

The background of the slide is a sunset scene. The sky is a gradient of orange and yellow, with some light clouds. In the foreground, there are dark silhouettes of trees and a road that curves into the distance. The overall mood is peaceful and contemplative.

# **Goals for this Discussion**

**The young-Earth and old-Earth positions cause controversy among Christians.**

**The goal for this discussion is to promote unity among Christians.**

**Unity is promoted by discussing and understanding different points of view.**

**For some issues, unity does not necessarily require agreement.**

# **Why I Believe the Earth is Old**

**Michael W. Edenburn**

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# Where am I Coming From?

The simplest interpretation of Genesis 1 is that all things were created in six 24 hour days.

One should use the simplest interpretation unless there is a very good reason not to.

I believe that there is a very good reason not to.

Even though my interpretation is not the simplest, I believe that Genesis 1 is reliable and authoritative.

I absolutely do not endorse the Darwinian theory of evolution.

I am definitely not a theistic evolutionist.

I absolutely do believe that God created all things, and that He did it through the agency of Christ who is my savior and lord.

# **How can I believe in the reliability of Genesis 1 and an Earth that is a few billion years old?**

## **Layers Upon Layers:**

Tree rings that go back 11,000 years

Ice cores estimated to be 740,000 years old

Green River shale deposits that have 7.5 million annual layers

Coral reefs estimated to be 400 million years old

## **Radiological Time Estimates:**

Several radiological methods dating some rocks to be 3.6 billion years old

## **A Less Rigid Interpretation of Genesis 1:**

Staying true to the context, range of word meanings, genre, and main point—that God is the creator of all things

# Tree Rings

The Shulman grove in California has living trees exceeding 4,500 years old.

European oaks, both alive and dead give a record dating back 11,000 years.

Tree rings are used to calibrate C-14 dating.



# Ice Cores

Greenland Ice Sheet                      3 km, 110,000 years old.

Vostok Station in Antarctica    3.6km, 420,000 years old.

East Antarctic Ice Sheet            3 km, 740,000 years old.

Ice is composed of H-1, H-2, O-16, and O-18 isotopes.

Isotope ratios in snow depend on seasonal temperature cycles.

Seasonal layers can be counted back to about 15,000 years.

Then, thickness is used to estimate age.



# Green River Shale Deposits

## Found in Colorado, Utah, and Wyoming

Very fine clay particles have settled in lakes under calm conditions. The same process forming annual layers is seen in some lakes today. Each layer is a couplet with the thickness of notebook paper. Each couplet has pollen in summer, none in winter. Up to 7.5 million couplet layers are found in one formation. If laid down by the flood over 150 days, 50,000 layers per day were required (7,500,000 layers divided over 150 days, see Gen 7:24).



# Eniwetok Coral Reef 100,000 Years Old

The Eniwetok reef is at least 4,600 feet thick.

Growth rate is limited by concentration of calcium carbonate in water.

Modern growth rates are 0.5 inches per year.

$4600 \text{ feet} \times 12 \text{ inches/ft} / 0.5 \text{ inches/yr} = 100,000 \text{ years}$





# 500 Million Year Old Coral Reefs

Some coral reefs dated geologically to be 500 million years old have 400 daily growth bands in an annual growth band.

400 days/year means the earth rotated faster 500 million years ago and the length of a day has increased by 2.1 hours = 7560 seconds.

Earth's rotation is slowing by 0.000015 sec each year due to tidal action.

$7560 \text{ sec} \div 0.000015 \text{ sec/yr} = 500 \text{ M years}$

Age calculations from geology and from changing earth rotation rates agree.



# Radiological Dating

Isotopes are atoms that have the same number of protons and but different numbers of neutrons.

Some isotopes are stable and some decay.

Half-life is the length of time when half of the parent isotope has decayed into its daughter(s).

