), in the same general region. After this, Noah’s descendents became the various nations known to the ancient Hebrews (10:1–32). The author explains that they ‘journeyed in the east [i.e. east of the land of Israel]’ and ‘found a plain in the land of Shinar [Mesopotamia], and dwelt there’ (11:1–2). In Shinar, they built a city, with a very high tower (11:3–4).⁴⁹ God

⁴¹ Victor Pearce thinks that the building of cities also came before the Flood (*Who Was Adam?*, 78). He bases this on the RSV of 4:17, ‘Cain built a city’ (48). However, the Hebrew term ‘*ir*’ denotes a settlement of any size.

⁴² Mellaart, *The Neolithic of the Near East*; Daniel Zohary and Maria Hopf, *Domestication of Plants in the Old World*, 2nd edn. (Oxford University Press, 1993); David R. Harris (ed.), *The Origins and Spread of Agriculture and Pastoralism in Eurasia* (London: UCL Press, 1996). Metals were not yet being smelted.

⁴³ Genesis 4:22 describes Tubal-Cain as a ‘sharpener’ (Heb.) or ‘hammerer’ (Gk.) of copper and iron.

⁴⁴ See Mellaart, *The Neolithic of the Near East*, 48–51. [I have included his ‘intermediate period’ of cultivation (50) and calibration (283).]

⁴⁵ *Ibid.*; Jared Diamond, ‘Location, location, location: the first farmers,’ *Science* 278 (1997), 1243–4.

⁴⁶ Mellaart, *ibid.*, 52–4.

⁴⁷ See my article, ‘Another look at mature creation,’ on-line.

⁴⁸ This means that Noah’s world was wider than I envisaged in *Big Bang, Small Voice*, 71.

⁴⁹ They said that they wanted to make a name for themselves, lest they became scattered (v. 4). This suggests that they thought that there would be people in the area who might attack them, as if there were other survivors of the Flood. In practice, however, they did not encounter opposition (at least, there is no reference to this in the narrative).

responded to this display of human arrogance by confusing their language and scattering them (11:5–9).

Now there is archaeological evidence for the movement of population from the Turkish-Iranian plateau on to the Mesopotamian plain.⁵⁰ Archaeologists date this to **6000/5000–4000/3300 BC**.⁵¹ This dates the Flood to before $(6000/5000 + x)$ B.C., where x is the time it took for Noah's family after the Flood to build up to the population that moved into Mesopotamia. If x was about 1,000 years, this dates the Flood to before about 7000/6000 BC.

These considerations suggest that the Flood took place between about 8500/7500 and 7000/6000 BC.

One further consideration is that the author of Genesis says that, after the Flood, 'Noah, a man of the ground, began and planted a vineyard' (9:20 lit.). This could mean (a) that the first thing he did was to plant a vineyard ('began [tilling the ground again] and planted ...'), or (b) that he did something that he had not done before ('began [something new to him] and planted ...'), or (c) that he did something that no one else had done before ('began [something new in the world] and planted ...').⁵² If (a) or (b) is correct, the Flood took place after viticulture began; if (c), it took place before.

Now, archaeologists have found seeds having the distinctive shape of those from cultivated vines at sites on the Turkish-Iranian plateau dating from about 7000/**6000** BC.⁵³ Cultivation will have started with wild vines, which grow on parts of the plateau, before this – perhaps not long after agriculture became established (9000/8000 BC, above). Thus (a) and (b) place the Flood after, and (c) before, sometime between 9000/8000 and 7000/6000 BC. A date within the limits calculated above (8500/7500 and 7000/6000 BC) is therefore consistent with (a), (b), or (c).

Now, trade routes between 8500/7500 and 7000/6000 BC extended beyond the plateau north of Mesopotamia to the Levant and other neighbouring areas.⁵⁴ This points to a storm that not only created a flood on the plateau, but also devastated other parts. Archaeological data for this period are sparse, but at sites that have been studied, there are signs of breaks in occupation around 8300/**7300** and 6900/**6000** BC.^{55,56} Archaeologists attribute the latter to a reduction in rainfall, but cannot readily explain the former.

⁵⁰ Geoffrey Barraclough and Geoffrey Parker, *The Times Atlas of World History*, 4th edn. (London: Times Books, 1993), 40–1.

⁵¹ *Ibid.*

⁵² Cf. A.B. Davidson, *Hebrew Syntax*, 2nd edn. (Edinburgh: T. & T. Clark, 1896), Sect. 83, Rem. 2; Kidner, *Genesis*, 103, n. 1.

