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Evolution and geological planet formation -

the biogenic origin of the early continents of the earth

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Evolution and geological planet formation -

the biogenic origin of the early continents of the earth

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Abstract: As rocks significantly older than earliest traces of life are rare the following hypothesis is introduced: Due to the latest astronomic findings of an abundance of water in protoplanetary discs, a cool origin [1] of earth and mars is suggested by hydrous accretion in rotating nebulas in habitable zones of the protoplanetary disc, with chemical evolution starting in the phase of accretion and biomineralisation as fundamental forming process. Secondary aerosols and hydrous silicon are the basis for chemical evolution and Precambrian prebiotic and cellular life in a global primordial soup. Mineral substances are accumulated from hydrous solutions by biomineralisation. Photosynthesis causes the great rise in oxygen enhancing oxidation of dissolved minerals and metals falling out as insoluble substances. On biogenic preliminary continents undersea reef-building organisms make them grow on. An increasing radiation of the young sun since the Paleozoic and gravitational pressure transform early sediments into magma and metamorphic rocks. With the early beginning of life based on hydrocolloids earth and mars were planet-embryos in the astronomical and biochemical sense. This paper includes a new explanation for the origin of the moon. Key words: Planet formation - chemical evolution – extremophiles – biomineralisation – Precambrian – Pangaea - moon.

1. Introduction

Circle conclusions between geology and astronomy make believe the oldest rocks on earth were igneous rocks, which cannot be confirmed by the geo-chemical evidence any more. The oldest Precambrian rocks are metamorphic. Due to previous heating identification as biogenic sediments is often difficult, although components can be formed by biomineralisation. Stromatolithes of the same age are definitely biogenic. As astronomers used to try to generate igneous rocks in laboratory experiments, some geologists still assume igneous rocks were the first. In all laboratory experiments simulating the growth of planetesimals problems occur, although new ideas for suitable compounds are found and the experimental set-ups are improved. For several reasons the resulting planetesimal-bodies don't exceed a certain limited size. Therefore we suggest arranging the first processes in a new succession theoretically and testing this by new experiments. The later stages are already sufficiently explored. They only need to be understood in a new context developed by logical evidence.

2. Hypothesis

In this new hypothesis the forming-processes of rocky planets are arranged in seven stages (Fig. 3). Only the first stage needs an experimental verification.

Stage 1: Hydrous accretion and chemical evolution

Origin of the young sun's protoplanetary disc containing silicium, hydrogen and gaseous compounds including water [2] from which in the Miller-Urey-Experiment amino acids form [3] as found in the Murchison Meteorite [4].

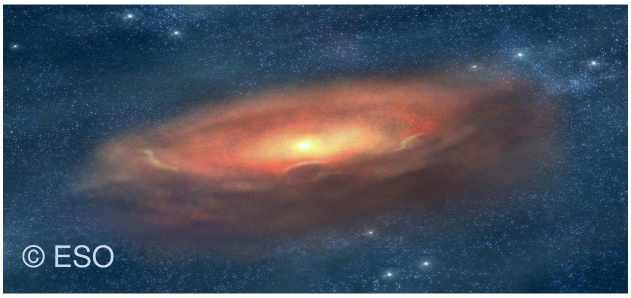


Fig. 1a: Protoplanetary disc (artist's impression)

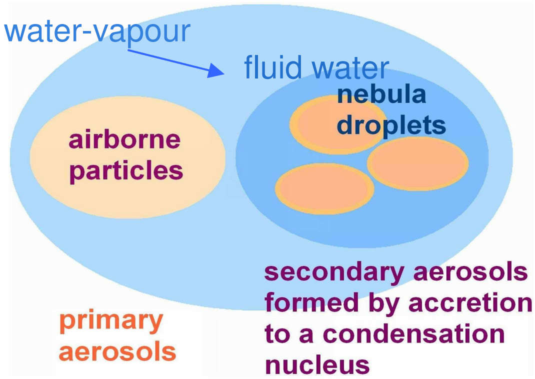


Fig. 2: Secondary aerosols as starting basis for a hydrous accretion

[1] VALLEY: http://www.geology.wisc.edu/zircon/cool_early/cool_early_home.html

[2] SALYK: http://peggysue.as.utexas.edu/SIRTF/PAPERS/pap121.pub.pdf

[3] MILLER-UREY- Experiment: http://glencoe.mcgraw-hill.com/sites/9834092339/student_view0/chapter26/animation_-_miller-urey_experiment.html

