



## IS THE EARTH UNIQUE IN THE UNIVERSE?

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### INTRODUCTION

Recently, we have been focusing on questions that are forwarded from theDove audience that relate to the Bible and science and typically center on Genesis 1-11 (questions can be forwarded to [hispeoplerejoice@gmail.com](mailto:hispeoplerejoice@gmail.com)). Even though the Bible is explicitly clear on numerous subjects such as the number of days of creation, the reason for a Global Flood, the Ark, the death and resultant resurrection of Jesus Christ, and most importantly – the need for salvation from sin – there are some areas of Scripture that do not “fill in all of the blanks” leading to the adage of “the Bible often gives us the mountain tops and not the valleys.” While the directive in I Peter 3:15 – “always be ready to give a defense to everyone who asks you a reason for the hope that is in you” – does not mean that Christians should be experts in all fields of science, it does indicate that Christians should be able and ready to give an adequate defense for what they believe. This month, the submitted question is; “Is the Earth unique in the Universe?”

As this question provides an excellent opportunity to examine the differences between secular scientific ideology and biblical Scripture, let's begin with a historical account of this subject, and then consider what makes the Earth unique in the Universe.

## IS THE EARTH UNIQUE IN THE UNIVERSE?

On Christmas Eve, 1968, the Apollo 8 astronauts became the first human beings to view the far side of the Moon.<sup>1</sup> Although this event was historic, it was overshadowed by the astronauts emerging from the Moon's far side and being transfixed by their view of the Earth<sup>2</sup> (about 240,000 miles away) that appeared as a delicate, gleaming swirl of blue and white that vividly contrasted with the monochromatic, barren lunar horizon. The photo in Figure 1, known today as *Earthrise*, popularized this event.



Figure 1. Earthrise

To chronicle and also underscore the significance of this incident for history, the Apollo crew read the opening words of Genesis 1:1 – *“In the beginning, God created the heavens and the Earth”* – that was broadcast to a live television audience of over one billion viewers, the largest single audience in television history. Indeed, when viewing Earthrise, one cannot help but marvel at the apparent majesty of a grand design.

However, an opposing opinion subscribes to the viewpoint that the existence of Earth (and life) is not only relatively ordinary but also purposeless

and insignificant – an accident. This viewpoint became a cornerstone of secular astronomy and science in the 16<sup>th</sup> Century<sup>3</sup> when Nicolaus Copernicus published his *Copernican Principle* that states the Earth does not rest in a privileged or special physical position in the Universe. This means that in secular science, (1) humans do not have a fundamentally privileged position within the Universe and (2) all large regions of the universe should be pretty much identical to each of the others.<sup>4</sup>



Figure 2. Pale Blue Dot

In more recent times, this viewpoint was epitomized by the late Astronomer Carl Sagan in his book, *Pale Blue Dot*, that reflected on another image of Earth (Figure 2) taken by Voyager I in 1990 from 4 billion miles away

(the circle surrounds the Earth). Commenting on the Pale Blue Dot in Figure 2, Sagan wrote:

*"Because of the reflection of sunlight.....Earth seems to be sitting in a beam of light, as if there were some special significance to this small world. But, it's just an accident of geometry and optics.....Our posturing's, our imagined self-importance, the delusion that we have some privileged position in the Universe, are challenged by this point of blue light. Our planet is a lonely speck in the great enveloping cosmic dark. In our obscurity, in all this vastness, there is no hint that help will come from elsewhere to save us from ourselves"*<sup>5</sup>

Sagan's perception can be summarized by the Principle of Mediocrity that believes mankind and life along with the conditions required for them are unremarkable and unintended and can be explained by the views of naturalism and/or materialism that embrace the concept that the material world is *"all that is, or ever was, or ever will be."*<sup>6</sup> As a result, most secular scientists have supposed that our Solar System is not only ordinary but the emergence of life in some form somewhere other than Earth must be quite likely, given the vast size and alleged vast age of the Universe. As an example, Carl Sagan optimistically conjectured that our own Milky Way Galaxy alone might contain as many as one million advanced civilizations.<sup>7</sup>

