

**MEDNET MONOGRAPH SERIES  
ON  
ISLAM AND QUR'AN**

**No : 21**

**EARTH SCIENCES  
AND  
QUR'ANIC REVELATIONS**

**Shah Manzoor Alam**

Indian School of Excellence Trust  
(INDSET)  
Hyderabad - INDIA

## **ACKNOWLEDGMENT**

**We acknowledge our profound sense of gratitude to:**

Al-Imam Muhammad Ibn Saud Islamic University, Riyadh, for their gracious permission to use the text of Chapter 3 of the following book published by the University in the preparation of this Monograph:

**Alam, Shah Manzoor (1999) : Scientific Significance in Selected Qur'anic Verses**, published by Deanery of Academic Research, Al-Imam Muhammad Ibn Saud Islamic University, Riyadh, Saudi Arabia.

Mrs. Asiya Mirza, as language expert, helped us to improve the language of the Monograph.

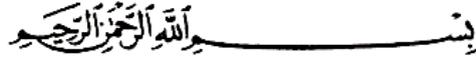
Mr. Kabir Ahmad, Director All India Radio (Retd.), for kindly giving a final reading before the Monograph was sent to the Press for printing.

# EARTH SCIENCES AND QUR'ANIC REVELATIONS

## CONTENTS

	<b>Page</b>
<b>Acknowledgment</b> .....	<b>ii</b>
<b>Preface</b> : <b>Chairman - INDSET</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>1</b>
<b>Cloud, Wind And Rain</b> .....	<b>1</b>
<b>Cloud Formation And Characteristics</b> .....	<b>2</b>
<b>Cumulus Clouds</b> .....	<b>4</b>
<b>Qur'anic Verses on Wind Cloud Relationship</b> .....	<b>4</b>
<b>Winds :</b> .....	<b>7</b>
<b>Planetary Winds</b> .....	<b>8</b>
<b>Trade Winds</b> .....	<b>9</b>
<b>The Westerlies And Monsoon Winds</b> .....	<b>11</b>
<b>Local Winds</b> .....	<b>12</b>
<b>Land And Sea Breezes</b> .....	<b>12</b>
<b>Thunderstorm And Tornadoes</b> .....	<b>13</b>
<b>Soil Erosion And Differential Soil Fertility</b> .....	<b>16</b>
<b>Earth, Mountain And Water Bodies</b> .....	<b>17</b>
<b>Earth The Habitat of Man</b> .....	<b>17</b>
<b>Role of Mountains As Revealed In The Qur'an</b> .....	<b>19</b>

<b>Water Bodies .....</b>	<b>22</b>
<b>Fresh And Saline Water .....</b>	<b>25</b>
<b>Conclusion .....</b>	<b>27</b>
<b>Summary of The Text .....</b>	<b>28</b>
<b>References .....</b>	<b>31</b>
<b><u>Appendix :</u></b>	
<b>Qur'anic Verses Relating To Earth Sciences .....</b>	<b>34</b>



## FOREWORD

It is a distressing fact that most of the Muslims lack proper understanding about the universal relevance of the Qur'anic Message which was revealed to Prophet Muhammad (SAWS) for the guidance of all mankind. There is considerable misapprehension too about Islam and the Message of the Qur'an in the minds of Non-Muslims. **Indian School of Excellence Trust (INDSET)** is making a humble endeavour through a series of monographs on Islam and Qur'an to project the image of Islam in its proper perspective and to explain the significance of the Message of the Qur'an in a scientific and systematic way.

This Monograph on Earth Sciences and Qur'anic Revelations presents only a broad spectrum of Qur'anic revelations pertaining to various aspects of the Earth Sciences. It does however focus sharply on the scientifically correct description in the Qur'anic verses relating to certain specific aspects of river formation, ground water accumulation stabilising role of mountains, wind movement and rain bearing clouds and separation of fresh and saline water. The description of natural phenomena in the Qur'an with scientific precision without the aid and assistance of modern, sophisticated scientific equipment is indeed miraculous. It testifies eloquently that the Qur'an is a divinely revealed message from Allah (SWT) to Prophet Muhammad (SAWS). Do they not also

substantiate convincingly the existence of Allah (SWT), the Creator and the Sustainer of the universe?

We earnestly pray, in all humility, to Allah (SWT) to kindly accept our small services in the cause of Islam and Qur'an and graciously bless our efforts with success (*Ameen*).

وَأَخِرُ دَعْوَاهُمْ أَنِ الْحَمْدُ لِلَّهِ رَبِّ الْعَالَمِينَ

**Shah Manzoor Alam**  
Chairman -INDSET  
&  
Former Vice-Chancellor,  
University of Kashmir,  
Srinagar

**EARTH SCIENCES**  
**(Geology, geophysics, geography and meteorology)**  
**QURANIC REVELATIONS AND**  
**SCIENTIFIC DESCRIPTION**

**INTRODUCTION**

The Earth Sciences cover a large number of disciplines which deal with the structure of the earth, its formation, and evolution. It also deals with such natural phenomena as rains, rivers, seas and oceans which influence the shaping of the earth. This monograph critically and systematically looks into scientific description of certain geomorphic features and meteorological phenomena in the light of the Qur'anic references relating to these natural features. We shall confine our analysis to the 50 odd verses in the Qur'an which specifically deal with the natural phenomena; and compare them with the scientific descriptions of the corresponding phenomena. This will enable us to appreciate the degree of congruence or incongruence between Qur'anic revelations and scientific observations relating to the natural phenomena. These 50 Qur'anic verses cover a wide gamut of natural features such as cloud, rain, wind, soil erosion, mountains, water bodies etc. and highlight their characteristic features.

## **CLOUD, WIND AND RAIN**

The phenomena of cloud, wind and rain are inevitably interlinked and have therefore been mostly described together in order to highlight their interconnection. As for instance it is mentioned in *Surah A'raaf* that: *"It is He who sendeth the wind like the heralds, of glad tiding going before His mercy when they have carried the heavy cloud, we drive them to land that is dead and make rain to descend thereon,"* (Al-A'raaf; 7:57). This interconnection is emphasised in another verse also: *"It is Allah who sends the winds, they raise the clouds, and then does He spread them in the sky as He wills."* (Ar-Ruum; 30:48). The importance of winds in cloud formation, occurrence and distribution of rain has been repeatedly stressed in the Qur'an.

## **CLOUD FORMATION AND CHARACTERISTICS**

Scientifically clouds are treated as "aggregate of minute water droplets of ice particles drifting in the air at some height above the earth" or "suspensions of minute droplets or ice crystals produced by the condensation of water vapour."(1) This process of condensation cools by expansion (adiabatic cooling) since it encounters lower pressures as it ascends higher levels in the atmosphere. The relative humidity increases until the air becomes saturated with water vapour; then condensation occurs on any of the minute particles suspended in the air. (2) The winds or air currents not only play a role in the

formation of clouds but also in spreading them across as will be observed later, and eventually in the occurrence of rain. It may thus be noted that the chilling which produces clouds is associated with the upward movements of air which carry heat from the earth's surface and restore to the atmosphere the heat lost by radiation into the space.(3) The speed and velocity of the upward movement of the air current determine both the type of cloud and the type of weather accompanying them.

The latest scientific researches however identify four types of upward wind motion which lead to the formation of four main and ten (10) sub-types of clouds. These are:

1. Vertical currents of small dimensions and irregular structure super imposed on the horizontal flow of air, these yields stratus and a few varieties of strato-cumulus clouds as well as currents which produce clouds notably marked for vertical development such as cumulus and cumulonimbus.
2. Upward currents induced by orographic obstacles (mountains, hills) in the path of the winds. These lead to the formation of stratus or altocumulus clouds. These upward currents accentuate any pre-existing tendency towards large scale convection with the result that clouds having considerable vertical development may be formed (cumulus or cumulonimbus).

3. More or less uniform ascent of air over wide areas resulting from special dynamical conditions in the atmosphere lead to the development of unbroken sheets of cirrostratus or cumulus and also alto stratus clouds which ordinarily precede bad weather.

