CHAPTER 4. NOAH’S FLOOD: UNIVERSAL OR LOCAL?

Genesis 7:19. And the waters prevailed exceedingly upon the earth; and all the high hills that were under the whole heaven were covered.

In the last chapter we discussed two Christian views on the age of the Earth: the Young Earth Creationist view that the Earth is 6000 years old (10,000 years maximum), and the Old Earth Creationist view that the Earth is 4.5-4.6 billion years old. A question that arises from the discussion in the last chapter on the history of geology and Earth’s geologic processes is: How could all of the sedimentary rock layers on Earth have formed within so short a time span as 6000 years? The answer given by Young Earth Creationists is that all of this sedimentary rock formed in Noah’s Flood, and the reason that this scenario is possible is because Noah’s Flood was “universal” – that is, it extended over the entire planet Earth, even covering the highest mountain tops.

The controversy covered in this chapter, then, logically follows the debate of the last chapter: Was Noah’s Flood universal or local? In this chapter we will discuss the evidence for and against a universal flood, and in the next chapter (Chapter 5) we will examine the various claims of Flood Geology. Here are three different positions that people take on the subject of Noah’s Flood:

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<tr>
<th>CHRISTIAN</th>
<th>NON-CHRISTIAN</th>
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<tr>
<td><strong>Young-Earth Creationist</strong></td>
<td><strong>Old-Earth Creationist</strong></td>
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<tr>
<td>Universal</td>
<td>Local</td>
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<td>Noah’s Flood covered the</td>
<td>Noah’s Flood was local to the</td>
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<td>entire planet Earth</td>
<td>Mesopotamian region</td>
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A Time and Place for Noah

Before we cover the topic of the universality of Noah’s Flood, we must first ask the question: Who was Noah? Was he a mythological person or a real historical person? If he was a real person, then where does the Bible place him in time and space and what was his cultural background and worldview perspective? To answer these questions, we must go to the Bible, since this is the primary document we have concerning Noah and the Flood. However, it is not the only document. Cuneiform tablets have been discovered that refer to a great flood that inundated the Mesopotamian region. Other ancient cuneiform tablets have revealed to scholars what life was like back in Noah’s time.

When Did Noah Live?

Biblical and archeological evidence constrain the time when Noah could have lived. The Bible dates Noah because it traces the genealogy of Adam to Abraham through the line of Seth (Gen. 5). Abraham is known to have lived about 2000-1900 B.C.,¹ and since the Bible chronologically puts the birth of Noah approximately 900-1000 years before Abraham, it thus places Noah in a time frame of about 3000-2900 B.C. While a "generation" in the Bible does not necessarily mean a direct father-to-son descent (as was discussed in Chapter 3), it is still notable that the Bible lists nine "generations" between Adam and Noah and seven "generations" between Adam (through Cain) and Jabal, Jubal, and Tubal-cain (Gen. 4). Assuming the average length of a generation was the same for both lines (a 40-year “full generation”),² this places Jabal, Jubal, and Tubal-cain sometime before Noah – perhaps eighty or so years before. The importance of Jabal, Jubal, and Tubal-cain to this discussion is that the Bible mentions their occupations, which can be linked to archaeological evidence. And Lamech took unto him two wives: the name of the
one was Adah, and the name of the other, Zillah. And Adah bore Jabal: he was the father of such as dwell in tents, and of such as have cattle. And his brother's name was Jubal: he was the father of all such as handle the harp and pipe. And Zillah, she also bore Tubal-cain, an instructor of every craftsman in bronze and iron: and the sister of Tubal-cain was Naamah (Gen. 4:19-22).

The word "father" in verses 20 and 21 implies that Jabal and Jubal were the first to practice these occupations. However, the word can also be translated as "ancestor", which alternately suggests that these men might have been only the first of their lineage to practice these professions. Cuneiform texts from Uruk, one of the earliest cities to exist in southern Mesopotamia (Fig. 4.1), mention the following occupations as being already established by 3100-3000 B.C.: plowman (farmer), shepherd (sheep and goats), cowherd (cattle), fisherman (fish), smith (worker in metal), weaver (of textiles), and potter (maker of pottery). Since these occupations were already in existence by 3100 B.C., it implies that both Jabal and Tubal-cain lived around or before (if they were the first) this time.

Jabal, the father of such as dwell in tents and have cattle, is difficult to place time-wise in an archeological context. It is known that the domestication of cattle, sheep, and goats occurred around 6500 B.C. in areas surrounding Mesopotamia. It is also known that nomads occupied the Negev (west of southern Mesopotamia) by the Early Bronze Age (~3000 B.C.). These ancient nomads appear to have had a similar life-style to that of modern-day Bedouin, who pitch their tents and move seasonally in order to provide grazing for their domesticated animals. The musician occupation of Jubal also fits within an approximate 3000 B.C. time frame. Sumerian characters representing harps have been found on stone tablets from late in the Uruk Period (~3100 B.C.; Table 4.1).
Table 4.1. Archaeological Periods in Mesopotamia

<table>
<thead>
<tr>
<th>Time Range</th>
<th>Period</th>
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<tr>
<td>5500-3800 B.C.</td>
<td>Ubaid</td>
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<tr>
<td>3800-3100 B.C.</td>
<td>Uruk</td>
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<tr>
<td>3100-2900 B.C.</td>
<td>Jemdet Nasr</td>
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<td>2900-2750 B.C.</td>
<td>Early Dynastic I</td>
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<td>2750-2600 B.C.</td>
<td>Early Dynastic II</td>
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<td>2600-2350 B.C.</td>
<td>Early Dynastic III</td>
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<tr>
<td>2350-2150 B.C.</td>
<td>Dynasty of Akkad</td>
</tr>
<tr>
<td>2150-2000 B.C.</td>
<td>3rd Dynasty of Ur</td>
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<tr>
<td>2000-1600 B.C.</td>
<td>Old Babylonian</td>
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The most pertinent of the three professions named in Genesis 4 is that of Tubal-cain: he was an instructor of every craftsman in bronze and iron. Bronze is a metal consisting of copper alloyed with either arsenic, antimony, or tin. The generally recognized date for the beginning of the Bronze Age in the Near East is around 3200 B.C. (Fig. 7.1). Thus, Tubal-cain could have lived as early as 3200 B.C. if he was one of the first in Mesopotamia to craft bronze objects. All of these dates (~3200-3000 B.C.) for Jabel, Jubal, and Tubal-cain place Noah in the approximate time frame of 3000-2900 B.C.

Additional archaeological evidence exists for the time of Noah and the Flood from two cuneiform texts known as the Gilgamesh Epic and Sumerian King List. Both of these documents attest to a great flood survived by Ziusudra, the Sumerian Noah (or Ut-napišthim or Atra-hasīs, alternate names for Noah), who was "king" of the ancient city of Shuruppak (Fig. 4.1). Gilgamesh was the fifth king of the first dynasty of Uruk following the great flood, and is known to have been a real person who reigned in Mesopotamia around 2650 B.C. Therefore, it is reasonable to assume that the Flood happened sometime before 2650 B.C. – and perhaps at least two hundred years before, since Gilgamesh was supposedly the fifth king after the Flood.
Figure 4.1. The land of Mesopotamia, showing the ancient regions (in red) of Babylonia, Sumer, and Akkad in Southern Mesopotamia, Assyria in Northern Mesopotamia, Susiana in Iran, and Urartu in southern Turkey. The black triangles represent the four most cited landing places ascribed to Noah’s ark. Also shown are the cyclonic weather patterns for the region (curved white arrows), the predominant winds (black arrows), the marshlands (dashed areas), ancient cities mentioned in the text, modern countries, and modern cities (underlined). River and spring names are in blue. The large white straight arrow shows the hypothesized direction that Noah’s ark might have taken from Shuruppak to the “mountains of Ararat” (Urartu).
The Sumerian King List also mentions ten antediluvian kings, with Ziusudra being the "king" who lived in Shuruppak just before the Flood. The mention of Shuruppak is important because the ancient ruins of this city still exist today as the archaeological mound of Fara, which has been partially excavated in modern times. Based on pottery types, cylinder seals, and proto-cuneiform tablets found at Fara, archaeologists have determined that this city was founded in the Jemdet Nasr Period (Table 4.1), and that it was a significant urban center during this time.\textsuperscript{11} There is no evidence for a settlement at Shuruppak earlier than the Jemdet Nasr Period; therefore, if Noah did live at Shuruppak, he could not have lived there before about 3100 B.C.

