

Truth behind Noah's Deluge – An Implication of Climate Change Adaptation

Saswati Roy

Senior Research Fellow, UGC
Department of Geography
Visva Bharati Central University
Santiniketan, India

Malay Mukhopadhyay

Professor, Department of Geography
Visva Bharati Central University
Santiniketan, India

Abstract

A mythical flood have been the research area of the authors in regards to the Noah's deluge which is recognized to be a global deluge in the Old Testament of the holy Bible. The Black sea is connected with the Mediterranean Sea by the Bosphorus strait. Earlier the Black Sea drained along this Bosphorus River into the Mediterranean Sea. During a significant deglaciation phase, there was a reversal in the flow pattern. Thus, the relation from the study of past myths helped in relating that it was a local flood rather than a global deluge.

Key words: Noah's deluge, Deglaciation, Mythical flood, Reversal of river flow.

Introduction

The present day science is capable enough to answer the reasons behind all sorts of processes that are experienced for ages. A group of scientists are engaged in engraving out the realities behind age old myths that has been encrypted within the holy pages of the pious texts. These mythical events have been attracting scientists from various fields. Many of them are even successful in exploring the scientific facts behind those myths.

Myth behind natural events

Ancient cultures were promoted by isolation totally being detached from the other civilizations of the outer world. The physical landscapes provided barriers to movement and brought out various themes for the folk cultural practices. On the basis of the available resources, the communities those who generally were in geographical isolation made a way out for their physical habits, social habits, entertainment and that made them unique. It was through these culture and habits that inculcated within the primitive cultures to have deep faith on the nature.

The people used to put their fear either by satisfying the God with sacrifices or by simply accepting them. These caused terror within the mankind and associated them into their cultural regimen that got recognized as myth and got a space in the religion as well. Every holy text heralds such catastrophe as the destruction of humankind. This was the reason that led to the creation of myths. It has been noticed that almost every culture includes an ancient flood story. Details vary, but the basic plot is the same: 'Deluge kills all but a lucky few just gets an escape' (The Bible, 1984).

Flood Myth

A flood myth or deluge myth is a symbolic narrative in which a great flood is sent by God to destroy civilization as punishment. There are flood myths from many different cultures. A common theme in the stories is the idea of punishing mankind for his sins while saving just enough people to start a better race.

About 300 cultures around the world have mythological stories of a massive flood¹. Most flood myths also include a hero, who strives to ensure a rebirth. The flood myth is widespread among many cultures as seen in the Mesopotamian flood stories, the *Puranas* of Indian Mythology, *Deucalion* in Greek mythology, the *Genesis Flood* narrative of the Judeo-Christian mythology, and in the lore of the *K'iche'* and *Maya* peoples of Central America, and the *Muisca* people in South America as well.

1. The Biblical Epic: The Flood of Noah

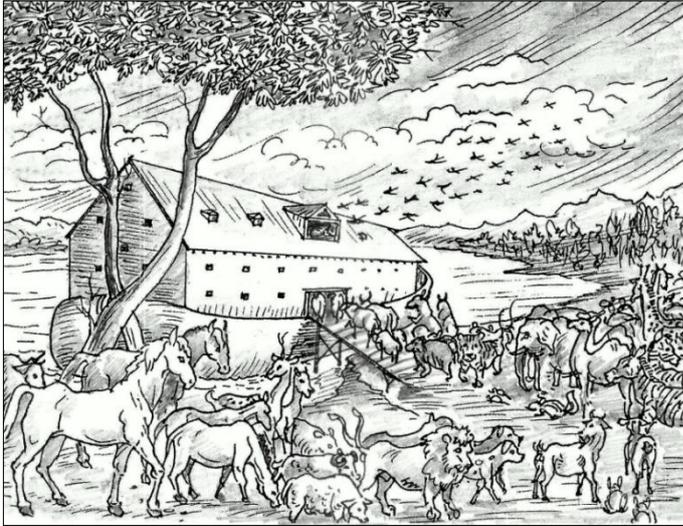


Figure 1: Noah's ark accommodating all the pairs of animals before the flood

Source: painting by the American folk painter Edward Hicks (1846).

