

## Verses of Sura Qamar v. Horton Theory

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### ABSTRACT

This paper aims at investigating and comparing Horton theory with verses of Sura Qamar. The quantity of precipitation which usually causes overflows in the river is called flood. To design water structures, flood peak data is required. The most and biggest possible flood is called Probable Maximum Flood or PMF. Probability – based studies indicate infinity of probable maximum flood; and when the probability of flood occurrence tends towards zero, its severity tends towards extreme. Yet Horton, disagreeing with this matter, states that a sparrow cannot lay an egg with a diameter of one meter or a little river cannot have the same volume of water as Mississippi River. They are unaware of some geological and hydro-geological matters; as with regard to different verses of the Holy Quran, particularly verses 11, 12, 14 of Sura Qamar, three factors have been regarded as contributing in saving Noah people and transmitting the ship to Judy Mount (Ararat Mount), namely very heavy rain, fault creation and flow-out of underground water in the form of spring as the heaven water joined the ground water. Thus Horton theory lost its value.

**KEYWORDS:** Sura Qamar, Horton theory, flood, Noah ship

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### INTRODUCTION

To understand how a normal flood is created it would be better to address causing factors and their analysis. Then the factors created probable maximum flood and general insight, and verses that have been revealed from The sublime God to Prophet Mohammad, the blessing of Allah be upon him, along with literary and mystical interpretations have been provided; afterwards, the theories offered by experts have been elaborated that whether these theories and hypotheses consider merely mathematical aspects or have been able to derive divine verses from divine Books such as the Torah, the Gospel and the Holy Quran. This issue has been raised as in the Holy Quran, several verses have been revealed on different occasions that have mathematical, physical, biological, geological, etc. aspects as well as verses that are about flood and storm; and this paper has been written as per several verses specifically verses 11, 12, and 14 of Sura Qamar. Finally, suggestions will be offered regarding technical treatment and creating facilities for reducing wastes caused by overflows.

#### Theoretical Basics:

The quantity of irrigation which usually causes overflows in the river is called flood. Flood causes severe loss of life and property. Rare floods hydrograph and irrigation corresponding height specifically flood peak (maximum) present so valuable information to design water structures. Flood maximum values have been variable in different years and they constitute a time series which make the assessment of irrigation occurrence possible. Designing bridges, waterways, dams, overflows and bulwark construction in water structures requires flood peak information. There are various methods to calculate flood peak including reasonable method, experimental method, unit hydrograph and flood frequency analysis, depending upon different factors such as objective, project magnitude and statistics.

#### Probable Maximum Flood (PMF):

Selecting a number in a flood is one of main problems in designing water projects and the related structures. Flood quantity is always estimated by economic criteria, human waste, biological places destruction and hydrological factors. What is apparently accepted is that Probable Maximum Flood (PMF) and Probable Maximum Precipitation (PMP) happen, and when assessing important and rare events, this question may be raised that how severe the probable maximum flood will be. Probability – based studies indicate infinity of the probable maximum flood value because as the occurrence probability decreases, the severity of the occurrence increases; and when flood occurrence probability tends towards zero, its severity tends towards extreme (Gumbel non-logarithmic diagram and related formulas). Yet as flood is the direct result of precipitation!!! It can be accepted that physical restrictions are due to stabilization of rainfall intensity and consequently flood!!!

Horton claims in a paper that "a little river can never generate a flood with the magnificence of the great floods of Mississippi River. He also argues that a sparrow can never be able to lay an egg with a diameter of one

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meter, and according to him it can be claimed that precipitation intensity has a logical extreme which is known as Probable Maximum Precipitation (PMP)."

### **Structures Design:**

Engineers and designers involved in dam construction, with regard to their concerns about flood, claim that the structure design must be in a way that would not be destroyed and causes loss of life and property; so the lowest risk or the biggest flood must be considered because if a dam is destroyed and causes loss, all people have the right to object and offer hydrological solutions. While once a dam remains stable, this question will never be raised that why a great overflow and free depth have been considered.

