

CLIMATE CHANGE ROSETTA STONE

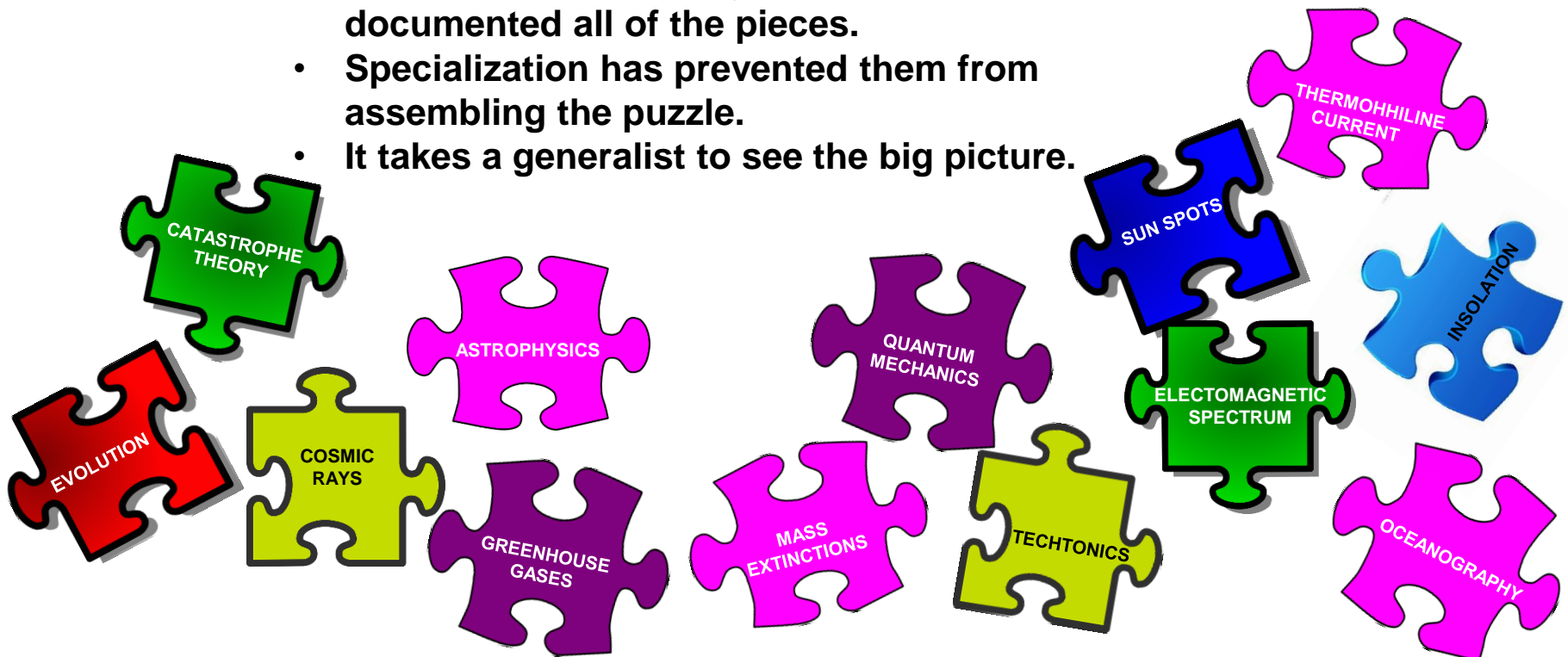
**AT LAST, HERE IS THE REAL,
UNSETTLED SCIENCE BEHIND
GLOBAL CLIMATE CHANGE IN AN
EASY TO UNDERSTAND FORMAT**

By David Doll BS, BSME, MSME



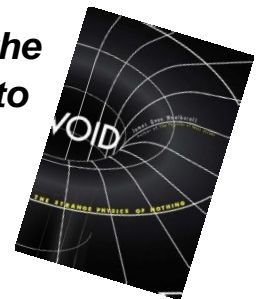
THE SCIENCE THAT EXPLAINS GLOBAL CLIMATE CHANGE ALREADY EXISTS

- Scientists have already researched and documented all of the pieces.
- Specialization has prevented them from assembling the puzzle.
- It takes a generalist to see the big picture.



The range of human knowledge today is so great that we're all specialists and the distance between specializations has become so great that anyone who seeks to wander freely between them almost has to forego closeness with the people around him.

— Robert M. Pirsig



DID YOU KNOW?

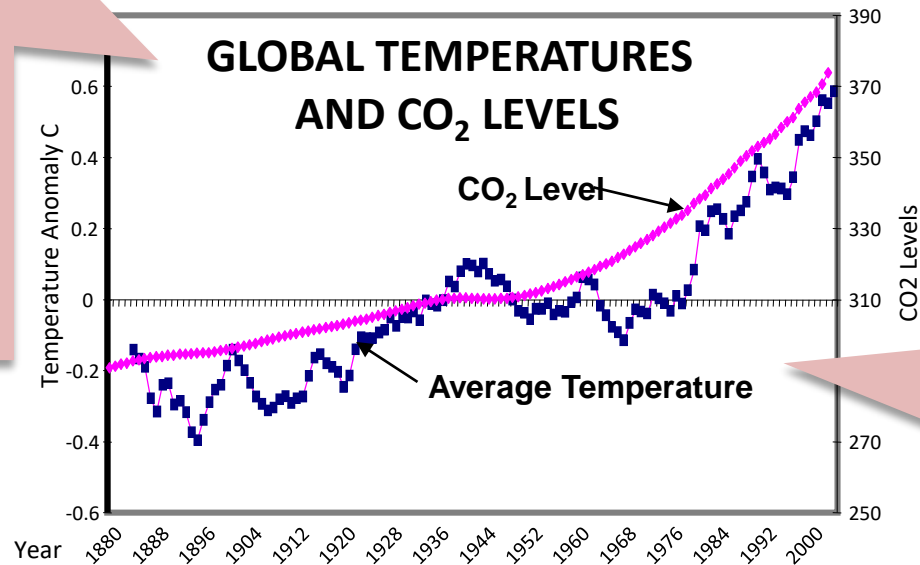
- **The Earth's climate has been changing profoundly for billions of years.**
- **The climate change that has occurred over the last 150 years is modest and unremarkable compared to changes that have routinely occurred in the past and will occur again in the future.**
- **The drivers of global climate change are primarily celestial in nature. Our climate change is the result of an amazing series of cosmic events.**
- **The greenhouse gas effect is both self limiting and beneficial.**

The current climate change debate limits itself to the last 100 to 150 years and misses the exciting and exotic big picture.

GLOBAL WARMING ALARMISTS TELL US THE RECENT “HOCKEY STICK” PROVES WE ARE DESTROYING THE PLANET

THE INFAMOUS
“HOCKEY STICK”
SHOWS EARTH’S
TEMPERATURE IS
RISING QUICKLY

THE RISE IS
ASSOCIATED WITH
MAN-MADE CARBON
DIOXIDE



Source: NOAA Paleoclimatology Program

POLITICIANS TELL
US THAT TO SAVE
THE PLANET WE
MUST GIVE AWAY
OUR PROSPERITY
AND STRICTLY
LIMIT OUR LIVES

THIS APPEARS TO BE THE CLASSIC SMOKING GUN

THE CATASTROPHE SCENARIO SEEMS PLAUSIBLE

- Energy flows to and from the space ship Earth.
 - We receive energy from the sun's radiation.
 - The Earth reflects some of the energy into space.
 - The Earth also radiates away some of the energy into space.
 - The difference between incoming and outgoing energy warms or cools the planet. (Climate Change)
- To have a viable ecosystem, the incoming and outgoing energy must be in balance at a reasonable temperature.



CARBON DIOXIDE EMISSIONS UPSET THE BALANCE



- The US discharges about 7 billion metric tons of CO₂ per year into the atmosphere.
- CO₂ traps outgoing energy, and the Earth heats up.
- Temperatures will continue to increase as we add more CO₂ resulting in runaway heating and global catastrophe.
- This process can be seen in action through the correlation between rising global temperatures and rising atmospheric concentrations of CO₂.



**IS THIS TRUE? ARE WE HEADING FOR A CATASTROPHE?
MUST WE GIVE UP OUR WAY OF LIFE TO PREVENT IT?**

WE MUST LOOK TO SCIENCE, NOT TO ADVOCACY, FOR THE ANSWERS

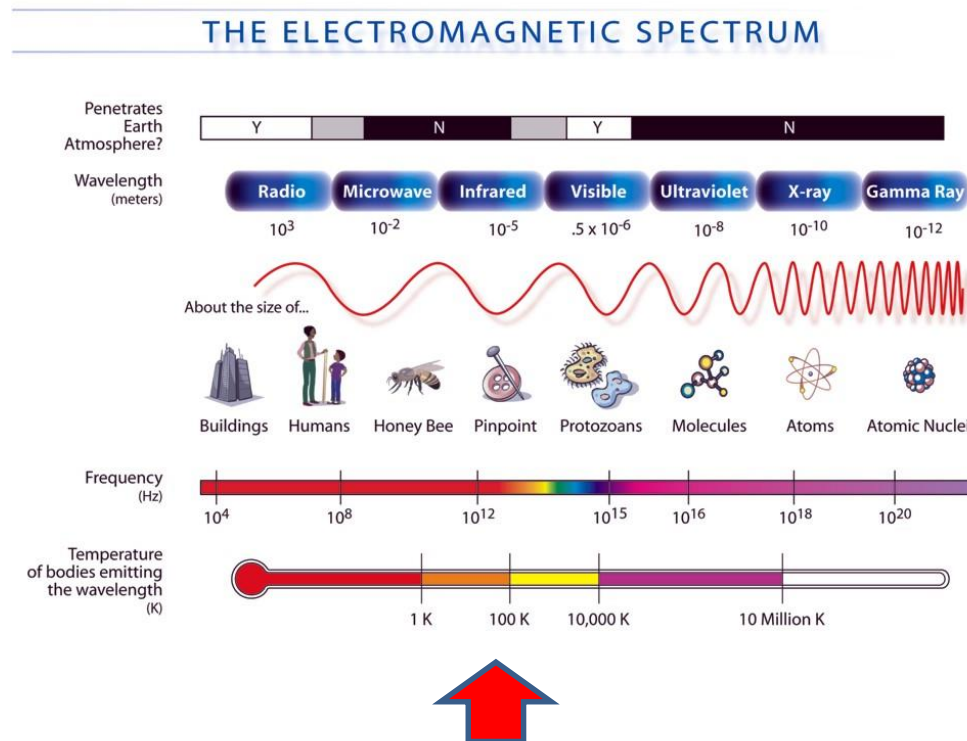


*I have done enough to demonstrate the correctness of my details.
The defects are merely basic and fundamental.*

- Ambrose Bierce

HEAT IS RADIATED AWAY FROM THE EARTH BY INFRARED RADIATION

- Infrared radiation is one type of electromagnetic radiation in which speeding photons carry packets of energy.



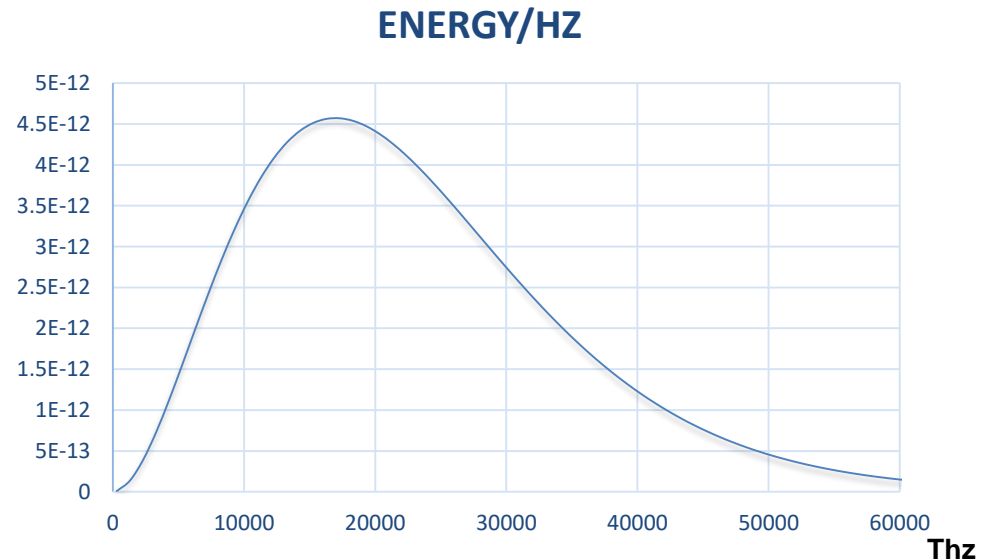
- Infrared radiation, or “thermal radiation”, is generated by the thermal vibrations of charged particles in atoms.

EARTH'S IR RADIATION IS DISTRIBUTED ACROSS A 75 TERAHERTZ WIDE BANDWIDTH



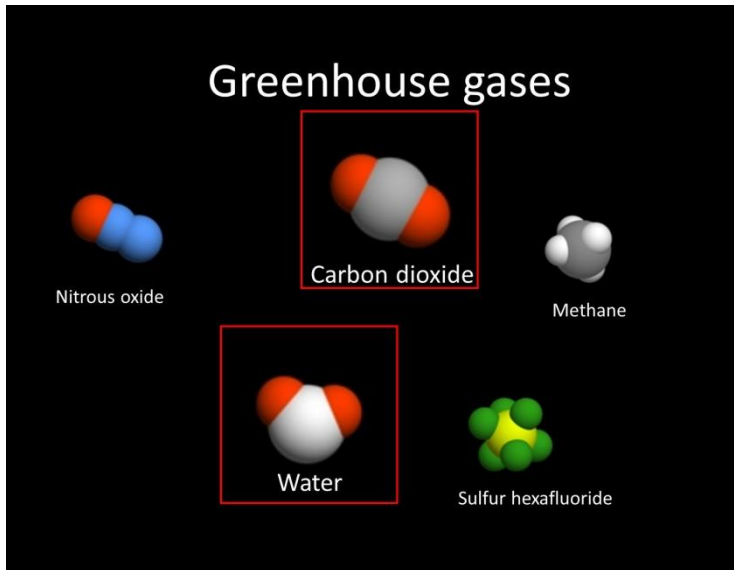
In 1900 Max Planck, the father of Quantum Physics, developed a formula that described the distribution of IR energy radiated away from a “black body” at any given temperature.

- Infrared photons from earth are broadcast across a broad frequency band with the maximum intensity at about 17Thz.
- The amount of energy radiated at each frequency is limited and is determined by the absolute temperature of the Earth.