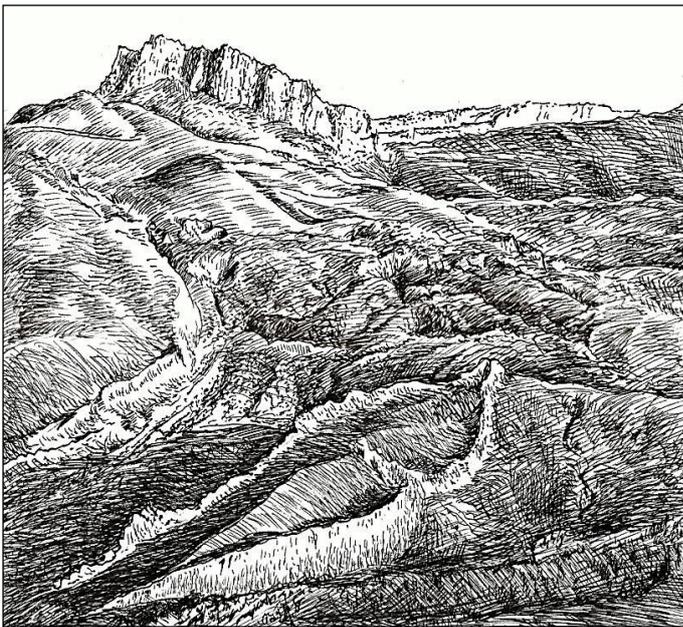


Figure 2: The landscape revealing the remnants of the Noah's ark, village of Uzengili

Earth was wiped out (The Bible, 1984).

1.1 The remnant of the Noah's ark

There is only one verse in the Bible which gives us a hint of where the ark came to rest, "*the ark rested...upon the mountains of Ararat*" (The Bible, 1984). It is assumed that as the waters receded, the ark came to rest on the mountains of Ararat (North

In Judeo-Christian countries, the most famous is the story of Noah's Flood, as recorded in the Bible: *Genesis*, chapters 6 to 8. The story of the worldwide flood has driven conflicts between geologists and Christians since the early 19th century (Morris, 1986). The dating of *Genesis* is uncertain, since the preservation of papyri is not nearly as good as that of stone. Historians place the date between 1,500 and 500 Before Common Era (B.C.E.), although the events are claimed to have occurred several thousand years earlier (Heidel, 1949).

According to the Bible, God was not pleased with what He has created. Evil ruled the Earth and was present within mankind. Only Noah, "*who found grace in the eyes of the Lord,*" (The Bible, 1984) his family, and the animals aboard the ark (ship) and survived to repopulate the planet. God instructed Noah to bring into the ark two of all living creatures, both male and female, and seven pairs of all the clean animals, along with every kind of food to be stored for the animals and his family while on the ark (Figure 1). Noah obeyed everything God commanded him to do. After they entered the ark, rain fell on the Earth for a period of about forty days and nights. The waters flooded the Earth for about a hundred and fifty days, and every living thing on the face of the

central Turkey). Ararat is a large area covering eastern Turkey, western Iran and surroundings.

1.2 The Ancient Historical Record of Noah’s Ark

Mr. Ronal Eldon Wyatt and his colleagues, an American research group made their first trip to the ark. By analyzing the soil structure and finding specific iron pieces and particles, they concluded that the Noah's Ark is located at *Uzengili* village near Ararat mountain region (Figure 2). The ark originally came to rest higher on the mountain after the flood. The area got the designation of a National park and a National Treasure in the recent years (Figure 3).

2. Associated Geographical attributes of the Noah’s flood



Figure 4: Present day Black Sea along with the study area flood.

A short and precise description of the related sites, associated landforms and water bodies would help the readers in understanding the procedure of genesis of this event.

2.1 Bosphorus Strait

The Bosphorus, also known as the Istanbul Strait is a strait that forms part of the boundary between Europe



Figure 3: Way showing towards the remnants of the Noah's ark, The National Park, Uzengili village

The detailed study of the present geographical features associated with the Noah’s Flood (demarcated within the box of Figure 4) would help in drawing out the relationship between the geological evidences behind this mythical



Figure 5: pointing at the semi-meandering bend character along with the shoal deposits within the Bosphorus strait channel. Photograph taken from the Camlica Hill (Asian side) shows the famous Bosphorus Bridge (1973) on the foreground connecting the two continents.

and Asia (vide figure 5). It is the Bosphorus strait that makes Turkey to be the only nation in the world sharing both the continents of Europe and Asia. It is also the world's narrowest strait used for international navigation, it connects the Black Sea with the Mediterranean Sea through Marmara and Aegean Sea. The present day flow is from the Mediterranean towards the Black Sea i.e. from south to north.

