Venus

A Young Earth

by John Ackerman

Venus – A Young Earth
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Abstract

Overwhelming physical evidence has been present for thirty-seven years that Venus is a hot new planet, born from an impact on the solid, highly deuterated, methane gas hydrate Jupiter 6,000 years BP. Impacts of large bodies on Jupiter trigger enormous nuclear fusion explosions which eject the full range of atoms in their known relative abundances, forming the terrestrial planets. Due to the great heat of these explosive ejections the atoms are reduced to a plasma comprising electrons, protons and neutrons, from which similar abundances quickly reformed, but with the nuclear decay clocks of radioactive elements reset to zero, producing the primordial isotope ratios of argon and hydrogen found on proto-Venus.

Venus today demonstrates that the heavy elements quickly condensed to form what will become the mantle of a complete terrestrial planet. Its current orbit is the result of multiple close encounters with Mars and Earth, raising the Tharsis Bulge and the Himalayas, and on Venus uplifting Aphrodite and Ishtar Terra, which display no volcanic calderas. The interior is completely molten with a thin basalt layer less than two kilometers thick floating on top, evidenced by its lack of rotation. Proto-Venus' enormous internal heat is manifested by raw incandescent lava, > 2000º C, lying in myriads of cracks in the surface, fleeting views of which by the Pioneer Venus Large Probe Infrared Radiometer produced high intensity erratic signals dismissed as window heater faults.

Up-welling vs down-welling radiation measurements from five independent Pioneer Venus probes all agree that proto-Venus is radiating 20 watts per square meter, 250 times more energy than the Earth. Integral to the cooling process, the primary transfer of heat from the surface to the lower cloud layer is accomplished by the high velocity jetting of sulfur gases from more than one million 'small domes' directly to 48 km altitude where S_8 crystalizes in three forms comprising the lower cloud layer. This unique, 2 km thick, roiling, mixed-phase stratiform cloud layer is the most ubiquitous atmospheric feature on the planet. Sulfur compounds raining back onto the surface evaporate, controlling the surface temperature.

The massive lower atmosphere, primarily sulfur, S_N, and CS, currently mistaken for CO_2, capped by the lower cloud layer are the source of the high surface pressure, 92 bars. This layer will settle to the surface of the planet as it cools, adding to the existing mantle. The temperature and pressure immediately above the lower cloud layer are similar to those at the surface of the Earth. The volatile elements currently found above the lower cloud layer represent a tiny fraction of the total produced by the 6,000 year (BP) impact explosion on Jupiter, the remainder of which orbit invisibly in the inner solar system awaiting capture. These will form the lithosphere, crust, oceans, atmosphere, flora and fauna of a new terrestrial planet.

A relatively simple, inexpensive, mission to verify this hypothesis is proposed. Two probes, for redundancy, would be released from an orbiter (or even a flyby), each carrying visible light cameras which would photograph the surface of Venus once they descend below the opaque lower cloud layer and the red haze to ~30 km altitude, where temperature and pressure are not severe. Another camera would be used to photograph microscopic images of sulfur crystals collected on cool glass plates as the probes fell through the lower cloud layer. The images would be transmitted to the bus and back to the Earth.

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1. Introduction

The currently accepted hypothesis concerning Venus, including published contributions from hundreds of scientists, is based on a single unprovable assumption - that the terrestrial planets accreted from refractory particles and gases in their current orbits 4.6 billion years before the present (BP).[1] Conformity to this hypothesis for the last three decades in the face of numerous contradictions of data from space probes has failed to explain every unique aspect of Venus. More credit should be given to NASA engineers who are the best in the world, successfully placing satellites in orbits, landing them dozens of times and providing dependable data that needs reinterpretation outside the current paradigm.

It is ironic that planetary scientists use mythological names for the planets and for features on their surfaces, yet ignore the myths themselves which provide significant clues as to what happened on a cosmic scale. The ancient texts tell of the creation and interactions of the planets observed by our ancestors, most of which could only have been made if these bodies were close to the Earth at that date. The consistency across cultures and their explicit details make clear that numerous, threatening cosmic events took place in the heavens close to the Earth within the last 6,000 years. Ironically, the current planetary science consensus is a modern-day 'myth' which was adapted from Lyell's gradualism, in deliberate opposition to these historical observations of ancient peoples world-wide.

Consensus science has failed to explain every aspect of the data returned from Venus probes. Among them: the high, uniform surface temperature and pressure; the composition of the ubiquitous lower cloud and haze layers; the super-rotation of the atmosphere at 90 to 100 km altitudes; the source of ultraviolet absorption in the upper atmosphere; the excess energy which Venus radiates; its lack of a magnetic field; the decrease of the CO_2 signal from the Pioneer Venus (PV) mass spectrometer as it descended from 50 to 31 km; the total apparently volcanic basalt surface with non-Earth-like Ur, Th, and K proportions; the enhanced primordial isotope ratios of hydrogen and argon; the reddish illumination at the surface; the powerful signals reported by the PV Large Probe Infrared Radiometer (LIR) below the lower cloud layer; the origin of Venus' slow retrograde rotation; its near resonant spin-orbit coupling with Earth; the formation of the Cytherian 'continents'; Venus' high admittance; the near-total malfunction of the external sensors on all four PV probes as they descended through altitudes of 12 to 14 kilometers (45,000 ft.); and most striking, the recent finding of the slowing of Venus' rotation by 6.3 minutes in the 16 years between the Magellan/Venera measurements and those of the ESA Venus Express mission. The birth and evolution of Venus proposed in this paper provides answers to every one of these questions, suggesting a complete re-evaluation/reinterpretation of the present interpretation of the data.

2. The Proposed Origin of Venus

As clearly expressed in the Rigveda, Egyptian, Greek, Roman, and Biblical sources, Venus was born some six thousand years Before the Present (BP), when a large dark body struck Jupiter on the sun side. Based on a new paradigm proposed by the author, Jupiter is a solid, frozen, highly deuterated Methane Gas Hydrate planet within which the known solar system elemental abundances are homogenously distributed. Jupiter's high concentration of deuterium renders it a fusion bomb which exponentially increases the strength of impacts. The rebounding fusion explosion triggered by this impact was so hot that it produced a plasma comprising electrons, protons and neutrons. The same abundances of the atoms quickly reformed as the fireball expanded and cooled (a small bang), but in their primordial forms, their radioactive nuclear decay 'clocks' reset to zero.

The impact explosion rebounded into the inner solar system with such intensity that the ancient texts of widely separated cultures tell that the entire Earth 'cried out', implying an earth-ringing gravitational wave. A continuous, slowly declining fusion reaction still burns at the site of the impact on Jupiter, producing unexplained excess luminosity and magnetic field. This 'Small Bang' ejected the inventory of atoms needed for a complete new terrestrial planet into the inner solar system, at the same time providing an example of the formation of Earth and Mars, 3.9 and 4.6 years billion-years BP, respectively from similar huge Jovian impacts.

As the explosive plume contracted, the heavy elements quickly gravitated to the center, their powerful radiation adding to their advantage, driving away the more volatile elements, whose numbers were much greater. The lighter elements that will form Venus' lithosphere, crust, oceans, flora and fauna remain floating in the inner solar system, having been observed falling into the Earth's atmosphere. Thus, the proper nomenclature for this new body is proto-Venus.