Because the Earth and its abundance of life is not viewed as the work of a Creator, a strong emphasis has been placed on attempting to discover life outside Earth as highlighted by the following three examples:

#### **SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI)**

SETI is a collective term for the scientific search for intelligent life in the Universe and began shortly after the advent of radio in the early 1900's and has expanded into international efforts around the globe (Figure 3). The SETI program is based on the premise of monitoring electromagnetic radiation for any signs of transmissions from intelligent civilizations on other worlds. The SETI Institute website states – *"We believe we are conducting the most profound search in human history to know our beginnings and our place among the stars."*<sup>8</sup> To date, any intelligent transmissions have yet to be detected.

#### **DIRECTED PANSPERMIA**

Panspermia is a common name that was coined in 1908 and is given to the concept that life originated in outer space and then migrated to Earth. In 1973, Francis Crick (co-discoverer of DNA) expanded the term to Directed Panspermia that currently stands for the concept that aliens brought life to Earth. This concept is still advocated by many scientists today. As an example, in the movie *Expelled*, Ben Stein asked the prominent evolutionary biologist Richard Dawkins



the question – “What do you think is the possibility that intelligent design might turn out to be the answer to some issues in genetics or in evolution?” Dawkins answer was illuminating – “Well it could come about in the following way: it could be that at some



Figure 3. The SETI Allen Telescope Array

*earlier time somewhere in the universe a civilization evolved by, probably by, some kind of Darwinian means to a very, very high level of technology and designed a form of life that they seeded onto perhaps this planet. Now that is a possibility and an intriguing possibility.”<sup>9</sup>*

#### **NASA**

Currently, The National Aeronautics and Space Administration (NASA) says nothing in their approach to space exploration has changed. But the reality is – it has. NASA used to engage in projects that captured the public’s imagination, such as the Apollo moon missions with an emphasis on God as the Creator as evidenced by the U.S. postage stamps in Figure 4. However, in recent years NASA has shifted its focus and launched the *Origins Program*, the purpose of which is to explore the Universe and search for life. The NASA website proclaims that its goals are to determine “Where did we come from?” and “Are we alone?”<sup>10</sup>



Figure 4. The Goal Of NASA Has Dramatically Changed From Apollo 8

Unfortunately, these secular scientific views of materialism and naturalism not only stand in stark contrast to biblical Scripture but are completely devoid of any mention of God, His creative handiwork, and His ultimate purpose for mankind that are clearly delineated in biblical Scripture as follows:

*"The heavens declare the glory of God and the firmament shows His handiwork"*  
*Psalms 19:1*

*"For thus says the Lord, Who created the heavens, Who is God, Who formed the Earth and made it, Who has established it, Who did not create it in vain, Who formed it to be inhabited"*  
*Isaiah 45:18*

*"I will show wonders in the heaven above and signs on the Earth below. Everyone who calls on the name of the Lord will be saved"*  
*Acts 2:19*

Today, it is known that there are about 100 to 200 billion galaxies in the observable Universe, each galaxy consists of billions of stars, and our Milky Way Galaxy is 100,000 light-years across (a light-year is six trillion miles), yet the dichotomy between the secular scientific and biblical Scriptural viewpoints can be concisely summarized by the following quote:

*"I can see how it might be possible for a man to look down upon the Earth and be an atheist, but I cannot conceive how he could look up into the heavens and say there is no God"*

*Abraham Lincoln*

## **FACTORS FOR EARTH'S HABITABLE LIFE**

Contrary to the secular scientific orthodoxy lets look at why planet Earth is not just an average planet around an ordinary star in an unremarkable part of the Milky Way in a vast and meaningful Universe. Interestingly, modern science now knows that Earth is intricately designed to not only support life but to also give us the best view of the universe (remember Psalm 19:1). Lets look at the following astounding findings from contemporary scientific knowledge that confirm the scientific premise that Earth's conditions were *designed* to perfectly frame an environment for God's masterpiece – mankind – and has not been found anywhere else in the known Universe.