[4] MEINERHENRICH: http://www.pnas.org/content/101/25/9182.full.pdf

[7] DOBSON: http://www.pnas.org/content/97/22/11864.full.pdf+html

In sufficient distance from the young sun ionized gaseous mineral-compounds connect to molecules. In the cold zone far away from the sun water evaporates from ice. Huge slowly rotating vortices of water vapour are enveloped by icy aggregations on the night-side.

Fig. 1b: Protoplanetary disc with vortices (artist's impression)

In their interior water-vapour can condense to droplets because the mineral compounds work as aerosols enhancing condensation. Inside of atmospheric globes the gravitational pressure becomes high enough to allow the existence of fluid nebula-droplets. An icy mantle, water-vapour and fog shield the interior from ionizing radiation and induce a greenhouse-effect. The warmth dilutes the inner surface of the ice-mantle, while on the cold outer surface new icy aggregations are added on the night-side. This way or in a similar way, atmospheric globes grow as primordial planet-embryos with an enormous volume, due to their high content of gases, hydrocolloids and light substances. Minerals and metals enrich the primordial nebula and primordial soup in the chemical state of hydrous solutions. Silica gel serves as basic material for the evolution of planet-embryos as matrix for amino-acids and proteins [5]. In the deep interior the silica gel gets condensed by pressure and heat, delivering water, forming silica aerogel and liquid silicon-compounds.

[5] ZANGOOJE: http://www.sciencedirect.com/science/article/pii/S0040609097010031

At 160°-200°C carbon-monoxide and hydrogen can connect to methane and high aliphatic hydrocarbons like in the Fischer-Tropsch-Synthesis [6]. Amino-acids, purines and pyrimidine – the basic elements for nucleic acids – can be generated catalysed by Ni, Fe, magnetite and hydrous silicon.

"Aerosol particles in the atmosphere have recently been found to contain a large number of chemical elements and a high content of organic material. The latter property is explicable by an inverted micelle model. The aerosol sizes with significant atmospheric lifetimes are the same as those of single-celled organisms, and they are predicted by the interplay of aerodynamic drag, surface tension, and gravity. We propose that large populations of such aerosols could have afforded an environment, by means of their ability to concentrate molecules in a wide variety of physical conditions, for key chemical transformations in the prebiotic world. We also suggest that aerosols could have been precursors to life, since it is generally agreed that the common ancestor of terrestrial life was a single-celled organism"[7].

DOBSON: http://www.pnas.org/content/97/22/11864.full.pdf+html

DOBSON's statements are based on the assumption that the atmosphere originated after some hot planet-formation according to the old theory of accretion. But his results are also applicable to a primordial atmosphere and a primordial soup in a habitable zone in the interior of a proto-planet, as space-telescopes recently detected a plenty of water-vapour in protoplanetary discs. The compounds to generate amino-acids like in the Miller-Urey-Experiment, water, nitrogen, ammonia, methane, carbon-monoxide and carbon-dioxide, are already available in abundance as well.

"We present detections of numerous 10-20 μm H_2O emission lines from two proto-planetary disks around the T Tauri stars AS 205A and DR Tau, obtained using the InfraRed Spectrograph on the Spitzer Space Telescope. Follow-up 3-5 μm Keck NIRSPEC data confirm the presence of abundant water and spectrally resolve the lines. We also detect the P4.5 (2.934 μm) and P9.5 (3.179 μm) doublets of OH and $^{12}CO/^{13}CO$ v = 1 → 0 emission in both sources. Line shapes and LTE models suggest that the emission from all three molecules originates between ~0.5 and 5 AU, and so will provide a new window for understanding the chemical environment during terrestrial planet formation. LTE models also imply significant columns of H_2O and OH in the inner disk atmospheres, suggesting physical transport of volatile ices …, while the … radial extent of the emission stresses the importance of a more complete understanding of non-thermal excitation processes" [2].