Parent	Daughter	Half-Life yrs
Be-10	B-10	1.5 million
C-14	N-14	5.7 thousand
Cl-36	Ar-36	300 thousand
K-40	Ca-40, Ar-40	1.2 billion
Rb-87	Sr-87	47 billion
Sm-147	Nd-143	110 billion
Lu-176	Hf-176	21 billion
Re-187	Os-187	70 billion
Th-232 series	Pb-208	15 billion
U-235 series	Pb-207	710 million
U-238 series	Pb-206	4.5 billion

# Dating Using Radiological Decay

We can find decay time  $T$  for a sample

$$P = P_0 \exp(-0.693 T / T_{\text{half}})$$

$$D = D_0 + P_0 - P$$

$$T = \ln[1 + (D - D_0) / P] T_{\text{half}} / 0.693$$

$D$  is the measured daughter,  $P$  is the measured parent

$D_0$  is the original daughter,  $P_0$  is the original parent

**Radiological dating depends on knowing  $D_0$**

Example:  $D_0 = 0$ ;  $D/P = 0.5$ ;  $T_{\text{half}} = 1,000,000$  years

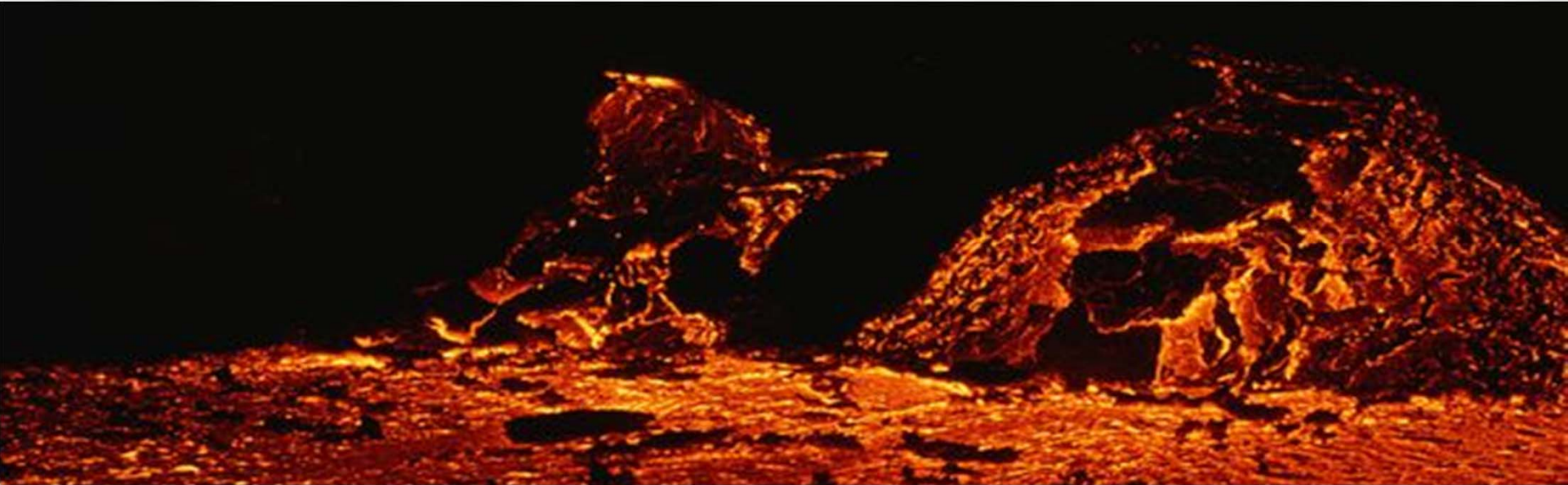
$$T = \ln[1+0.5] 1,000,000 / 0.693 = 585,000 \text{ years}$$

# Dating Lava Using Potassium-Argon

If the daughter is a gas, like Argon, it will escape when molten lava comes to the surface, but it will be trapped when the lava solidifies.

$D_0$  is 0.0, or nearly so, and the daughter in the sample comes from decay of potassium.

Some daughter may remain in the lava from before it solidifies, but techniques are used to quantify this.