Currently, there are at least 20 factors that are necessary for life on Earth. It must be remembered that all of these factors have to be met at the same time in one place and the same factors that apply to Earth apply anywhere in the Universe and/or our galaxy. Additionally, it should be stated that the mathematical chance of all these factors meeting the "*one place at the same time*" criteria is one-one thousandth of one, one-trillionth,<sup>12</sup> which is mathematically impossible without a Creator. Lets consider some of the factors that make Earth unique in the Universe.

*Note: The following factors are not listed in any particular order, as they are all interrelated.*

### **LIQUID WATER**

A basic starting position is the presence of water that has chemical properties that are perfectly suitable for carbon-based life. These properties are essential for:

- Absorbing heat from the sun and regulating Earth's surface temperature
- Living organisms consist mostly of liquid water and life on Earth depends on the unusual structure of hydrogen and oxygen (H<sub>2</sub>O)
- Liquid water transports, lubricates, reacts, stabilizes, signals, structures and partitions as an inert diluent
- Dissolving and transporting nutrients that are vital to organisms
- The large heat capacity and high thermal conductivity of water helps to prevent local temperature fluctuations in organisms, enabling them to more easily control their body temperature
- The large heat capacity of the oceans and seas (71% of Earth's surface) allows them to act as heat reservoirs, thereby moderating Earth's climate

- Water's high surface tension plus its expansion on freezing encourages the erosion of rocks to give soil for agriculture
- And so on.....

### **DISTANCE FROM A HOME STAR**

The correct distance from a home star (in this case, our Sun) ensures the presence of liquid water. Similar to real estate, it's all about location, location, location. In astronomy, the Earth is considered to be located in The Goldilocks Zone or the Circumstellar Habitable Zone (Figure 5) and is defined as – “the region around a star – in this case, our Sun – where water could exist on the surface of an Earth-like planet over its entire lifetime.”<sup>11</sup> This zone is relatively narrow and begins just outside Venus and ends just short of the orbit of Mars. This ensures that:

- The Earth is not too hot nor too cold, it's just right (primarily for water) as either excessive heat or cold would either boil or freeze water