Earth radiates IR in in the range of 300 gigahertz to 75 terahertz

GREENHOUSE GASES CAN TRAP ONLY A FEW SPECIFIC FREQUENCIES OF INFRARED RADIATION



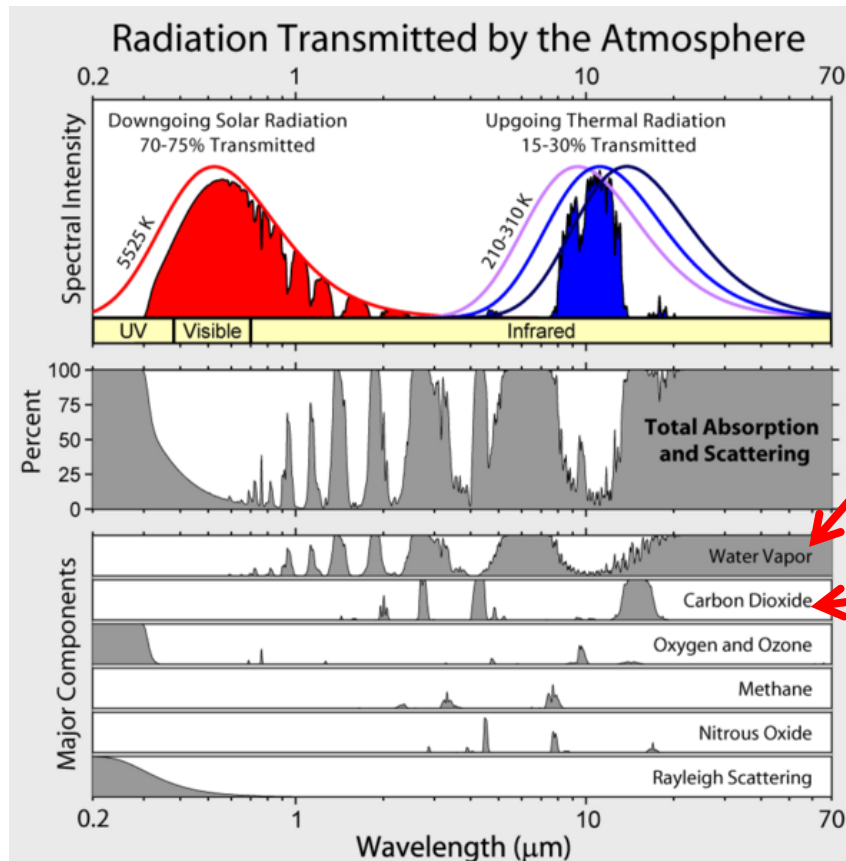
Gas molecules are tuned to specific natural frequencies that are determined by their structure.

- Strength of chemical bonds between the atoms
- Shape of the molecule
- Atomic weight of the atoms in the molecule

- The infrared radiation frequency must be tuned to the natural frequencies of the molecule in order to be absorbed.
- ALL greenhouse gases are transparent to any infrared radiation frequencies that do not match the natural frequencies of the gas.

Like a radio antenna the gas molecules must be tuned in to the frequency of the incoming IR signal in order to interact

WATER VAPOR IS THE MOST IMPORTANT GREENHOUSE GAS ON EARTH



- Water vapor captures more than twice as much infra red radiation than CO_2 .
- Water vapor frequencies overlap and partially cover the CO_2 frequencies.
- Water vapor accounts for 60% of Earth's greenhouse effect.
- CO_2 accounts for only 26% of Earth's greenhouse effect.
- Water vapor is present at up to 30,000ppm while the CO_2 concentration is only 350ppm.

MAJOR GREENHOUSE GASES HAVE ALREADY ACHIEVED SATURATION

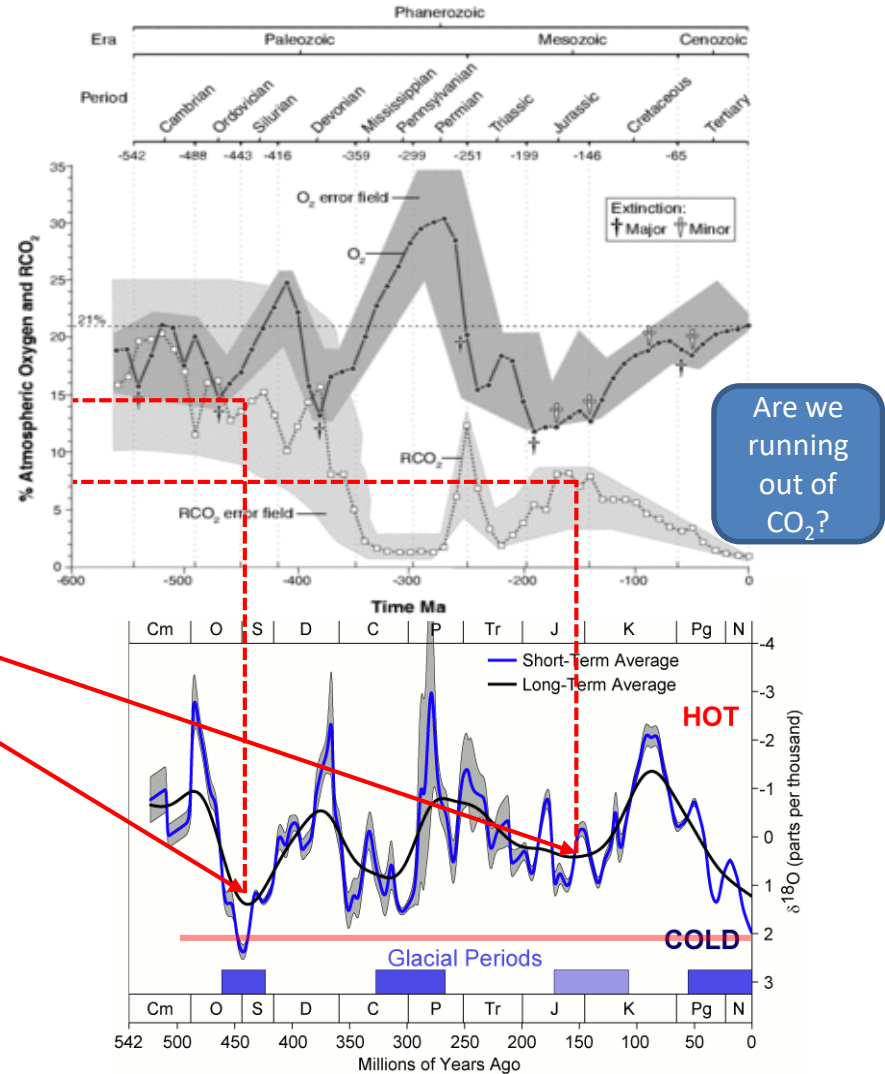
- **Water vapor and CO₂ already capture close to 100% of the available infrared radiation at their natural frequencies.**
- **Increasing the concentration of these gases will not produce any significant additional warming.**
 - **Few additional IR photons remain to be trapped at these frequencies.**
 - **Greenhouse gases are transparent to infrared radiation at ALL frequencies other than the gases' own natural frequencies.**
- **If doubling the 350ppm concentration of CO₂ could cause catastrophic global warming, then the 7,500ppm (average) of water vapor currently in the atmosphere should have already caused the oceans to boil.**

COMPUTER MODELS THAT SHOW GREENHOUSE GASSES PILING ON LIKE EXTRA BLANKETS FAIL TO RECOGNIZE THAT ONCE THE FIXED AMOUNT OF IR AT THE GAS FREQUENCY IS ABSORBED, THERE CAN BE NO ADDITIONAL WARMING EFFECT

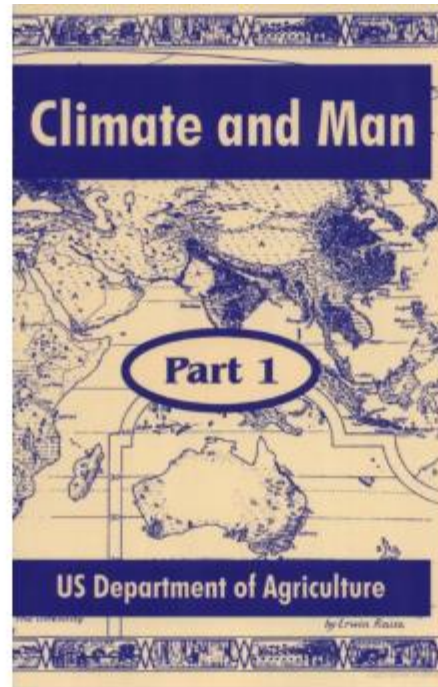
PALEO CLIMATE STUDIES CONFIRM THE QUANTUM PHYSICS

- 500 million years ago CO₂ concentration in the atmosphere was approximately 8000 parts per million.
- In the past mass extinctions caused by global cooling have taken place when carbon dioxide levels were far higher than they are today.

Over the long haul, CO₂ concentration shows no correlation with global temperature.



OUR GOVERNMENT USED TO KNOW THE TRUTH



94 • *Yearbook of Agriculture, 1941*

Much has been written about varying amounts of carbon dioxide in the atmosphere as a possible cause of glacial periods. The theory received a fatal blow when it was realized that carbon dioxide is very selective as to the wave lengths of radiant energy it will absorb, filtering out only such waves as even very minute quantities of water vapor dispose of anyway. No probable increase in atmospheric carbon dioxide could materially affect either the amount of insolation reaching the surface or the amount of terrestrial radiation lost to space.

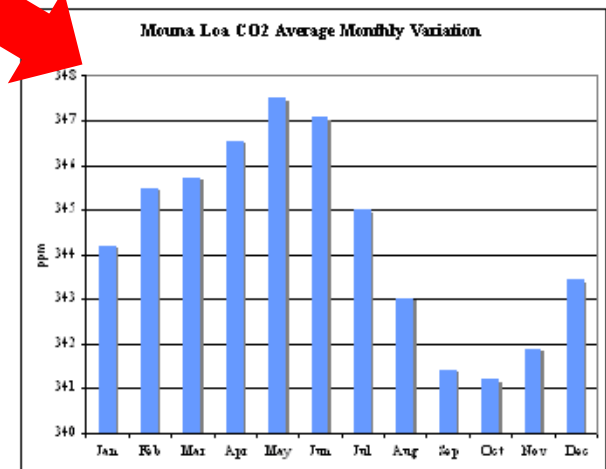
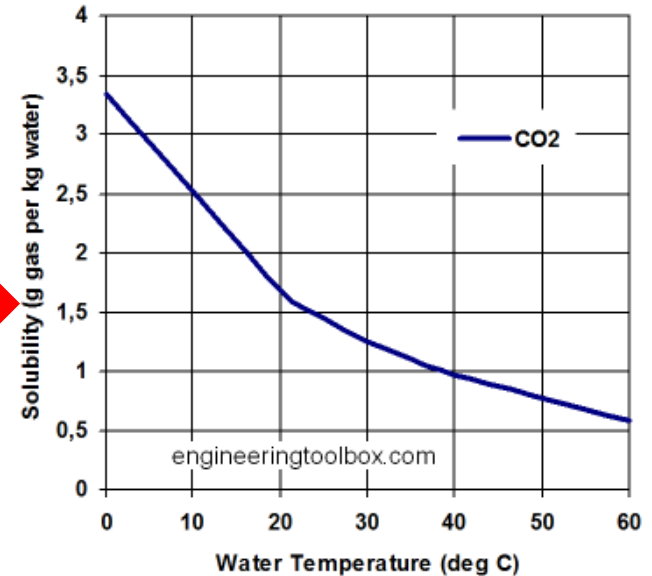
STATED MORE SIMPLY



**ADDING MORE LAKOTA SIOUX WARRIERS WILL NOT
MAKE IT ANY WARMER FOR GENERAL CUSTER**

WHAT ABOUT THE SMOKING GUN???

- The solubility of a gas in a liquid depends on temperature and pressure.
- At constant pressure the ability of a liquid to absorb gases will decrease as the temperature increases.
- As water warms up it will naturally release carbon dioxide into the atmosphere.
- The correlation between temperature and carbon dioxide does exist, but



**GLOBAL WARMING CAUSES THE CARBON DIOXIDE IN THE ATMOSPHERE TO INCREASE.
CARBON DIOXIDE DOES NOT CAUSE GLOBAL WARMING.**



**Can we have global
climate change
without forcing it
with green house
gases?**

THE EARTH'S CLIMATE HAS BEEN CHANGING FOREVER



EVERY LAYER ON THESE
SEDIMENTARY ROCKS IS
AN INDICATION OF PAST
CLIMATE CHANGE

SEDIMENTARY ROCK COVERS
75% OF OUR LAND SURFACE

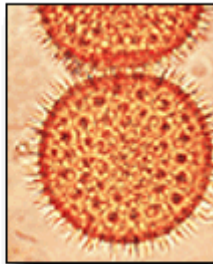
THESE BEASTIES
USED TO SWIM
IN THE SEA
IN COLORADO & KANSAS

THE EVIDENCE IS
ALL AROUND US!



Dinosaur Resource Center – Woodland Park, CO

SCIENTISTS USE PROXY DATA TO RECONSTRUCT PAST CLIMATES

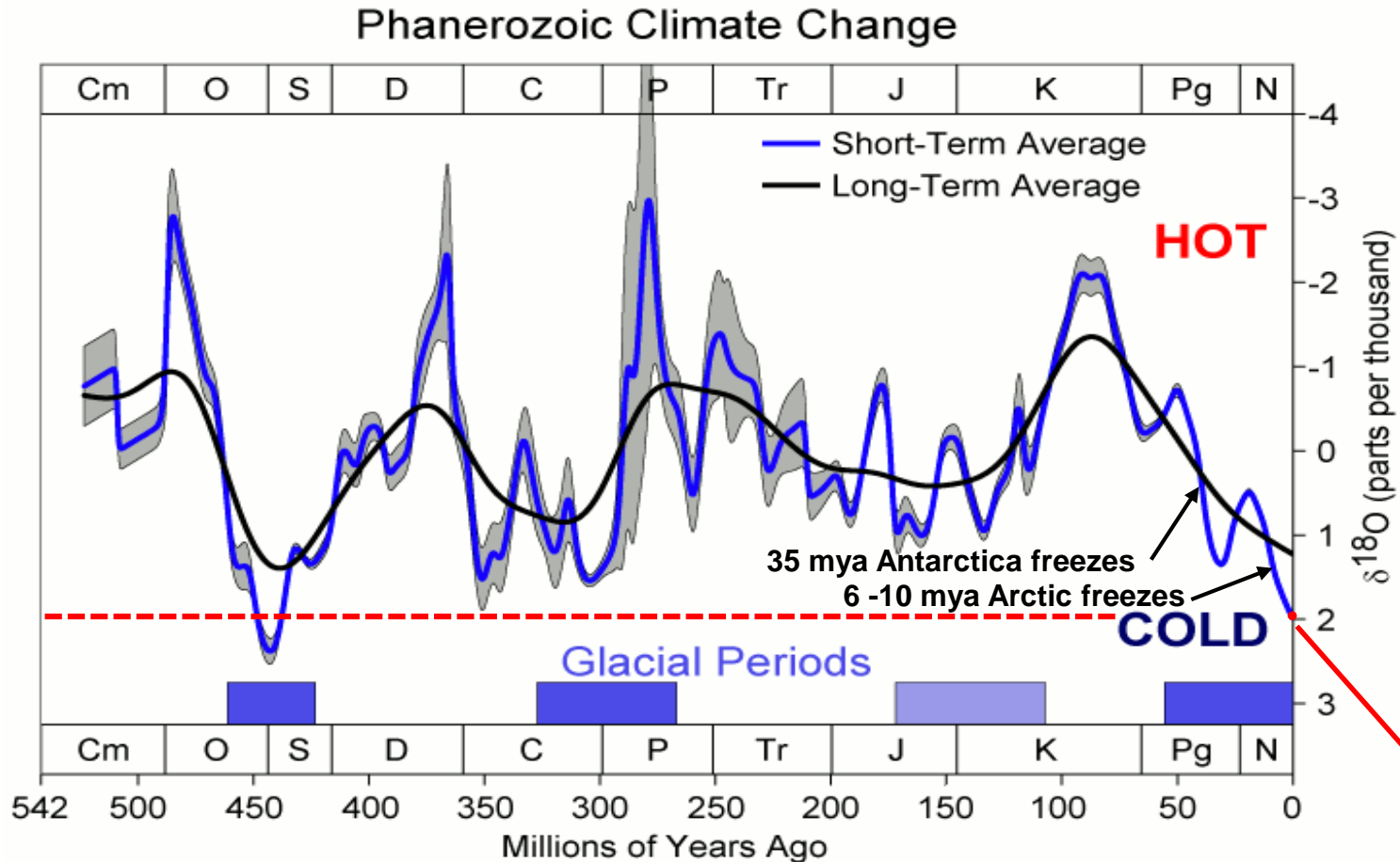


ANYTHING IN NATURE THAT CHANGES WITH TEMPERATURE AND HAS BEEN PRESERVED CAN BE USED TO ESTIMATE THE CLIMATE IN THE PAST

- FOSSILIZED SHELLS
- OCEAN AND LAKE SEDIMENT
- ICE CORES
- CORALS
- TREE RINGS
- POLLEN GRAINS
- DIATOMS
- EARTH BORE HOLES
- CRYSTALLIZED PACK RAT URINE