It is obvious that this theory disvalues financial problems in hydraulic systems destruction. To design structures, three types of flood in terms of flood quantity, are encountered:

1. Frequency Based Flood, these are obtained with regard to the desirable return time of statistical analyses which are briefly addressed below:
  - 1.1 Determining flood frequency via plotting position method.
  - 1.2 Determining flood frequency via Pearson method.
  - 1.3 Determining flood frequency via Gumbel method.
  - 1.4 Determining flood frequency via Hazen method.
  - 1.5 Determining flood frequency via Log Pearson method.
2. Standard Project Storm (SPS), these floods are usually near 50% of probable maximum flood.
3. Probable Maximum Flood (PMF), these are determined through following methods:
  - 3.1 Using hydrological methods such as unit hydrograph, synthetic hydrograph for estimating PMF.
  - 3.2 Using experimental methods for estimating PMF.
  - 3.3 Using models for estimating PMF.

It must be noted that flood selection in terms of the above mentioned items depends upon economic, human and political factors and ultimately the hydrological nature of the area.

### **The Role of Snow Melt in PMF Estimate:**

In most of the world basins, particularly large basins part of which constitutes mountainous region, snow melt is effective on maximum value of flood. Thus estimation of the maximum accumulated snow is undertaken based on snow melt quantity at a point in time that is converted into the flood.

1. Methods for estimating maximum snow accumulation briefly consist of:
  - 1.1 Partial Season Method.
  - 1.2 Snow Storm Maximalization Method.
  - 1.3 Statistical Method.
  - 1.4 Degree Day Method.
  - 1.5 Energy Balance Method which includes:
    - 1.5.1 Snow melts quantity.
    - 1.5.2 Snow melts due to the effect of short wavelength radiation.
    - 1.5.3 Snow melts due to the effect of long wavelength radiation.
    - 1.5.4 Snow melts due to the effect of energy transmission through thermal wind.
    - 1.5.5 Snow melts due to the heat of rain drops.
    - 1.5.6 Snow melts due to the ground heat that is guided to the surface, which will be more discussed.
2. Temperature: since temperature plays an important role in estimating snow melt, maximum temperature of snow season must be determined. Long term statistics provided during 30 to 50 years must be applied. Usually 3 – day, 7 – day and 30 – day series temperatures must be utilized whose values decrease respectively.
  - Snow albedo is selected for the fresh snow as 80 – 85% at most and 40% at least.
  - Dew and wind point temperature are also important factors in snow melt.
  - Showers are also effective on snow melt, and it depends upon the environment temperature degree and the shower itself.

**Findings:**

1. Ground temperature: it is transmitted to the ground surface through two following ways and causes changes including snow melt and flooding.
  - 1.1 Permanent temperature: it is transmitted regularly and nonstop from the ground internal parts to the ground surface and causes snow melt, it interferes as a constant factor  $M_g = 50$  cm/day in calculations pertaining to the energy balance method.
  - 1.2 This kind of temperature is transferred due to the infiltration of molten materials from inside the ground to the ground surface via chimney, dyke and or flood; it happens over a short period of time and will cause sudden melting of snow, ice and glaciers of mountains including Damavand. With regard to the significant volume of snow and ice existing in these mountains, irreparable damages will be caused due to the snow melt and overflows of floods such as PMF. Unfortunately this matter has not been considered in calculating flood volume through hydrology, and designers of water structures and environment protection are wrong in the related calculations and the existing structures are exposed to serious threats. Ministries of energy, housing, urban development, etc. and environment protection must build thermometer stations with warning signs through undertaking adequate cooperation regarding accident prevention. The country capital embracing so many populations as well as residential, administrative and industrial facilities, northern parts of Iran and rivers without bulwarks are exposed to highly serious threats.
2. And finally Divine Verses of The Holy Quran
 

What has been elaborated by present including rain, snow melt due to the changes in temperature degree or as a result of infiltration of molten materials and creating high temperatures and devastating floods and sudden melt of snow, ice and natural glaciers of high mountains such as Damavand has been considered alone.