Thus whatever may be the type of cloud, it needs air current to assist its formation. Although clouds are aggregates of moisture, all clouds are not rain bearing clouds. There are certain specific types of clouds which are rain bearing such as the cumulus and cumulonimbus. The scientists offer the following description of these clouds:

### **CUMULUS CLOUDS**

Cumulus clouds were described as heaps of clouds by L Howard in 1803. They have a characteristic pyramidal shape, and viewed from a distance appear to have an unfolding motion with fresh cloud masses continually emerging from the interior to form summit...  
...Cumulus clouds....In disturbed conditions they cover a large part of the sky and individual clouds may tower as high as 10 kilometers - These clouds produce heavy showers, hail and thundershowers - the upper currents in thunder clouds however often exceed five meters per second and may reach 30 meters per second or more,"(4). Cumulus and cumulonimbus are heavy masses of cloud with great vertical development, whose summits are like

mountains, or towers, the upper parts have fibrous texture and often spreading out in the shape of an anvil," (5).

### **QURA'NIC VERSES ON WIND CLOUD RELATIONSHIP**

We have observed in the preceding paras that winds act as the driving force for the clouds and the nature of air current largely determines the type and character of clouds. This linkage has been forcefully expressed in *Surah Baqarah*: *"In the change of the winds and the clouds which they trail like their slaves between the sky and the earth; - (Here) indeed are Signs for the people that are wise,"* (Al-Baqarah; 2:164).

The Qur'an expresses a distinct relationship between the air currents and cloud types. As observed earlier there are four types of upward wind motion and each type of air current gives rise to a specific set of clouds.

The Qur'an is also very clear that all clouds are not rain bearing clouds and hence specifies rain bearing clouds as *"the heavy laden clouds,"* or *"clouds heavy with fertilizing rain,"* (Ar-Ra'd; 13:12).

These verses obviously refer to the cumulus or cumulonimbus clouds for the scientists also call them "heavy masses of cloud". The following Qur'anic verse does not leave us in any doubt as to the identity of cloud:

*“Seest thou not that Allah makes the cloud move gently, then joins them together and then makes them into heap, then wilt thou see rain issue forth from their midst. And He sends from the sky mountain masses (of clouds) wherein hail is. He strikes therewith whom He pleases and He turns it away from whom He pleases. The vivid flash of His lightning well nigh blinds the sight,”* (An-Noor; 24:43).

Please note the use of words ‘heap’, ‘mountain masses’, hail and ‘flash of lightning’ in this Surah. In his classification of cloud L Howard (1803) identified cumuli form of clouds as ‘heap’ (6). The World Meteorological Organisation also calls the cumulus clouds as ‘small heap of clouds’ (7). The cumulonimbus clouds are described by the meteorologists as ‘heavy masses of cloud.....whose summits are like mountains’. It is in these low thick clouds rising like mountain because of strong vertical currents that hail stones are formed and thunder and lightning are vigorous and frequent. We find striking similarity between the Qur’anic and scientific description of the cumulus and cumulonimbus clouds. They both describe them as ‘heaps’ and ‘mountain masses’ of clouds. Does it not sound amazing?

The formation of ice crystals and their coalescing into large crystals within the clouds explain the mechanics of precipitation from the clouds. These processes help the growth of small water droplets into large size and with the increase in size they tend to split in fragments and fall as rain drops on the ground. The mechanics of rainfall through a cumulus or cumulonimbus clouds is described

as follows "In a dense vigorous cloud several kilometers deep, the drop may attain its limiting stable diameter (about six millimeters) before reaching the cloud base and thus will break up into several large fragments. Each of these may continue to grow and attain break up size. The number of drops may increase so rapidly in this manner that after a few minutes the accumulated mass of water can no longer be supported by the upper currents and falls as heavy shower.(8). It is this fragmentation of the large super cooled condensed particles of moisture in the cloud that the Qur'an speaks of in *Surah Rum*: ***"It is Allah Who sends the winds and they raise clouds. He spreads in the sky as He wills and breaks them into fragments until thou seest rain drops issue from the midst thereof"*** (Ar-Ruum; 30:48).

It may also be noted that the vertical lift of the clouds is caused by the vertically rising wind currents which raise clouds. Similarly the Qur'an repeatedly refers to the phenomena of lightning associated with these "rain laden clouds," ***"or (another similitude) is that of rain laden cloud from the sky; in it are zones of darkness, and thunder and lightning"*** ( Al-Baqarah; 2:19).

Thunder and lightning are associated with convective clouds with air currents of high vertical intensity. The mechanism by which electric charges are dissipated in lightning is closely associated with the appearance of ice phase, and the most promising theory suggests that the charges are produced by the rebound of the ice crystals or a small fraction of the cloud droplets that collide with the falling hail pellets". (9) and (10).

Hence this association of thunder and lightning is realistic and scientifically correct. People can be struck dead by lightning? Trees are torn to pieces and cleavages occur in walls with the impact of a ferocious charge of lightning. The Qur'an graphically describes this impact as follows: *"The lightning all but snatches away their sight, every time the lightning (help) them, they walk therein and when the darkness grows then they stand still. And if Allah willed He could take away their faculty of hearing and seeing, for Allah has power on all things,"* (Al-Baqarah; 2:20).

## WINDS

We have observed in the preceding paras that winds or air currents provide the motive force in the formation of clouds and in the occurrence of rain. There are eleven verses in the Qur'an which emphasise the role of winds in human life and have classified winds according to their character. It seems appropriate that we spell out the scientific explanation of winds before we examine and explain the relevant Qur'anic verses.

Scientifically there are diverse types of winds. Some of them are global in nature, others are local; some are stormy and destructive others, are calm and pleasant; some are rain-bearing, others are dry; some are cold and freezing, others are hot and scorching. These variety of winds, because of the differences in their temperature, moisture content, velocity and direction, lead to varying

weather conditions which have a strong impact on human life.

All wind movements are caused because of thermal and pressure differences both horizontally and vertically with dimensions ranging from tens of metres to thousands of kilometers. They widely differ in their scale i.e. size and life time. There are winds on the planetary scale spreading across the globe covering a wide range of latitudes and having distinct seasonality lasting 3 to 4 months. These are planetary winds and are frequently interspersed with cyclones and anti-cyclones which span smaller distances, a few hundred to a few thousand kilometers and possess shorter life time, a few hours to several days. Then there are winds on the meso-scale such as the thunderstorms including tornadoes, whirlwinds lasting only a few hours. Another set of winds generated on micro scale are the local winds such as the land and sea breezes, mountain and valley winds etc., which are caused by the local temperature differences and cover a very small land area. We propose to describe briefly each of these major types of wind and examine them both in the light of Qur'anic revelations and scientific findings.

## **PLANETARY WINDS**

Owing to reflection from clouds, snow, ice which are more extensive in high latitudes, the solar radiation absorbed by the earth-atmospheres is about three times as

great in the equatorial belt as in the poles. Thus in low latitudes  $0 - 30^\circ$ , the earth-atmosphere is, on the average heated and in higher latitudes i.e. north of  $35^\circ\text{N}$  and south of  $35^\circ\text{S}$  is cooled by radiation. Consequently the heat gained by condensation and the heat transferred from the earth's surface exceed the net radiative heat loss in low latitudes. The reverse is true in higher latitudes. In order to balance this gain and loss of heat, planetary high and low pressure belts are established which initiate transfer of heat or energy from high energy to low energy belts. Consequently the winds commence to flow on the surface from low energy areas to high energy areas, and in the upper air the direction of the air current is reversed. (11) and (12) The global pressure belts are as follows:

**High Pressure Belts:** (1) around the North and South Poles  
(2)  $30^\circ - 35^\circ$  north and south of the equator

**Low Pressure Belts:** (1)  $5^\circ$  N&S of the Equator;  
(2)  $60^\circ - 65^\circ$  N-S of the Equator.

The existence of permanent pressure belts with minor seasonal shifts leads to a mass circulation of winds such as the Trade Winds, the Monsoon winds and the westerlies in both the northern and southern hemispheres.

