



**The title of the seminar :**

## LIFE INSIDE THE SOLAR SYSTEM

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PICTURE (1)

## Introduction :

In our world ; there are a lot of creatures that live inside it ;  
animals , plants , humans , .....

But ...

Are we alone in this space ?

Are there another life inside our small  
sidereal system (The solar system) ?

what are the elements that must appear on planets  
to make them habitable for aliens ?

This seminar will discuss these argumentative questions trying  
to give them some answers ....

## CHAPTER (1) :

### Emergence of the solar system

"The latest hypotheses said that the solar system (the sun and the nine planets) started as a cloud consisted of gases and solid grains of rock and ice, this cloud were revolving around it self ...

After that the sun formed in the center and its temperature steamed the ice grains in the inner part of the solar system leaving only the rock grains that formed the four (rock dwarfs) later ...

But in the further regions outward, the ice grains did not evaporate, so the planets which formed there were larger and its gravity attracted other gases to become (giants gases) ...

and the grains gathered in the beginning to form small asteroids that collided each other to form finally the planets."<sup>(1)</sup>

This planets are : Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

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(1) - "الموسوعة الفلكية" book / page 43

## CHAPTER (2) :

### Earth , the planet of the life



PICTURE (2)

The Earth is the planet of the life, it has all the creatures that we know from the human life to the bacteria one.

All of them base on the elements which make the life on Earth survive.

The main elements that could make that are : water, atmosphere and the astronomical properties.

## 1) . The water :

Earth is often called the planet because about 70 Percent of its surface is covered with water.

The water is the most important element that make the life survive on the Earth, and this item does not disappear cause of the **water cycle** process.

### The water cycle :

"Most of the Earth's water can be found in the oceans.

As the sun heats the surface of the ocean, it causes water to evaporate.

**Evaporation:** is the process of liquid water changing in to water vapor.

Water vapor joins the other gases in the atmosphere.

As it rises high into the air, the water vapor cools.

If the water vapor cools enough, it will condense.

**Condensation:** is the process in which water vapor changes in to liquid water.

When water vapor condenses in the atmosphere,  
Clouds form.

Drops of condensed water in the clouds collide, and the  
Drops grow larger.

When drops are too heavy to remain suspended in the  
clouds by air currents, they fall as precipitation.

**Precipitation:** is solid or liquid water that falls from the air to Earth.

Rain, snow, sleet and hail are forms of precipitation.

Most precipitation falls back into the oceans.

Precipitation that lands on the ground can run off the surface into rivers and lakes, or it can soak into the ground.

Some of this water quickly recycles back to the atmosphere through evaporation or transpiration.

This is the process by which plants release water vapor into the air through their leaves.

The rest of the water in the soil slowly trickles down through gaps and pores in rock." <sup>(2)</sup>

## **2) . the atmosphere :**

"What gases are you taking in when you breathe?"

You probably said (*oxygen*), but the air contains other gases make up the **atmosphere**, the layers of air that surround Earth.

The graph below shows the amounts of the different gases that make up the atmosphere.

Another important gas is *ozone*, a form of oxygen that absorbs ultraviolet (UV) radiation from the sun.

Ozone in the atmosphere helps protect life at Earth's surface from the harmful effects of UV radiation.

However, ozone at Earth's surface is harmful.

This is found in smog that hangs over some cities as pollution.

The atmosphere also contains solid, such as dust.

Dust particles provide surfaces on which water vapor condenses into water droplets or ice crystals.

The atmosphere is composed of five layers, which fade from one into another.

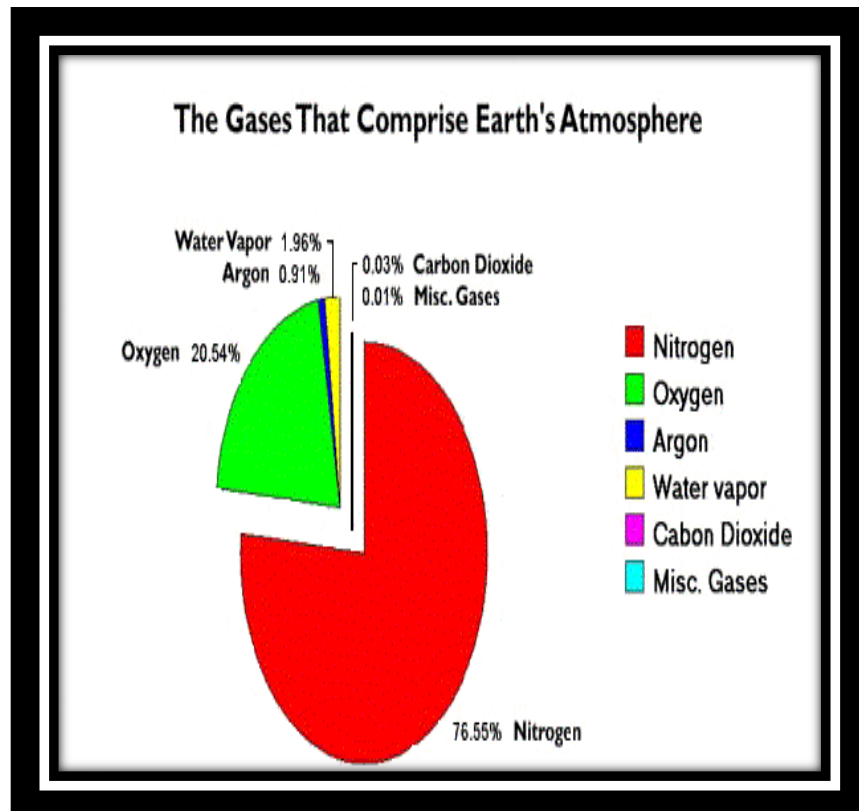
The (*troposphere*) is the layer closest to Earth's surface.