Arranging the known and already well explored processes in new succession, I suggest a chemical evolution already taking place in phase of accretion and that the planet-embryos of Earth and Mars bear early stages of life very soon.

Osmosis, a biochemical process in living cells, is able to generate pressures in the interior of cells and tissues significantly higher than in the environment.

"With the paleobiological evidence from the currently known Archaean rock record at hand, the existence of microbial (prokaryotic and archaea-prokaryotic) life as from 3,8 b. yr ago seems to be firmly established. Both the paleontological record (microfossils and stromatolithes) and the available biogeochemical data (specifically the 13C/12C age function of sedimentary organic carbon as index line of autotrophic carbon fixation) convey a remarkably consistent picture of the existence of microbial ecosystems … as from the very beginning of the presently known sedimentary record. Residual questions primarily center around the impairment of relevant information in the oldest record that bears a metamorphic overprint … and problems of the time scale of early organic evolution as posed by the unheralded appearance about 3.8 b. yr ago of the prokaryotic cell which leaves an uncomfortably narrow time span for the initiation and early diversification of life since the Earth's formation some 4.5 b. yr ago" [8].

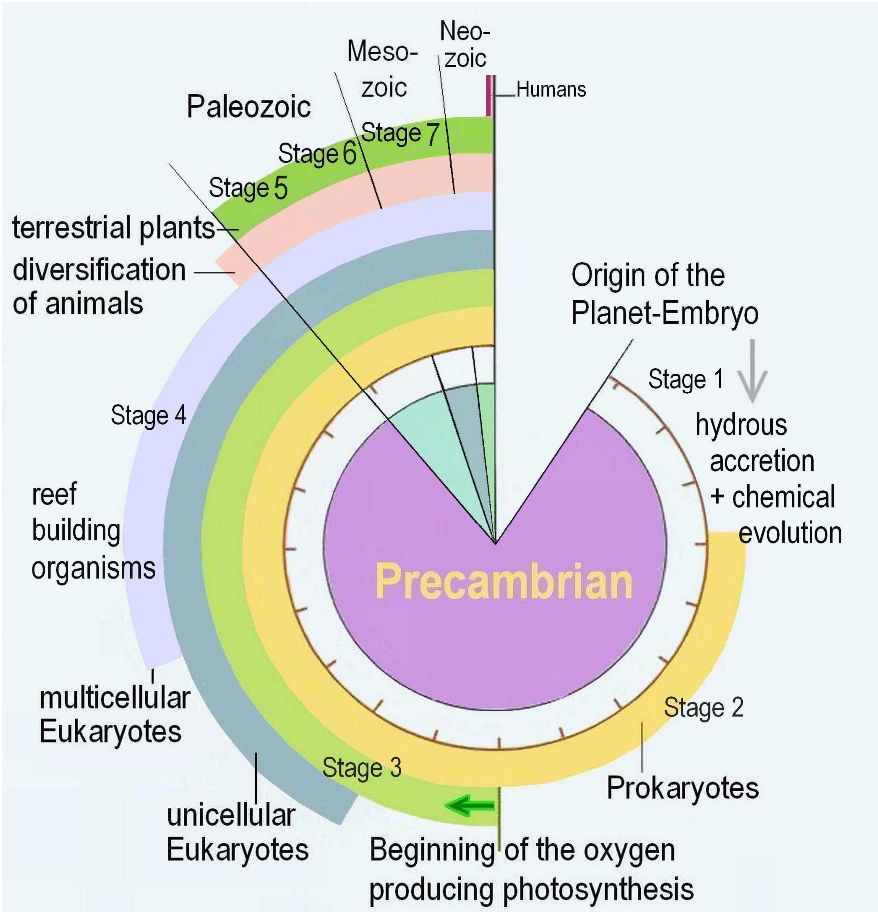
[8] SCHIDLOWSKI: http://www.zgw-online.de/en/media/237-094.pdf

Silicon-biochemistry has a high tolerance for temperatures [9, 10, 11].