Proto-Venus, known as *Pallas-Athene* (young Athena) in Greek myth, as *Aditi* in the Rigveda - *diti* meaning "bounded" and the prefix "A" negating the meaning, therefore "unbounded". The various aspects of this glowing, out-gassing body were given unique names in the Rigveda, such as: *Surya* (Sun maiden) when it appeared in the day sky along with the Sun; *Pushan* (the traveler's guide) when it illuminated the Earth at night; *Agni* (fire), the Greek *Phaethon*, when it scorched the Earth from the Sahara to the Himalayas; and *Varuna* with it's beautiful outgassing robe, once it no longer threatened the Earth. These were called the *Adityas* (sons of *Aditi*). The Rigveda assures the student that "the wise know that the one is known by manifold names".

Powerful mechanisms immediately began reducing the eccentricity of its orbit. Its orbital energy was dissipated by tidal forces exerted on it during close encounters with Mars, Earth, and Mercury. The tidal forces exerted by these planets greatly distorted proto-Venus' liquid shape, causing it to seethe, converting orbital energy to heat. Due to the high state of its ionization, *electromagnetic forces* came into play, when it entered the magnetic fields of the extant planets and that of the Sun. These heating events, combined with the accompanying transfer of orbital energy and angular momentum, reduced proto-Venus' orbit orders of magnitude faster than would be the case with a rigid body - its molten form resulting in a proto-planet with no rotation.

Proto-Venus outgassed millions of tons of heavy elements per second during its first few centuries. The out-gassing elements condensed, reacted to form tiny particles in empty space, producing two dark columns many millions of kilometers long in contrast to the familiar white or bluish 'tails' formed by comets due to the out-gassing and freezing of ice in space. This was described in the Rigveda as two 'parent brands' (branding irons) in a fire and 'two sticks


Fig. 1 Osiris with Atef crown

rubbed together to start a fire'. The earliest paintings of *Osiris*, originally associated with the marauding proto-Venus, was depicted similarly, the two tails represented by the two-straight parallel 'feathers' of the *Atef* crown (Figure 1). To this day the outgassing of heavy elements remains a primary mechanism in the cooling of proto-Venus, combined with its measured radiation of 20 w/m^2. Only after the planet cools and the lower cloud layer collapses to the present surface will its volatile complement begin to settle for the first time on the body of the planet, forming its atmosphere, lithosphere, crust and oceans.

Proto-Venus' many close encounters with Mars were attested to as battles between *Agni* (Venus) and *Indra* (Mars) in the Rigveda. These were true encounters as opposed to alignments, because both Vedic and Egyptian texts describe *Indra* receiving great draughts of (white) *Soma* from *Agni*, and *Horus, celestial milk* from *Sechat-Hor* – evidence of the atmosphere of Mars being tidally drawn to the more massive Venus with the water in it freezing. Although the atmosphere passed in the opposite direction, the tear-drop, or breast-shaped form of the molten proto-Venus in these instances contributed to the mythic interpretation.

These encounters created Mars' largest global features known today as the Tharsis Bulge and the Valles Marineris. The distortion of Mars was much greater at that date, as evidenced by the description of *Indra* as an "ugly child" in the Rigveda and the 'dog star' (*Anubis*) in Egyptian texts. Moreover, the Valles Marineris is a 4,000 km long, deep fault, that extends into the core of Mars, not yet recognized as such by planetary scientists.

Proto-Venus' close encounters with the Earth scorched and permanently desiccated a wide swath from the Sahara to the Himalayas, the most prominent feature in images of the Earth from space today. It also uplifted the Himalayas just as it had raised the Tharsis bulge on Mars, and caused the oceans to flow across continents, depositing what have recently been recognized as several mid-lithosphere-discontinuities (MLD). Its outgassing left a unique signature known today as the iridium spike, an inch-thick layer of the rarest element on Earth, found around the world. Therefore, the close passes of proto-Venus were the death knell of the dinosaurs on the Earth.

As a result of these encounters, proto-Venus entered an eccentric orbit interior to that of Earth in a few centuries, where it remained for 3,000 years. Due to its molten interior, it had acquired no rotation. It still glowed sufficiently to be seen in the sky during the day, as indicated by its mysterious pairing in the Rigveda with the deity *Mitra*, as *Mitra-Varuna*. *Mitra* was said "to rule the day" while *Varuna*, with his flowing robe ruled the night. The 'robe' referred to proto-Venus' extensive outgassing, which could only be seen at night. At inferior conjunctions, this crust would crack in many places, allowing bright emissions from the molten interior, resulting in the common epithet 'many eyed' for proto-Venus at this stage. Numerous cracks remain to this day, obscured by Venus' lower cloud layer.

2.1 The Venus-Earth Spin-Orbit Resonance

Venus' retrograde rotation and spin-orbit synchronization with Earth were established during this 3,000-year period. Every 30 years, Venus' aphelion and inferior conjunctions with Earth coincided. The tidal effect of the Earth acted on Aphrodite Terra throughout each

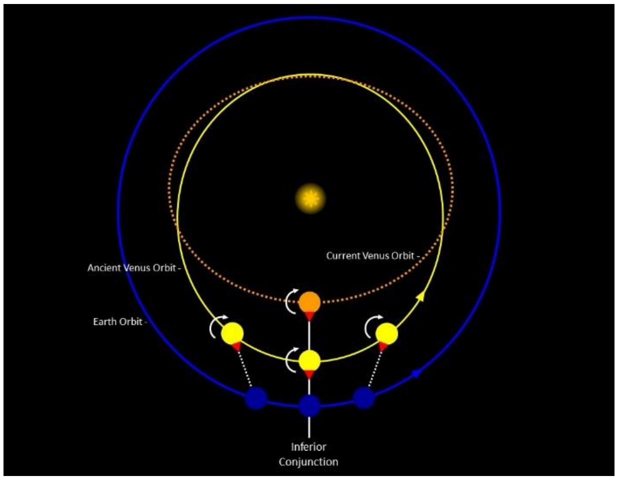

Fig. 2 At conjunction, Earth tidal effect established Venus retrograde rotation and spin-orbit link to Earth

conjunction, establishing its retrograde rotation and their near-synchronous spin-orbit relationship as illustrated in Figure 2. At the end of this 3,000-year period, encounters with Mercury reduced Venus' orbit to its current near-circular one, with the least eccentricity of any planet, 0.007. It is also the closest planet to the Earth, only 0.24 AU at inferior conjunction. Due to its molten interior, Aphrodite and Ishtar Terra, which float on the molten mantle have continued to settle, resulting in the most perfectly spherical planet in the solar system. Based on the current magnitude of the gravitational free air anomaly associated with Aphrodite Terra determined by Magellan, planetary astronomers have concluded that the near-synchronous relationship with the Earth is merely coincidental.

3.0 The Body of Proto-Venus

3.1 The Continents

During very close encounters Venus became distorted into a tear-drop shape with the point of the 'drop' facing the opposing planet. Because Venus' entire interior was molten it quickly returned to a spherical shape after each encounter except for the tips of the tear-drop shapes which remain today as its two 'continents', Aphrodite and Ishtar Terra. Consistent with this interpretation, these highest peaks exhibit no volcanic calderas. Since they formed less than 6,000 years BP, the 'crust' of proto-Venus has had little chance to thicken and consequently is less than a few kilometers deep. The high admittance of Venus measured by Pioneer Venus Orbiter (PVO) is clear evidence for a very thin layer of basalt floating on a completely molten interior. Thus, it has neither a crust, lithosphere, rigid mantle, solid core or an internal magnetic field, as does the Earth. Based on the currently accepted view of Venus' great age, the continental peaks are assumed to be as permanent as terrestrial features, thereby violating the high admittance, but they are still settling in the proposed paradigm. The fact that many craters are flooded with lava is evidence that impacting bodies punched completely through the thin crust, allowing the hot lava to flood up from the interior to the 'sea level', which is really a 'lava level' in the present hellish surface environment.