## TRADE WINDS

These are the most extensive of the planetary winds. They have been so named because of their favourable influence on national and international trade before the invention of the steam ships and diesel engines. These winds blow in the northern hemisphere from north east to south west from the sub-tropical high (30 - 35 N) to the equatorial low. They produce cool dry conditions with abundant sunshine while passing overland. However when they pass over extensive water bodies such as the Pacific, Atlantic and the Indian Ocean the air mass becomes more humid and scattered showers occur particularly along the east coast in the northern hemisphere and on islands with elevated terrain features that interrupt the flow of warm, moist air.

Before the advent of steamships, the planetary winds were of immense help in the movement of ships across the seas and oceans. Assisted by these favourable winds the Arabs and Indians established flourishing trade by navigating across the Arabian sea. Even before the rise of Islam there were a large number of trading ports in the Arabian (Persian) Gulf which had lucrative trade with India through its settlements on the west coast from Gujarat to Kerala. Columbus used the favourable trade winds to discover America (1482) and similarly Vasco da Gama utilized these winds successfully to sail across the Cape of Good Hope to reach Goa, in India (1498). It is this favourable role of the wind which is pointed out in the Qur'an: *"It is He Who enableth you to*

*traverse through land and sea; so that you even board ships -- They sail in them with a favourable wind and they rejoice there at. Then comes a stormy wind and waves come to them from all sides, and they think they are being over-whelmed. They cry to Allah sincerely offering (their) duty to Him saying: if thou dost deliver us from this we shall truly show our gratitude,"* (Yunus; 10:22).

The smooth sailing of the ship is being frequently disturbed by the cyclonic conditions which leads to stormy weather resulting in violent wave movement on the surface of the sea. The Qur'anic revelation speaks of this stormy sea condition to pin point at the selfish nature of man. Whenever a disturbing situation befalls him, he thinks of Allah (SWT<sup>1</sup>) and promises total loyalty and obedience but renegades the moment he is out of danger.

### **THE WESTERLIES AND MONSOON WINDS**

The most fecunding or profitable for the growth of human civilization are the planetary winds called the Westerlies and the Monsoons. While the westerlies blow in the temperate regions in both the northern and the southern hemispheres, the Monsoons are largely confined to the tropics and subtropics. In the northern hemisphere the westerlies are associated with changeable weather common to the middle latitudes. Despite frequent cyclonic

---

<sup>1</sup> SWT stands for 'Subhanuhu wo Ta'la,' meaning 'Pure and Exalted.'

disturbances the westerlies are a boom to the Mediterranean region in Europe. The agricultural, pastoral and horticultural economy of this region depends on winter rains from the westerlies. By virtue of the distinct climatic conditions it generates in the Mediterranean it is identified as the Mediterranean type of climate marked for its mild rainy winter and hot dry summer. This region is famous for vine, citrus fruits, and olives the world over. These crops are conspicuously dependent on the weather conditions typical of the Mediterranean within the flow zone of the westerly winds.

Because of the high temperature conditions over the subcontinent of India during the months of April and May it develops a strong low pressure belt which tends to reverse the flow of the trade winds from the Indian Ocean around the equator towards the sub-tropics. Consequently moisture laden winds commence to move from SW to NE and usher in a period of invigorating rains throughout the Indian subcontinent from the middle of June to the middle of October. These are life giving Monsoon rains for India, Pakistan and Bangladesh. If the monsoon rains fail to occur consecutively for 3 to 4 years, they cause serious loss of food and fodder crops resulting thereby in acute famine conditions both for human beings and cattle. Thus the monsoon winds are the real life giving fecunding winds *“And We let loose the winds to fertilize [plants], and We send down water from the skies and let you drink thereof: and it is not you who dispose of its source”* (Al-Hijr; 15:22).

This has been re-emphasised in the following verse: *“And He it is who sends forth the winds as a glad tiding of his coming grace; and (thus too). We cause pure water to descend from the skies, so that We may bring dead land to life thereby, and give the drink thereof to many (being) of our creation, animals as well as humans.”* (Al-Furqaan; 25:48-49).

The reference to such planetary winds as the westerlies and the Monsoons as fecunding winds is obvious for they flow with consistent regularity bringing in maximum benefit to the land and people. These are the winds which serve as heralds of glad tiding.

This is very true of agriculture in India which depends largely on the Monsoon rains. The farmers there look upon the sky with expectant eyes for the onset of the Monsoon. Their prosperity is inevitably linked with it. Thus the Monsoon winds in every sense of the word are “heralds of glad tidings”. It may also be noted that the distribution of the rainfall is very much governed by the direction of these rain bearing winds. Sometimes the direction of these moisture laden winds is suddenly altered something which cannot be even predicted. Occasionally these Monsoon winds are also weakened resulting in less than normal rainfall in certain regions.

## LOCAL WINDS

Besides these planetary winds there are diverse types of local winds with distinctive characteristics of their own such as the land and sea breezes:

### LAND AND SEA BREEZES

Among the local winds the land sea breezes are the most commonly observed. These local winds are encountered along the coastlines adjacent to large water bodies and are induced by temperature differences that occur between heating and cooling of the water and the adjacent land surface. Because water has a higher heat capacity than do the materials in the land surface, daytime solar radiation heats the land surface more than the water surface. This higher land temperature transfers more heat to its overlying air mass and in so doing induces a circulation cell. Thus during the day time gentle, cool sea breeze, not exceeding 30 km per hour, move into the land to a depth of 10 to 20 km. It is such gentle breezes which have been referred to in the Qur'an as those that "*flow with ease and gentleness*," (Adh-Dhariyaat; 51:3).

This may also refer to the pleasant local mountain winds which flow into the valley from the cool mountain slopes and are very refreshing. (13)

### THUNDERSTORMS AND TORNADOES

In contrast to the land and sea breezes are the violent thunderstorms which according to Qur'an are "*a furious wind on a day of violent disaster,*" (Al-Qamar; 54:19).

These violent winds or tornadoes are called twisters in North America, norwesters in Bangladesh, Haboob in Sudan. Tornado is the most violent of thunderstorms. It is a powerful twister whose rotational speeds are estimated to be close to 480 km per hour but may occasionally exceed 800 km per hour. The direction of rotation is usually counter clock wise in the northern hemisphere.

The tornadoes have a very short span of life, perhaps only a couple of hours, and cover a limited area about few square kilometers. But within that short time and narrow extent they spell catastrophic disaster. It has been reported that in "the short time that it takes to pass, a tornado causes calamitous destruction. There have been cases reported in which "blades of straw were imbedded in fence posts, a school house with 85 pupil inside was completely demolished and pupils, carried 137 metres with none killed; and five railway coaches, each weighing 70 tons, were lifted from their track and one coach was moved 24 metres"(14). It would be interesting to compare this report with the Qur'anic revelation on the nature and character of tornadoes. In one of the verses it is stated: "*Do you then feel secure that He will not cause you to be*

*swallowed up beneath the earth when you are on land or that He will not send against you a violent tornado (with showers of stones) so that you shall find no one to carry out your affairs for you,"* (Al-Isra; 17:68).

In *Surah Al-Qamar* the destructive role of tornado is thus described: *"A furious wind on a day of violent disaster. Plucking out men as if they were roots of palm trees torn up (from the ground)"* (Al-Qamar; 54:19-20).

The degree of conformity between the Qur'anic revelation and modern account of the colossal damage caused by tornado is indeed remarkable.

The winds also play an important role in the dissemination of seeds across great distances. They are used for running wind mills, for separating grains from chaff and as channels of communication. The Qur'anic revelations identified these functional roles of winds centuries ago. As for instance in *Surah Adh-Dhariyaat* it is pointed out that winds "broadcast" i.e. spread out materials over a wide area and they can provide energy to lift heavy weights or it may even imply that winds with strong gale force can bodily lift small pieces of stones and scatter them across a wide area. Further it is the wind movement which controls the distribution of rain in specific regions. These diversified functions of the wind are expressed as follows in the Qur'an *"By the winds that scatter broadcast, and those that lift and bear heavy weight and those that flow with ease and gentleness; And those that distribute and apportion by command"* (Adh-Dhariyaat; 51:1-4).

These functions of the wind are again more specifically stated in *Surah Al-Mursalaat*: ***“By the (winds) send forth one after another (to man’s profit) which then blow violently in tempestuous gusts, and scatter things far and wide, then separate them from one another, then spread abroad a message,”*** (Al-Mursalaat; 77:1-5).