Nearly all life on Earth exists in this layer.

Almost all weather occurs here, too.

The air is densest in this layer, which makes up about 75 percent of the total mass of the atmosphere.

The greater the distance from Earth's surface, the thinner and colder the air is.



PICTURE (3)

The (*stratosphere*) is the next layer of the atmosphere.

The air in this layer is thinner and drier than that of the troposphere.

The stratosphere makes up about 24 percent of the total mass of the atmosphere.

Like the troposphere, the stratosphere contains ozone.

As the distance from Earth increases, the air becomes thinner, but the temperature becomes warmer.

Above the stratosphere is the (*mesosphere*), the coldest layer of the atmosphere.

Though the air here is very thin, it still produces enough friction to cause *meteoroids* to burn up.

These are chunks of rock moving through space at very high speeds.

The (*thermosphere*) is the layer above the mesosphere.

Temperatures here are extremely high—up to 1200°C (2200°F).

The (*exosphere*) is the outermost layer of the atmosphere.

There is no exact boundary between the exosphere and space.

The air simply becomes thinner and thinner as its atoms and molecules escape into space."<sup>(3)</sup>

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(2) – science Harcourt School Published / page 338/389

(3) - science Harcourt School Published / page 372/373

### 3) . The astronomical properties :

The sidereal site of planet is very important element that make the life on it possible.

The sidereal site of the Earth is considered the best one between the other sites of the solar system planets.

Earth's movement also affects at its climate, it contains :

#### 1) .The Earth rotation :

It is a term that referring to the Earth's movement around its axis and takes about 24 hours to be completed.

This movement causes the succession of night and day.

#### 2) .The annual movement :

It is the movement that causes the four seasons.

This movement takes about 365.4 days to be completed.

With this time, Earth completes the whole distance of its orbit around the sun.

## CHAPTER 3 :

### The life inside (rock/gases) planets

#### 1) .The gases planets :



PICTURE (4)

**Saturn :** Saturn is the sixth planet in the distance from the sun.

Its atmosphere has 89% hydrogen and 11% helium with some other gases.

This planet is extremely cold and hasn't oxygen gas.

**Uranus :** the seventh in the distance from the sun.

It is called (**The green planet**), that because of the big amount of the blue-green methane gas it has.

Like Saturn, it has hydrogen and helium and free off Oxygen gas with extreme cold.

**Neptune** : the eighth planet in the distance from the sun.

It is called (**The blue planet**).

This pretty planet has similar atmosphere that Uranus has with the same extreme cold.

**Jupiter** : the biggest planet in the solar system.

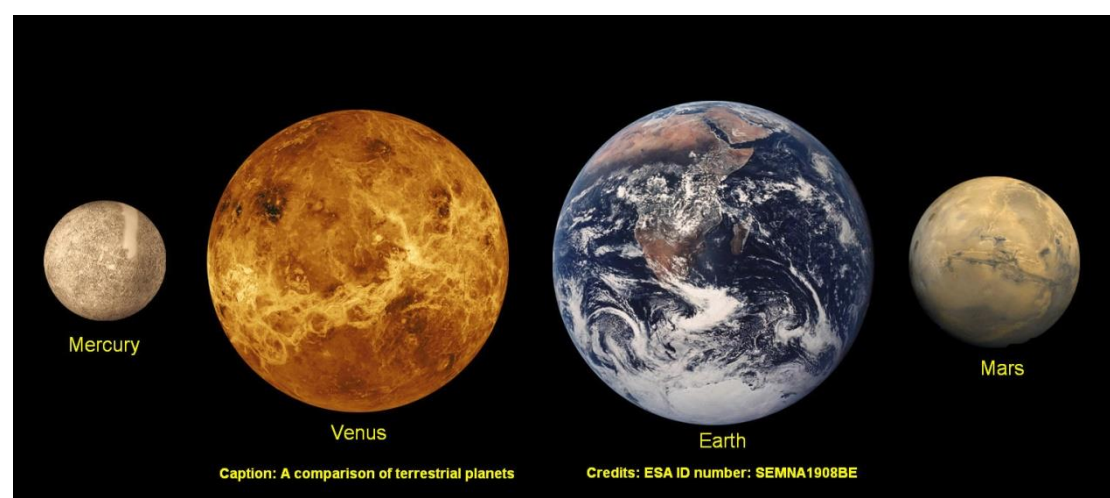
This giant planet is the fifth in the distance from the sun.