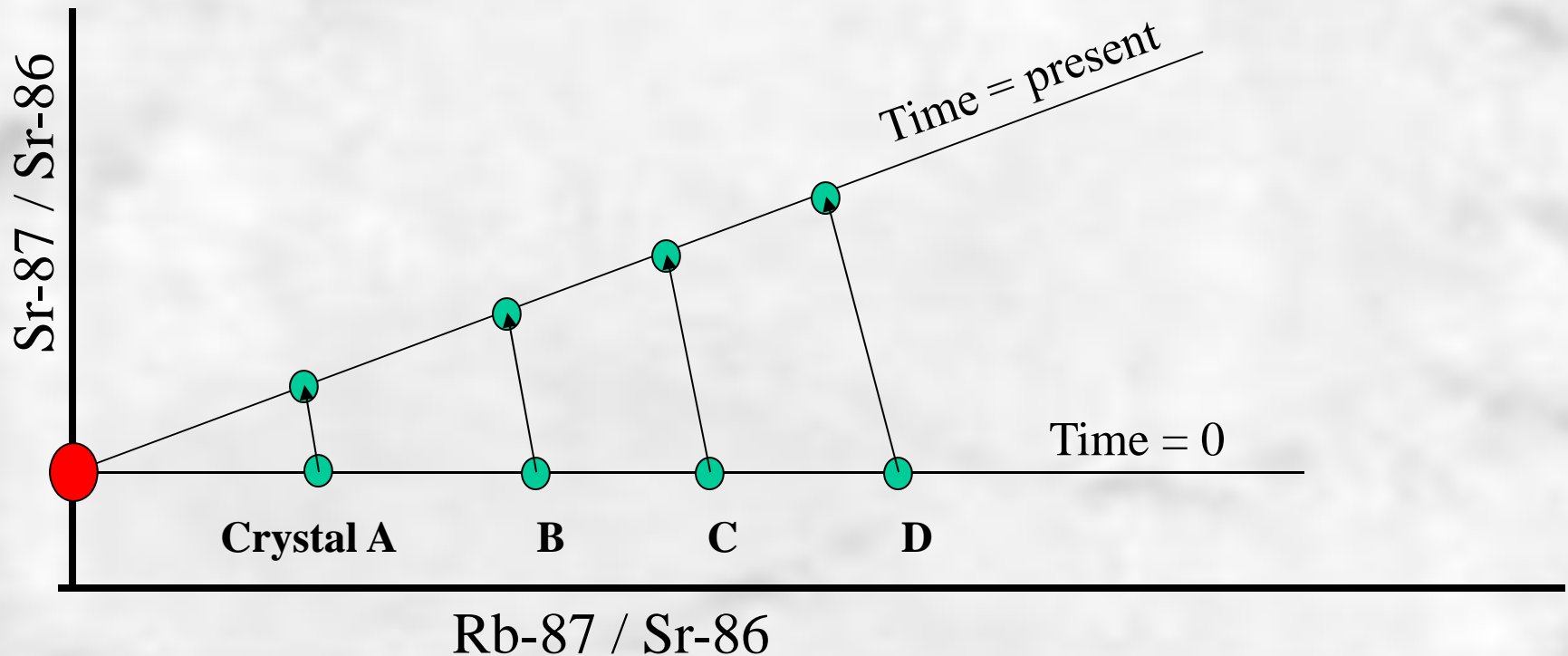
# Radiological Dating Using Rubidium-Strontium

Rb-87 decays into Sr-87

Sr-86 is also present but it is stable and is not the product of decay

Different crystalline structures in the lava absorb the same ratio of Sr-87 to Sr-86 but not the same ratio of Rb-87 to Sr-86.

From this, the initial amount of Sr-87 and Rb-87 can be found.