2.1.1 Bosphorus Riverine Strait: Palaeo geomorphological evidence

The authors went through a palaeo physiographic analysis of this strait. As mentioned earlier that one of the major hypotheses was that the Bosphorus channel was present prior to the Noah's Flood period. It is assumed that during that period also the channel bore the same characteristics as it is bearing now.



Figure 6: Deltaic deposits on both side of the Bosphorus Strait's mouth

The authors got various elementary characteristics of a river within the Bosphorus channel regime. Firstly, the presence of meander is a very basic element of a river (vide Figure 5). Secondly, the presence of shoal deposits along its course (vide Figure 5).

Thirdly, deltaic deposits are found at both the northern and southern mouths of the Bosphorus channel (Hiscott et al., 2002) (vide Figure 6). These confirm the riverine individuality of the strait.

2.2 The Black Sea

It has always been a pondering question as to why the Black Sea was called 'black'. When the authors saw the Black Sea they were pleasantly surprised; it was greenish

blue and beautiful (vide Figure 7). According to a literature study, the ancient Turkish people (Turks) referred to the northern direction as "black" and the southern as "red." Another theory opines that it was called the Black Sea by sailors and pirates who were struck by its dark appearance when the sky changed with tornado clouds and was also unfriendly (Özhan Öztürk Karadeniz, 2005).

Another possible explanation comes from the colour of the Black Sea's deep waters. The dark colour is because of the rich microalgae



Figure 7: Black Sea Coast from the hill top of Anadolu Hisari (Asian side)

concentration.

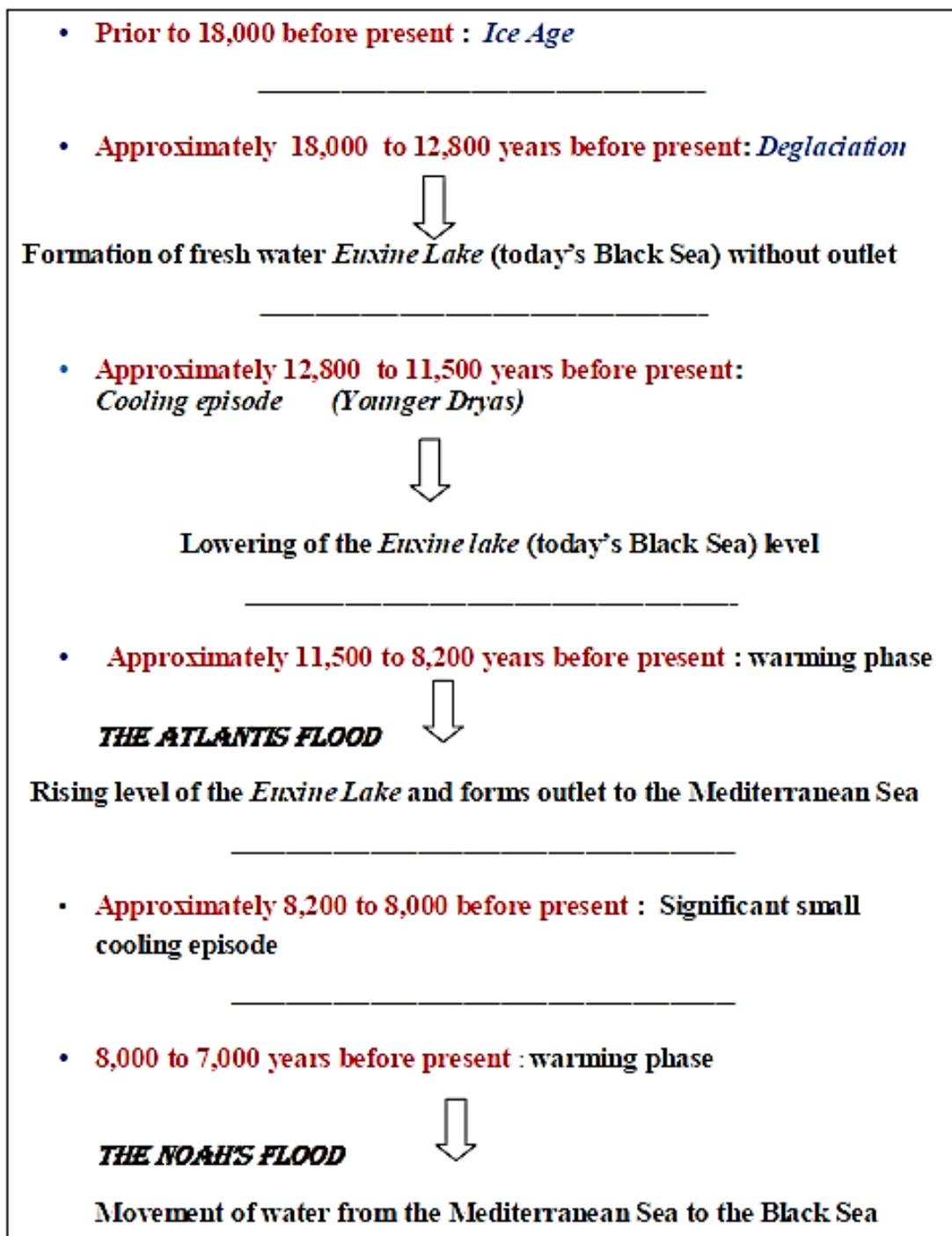
3. Geological sequences related to the Noah's Flood