SCIENTISTS HAVE BEEN ABLE TO USE PROXY DATA TO LOOK BACK FOR MORE THAN 500 MILLION YEARS

SO, LET'S STEP BACK AND TAKE THE LONG VIEW OF GLOBAL CLIMATE



WE ARE IN THE MIDDLE OF AN ICE AGE EPOCH

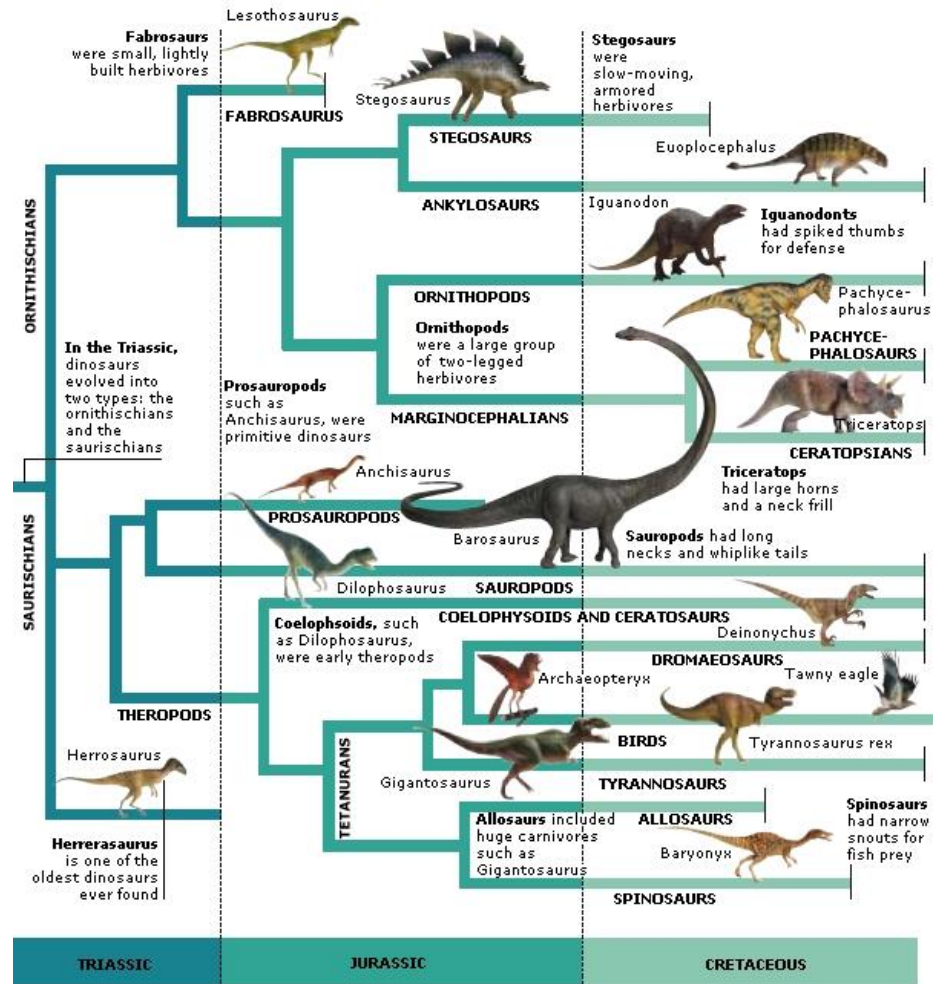
ICE AGE EPOCHS OCCUR EVERY 140 MILLION YEARS

ALL OF HUMAN EXISTANCE HAS BEEN IN AN ICE AGE EPOCH

DINOSAURS FLOURISHED DURING PROTRACTED GLOBAL WARMING

Catastrophic volcanic events in the Triassic and global cooling in the Jurassic culled reptilian rivals and allowed dinosaurs to rule the land.

Dinosaurs were able to ride a continuous warming trend through the Cretaceous until a massive meteor strike ended their reign.



MANKIND WAS FORGED IN THE HARDSHIP OF GLOBAL COOLING



The Golden Age of mammals occurred before the latest ice age epoch.

Early man evolved during this ice age epoch.

Paleontologists theorize that at one point the hardships reduced mankind to a few scattered clans living on the coast of South Africa.

We are only about half way through the current ice age epoch. The inevitable future glacial period will prove to be catastrophic.

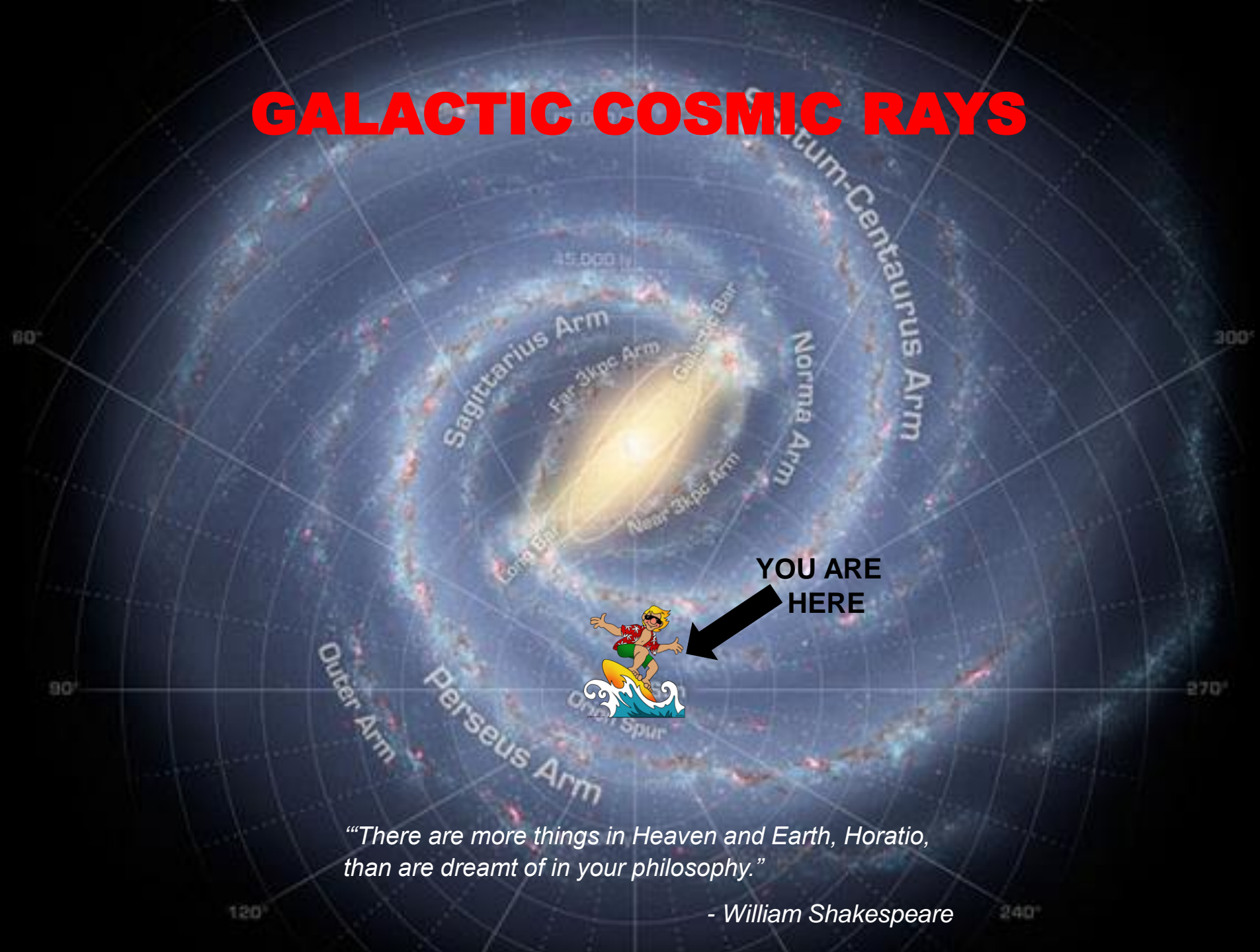
WHAT CAUSES THESE GLOBAL CLIMATE CHANGES ?

- There is no terrestrial phenomenon that can explain this regular ~140 million year cycle of warming and cooling.
 - CO₂ has dropped fairly steadily from 8,000 ppm 500 million years ago to its current value between 300 and 500 ppm.
 - Tectonics produces new super continents about every 300 million years. Rearrangement of continents changes energy distribution on earth, but the timing is wrong, and the locations are highly variable.
 - Catastrophes causing mass extinctions occur at about 100 million year intervals but do not create extended climate change.
- Examination of iron-nickel meteorites reveal a regular 140 million year cycle of increasing and decreasing bombardment by galactic cosmic rays.



Israeli astrophysicist Nir Shaviv has developed a compelling theory linking this climate change to the movement of our solar system through the spiral arms of the galaxy.

GALACTIC COSMIC RAYS



*“There are more things in Heaven and Earth, Horatio,
than are dreamt of in your philosophy.”*

- William Shakespeare

THE MILKY WAY GALAXY

- Our galaxy is a loosely wound, barred spiral galaxy that contains 200 to 400 billion stars.
- The central bulge contains a supermassive black hole surrounded by a dense bar shaped cluster of stars.
- The surrounding disk is 100,000 light years across.
- The disk is characterized by distinctive arms of stars spiraling outward from the center.
 - Spirals are the result of the interaction of the orbiting stars with gravity field distortion caused by the central bar. (gravity induced star waves)
 - Spirals force matter to interact resulting in cosmic rays
- Our solar system orbits the galaxy at about 27,000 light years from the center.
 - We are currently in the middle of the Orion spiral arm.
 - The solar system passes through a spiral arm every ~140 million years.



We are now surfing the galaxy on a spiral star wave called Orion!

GALACTIC COSMIC RAYS CONTINUOUSLY BOMBARD THE EARTH

- **Cosmic rays are electrically charged subatomic particles that travel through space at nearly the speed of light.**
- **Measurements of cosmic ray density indicate that most of these particles originate in our galaxy.**
- **Scientists believe that cosmic rays are generated by high energy events, such as the birth and death of stars, within the galaxy.**
- **Most of these high energy events take place within the spiral arms of the galaxy.**

COME DIE WITH ME

Nasa fears cosmic rays from outer space will damage plane passengers' brains

Space agency publishes results of probe into the risks of flying at high altitudes

BY MARGI MURPHY, **THE SUN**

27th January 2017, 4:32 pm

Comments

COSMIC rays could harm passengers and crew during flights, Nasa has warned.

Humans are mostly protected from cosmic rays on planet Earth but travelling at high altitudes is an entirely different matter.

Passengers could be at risk from cosmic rays

In a chilling statement, Nasa wrote: "Just above you, high-energy particles, called cosmic rays, are zooming in from outer space.

"These speedy particles crash wildly into molecules in the atmosphere, causing a chain reaction of particle decays.

"While we are largely protected from this radiation on the ground, up in the thin atmosphere of the stratosphere, these particles can affect humans and electronics alike."

To study the effects of these cosmic rays, the space agency sent a giant helium-filled balloon into the stratosphere to measure cosmic radiation coming from the sun and interstellar space.

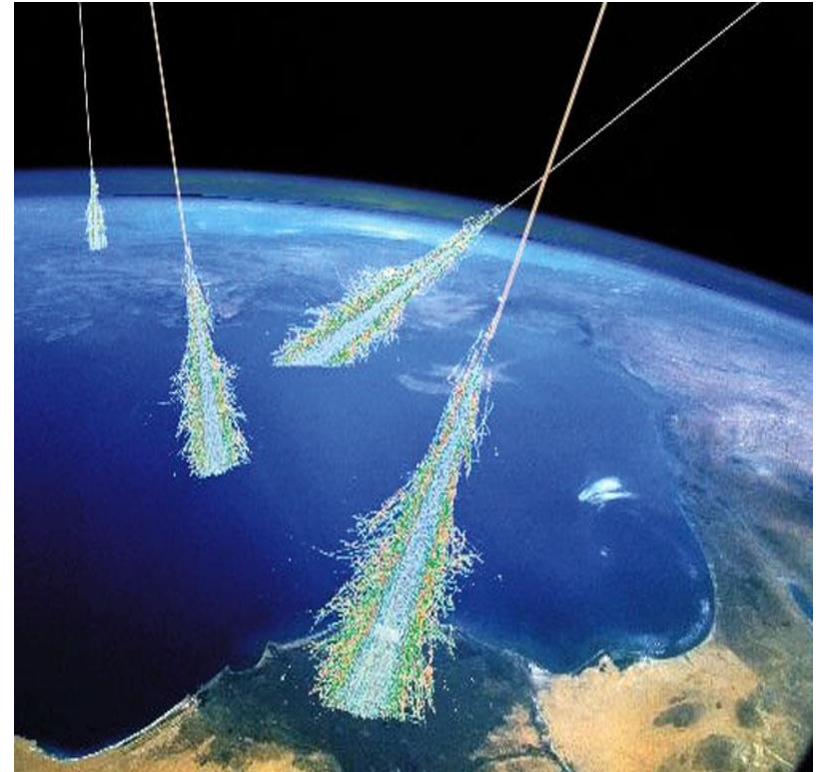
It found that because of their time spent in Earth's upper atmosphere, aircrew are exposed to nearly double the radiation levels of us on the ground.

Exposure to cosmic radiation is also a concern for space travel too.

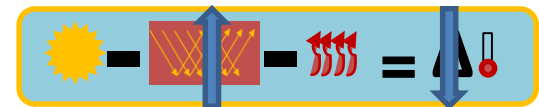
It added: "Learning how to protect humans from radiation exposure is a key step in future space exploration."