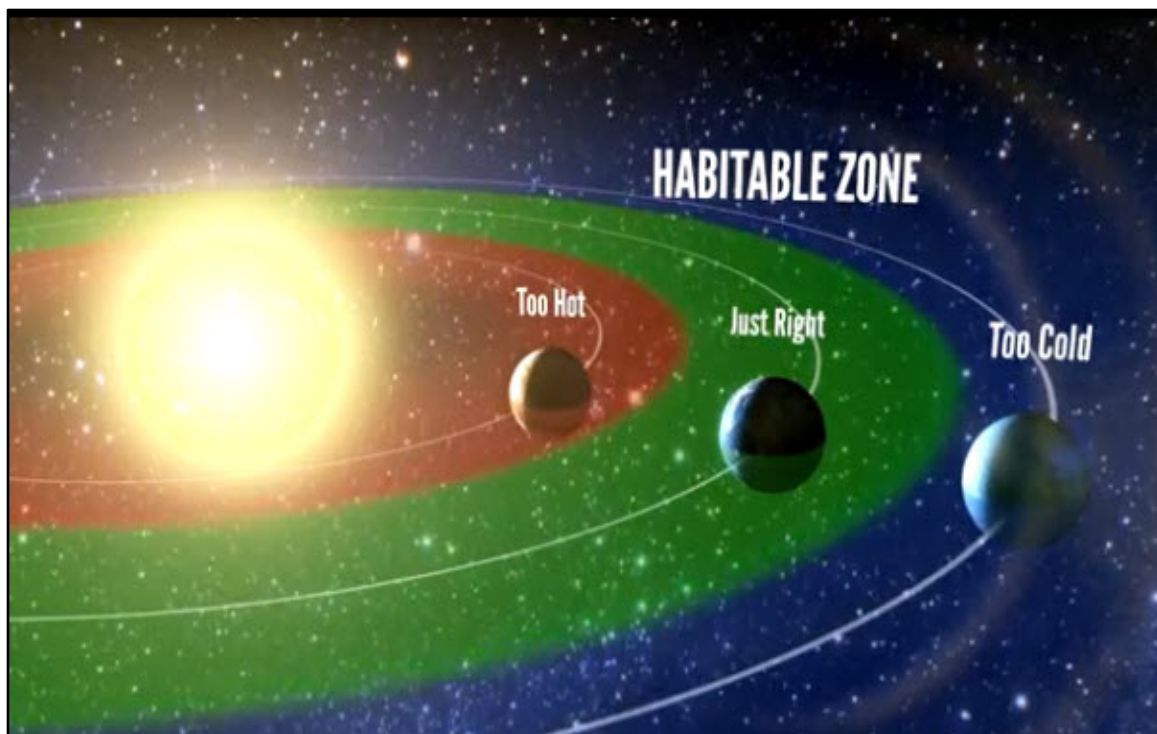


Figure 5. Habitable Zone

- If the Earth were 5% closer to the sun, temperatures on Earth would rise to 900-degrees F. Conversely, if the Earth were 20% farther from the sun the Earth would be locked in cold and ice like Mars
- Earth is perfectly situated between two arms of a flattened spiral galaxy (the Milky Way). This also enhances observation of our galaxy and the Universe
- If the Sun were smaller, the Habitable Zone would be smaller. Therefore, to stay in the Habitable Zone, the Earth would have to be closer to the Sun. As a



result, increased gravity from the Sun would reduce the rotation rate of the Earth

- Permits a stunning diversity of measurements, from the Universe at large (cosmology) to the smallest subatomic particles (quantum physics) to the size of the Earth and humans (geology and anthropology)

### **TERRESTRIAL PLANET**

The Earth is comprised of three main components – core, mantle and crust (Figure 6). The paper-thin crust is about 4 to 30 miles thick and has more than a dozen tectonic plates in constant motion. This dynamic geology:

- Regulates the Earth's interior temperature
- Recycles carbon
- Mixes chemical elements essential to living organisms
- Shapes the continents