The authors carried a couple of hypotheses prior to their site visit:

Firstly, the Bosphorus strait had its origin prior to the Noah's Flood.

Secondly, there was a reversal of the Bosphorus flow due to the changes in the physiography as well as climatic phenomena.

Chart 1: Myths associated with the Palaeo-Geomorphological Sequences



3.1) Approximately before 18,000 years ago from now: Ice Age

The globe experienced several ice ages and interglacial phases. The last Ice age is considered as the Last extensive glacial Ice age (http://en.wikipedia.org/wiki/Last_glacial_period). After the prolonged period of this ice age the warm episode (deglaciation) started about 18,000 years before present (B.P.). During this ice age, sheets of ice up to 3.218 kilometers thick covered much of the northern parts of North America, Europe and Russia. So much water had been withdrawn from the world's oceans that their level was about 121.92 metres lower than it is today (<http://water.usgs.gov/edu/watercycleice.html>).

The Black Sea is an ancient ocean waterway that separated Eurasia from Africa and India. When Africa and India collided with Eurasia, the waterway closed. About 25 million years ago, the Black Sea became a landlocked remnant. Since then the sea has shrunk during glacial periods when the region became dry. What is now the Mediterranean Sea then was largely a dry valley. A narrow height of land between what is now Spain and Northern Africa held back the Atlantic Ocean. The height of land collapsed – perhaps due to an earthquake, and the Atlantic Ocean flowed in to form the Mediterranean Sea (http://www.religioustolerance.org/ev_noah.html).

3.2) Approximately 18, 000 to 12,800 years before present: (Deglaciation/Interglacial)

About 18,000 years ago before present the temperatures started to increase that warmed up the atmosphere. Icecaps began to melt. It was during this period when several depressions on the land surface all over the globe started filling up with the molten glacier water.