It may not be inappropriate to mention that wind has been used as a channel of communication through the centuries. As for instance travelers in the mountainous regions used echos to communicate with fellow travelers. In the forts of India clapping echoes were used to announce the arrival of strangers or guests at the outer gate.

The aforesaid verses re-stress the functional role of the wind. They point out clearly that wind has both helpful and harmful effects. When it brings rain it helps agricultural production and refurbishes supply for drinking water, but in the form of tempestuous gusts it can be dreadfully disastrous. This is the case with all aspects of natural phenomena. As for instance fire can be a source of energy and light-hence a source of convenience and comfort. It can also burn houses, human beings and forests with disastrous consequences. Think of any natural phenomenon and you will observe it possesses contrasting characteristics.

## **SOIL EROSION AND DIFFERENTIAL SOIL FERTILITY**

Sun, water and winds are agents of erosion. They break and erode rocks and soils. The wind and water transport the eroded material away to great distances. Further there are soils of differential fertility depending upon the mineral content of the rock from which the soil has been formed. Sometimes the soils are deep as in the lava regions or the river deltas but in arid and hard rocky areas the top soil constitutes a thin veneer on the rocky bed which get exposed when eroded. The Qur'an reveals with a remarkable degree of precision these scientific aspects of soil erosion and soil fertility through a parable. As for instance in *Surah Al-Baqarah* it is pointed: *"They are in parable like a hard barren rock, on which is a little soil, on it falls heavy rain which leaves it just a bare stone,"* (Al-Baqarah; 2:264).

Although referred to as a parable yet it is a highly precise scientific statement. It identifies water as a powerful agent of erosion when it rains hard. On hard rocks the process of soil formation is extremely slow and generally a thin layer of soil is formed in thousands of years. The Qur'an points out that this thin layer of top soil is removed by the downpour and base rock is exposed which agriculturally is useless (15) and also (16). In *Surah Al-A'raaf* the Qur'an very pointedly refers to differential soil fertility: *"From the land that is clean and good, by the will of its Cherisher springs up produce (rich) after its kind; but from the land that is bad spring up nothing but*

*that which is niggardly. Thus do we explain the signs by various (symbol) to those who are grateful,"* (Al-A'raaf; 7:58).

The fertile soils free from weeds when provided with adequate quantity of water and manure yield a flourishing crop whereas a barren and sterile soil despite a good supply of water hardly produces any crop and is of no benefit to man. This differential quality of land is a scientific fact, and that crop yields depend on soil fertility is equally true. (17)

## **EARTH, MOUNTAIN AND WATER BODIES**

There are a number of Qur'anic verses which explain the character of the earth as the habitat of man, the formation of mountains and their role in lending stability to the earth. The water bodies whether on the surface or underground have been very precisely identified. The degree of scientific precision we observe in these Qur'anic verses is astounding.

### **EARTH : THE HABITAT OF MAN:**

The Supreme Creative Power of Allah (SWT) is demonstrated by the fact that no other planet in the solar system besides the earth has been made habitable for man. The earth as a habitat for man is incomparable. It has been endowed with immense natural resources such as water, fertile soil, minerals and forests to provide adequate means for the sustenance of human civilization.

Allah (SWT) points out in the Qur'an that He has made the earth a place of rest and relaxation for man: *"It is Allah Who has made for you the earth as resting place,"* (Ghaafir; 40:64).

In another verse it has again been called a resting place for people to relax: *"Who has made the earth a resting place for you,"* (Al-Baqarah; 2:22). The Qur'an highlights that the earth has been excellently spread out: *"And We have spread out the (spacious) earth, how excellently we do spread out,"* (Adh-Dhariyaat; 51:48).

The earth is basically spherical (oblate spheroid) in shape, but its sphericity is imperceptible. It is a well known fact that when the sphere is large the curvature becomes imperceptible and looks apparently flat. It is this apparent flatness of the earth, despite its sphericity, which is repeatedly stressed in the Qur'an. This may also be interpreted to mean that the earth has been so scientifically laid out that one does not feel the effect of centrifugal forces due to earth's rotation and revolution nor of the centripetal forces due to earth's gravity. Both the forces are evenly balanced. It may also be clarified that these verses do not suggest a flat earth. In fact such an inference will contradict the other Qur'anic verses which clearly imply global nature of the earth such as 31:29, 39:5 and many other verses where alternation of days and nights are indicated or verses 55:17 and 70:40 which speak of two or multiples of easts and wests respectively.

Moreover Allah (SWT) has endowed the earth with adequate supply of water and fertile land for the sustenance of mankind and even for animals: *“Do they not look at the earth-how many noble things of all kinds We have produced therein,”* (Ash-Shura; 26:7). It is again on this earth that Allah (SWT) *“has produced for your sustenance of things pure and good, such is your Lord,”* (Ghaafir; 40:64). In order to transact business on earth and facilitate movement roads can be easily laid on the surface of the earth: *“And Allah has made for you the earth wide spread out that you may go about therein in spacious roads,”* (Nuh; 71:19-20). These roads lend mobility to the inhabitants of the earth and facilitate their social, intellectual, cultural and commercial contacts which are essential for the growth of human civilization through exchange of ideas and transfer of technology. Not only has the earth been *“spread like a carpet”* (Al-Hijr; 15:19) and *“extended to a wide expanse”* (An-Naziyaat; 79:30) it has been made manageable as well: *“It is He Who has made the earth manageable”* (Al-Mulk; 67:15), implying thereby that human ingenuity is capable of making use of resources made available to him on earth. While concluding the Qur'an points out significantly that the earth brings together both the dead and the living. *“Have We not made the earth (as a place) to draw together the dead and the living”*. This has been deliberately done to remind mankind of his ultimate end, his account-ability to Allah (SWT) for his deeds on earth during his life time.

### ROLE OF MOUNTAINS AS REVEALED IN THE QUR'AN

According to Qur'an the mountains are established firmly on the earth *"He established on it (earth) mountains standing firm, high above it,"* (Fussilaat; 41:10).

The role of mountain as stabilizers of the earth surface has also been confirmed by EL Naggar who points out that mountains as stabilizers for the Earth surface which hold it firmly as pickets (or pegs) which holds "the Earth's (lithosphere) down as a means of fixation firm and habitable for human activity". This important stabilising role of the mountains has been emphasised over and over again in the Qur'an. As for instance in *Surah Al-Hijr: "And the earth We have spread out (like a carpet), set there on stabilizers (in the form of mountains) and produced therein all kinds of things in due balance"* (Al-Hijr; 15:19), or in *Surah al-Naml "Who has made the earth firm to live in; made rivers in its midst; set thereon mountains firm"* (An-Naml; 27:61), and again in *Surah Qaf: "And the earth We have spread it out set thereon mountains standing firm, and produced therein every kind of beautiful growth (in pairs),"* (Qaf; 50:7). It is obvious from the aforesaid verses that the habitability of the earth and production "of all kinds of things in due balance" is dependent upon its stability which the Qur'an clearly and categorically points is provided by the mountains standing "firm as stabilizers". But for these mountains the earth would have been unstable and shaky and would not have been habitable. The Qur'an reveals that Allah (SWT) *"has set up on the earth mountains standing firm, lest it should shake with you; and rivers and roads; that ye may guide*

*yourselves;*" (An-Nahl; 16:15). This has been re-stressed in the Qur'an in *Surah Al-Anbiya*: "And We have set on the earth mountains standing firm, lest it should shake with them" (Al-Anbiya; 21:31), and *Surah Luqmaan*: "He created the heavens without any pillars that ye can see; He set on the earth mountains standing firm, lest it should shake with you" (Luqmaan; 31:10). In the light of the aforesaid verses it is clearly implied in the Qur'an that the absence of mountains will destabilize the earth which will cease to be as beneficial to man as it is today with chains of mountains spread all over the globe. While revealing the stable role of the mountains, the Qur'an highlights their function as pegs to hold the earth in position: "Have We not made the earth as a wide expanse and the mountains as pegs," (Surah An-Naba; 78:6-7). Pegs as we understand are used to fix things such as tents and canopies firmly and in perfectly balanced position. This can be stated on the authority of Dr. Naggar that the term "picket" or "peg" is both literally and scientifically more correct than the term "root" which is currently used for mountains," (18).