Processes driven by interior structures on ancient planets such as Mars and Earth do not apply to proto-Venus. Geologically trained scientists speak of isostatic equilibrium as if the current shape of the planet is ancient and stable. The currently existing 'planet' will become its mantle and solid core, but this will require millions of years, considering what has happened in the last 6,000 years. The only surface features generated from the interior are the coronae and pancakes (Figure 3), which are the result of hot plutons, rising rapidly from the interior, impacting the surface and melting it from below and only when the heat was dissipated did the remaining thin layer subside forming concave upward forms. The plutons are the result of continual settling of the heaviest elements deeper into the core or the result of concentrations

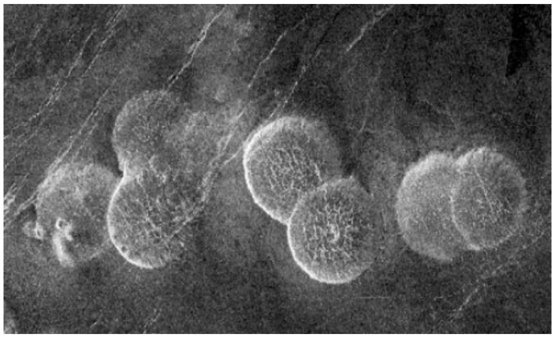

Fig. 3 Pancake features on proto-Venus surface

of primordial radioactive elements with short half-lives, such as ^{26}Al rising rapidly to the surface. All other features are the result of encounters with the existing planets when proto-Venus rampaged throughout the solar system, which, in addition to the continents, created features resembling ripples retained in a disturbed viscous liquid.

The most obvious fact supporting the recent catastrophic origin of proto-Venus is its lack of rotation. The explosive impact out of which it was born could not result in any rotation nor could close encounters because of its molten makeup. But as explained above, its slow retrograde rotation was induced by many repetitive interactions with the Earth. This slight rotation is being reduced as indicated by the comparison of Magellan and Venus Express measurements by a dissipative mechanism discussed below but cannot increase its prograde rotation. The accretion of the orbiting material will accomplish this. [2]

Some investigators have expressed surprise at the 'freshness' or 'pristine nature' of the surface features in the radar images, based upon the currently accepted hypothesis that these features are hundreds of millions of years old. They rationalize this youthful appearance as due to the thick atmosphere having protected the surface from deterioration by small-meteorite bombardment over the period since these features were formed and the lack of liquid water, which is a major factor in weathering on the surface of the Earth. The explanation proposed herein would have been William of Occam's favorite - these features appear new because they *are* new.

3.2 Magnetic Field

The earth-like average density of Venus implies that it possesses a mass of iron comparable to the Earth. The iron in Venus has become differentiated to a large degree due to its highly fluid interior. The proposed catastrophic scenario explains how quickly and naturally the process of differentiation takes place early in the development of a terrestrial body, a troubling problem in the standard model. Venus is currently at the stage where the naturally radioactive isotopes of potassium, thorium, and uranium are rising toward the surface by fractionation due to their higher temperatures.

Despite the concentration of iron at the core, there is no magnetic field being generated in the interior of Venus. The field measured by the Pioneer Venus orbiter spacecraft was extremely weak and was created by interactions with the solar wind. The lack of an internally generated magnetic field is due to the hot, molten, nature of the interior. Only when the interior cools sufficiently will a solid iron core form, making possible the generation of an internal magnetic field.

3.3 Exposed Lava

Venus 'canali' are cracks in the surface longer than 500 km, the longest, Baltis Vallis, otherwise called the River Styx, is 6800 km long and a mile wide. (Figure 4) Hydrologists imagine these features display fluvial attributes, but the similarities with actual rivers are few.

They are the same width along their entire length, have no actual tributaries and, based on Magellan measurements, appear to flow up and down hills. They are not ‘flowing’ or even ‘lying’ on the surface. They are not at the temperature measured by probes on the surface, rather they are cracks in the basalt surface through which the incandescent liquid interior is exposed. They are black in Magellan radar images revealing they are liquid.

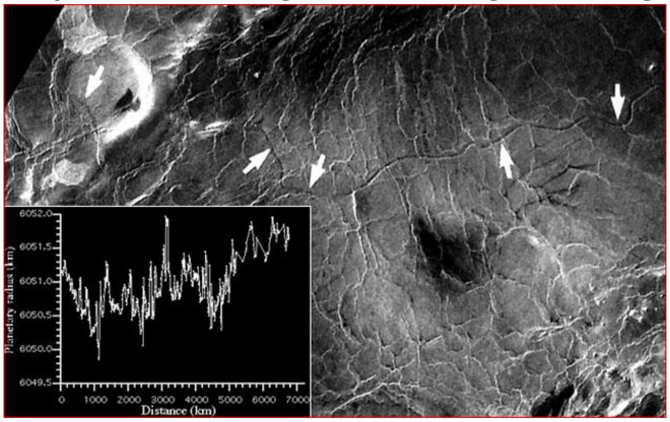

Fig. 4 Baltis Vallis winds 6800 km thru low-lying volcanic plains of Venus. Insert gives elevations along its path.

The Pioneer Venus Large Probe Infrared Radiometer (LIR), designed to sense red and near infrared radiation, was the most capable of studying the surface in lieu of actual photography, which was not included in the PV suite. The LIR instrument window rotated about a horizontal axis viewing at 45 degrees upward and downward through a diamond window heated to prevent deposits as it passed through the cloud layers. Once the probe passed through the lower cloud layer PV scientists expected the radiation would decrease with altitude, but the LIR began reporting unexpectedly high levels of red and infrared radiation that exhibited rapid variations in intensity. Because these data did not fit the currently accepted hypothesis, the data was rejected, because “signals in all channels increased unreasonably”. This ‘anomaly’ was attributed to a possible malfunction in the window heater. [3]

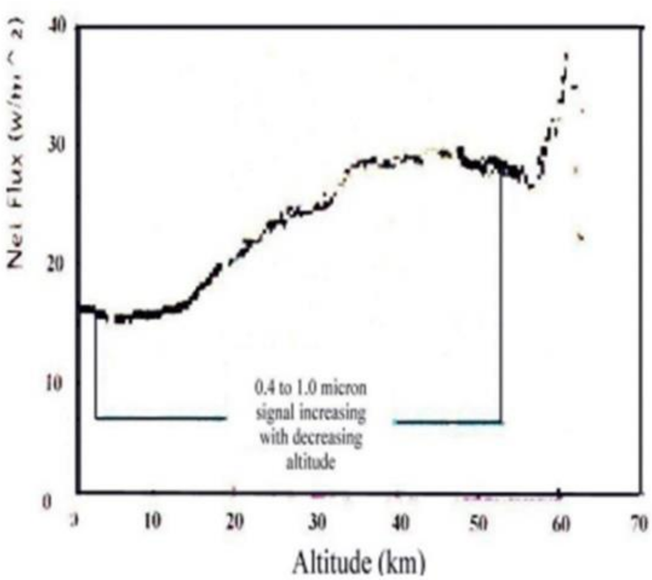

Fig. 5 SNFR downward flux increases just below the LCL (50 km) and as the instrument neared the surface

In the proposed catastrophic paradigm, the high signal level and rapid variations were the result of incandescent sulfurous lava at more than 2,000º C in cracks in the surface, passing in and out of the LIR’s field of view due to the sensor rotating, possibly aggravated by the buffeting of the spacecraft due to atmospheric turbulence. These features would have been understood immediately if a camera had been used.