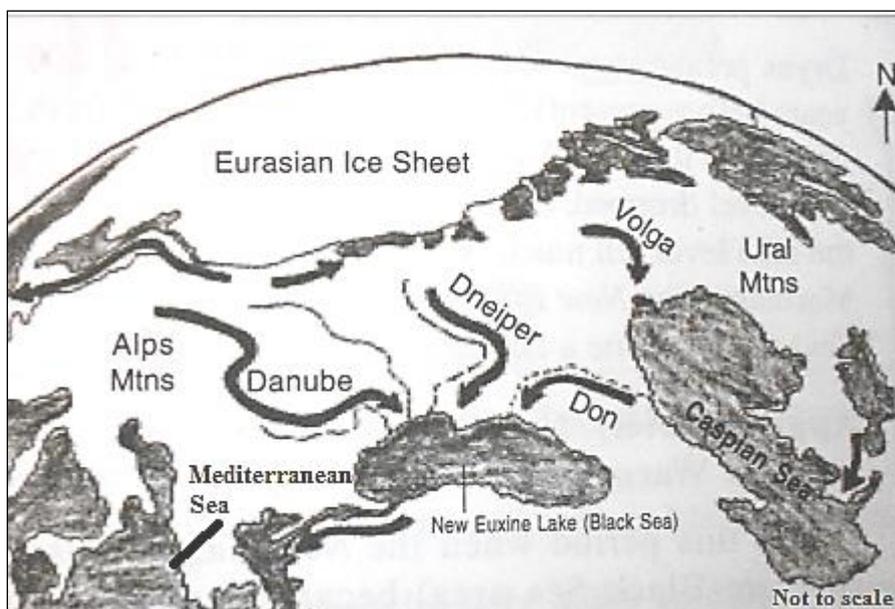


Figure 8: Movement of molten water into the New Euxine Lake after deglaciation

Similarly the ancient Black Sea was an east-west trending elliptical depression then. In the past the Black Sea was once a part of a larger body that included the Caspian and Aral seas. Later it got separated from the Caspian Sea and was linked to the Mediterranean Sea (<http://www.danube-delta-blacksea.eu/blacksea.html>).

[blacksea.eu/blacksea.html](http://www.danube-delta-blacksea.eu/blacksea.html)).

The ice at the southern boundaries of the glaciers began to melt that fed the rivers. The rivers in turn created and filled the huge freshwater depression (ancient Black

Sea depression) that resulted into a lake in the center of the map, and from there the waters flowed into the sea (vide Figure 8). The confluence of the main rivers formed the *New Euxine Lake* - a fresh water lake located within the area of today's Black Sea (Haarmann and Lee, 2006). It had a small outlet to the Sea of Marmara and thence to the Aegean and finally into the Mediterranean Seas (<http://www.geoscience-environment.com/es767quat/background.html>).

During this interglacial period, the ice melted and the sea expanded. About 12,800 years ago the Black Sea reached its largest extent, as the continental glacier melted and the rivers carried the melt water to the south. The Caspian Sea over spilled into the Don adding to the flow. The top layer of this *New Euxine Lake* became fresh water whereas below 200 metres water still had saltwater (<http://www.geoscience-environment.com/es767quat/background.html>).

3.3) 12,800 years before present to 11,500 years before present: Young Dryas cooling episode

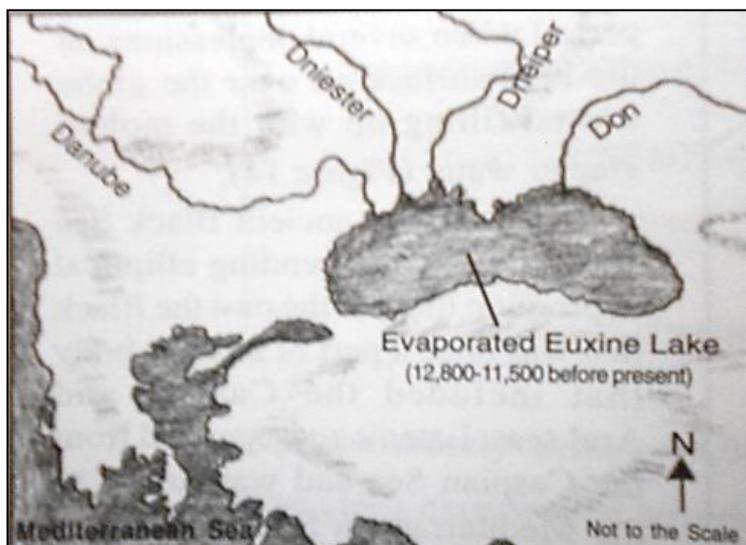


Figure 9: The excess take away of water resulted in a land locked lake that attracted civilisation

This period experienced a small cooling episode. The flow of freshwater from the glaciers into this lake got reduced to a greater extent. Both the temperature and rainfall dropped in the region (Muscheler, 2008) – an event known as the younger Dryas (Younger Dryas period some approximately 12,800 and 11,500 years before present) (Walker, 2004). As a result, the flow of fresh water into the *New Euxine Lake* almost stopped. The lake level dropped, due to evaporation

(http://www.religioustolerance.org/ev_noah.html). Eventually, the lake level fell much below its outlet to the Sea of Marmara. The *New Euxine Lake* (present day Black Sea) then became a landlocked, fresh water lake. (vide Figure 9)

3.4) 11,500 years before present – 8,200 years before present: (Warm phase)