From the above archaeological evidence it can be estimated that Noah most likely lived somewhere around 2900 B.C. (± 200 years) – or almost exactly when the Bible places him in time according to its genealogically based chronology.\textsuperscript{12}

**Where did Noah Live?**

The Sumerian King List mentions Shuruppak as being the "home town" of Noah (Ziusudra). The Bible also attests to Noah having lived in the area of Mesopotamia. The Garden of Eden was located in the land of the four rivers of Mesopotamia: Euphrates, Tigris, Pishon, and Gihon (Gen. 2:10-14). The ark landed upon the mountains of Ararat (Urartu), located just north of Mesopotamia (Gen. 8:4). The names of some of Noah's descendants mentioned in Genesis 10 (e.g., Ophir, Havilah, Asshur) represent places in or bordering Mesopotamia, and Noah's descendent Nimrod (Gen. 10:8-12) was the founder of Babel, Erech (Uruk), and Calneh, all Mesopotamian cities in the land of Shinar, the biblical counterpart of the cuneiform "Sumer". The "tower of Babel" was located on the plain of Shinar, and probably refers to the ziggurat (high temple) of ancient Babylon (Fig. 4.1).
Noah’s World

What would it have been like to live in the ancient world of Noah? What geographical, climatological, political, and cultural forces would have shaped the worldview of Noah and the people of his time?

The land where Noah lived was called Mesopotamia, which literally means “the land between the rivers”. The rivers are the Euphrates and Tigris, the main waterways of what was then Mesopotamia, and what is now modern Iraq. The Euphrates and Tigris Rivers receive their waters from the mountains of Iran, Turkey, Syria, and Saudi Arabia, which surround the Mesopotamian alluvial plain. Southern Mesopotamia included the provinces of Sumer and Akkad, which together were referred to as Babylonia (Fig. 4.1). Northern Mesopotamia was referred to as Assyria. Southern Mesopotamia is almost completely flat and near sea level, the only elevated areas being occasional mounds on the plain that represent the remains of ancient cities such as Shuruppak, Uruk, and Ur.

Before modern dams were built, many hundreds to thousands of square miles of the alluvial plain could become inundated with an almost continuous sheet of water when the Euphrates and Tigris Rivers were in flood from March to July. These two rivers have constantly changed their courses over time. During Noah’s time (~3000-2900 B.C.) the Euphrates flowed from Sippar to Kish to Nippur to Shuruppak to Uruk, and the mounds that still exist of these cities are found along this ancient river course. Even as early as the Ubaid period (Table 4.1), these two rivers were diverted into canals to water the fertile alluvial soil left behind by seasonal floods. The canal system consisted of an intricate network of dikes, reservoirs, and small dams constructed to store water and release it at the proper time.
The climate of southern Iraq (Mesopotamia) is extremely hot and arid and it almost never rains. Temperatures can reach 120°F in July and August, and the average rainfall amounts to only a few inches per year – mainly in March-April from intermittent storms brought in from the Mediterranean (Fig. 4.1). The prevailing wind is the *shamal*, or north wind, which sweeps almost continuously down the valleys of the Tigris and Euphrates from June to September, and which dries up the flooded ground. During spring, the southerly *sharqi* or *suwahli* winds can bring violent rainstorms to the region, which moisture is derived from the Persian Gulf.

The natural resources of ancient Babylonia consisted of water from the two rivers, a very rich and fertile soil, clay derived from the alluvial soil, bitumen derived from hydrocarbons coming up faults at Hit, and reeds from the marshlands (Fig. 4.1). The region was almost completely lacking in metals, gemstones, or high-quality wood, and these commodities had to be imported from the surrounding highlands. Wool (from sheep) and linen (from flax) were common textile export items, as was barley, the main constituent of bread and beer. Clay was used for practically everything: for the making of clay bricks, pottery, sickles, tablets, and even nails. Bitumen was used for cementing bricks and for caulking boats. Reeds were used to strengthen mud bricks, to build small boats, to roof houses, and to make baskets and mats. Agriculture based on canal irrigation and animal husbandry (sheep, goats, cattle, pigs, fowl) were the primary sources of food. The fertile river lands provided the Mesopotamians with a varied and nutritious diet.

By Noah’s time, trade routes had become established with neighboring regions, especially during Late Uruk expansion in the latter part of the fourth millennium B. C. Lapis lazuli was brought to Mesopotamia along overland trade routes from Afghanistan, carnelian from India, tin from Iran, copper and obsidian from Turkey, timber (cedar wood) from the Amanus
Mountains, and gold, silver, and onyx from Arabia. Sea routes were established between Mesopotamia and India and Egypt at the end of the fourth millennium B.C., but it was not until the third millennium B.C. – or after Noah’s time – that these routes became commercially important. While commodities came from long distances, Uruk trade centers, such as those established in ancient Urartu (Ararat), mainly surrounded the margins of Mesopotamia. Thus, for the great majority of people living in Mesopotamia at that time, knowledge of the world was limited to the alluvial plain and surrounding mountainous areas.

Figure 4.2. Representation of a ziggurat on an Assyrian bas-relief found at Nineveh (7th Century B.C.). The lines crossing the drawing are cracks in the relief. Note the bullheads on the top temple building and fish and crab in the water, which perhaps represents the water of the Tigris River when it, or one of its canals, flowed past ancient Nineveh.

Cities arose in southern Mesopotamia around 3400 B.C. in the Uruk Period (Table 4.1), or about the time when the Bible says they did (Gen. 4:17). The buildings of ancient Mesopotamia consisted of houses, public buildings, and temples. Simple huts were built of reeds plastered with mud, but some houses were built with clay bricks. Temples were built on the tops
of ziggurats, which were essentially artificial “mountains” of sun-baked brick constructed in a stair-step, pyramidal manner (Fig. 4.2). The purpose of the ziggurat and temple tower was to “reach unto heaven” (Gen. 11:4); i.e., to provide a link between heaven and earth so as to be a sanctuary for the pantheon of gods that the polytheistic Mesopotamians worshipped. Politically, ancient Mesopotamia consisted of a number of city states that competed with each other for power. Wars and power struggles between these city states were constant and violent.

Cuneiform writing arose in Mesopotamia around the end of the fourth millennium, as did the establishment of a well-developed system of numbers and measures. The dual numerical and numerological sexagesimal numbering system used by the Mesopotamians has already been discussed in Chapter 3. Besides mathematics, the Mesopotamians were the first civilization in the world to invent writing. At first the process was developed primarily for the purpose of recording commodities, and it wasn’t until about 2500 B.C. that narratives (such as the Gilagmesh Epic) were recorded on clay (cuneiform) tablets (Fig. 3.1). Thus, the period starting about 2500-2450 B.C. would have been the earliest that the story of Noah’s Flood could have been written down by scribes.

**Noah’s Worldview**

From this cultural context let us now try and place ourselves into the worldview of Noah, or of the ancient Mesopotamian author(s) who wrote down the story of the Flood. Sometime after 2500 B.C. the Flood story could have been passed down either orally or in written form to Abraham and his descendent Moses (a scenario proposed in Chapter 2).

If Noah were the “king” of Shuruppak, as stated in the King List, he would probably have been well educated and rich. He could have known mathematics and could have also acquired
the knowledge of how to build ships such as plied the Euphrates River next to his city. He or his extended clan may have been involved in canal building and maintenance, since this activity was basic to every citizen’s livelihood. Noah could have also been engaged in the importation of cedar wood from the Amanus Mountains and bitumen from Hit, both necessary items for building the ark.19 Noah would have been surrounded by a polytheistic and violent culture. However, the Bible says that Noah was a just man, perfect in his generations, and Noah walked with God (Gen. 6:9).

Despite Noah’s being a man of God, his scientific knowledge, and that of later biblical author(s), would have consisted only of what they could personally observe. That is, they would have had the basic cosmological worldview of the ancient Mesopotamians discussed in Chapter 1 (Fig. 1.1). This world consisted of a flat alluvial plain “held up” (surrounded) by mountains. The “earth” was the dry land, a flat disc extending to the horizon upon which people walked and worked. “Sluice gates” in the firmament (sky) could open up and pour forth rain, analogous to when canal sluice gates were opened to allow water access to agricultural fields. Water also emerged from the deep underground as springs (fountains of the primordial deep). This cosmological worldview makes perfect sense from the pre-scientific knowledge and everyday experience of the Mesopotamians.