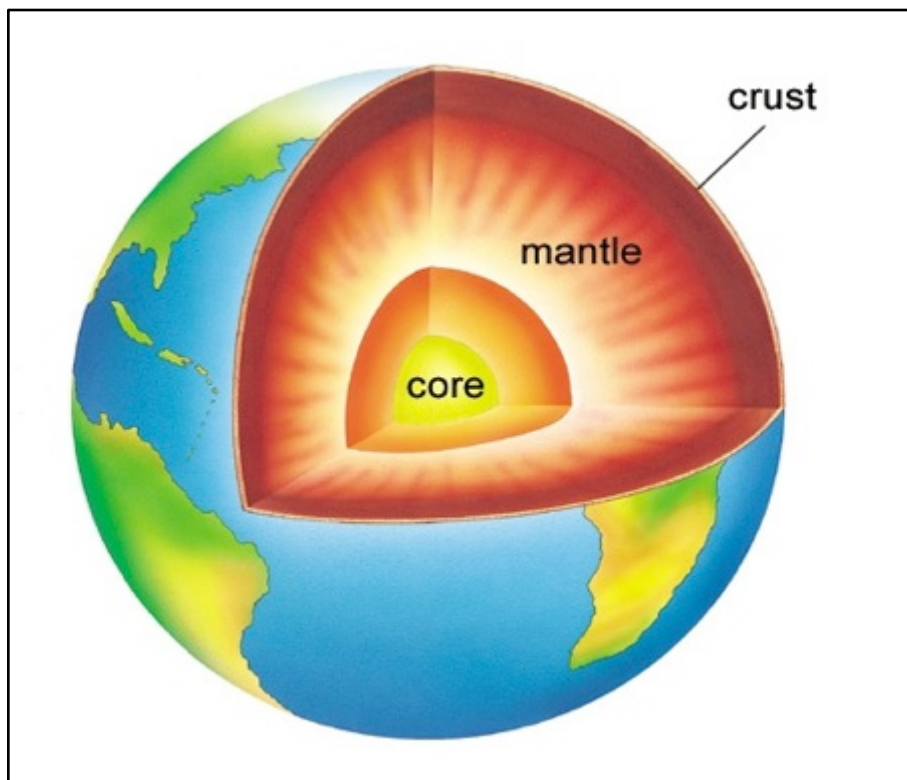


Figure 6. The Core, Mantle and Crust

### **STABILITY OF THE SUN**

The Sun is average in activity and is responsible for:

- The radiant heat and radiation is typically consistent although there are occasional solar flares
- The Sun is regarded as a solitary star. This means it is only accompanied by orbiting planets, asteroids, comets and dust

## EARTH'S CONSISTENCY OF TEMPERATURES

The average temperature on Venus is +864-degrees F and on Mars it is -80-degrees F. However, the average temperature on Earth is +59-degrees F. This moderate average not only allows liquid water to exist, but also provides a relatively stable environment for life. Temperature extremes limit diversity of biological life forms, and while some bacteria can survive extremes, advanced organisms typically are too complex to endure extreme extremes.

## DIVERSITY OF LIFE

The diversity of life on Earth has two unique advantages:

- It creates a food-chain that can sustain a variety of species
- It allows a greater development of living species