GALACTIC COSMIC RAYS STIMULATE LOW LEVEL CLOUD FORMATION

- Single water vapor molecules are too small to attract and hold other water vapor molecules.
- High energy galactic cosmic rays (solar wind on steroids) ionize patches of the atmosphere.
- Ionized patches are “sticky” and attract multiple water vapor molecules.
- Resulting clusters of water vapor molecules are large enough to continue attracting more water vapor, and clouds form.



**GALACTIC COSMIC RAYS SEED
LOW LEVEL CLOUD FORMATION**



COSMIC RAYS CAUSE CLOUDS TO FORM THAT REFLECT HEAT FROM THE SUN

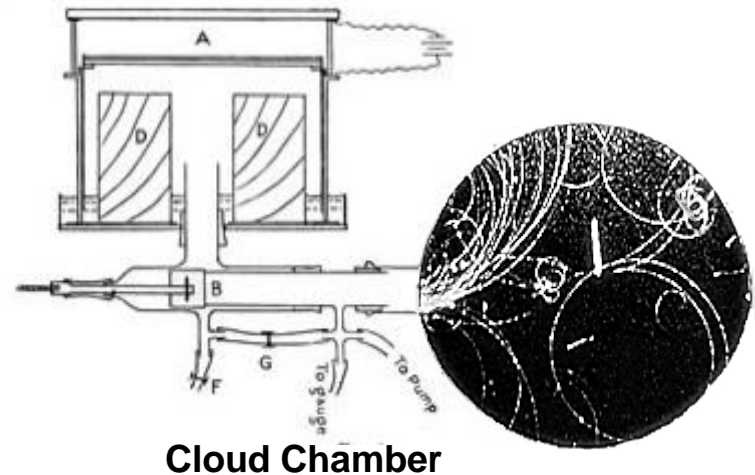


Scottish physicist Charles Wilson invented the cloud chamber while investigating cloud formation.

- In the 1890s Wilson developed a strong interest in cloud formation and atmospheric electricity.

• He discovered that high energy cosmic rays from beyond our solar system were very effective at generating clouds.

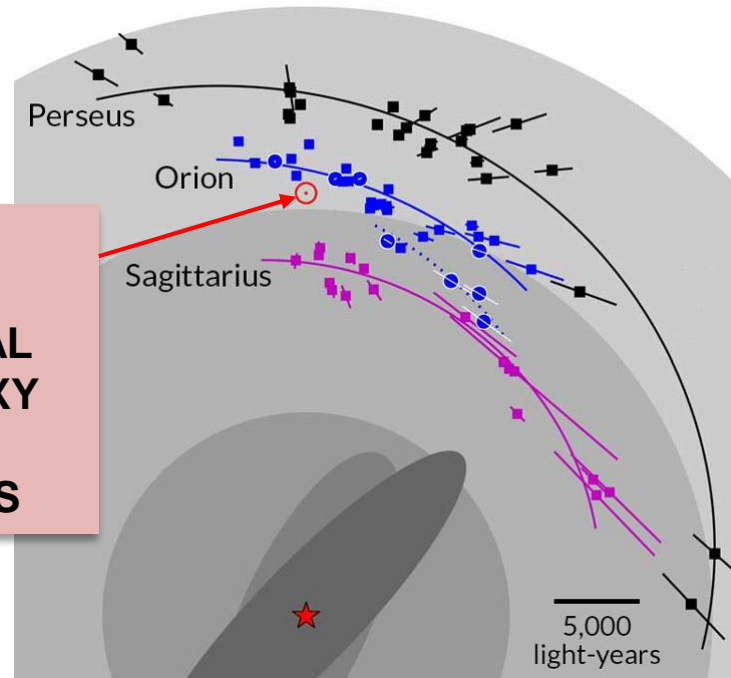
- Wilson received a Nobel Prize for his work in 1927.



A 10% INCREASE IN CLOUD COVER DECREASES THE GLOBAL TEMPERATURE BY 1°C

COSMIC RAY INTENSITY CHANGES AS THE SOLAR SYSTEM MOVES THROUGH THE GALAXY

STARS ORBITING THE GALAXY PASS THROUGH SPIRAL ARMS IN THE GALACTIC DISC



OUR SUN MOVES THROUGH A STAR-DENSE SPIRAL ARM OF THE GALAXY ABOUT EVERY 140 MILLION YEARS

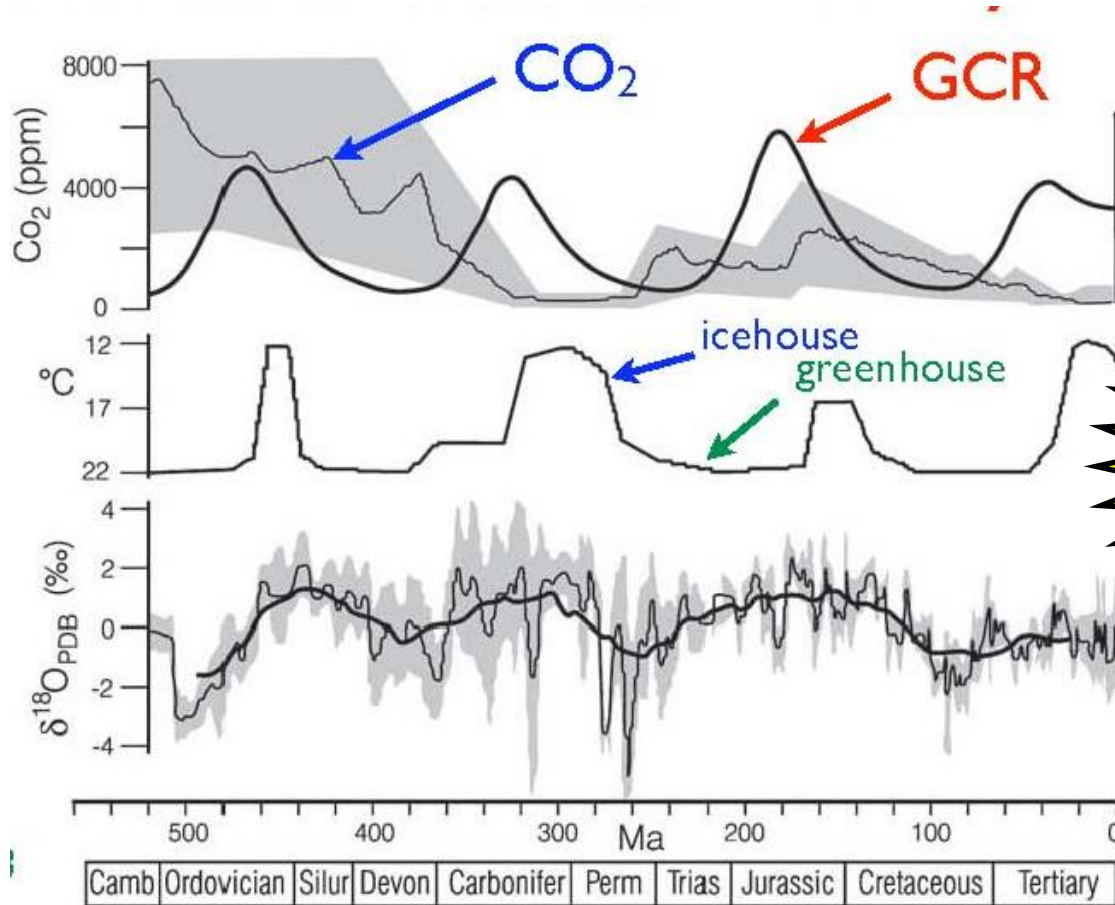
GALACTIC COSMIC RAYS COME FROM STARS

WHEN THE SUN IS WITHIN AN ARM OF THE GALAXY, IT IS SURROUNDED BY MANY STARS, AND COSMIC RAYS AND CLOUDS INCREASE

WHEN THE SUN IS BETWEEN THE ARMS OF THE GALAXY, IT IS SURROUNDED BY FEWER STARS, AND COSMIC RAYS AND CLOUDS DECREASE

EARTH IS NOW IN THE ORION SPIRAL ARM RESULTING IN AN ICE AGE EPOCH

GALACTIC COSMIC RAYS ARE THE MAJOR CAUSE OF GLOBAL CLIMATE CHANGE



WHEN
COSMIC RAY
INTENSITY IS
HIGH,
THE EARTH
COOLS

STATISTICAL ANALYSIS INDICATES THAT GALACTIC COSMIC RAYS ARE RESPONSIBLE FOR 2/3 OF ALL GLOBAL CLIMATE CHANGE

IF WE ARE IN AN ICE AGE EPOCH, WHERE'S ALL THE ICE?



**WE ARE IN A PERIOD OF TEMPORARY REMISSION BETWEEN ICE AGES
(THERE HAVE BEEN 10 ICE AGES IN THE LAST MILLION YEARS)**

**TO UNDERSTAND WHY WE HAVE TO LOOK AT THE WAY CHANGES TO EARTH'S
ORBIT AND INCLINATION CAUSED BY SOLAR SYSTEM GRAVITATIONAL
ATTRACTIONS AFFECT THE WAY WE RECEIVE WARMTH FROM THE SUN**

MILANKOVICH CYCLES (ORBITAL FORCING)

$$\frac{da}{dt} = \frac{2}{na} \frac{\partial R}{\partial \lambda}$$

$$\frac{dh}{dt} = \frac{(1 - e^2)^{1/2}}{na^2} \frac{\partial R}{\partial k} - \frac{h(1 - e^2)^{1/2}}{na^2 [1 + (1 - e^2)^{1/2}]} \frac{\partial R}{\partial \lambda}$$

$$\frac{kp}{2na^2 (1 - e^2)^{1/2}} \frac{\partial R}{\partial p} +$$

$$\frac{dp}{dt} = \frac{1}{4na^2 (1 - e^2)^{1/2}} \frac{\partial R}{\partial q} -$$

$$\frac{p}{2na^2 (1 - e^2)^{1/2}} \frac{\partial R}{\partial \lambda} -$$

$$\frac{pk}{2na^2 (1 - e^2)^{1/2}} \frac{\partial R}{\partial h} +$$



$$\frac{dk}{dt} =$$

$$\frac{k(1 - e^2)^{1/2}}{na^2 [1 + (1 - e^2)^{1/2}]} \frac{\partial R}{\partial \lambda} -$$

$$\frac{(1 - e^2)^{1/2}}{na^2 [1 + (1 - e^2)^{1/2}]} \left(h \frac{\partial R}{\partial h} + k \frac{\partial R}{\partial k} \right) +$$

$$\frac{1}{na^2} \left(p \frac{\partial R}{\partial p} + q \frac{\partial R}{\partial q} \right)$$

"The sun, with all those planets revolving around it and dependent on it, can still ripen a bunch of grapes as if it had nothing else in the universe to do."

Galileo Galilei

$$\mu \frac{m_i}{a_i} R_{ji}$$

$$\frac{2na^2 (1 - e^2)^{1/2}}{\partial q}$$

$$i < j, \quad i > j$$

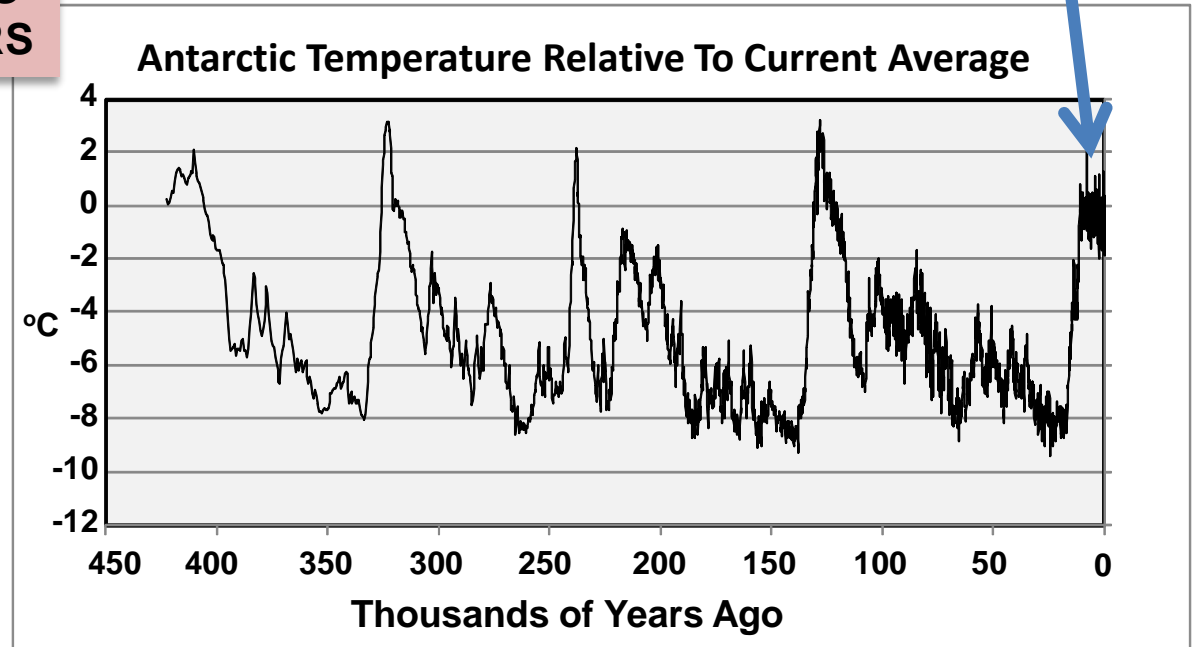
GLACIERS COVERED THE EARTH TEN TIMES IN THE LAST MILLION YEARS

GLACIAL ICE BORES IN ANTARCTICA SHOW A PATTERN OF WARMING AND COOLING

- 90,000 COLD YEARS
- 10,000 WARM YEARS

THE LAST GLACIAL EVENT BEGAN 125,000 YEARS AGO AND ENDED 11,700 YEARS AGO

WHAT'S CAUSING THIS WARMING AND COOLING?
IT ISN'T CARBON DIOXIDE.



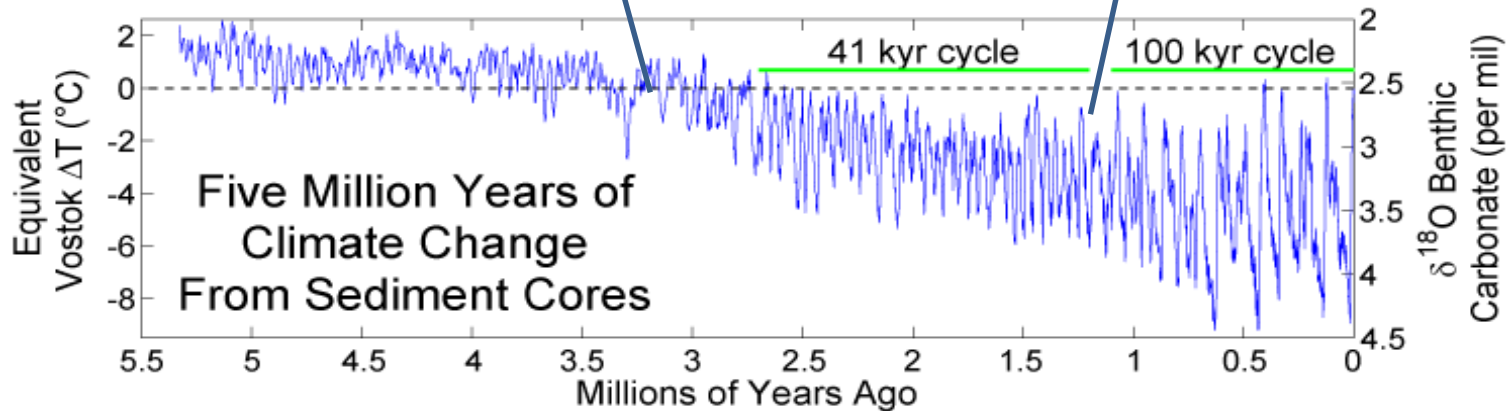
Source: World Data Center for Paleoclimatology, Boulder

IT'S IMPORTANT FIND OUT WHY THESE ICE AGES START AND STOP.
A NEW ICE AGE COULD KILL BILLIONS OF PEOPLE.

