Planets And Solar System Essay, Research Paper

“A planet is a celestial body that revolves around a

central star and does not shine by its own light ” (Grolier,

1992). The only planetary system that is known to man is our

solar system. It is made up of nine planets which range in size

and make-up. The nine major planets in our solar system are

Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and

Pluto. There are also many other minor planets which are also in

our solar system, but they are unimportant compared to the nine

major planets. In this paper I will discuss the planets and how

they are each unique.

Mercury which is the planet that is closest to the sun is

the first planet I will discuss. Mercury is the smallest of the

inner planets. It is speculated that the heat from the sun made

it impossible for the gases present to become part of the

planetary formation. The surface of Mercury is extremely hot.

It is approximately 470 degrees celsius on the surface and is

thought to be even hotter at the two ” hot spots.” These ” hot

spots ” are on opposite ends of the equator. It is the heat of

the surface that makes it impossible for Mercury to have any type

of atmosphere.

Mercury orbits the sun once every 88 days and has a true

rotation period of 58.6 days. ” It is the closest planet to the

sun and therefore orbits faster than any other planet ”

(Thompson/Turk, 542, 1993). It is said that Mercury rotates

three times for every two trips around the sun, so that during

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every alternate perihelon passage the same face points directly

at the sun. ” Geologically, the most remarkable features of

Mercury are compressional cliffs or faults, just the sort of

wrinkles that might form in the crust if the interior of the

planet shrank slightly ” (Morrison, 74, 1993). It is speculated

that it was the solidification of Mercury’s metallic core that

caused this global shrinkage. Mercury is also ” . . . enriched

in metal or depleted of rock ” (Morrison, 74, 1993). It is also

believed that some of the inner core of Mercury is still in a

fluid state.

Scientists also believe that Mercury’s surface is made partially

of silicate rock. The best way to describe Mercury is, ” . . .

small, heavily cratered and airless ” (Morrison, 71, 1993).

Venus is the second closest planet to the sun and is said to

” . . . most closely resemble Earth in size, density, and

distance from the sun ” (Thompson/Turk, 542, 1993). Venus is

known to most scientists as the sister planet to the Earth. It

is called this because it closely resembles the Earth’s mass,

density and diameter. The only thing different is that Venus ”

is shrouded in thick clouds that completely hide the surface of

the planet ” (Grolier, 1992). The surface temperature is also

much warmer than that of Earth.

Venus completes one revolution around the sun in 224.7 days.

This makes the Venusian day equal to 117 earth days. It is

thought that this slow rotation may be the reason why Venus has

no magnetic field.

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The atmosphere of Venus made up of 98% carbon dioxide and

2% Nitrogen. This atmosphere also has the presence of helium,

neon and argon. This is yet another thing which makes Venus

different from Earth.

The surface of Venus is quite a bit like that of the Earth.

The surface has volcanoes and smooth plains. ” Much of the

volcanic activity on Venus takes the form of Basaltic eruptions

that inundate large ares, much as the mare volcanism flooded the

impacted basins on the near side of the moon ” (Morrison, 93,

1993). One thing that differs from Earth is that there is no

water liquid on the Venusian surface.

Some of the scientific data that follows was taken out of

Cattermole’s book. The mean distance from the sun is 108.20 Km.

The equatorial diameter is 12,012 Km and the equatorial rotation

is 243 days. Finally the mass of Venus is 4.87\*10^24

(Cattermole, 63, 1993). Venus, although different than Earth, is

still our sister planet.

Mars is the fourth furthest away from the sun and is

recognized by its reddish color. Mars is also very much like the

Earth. ” More than any other planet in the solar system, Mars

has characteristics that make it an Earth-like world “(Grolier,

1992).

One thing that is very similar to Earth is the rotation

period. Mars rotation period is only thirty seven minutes longer

than the Earth’s. This would explain why Mars has significant

seasonal changes just as Earth does. It is believed that the

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difference between winter and summer on Mars is even greater than

on Earth.

Mars is extremely hard to understand due to the effect of

blurring that is caused by the two atmospheres of Mars.

Scientists do know, however, that Mars is relatively small and

that changes take place in the surface features when the seasons

change. It is also known that dust storms are prevalent and

leaves the surface of Mars covered by a red haze.