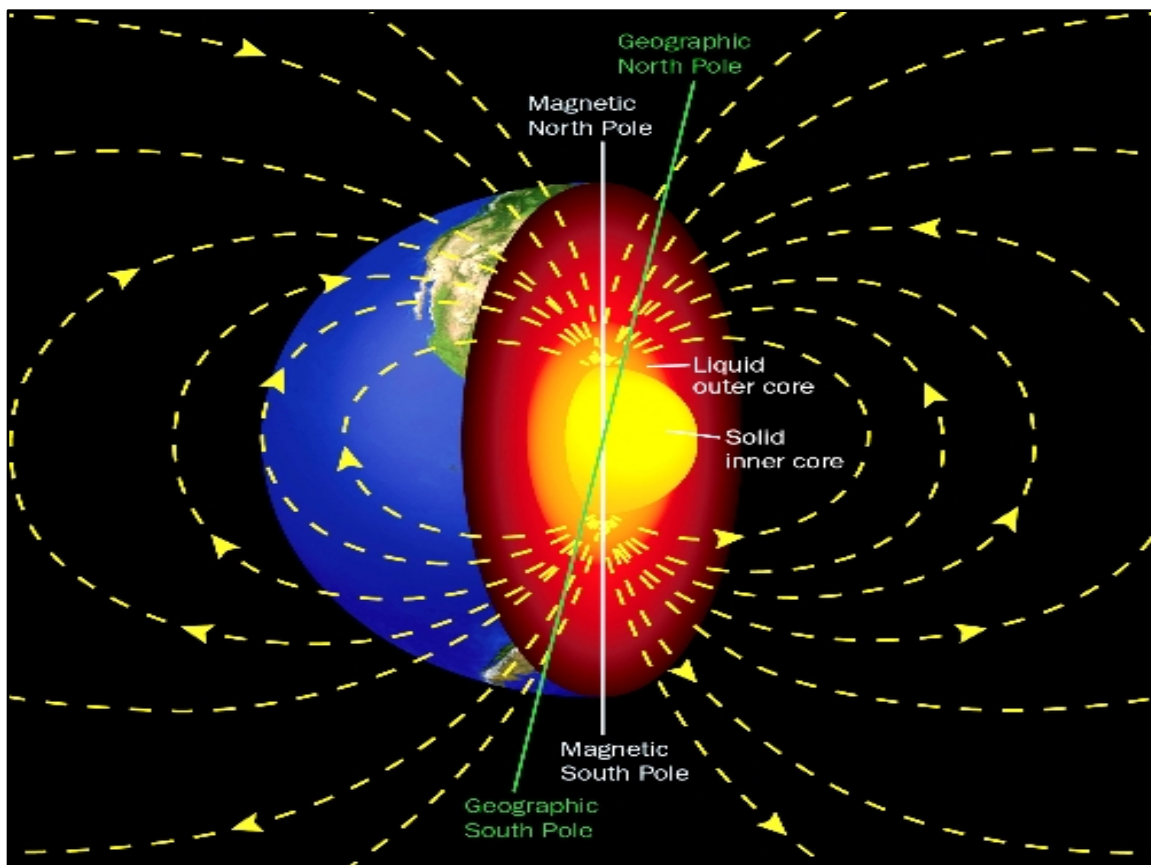


Figure 7. Earth's Magnetosphere

## PROTECTIVE MAGNETIC FIELD

Deep within the interior of the Earth the movement of liquid iron generates a protective magnetic field that is essential to life and is called the Magnetosphere (Figure 7) by scientists and astronomers. This invisible *gravity shield* deflects radiation from the Sun and space and also protects organisms on Earth from

the solar wind (a stream of charged particles released from the upper atmosphere of the Sun, called the Corona). If Earth were smaller, the iron fluid would be smaller and reduce the size and strength of Earth's magnetic field allowing the solar wind to strip away our atmosphere and transforming Earth to a dead barren world like Mars.

### **THE OZONE LAYER**

The ozone layer is much like the Magnetosphere as it is another buffer against solar radiation, especially Ultra-violet (UV) radiation.

### **OXYGEN-NITROGEN ATMOSPHERE**

We need oxygen and nitrogen for life. Even though the Earth's atmosphere is less than 1% of Earth's diameter (Figure 8), it contains 78% nitrogen, 21% oxygen and 1% carbon dioxide in perfect harmony. These gases ensures:

- A benign atmospheric combination
- Temperate climate
- Protection from the Sun's radiation
- Correct ratio of gases for liquid water and complex life
- Transparency for discovery of our galaxy and universe



Figure 8. Earth's Blue Atmosphere

## **EARTH AS A ROCKY PLANET**

Given some recent studies of distant stars and the on-going discovery of planets beyond our own solar system, many planets in the Universe appear to be gas-giants similar to Saturn, Jupiter, Uranus and Neptune. Current science indicates that a rocky planet offers the best foundation for life and especially the diversity of life that is common on Earth.

## **ORBITED BY A LARGE MOON**

For our size planet, our moon is considered as large. Current thinking dictates that if our moon did not exist, neither would we. Our moon is  $\frac{1}{4}$  the size of Earth yet its powerful gravitational pull stabilizes the angle of the Earth's axis at a constant 23.5-degrees. It also:

- Stabilizes the rotation of the Earth so we have comfortable 24-hour days as without the moon, our days would be 4-hours long
- Moon's gravity creates oceanic tides, keeping coastline waters from becoming stagnant and driving currents around the world
- Ensures temporal seasonal changes
- Earth's climate is the only known climate in the solar system capable of supporting life

## **TYPE OF STAR**

Earth is known as a spectral type, G2, dwarf, main sequence type of star that is well suited for our needs and for life.