It was this period when the *New Euxine Lake* (present Black Sea area) became a source of attraction for new civilizations to crop into. This was the period that resulted into the growth of the legendary *Atlantis Civilization*. This *Atlantis Civilization*- its birth, its growth, downpour of diversified population, its local myths and lastly its death helped us in confirming with our facets that steered up into the Atlantis Theory. This Atlantis Theory possesses a crucial mention to our work as it was in due course of this event that led to the formation of a fossil river – presently getting the status as the Bosphorus strait. As mentioned that a global ice age snap hit the globe during the previous mentioned era. The lake that formed got the name as the *New Euxine Lake*

(present Black Sea area). This fresh water lake became the hearth of the newer genre of civilization (Eagle and Wind, 2005).

The continued warm phase resulted in the extensive melting of the glaciers. It was then when the river confluences poured into the Caspian as well as the Black Sea (*the then New Euxine Lake*) (Kobashi et al., 2008). The Atlantis Theory explains the

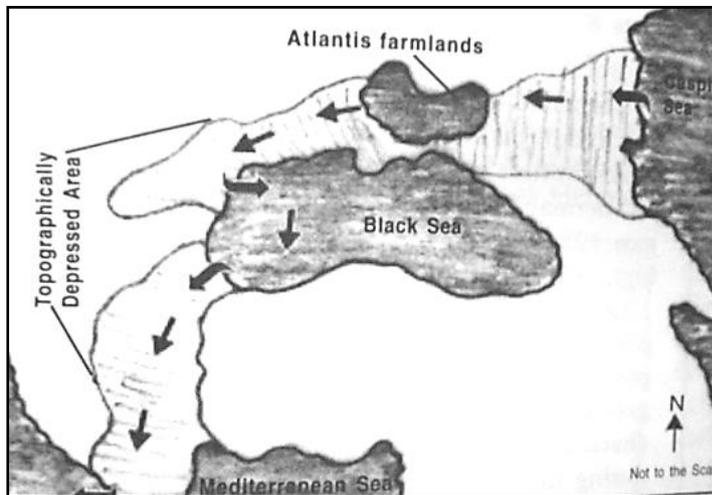


Figure 10: The movement of water from Caspian to Mediterranean via Black Sea rupturing the Bosphorus channel

excess movement of water from the Caspian through a passage onto the *New Euxine Lake* (present Black Sea area) that caused an over spill (vide Figure 10). This spill over created an outlet through the present Bosphorus strait into the Mediterranean Sea. This outlet got the stature of a river. This river after its prolonged imprints again got revived during the Noah's Flood (7,600 years before present i.e. 5,600 B.C.) period but with a reversed flow (i.e. from Mediterranean to Black Sea).

3.5) 8,200 before present – 8,000 before present (significant small cooling episode)

In this period the globe saw a sudden and significant cooling episode approximately 8,200 to 8,000 years before present. As the rainfall lessened civilisations without any reliable water resource faced difficulties. Many "*farming villages in Anatolia and along the Fertile Crescent were abandoned, while others dwindled*" (William and Walter, 2000). Villagers from many cultures moved in large numbers to the New Euxine Lake. It is assumed that along the shores of the lake there would have been villages with farmers and hunters from many cultures in the region. They spoke "*many different languages -- Proto-Semitic, Proto-Indo-European, Proto-Kartvalian and others...*" (William and Walter, 2000).

3.6) 8,000 B.P. - 7,000 B.P. (Continuance of warm phase): Noah's Flood "Revival of Bosphorus River"

But within a short time the Holocene regained its normal characteristics i.e. rise in temperature. The middle part of this period approximately 8,000 years before present experienced a climatic or Thermal Maximum, the warmest period in the past 125,000 years, with minimal glaciation and highest sea levels (William and Walter, 2000).

All throughout this period (post Atlantic flood period 8,000 to 7,000 years before present) the Bosphorus region went through several geo-tectonic events that ultimately changed the flow characteristics of the Bosphorus outlet. It was even during this period that a Bosphorus sill (igneous intrusion) along the channel's way was formed due to massive tectonic movements.

It was during this period where the outlet of the Bosphorus river (Bosphorus strait) was disturbed with deposition of various terrestrial eroded sediments from the adjacent land mass (vide Figure 11).