Cells containing hydrogen-peroxide are protected from freezing [12].

Extremophile Protobionta develop to Protocytes [13]. Methanogen and other extremophile archaea produce substrates for further biochemical reactions. Worldwide colonies of colloidal and cellular microorganisms are filling the spherical primordial soup as global ecosystem.

These considerations can be confirmed by results of the geological exploration of the early continents.



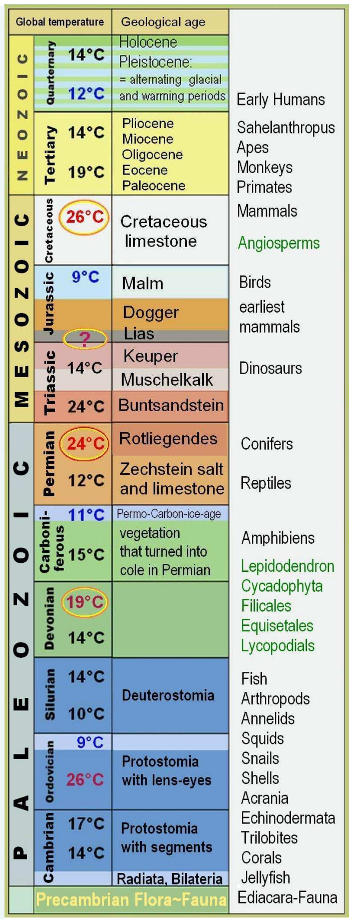


Fig. 3a: Timescale of early evolution and biodiversification.

Fig. 3b: Stage 5 - 7

The Precambrian is the longest time in earth-history. It should not be considered as a geologic age after the planet's origin but as the time of the formation of the planet-embryo. According to VALLEY [1] and SCHIDLOWSKI [8] a cool early earth allows early prokaryote life very soon. The early appearance of extremophiles and other prokaryotes and the missing of rocks older than the earliest traces of life imply a new scenario of planet formation.

"No known rocks have survived from the first 500 million years of Earth history, but studies of single zircons suggest that some continental crust formed as early as 4.4 Ga, … , and that surface temperatures were low enough for liquid water. Surface temperatures are inferred from high $d^{18}O$ values of zircons. The range of $d^{18}O$ values is constant throughout the Archean (4.4-2.6 Ga) suggesting uniformity of processes and conditions. The hypothesis of a Cool Early Earth suggests long intervals of relatively temperate surface conditions from 4.4 to 4.0 Ga that were conducive to liquid-water oceans and possibly life. Meteorite impacts during this period may have been less frequent than previously thought"[1].

Stage 2: Biomineralisation

In the early Precambrian colonies of extremophile archaea and bacteria start producing mineral-sediments. Some gain energy from sulfate-reduction in presence of carbon producing Pyrit and Markasit. Iron-bacteria oxidate dissolved Fe^2 into insoluble Fe^3 by anoxygenous photosynthesis. Diatoms accumulate silica. Many new materials are generated by Biomineralisation as effect of chemosynthesis and anoxygenous photosynthesis in marine colonies of autotrophic prokaryote organisms. http://de.wikipedia.org/wiki/Biomineralisation

"The abundance of silica as well as calcium and carbonate ions in the ancient marine environments … and the existence of chitin and collagen primary scaffolds in primitive biological form … led to the formation of unique biocomposites, possessing completely new qualities" [14, 15,16] .