The last remnant of the downward solar radiation is extinguished in the dense lower cloud layer, as originally expected. When the large Pioneer Venus probe descended through this layer, the SNFR (solar net flux data versus altitude) showed downward radiation increased as the diminished light from the sun was ‘replaced’ by visible and near infrared radiation from the lava in surface cracks, which was scattered from above by the bottom of the lower cloud layer (Figure 5). This scattered light is what made possible photographs of the surface by the Venera landers without the use of the artificial lighting carried for that purpose. The light is red, not due to Rayleigh or Mie scattering of incident sunlight, suggested by several scientists to justify the archaic greenhouse effect, but because the black body radiation of the lava has its peak intensity in the red part of the spectrum. This light was also sensed by the PV nephelometer on the night side of Venus, and was declared 'spurious'. The intensity of the up-welling radiation near the surface varied from PV probe to probe depending on the proximity of each one to exposed raw lava.

The Magellan imaging radar, which utilizes reflected radio waves, obviously could not determine incandescence which is a visible characteristic. However, Magellan did detect surface emissions in the radio spectrum and found that they were strongest in the low-lying, hottest areas, suggesting this was due to the 'tail' of the black body radiation from hot lava.

3.4 Venera Surface Images

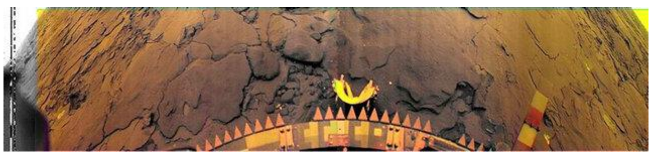

Fig. 6 Layered surface rocks surrounding Venera 14

The surface photographed in the immediate vicinity of the Venera space landers, (Figure 6) is one of a continuous flat basaltic igneous rock. This is the virgin surface of a new planet. It was the same at all six Venera landing sites, slightly blockier at the Venera 9 site. Generally, the cracking is the result of global flexing of the planet during encounters with Mars, Earth and Mercury, or merely the result of differential cooling of the rock with depth, due to the large thermal gradient in the surface. There is very little dust, because there has not been sufficient time since proto-Venus' creation for significant weathering and surface winds of only a few meters per second.

Using gamma scintillation data from the Venera landers, Russian scientists measured counts indicating what is currently believed to be the relative enrichment in U, Th, and K. Comparison of the relative values with a library of terrestrial volcanic mantle rocks were performed with the purpose of showing common geochemical attributes between Venus and Earth but found the Venus basalts did not match any of the terrestrial samples.[4] With the NASA New Frontier's call for proposed new Venus in situ missions, proposals are currently being put forth for a more detailed study of both the geochemical diversity and magma genesis conditions on Venus.[5] Given the enormous differences in the proposed paradigm suggesting that the body of proto-Venus is the newly formed molten mantle and that the sulfur dominating the lower atmosphere and LCL (discussed below) will become its asthenosphere, it seems that verifying this aspect would be more compelling than the huge expense of trying once again to prove any resemblance between Earth and Venus rocks.

3.5 Small Domes

By far the most ubiquitous feature identified on the surface of Venus are the 'small domes', - the name given by Soviet investigators who first observed them in Venera radar images. Detailed examination of the higher resolution Magellan imagery has since revealed more than a million of these features, perhaps ten times more if volcanic depressions and

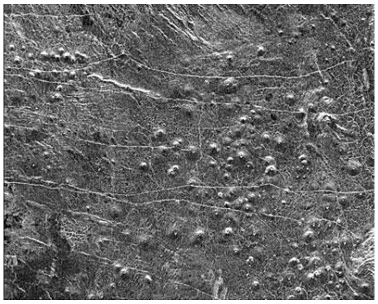

Fig. 7 Radar image of shield field

calderas, are included. These are named small 'shield volcanos' by PV scientists, located in some 647 ‘shield fields’ in the plains - the lowest lying terrain (Figure 7). The domes are circular, 1 to 16 km in diameter, have slopes from 0 to 5 degrees, each with one caldera at the center. It has been proposed that they formed from a unique high viscosity lava species which oozed slowly out on the surface and ceased to flow further because no extensive lava flows are associated with their smooth calderas. Their sheer numbers and similarities to Io’s volcanos are an indication of their importance in understanding Venus. These ubiquitous domes are the single most important surface features imaged on Venus, because their function leads to the understanding of the unique lower atmosphere from the surface to 50 km as well as the interior.

The Jovian moon Io is a close cousin of Venus, both having been born in the catastrophic ‘*Small Bang*’ on Jupiter some 6,000 years BP and reheated for 3,000 years, albeit by a different process.[6] As such, Io serves as a visible example of what is happening on Venus beneath its veil of clouds. The images of Io returned by the Galileo mission revealed numerous volcanic plumes of gas and ‘dust’. But a particularly energetic plume from the volcano named Pele, radiating in the UV, extended as high as 400 kilometers into space with temperatures exceeding 1300º C, the highest temperature currently known in the solar system. The Hubble Space Telescope imaged the plumes against the dark background of space revealing sulfur gas S_2. Ejection velocities are estimated to be as high as 1,000 meters per second and analysis indicated that as much as 100,000 tons of material are being erupted each second from this modest sized body slightly larger than Earth’s Moon. Color renditions of Voyager photographs of the surface of Io show the colors characteristic of several forms of sulfur deposited in their vicinities. Qualitative comparisons of Io and proto-Venus help reveal the true nature of proto-Venus. The most obvious difference is that the mass of Venus is 54.5 times that of Io, with an unusually massive atmosphere, the clouds of which retain its heat and obscure the surface.

The small domes, as well as a few larger volcanoes on proto-Venus, are jetting sulfur gas at high velocity - exactly as is happening on Io, but on a much grander scale given their numbers. The interior of Venus is molten metal and rock with enormous internal heat, resulting from its recent primordial ‘birthing’ process. More than a million small domes are active vents through which innumerable tons per second of gaseous sulfur are continuously being ejected at high velocity directly to the ubiquitous Lower Cloud Layer (LCL) at an altitude of 48 km. The mass of sulfur allotropes rising and suspended in the lower atmosphere increases the pressure from one bar just above the LCL to 92 bars at the surface of the planet. The LCL extends around the entire planet, delineating a global lower atmospheric zone in which the measured temperature as a function of altitude is the same within two degrees from equator to 60º latitudes where measured, and sub-solar (noon) to anti-solar (midnight). This is the first stage in the cooling process of the super-heated proto-Venus that dominates the 50-km high zone of the atmosphere (Figure 8).

The measured temperature of the solid crust is kept around 475º C (887 ºF), varying slightly with the elevation, slightly above the boiling temperature of sulfur, implying that a continuous raining and evaporation of sulfur keeps the surface from becoming much hotter.

The ‘crust’ is very thin and the interior is liquid rock at 2000 K producing a large temperature gradient in the crust.

4.1 The Atmosphere of Venus

Considerable research efforts have been devoted to comparisons of the isotopic ratios in the atmospheres of Venus and Earth, attempting to show the similarity of the two suggested in the standard model of the solar system. However, the proposed catastrophic hypothesis suggests that despite the current surface pressure, proto-Venus has not yet acquired 95 percent of its volatile elements, which remain orbiting in the inner solar system. The entire lower atmosphere, including the LCL, will gradually settle to its surface and eventually become part of its mantle. Only at that date will the volatile elements destined to comprise its lithosphere, crust, oceans, atmosphere and biosphere, reach the surface for the first time. These volatile elements were all created in the explosive impact out of which proto-Venus was born and are orbiting invisibly in the inner solar system awaiting capture. Volatile elements from this primordial explosion have been observed falling into the upper atmosphere of the Earth in the form of 20-50 ton comets at a rate of 25,000 per day.[7] This is in addition to the estimated 100-300 metric tons of ‘cosmic’ dust that falls to Earth each day based on accumulations of iridium and osmium in polar ice cores and deep-sea sediments.