CATASTROPHE THEORY EXPLAINS HOW WEAK ORBITAL FORCING CAN RESULT IN MASSIVE CHANGES IN CLIMATE

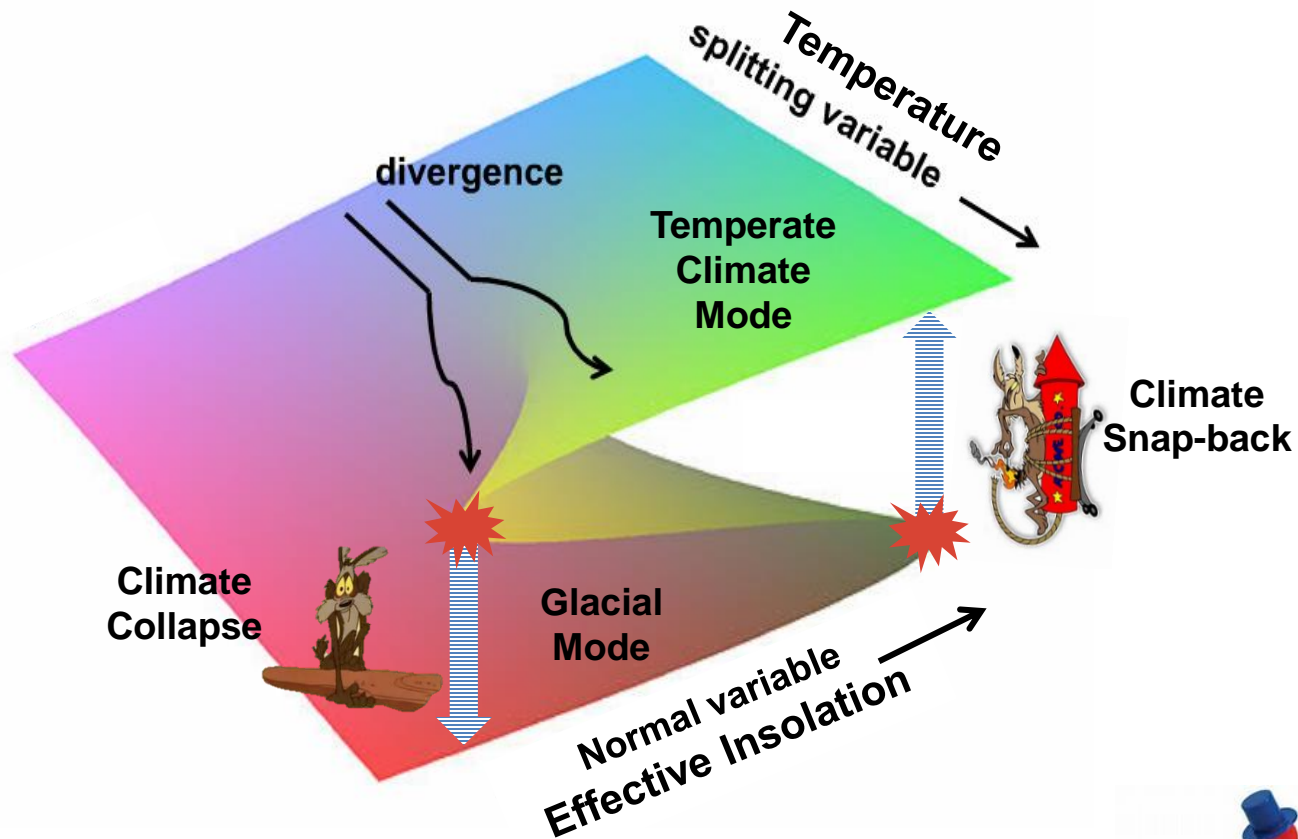
AS COOLING DUE TO GALACTIC COSMIC RAYS MOVES EARTH'S TEMPERATURE TOWARD THE FREEZING POINT OF WATER. AN UNSTABLE BIMODAL CLIMATE REGIME IS CREATED.

ORBITAL CHANGES STRESS THE CLIMATE SYSTEM BY CHANGING AMOUNT AND DISTRIBUTION OF HEAT FROM THE SUN CAUSING THE EARTH TO OSCILLATE IN AND OUT OF ICE AGES



In the 50' and 60's French mathematician René Thom developed a branch of mathematics, differential topology, into "Catastrophe Theory" which shows how small changes in a system can produce massive changes in state.

CLIMATE INSTABILITY RESULTS IN A CUSP CATASTROPHE THAT PRODUCES A BIMODAL CLIMATE

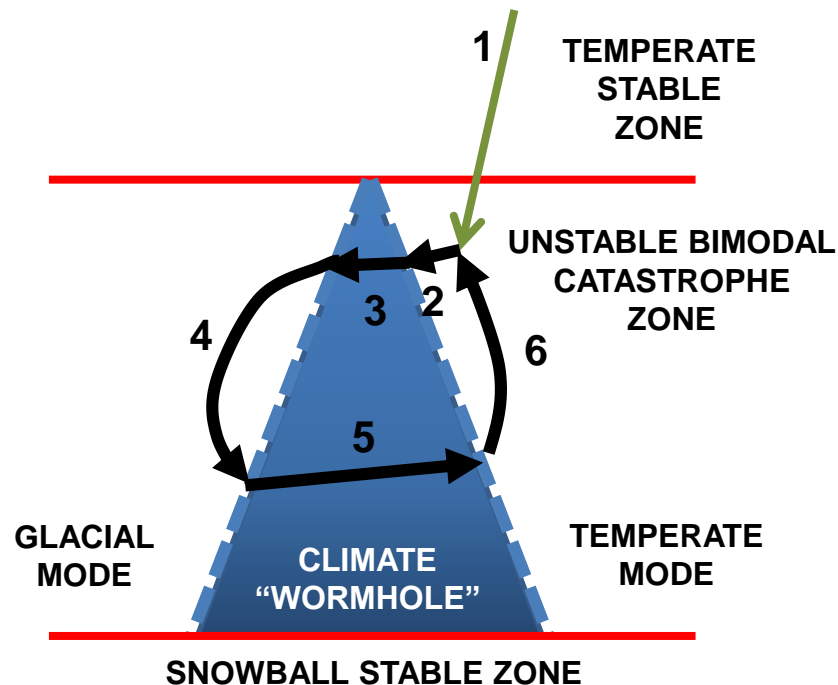
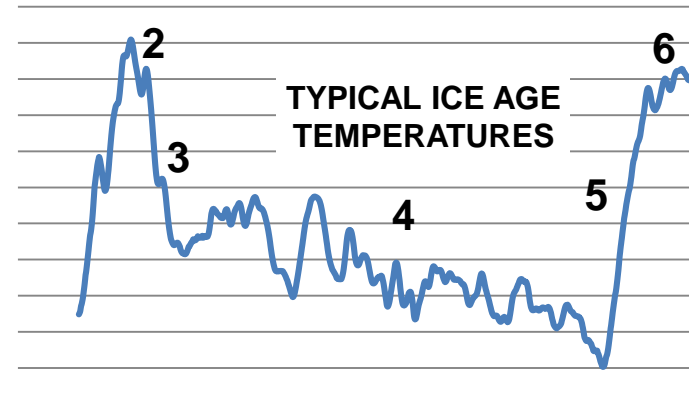


Top and bottom edges of cusp act as “climate wormholes” to abruptly move climate back and forth between temperate and glacial modes.



THE PATTERN OF JUMPS HAS BEEN THE SAME FOR THE LAST TEN ICE AGES

1. Galactic cosmic rays cause downward drift of stable climate system into unstable bimodal catastrophe zone.
2. Orbital forcing drops energy input moving climate system into “wormhole”.
3. “Wormhole” rapidly moves climate system from temperate to glacial mode.
4. Albedo feedback loop causes temperatures to drop and ice sheets to grow.
5. Climate intersects “wormhole” and rapidly moves from glacial to temperate mode.
6. Climate stable during temperate mode.

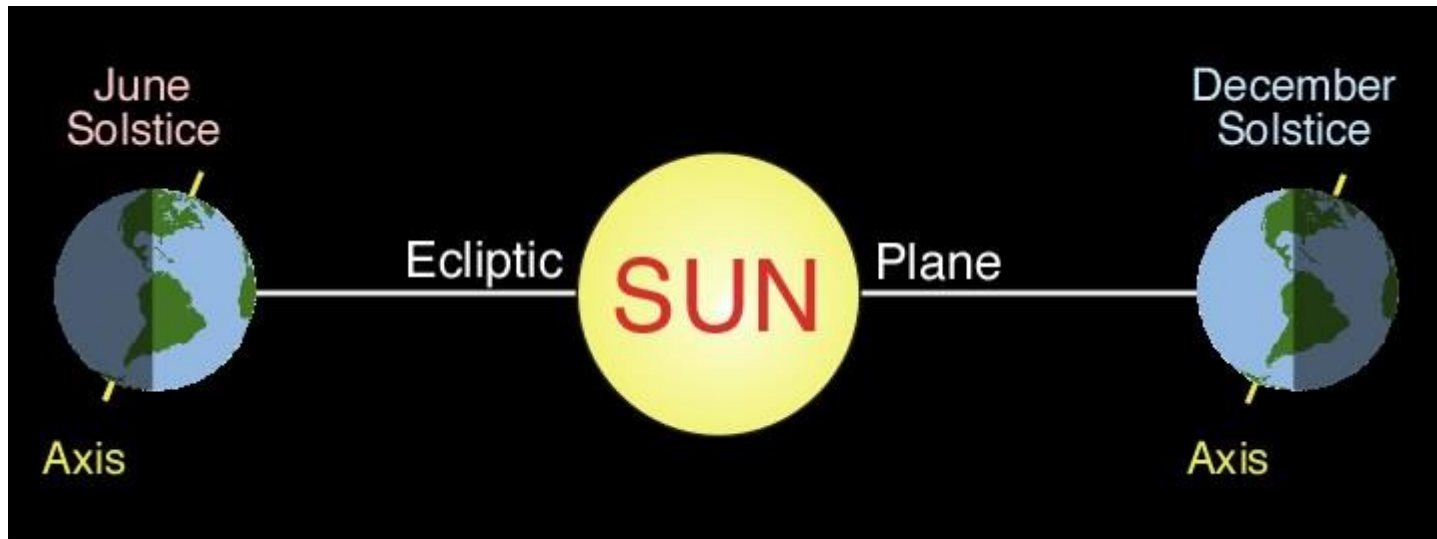


HOW DOES “ORBITAL FORCING” MOVE THE CLIMATE INTO THE “WORMHOLE”?

SOLAR RADIATION (INSOLATION) WARMING THE EARTH IS CHANGED BY THE EARTH'S ORBIT AND INCLINATION

WHEN SUNLIGHT STRIKES AT AN ANGLE, IT HAS LESS POWER THAN WHEN IT HITS STRAIGHT ON

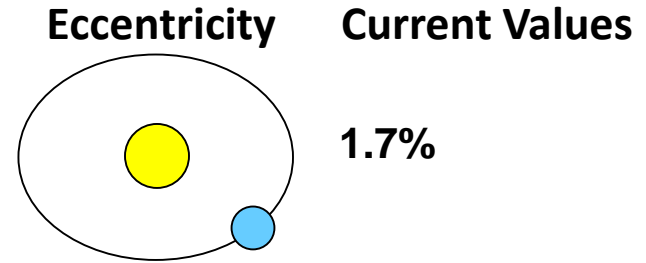
THIS IS WHY SUMMER IS HOTTER THAN WINTER, AND NOON IS HOTTER THAN SUNRISE



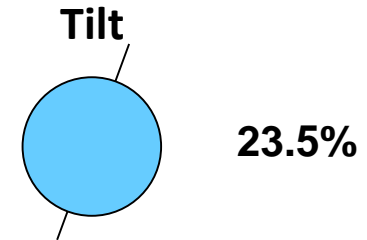
THE MOVEMENT INTO THE COLLAPSE “WORMHOLE” OCCURS BECAUSE THE ANGLE AND DIRECTION OF TILT OF THE EARTH AND THE DISTANCE FROM THE SUN ARE CONSTANTLY CHANGING

COMPLEX GRAVITATIONAL FIELDS IN THE SOLAR SYSTEM TWEAK OUR ORBIT & TILT

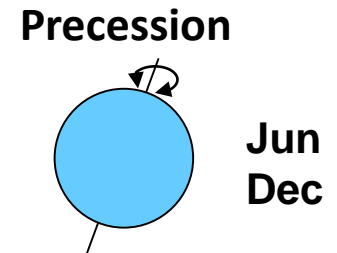
The eccentricity of earth's orbit changes from 0 to 5% on a 100,000 year cycle