## **MODERATE RATE OF ROTATION**

The Earth rotates once a day in about 24 hours (called the Sidereal period) at a speed of about 1,000 mph and travels around the Sun at about 67,000 mph. If the rate of rotation increased over the present rate:

- Gravity would be decreased at the equator and increased at the poles
- The days would shorten
- The current magnetic field would be decreased
- Life would be exposed to increased harmful ionizing radiation from the Sun
- Ocean tides would be much higher
- As the axial-tilt of the Earth would change, Earth would experience colder winters, hotter summers and faster wind speeds

## **PROTECTED BY GAS GIANT PLANETS**

Like other planets, Earth is susceptible to being struck by comets and/or asteroids. However, Earth is different from other planets as the size and gravity of Jupiter and Saturn in our galaxy minimize the chance of Earth being struck by these objects from space. Interestingly, these two planets act as giant vacuum cleaners due to their immense gravitational fields.

## **THE STABILITY OF OUR SOLAR SYSTEM**

Our solar system is relatively stabilized in terms of planetary orbits.



## OUR LOCATION IN THE MILKY WAY GALAXY

Our location in the Milky Way Galaxy is at the edge of a spiral arm called the Orion Arm, and is about two-thirds of the way from the center of our galaxy to



Figure 9. Earth's Location In the Milky Way Galaxy

the edge of the starlight (Figure 9). This enhances stability and safety as stars and systems are in a very crowded area where collisions with celestial bodies and high radiation exposure are statistically higher.

## CONCLUSION

Comparing the primary differences between secular science/astronomy and biblical Scripture regarding the origin and importance of the universe and this Earth is startling in the diversity of their explanations as follows:

### SECULAR SCIENCE/ASTRONOMY

#### The Universe:

“The most popular theory of our Universe’s origin centers on a cosmic catastrophic event unmatched in all of history – the big bang. Big bang proponents suggest that some 10 billion to 20 billion years ago a massive blast

allowed all the Universe's known matter and energy – even space and time themselves – to spring from some ancient and unknown type of energy. The theory maintains that, in the instant – a trillion – trillionth of a second – the big bang, the Universe expanded with incomprehensible speed from its pebble-size origin to astronomical scope (Figure 10). Expansion has apparently continued, but much more slowly, over the ensuing billions of years. Scientists can't be sure exactly how the universe evolved after the big bang. Many believe that as time passed and matter cooled, more diverse kinds of atoms began to form, and they eventually condensed into the stars and galaxies of our present Universe."<sup>13</sup>