4.2 Bimodal Atmosphere

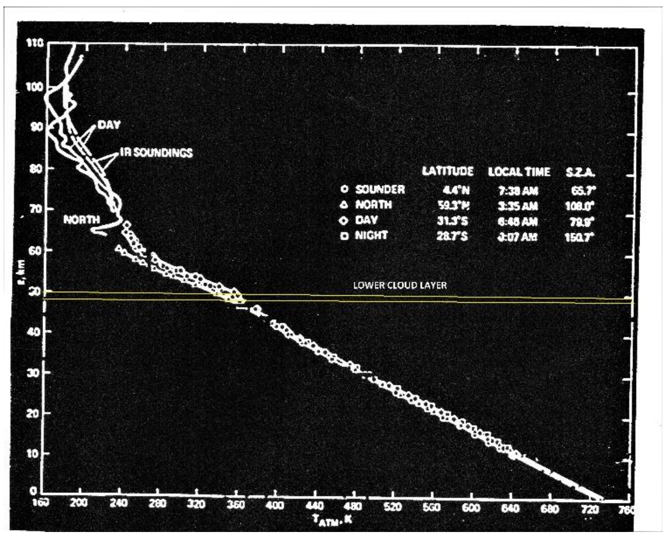

Fig. 8 Temperature vs altitude of four Pioneer Venus Probes

The atmosphere of Venus is bimodal, with the lower cloud layer acting as the boundary between the two very different regimes. The lower atmosphere temperature-versus-altitude sampled by the four PV probes in widely dispersed parts of the planet were identical within 2º K (Figure 8). This measurement, combined with surface winds of a few meters per second clearly implies that the heat of the planet controls the zone up to 50 kilometers. The same figure shows a change in slope at 48-50 km, the altitude of the Lower Cloud Layer, suggesting that a different atmospheric density profile exists above and below this level. This can only be due to the unique mass-flow environment in which the heavy sulfur gas is continuously jetting upward and dominating the lower atmosphere. On ancient planets with a mixed atmosphere the hydrostatic density is a smoothly varying exponential function.

Above 50 km the temperature is a 'balmy' 70 degrees centigrade and the pressure is about 1 atmosphere - quite Earth-like, with stratus clouds, in which the sunlight apparently causes more familiar global circulation patterns. At present, the clouds are primarily sulfuric acid due to the excess of sulfur in the LCL combining with H_2O in the upper atmosphere. This regime will settle to the surface when the planet cools sufficiently to cease the jetting of sulfur gas.

In 1994, scientists monitored the final plunge of the NASA Magellan probe into the atmosphere of Venus. As with many of the data from Venus probes, the results were unexpected. Assuming a hydrostatic pressure profile based on the Venus' surface pressure and a composition of carbon dioxide, project scientists found that the predicted density between 150 and 160 km was twice the magnitude calculated from the probe's rate of descent. The error was due to the failure to recognize the bimodal makeup of the atmosphere.

4.3 The Lower Atmosphere

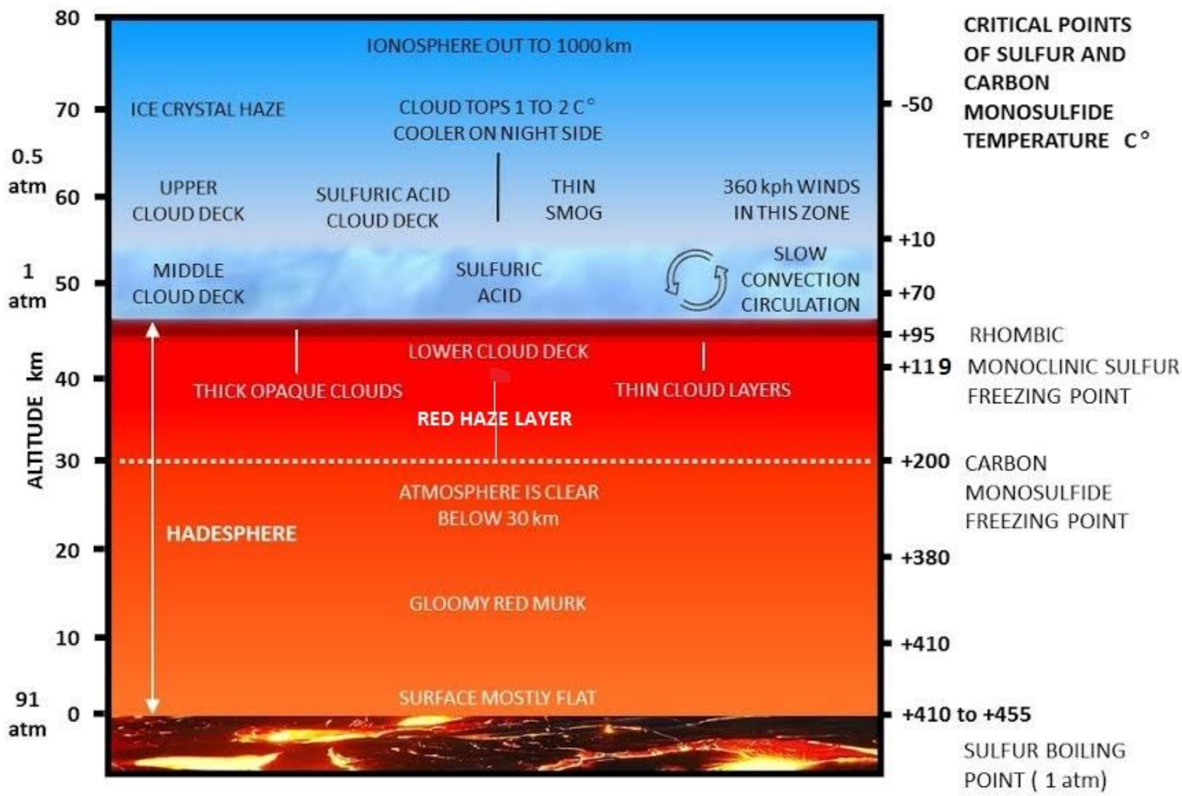

Fig. 9 Pioneer Venus drawing of atmospheric features with altitude and temperature. Annotations of crystallization temperatures of S_8 and CS on right added by the author.

The two modes of proto-Venus' atmosphere are characterized by molecular species gradients as a function of altitude (km). The volatile elements that dominate the atmosphere above 50-km were retained from the mass of volatile elements in the primordial explosion supplemented by those captured during close encounters with Mars and Earth. The upper atmosphere has not been able to settle to the surface due to the barrier presented by the lower cloud layer and the rapidly rising mass flow that sustains it.

The atmosphere below 50 km is unlike anything currently imagined in the solar system. Massive amounts of hot gaseous sulfur allotropes are jetting at supersonic velocities directly from more than one million small domes to the Lower Cloud Layer (LCL) and beyond. Compelling evidence of the total domination of sulfur in the lower atmosphere is present in Figure 9**,** which is reproduced from the Pioneer Venus report. Using the temperature versus altitude data in the PV figure, this author has annotated on the right, the altitudes at which S_8 crystallizes into its β and α forms. This simple addition reveals the obvious dominance of sulfur in the lower atmosphere and much more.

First, the surface temperature of Venus measured by PV and Venera (475º C) is only slightly greater than the boiling point of sulfur (~444º C) implying that an enormous amount of sulfur is continuously 'raining down', evaporating, and limiting the surface temperature in the immediate area where the probes landed.