The tilt of earth's axis changes between 21.5° and 24.5° on a 41,000 year cycle

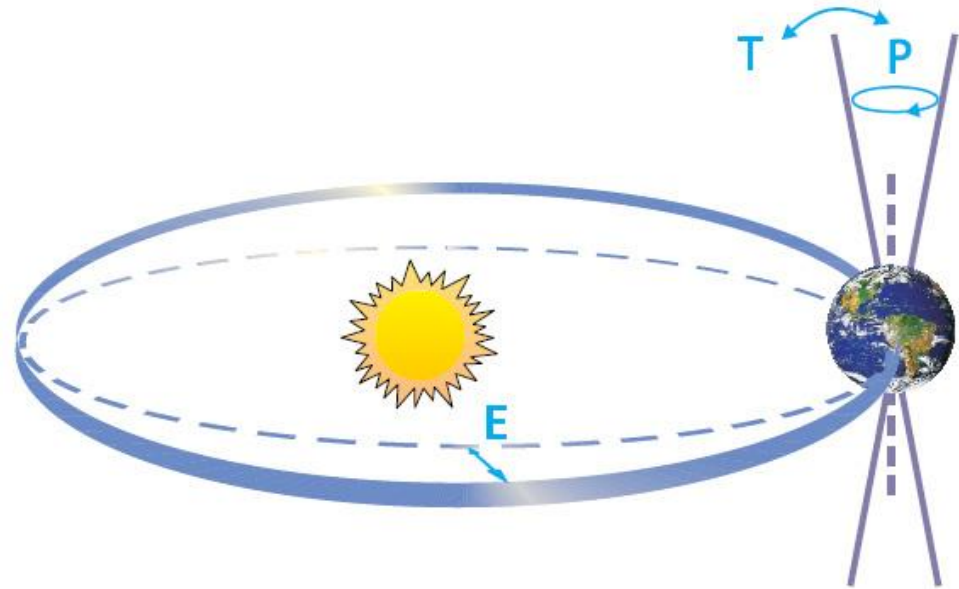


Precession (wobble) of the earth's axis occurs over a 23,000 year cycle



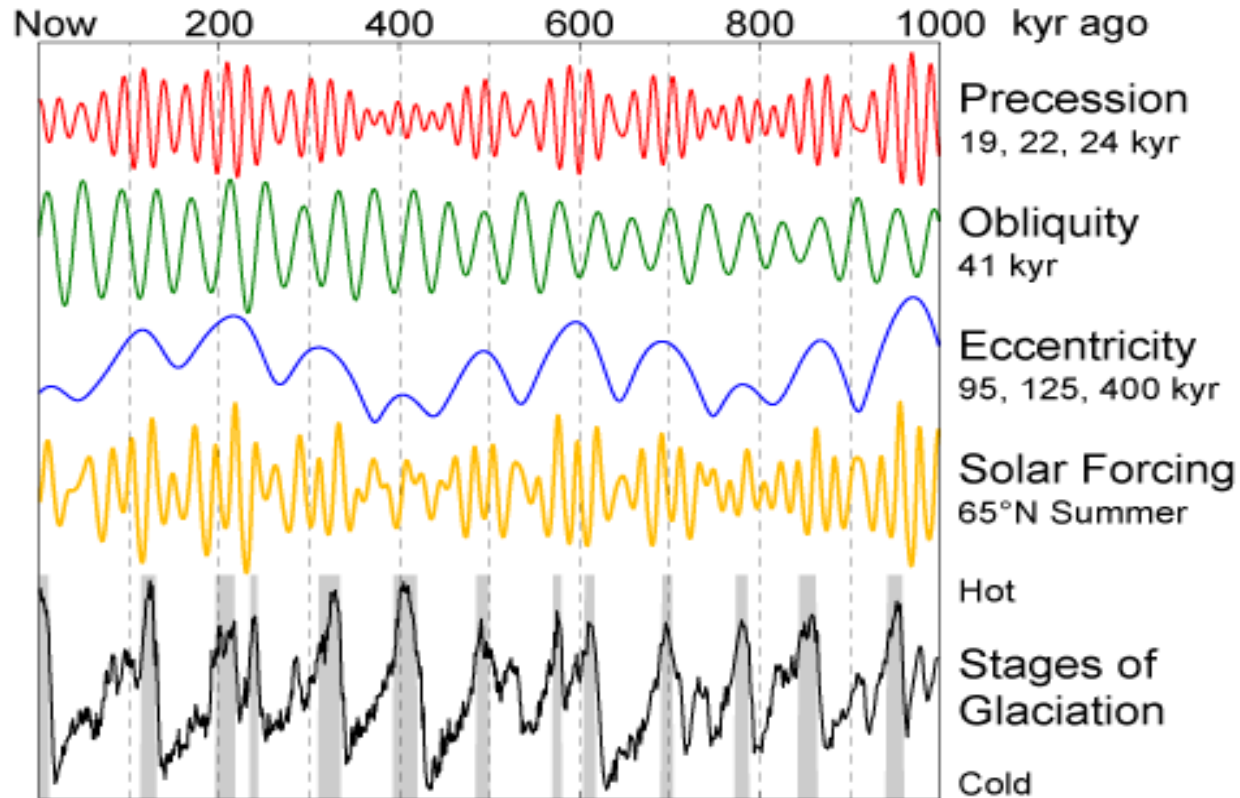
WHEN ECCENTRICITY IS MAXIMUM, AND TILT DURING SUMMER IS TOWARD THE SUN, THE ICE AGE STARTS

COMPUTATION OF ORBITAL PARAMETERS CAN PREDICT RECURRING ICE AGES



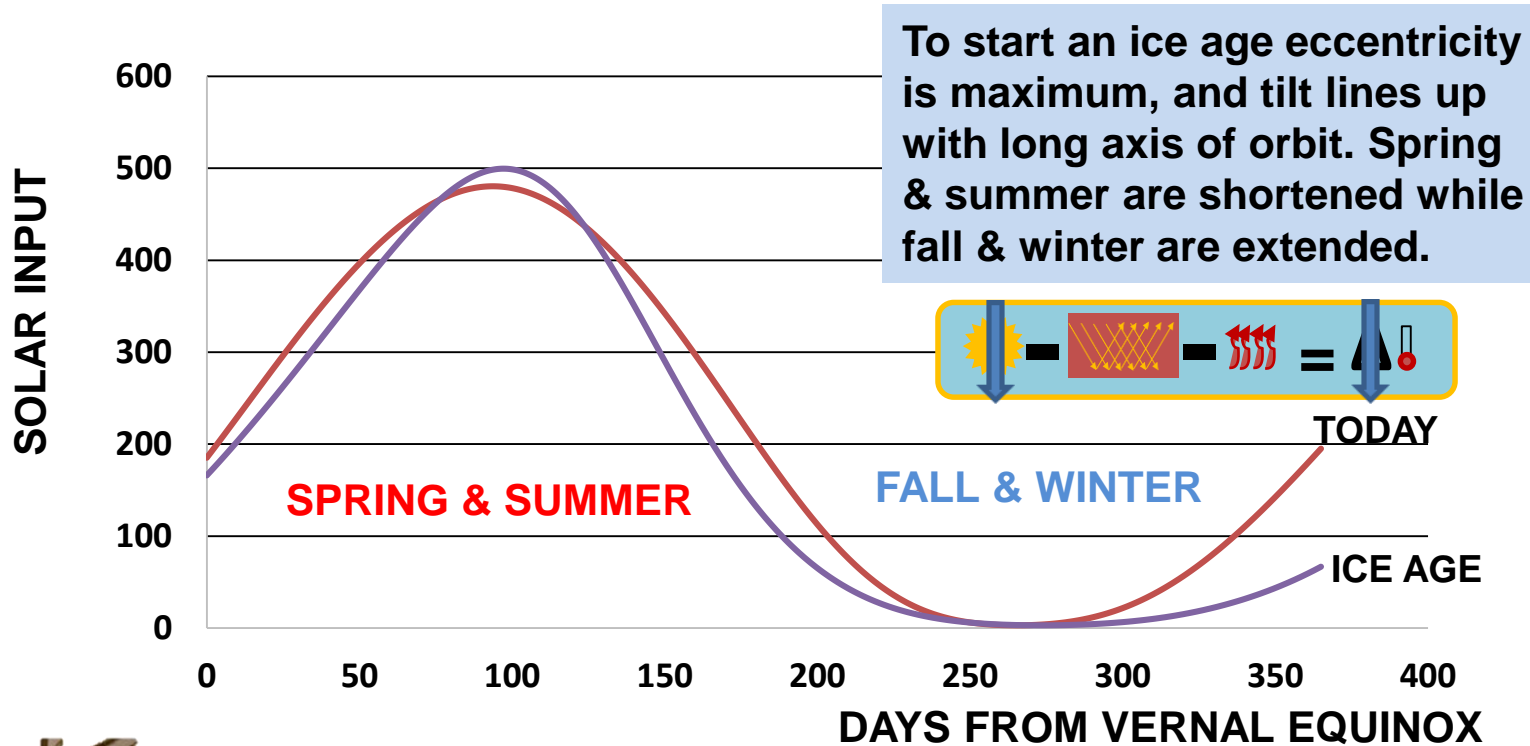
- In 1920 Serbian mathematician, Milutin Milanković, published calculations describing a 100,000 year cycle of ice ages based on his astronomical calculations.
- Meteorologists discounted his theory claiming that the resulting insolation changes were too small to significantly change global climate.
- In the last half of the 20th century, analysis of deep-sea sediments and ice cores found the 100,000 year periodicity in climate predicted by Milanković.

MILANKOVIĆ CYCLES & GLACIATION



- **ORBITAL ECCENTRICITY AND PRECESSION ARE MAJOR FACTORS IN THE ONSET OF INCREASED GLACIATION**
- **WHEN EARTH'S ORBIT IS AT ITS MOST ECCENTRIC, AND TILT LINES UP WITH THE MAJOR AXIS OF ORBIT, GET OUT YOUR SNOWSHOES!**

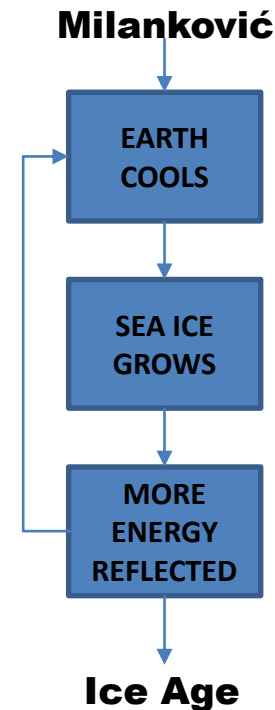
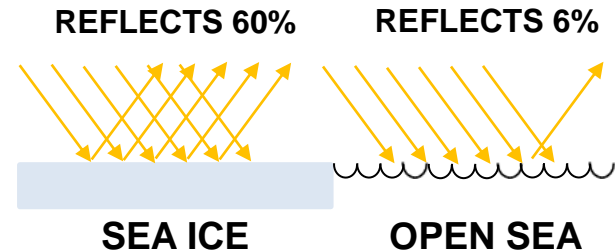
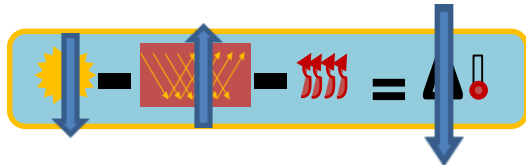
CHANGES IN OUR ORBIT PRODUCE SHORT SUMMERS & LONG WINTERS



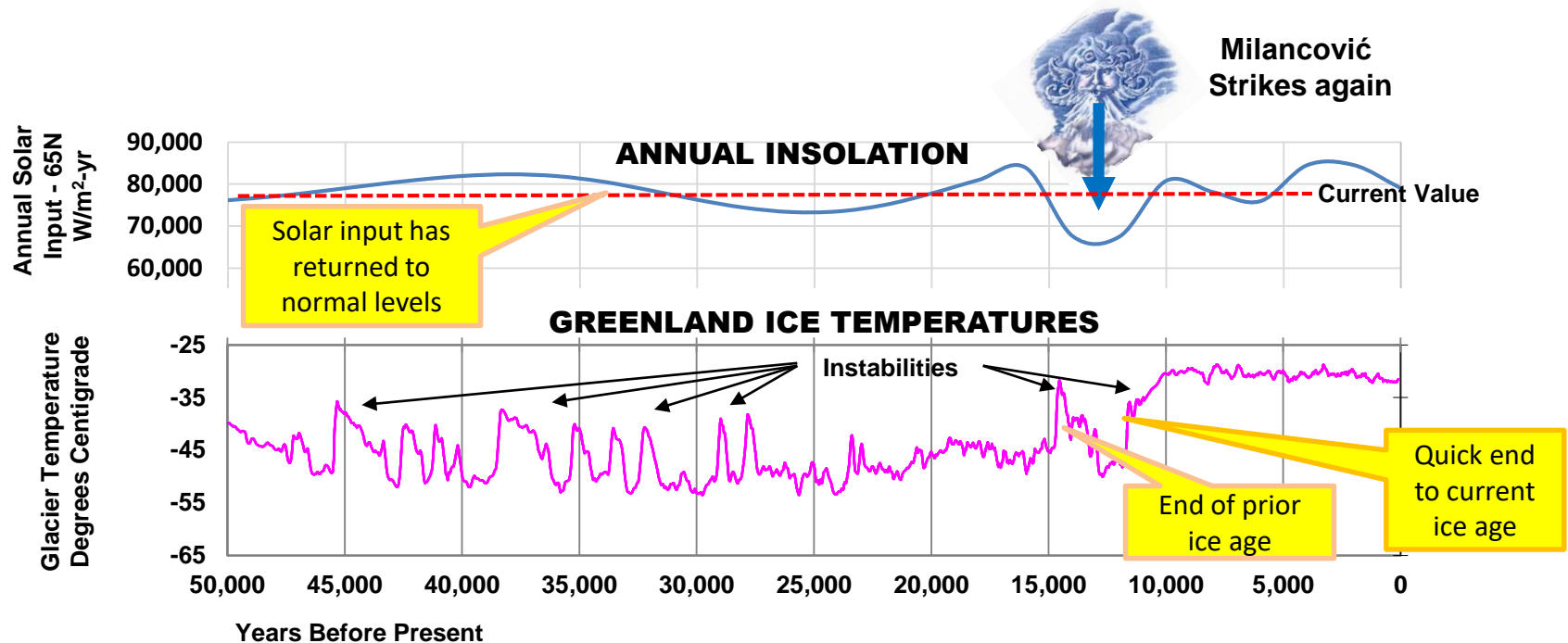
- THIS REDUCTION IN ENERGY INPUT IS SUFFICIENT TO MOVE CLIMATE SYSTEM INTO THE CATASTROPHE “WORMHOLE” AND TRIGGER AN ICE AGE.
- FORTUNATELY IT ONLY OCCURS EVERY 100,000 YEARS.

SEA ICE COMPLETES THE ONE-TWO PUNCH TO LOCK IN THE ICE AGE

- Cooling from the Milanković event causes sea ice to form over large areas of the ocean.
- The sea ice reflects 50% to 70% of solar energy away from the earth, changing the energy balance and causing global cooling.
- This cooling causes more sea ice to form further cooling the earth.
- The cooling feedback loop continues until the glacial maximum is established.



WHAT DRIVES THE END OF THE ICE AGE?



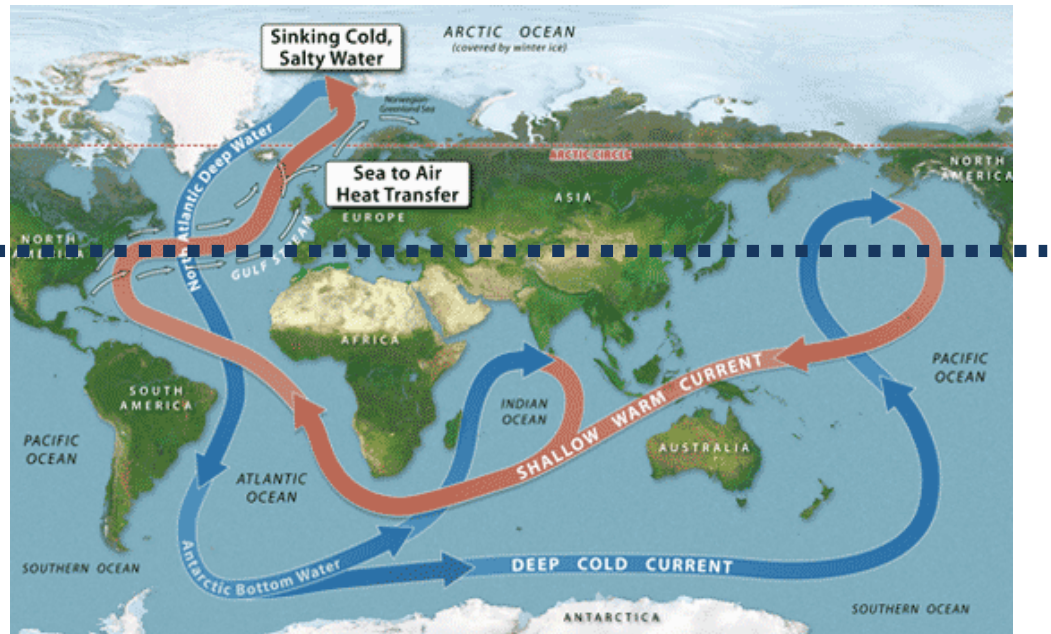
The temperature profile provided by core drilling glaciers in Greenland provides clues to the collapse of the last ice age (glacial mode).