The Qur'anic concept of mountains lending stability to the earth surface supports the theory of isostasy in the mountain building process. This theory postulates that "a mass above sea level is supported below sea level and thus there is a certain depth at which the total weight per unit area is equal all round the world; this is known as the depth of compensation," (19). This idea of the large masses of high mountains float on a "sea" of denser rock was originally mooted by G.B. Airy (1855). In his paper to the Royal Society of London he observed that

“the excess mass of mountains above sea levels compensated by a deficiency of mass, less than the surrounding rocks below this datum, produced by a downward extension of the light rocks that constitute mountains in the form of roots. The “mountains root” provides the buoyant support in a manner similar to all floating bodies” (20). According to Airy “the state of the Earth’s crust lying upon lava may be compared with perfect correctness to the state of a raft of timber floating on water; in which, if we remark (observe) one log whose upper surface floats higher than the upper surface of others, we are certain that its lower surface lies deeper in the water than the lower surface of the others” (21). It is clearly borne out from this observation that Airy “simulated the Earth’s crust to a light, rocky cover, floating on a more dense, liquid substratum. The hydrostatic equilibrium was said to be achieved by the floating of the less dense material in the denser substratum with variable depths of compensation” (22). Pratt further improved upon this concept in 1859 and introduced the idea that all parts of the crust of the earth have the same total mass above “the level of compensation.” The investigations continued for a proper appreciation of the “roots of mountains” and eventually in 1889 Dutton introduced the concept of “Isostasy” (Isos= equal; and statikos: stable) from the Greek isostasion, meaning “in equipoise with” which could precisely explain this phenomenon duly supported by gravity surveying and gravity anomaly observations.

It may be summed up that the stabilising role of the mountains in keeping the earth in balance while floating

in space was revealed more than 1400 years ago before Airy, and Dutton explained it scientifically in the later half of the 19<sup>th</sup> Century. It is this stabilising function of the mountains which make them a blessing for the mankind.

#### **WATER BODIES**

Water bodies such as rivers, lakes, seas, oceans, and springs are of immense importance in sustaining human life and in promoting the progress of human civilization. It was beside the river valleys that the earliest urbanized civilizations had developed such as the Mesopotamian and Indus Valley civilizations. Rivers and seas have been major channels of trade and movement of people over the centuries. Besides human consumption, water is also required for irrigating crops, for industries and for flushing the city sewers. Its consumption pattern, with the passage of time has considerably diversified and the volume of consumption has magnified. Man is tapping all sources of water whether surface (rivers, lakes, glaciers and even seas) or ground water (natural springs, artesian wells, wells, and tube wells) in order to meet the ever increasing fresh water needs of the human civilization. All these sources of water are indeed a great blessing for mankind: *“And we have distributed the (water) among them, in order that they may celebrate our praises, but most men are averse (to aught) but rank ingratitude”* (Al-Furqaan; 25:50). That the channels of river streams are formed by the rains and that these rivers are crucially important for the progress of human civilization is clearly stated in the following verse: *“Generations We had established on earth, in strength such as We have not*

*given to you for whom we poured out rain from the skies in abundance and gave (fertile) streams flowing beneath their (feet) yet for their sins We destroyed them,"* (Al-An'aam; 6:6). The stream is called fertile firstly because water is a basic requirement for producing crops, and secondly the fine silt that these streams carry and deposit in their flood plains are essential to replenish the fertility of the soil. The quantum of water in a river channel is dependent on the quantum of rain in its watershed area. This phenomenon is precisely revealed in the Qur'an "**He sends down water from the skies and the channels flow each according to its measure,"** (Ar-Ra'd; 13:17). Besides surface water, ground water in the form of natural springs, artesian wells, and wells provide a reliable and stable source of water supply for men, animals and plants. The origin of the ground water has been appropriately described in the Qur'an as follows: "**And We send down water from the sky according to (due) measure, and We cause it to soak in the soil; and We are certainly able to drain it off (with ease)"** (Al-Mu'minun; 23:18). It is an established fact that the rain water that percolates under the ground through permeable soils and rocks is the source of all types of ground water. The Qur'anic stress on the importance of natural springs in the desert region is obvious because of the acute scarcity of water there. This is highlighted in the following verse: "**Seest thou not that Allah sends down rain from the sky, and leads it through springs in the earth. Then He causes to grow therewith produce of various colours,"** (Az-Zumar; 39:21). One of the earliest sources of ground water was of course the natural spring of *Zam-Zam* located adjacent to *Ka'bah*

in *Makkah-Al-Mukarramah*. That the springs are concealed beneath the permeable rocks is categorically stated in the Qur'an: *"And remember Moses prayed for water for his people We said: "Strike the rock with the staff" Then gushed forth therefrom 12 springs. Each group knew its own place for water. So eat and drink of the sustenance provided by Allah"* (Al-Baqarah; 2:60). It is also a fact that a large number of perennial rivers have originated as springs gushing out of the rocks. The Qur'an refers to this fact allegorically in the following verse: *"For among rocks there are some from which rivers gush forth, others there are which when split asunder send forth water; and others which sink for fear of Allah, and Allah is not unmindful of what ye do"* (Al-Baqarah; 2:74). The disappearance of stream channels in a desert or limestone region is a clearly observable and identifiable phenomenon, such as the dry *wadis* (Valleys) or river courses in the deserts. These underground river channels are also notably observed in the limestone region or regions of karst topography. In this type of landscape "the patterns of surface stream channels and stream valleys are still in evidence, though much of drainage be underground." (23) and (24). It is this phenomenon of lost stream in the desert regions and in the karst topography which is thus revealed in the Qur'an: *"Say, see ye? If your stream be some morning lost (in the underground earth) who then can supply you with clear flowing water,"* (Al-Mulk; 67:30)

The artesian springs and wells also constitute an important source of water. They are quite important for agriculture in Australia particularly in the State of Victoria. Artesian springs are found where a gently

dipping permeable rock layer (such as sand stone) receives water along its outcrop at a level higher than the level of the surface of the ground, at the well site. At the outcrop the water moves down into the aquifer (water bearing layer) but is prevented from leaving it by the impermeable rocks (such as shale above and below it). Pressure from the water's weight (hydrostatic pressure) forces water to the surface well drilled down the aquifer - --- in places where the overlying impermeable rocks are broken by joints or faults water may escape them to rise to the surface as artesian springs" (Micropaedia-Vol.1, p:601) (25). It may be noted that as described in the Qur'an in the case of artesian wells as well water seeps in through permeable rocks and is stored in beneath the impermeable rocks.

#### **FRESH AND SALINE WATER**

The Qur'an also distinguishes fresh and sweet drinking water from the bitter saline sea water unfit for drinking. *"It is He who has let free two bodies one palatable and sweet and the other salt and bitter. Yet has He made a barrier between them a partition that is forbidden to be passed,"* (Al-Furqaan; 25:53). The same point has been made again in *Surah Al-Naml: "And made a separating bar between them two bodies of flowing water"* (An-Naml; 27:61). In *Surah Al-Fatir* the differential qualities of fresh and saline water has been re-stressed as in *"Nor are the two bodies of flowing water alike. The one palatable, sweet and pleasant to drink, and the other salty and bitter,"* (Fatir; 35:12). The stress is on the qualitative differences between saline sea and fresh river