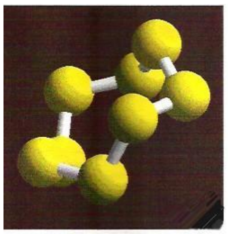

Fig. 10 S_8 molecule

Second, an enormous mass of hot gaseous sulfur is continuously jetting from the interior via more than a million small domes, possibly ten times more if calderas are on the surface, concentrated in some 647 dome fields imaged by the NASA Magellan orbiter. The binding energy of the many sulfur allotropes is small and they take on a variety of forms such as strings and rings of different numbers of atoms as they shoot upward. The velocity of its ejection from the small domes is greater than the 1,000 m/s measured in Galileo images of Io. This flow meets little resistance above the dome-fields because it is a mass-flow environment.

Most of the sulfur allotrope masses were beyond the range of the PV mass spectrometer (209 amu), but the high gas velocity would have prevented most of the smaller sulfur molecules from entering the mass spectrometer leaks, which were two thin heated tantalum tubes compressed to slits which extended horizontally beyond the satellite boundary layer to collect *ambient* air samples. As the sulfur gases shoot upward and approach 48.3 km, they take on a staggered-ring shape of S_8 (Figure 10).

4.4 The Lower Cloud Layer

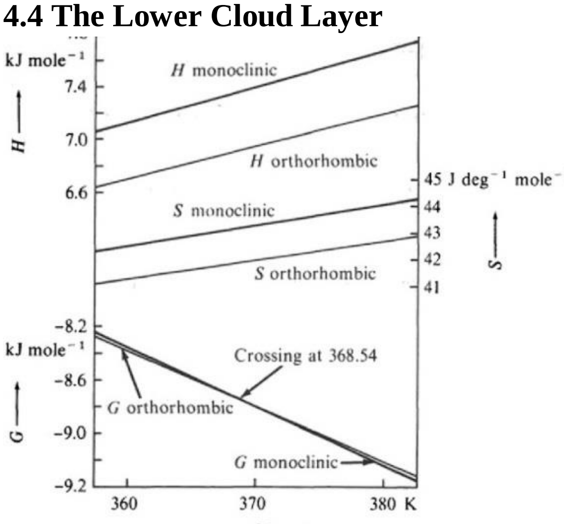

Fig. 11 Thermodynamic functions of orthorhombic vs monoclinic sulfur crystals at 95.4 C (L. Pauling)

Third, at 48.3-km (119.28º C) the rising S_8 forms monoclinic crystals, high aspect ratio, needle-like stacks of many S_8 rings, termed the β form with density 1.96 g/cm^3 and an unstable feather-like γ form with a density of 1.92 g/cm^3. Due to the roiling nature of the LCL, this unstable form may comprise a significant fraction, that is, the "thin cloud layers" annotated by Pioneer Venus in Figure 9 - the wispy lower portion of the lower cloud layer. The heat released by the formation of monoclinic crystals carries them still higher.[8]

Forth, the opaque primary cloud feature on Venus, the denser portion of the lower cloud layer, at 50-km elevation corresponds to the temperature (95.39º C) at which sulfur changes from a monoclinic to an orthorhombic crystal, termed the α form, with a density 2.07 g/cm^3.

Fifth, the higher density orthorhombic crystals fall back down into the higher temperature zone. Since the reaction from one crystal type to the other is completely reversible (Figure 11), a unique, 2 km thick roiling cloud layer forms at this altitude driven by the continuously rising hot S_8.[9] This unique mixed-phase stratiform cloud layer is the most ubiquitous atmospheric feature on the planet.

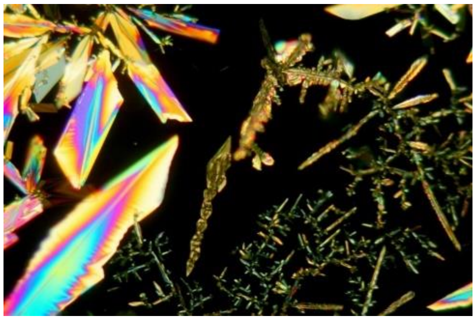

Fig. 12. Sulfur crystals 25X forms **γ** left, α center, β right

The PV nephelometer data suggested several possible forms in the Lower Cloud Layer, describing the monoclinic crystals, possibly the γ form, as a precloud layer existing as transitory clouds in the upper part of the lower haze layer.[10] A microscopic photo of the three natural forms of sulfur crystals are shown (Figure 12).

Consistent with this hypothesis, the Pioneer Venus probes measured turbulence as they passed through the Lower Cloud Layer and the heat released in the crystallization process was also detected, as a 20 w/m^2 pulse in the upward thermal net flux at 50 km (Figure 13).[11]

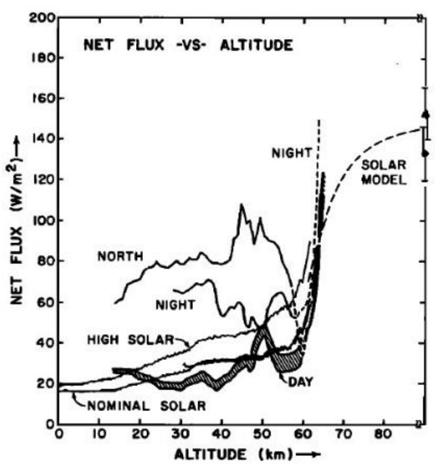

Fig. 13. Day & night thermal net flux show a rising heat pulse at 50 km.

Both Soviet and Pioneer Venus orbiters detected whistlers, indicative of cloud-to-cloud lightning likely produced within the 2-km thick roiling LCL, since it is too high for cloud-to-ground lightning.

4.5 Red Haze Layer

Figure 9 also delineates an extensive layer of red haze extending downward from the lower cloud layer to 31 km (200º C). This haze is the result of the formation of CS, carbon-sulfide, identified by its crystallization temperature, 200 C, and the fact that it forms characteristic tiny red crystals. Laboratory samples are described as reddish crystalline powder. CS, also known as carbon monosulfide, was detected by radio astronomy in the atmosphere of Jupiter after the Shoemaker-Levy 9 comet impacts, indicating that high temperature and pressure processes are ongoing on both planets.[12]

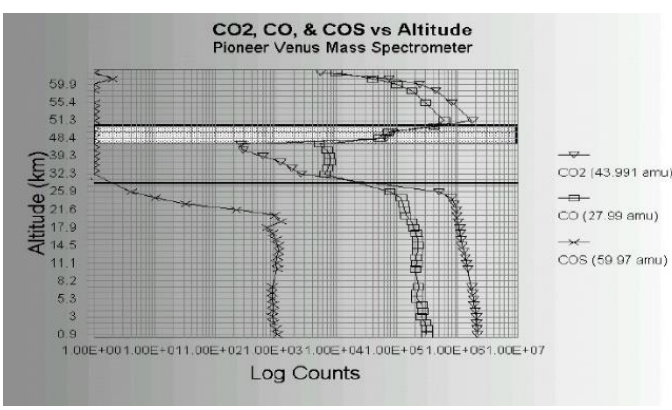

Fig. 14 Pioneer Venus Mass Spec data for CO and CO_2

CS has another unique property which has prevented its identification in the lower atmosphere of Venus. Its molar mass is 44.076 Da, while that of CO_2 is 44.0095 Da, meaning that the two are indistinguishable in the PV mass spectrometer unless a deconvolution of the data could be performed. This is not possible since the counts in all channels were transmitted as the ratio of the counts to those in channel 44. Thus, the mass spectrometer counts in channel 44 below 31 km cannot be assumed to represent CO_2 and are probably due exclusively to CS.