- Solar input had returned to normal levels for tens of thousands of years, but reflection from ice caused the ice age to linger until ended by a bipolar instability (salt oscillation) in the ocean system around 14,000 years ago.
- A 100,000 year Milancović event quickly occurred starting a new ice age.
- A large bipolar instability developed within the ice age that hammered away at the accumulated ice coverage and kept the new ice age from taking hold.

THE THROTTLED, SALTY THERMOHALINE CURRENT EXPLODED NORTHWARD CHANGING EARTH'S ALBEDO



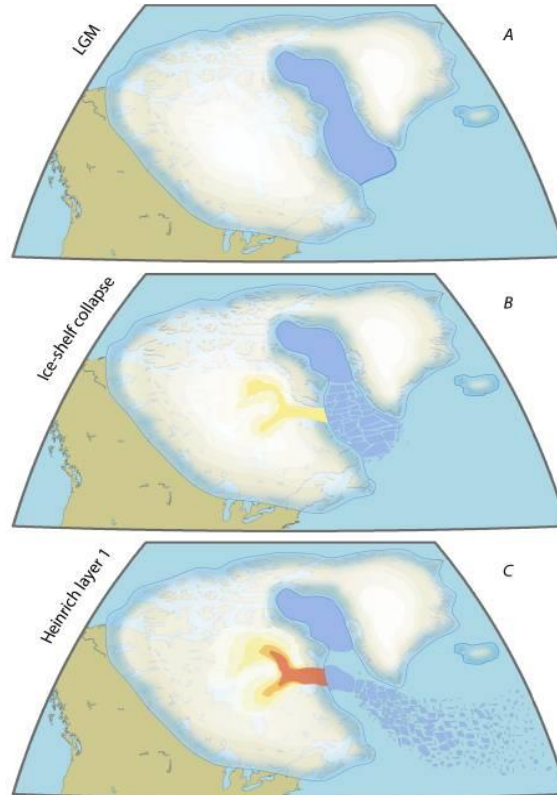
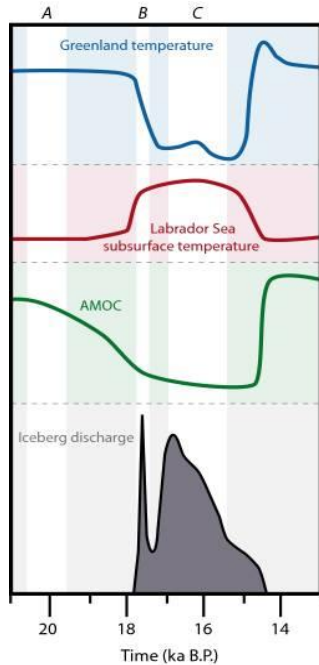
Extent of Northern
Ice Sheet
During Ice Age



The thermohaline current acts like a giant Lava Lamp, but ice disrupts normal flows.

- Currents driven by temperature and salinity drive heated water North.
- Ice sheets and fresh water melt disrupt current flow and cause moderate heat build up under ice packs and strong heat build up in tropical waters.
- High salinity, very warm water builds up in the tropics and bursts forth to act as a giant deicer changing large areas of the surface from reflective ice to heat-absorbing open sea.

HOW DOES THE BREAK UP HAPPEN?



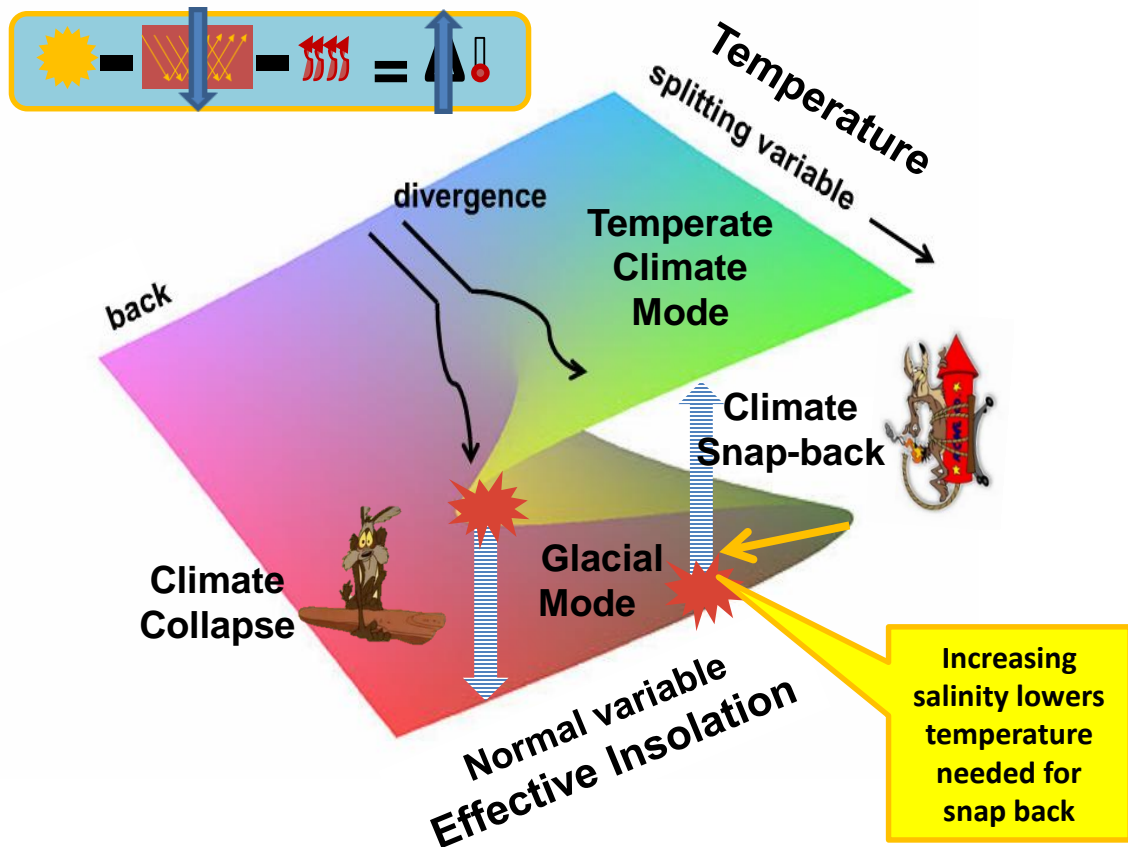
Tremendous amounts of ice accumulate during ice age.

- Glaciers up to 12,000 feet thick grow down below current US border.
- Internal stresses grow with increasing glacier size.
- Ice sheets grow over the ocean filling in the area between the glaciers.
- Water levels drop 400 feet, fracturing the ice pack and greatly increasing the salinity of the ocean.

- Warm ocean currents from the South undermine ice sheets and cause them to break up.
- Unsupported glaciers release an avalanche of icebergs into the ocean.
- High salinity prevents sea ice from reforming.

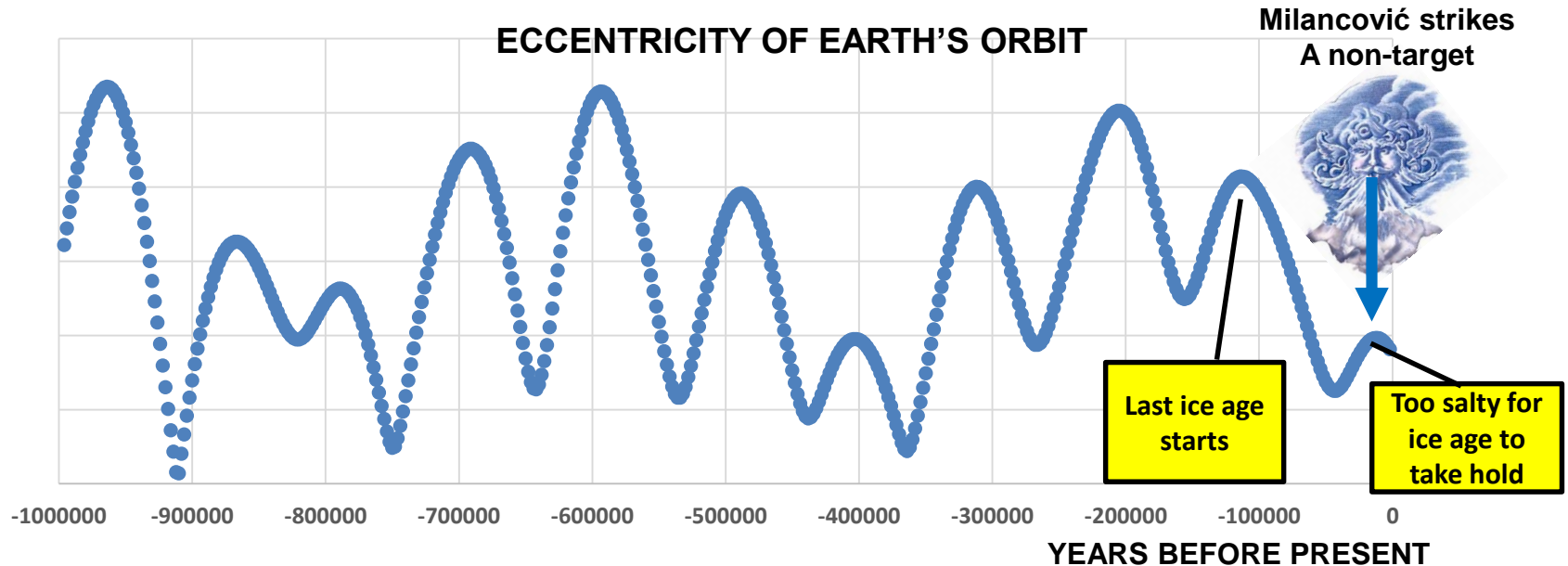
INCREASED OCEAN SALINITY LOWERS THE THRESHOLD FOR A SNAP BACK TO TEMPERATE CLIMATE MODE

- Glacier formation drops sea level by 120m, leaving salt behind.
- Sea ice formation adds to the residual salt level.
- Cooling of northern tropical Atlantic displaces tropical rain belt southward, further removing fresh water and increasing salinity.
- Increasing salinity promotes melting of ice.



THE PERSISTANT HIGH SALINITY IS THE DIFFERENCE BETWEEN EARLIER OSCILLATIONS AND THE FINAL INSTABILITY

IS THE NEXT INSOLATION-CAUSED ICE AGE JUST AROUND THE CORNER ?



- The last ice age lingered about 25,000 years longer than normal.
- The subsequent Milanković event occurred 14,000 years ago killing the recovery from the last ice age.
- Accumulated, persistent instability in ice age climate system in turn quickly killed the new ice age.
- Milanković forcing conditions will not be met again for another 86,000 years.

BEST GUESS – WE REALLY LUCKED OUT!

WE HAVE ALSO HAD MANY LESSER UPS AND DOWNS SINCE THE GLACIERS RECEDED



SCIENTISTS EXAMINING GLACIAL CORES FROM GREENLAND HAVE DOCUMENTED SEVERAL UPS AND DOWNS IN GLOBAL TEMPERATURE IN HUMAN HISTORY.

IN GENERAL WARM PERIODS WERE TIMES OF PROSPERITY, AND COLD PERIODS WERE TIMES OF DEPRIVATION.

TO UNDERSTAND THESE CHANGES WE MUST EXAMINE OUR THIRD CELESTIAL CAUSE OF CLIMATE CHANGE.

SOLAR ACTIVITY



“The history of all hitherto existing society is the history of class struggles”

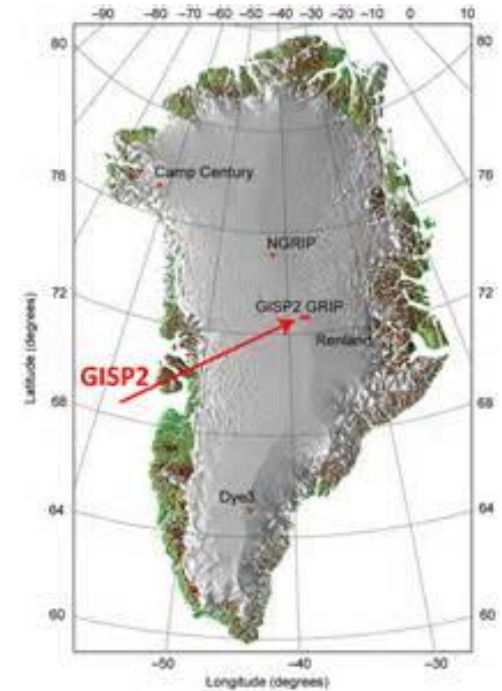
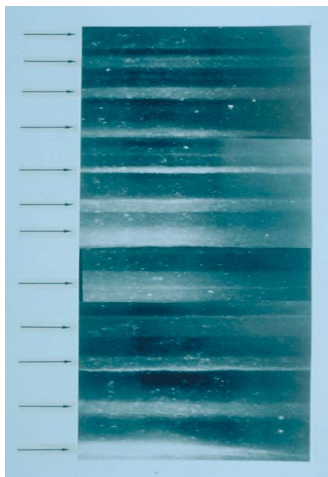
- Karl Marx

CORE DRILLING OF GLACIERS HAS DOCUMENTED CONTINUOUS SMALL CLIMATE CHANGES SINCE THE END OF THE LAST ICE AGE



In the 1990's climate scientist Dorthe Dahl-Jensen led a team of Danish scientists that drilled through glaciers in Greenland and determined past temperatures.

Layers within the ice cores that they extracted were analyzed to provide temperatures and greenhouse gases from the present through the last ice age.