⁵³ Patrick E. McGovern, Ulrich Hartung, Virginia R. Badler, Donald L. Glusker, and Lawrence J. Exner, 'The Beginnings of Winemaking and Viniculture in the Ancient Near East and Egypt,' *Expedition* 39, No. 1 (1997), 3–21; Rod Phillips, *A Short History of Wine* (London: Penguin, 2000), Chap.1.

⁵⁴ Mellaart, *The Neolithic of the Near East*, 9, 40–1.

⁵⁵ Charles Keith Maisels, *The Emergence of Civilization* (London and New York: Routledge, 1990), 82. For details of the first break, see Mellaart, *The Neolithic of the Near East*, 48 (Mureybet, Abu Hureyra), 51 (Jericho). On the second, see *ibid.*, 67–9.

⁵⁶ Patrick O'Connell arrived at a date of 7000 BC for the Flood, but by conflating evidence of flooding in the ancient world [*Science of To-day and the Problems of Genesis* (Minnesota: Radio Replies Press

My tentative conclusion, therefore, is that the Flood took place in about 8300/7300 BC. This is if farming and metalworking were sufficiently well established by the time of the Flood as to have left remains. If this assumption is wrong, the Flood could have been earlier than this.

The early date for the Flood means that the flooding in Mesopotamia that gave rise to flood stories similar to the one in Genesis was much later. The reason for the similarity may be that the hero had some knowledge of Noah, and followed his example.

The ark

There is indirect evidence for the use of boats at the above date for the Flood.⁵⁷ Possible remains of boats have been found by the Persian Gulf dating from about 6000/5000 BC, and in the upper Euphrates valley dated 3800/3100 BC.⁵⁸

According to Genesis, God told Noah to make the ark of *gopher* wood and cover it with *kopher* (6:14). These terms are used only here in the Old Testament. This is consistent with placing Noah on the edge of the Old Testament world. *Kopher* would have been some form of bitumen, sources of which occur all over the Middle East, including the Turkish-Iranian plateau.⁵⁹ The ark was remarkably large (6:15), even by later standards.

Discussion

Christians who believe that the Flood was global, and caused the formation of most of the sedimentary rocks in the earth's crust, will be disappointed by my conclusion. Let me say at once, therefore, that it is still possible to explain the formation of these rocks within a literal understanding of Genesis, as I have shown elsewhere.⁶⁰

There are in any case problems with the idea that most sedimentary rocks were formed in the Flood. Quite apart from the geological difficulties,⁶¹ the author of Genesis describes the rivers in Eden before the Flood as if his readers knew them (2:10–14). Today the Tigris and Euphrates flow through the Mesopotamian plain over layers of sedimentary rock thousands of feet thick.⁶² Before these were laid, the rivers in the region would have been very different. Further, Noah correctly anticipated that

Society, 1959), Book II, Part I]. On his explanation of the salt desert ('Great Kavir') on the Iranian plateau (57–9), compare M.H. Ganji, 'Post-Glacial Climatic Changes on the Iranian Plateau,' in William C. Brice (ed.), *The Environmental History of the Near and Middle East Since the Last Ice Age* (London: Academic Press, 1978), Chap. 10.

⁵⁷ Seán McGrail, *Boats of the World: from the Stone Age to Medieval Times*, paperback edn. (Oxford University Press, 2004), vii–viii.

⁵⁸ *Ibid.*, viii–ix.

⁵⁹ Z.R. Beydoun, 'Prehistoric, Ancient and Mediaeval Occurrences and Uses of Hydrocarbons in the Greater Middle East Region,' *Journal of Petroleum Geology* 20 (1997), 91–5.

⁶⁰ *Big Bang, Small Voice*, Part III.

⁶¹ See, e.g., Young, *The Biblical Flood*.

⁶² See Carol A. Hill, 'The Garden of Eden: A Modern Landscape,' *Perspectives on Science and Christian Faith* 52 (2000), 31–46, Fig. 3. (Her location of Eden is different from mine.)

a dove would find olive trees growing after the waters had subsided (8:8–11). There could not therefore have been a major reworking of the earth's crust in the Flood.

What happened in the Genesis flood seems to have been played out, at different times, in various parts of the world. There are an extraordinary number of flood stories from all over the globe.⁶³ Major flooding was doubtless a common phenomenon at the end of the last Ice Age. To this extent, the Genesis flood is a 'type' of all the others, in showing God's wrath at the behaviour of his creatures, while preserving a few to allow them to continue. Noah is picked out because he fathered the line that led to Abraham and the nation of Israel, from which would come the Messiah and 'light of the world'.

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⁶³ Bernhard Lang, 'Non-Semitic Deluge Stories and the Book of Genesis: A Bibliographical and Critical Survey,' *Anthropos* 80 (1985), 605–16.