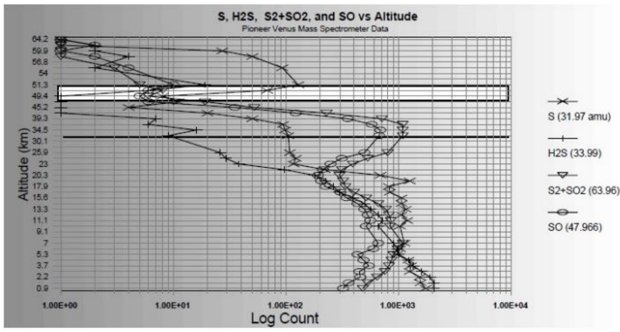

Fig. 15 Low peaks of sulfur below 31 km attributed to evaporation of anomalous sulfuric acid droplet.

CS is the sulfur analog of CO with a triple bond between carbon and sulfur.[13] On Venus, it is being ejected from the interior or formed when carbon-bearing molecules from the upper atmosphere react with hot sulfur molecules from the interior. Based on the 17-km thickness of the layer of tiny red CS crystals and the depressed counts in all the mass spectrometer channels within it, a considerable amount of gaseous CS must exist in the higher temperatures and pressures below 31-km extending down to the surface. Consistent with similarities in CO and CS bonds, the carbon in the lower atmosphere appears to come primarily from CO, because the number of counts in channel 28 at Venus' surface is only one half the number just above the LCL (1.58 vs 3.16 $x10^5$) relative to the 44 counts. But the question remains: How many of the channel 44 counts represent CS and how many CO_2 ? The concentrations of the two molecules could be determined in situ by molecular spectroscopy since CS is diatomic and CO_2 is a tri-atomic. The presence of a similar diatomic molecule CO, would complicate the measurement.

The precipitous drop in the neutral mass spectrometer counts in the CO_2 channel when the main PV probe entered the Lower Cloud Layer and throughout the red haze layer (Figure 15) was considered an anomaly by Pioneer Venus scientists, explained as the result of a simultaneous clogging of the two inlet leaks by drops of sulfuric acid. When the mass 44 channel counts returned to high levels at 31 km, the peaks of sulfur that appeared were explained as a residual from the sulfuric acid that had clogged the inlet leak (PV report p. 105)

The three small probes, designated day, night, and north, were designed to fall without parachutes, measuring temperature, pressure, net-flux, and cloud particle types as a function of altitude. All three suffered nine identical failures of exposed sensors and windows between 14 and 12 km, thought to be due to coatings of sulfur.[14] (PV report p. 105)

4.6 Venus' High Surface Pressure

The fact that the lower cloud layer was detected at the same altitude by the four PV and the Venera 9 probes, on both day and night sides of the planet, supports the hypothesis that the extreme heat of the interior is driving Venus' lower atmosphere, or 'Hadesphere'. This analysis suggests that the numbers of sulfur compounds and jetting allotropes in the lower atmosphere, the sulfur crystals of the LCL and the red haze layer do not comprise a few hundred parts per million, as currently believed, rather sulfur is the dominant element below 50 km. It follows that the masses of these sulfur forms are responsible for the high surface pressure on Venus. This implies even larger numbers of sulfur atoms because the highest density orthorhombic crystals comprising the LCL are 2.07 g/cm^3, with the sulfur atoms occupying only 17% of the volume of the fluffy crystals.[15]

How has this enormous concentration of sulfur remained undetected? The mass of the primary form, S_8, 256 Da, was outside the range of the PV mass spectrometers, (max 209 u) and was not detectable by the gas chromatograph.[16] Also, the three types of sulfur crystals, and CS crystals could not be identified by a nephelometer.

4.7 Mesospheric Atmosphere

The proposed paradigm also offers an explanation the 'four day' zonal winds at the cloud tops. The maintenance of the planet-wide zonal wind is direct evidence that a tremendous mass of material is continuously transferring the angular momentum of the planet into the atmosphere. The mechanism has remained a mystery, since no significant horizontal winds were detected by the Venera landers. The gases are vented vertically from the > 2000 K interior via more than one million small domes but were not detected due to their high masses and velocities. The mesospheric winds are due to the jetting S_8 orthorhombic crystals (2.07 g/cm^3) which penetrate the LCL assisted slightly by the heat of formation of monoclinic crystals. These increase in size by deposition in the colder reaches of the upper atmosphere. Despite the slow rotation of Venus, blasts of these crystals impart angular momentum to the mesospheric gases.

4.8 Ultraviolet Absorption in Mesosphere

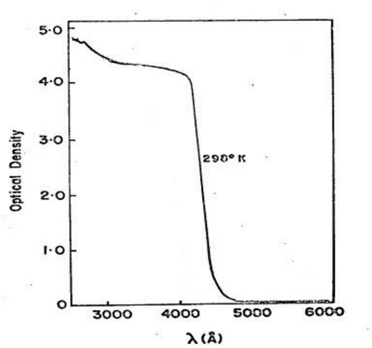

Fig. 16 Sulfur crystal absorption

The same orthorhombic S_8 crystals which ascend in blasts through the LCL are the primary source of UV absorption in the lower mesosphere. Since they are ejected from the interior they impart angular momentum to the gas and vapors above the LCL due to the rotation of the planet. Once this transfer takes place they are not be carried at the wind speed because of their higher mass, therefore the UV absorption features lag the measured wind speed, as observed.[17] (Figure 16)[18]

4.9 Slowing of Venus' Rotation

The measured slowing of Venus' rotation by 6.5 minutes in the sixteen years between the Magellan and Venus Express missions, means that massive numbers of sulfur crystals and associated atmosphere are leaving the planet every second. But at the same time, it is constantly acquiring new atmosphere placed in orbit by the original primordial explosion, the accretion of which will increase its prograde rotation. However, the latter process is a much slower one that will require millions of years to increase its rotation to a normal prograde rotation rate.[19] There exist two observations which support the sulfur crystal-driven loss hypothesis.

Based on the first Hot Flow Anomaly (HFA) detection confirmed in Venus Express data, the archived magnetometer, ion spectrometer and electron spectrometer data revealed seven more events, corresponding to a frequency of 1.2+/- 0.8 per day.[20] Although these were sensed by instruments which detect electric and magnetic fields, this does not mean that the causative physical events were electrical in nature. When the atmosphere on the Sun side of

Venus bulges outward due to a blast of air and sulfur crystals, the solar wind bow shock wave, comprising protons and electrons is deflected from its normal shape, resulting in changes in the local magnetic and electric field, through which Venus Express flew. The HFAs are sulfur crystal-driven atmospheric bulges which are obviously occurring at a variety of meridians, but can only be detected in the sub-solar direction, via the distortions of the bow shock wave. They mark atmospheric loss events driven by blasts of sulfur crystals.

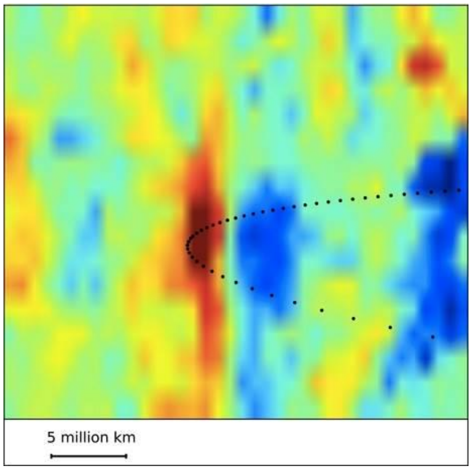

Fig. 17. Dust columns inside and outside Venus' orbit traced as a dotted line.