Most important, the known world of Noah, and that of the biblical author(s), would have consisted basically of the Mesopotamian alluvial plain and surrounding mountain areas. People living at this time would have had scant knowledge of civilizations outside this boundary, and certainly no knowledge of other distant civilizations then existing over planet Earth (see Chapter 7). It is into this limited world that the Genesis Flood occurs, and it is within the constraints of this pre-scientific and geographical worldview that the story of the Flood should be interpreted.
Feasibility of a Universal Flood

We will now discuss the pros and cons of a universal flood; that is, the Young Earth Creationist position that Noah’s Flood covered the entire planet Earth. Then we will discuss the feasibility of a local flood.

Universal Language of Genesis 6-8

One of the major “pros” supporting the Young Earth Creationist position of a universal Flood is the seemingly “universal” language of Genesis, Chapters 6 through 8. This language is emphatic in the Flood’s universality and is no doubt the main reason why people in centuries past have believed that Genesis was talking about the planet Earth, and why this traditional interpretation has continued to the present day in the form of Young Earth Creationism. In Genesis 6-8, "earth" (eretz or adâmâh) is used 42 times, "all" (kôwl) is used 20 times, "every" (also kôwl in Hebrew) is used 23 times, and "under heaven" (literally, "under the sky") is used two times. However, such language is not necessarily all-inclusive when understood from the cultural and linguistic context of Genesis and the rest of the Bible.

Earth. The Hebrew words for "earth" used in Genesis 6-8 is eretz or adâmâh, both literally meaning "earth, ground, land, dirt, soil, or country". The word "earth" (un-capitalized) cannot be taken to mean the planet Earth (capitalized), as the Genesis author(s) had no concept of Earth as a planet and thus had no word for it. From a worldview perspective, the biblical account must be interpreted within the narrow limit of what was known about the world at that time, not what is known about the world today.
Biblical context also makes it clear that "earth" does not mean the whole planet Earth. For example, the *face of the ground*, as used in Genesis 7:23 and Genesis 8:8 in place of "earth," does not imply planet Earth. "Land" is a better translation than "earth" for the Hebrew *eretz* because it extends to the "face of the ground" we can see around us; that is, what is within view of the horizon.\(^\text{20}\) It can also refer to a local geographic or political landscape. For example, when Zechariah 5:6 says *all the earth*, the verse is literally talking about Palestine – a tract of land or country. Similarly, the Mesopotamian concept of "the land" (*kalam* in Sumerian) seems to have meant the entire alluvial plain.\(^\text{21}\) The clincher to the word "earth" meaning ground or land (and not the planet Earth) is Genesis 1:10: *God called the dry land earth* (*eretz*). If God defined "earth" as "dry land," then so should we.\(^\text{22}\)

**All, Every, Under Heaven.** While these three terms appear to infer a universality for the flood event, all three are used elsewhere in the Bible for local events, and so – like the term "earth" – do not necessarily have a universal meaning. For example, Acts 2:5 states: *And there were dwelling at Jerusalem Jews, devout men out of every nation under heaven.* Does this passage include every nation on Earth? Or does it refer only to the nations that Luke, the writer of Acts, knew about? Certainly it didn't include North America, South America, or Australia, as these continents were unknown to Luke in the First Century A.D. Such "universal" language is simply the way people expressed themselves in those days to emphasize a level of inclusiveness – a type of "Bible-speak" that is not supposed to be taken absolutely literally, but in the context of what the biblical author was trying to emphasize. This passage in Acts simply means that devout men (Jews) of many nations from some extended region of the then-known world were present at Jerusalem.
An excellent example of how a universal "Bible-speak" is used in Genesis to describe a non-universal, regional event is Genesis 41:56: *And the famine was over all the face of the earth.* This is the exact same language as used in Genesis 6:7, 7:3, 7:4, 8:9 and elsewhere when describing the Genesis Flood. So was the biblical author claiming that the whole planet Earth (North America, Australia, etc.) was experiencing famine? No, the universality of this verse applied only to the lands of the Near East (Egypt, Palestine, Mesopotamia), and perhaps even to the Mediterranean area; i.e., the whole world that had become known by Joseph’s time (~1700 B.C.). Another Old Testament example of such universal language can be found in Daniel 6:25 where *King Darius wrote unto all people, nations, and languages that dwell in all the earth*... The phrase “in all the earth” in this case would have referred to the whole world that had become known by Daniel’s time (~600 B.C.).

The same principle of a limited universality commensurate with the knowledge of the biblical author(s) also applies to the story of Noah’s Flood. From Noah’s perspective, the "earth" included just the land (ground) in the visible horizon; i.e., as Noah saw it “under heaven”. The language used in the Scriptural narrative is thus simply that which would have been natural to an eyewitness (Noah), with this eyewitness report passed down orally to later biblical scribes. Leonard Woolley\(^{23}\) aptly described the situation thusly: "It was not a universal deluge; it was a vast flood in the valley of the Tigris and Euphrates which drowned the whole of the habitable land…for the people who lived there that was all the world (italics mine)."

**Depth of the Flood**

Another key verse as to whether the Noachian Flood should be interpreted as being universal or local is Genesis 7:20: *Fifteen cubits upward did the waters prevail; and the"*
Mountains were covered. Young Earth Creationists take this passage to mean that the floodwater rose at least fifteen cubits above Mount Ararat, their presumed landing place for the ark.

The main difficulty with this interpretation involves the translation of the Hebrew word har as "mountain" in Genesis 7:20. This word can also be translated as "a range of hills" or "hill country," implying with Genesis 7:19 that it was "all the high hills" (also har) that were covered with floodwater rather than the high mountains. To make matters more complicated, the Sumerians considered their temples (ziggurats) to be "mountains," calling them "É. kur," which in Sumerian means "house of the mountain" or "mountain house". Also, the specific Mesopotamian word for "mountain" (šadû) is derived from "mounds," and may indicate that the Mesopotamians actually thought of their high temple mounds on the very flat alluvial plain as hills or mountains. So to which of these possibilities was the biblical author referring to in Genesis 7:20? Were the flood waters fifteen cubits above the highest mountains of planet Earth; were they fifteen cubits above the "hill country" of northern Mesopotamia; were they fifteen cubits above the tops of ziggurat temple mounds ("mountains") in southern Mesopotamia, thus dooming all the people who ran to the high temples for safety from the floodwaters; or were they only fifteen cubits above the Mesopotamian alluvial plain? Could the "fifteen cubits upward" even refer to the draft (draught) of the ark; i.e., how deep its 30 cubit depth (Gen. 6:15) was submerged in the water when the ark was loaded?

Another difficulty with Genesis 7:20 is: How did Noah measure the depth of the floodwaters at fifteen cubits? In riverboats of that day people used rods or poles to measure water depth. But, how could Noah have possibly taken a pole measurement on top of a mountain like Ararat in the midst of a tempestuous global ocean? Rather, the biblical account (Gen. 7:14) seems to suggest that the waters increased continuously until the ark was gently lifted up above
the earth (land), and in this context one can imagine Noah measuring the depth of water from where the ark began floating on the alluvial plain. In any case, the phrase "fifteen cubits upward" does not necessarily imply a universal flood; if anything, it favors a local flood where the depth to the ground surface could be easily measured.

Landing Place of the Ark

The landing place of the ark has been one of the most controversial aspects of Noah's Flood, with Young Earth Creationists insisting that the Bible identifies the site as Mount Ararat, the huge volcanic construct, Agri Dag, in northeastern Turkey (Figs. 4.1 and 5.6). A universal model for the Noachian Flood hinges on Mount Ararat being the landing place of the ark because if the ark had landed on the top of this mountain it would imply that the floodwater level had reached at least 17,000 feet in elevation, and thus would have had to have been planet-wide.

The ark has been assigned to at least eight different landing places over the centuries – including Saudi Arabia, India, and even the mythical Atlantis.26 One reason for this ambiguity is that the Bible does not actually pinpoint the exact place where the ark landed, it merely alludes to a region or range of mountains where the ark came to rest: the mountains of Ararat (Gen. 8:4). Although many sites have been proposed for the landing place of the ark, only four appear to meet the requirement of being located within the boundaries of ancient Ararat: Mount Nisir, Mount Nisibis, Mount Ararat, and Jabel Judi (Fig. 4.1). The most often cited and likely contenders of these four are Mount Ararat and Jabel Judi.