water. The fresh water is termed sweet, pleasant and palatable. As against this the saline water has been called bitter and therefore unpalatable. What is more important is the repeated stress on the barrier between two bodies of water and they are not allowed to "transgress" this barrier. Let us look into these revelations from a scientific view point. One basic difference between fresh and saline water is in their chemical composition. Fresh water constitutes only 2.70 percent of the total quantum of 1,385 billion cubic km water available on earth. The balance of 97.30 per cent or 1,385 billion cubic km is salt water. The fresh water is derived from polar ice and glaciers and these two constitute the bulk or 76% of fresh water, ground water (10%), lakes (0.33%), soil moisture (0.18%), atmosphere (0.036%) and a negligible (0.0047%) in rivers.(26). In its purest form fresh water can be obtained from rainfall which has a minimum number of solutes. Besides H<sub>2</sub>O calcium, sodium, magnesium and potassium (K<sup>+</sup>) concentrates range from a few to tens of miligrain per litre. The range of these concentrates in fresh water rises from rain water to ground water. As against this, the saline sea water has chlorides, sodium sulphate and magnesium in the ratio of 19.98, 10.55, 2.65 and 1.3 grams of 1 kilogram of Sea water respectively. This difference in the chemical composition of the fresh and saline waters gives them differential density and thermal conditions which build a natural barrier between two flowing water bodies and maintain it. Because of the high contents of salts such as chlorides and sodium the average salinity of sea water is 34.48 parts per thousand. With this high content of salinity its density is 1028.1 kgm per cubic

metre. Fresh water is far lighter than saline water; its density being 999.9 kgm per cubic metre under atmospheric pressure with temperature at 0°C. This differential density together with differential gravity, prevent to a certain degree the intermixing of saline and fresh water. Further fresh water attains its maximum density at 4°C (39°F) but sea water reaches its maximum density at a much lower temperature. Consequently sea water continues getting heavier with decreasing temperature until the freezing point is reached. Since the sea is cooled from above, the surface water becomes colder and heavier than the water underneath. Hence it will sink downward and water from below will take its place. This constant upwelling of sea water from the bottom to the surface never allows the level sea water to fall below that of the fresh water, despite being denser and heavier. This prevents inter-mixing on an extensive scale of the fresh water with the saline water in spite of being located in close proximity. Because of the differential density, gravity and stable level of sea water excepting during tides and tidal waves a well defined zone of transition between the sea and river water is formed at the mouth of the river adjacent to the coastline. This zone of transition separates the sweet from the saline water. This is presumably what the Qur'an reveals as "separating bar" and science acknowledges it.

## CONCLUSION

We have observed that Qur'anic revelations have highlighted a wide variety of natural phenomena such as the formation of clouds, movement of winds, occurrence of rains, stabilising role of mountains, character of earth, differential fertility of soils, differences in fresh and saline sea water, etc. In each case it has not only provided a scientifically correct account but in certain specific fields it has even anticipated scientific discoveries centuries before their actual discovery. As for instance the formation of a mountain mass of rain laden clouds assisted by wind currents was described in the Qur'an long before the World Meteorological Organisation came out with its scheme of cloud classification in 1894. The Qur'anic revelation has repeatedly stressed the balancing role of the mountain building. This divine book, which is basically for the guidance of mankind, maintained its absolute truthfulness in scientific revelations as well. The Qur'an thus stands supreme in whatever field it reveals its injunctions thereby establishing beyond doubt its divine character and supremacy of Allah (SWT).

**EARTH SCIENCES**  
**(Geology, geophysics, geography and meteorology)**  
**QURA'NIC REVELATIONS ANDSCIENTIFIC**  
**DESCRIPTION**

**SUMMARY OF THE TEXT**

One is amazed at the scientific preciseness with which some of the geomorphic features and meteorological phenomena have been described in the Qur'an. There are nearly 50 Qur'anic verses which refer to a wide variety of natural phenomena earth (as habitat of man) rain, cloud, winds, mountains, rivers, springs, fresh and saline water and many others. These are observable phenomena and can be verified and ascertained. A critical analysis of the Qur'anic revelations and their comparison with the scientific description of these natural features reveal a significant degree of concordance between the two.

The meteorological observations and the Qur'anic revelations point out a high degree of correlation between air currents and cloud formation. The Qur'an reveals that air currents assist the formation of clouds. The scientists fully agree with this Qur'anic revelation. The Qur'anic revelations and the scientists further point out that the quality and character of clouds is determined by the nature and character of air currents, (Ar-Ruum; 30:48); (Al-Baqarah; 2:164). The Qur'an identifies rain bearing clouds as "mountain mass" in structure (Ar-Ra'd; 13:12); The World Meteorological Organisation agrees with this

description. The Qur'an proclaims and the meteorologists agree that large sized rain drops, fragment into smaller drops before they begin to pour down (Ar-Rum; 30:48).

The Qur'anic verses identify a wide variety of winds such as local, seasonal, cyclonic etc. They provide most vivid account of the disastrous effects of stormy winds such as tornadoes. This is in total conformity with modern accounts of the damage caused by the tornadoes in USA or elsewhere.

The earth (land) and water are absolutely essential for the development of human civilization. The earth has been so well spread out by Allah (SWT); its centrifugal and centripetal forces are so finely balanced, that it serves as an excellent habitat for man and for the organisation of all human activities (Adh-Dhariyaat; 51:48; Al-Hijr; 15:19; Al-Mulk; 67:15). The effect of sphericity and of rotation and revolution are not felt by man and they do not hamper human economic activities at all.

The role of mountains in maintaining the equilibrium of the earth is pronounced both by the Qur'anic revelations and scientific discoveries (Al-Hijr; 15:19; An-Naml; 27:61; Qaf; 50:7). The mountains have been called "Pegs" in the Qur'an which according to experts in geology, is scientifically more expressive of the stabilising role of mountains than the word "root" which is used by scientists. While the Qur'an revealed this fact 1400 years ago, the scientists discovered the principle of isostasy in the early 20<sup>th</sup> century.

The Qur'an clearly identifies surface water, ground water, and rain as the three main sources of fresh water (Al-Mo'minun; 23:18; Az-Zumar; 39:21; Al-Mulk; 67:30). However the most remarkable phenomenon mentioned in the Qur'an in this regard is, that of the disappearing river streams, which happens both in the desert regions and in the limestone or karst topography regions of the world.

The differences in salinity, density, temperature and gravity prevent large scale intermixing of saline sea water with the fresh and sweet river water. This process is also assisted by the constant upwelling of the sea water from the bottom to replace its cold and sinking surface water. This maintains a stable sea level which is disturbed only during tides and cyclonic weather conditions. These factors lead to the formation of a well defined zone of transition at the mouth of the river adjoining the coastline. This transition zone separates the sweet from the saline water and hence constitutes a natural barrier between the two. They thus manage to retain their identity and distinguishing characteristics as revealed in the Qur'an (An-Naml; 27:61).

The description of natural phenomena in the Qur'an with scientific precision, without the aid and assistance of modern, sophisticated scientific equipments, is indeed miraculous. It testifies eloquently that the Qur'an is a divinely revealed message from Allah (SWT) to

Prophet Muhammad (SAWS<sup>2</sup>). Do they not also substantiate convincingly the existence of Allah (SWT), the Creator and the Sustainer of the universe?

---

<sup>2</sup> SAWS stands for '*Sallallahu 'Alaihi wo Sallam,*' meaning 'Blessings of Allah and Peace upon him.'

### **REFERENCES**

**Note:** English Translation of Qur'anic Verses from Abdullah Yusuf Ali, King Fahd Holy Qur'an Printing Complex, P.O. Box: 3561, Al-Madinah Al-Munawwarah, Saudi Arabia.

---

1. Mac Graw Hill Encyclopaedia of Science and Technology (1987) : Vol. 4, p : 47 Mac Graw Hill Book Co. New York.
2. The New Encyclopaedia Britannica Macropaedia (1988) Encyclopaedia Incorporated Chicago : Vol.16, p: 455.
3. Encyclopaedia of Science and Technology (1987) : Vol. 4, p : 47.
4. Macropaedia (1988) : Vol.16, p: 444.
5. Micropaedia (1988) : Vol. 5, p: 850.
6. Encyclopaedia of Science and Technology (1987) : Vol. 4, p: 48.
7. \_\_\_\_\_ : Vol. 4, p: 49.
8. Micropaedia (1988) : Vol.16, p: 447.
9. Encyclopaedia of Science and Technology (1987) : Vol. 4, p: 55.
10. Micropaedia (1988) : Vol. 16,p: 447.