The last data about Jupiter said that it is possible to find life on it, at least at the level of microscopic objects.

Its climate has a big amount methane and ammonia, and a lot of elements that - as evidenced in research laboratories on Earth - leads to the formation of organic primitive cells.

And it creates the presence of water in its giant atmosphere suitable conditions for the development of these cells to become more complex.

## 2) . The rock planets :



PICTURE (5)

**Mercury :** Mercury is the closest planet to sun and the smallest between the other planets in the solar system.

Its temperature is imaginary high in the side exposed to the sun, and very low in the other side.

Its atmosphere is very bad for life, it has the amount of fifty times more helium than hydrogen.

**Venus :** this planet is the second in the distance from the sun and has a similar size to the size of Earth.

Its atmosphere has the carbonic acid gas with mixture of carbon gas and some poisonous gases such as the sulfuric acid and mercury (Hg) fumes.

**Mars :** it is also called (**the red planet**), it is the fourth planet in the distance from the sun.

"At the last years, the space shuttles which are around the orbit of Mars found a lot of signs that indicate the existence of water on Mars or the methane gas on its surface and those are signs that affirm the possibility of life existence on Mars.

And the space shuttle (Odessa) discovered a big amount of ice under the surface of Mars."<sup>(4)</sup>

"In 1997 scientists found traces of single-cell bacteria in a part of a meteorite from Mars landed on Antarctica.

After analyzing a sample of a soil from Mars, scientists have discovered a form of microscopic life in that soil.

The information indicates that something turns carbon dioxide into oxygen in a manner similar to the way that

micro-organisms do on Earth."<sup>(5)</sup>

"And it turns out that the atmosphere of Mars contains essential elements in the form of gases that are essential for forming the primitive substance for cells, so the possibility of life on Mars is very large."<sup>(5)</sup>

**Europe :** Europe is one of the moons of Jupiter.

Its atmosphere contains a big amount of oxygen and nitrogen.

"The presence of liquid water in Europe make the scientist send a verification there.

In 1977, and during an exploratory dive, the scientists discovered a variety of creatures in the depths of the sea.

These creatures are developing there although the sun shine doesn't reach them.

They take their energy from some chemical reactions in the depth of the sea.

Scientists also discovered that some of universal rays effect on the ice lakes on Europe convert it to oxygen more than the Earth has, so it is probably habitable for life because it has all the life elements."<sup>(6)</sup>

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(4) -[http://arabic.news.cn/science/2014-12/16/c\\_133857107.htm](http://arabic.news.cn/science/2014-12/16/c_133857107.htm)

(5) - "الموسوعة الفلكية" book / page 90

(6) - [https://ar.wikipedia.org/wiki/%D8%A3%D9%88%D8%B1%D9%88%D8%A8%D8%A7\\_%28%D9%82%D9%85%D8%B1%29](https://ar.wikipedia.org/wiki/%D8%A3%D9%88%D8%B1%D9%88%D8%A8%D8%A7_%28%D9%82%D9%85%D8%B1%29)

## conclusions :

At the end of my research I found that there isn't any Intelligent life in the solar system abroad Earth, but in Some planets like Mars, it have a primitive bacterial life.

And I recommend to complete those scientific researches To answer completely our curious questions.

Photo index :

The number	The page	The description
(1)	(1)	The solar system planets
(2)	(4)	The Earth planet
(3)	(7)	The gases that comprise the Earth atmosphere
(4)	(10)	The gases planets
(5)	(11)	The rock planets

### Paper references :

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<b>science Harcourt School</b>	<b>First edition</b>	<b>Havcourd</b>	<b>Florida Harcourt School</b>	<b>2006</b>
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1). [http://arabic.news.cn/science/2014-12/16/c\\_133857107.htm](http://arabic.news.cn/science/2014-12/16/c_133857107.htm)

19/10/2015 , 9 at night

2).

[https://ar.wikipedia.org/wiki/%D8%A3%D9%88%D8%B1%D9%88%D8%A8%D8%A7\\_%28%D9%82%D9%85%D8%B1%29](https://ar.wikipedia.org/wiki/%D8%A3%D9%88%D8%B1%D9%88%D8%A8%D8%A7_%28%D9%82%D9%85%D8%B1%29)

19/10/2015 , 9 at night

## The index :

The cover page .....	1
Introduction .....	2
<b>Chapter 1:</b> .....	3
Emergence of the solar system	
<b>Chapter 2:</b> .....	4
Earth, the planet of the life	
<b>Chapter 3:</b> .....	10
The life inside (rock/gases) planets	
Conclusions : .....	14
Photo index : .....	15
References : .....	16