Mount Ararat. “Ararat” is the biblical name for the mountainous region of Urartu, as this area was known to the ancient Assyrians.27 Urartu was geographically centered between Lake Van and Lake Urmia (Fig. 4.1), and was part of the ancient region of "Armenia" (not
limited to the country of Armenia today). The Hebrew word for "mountain" in Genesis 8:4 is plural. Therefore, the Bible does not specify that the ark landed on the highest peak of the region (Mount Ararat), only that the ark landed somewhere on the mountains or highlands of Armenia (both "Ararat" and "Urartu" can be translated as "highlands"). In biblical times, "Ararat" was actually the name of a province (not a mountain), as can be seen from its usage in 2 Kings 19:37 and Isaiah 37:38: "...some escaped into the land of Ararat" and Jeremiah 51:27: "...call together against her (Israel) the kingdoms of Ararat, Minni, and Askkenaz...”.

While Mount Ararat appears to have been part of the province of Urartu in the 7th-8th Centuries, B.C., it is probable that it was not part of this province in Noah’s time. At its zenith, the kingdom of Urartu stretched from the eastern bank of the upper Euphrates River to the western shore of Lake Urmia, and from the mountain passes of northern Iraq to the Caucasus Mountains, thus including Mount Ararat in what is now the region of the Republic of Armenia (Fig. 4.1). However, this northern, Mount Ararat section was added to the Urartu region only in the 8th Century B.C. during a time of major Urartian expansion. By contrast, it is known that the Urartian language was present in the northern fringes of Mesopotamia (i.e., the Jabel Judi area) at least sometime by the third millennium B.C. After the 8th-7th Centuries B.C., the name "Urartu" faded from view and was transformed into "Ararat" by later vocalizations imposed on the Hebrew Bible.

*Search for Noah's Ark on Mount Ararat.* If Mount Ararat is not the landing site of Noah's ark, then what about all of the books, movies, and television shows that have claimed that the ark has actually been found on Mount Ararat? None of these popular "ark fever" accounts have been verified – some have been shown to be actual hoaxes, and all have been shown to be
scientifically unfounded. Since the early 1800s there have been more than a dozen expeditions to Mount Ararat, none of which have proved successful in finding the ark.

The first popularized modern search for Noah's ark on Mount Ararat was by Fernand Navarra in 1955 and then again in 1969. On the northwest side of Mount Ararat, Navarra collected sections of worked timber from beneath a glacier at about 14,000 feet elevation. These specimens were identified as *Quercus* (oak), and have been radiocarbon dated by six different dating labs at 720-790 A.D. for the wood collected by Navarra in 1955, and at 620-640 A.D. for the wood collected in 1969. These dates suggest that the wood may have been part of a Byzantine or Armenian shrine commemorating what was believed by the people of that region to have been the landing site of the ark.

In 1993, CBS aired a two-hour television special entitled "The Incredible Discovery of Noah's Ark," which was reportedly seen by an estimated 20 million viewers. In this case, an actual hoax was involved in that a piece of modern pine wood was made to look ancient and was claimed to be a piece of the ark.

Noah's ark was again reported by the popular press in the early 1990s to have been found near Doğubayazit, Turkey, about 12 miles southwest of Mount Ararat (Fig. 5.6). Supposedly, a "boat" having the dimensions of the ark had been found – a boat made out of petrified gopher wood and containing ribs, iron rivets, and stone anchors. In reality, the "boat" turned out to be a natural volcanic (ophiolitic basalt) rock formation, dated at 110-120 million years, which mimicked the shape of a boat due to the rock being steeply inclined along the limbs of a doubly plunging anticline. The supposed fossilized "gopher wood bark" was crinkle-folded metamorphosed rock, the "iron rivets" were naturally-occurring concentrations of limonite and magnetite, and the "anchor stones" were pieces of local andesite (another volcanic rock type).
short, the scientific evidence demonstrated that the "boat" found near Doğubayazit is a completely natural rock formation – a "phantom ark".

**Jabel Judi.** Jabel Judi (Cudi Dag) is a mountain range located just east of Cizre, Turkey near the border of Iraq and just within the northern boundary of the Mesopotamian hydrologic basin (Fig. 4.1). The range rises above the Cizre Plain, which is surrounded by low hills in the north, gently sloping ridges in the south, and hilly land in the west. All of the streams within the Cizre Plain are tributaries to the Tigris River.

Jabel Judi has been another favored landing place for the ark, being the most widely accepted site among Christians, Jews, and Muslims during the latter centuries of the first millennium A.D. It was only in the eleventh and twelfth centuries A.D. that the focus of investigators began to shift toward Mount Ararat as the ark's final resting place, and only by the end of the fourteenth century A.D. does it seem to have become a fairly well established tradition.\(^\text{34}\) The Arab geographer al-Masudi (~956 A.D) stated that the ark "stood on el-Judi…a mountain in the country of Masur…eight farsangs (about 30 miles) from the Tigris River". In its principal reference to the Flood, the Koran (Surah 11, Aya 44) states that the ark eventually came to rest on Mount Djudi (Jabel Judi). Not only is Jabel Judi the earliest accepted landing site of the ark, it also corresponds to a belt of high country where vineyards and olive trees are known to have been grown in antiquity.\(^\text{35}\) Vineyards and olive trees are important because they are both mentioned in the Genesis account of the Flood: *And the dove came in to him in the evening; and, lo, in her mouth was an olive leaf plucked off: so Noah knew that the waters were abated from off the earth. (Gen. 8:11)* And *Noah began to be a farmer (husbandman) and he planted a vineyard. (Gen. 9:20).*
Vineyards. The wine grape of antiquity, *Vitis vinifera*, is what is referred to in both the Old and New Testaments of the Bible. *Vitis vinifera* has been cultivated for thousands of years, probably originating as a wild plant in the Transcaucus area, then becoming domesticated in the area between the Black and Caspian Seas, eastern Turkey, and the Zagros range sometime before 4000 B.C.\(^36\) It is certain that viticulture was practiced and wine was made in (northern) Mesopotamia sometime before 3000 B.C.\(^37\) Cultivation restrictions of *Vitis vinifera* limit the location of where Noah could have landed and planted his vineyard. *Vitis vinifera* can only be cultivated at an elevation where the average temperature is at least 60ºF in the warmest summer months (for the fruit to ripen), where the winters are not too severe (frost can kill young grapevines), and where the climate is not too hot and dry (grapevines need at least a moderate rainfall).\(^38\) Noah could not have landed anywhere in southern Mesopotamia because it is too hot and dry there for viticulture to flourish, nor could he have remained in the high mountain regions because the severe winters would have killed his vineyard. The region of Mesopotamia where grapevines flourished in ancient times, as today, was Assyria (northern Iraq), which has a moderate rainfall and abundant streams that irrigate orchards and vineyards. The area north and east of Nineveh was especially renowned in antiquity for its wine, corn, and olive oil. In 2 Kings 18:36 King Sennacherib boasted that Assyria was... *a land of grain (corn) and wine, a land of bread and vineyards, a land of olive oil and honey...*

Olive trees. Olive trees (*Olea europea*) are even more sensitive to climate than grapevines. Olive trees cannot tolerate hot and cold extremes, and they are especially susceptible to flooding. Olive trees need an elevated, well-drained soil to survive and in a waterlogged soil they drown.\(^39\) This fact makes the mention of an olive leaf in Genesis 8:11 supportive of a local flood. If the Flood had covered the entire planet Earth to 17,000+ feet (the height of Mount
Ararat) with seawater for a whole year, an olive tree (or even its seeds) could not have survived. The return of the olive leaf by the dove suggests the survival of relatively unharmed trees outside the flooded area.\textsuperscript{40}

\textit{Doves.} The mention of a dove in Genesis 8:11 is also important to the subject of a universal versus local Flood. Doves were well favored by the ancient Mesopotamians – in fact, they were part of their diet.\textsuperscript{41} Noah's dove was probably a rock dove (\textit{Columba livia}), which is native to the Middle East and ancestor to all of the various pigeon breeds we have today. Pigeons were kept in Mesopotamia at least by 5000-4500 B.C., and evidence that pigeons were already at least partially domesticated in Mesopotamia by Noah's time comes from al'Ubaid, where a row of sitting pigeons is pictured on the limestone frieze of a temple façade dating from about 3000 B.C.\textsuperscript{42} The pigeon's homing instinct has been recognized and exploited since earliest times, and Noah evidently had knowledge of this homing instinct when he sent forth a female dove from the ark (Gen. 8:8-12). Noah's action in Genesis 8:9 affirms that his dove was a domesticated pigeon: \textit{Noah put forth his hand, and took her, and pulled her in to him into the ark.}

Exactly how far an ancient breed of dove like Noah's could have flown from the ark to search for dry land is not known, but it was probably less than 100 miles.\textsuperscript{43} Noah sent out his dove, presumably in the morning (Fig. 4.3), and it came back to him in the evening (Gen. 8:2). Thus, within a one-day's flight from and back to the ark (Gen. 8:11), the dove found an olive tree or sprout growing, picked off a leaf, and returned again to the ark. This means that wherever the ark landed, it had to be less than about 50 miles from a region where it was suitable for olive trees to grow.
The Jabel Judi (Cudi Dag) region has the following advantages over the Mount Ararat region for being the landing place of Noah's ark:

1. Jabel Judi was located within the borders of ancient Urartu during Noah’s time (~3000 B.C.), while Mount Ararat was not.