11. Encyclopaedia of Science and Technology (1987) : Vol. 2,pp: 181-183.
12. Micropaedia (1988) : Vol.16,pp: 452-457.
13. \_\_\_\_\_ : Vol.16,pp: 458-459.
14. \_\_\_\_\_ : Vol.16, p: 474.
15. Encyclopaedia of Science and Technology (1987) : Vol. 5,pp: 134-136.
16. Micropaedia (1988) : Vol. 6, p: 433.
17. Encyclopaedia of Science and Technology (1987) : Vol.16,pp: 507-533.
18. EL-Naggar, R Z (1991) : The Geological Concept of Mountains in the Qur'an, p:10.
19. Micropaedia (1988) : Vol. 6, p: 420.
20. EL-Naggar, R Z (1991) : op. cit. p: 18.
21. \_\_\_\_\_ : op. cit,pp: 18-19.
22. \_\_\_\_\_ : op. cit. p: 19.
23. Micropaedia (1988) : Vol. 6, p: 752.
24. Micropaedia (1988) : Vol.16, p: 749.

25. Micropaedia (1988): Vol. 1, p: 601.
26. Micropaedia (1988): Vol. 20; p:789.

## Appendix :

### QUR'ANIC VERSES RELATING TO EARTH SCIENCES

#### Section 1: Winds and Rain as Described in the Qur'an

##### *Surah 10 : Al-Yunus*

10:22 He it is Who enableth you to traverse <sup>1.1 ES</sup> through land and sea; so that ye even board ships--- They sail with them with a favourable wind, and they rejoice thereat; then comes a stormy wind and the waves come to them from all sides, and they think, they are being overwhelmed: They cry unto Allah, sincerely offering (their) duty unto Him, saying. "If Thou dost deliver us from this, we shall truly show our gratitude."

##### *Surah 15 : Al-Hijr*

15:22 And We send the fecundating winds, then <sup>1.2 ES</sup> cause the rain to descend from the sky, therewith providing you with water (in abundance), though ye are not the guardians of its stores.

##### *Surah 17 : Al-Isra*

17:68-69 Do ye then feel secure that He will not <sup>1.3 ES</sup>

cause you to be swallowed up beneath the earth when ye are on land, or that He will not send against you a violent tornado (with showers of stones) so that ye shall find no one to carry out your affairs for you? Or do ye feel secure that He will not send you back a second time to sea and send against you a heavy gale to drown you because of your ingratitude, so that ye find no helper therein against Us?

*Surah 18 : Al-Kahaf*

18:45 Set forth to them the similitude of the life of <sup>1.4 ES</sup>  
this world: It is like the rain which we send down from the skies: The earth's vegetation absorbs it. But soon it becomes dry stubble, which the winds do scatter: It is (only) Allah Who prevails over all things.

*Surah 22 : Al-Hajj*

22:5 ---And (further), thou seest the earth barren <sup>1.5 ES</sup>  
and lifeless, but when we pour down rain on it, it is stirred (to life), it swells, and it puts forth every kind of beautiful growth in pairs.

*Surah 25 : Al-Furqan*

25:48 And He it is Who sends the winds as <sup>1.6 ES</sup>  
heralds of glad tidings, going before His mercy, and We send down pure water from

the sky---

*Surah 30 : Al-Rum*

30:46 Among His signs is this that He sends the winds as heralds of glad tidings giving you a taste of His (grace and) mercy that the ships may sail (majestically) by His command and that ye may seek of His bounty in order that ye may be grateful. <sup>1.7 ES</sup>

30:51 And if We (but) send a wind from which they see (their tilth) turn yellow--- behold they become, thereafter, ungrateful (unbelievers); <sup>1.8 ES</sup>

*Surah 51 : Adh-Dhariyaat*

51:1-4 By the (winds) that scatter broadcast: And those that lift and bear away heavy weights; and those that flow with ease and gentleness; and those that distribute and apportion by command--- <sup>1.9 ES</sup>

*Surah 54 : Al-Qamar*

54:18-20 The 'Ād (people) (too) rejected (truth): then how terrible was My Penalty and My Warning? For we sent against them a furious wind, on a Day of violent Disaster, plucking out men as if they were roots of palm-trees torn up (from the ground). <sup>1.10 ES</sup>

*Surah 77 : Al-Mursalaat*

77:1-5 By the (Winds) sent forth one after another <sup>1.11 ES</sup>  
 (to man's profit); which then blow violently  
 in tempestuous Gusts, and scatter (things)  
 far and wide; then separate them, one from  
 another, then spread abroad a Message.

**Section 2: Clouds as Described in the Qur'an**

2:19 Or (another similitude) is that of a rain- <sup>2.1 ES</sup>  
 laden cloud from the sky; in it are zones of  
 darkness, and thunder and lightning: ---

2:164 ---In the change of the winds, and the <sup>2.2 ES</sup>  
 clouds which they trail like their slaves  
 between the sky and the earth--- (here)  
 indeed are signs for a people that are wise.

*Surah 7 : Al-A'raaf*

7:57 It is He Who sendeth the winds like heralds <sup>2.3 ES</sup>  
 of glad tidings, going before His mercy:  
 When they have carried the heavy-laden  
 clouds, We drive them to a land that is  
 dead, make rain to descend thereon, and  
 produce every kind of harvest therewith:  
 Thus shall We raise up the dead:  
 Perchance ye may remember. (see also  
**Resources**)

*Surah 13 : Ar-Ra'd*

13:12 It is He Who doth show you the lightning, <sup>2.4 ES</sup>  
by way both of fear and of hope. It is He  
Who doth raise up the clouds, heavy with  
(fertilizing) rain!

*Surah 24 : An-Noor*

24:43 Seest thou not that Allah makes the clouds <sup>2.5 ES</sup>  
move gently, then joins them together, then  
makes them into a heap?--- Then wilt thou  
see rain issue forth from their midst. And  
He sends down from the sky mountain  
masses (of clouds) wherein is hail: He  
strikes therewith whom He pleases and He  
turns it away from whom He pleases. The  
vivid flash of His lightning well-nigh  
blinds the sight.

*Surah 30 : Al-Rum*

30:48 It is Allah Who sends the winds, and they <sup>2.6 ES</sup>  
raise the clouds: then does He spread them  
in the sky as He wills, and break them into  
fragments, until thou seest raindrops issue  
from the midst thereof: Then when He has  
made them reach such of his servants as He  
wills, behold, they do rejoice!---

*Surah 35 : Faatir*

35:9 It is Allah Who sends forth the winds, so <sup>2.7 ES</sup>

that they raise up the clouds, and We drive them to a land that is dead, and revive the earth therewith after its death: even so (will be) the Resurrection!

### **Section 3: Soil Erosion and Quality of Land**

#### *Surah 2 : Al-Baqarah*

2:264 O ye who believe! Cancel not your charity <sup>3.1 ES</sup> by reminders of your generosity or by injury--like those who spend their substance to be seen of men, but believe neither in Allah nor in the Last Day. They are in parable like a hard barren rock, on which is a little soil; on it falls heavy rain, which leaves it (just) a bare stone. They will be able to do nothing with aught they have earned. And Allah guideth not those who reject faith.

#### *Surah 7 : Al-Arâf*

7:58 From the land that is clean and good, by <sup>3.2 ES</sup> the Will of its Cherisher, springs up produce, (rich) after its kind: But from the land that is bad, springs up nothing but that which is niggardly: Thus do We explain the signs by various (symbols) to those who are grateful.

## **Section 4: Description of Rivers & Streams in The Qur'an**

### **Sweet and Salty Bodies of Water**

#### *Surah 25 : Al-Furqaan*

25:53 And He it is Who has given freedom of <sup>4.1 ES</sup>  
movement to the two great bodies of water--  
--the one sweet and thirst-allaying, and the  
other salty and bitter--- and yet has  
wrought between them a barrier and a  
forbidding ban. (Translation by Muhammad  
Asad)

#### *Surah 27 : An-Naml*

27:61 Or who has made the earth a stable abode; <sup>4.2 ES</sup>  
made rivers in its midst; set thereon  
stabilizers mountains and made a  
separating b'ar between two bodies of  
flowing water? (can there be another) god  
besides Allah? Nay, most of them know  
not.  
(Translation from El-Naggar, ZR Bibliography  
No.5) (Repeated)

#### *Surah 35 : Faatir*

35:12 Nor are the two bodies of flowing water <sup>4.3 ES</sup>  
alike--- the one palatable, sweet, and  
pleasant to drink, and the other, salty and  
bitter. Yet from each (kind of water) do ye  
eat flesh fresh and tender. And ye extract  
ornaments to wear; and thou seest the ships

therein that plough the waves, that ye may seek (thus) of the Bounty of Allah that ye may be grateful.