A second, completely independent observation supports the proposed slowing of Venus' rotation hypothesis. The Heliospheric Imager (HI) instruments which are carried by the STEREO mission are designed to study coronal mass ejections as they traveled from the Sun to the Earth. As a result, HI images the orbit of Venus tangentially. Pushing them to the limit of their resolutions, has allowed physicists to image the dust ring in the orbit of Venus. The dust ring is coplanar with the orbit of Venus, with an inclination of 3.39º and a longitude of the ascending node at 76.68º. Images of the same positions were taken by both STEREO A and B, viewing in opposite directions with 10 hour integrations. The surprising measurements revealed that Venus' complete orbit, 220 million km, is traced by two huge bands of dust 10-15 million km high, orthogonal to the ecliptic plane, inside and outside the orbit. This unique configuration of the dust clouds has not been observed for any other planet in the solar system (Figure 17). It is consistent with the locations of the 647 shield fields, concentrated between 60º North and South latitudes on Venus. These dual rings must comprise solid particles in order that the entire orbit remain intact for Venus' entire year (225 earth-days) and be detectable by the HI instruments at distances of 100 million km

The unidentified 'dust' particles are orthorhombic sulfur crystals, blasts of which must be occurring regularly to penetrate Venus' inordinately massive atmosphere and completely populate the two dust columns.

A recently discovered cloud also follows the orbit of the Earth but its shape is a tube, thought to be dust 'organized' by the passage of the Earth through the interplanetary dust cloud, the origin of which is not currently understood. As discussed previously this dust was blasted into the solar system by the 'small bang' out of which proto-Venus formed. However, this produces a cloud with radial symmetry, not the two columns perpendicular to the ecliptic plane shown in Figure 17.

4.10 Primordial Isotopes in Venus' Atmospheric

Current estimates of Venus' elemental composition relative to the Earth are not meaningful at this date because they are based on the extrapolation of incomplete measurements in the upper atmosphere to an assumed CO_2 content in the lower atmosphere, which results in 75 times the number of molecules in the Earth's atmosphere. These estimates are further distorted by assumptions that Venus is an ancient planet having lost all its water by hypothetical processes, but ending up with an atmosphere almost one hundred times more massive than the Earth's. In the proposed recent catastrophic creation, the lower atmosphere, including the LCL, which comprises 90% of the atmosphere, is primarily sulfur and some carbon, all of which is destined to become part of the solid planet.

Some insight into the correct paradigm can be gained from comparisons of Venus and terrestrial isotope *ratios*, such as $^{40}Ar/^{36}Ar$ and D/H. The radiogenic isotope ^{40}Ar and the primordial ^{36}Ar and ^{38}Ar are present in the atmosphere of Venus in approximately equal amounts, whereas on Earth ^{40}Ar is 300 times more abundant than the primordial isotopes. Also of interest, the ratio of ^{36}Ar to ^{38}Ar on both planets are almost identical. The large amount of ^{40}Ar on Earth is due to the decay of potassium (^{40}K) with half-life of 1.248 billion years since the formation of the Earth, 3 billion years BP. This ratio favors the recent primordial origin of proto-Venus, since there has been little time for the ^{40}K on Venus to decay. This suggests that most of the ^{40}Ar present today was captured from Mars and Earth during close encounters.

The hydrogen isotope ratio (D/H) on Venus is 150 times the terrestrial value (150 +/- 50 X SMOW), the acronym denoting the inclusion of the oceans of the Earth (Standard Mean Ocean Water). This is consistent with the proposed resetting of proto-Venus' nuclear clocks by the complete dissociation of all nuclei in the impact explosion on Jupiter 6,000 years BP.

4.11 Cosmological Implications

Cosmologists believe that the amount of deuterium today is an indication of the Big Bang initial conditions, such as density. However, this hypothesis assumes that there are no post-Big Bang processes that could produce significant amounts of deuterium. But the primordial explosion out of which Proto-Venus was born was exactly that - a post-Big Bang event, as were those from which Mars and Earth were born. Therefore, the deuterium present today has little to tell us about the initial conditions of the universe.

Given the great heat and gravitational energy of the explosion out of which proto-Venus was formed, the logical conclusion is that the background radiation currently thought to be the CMB is from that event, the 'Small Bang' 6,000 years BP. What is currently being observed is a fraction of this radiation which was reflected from local galactic dust only 3,000 years ago. This explanation is consistent with the several unexplained alignments of the background radiation with the solar system and its isotropic distribution. An additional clue to the foreground nature of this radiation has been suggested by an unexplained decrease in the power of anisotropies between the WMAP and Planck surveys.[21]

5. The Evolution of Venus' Atmosphere

As Venus cools, the mass, temperature and velocity of the sulfur gases being vented from the interior will gradually decrease. As a result, the surface pressure will decrease as the Hadesphere gradually collapses toward the surface of the planet. The present sulfur-ladened LCL will then become the asthenosphere on top of which the lithosphere, and crust will settle. As the oceans form in the low-lying areas, some of the small domes in the deep will continue venting sulfur forming hydrothermal vents providing whole new ecosystems on the young planet. How long this will take is unimaginable as will be the political protests against scientist's frequent visits contaminating the new planet. This scenario holds promise for the evolution of a habitable planet at some future date, in contrast to the currently accepted view that Venus is a dead planet.

6. Planning Future Venus Missions

This paper proposes that Venus is a new planet. Its recent creation in proto-historical times provided an example for mankind of how all terrestrial planets originated. It would be a great shame if more generations of young minds fail to experience this adventure because of the inability to accept a wider range of ideas.

Given two completely different theories concerning the planet Venus: the conventional one, in which all the terrestrial planets accreted 4.5 billion years ago, and the new catastrophic theory presented here, the question is - What future measurements or analyses can be made that would identify the correct paradigm? Rather than using complex and expensive instruments designed to verify the presumed great age of Venus, the approach which has resulted in the failure of thirty missions to explain a single feature of the planet, we should return to simpler means, cameras, to resolve the appropriate paradigm. This can be accomplished by photographing the surface from below 31 km (200º C) and capturing crystals within the Lower Cloud Layer and red haze layer below it on microscope slides and photographing them. The data would be sent to an orbiter or flyby from several probes with no need to withstand high pressures and temperatures and relayed to Earth in a very short mission. This could be accomplished with existing rockets of modest power because the payload would be lightweight. Several radar-ranging systems at different frequencies on the orbiter and probes would enable the determination of the elevation of the LCL, discussed above, if the return from the surface is also recorded.

Future missions to Venus could then determine the actual rate of collapse of the LCL. The Magellan probe measured altitude to determine terrain but did not measure the elevation of the LCL. The PV and Venera estimates assumed a simple hydrostatic relationship of pressure versus altitude for a single component, CO_2 atmosphere. This resulted in factor of two error in the calculated rate of descent of Pioneer Venus orbiter at the end of its mission due to the bi-modal atmosphere. Estimating this 'normalization timespan' for proto-Venus is not a high priority because of the great times involved.

For three decades, planetary science has been constrained by the unproveable assumption that the planets have remained in their current orbits for 4.5 billion years. Yet we are confronted with: a barren desiccated Mars which has lost its solid iron core, arrayed with strong evidence of global water circulation at too great a radius from the Sun; Mercury, with a fading, perfect dipole magnetic field and a thin covering of sulfur, is a good candidate for Mars' lost core; Venus, with a density equal to the Earth but with no magnetic field, the rotation of which is negligible, retrograde and changing, radiates 250 times the heat of the Earth; Jupiter, a low density giant with a magnetic field 20,000 times that of the Earth is also radiating an enormous source of internal energy. It is time for a new paradigm.

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