2. Jabel Judi is located within the foothills of the Taurus Mountains where optimal conditions exist for the growing of both grapes and olives.

3. Jabel Judi is located only about 80 miles from Nineveh (Fig. 4.1), a region that was renowned in ancient times for both its grapevines and olive trees.\textsuperscript{44} Since the northern part of the Nineveh region is within a 50 mile distance of Jabel Judi, it is feasible that a dove could have
flown to this area and back to the ark with an olive leaf in one day, as required by the Genesis account.

4. If the ark did land in the Cizre area, then it means that the Flood stayed within the (northern) boundary of the Mesopotamian hydrologic basin. This in turn implies a flood local to Mesopotamia because if the flood was universal, why wouldn't the ark have floated to somewhere outside of the boundaries of Mesopotamia – some place like Europe or Asia?\textsuperscript{45}

**Feasibility of a Local Flood**

From the worldview of the Mesopotamians a local flood seems quite feasible. However, Young Earth Creationists raise some important objections in defense of a universal flood, the most formidable one being: ‘How could Noah’s ark have floated up-gradient to the mountains of Ararat if the Flood was local? Why didn’t it float downstream to the Persian Gulf? The only way the ark could have gone north to the mountains of Ararat, instead of south to the Persian Gulf, would be for the waters of a universal flood to take it there.’ This argument must be addressed if a local-flood model is to be judged feasible. Other important questions that need to be answered concerning the hydrology and meteorology of the Flood are: \textsuperscript{46} (1) How could it have rained for forty days and forty nights?, (2) How did prolonged flooding occur?, and (3) Where is the flood sediment left by Noah’s Flood? These questions will be discussed for most of the remainder of this chapter.

**How Could It Have Rained For Forty Days and Forty Nights**

Before the question “How could have rained for forty days and forty nights” can be answered, it is necessary to first understand the weather patterns (meteorology) of the
Mesopotamian region and surrounding mountainous terrain. Then these patterns can be compared with the Genesis account of the weather associated with the Flood.

**Cyclonic Storms.** The "Land of the Five Seas" refers to the lands encompassed by the Mediterranean, Black, Caspian, Red, and Arabian Seas. This entire region is, and has been for thousands of years, controlled by the Asiatic pressure system. During winter, storms originating over the Atlantic Ocean sweep eastward along a low-pressure trough that exists over the Mediterranean Sea, and then they penetrate into southwestern Asia during periods of temporary weakening of the Asiatic anti-cyclone. These storms bring cold-season rainfall to this region except for the southern part of the Arabian Peninsula. During temporary breakdowns of this system, cyclonic storms travel along the low-pressure Mediterranean trough to the region of the Aegean, and then still traveling eastward, these storm tracks bifurcate either to the north to the Black and Caspian Sea areas and the mountains of Turkey, Armenia, and Iran, or to the south to the Palestine, Syria, Iraq, and Persian Gulf areas (Fig. 4.1). For each of these winter tracks, there are about three storms a month that move across the Mesopotamian region, with the peak of rainstorm activity occurring in March and April. During the summer, the low-pressure system over the Mediterranean is replaced by high pressure, and the paths of resulting storms are northward of the "Five Seas" area. This pervasive situation has caused both northern and southern Mesopotamia (Iraq) to experience nearly rainless conditions in the summer months for millennia.

In addition to the general weather pattern just described, when low pressure centers exist both in the Mediterranean and over the Persian Gulf and Arabian Sea, Iraq (Mesopotamia) becomes susceptible to the influence of colliding maritime air masses. The eastern tropical maritime air masses originate in the Indian Ocean and can travel northwestward via the Arabian
Sea and Persian Gulf to as far as the Mosul area (Fig. 4.1). The lower of these two maritime air masses is usually warm and moist, while the upper layers are cool – conditions that favor instability. This results in heavy rainfall in the mountainous parts of the country and also considerable rain in the lowlands. Continuous downpours that last for days are characteristic of this type of maritime condition, and rains are often accompanied by wind and thunder.

Long-duration downpours are caused by the stalling or blocking of a Mediterranean frontal system, and depending on how long the system stalls, a "100-year" or "1000-year" precipitation event can result. These rare occurrences of extremely high precipitation are referred to as the "Noah effect" by weathermen and hydrologists. When circulation patterns persist, then high amounts of rain and snow can also precede or follow a cyclonic event. An example of this happening was in 1969 over the Jordan basin, when cyclonic circulation patterns persisted for 24 days, and rain and snow fell during a period of almost two months. The stalling of this front brought an average of 75 inches of rain to the basin – the highest amount for a 150-year period – and caused considerable flooding.

Precipitation. Southern Mesopotamia is one of the driest spots on Earth, with an average annual rainfall of less than four inches. The Mediterranean cyclonic disturbances that pass through Iraq in winter-spring provide the only significant rain of the year for this area, and even this meagerly rain can be "fickle", with some years having no rain at all and with other years having substantial amounts of rain. The alluvial plain of Mesopotamia is surrounded on the east by the Zagros Mountains, on the north and northeast by the Taurus Mountains, and on the northwest by the Amanus Mountains (Fig. 4.1). These mountains receive rain and snow precipitation that feeds the Euphrates and Tigris River basins in the spring. The mountains of Armenia and Kurdistan in the northeastern Taurus range experience especially severe winters of
up to six to eight months duration, and snow there frequently reaches depths of 6 feet. The Tigris River overflows practically every spring from melting snow in the Zagros Mountains. Mountain snow comes mainly in the winter months (January-February), while the greatest rainfall occurs in the spring (March-April). Spring rainfall can quickly melt the mountain snow, causing the Tigris River to reach its highest flood level in late spring.

**Wind.** The predominant wind in Iraq (Mesopotamia) is the northwest *shamal* (Fig. 4.1). The shamal wind is the more-or-less constant flow of air down the Tigris-Euphrates river valley following topography and gradient from the Taurus Mountains in Turkey southward to the Persian Gulf. The shamal operates all year long, but is especially prevalent in the summer-fall from June to October when the wind direction is not interrupted by the passage of cyclonic storms. These are dry, warm, persistent winds, signifying clear skies and stable weather. The very dry air brought by the shamal permits intense heating and evaporation of the land surface.52

In winter and spring, the regularity of the shamal wind decreases and the *sharqi* becomes the predominant wind up to a height of approximately 7000 feet. These winds coming from the Persian Gulf are relatively cool and damp and may bring clouds and rain to the entire region of Iraq as they develop in front of advancing cyclonic depressions. Sometimes in the Persian Gulf region these southeasterly *sharqi* winds are followed by southwesterly *suhaili* winds after the passage of a trough. The *suhaili* is often a strong wind that can pose a danger for ships in the Gulf. Only with the passing of a cyclonic storm are pressure gradients steep enough for violent winds to result.

**Accordance With the Biblical Account.** If the "second month, seventeenth day of the month" of Genesis 7:11 is interpreted as denoting the season of the year when the flood started, rather than a month-day extension of Noah's age, then the Bible is in remarkable accordance
with the weather patterns that actually exist and have existed in the Mesopotamian area for
millennia. If the ancient Mesopotamian sideral calendar is coordinated with today’s tropical
calendar,\textsuperscript{54} then this puts the "second month, seventeenth day" in about the middle of March
when meteorological conditions bring the most abundant rain to the Mesopotamian region.
Genesis 7:12 implies that it was a “heavy” rain which fell upon the earth (land) for forty days
and forty nights,\textsuperscript{55} and this is the type of continuous downpour that can result from the activity of
maritime air masses characteristic of this season. The duration of rain (up until 150 days; Gen.
8:2) could have been caused by the stalling of a Mediterranean cyclonic front over the
Mesopotamian area in combination with maritime air masses moving up from the Persian Gulf
and Arabian Sea/Indian Ocean. This stalled storm would have been associated with southerly
winds (the sharqi and/or suhaili), not with the northwesterly shamal wind, and these could have
been very intense winds both in strength and duration.