# Various Independent Measurements Estimate the Oldest Rocks are 3.6 Billion Years Old

U-Pb 3.6 billion

Pb-Pb 3.7 billion

Rb-Sr 3.6 billion

Lu-Hf 3.5 billion

Sm-Nd 3.6 billion

Western Greenland Amitsoq gneisses, from Dalrymple

# What About Inconsistent Radiological Dates?

For example: Lava from the Hualalai volcano dates by K-Ar from 160 million to 3 billion years old, yet the flow was known to occur in 1801.

According to G. Brent Dalrymple (Ph.D. Berkely, USGS, Oregon St. U. Geologist) the flow contained xenoliths from deep within the mantle. The xenoliths were not molten and did not give up Ar when exposed to atmospheric pressure. Hence dating the Hualalai flow using K-Ar is not meaningful.

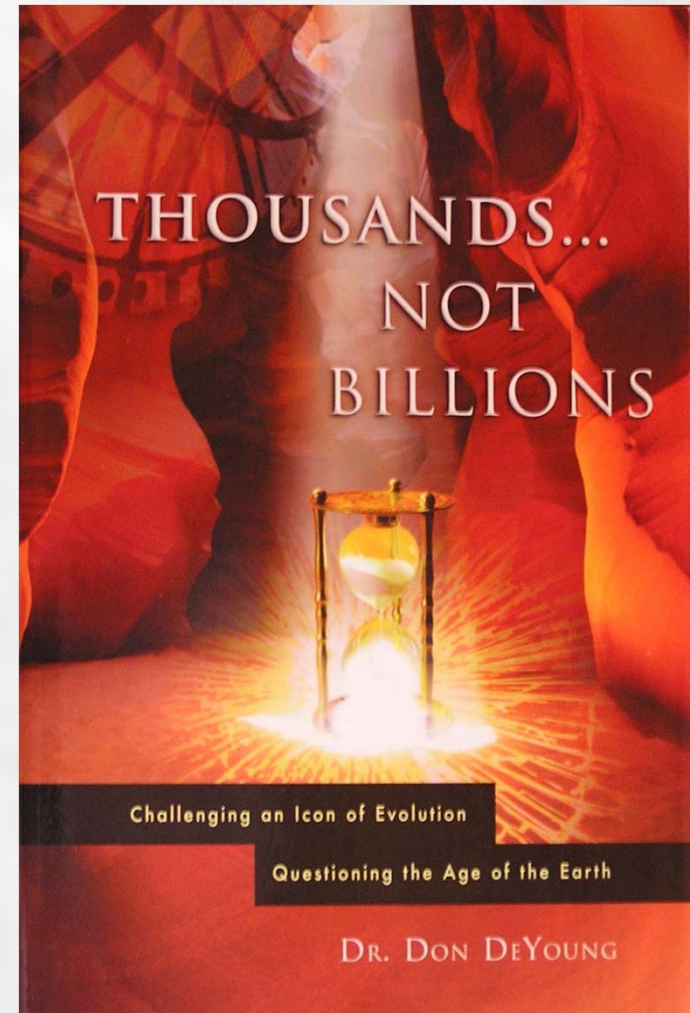
In addition, since K has a half-life of 1.2 billion years, dating lava flows less than a few million years old with K-Ar is meaningless.

There are many ways that radiological dating can go wrong, and scientists who use it are aware of them.

# The Book *Thousands Not Billions* by Dr. Don DeYoung

The RATE Group at the Institute for Creation Research reconciles radiological dating to a young-earth point of view by asserting that radiological decay was greatly accelerated during the flood.

If radiological decay accelerated as asserted, I calculated that the flood was unnecessary—the radiation environment alone would have been sufficient to kill every living thing.





# Is an Old Earth Interpretation of Genesis 1 Reasonable?

And there was evening and there was morning, one day (a second day, a third day, a fourth day, a fifth day, the sixth day-NASB)

## The Meaning of Day

The Hebrew word is Yom which, like in English, can be a 24-hour day, or an indefinite period of time.

In the Old Testament, it is used in both ways.

Genesis 2:4 says “These are the generations of the heavens and of the earth when they were created, in the day that the Lord God made the earth and the heavens-KJV.”