*Surah 55 : Ar-Rahmaan*

55:19-21 He has let free the two bodies of flowing water, meeting together: Between them is a barrier which they do not transgress: Then which of the favours of your Lord you will deny? <sup>4.4 ES</sup>

**Section 5: Water Through Springs**

*Surah 39 : Al-Zumar*

39:21 Seest thou not that Allah sends down rain from the sky, and leads it through springs in the earth? Then He causes to grow, there-with, produce of various colours: then it withers; thou wilt see it grow yellow; then He makes it dry up and crumble away. Truly, in this, is a message of remembrance to men of understanding. <sup>5.1 ES</sup>

*Surah 54 : Al-Qamar*

54:11-12 So We opened the gates of heaven, with water pouring forth. And we caused the earth to gush forth with springs. So the waters met (and rose) to the extent decreed. <sup>5.2 ES</sup>

## Section 6: Surface and Ground Water Streams

### *Surah 6 : Al-An'aam*

6:6 Generations We had established on the earth, in strength such as We have not given to you--- for whom We poured out rain from the skies in abundance, and gave (fertile) streams flowing beneath their (feet): yet for their sins We destroyed them, and raised in their wake fresh generations (to succeed them). 6.1 ES

### *Surah 13 : Al-Ra'd*

13:17 He sends down water from the skies, and the channels flow, each according to its measure: but the torrent bears away the foam that mounts up to the surface. --- 6.2 ES

### *Surah 67 : Al-Mulk*

67:30 Say: "See ye?--- If your stream be some morning lost (in the underground earth), who then can supply you with clear-flowing water?" 6.3 ES

## Section 7: Earth as Described in the Qur'an

### *Surah 2 : Al-Baqarah*

2:22 Who has made the earth your couch <sup>7.1 ES</sup>  
(resting place) and the heavens your canopy; and sent down rain from the heavens; and brought forth therewith fruits for your sustenance; then set not up rivals unto Allah when ye know (the truth that He is One).

### *Surah 20 : Ta Ha*

20:53-54 "He Who has made for you the earth like a <sup>7.2 ES</sup>  
carpet spread out; has enabled you to go about therein by roads (paths and channels); and has sent down water from the sky." With it have We produced diverse pairs of plants each separate from the others. Eat (for yourselves) and pasture your cattle: verily, in this are signs, for men endued with under-standing.

### *Surah 40 : Ghaafir*

40:64 It is Allah Who has made for you the earth <sup>7.3 ES</sup>  
as a resting place, and the sky as a canopy. And has given you shape--- And made your shapes beautiful-and has provided for you sustenance of things pure and good--- such is Allah your Lord. So glory to Allah,

the Lord of the worlds!

*Surah 43 : Al-Zukhrif*

43:10-12 (Yea, the same that) has made for you the earth (like a carpet) spread out, and has made for you roads (paths and channels) therein, in order that ye may find guidance (on the way); That sends down (from time to time) rain from the sky in due measure--- and We raise to life therewith a land that is dead; even so will ye be raised (from the dead)--- That has created pairs in all things, and has made for you ships and cattle on which ye ride, --- <sup>7.4 ES</sup>

*Surah 51 : Adh-Dhariyaat*

51:48 And We have spread out the (spacious) earth: how excellently We do spread out! <sup>7.5 ES</sup>

*Surah 67 : Al-Mulk*

67:15 It is He Who has made the earth manageable for you, so traverse ye through its tracts and enjoy of the sustenance which He furnishes: but unto Him is the Resurrection. <sup>7.6 ES</sup>

*Surah 71 : Nuh*

71:19-20 And Allah has made the earth for you as a carpet (spread out), "that ye may go about <sup>7.7 ES</sup>

therein, in spacious roads (paths)".

*Surah 77 : Al-Mursalaat*

77:25-26 Have We not made the earth (as a place) to draw together the living and the dead, <sup>7.8 ES</sup>

*Surah 79 : Al-Naziyaat*

79:30-33 And the earth, thereafter, hath He extended (to a wide expanse); He draweth out therefrom its moisture and its pasture; And by the mountains hath He firmly fixed it (the earth) for use and convenience to you and your cattle. (Translation as rendered by El-Naggar : The Geological Concepts of Mountains in the Qur'an p : 13) <sup>7.9 ES</sup>

**Section 8: Mountains as Earth Stabilizers**

*Surah 13 : Al-Ra'd*

13:3 And it is He Who spread out the earth, and set thereon mountains standing firm, and (flowing) rivers and fruit of every kind He made in pairs, two and two: Behold, verily in these things there are signs for those who consider. (repeated in Resources) <sup>8.1 ES</sup>

*Surah 15 : Al-Hijr*

15:19 And the earth We have spread out set thereon stabilizers (in the form of <sup>8.2 ES</sup>

mountains) firm and immovable. And produced therein all kinds of things in due balance. **(Translation as adopted by El-Naggar op.cit. p:11) (See also Resources)**

*Surah 16 : Al-Nahl*

16:15 And he has set up on the earth mountains <sup>8.3 ES</sup> standing firm, lest it should shake with you; and rivers and road (or pathways); that ye may guide yourselves, ---

*Surah 21 : Al-Anbiya*

21:31 And We have set on the earth mountains <sup>8.4 ES</sup> standing firm, lest it should shake with them, and We have made therein broad high ways (between mountains), for them to pass through: that they may receive guidance.

*Surah 27 : Al-Naml*

27:61 Or, Who has made the earth a stable abode; <sup>8.5 ES</sup> made rivers in its midst; set thereon as stabilizers mountains and made a separating barrier between two bodies of flowing water? Can there be another god besides Allah? Nay, most of them know not. **(Translation as in El-Naggar op.cit. p:12) (Repeated see page No : 57 also)**

27:88 Thou seest the mountains and thinkest <sup>8.6 ES</sup> them firmly fixed: but they shall pass away

as the clouds pass away: (such is) the artistry of Allah, Who disposes of all things in perfect order: for He is well acquainted with all that ye do.

*Surah 31 : Luqmaan*

31:10 He created the heavens without any pillars <sup>8.7 ES</sup>  
that ye can see; He set on the earth mountains standing firm, lest it should shake with you; and He scattered through it beasts of all kinds. We send down rain from the sky and produced (plants) of every goodly kind therein, in pairs.  
(Translation as in El-Naggar op.cit. p:12)

*Surah 41 : Fussilaat*

41:10 He established on it (the Earth) stabilizers <sup>8.8 ES</sup>  
(mountains standing firm), high above it and bestowed blessings on the Earth, and measured there all things to give them nourishment in due proportion, in four days, in accordance with (the needs of) those who seek (sustenance).  
(Repeated see also - Astronomical Sciences)

*Surah 50 : Qaf*

50:7 And the earth--- We have spread it out, and <sup>8.9 ES</sup>  
set thereon (mountains standing firm) and produced therein every kind of beautiful growth (in pairs)---

*Surah 77 : Al-Mursalaat*

**77:25-27** Have We not made the Earth (as a place) to <sup>8.10 ES</sup> draw together the living and the dead. And made therein stabilizers (Mountains standing firm), lofty (in stature); and provided for you water sweet (and wholesome). (Translation as adopted by El-Naggar op.cit. p:13)

*Surah 78 : Al-Naba*

**78:6-7** Have We not made the earth as a wide <sup>8.11 ES</sup> expanse. And the mountains as pegs.

*Surah 88 : Al-Ghaashiyah*

**88:17-20** Do they not look at the camels how they <sup>8.12 ES</sup> are made?--- And at the sky how it is raised high?--- And at the mountains, how they are fixed firm?--- And at the earth how it is spread out?  
(Repeated see also - Astronomical Sciences)