Genesis 8:1 records that five months after the flood began – or about in the middle of
August assuming a middle-of-March start-date for the Flood – a wind passed over the Earth
causing the waters to subside. This wind could correspond with the northwest shamal wind that
blows almost continuously during the summer months. In spring, the melting of snow and steady
rain in the mountains of northern Iraq produces flooding in the valleys of the south. Then in
summer, the wind howls southward along the narrow fertile strip between the Euphrates and
Tigris Rivers, and the drying process begins.\textsuperscript{56}

\textbf{A Worldview Approach to the Flood Account.} The basis of the worldview approach
stated in Chapter 1 is that Genesis is historically accurate \textit{if} interpreted from the worldview of the
biblical author(s). Genesis 7:11 is an example of how a verse of the Bible can contain “historical
memories,” yet at the same time exhibit the worldview of the ancient writer. Genesis 7:11 states
that: *In the six hundredth year of Noah’s life, in the second month, the seventeenth day of the month, the same day were all the fountains of the great deep broken up and the windows of heaven were opened.* First, Noah is said to have been 600 (60 x 10) years old when the Flood started. This is not an actual age, but a sacred, symbolic age – one of the most “perfect” numbers in the sexagesimal numbering system, according to the worldview of the Sumerians (see Chapter 3). Then comes the “second month, seventeenth day”, which was intended by the biblical author to pinpoint the exact time of the year when the Flood started. This date corresponds to the actual rainy season of Mesopotamia because it records a real historical memory. Then comes the “fountains of the deep”, which is also a historically correct statement – a rainfall that heavy would have caused springs to immediately start flowing from the shallow water table of the Mesopotamian alluvial plain. However, to the biblical author this phrase would have meant waters emerging from a primordial deep/netherworld (Fig. 1.1, [9]). Then the “windows of heaven were opened”, which meant to the biblical author that the sluice gates of the solid firmament had been opened so that rain began pouring down from the immense ocean of water held above the firmament (Fig. 1.1 [7]).

A worldview approach also applies to other numbers in the Genesis Flood account. If the original Genesis author(s) of the Flood lived in Mesopotamia in the time frame of 2500-2000 B.C., as proposed in Chapter 2, then at least 400 years of oral transmission of the Flood story must have occurred until such time as the story could have been written down after the invention of narrative writing. The biblical writer of this oral history was recording a *real* event (the Flood) and *real* people who lived through that event (Noah and his family), but he was writing within the literary and numerological framework of his time. The biblical author probably did not even know exactly how long the flood rains lasted, but he knew that it must have been a fairly “long
period of time,” which to him was the numerological equivalent of “forty days and forty nights”. The Flood may not have lasted exactly 40 days and 40 nights, but this figurative number would not have been unrealistic for a stalled cyclonic story over the Mesopotamian region (as discussed in the previous section).

Let’s look at some of the other numbers used in the Flood account. The size of the ark is said to have been 300 cubits long, 50 cubits wide, and 30 cubits high (Gen. 6:15). These are also probably figurative numbers rather than real numbers. Three hundred is exactly one-half of the sacred number 600, and 30 is one-tenth of 300. Three hundred divided by six (6, a bisexagesimal number) is 50, or the width of the ark. Genesis 7:24 says the flood water prevailed upon the earth for 150 days, or one-half of 300. The ark rested in the seventh month (the preferred number 7) on the seventeen day (10 + 7, two preferred numbers) of the month, upon the mountains of Ararat (Gen. 8:4). After 40 days (again, a figuratively long period of time), Noah opened the window of the ark (Gen. 8:6). Noah stayed yet another seven (7) days, twice (Gen. 8:10, 12). The Flood lasted exactly 365 days, or one solar year, if the first and last days of the duration of the flood event are included. All of this is not a numerically accurate account of a real flood event, but it is a numerologically accurate account.

Thus, a perfectly “literal” interpretation of the Genesis Flood story combines both a historical reality and the worldview of the biblical author(s), and one must filter out this worldview to get to the historical core of the text. If this is not done, then the text becomes mythological; e.g., the unrealistic great age of Noah (600) which is at odds with science. However, not having this “enlightened” combined interpretation does not alter the spiritual message of the Noah story, which has remained the same for all peoples over the centuries. Or, in other words, it was not a universal flood, but it was a universal revelation.
How Did Prolonged Flooding Occur?

Not only does the Bible claim that it rained for forty days and forty nights, it claims that the floodwaters prevailed for 150 days. A number of hydrologic factors could have been responsible for this prolonged flooding.

**Rain.** Not only did it rain heavily and continuously for forty days and forty nights (Gen. 7:12), it could have also rained intermittently until Day 150, when Genesis 8:2 says the rain finally stopped. The exact place and duration of the rain is unclear. If the cyclonic storm was regional, it could have rained over all of Mesopotamia and the surrounding highlands for an extended period of time.

**Snow.** While the Bible doesn't specifically mention the involvement of snow in the Genesis Flood, melting of mountain snows by the rains of Genesis 7:17 could also have been an important factor contributing to prolonged flooding. Vast amounts of water are held in snow storage, and the greatest floods on large rivers (such as the Tigris) tend to occur in spring because of excess snowmelt. When deep snow is melted by heavy rains, water can be released very quickly and produce immediate flooding, but if the snow is deep and not subject to quick melting, then water will be released over a long period of time. If the snow had been exceptionally deep during the winter of Noah’s Flood, this snow could have added a great amount of runoff water to the Mesopotamian hydrologic basin for a period of months. In particular, it could have been responsible for prolonged flooding in the upper parts of the Mesopotamian hydrologic basin in the northern Mesopotamian (Urartu) region. Such a situation is recorded as having happened in the 1954 flood along the upper Tigris River. Another important factor in melting snow are warm winds. If the "wind" of Genesis 8:1 was a warm,
northwesterly, shamal wind, it might have helped to melt snow in the surrounding highlands as well as to dry up the ground in the Mesopotamian alluvial plain.

Springs. The Bible mentions the "fountains of the deep" (springs) twice in its narrative – once when the springs start (Gen. 7:11) and again when they stop (Gen. 8:2). Springs could have been a prime factor causing prolonged flooding of the Mesopotamian hydrologic basin. When it rains or when snow melts, water doesn't only flow over the ground as stream runoff. It can also travel underground as "groundwater," finally exiting at springs. Genesis. 7:11 records that the fountains of the great deep (subterranean water or groundwater) were "broken up". The phrase "broken up" comes from the Hebrew word "bâqa", which means to "break forth", or be "ready to burst", and so the literal meaning of the text is that these springs began gushing water.

Springs exist all over Mesopotamia and surrounding highlands, and many of these are limestone (karst) springs. Ras-el-ain (ain means "spring"), near the border of Syria and Turkey, is one of the largest limestone karst springs in the world and is the effective head of the Khabûr River, a major tributary of the Euphrates (Fig. 4.1). Water from this spring (actually a complex of 13 springs) comes from maximum winter infiltration (snow melt and rain in the Taurus Mountains) in January-February, but this water does not actually discharge at Ras-el-ain until the following July or August. This type of delay is typical of many karst springs, where recharge may be distant or convoluted from the spring discharge point. Some springs flow all the time, some springs flow only when it floods, and some springs have a delayed reaction between recharge and discharge. In the case of a delayed reaction, a continuous supply of water may be supplied for many months after a heavy rainstorm or series of storms. The Bible seems to indicate that at least some springs began gushing water immediately after the Flood started (Gen. 7:11), but that others continued for up to 5 months (Gen. 8:2).
Specific springs (among many) that could have contributed water to the Mesopotamian hydrologic basin during Noah’s Flood are those located near ancient Sippar, Babylon, and Kish; those in the vicinity of Hit; and those in the Jezira desert region between Baghdad and Mosul. Tributaries to the Tigris River also emerge from karst springs (large caves) along the foothills of the Zagros Mountains. When severe rains occur in the Zagros, these springs respond with a strong outflow, causing the rivers to swell and overflow onto the plains. In antiquity, one of the most important of these springs emerged from Shalmaneser's Cave, which was thought to be the "source" of the Tigris River when Shalmaneser III visited the cave in 852 B.C. It is also recorded that Sargon II had learnt the secret of tapping water from subterranean strata during his campaign against Ulhu and Urartu (the land of Ararat).