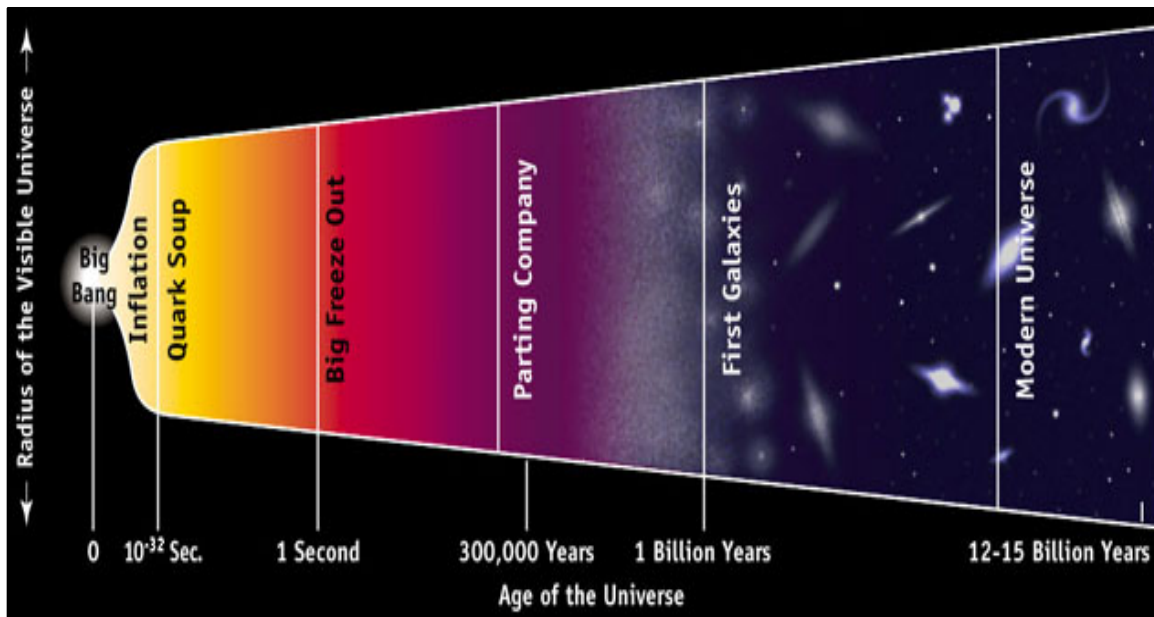


Figure 10. Alleged Origin Of The Modern Universe

### The Earth:

"In the standard theory, space and time and all matter and energy in the Universe were formed in the big bang some 10 to 20 billion years ago. Earth, along with the other planets, is believed to have been born 4.5 billion years ago as a solidified cloud of dust and gases left over from the creation of the Sun. No eyes were around at that time to view the turmoil that must have taken place on the face of the Earth – gigantic heaves and bubbling's on the surface, exploding volcanoes, and flowing lava covering everything in sight. Finally, the iron in the center accumulated as the core. Around it, a thin but fairly stable crust of solid rock formed as Earth cooled. Depressions in the crust were natural basins in which water, rising from the interior of the planet through volcanoes and fissures, collected to form the oceans. Slowly, Earth acquired its present appearance."<sup>14</sup>

## **BIBLICAL SCRIPTURE**

### **The Universe and Earth:**

The biblical account of the origin of the universe and Earth is more direct and explanatory as compared to the secular scientific version that relies on theory and evolutionary belief. The biblical account of origins can be found in Genesis and Isaiah as follows:

*"In the beginning, God created the heavens and the Earth"*

*Genesis 1:1*

*"Then God said, Let there be lights in the firmament of the heavens to divide the day from the night; and let them be for signs and seasons, and for days and years; and let them be for lights in the firmament of the heavens to give light on the Earth;" and it was so. Then God made two great lights: the greater light to rule the day, and the lesser light to rule the night. He made the stars also"*

*Genesis 1:14-16*

*"For thus says the Lord, Who created the heavens, Who is God, Who formed the Earth and made it, Who has established it, Who did not create it in vain, Who formed it to be inhabited"*

*Isaiah 45:18*

*"I have made the Earth, and created man on it. My Hands-stretched out the heavens, and all their host I have commanded"*

*Isaiah 45:12*

These four accounts tell us that God made the heavens, the Earth, and *specifically created the Earth to be inhabited*. The secular answer to the idea of life outside of this planet is fundamentally based on a belief in evolution instead of God's Word. This ideology is derived from the premise that if life accidentally started here on Earth (evolution) then it is not unreasonable to assume that life could also have accidentally evolved somewhere else in the far reaches of space given the size of the Universe, the millions of planets and the right conditions that might be present on other planets. Therefore, life is almost inevitable in an evolutionary worldview.

However, as we have previously discussed, the Earth is unique and God designed it for life as delineated in Isaiah 45:18. The other planets have an entirely different purpose than Earth as outlined in Genesis 1:14-16. Therefore, the heavenly bodies are designed differently than Earth and serve a different purpose. Nowhere does scripture discuss the creation of life on the *"lights in the firmament (expanse) of the heavens."* Unfortunately, secular science views the

Universe and Earth as an accidental result from the formation of the alleged *Big Bang* that resulted in a Universe and Earth that has no purpose. From our previous discussion, current scientific evidence on the sole uniqueness of Earth completely refutes this philosophy. Even more important than the apparent uniqueness of Earth is a person's relationship with the Lord Jesus Christ that will determine your eternal destiny.

## RESOURCES

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