Mars has a very thin atmosphere which is composed of carbon

dioxide, nitrogen, argon, water vapor and oxygen. Mars also has

no magnetic field. ” Because the atmosphere of mars is so thin,

wind velocities up to several hundred Km per hour are required to

raise the dust particles during a dust storm, and these fast-

moving particles erode structures with a sand-blasting effect ”

(Grolier, 1992). Therefore, the surface is basically plain-like

and covered with large craters. There are also some areas where

the rock is ” jumbled.” The poles of Mars are iced over and the

temperature is about 160 – 170 degrees K. Mars also has its

share of volcanoes. Most of these volcanoes are shield

volcanoes. The surface is littered with winding channels that

resemble river channels that have dried up over time. Scientists

believe that water once existed and caused the formation of these

channels. It is said that, ” Mars remains the best candidate for

life in the solar system outside of the Earth,” and that is what

makes Mars so interesting to scientists.

Jupiter is the fifth planet and is the most massive of all

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the planets in this solar system. ” Its mass represents more

than two-thirds of the total mass of all the planets, or 318

times the mass of the Earth. Jupiters density is quite low at

1.3 g/cubic cm.

The atmosphere of Jupiter contains water, ammonia, methane

and carbon. It is thought by scientists that there are three

cloud layers. The wind activity on Jupiter is quite fierce and

moves in jet streams parallel to the equator. The weather on

Jupiter is still very hard for scientists to understand. There

is not enough information to truly understand how the weather is

on this planet.

Jupiter is most known by the normal citizen by the rings it

has. These ” rings are very diffuse. The ring particles must

generally be about as big as the wavelength of light, that is,

only a few microns ” (Grolier, 1992). That is why these rings

are faint or diffuse. The rings are what Jupiter is known for.

Saturn is a planet which is also known for its rings and

when viewed has a yellow or grayish color. The color is from the

gaseous atmosphere and the dust particles in that atmosphere.

The atmosphere is mostly a clear hydrogen-helium atmosphere.

There are also traces of methane, phosphine, ethane, and

acetylene. This atmosphere is much different than that of the

Earth’s.

Saturn orbits the sun with a period of 29.4577 tropical

years. It is 1.427 billion Km away from the sun and is therefore

a cold planet. It has an equatorial diameter of 120,660 Km which

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makes it the second largest planet in our solar system.

The next planet is Uranus. The main problem scientists have

with Uranus is that, “the lack of visible surface features means

that it is difficult to measure the rotation period of Uranus

“(Hunt/Moore, 388, 1983). Uranus has an equatorial diameter of

51,000 Km which is almost four times as much as Earth. The

atmosphere is mostly methane gas and therefore the planet has a

red tint or a blueish green color. Uranus also has rings but

unlike Saturn these rings have almost no small particles.

Scientists are not as concerned with this planet.

Neptune is the last of the gaseous planets in our solar

system. Its atmosphere is much like Uranus’s because it is

mostly helium and hydrogen. It also contains methane. Neptune

has a diameter of 49,500 Km and a mass 17.22 times that of the

Earth. It has an average density of 1.67 /cm^3 (Grolier, 1992).

Neptune also has rings like its other gaseous partners, but they

are very faint. Not a great deal is known about Neptune. It is

widely studied by scientists and that makes it an important

planet.

The final planet, which is also the smallest, and the

furthest away from the sun is Pluto. This planet is very hard to

see therefore not a lot is known about its physical

characteristics. Scientists do know that it has a thin methane

atmosphere. Little is known about this planet because it is so

far away from the Earth and the sun. Scientists are always

learning new things and more data will arise in the future.

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As one can see the planets of most importance are the ones

closest to the sun and Earth. Little is known about the far off

planets therefore it is hard to give them full recognition. Much

is known about Mercury, Venus, Earth, Mars, Jupiter and Saturn.

The other three planets are not as well known as these six are.

Whether more planetary systems exist doesn’t really matter.

There are still plenty of things we don’t understand about our

own solar system. Scientists will have their work cut out for

them in the future. Each and every planet has distinct

differences and that helps show us how truly great God is. The

planets will never fully be understood and will always be a great

topic of discussion.

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