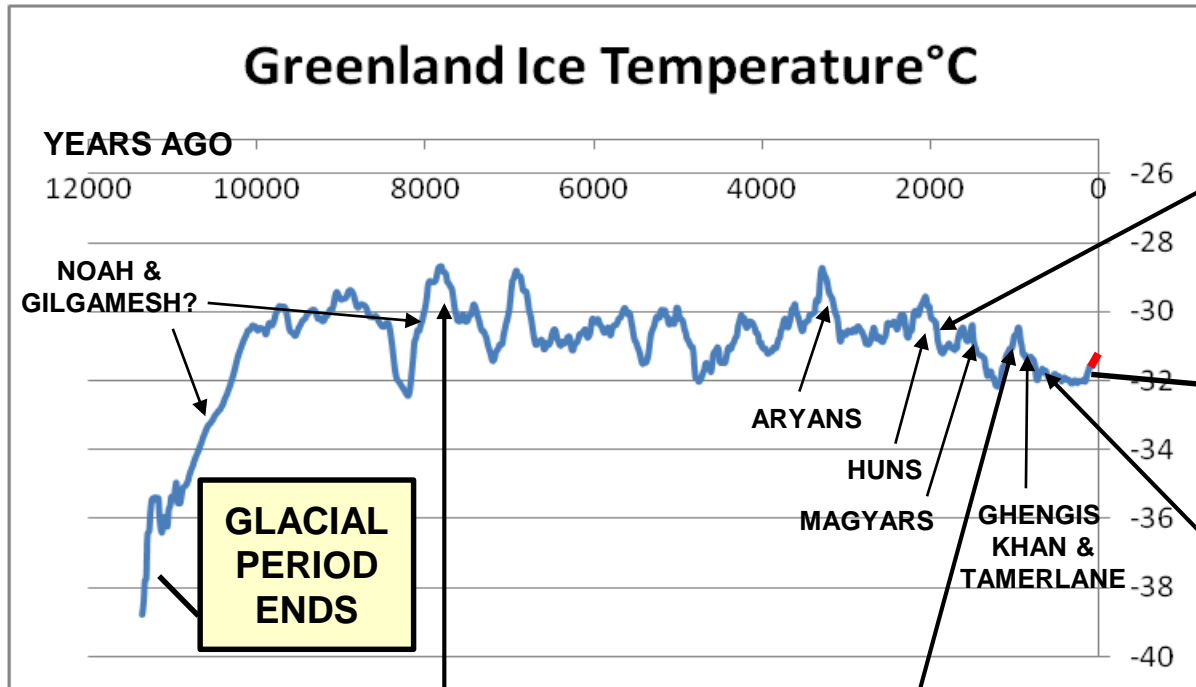


Two conclusions from the data are obvious:

- Past changes in climate since the end of the ice age routinely dwarf the change over the last 150 years.
- Forget Marx's theory of class warfare. Climate change is a major factor shaping our history.

WARM CLIMATE = GOOD TIMES

COLD CLIMATE = BAD TIMES



Source: Adapted from D. Dahl-Jensen, "Past Temperatures Directly From the Greenland Ice Sheet"

FALL OF THE
ROMAN
EMPIRE

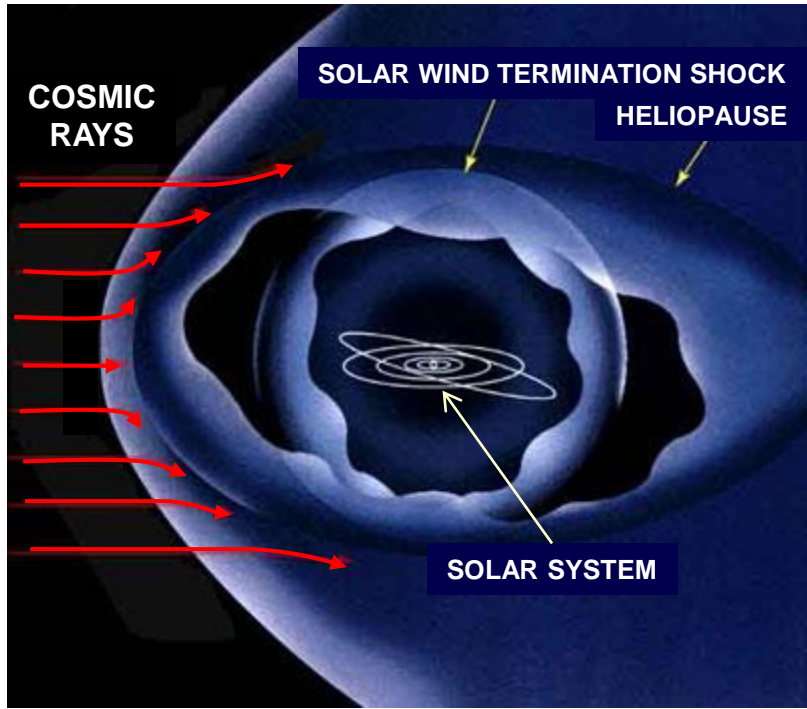
HERE'S OUR HOCKEY
STICK!
(DOESN'T LOOK SO
IMPRESSIVE NOW)

THE WARMEST
TEMPERATURE SINCE THE
GLACIERS
MELTED WAS 7000 TO 8000
YEARS AGO WHEN
AGRICULTURE BEGAN
"CLIMACTIC OPTIMUM"

THE MEDIEVAL
WARMING PERIOD
AROUND 1000
YEARS AGO WAS TIME
OF PROSPERITY

THE "LITTLE ICE AGE"
BEGAN AROUND 1300CE
BRINGING WAR, FAMINE,
PESTILENCE, AND DEATH

THE SUN'S HELIOSPHERE PROVIDES PARTIAL PROTECTION FROM COSMIC RAYS



Source: NASA

The sun generates huge amounts of electromagnetic energy.

This energy forms a bubble around the solar system called the heliosphere.

Electromagnetic forces in the heliosphere deflect some of the incoming cosmic rays. (Deflector shield)

CYCLIC CHANGES IN SOLAR ACTIVITY INFLUENCE THE INTENSITY OF THE COSMIC RAY BOMBARDMENT AND THE CLOUD COVER OF THE EARTH



SUNSPOTS ARE AN INDICATOR OF THE SUN'S ELECTROMAGNETIC ACTIVITY

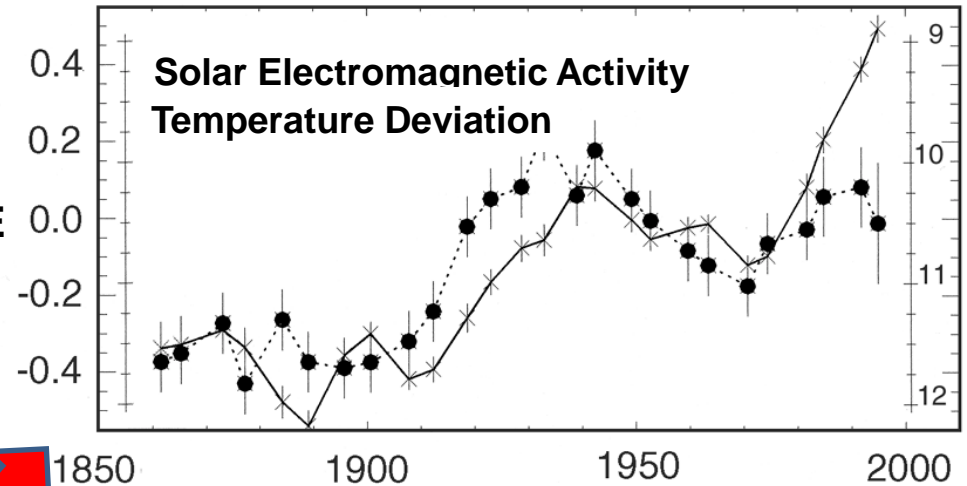


Source: NASA

THE SUN'S
MAGNETIC
FIELD REVERSES
EVERY 11 YEARS

EACH 11 YEAR CYCLE
PRODUCES DIFFERENT
AMOUNTS OF
ELECTROMAGNETIC
ENERGY

Sunspots are more frequent when the sun's electromagnetic shield is strong. There were few sunspots during the "Little Ice Age" that lasted from 1350CE to 1850CE. Our current "Hockey Stick" is actually a recovery from this "Little Ice Age".



Source: Adapted from J. Kristjansson, "On the Length of the Solar Cycle and the Earth's Climate"

SUNSPOTS CORRELATE WELL TO TEMPERATURE ON THE "HOCKEY STICK"

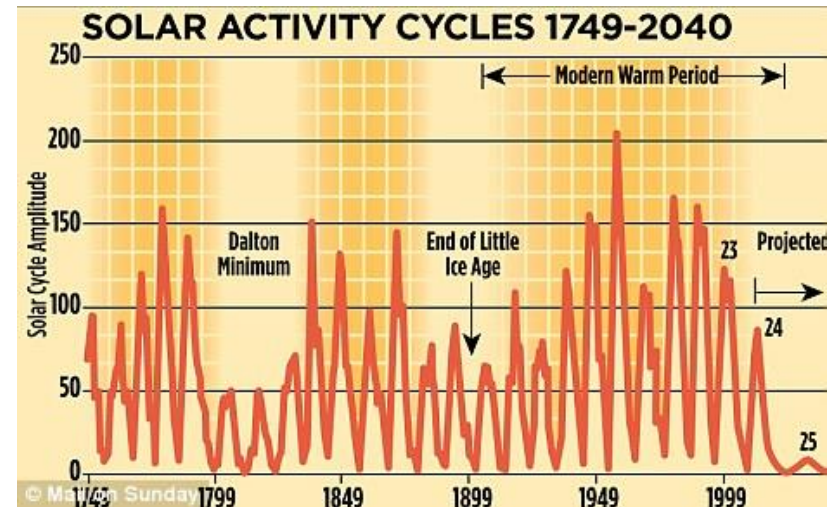
SOLAR ACTIVITY IS DECREASING

Solar cycles last for about 11 years.

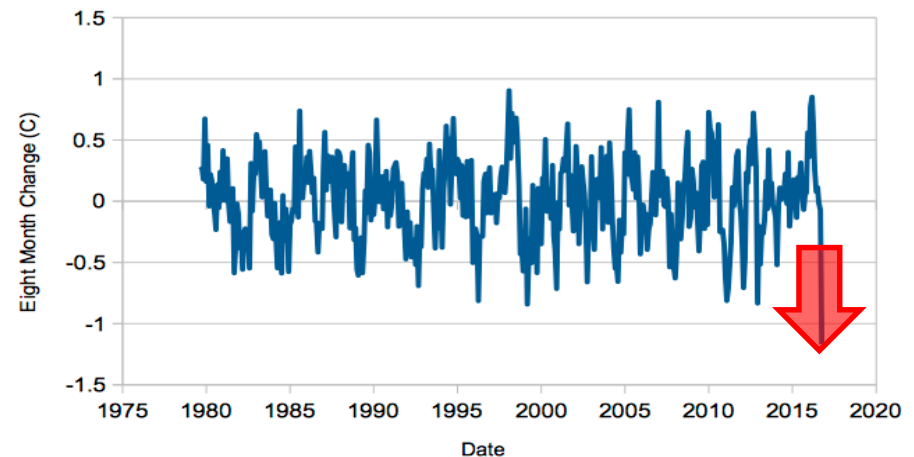
NASA observations indicate that the solar cycle beginning in 2008 will be the weakest in 200 years.

History indicates that colder weather will last an unknown length of time that could last from decades to centuries.

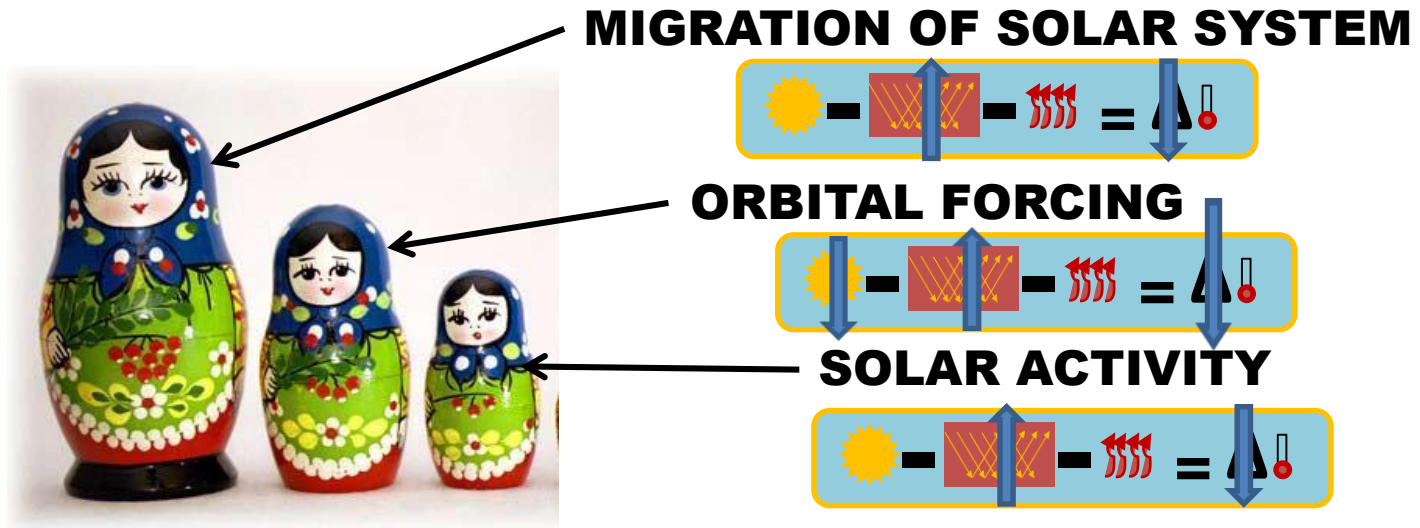
**BUTTON UP YOUR
OVERCOATS!**



RSS TLT Eight Month Temperature Change Over Land



SUMMARY - THREE NESTED PHENOMENA DOMINATE GLOBAL CLIMATE CHANGE



THE THREE PHENOMENON OCCUR AT THE SAME TIME PRODUCING A COMPLEX PATTERN OF GLOBAL CLIMATE CHANGE

THESE THREE CELESTIAL PHENOMENON ACCOUNT FOR VIRTUALLY ALL OBSERVED GLOBAL CLIMATE CHANGE

GREENHOUSE GASES HAVE PLAYED NO OBSERVABLE ROLE IN LONG TERM GLOBAL CLIMATE CHANGE

GLOBAL CLIMATE FORECAST



- **We have been in an ice age epoch for the last 2.5 million years. We are only slightly more than half way through. Get used to it.**
- **The catastrophic ice ages that would destroy our civilization have been placed on hold by an extraordinary, fortunate alignment of the planets. Celebrate it.**
- **Declining electromagnetic activity from the sun will result in colder temperatures for decades. This will result in some hardships, but history shows that we shall survive it.**

CONCLUSIONS

**THE PRIMARY FORCES DRIVING GLOBAL CLIMATE CHANGE
DO NOT ORIGINATE ON THIS PLANET AND CANNOT BE
AFFECTED BY THE ACTIONS OF HUMANS**

**GREENHOUSE GASES HAVE NOT CAUSED GLOBAL CLIMATE CHANGE
ASTROPHYSICS IS THE KEY TO UNDERSTANDING CLIMATE CHANGE
STUDYING BOVINE FLATULANCE WON'T HELP**

**GOVERNMENT REGULATIONS JUSTIFIED AS “SAVING THE PLANET”
ARE REALLY ALL ABOUT POWER AND MONEY**

Meet the Author

David Doll

Mr. Doll is a 40-year veteran in the field of maintenance design and operations management. He has held key technical manager positions at a major US airline, including process engineering, fleet technical services, manufacturing engineering and component re-manufacturing. He currently provides consulting services in operations analyses, process re-engineering and market evaluation.

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