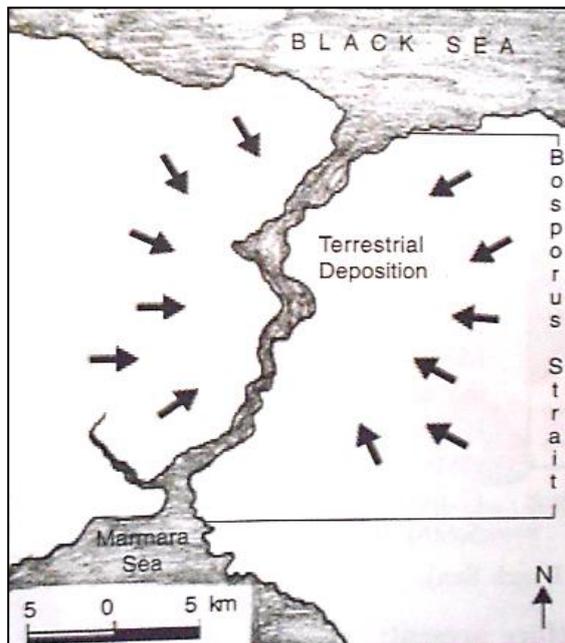


Figure 11: Tectonic movement along with terrestrial deposition disturbs the channel flow

The state of the Earth's climate was such that the oceans sat lower than today, and the Black Sea, cut off from the salty Mediterranean, had dried up and turned to a relatively shallow freshwater lake. Farming societies lived on the fertile lands around that sweet sea and fished in its waters, some 122 metres below the place where today the Bosphorus strait runs past Istanbul, Turkey (William and Walter, 2000).

During the earlier part of the millennia, the Mediterranean was cut off from the Black Sea. So as the level of the Atlantic Ocean started to rise, the Mediterranean did as well, but the Black Sea did not. The water level difference reached as much as 122 meters. During this period the water level of the Mediterranean continued to rise, but in expanding northward, it was only able to reach the edge of the Bosphorus Valley,

since it was ultimately held back by a natural sediment dam. Up to 7,600 years ago (i.e. 5,600 B.C.E.), the Mediterranean had no water exchange with the Black Sea (William and Walter, 2000).

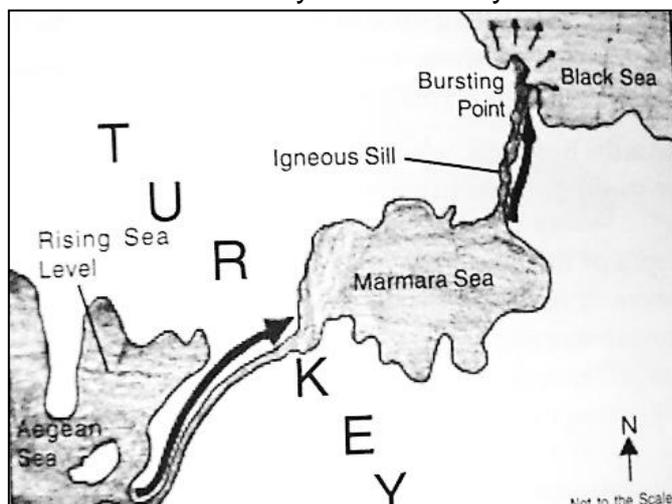


Figure 12: Revival of the Bosphorus Strait

At the time of the catastrophe, the Mediterranean Sea level was 30 meters lower than the contemporary level and the Black Sea level was 120 m lower. Thus, the Mediterranean Sea level was about 90 meters higher than the Black Sea level (Robinson, 1999).

The freshwater Black Sea was weakly connected to the saltwater Mediterranean (which reached the Sea of Marmara) with the small Bosphorus Valley. This valley was formed by the initiation of outlet water that flowed from the Black Sea into the Mediterranean through the Aegean Sea (Atlantis flood Theory, around 11,000 years before present vide Figure 12). Later, some 7,600 years before present (i.e. 5,600 B.C.) when the Earth started experiencing a tremendous rise in temperature excess waters in the Mediterranean pushed northward, causing the Aegean and Marmara Seas to rise, and the water broke

through the igneous sill at Bosphorus, and finally spilled into the Black Sea, in the form of a massive flood (vide Figure 12). This resulted in the great Noah's Flood (around 7,600 years before present i.e. 5,600 B.C.) (William and Walter, 2000)

The catastrophe for the Black Sea (Neo Euxine Lake) occurred approximately 7,600 years ago (i.e. 5,600 B.C.) when the sea level of the Mediterranean Sea rose and breached the Bosphorus Strait. These events might have been stimulated by frequent earthquakes, which sometimes were disastrous. Rising of sea levels during this period also formed the Torres Strait, separated Australia from New Guinea, formed the Irish Sea and many such events of transgression of global seas are evidenced.