Numerous springs also exist in the deep canyons of the Cudi Dag (Jabel Judi), Cizre region of southeastern Turkey. Various karst features such as springs, sinks, and caves have developed in the Jurassic-Cretaceous Cudi Limestone of these mountains. The best known of these springs is located west of Beytişebab, and other smaller ones occur further south. Runoff from these springs can prolong flooding in the upper Tigris River Valley-Cizre Plain region.

Storm Surge. In addition to rain, snow melt, and spring activity, there is the possibility that a storm surge may have prolonged flooding in the southern part of Mesopotamia during Noah’s Flood. Storm surges occur where a low-pressure meteorological system causes high winds and tides, which can drive seawater inland for hundreds of miles. This hypothesis is supported by written cuneiform records. The technical word for flood or deluge is "amaru" in Sumerian, or "abubu" in Akkadian. Specifically, "abubu" indicates moving water caused by a rainstorm or a storm that drives seawater into land. In the Sumerian Gilgamesh Epic it is said that a "hurricane raged" and after the flood "the sea became quiet, the storm was still, and the
abubu ceased." The term abubu not only depicts an inundation, but it also includes the destructive winds and gales that accompany the rainstorm. In the Sumerian cuneiform tablets found at Nippur, the Noachian deluge is described as: "the mighty winds blew violently…and the ship moved along over the face of the great waters, driven by the wind." In the Akkadian Atrahasis Epic, the text speaks of thunder and savage winds. Also in the Gilgamesh Epic, the flood of Ziusudra (Noah) is recorded as having been a "south storm" accompanied by wind and thunder, where the flood-winds blew over the land and the south-wind tempest swept over it. Similarly, the Hebrew word "mabhūl" for "flood" used in the Genesis text is applicable to both an inundation or an "overflooding" caused by a sweeping, wind-driven rainstorm.

Where Are the Flood Sediments Left by Noah’s Flood?

As the waters of Noah’s Flood abated (Gen. 8:3), fine-grained mud particles in the water would have settled slowly out of suspension to form sediments until such time as these sediments dried up (Gen. 8:13-14). Because of the traditional assumption that the Flood was universal, most people up to about 1750 A.D. accepted the idea that sedimentary rock (with its fossils) represented the remains of Noah's Flood – or roughly the same position held today by Young Earth Creationists (see Chapter 5). Then, starting at the end of the 18th Century, an agonizing battle over the history of the Earth began between scriptural chronology and the newly-founded science of geology. During the seventy or so years between 1750 and 1820, the cumulative weight of evidence for an old Earth swayed the vast majority of scientists, but not the majority of the church. Not only did it become evident to geologists that sediments take a long time to be deposited, it also became clear that the transformation of sediments into sedimentary rock involves an even longer span of time (see Chapter 3). In addition, it was discovered that most
sedimentary rocks are not composed of flood-type sediments. Rather, there are marine sedimentary deposits (the majority) that alternate with eolian (wind), lacustrine (lake), and evaporite (halite and gypsum) deposits. Thus, the sedimentary record does not document one catastrophic flood event (Noah's Flood), but a series of many different sedimentary environments that overlap with each other in space and time. (We shall discuss this record in more detail in Chapter 5 when we talk about the sedimentary rock sequence in Grand Canyon)

By 1820 most geologists had abandoned the idea that all sedimentary rock had been formed at the time of Noah's Flood, but many still believed in the former existence of an extremely violent flood (or floods) that had swept over the Earth – floods that had even submerged some of the highest mountain summits and had created great valleys, gorges, and ravines. The evidence for this belief, called the "diluvialist school of thought" after Noah's deluge, was that many parts of the Earth (especially northern Europe and the Alps) were mantled by a chaotic assemblage of sediments ranging from mud to silt to sand to gravel to huge, erratic, strangely-striated boulders weighing many tons. These deposits led some geologists to propose that older diluvial deposits (left by the biblical deluge) were overlain by younger alluvial deposits that contained fossils of a recognizable modern type. Also, fossils such as great mammoths trapped in glacial ice, and fossil deposits in caves, were attributed to changes in climate brought about by the Noachian Flood.

This was the setting for the emergence of the glacial theory, which rudely shocked the geological community in the late 1830s and early 1840s by the proposition that the action of glaciers accounted for the strangely striated "erratic" boulders and poorly-sorted rock debris ("till") present in many parts of the world. This glacial, "ice-ages" revelation now left no deposits that could be attributed to Noah’s Flood.
**Flood Sediments in Mesopotamia.** So where are the sediments left by Noah's Flood if indeed such a historical flood actually happened? They would be present in Mesopotamia if Noah's Flood was a *local flood*. Flood deposits over the entire Earth should not be expected; rather, only some of the sediment in Mesopotamia should be attributable to Noah's Flood.

Flood sediment layers have been found in Mesopotamia in places such as Kish, Shuruppak, Ur, Uruk, Lagash, and Nineveh (Fig. 4.1). This is because floods are endemic to the region, occurring practically every year somewhere within the Mesopotamian hydrologic basin. The term “hydrologic basin” refers to a water-catchment area surrounded by a drainage divide, where water on one side of the divide flows downhill in one direction, and water on the other side of the divide flows in the opposite direction (like it does along the “continental divide” of the western United States). The Mesopotamian hydrologic basin includes the entire region drained by the four rivers of Eden (the Euphrates, Tigris, Pishon, and Gihon), all of which flow (or flowed) to the Persian Gulf (Fig. 4.1).

Some of the flood deposits in the Mesopotamian hydrologic basin are from "normal" floods, while others are from larger-magnitude floods. The most famous of these flood deposits was found in the late 1920s by Leonard Woolley who reported 8 to 11 feet of "clean water-laid mud" in the Royal Cemetery of Ur and pronounced it the result of "Noah's Flood".73 As it turns out, this particular flood deposit seems too early to be a record of the Noachian Flood, belonging to the end of the Ubaid Period (~3800 B.C.) and not to the Jemdet Nasr Period (~2900 B.C.) (Table 4.1). The flood deposits at Nineveh also seem to be too early (~4300 B.C.) to correlate with the Noachian Flood, while at Kish the flood stratum seems to be too late, dating from the end of the Early Dynastic Period.74 At Shuruppak, and also at Uruk, the last Jemdet Nasr remains are separated from the subsequent Early Dynastic I Period by clean, water-lain clay deposited by
a flood. This clay is nearly five feet thick at Uruk and two feet thick at Shuruppak (Fara).\textsuperscript{75} These sediments date from the right time and may be deposits left by Noah's Flood. But if these are the sediments left by Noah’s Flood why are they so limited in extent?

**Flood Deposition and Erosion.** A popular misconception is that a great inundation such as Noah's Flood should have left a widespread layer of sediment all over Mesopotamia. If flood deposits occur at Shuruppak, then why not at nearby Kish? Why have no flood deposits been found at Ur that correspond to Noah's Flood, and why in the city-mound of Ur do some pits contain thick flood deposits while other pits nearby contain no flood deposits?

This presumed conflict is completely understandable to hydrologists – in fact, it is what they expect. Floods *erode* sediment as well as *deposit* sediment. A large, high, temple-mound ziggurat in the path of a raging flood might be eroded on its side facing the torrent of water, while on its lee, backwater side sediment might be deposited in low areas. Rivers may scour and down cut sediment along steep gradients, whereas they may deposit sediment in shallow-gradient locations. Rivers in vegetated terrain are capable of eroding less sediment than in un-vegetated, clay-silt terrain. The Euphrates and Tigris river channels have changed their courses over the millennia. If a city was close to one of these former river channels, then that city might be washed away rather than be covered over with river silt. Or, sediment left from waters of one flood may be removed by erosion in a later flood. Thus, the depth of river flood deposits does not automatically indicate the depth of a past flood, and the lack of flood deposits does not automatically mean the non-existence of a flood (i.e., the absence of evidence is not necessarily the evidence of absence). The only absolute way of knowing when a flood occurred is to dig a series of trenches and date the archeological or organic remains both above and below a flood sediment horizon. Such a comprehensive study has never been done for most of the ancient cities.
in Mesopotamia, and certainly not using the most recent techniques. Therefore, not enough data has been obtained yet to ascertain with certainty the age of these deposits, or which of these deposits may derive from Noah’s Flood.