But in the Holy Quran, particularly verses 11 and 12 of Sura Qamar, three factors have been considered together. Divine verses and literal, literary and mystical translations are presented below, respectively:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
فَفَتَحْنَا أَبْوَابَ السَّمَاءِ بِمَا كُنَّا نُمْنِمُونَ (11)

وَفَجَّرْنَا الْأَرْضَ عُيُونًا فَالْتَقَى الْمَاءُ عَلَى أَمْرٍ قَدْ قَرَرَ (12)

Sura Qamar (54)

- Literal translation of the verse 11:** Hence we opened the doors of heaven to the flooding water.
- Literal translation of the verse 12:** We ripped the ground and opened the springs, and then waters of earth and heaven reached each other as per the command that was destined.
- Literary and mystical interpretation:** in these two verses and the verse 14 of Sura Qamar: "by Noah prayer, we opened the doors of heaven to a falling water (rain) and flowing water (flood) and once we ripped the earth and springs of water came up, heaven waters reached the earth waters and they integrated and water swept the world, Noah people were immersed in water and put Noah inside the ship that was the god of tablet and nails, we saved him and that ship flew before our eyes and under our protection." (Inferred from the book Water (Hydrogeology) in the Holy Quran – written by the author) Albeit there are another verses in the Holy Quran in this regard, including: verses 43 and 44 of Sura Hud (11) regarding water wave and water infiltration to underground aquifers.
- The verse 11 of Sura Noah (71) regarding frequent rains.
- The verse 16 of Sura Saba (34) regarding raged flood that broke down the "Erm" dam. Sheba watered gardens by waters of streams flowing from the dam; for more details, see pages 211 and 121 of the book Water (Hydrogeology) written by the author.
- 2.1 The verse 11 of Sura Qamar (54) indicates heavy rain falls in the form of the flooding water that is exclusively related to hydrology and it is PMP.
  - 2.2 The verse 12 of Sura Qamar addresses clearly geology and underground waters.
    - 2.2.1 وَفَجَّرْنَا الْأَرْضَ we ripped the earth, i.e. We created fault.
    - 2.2.2 عُيُونًا we created springs.

One of the main factors in tectonic and geology is creation of fault and earth displacement which is explicitly stated in the verse 12 of Sura Qamar. There are many faults even in Iran whose height difference may be more than one hundred meter, like Alborz Fault, Gorgan – Rasht Fault, Musha – Qeshm Fault, etc.

In the same verse, it is indicated that we opened springs, i.e. the underground water that had been saved in different layers with so much volume comes up as springs after fault creation, particularly if layers are made of calcareous formations that may cause irreparable damages; because calcareous formations have abundant seams and gaps, and water exists there with higher intensity.

There are two important scientific matters together in the verse 12 and then the verse of flooding rain pertaining to the verse 11 is added as underground waters flew out of aquifers and rain waters, reached each other as per the Sublime God command. Consequently three matters may be considered together in exceptional floods known as PMF which is mentioned in the Holy Quran. It is obvious that these three factors have created so much water to transmit Noah ship to the Judy Mountain. Yet these factors are among divine signals that must be considered by designers and thinkers of constructs especially residential structures and water structures, and disasters must be prevented as far as possible.

## Conclusions

With respect to the existing diagrams, the range of volume probability of PMF flood may be extended to extreme. So it cannot be accepted that a sparrow cannot lay an egg with a diameter of one meter or the water volume of a little river cannot be as much as the water of Mississippi River. This fact evidence are the verses 11, 12 and 14 of Sura Qamar or other verses in the Holy Quran that explicitly address this matter and consider different factors in a big flood creation including flooding rain, fault creation and flow-out of underground water aquifers in the form of springs to which water structures designers must pay an accurate attention.

With respect to the above mentioned matters, hydrological equation will be as below:

$$P + F - R - G - E - T = ds$$

If we ignore G, E and T due to their small value, general form of the hydrological equation will be:

$$P + F - R = ds$$

P: precipitation

F: flow out of underground waters due to fault displacement

R: surface runoff

E: evaporation

T: transpiration

G: ground water flow

ds: water supply changes in system

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