Day here is the singular version of Yom and refers to several days.

# And there Was Evening and there Was Morning

This phrase appears to support the idea of a 24-hour day; however, evening and morning (Ereb & Boqer) have ranges of meaning:

It could simply mean a passing of time (Stoner; **A New Look at an Old Earth**; citing Lev 24:1-4, 1 Chron 16:38-40, Job 4:19-21).

It could mean interacting with and bringing forth (Zodhaites; **Hebrew Dictionary**, root words).

It could refer to God's creative plan, which was obscure and then broke forth (Zodhaites).

Some interpret the phrase as a flow from disorder into order based on Hebrew root words (Schroeder; **Genesis and the Big Bang**).

These interpretations are a little figurative, but they fit some meanings of the words.

# Are Figurative Interpretations Reasonable?

Genesis 1 is poetic.

Repetitive poetic elements:

“Then God said...” (Gen 1:3, 6, 9, 14, 20, 24)

“And there was evening, and there was morning  
(Gen 1:5, 8, 13, 19, 23, 31).

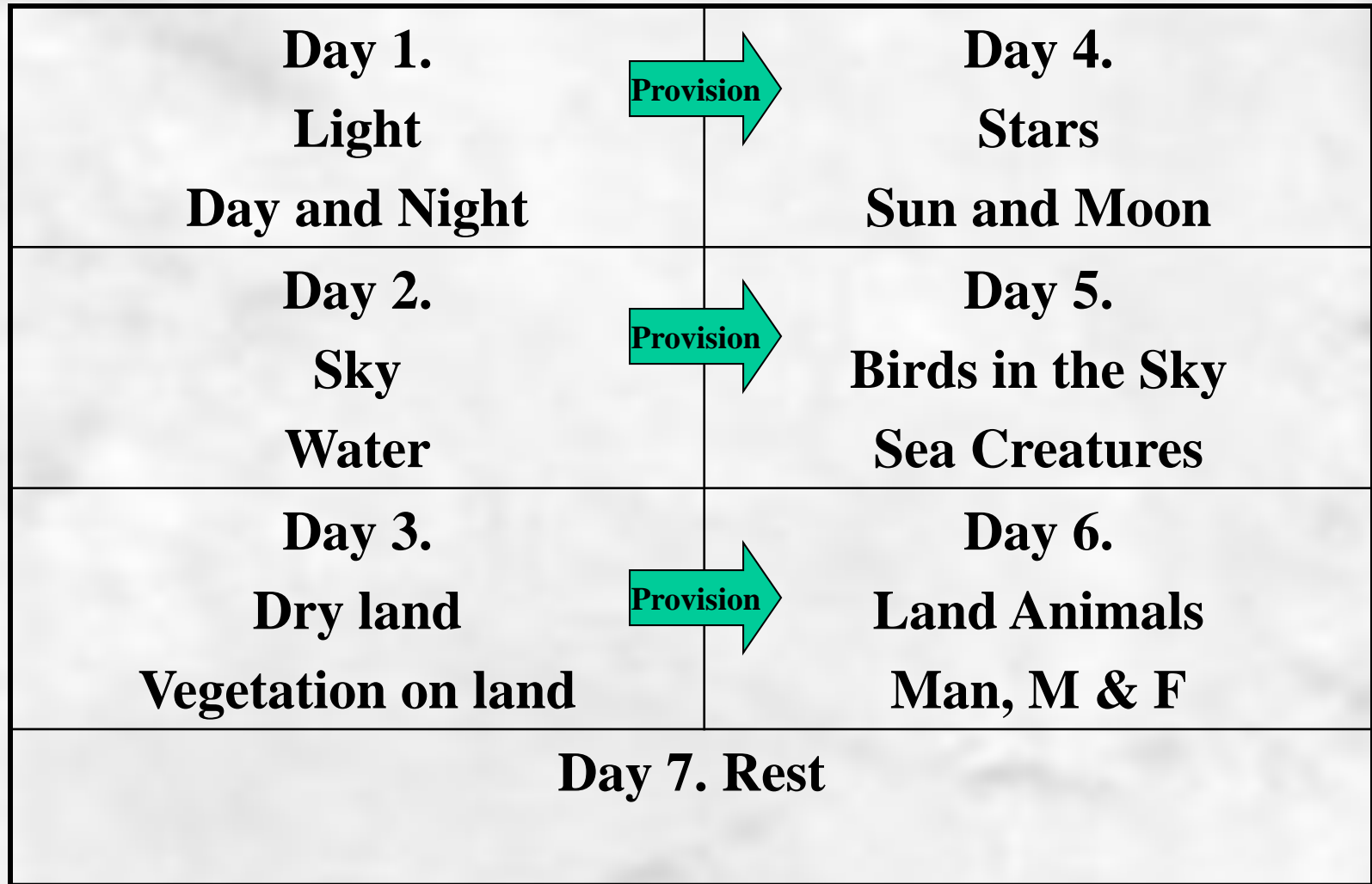
“And God saw that it was good” (or “very good”)  
(Gen 1: 4, 10, 12, 18, 21, 25, 31)