It is extremely important to this discussion to understand the magnitude of sediment build-up that can occur in a major flooding event. The Mississippi River flood of 1973 was out of its banks for two to three months in some locations,\textsuperscript{76} and the average sediment thickness left by that flood was 21 inches along the natural levee and 12 feet in the back-swamp areas.

Considering that Noah's Flood supposedly lasted four to six times as long as the Mississippi River flood, one can roughly estimate that a maximum of about 50 to 70 feet of sediment might have accumulated in an ideal backwater location during this flood. This is nowhere equivalent to the miles of sedimentary rock proposed by Young Earth Creationists as having formed during the Noachian Flood. But it does fit with a "1000-year" or “5000-year” local flood model.

**How Could the Ark Have Floated Up-Gradient to the Mountains of Ararat?**

Now comes the most difficult question of all to answer: If Noah’s Flood was local, then how could the ark have floated against the current toward the mountains of Ararat instead of floating down gradient to the Persian Gulf? In order to answer the question of how the ark went “uphill”, physicist Alan Hill set up a mathematical local-flood model demonstrating how a strong wind could have blown the ark northward from southern Mesopotamia to the “mountains of Ararat”.\textsuperscript{77} Incorporated into Hill’s model were the physical parameters given by the Genesis account: size of the ark (300 x 50 x 30 cubits; Gen. 6:15), period of intense rainfall (40 days and night; Gen. 7:12), and total period of extended rainfall and spring flow (150 days: Gen. 7:24).
The Bible does not give quantitative information on the magnitude of rainfall or spring flow rates, but it does give conditions as to the initial water depth at the point of the ark’s departure (15 cubits upward), the presence of water at the ark’s landing position (mountains of Ararat), and the point in time when Noah disembarked from the ark after the mud had hardened (exactly one year or 365 days after the Flood started). The Bible also does not give the exact departure and landing sites of the ark, but the departure point was assumed by Hill to have been Shuruppak on the southern Mesopotamian plain, and the landing point the Cizre Plain in the Jabel Judi area (Fig. 4.1), for reasons discussed previously in this chapter. The distance from Shuruppak to Cizre is 440 miles over an elevation change of 2100 feet. The pre-flood terrain was assumed to have been a modern landscape similar to that existing today (as will be discussed in Chapter 5).

It is beyond the scope of this chapter to go into the mathematics and computer analysis of Hill’s local-flood model, and the interested reader is referred to his paper. Suffice it to say that Hill’s calculations demonstrate the feasibility of storm winds blowing the ark upstream, against the hydrologic gradient, to the mountains of Ararat (Urartu). Calculated wind velocities of 30 to 70 miles per hour are considered well within reason for a large stalled cyclonic storm over the Mesopotamian region; e.g., winds up to 155 miles/hr were recorded in the June, 2007 cyclonic storm over Oman and Southern Iraq. Furthermore, if the ark’s dimensions given in Genesis 6:15 (300 x 50 x 30 cubits, which Hill used in his calculations) were to be considered as sacred numbers instead of real numbers, then average wind velocities could have been even lower.
Local Flood Model and Route of Noah’s Ark

To synthesize this discussion on the feasibility of a local flood, a meteorological model for a local flood is proposed. A large cyclonic storm stalled over Mesopotamia provided heavy rainfall for “40 days and 40 nights” to the lowland regions and snow/rain-melt to the highland regions. This rainstorm was accompanied by an intense sharqi and/or suhaili south wind, which blew the ark northward towards the mountains of Ararat (Urartu). The entire Tigris River hydrologic basin was inundated up to the area of Cizre because springs and snow melt kept the water flooded in the upper Tigris River Valley as well as in the lower Tigris River Valley.

Powered by strong winds, the ark may have travelled from Shuruppak in southern Mesopotamia along the inundated flood plain between the Euphrates and Tigris Rivers up to the area of present-day Baghdad (Fig. 4.1). From there, it could have followed the flooded Tigris River Valley up to the area of Mosul, where the Tigris still remains a wide stately river.

Northward from Mosul, the terrain becomes more hilly, but there is still a wide valley up to Cizre. The ark could have landed somewhere in this area (just south of Jabel Judi), or it could have made it to the Cizre Plain and landed in the foothills of the Jabel Judi Mountains where the mountain tops could be seen (Gen. 8:5), but where the valleys were still flooded (Gen. 8:9). This location is part of the “mountains of Ararat” (Gen. 8:4) and was known in antiquity for both its olive trees (Gen. 8:11) and vineyards (Gen. 9:20).

The Nature of Nature Miracles

From the above discussion it may seem like a completely naturalistic explanation for the Noachian Flood is being offered. Such is not the case! The Bible claims that Noah's Flood was supernatural in that:
1. It was God who purposely sent the Flood to judge an evil, corrupt, and violent world (Gen. 6:7; Gen. 6:11-13). But Noah "walked with God" (Gen. 6:9) and found grace in the eyes of the Lord (Gen. 6:8). Noah had a personal relationship with God and was thus spared.

2. It was God (I, even I; Gen. 6:17) who exercised absolute control over the forces of nature by causing the Flood.

3. It was God who commanded Noah to build the ark (Gen. 6:14), to gather the animals onto the ark (Gen. 6:19), and it was the Lord God who shut up Noah and his family into the ark (Gen. 7:17).

4. It was God who restrained the floodwaters (Gen 8:1-3) and brought the ark safely to the mountains of Ararat (Gen. 8:4).

5. It was God who established a covenant with Noah (Gen. 6:18) and who made the rainbow a sign of that covenant (Gen. 9:13).

Noah's Flood was a miracle because God intervened into His physical laws. One does not have to invoke the notion of the suspension or violation of natural laws in nature miracles. Divine action can simply be understood as higher-order laws (God's ultimate purpose) working seamlessly with lower-order laws (God's physical laws).78 Is it any less a miracle because it can be explained by natural processes? This is the nature of "nature miracles": to have the timely intervention of God into natural processes.79

One of the best examples of a "nature miracle" that comes to mind is Jesus rebuking the winds and sea (Mt. 8:23-26). In Matthew 8:26 the calming of the winds and sea could be explained by a sudden change of barometric pressure – which was probably the case. But it was God who caused this change to take place exactly when Christ commanded the waves and wind to be still. Another example is that of the Israelites crossing the Jordan River, where the stoppage
of water lasted long enough for the Hebrews to get across the river in the day (Josh 3:1-4:18). That this type of blockage has happened historically is a well known fact: in 1267, 1906, and 1927 landslides upstream from Jericho have dammed the river for up to 21 hours.\(^8^0\) The miracle of the Jordan is that God caused the blockage to happen \textit{exactly} when the Israelites needed to cross the river.

Four further points should be made at this time about miracles:

1. "Nature miracles" – where miracles can be explained by natural processes – are not the only kind of miracle claimed by the Bible. Jesus' walking on water, the Virgin birth, the Resurrection of Christ: all of these "non-nature miracles" cannot be explained by natural processes (as we know them). It is not to be implied that "non-nature" miracles cannot or have not occurred.

2. Just because God can perform "nature miracles" does not mean that all natural disasters are judgments of God as was Noah's Flood. Most natural disasters are due to normal causes where God allows the processes He set up to operate naturally.

3. In order to explain a "nature miracle" like Noah's Flood, a slew of miracles that are not recorded in the Bible should not be assumed; i.e., miracles should not be "pulled out of a hat" anytime one feels like it. Any theory, no matter how feeble, can be "proved" by recourse to the miraculous or God's omnipotence.\(^8^1\) It is a weak interpretation that has to invent all sorts of miracles that the text says nothing about in order to compensate for logistical problems.\(^8^2\) The miracles that the Bible actually claims should be considered to be miracles, and those it does not claim should not be manufactured.

(4) It is inconsistent to question God’s ability to perform simple miracles, such as those performed to manage a local flood, yet allow for God to manage a giant-scale miracle related to a
universal, world-wide flood. A “God can do anything” argument is not a defense for a universal flood and for the slew of assumed miracles required by “Flood Geology” – the subject of the next chapter.

NOTES

10 M. E. Mallowan, "Noah's Flood Reconsidered," Iraq 26 (1964) 68.


The term “100-year flood (or “1000-year” or “5000-year” flood) is a statistical designation meaning that there is a 1 in 100 (or 1 in 1000 or 5000) chance that a flood this size will happen during any one year.


75 P. Carleton, *Buried Empires: The Earliest Civilizations of the Middle East* (London: Edward Arnold, 1939) 64.