4. Authors's Connotation: *Reversal of River Flow*

After going through the total global scenario and scientific evidences, the authors tried to draw out a geographical relevance behind the discussed two theories namely - *The Atlantis Theory* and *The Noah's Flood Theory*.

From *The Atlantis Theory*, it has been depicted that there was a movement of a channel of water in the form of a river from Black Sea to the Mediterranean which was suppressed due to global climatic changes. After a long stay in such a manner, the fossil river cropped out as a pseudo river but in this case carrying water from a reverse direction i.e. from the Mediterranean Sea to the Black Sea. After analysing through the hypothesis with the detailed site visit the authors came up with a geographical term- *Reversal of river flow*.

5. Geographer's Insight

The present authors think that if these ancient myths are handled sensibly then the world creation history may be co-related with efficiency. Even if those mythical events are put into a global mosaic, then the trends of spatial and temporal landscape evolution can be analysed along with the discovery of newer patterns of landscapes. These features would contribute to the subjects of physical sciences. These spatio-temporal landscape evolutions would further be helpful in understanding the waves of civilization that cropped up all throughout the globe. If these could be done then huge clues could be revealed to relate the integrity of the physical with the civilization phases.

This paper had been a part of our book (author: Saswati Roy and co-author: Prof. Malay Mukhopadhyay) "Geography Behind Myth – The Tale of Noah's Deluge" already published in the year 2014. In this paper, the authors have tried to assimilate almost all the major findings as stated in the book.

References:

- Eagle L.F. and Wind, M.W. (2005) *The Great Atlantis Flood Theory*. Cosmic vortex publishing House, Montreal, pp303-307.
- Heidel, A. (1949) *The Gilgamesh Epic and Old Testament Parallels*, (Chicago: University of Chicago Press,), p. 13.
- Haarmann, H. and Lee, J. (2006) *Popular Controversies in World History: Investigating History's Intriguing*. Chichester, pp114-116.

Hiscott, R.N., Aksu, A.E., Yasar, D., Kaminski, M. A., Mudie, P.J., Kostylev, V.E., ... Lord, A.R. (2002) Deltas south of the Bosphorus Strait record persistent Black Sea outflow to the Marmara Sea since ~10 ka. *Marine Geology*. 190 (1-2), 95-118.

http://en.wikipedia.org/wiki/Last_glacial_period

<http://water.usgs.gov/edu/watercycleice.html>

<http://www.danube-delta-blacksea.eu/blacksea.html>.

<http://www.geoscience-environment.com/es767quat/background.html>.

http://www.religioustolerance.org/ev_noah.html.

http://www.religioustolerance.org/ev_noah.html. *A source for the stories of Noah's flood: The catastrophic deluge that entered the Black Sea*

Kobashi, T., Severinghaus, J.P., and Barnola, J. (2008) 4 ± 1.5 °C abrupt warming 11,270 yr ago identified from trapped air in Greenland ice. *Earth and Planetary Science Letters*. 268 (3–4), 397–407.

Morris, H. M., (1986) *Science and the Bible*, Chicago, Moody Press, p. 85.

Muscheler, R. (2008) Tree rings and ice cores reveal ^{14}C calibration uncertainties during the Younger Dryas. *Nature Geoscience*. 1 (4), 263–267.

Özhan Öztürk Karadeniz: Ansiklopedik Sözlük (Black Sea: Encyclopedic Dictionary) (2005) Heyamola Publishing, Istanbul.

Robinson, B.A. (1999) The catastrophic deluge. *Religious Tolerance*. 1(4), 263-267.

The Bible (1984) *Genesis*, The New International Version (NIV), New York.

Walker, M. J. C. (2004) *Proceedings of the Yorkshire Geological Society*. 55, 33–42.

William R. and Walter P. (2000) *Noah's Flood: The New Scientific Discoveries about the Event that Changed History*, Simon & Schuster paperbacks, New York. pp-204-350.