Hebrew scholars reject the idea that Genesis 1 is Hebrew poetry, but some acknowledge poetic elements.

Gen 1 may not have been originally written in Hebrew, so rules of Hebrew poetry may not apply.

If Gen 1 is poetic, whether Hebrew poetry or not, figurative interpretations may be reasonable.

# The Days in Genesis 1 May be Topical, About God's Provision, Not Sequential 24-Hour Days



This is an idea supported by Bruce K. Waltke, a Hebrew Scholar.

# **We Don't Always use Literal Interpretations**

Job 9:6 “He shakes the earth from its place and makes its pillars tremble.”

Job 38:4 & 6 “Where were you when I laid the foundations of the earth? On what were its bases sunk? Or who laid its cornerstone?”

Ps 75:3 When the earth and all its people quake, it is I who hold its pillars firm.

Ps 104:5 “He set the earth on its foundations. It can never be moved.”

Isa 48:13 My own hand laid the foundations of the earth, and my right hand spread out the heavens;

**Until Kepler and Galileo, we thought the earth was fixed in space. Why not now?**

# Summary of Genesis 1 Interpretation

- 1) The fact that Yom can imply either a 24-hour day or an indefinite period of time,
  - 2) the possibility that figurative interpretations of Evening and Morning are within a reasonable range of meanings and could simply imply a passage of time or a creative process,
  - 3) the possibility that Genesis 1 contains poetic elements, allowing some flexibility, perhaps a figurative interpretation, and
  - 4) the possibility that the days are topical and not sequential,
- lead me to believe that the six days of creation in Genesis 1 need not be rigidly interpreted as sequential, 24-hour days.**



## My Conclusion

If the six days of creation are interpreted to be periods or cycles of God's creation--from the birth of each Godly decree to its completion--then our interpretation of Genesis 1 and scientific evidence are in good agreement.

That is the way it should be.

# Considerations

Both the Bible and Creation are God's word (God spoke creation into existence). They must be consistent. If there is an inconsistency, it is because we are misinterpreting one or the other or both.

Creation is studied by science, which strives for objectivity by staying within the bounds of evidence, but true objectivity is not always achieved.

Truth is the ultimate goal. It glorifies God.



# Creation Account Theories & Conjectures

All attempt to rectify Genesis 1 and scientific evidence.

1. Genesis 1 is just a story.
2. Genesis 1 is only symbolic.
3. Day refers to an unspecified period of time.
4. There are long periods of time between days.
5. The six days refer to divine fiat (Hayward).
6. Creation was revealed to Moses over seven days.
7. Time is relative. God's perspective. Cosmological theories.
8. Total recreation between Genesis 1:1 and 1:2.
9. Billions of years for Gen 1:1&2. Completion in 6 days.
10. God created Earth in six 24-hour days with appearance of age.
11. Creation in Six 24-hour days. Earth is a few thousand years old.