[14] KRÖGER: http://iabserv.biologie.uni-mainz.de/eng/349.php

[16] BRUNNER: http://books.google.de/books?hl=de&lr=&id=V-5qdziJIXAC&oi=fnd&pg=PR6&dq=BRUNNER,+Eike:+Biological+Materials+of+marine+origin.+Springer-Verlag,+2010&ots=NzW6EBbtm_&sig=Ndq9kMjsl_aAUmigX0WVee8Lw6k#v=onepage&q&f=false

Stage 3: Great rise in oxygen enhancing mineralisation

Cyanobacteria produce calcium-carbonate. Photosynthesis of Cyanobacteria and Algae initiates the rise in oxygen enhancing the oxidation of dissolved minerals and metals falling out as insoluble substance. Biogenic marine sediments form growing dense fractions in the global primordial soup. The abundance of oxygen sets in motion the evolution of a rich marine eukaryote-fauna [13].

Stage 4: Reef-building organisms and Cambrian radiation

On organically grown shapes of colloid preliminary phases of the earliest continents partially cemented by biomineralisation dwelling under water reef-building organisms as sponges and corals make them grow on. Other marine organisms descending from stem-cells of the planet-embryo conserve genetic information of the global organism. This gen-pool is the starting basis for the Cambrian radiation recombining the planet embryo's genetic information in a multitude of eukaryote multicellular plants, fungi and animals.

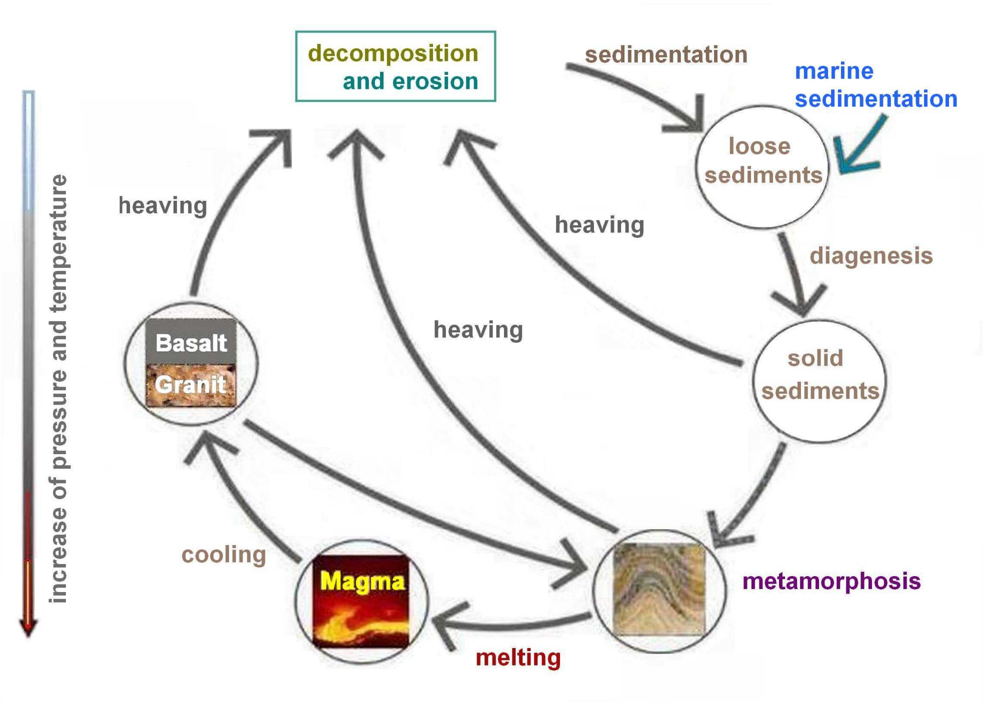


Fig. 4: The cycle of rocks begins with **marine biogenic sediments** as starting basis.

We may draw the conclusion, that magma is a secondary product of melting-processes in Paleozoic and Mesozoic. Hot phases of earth history are proven in Devonian, Permian, Late Triassic and Late Cretaceous in a time-correlation with flood-basalt events and mass extinctions [17, 18].

COURTILLOT: http://www.sciencedirect.com/science/article/pii/S1631071303000063

This can be interpreted as effect of an increasing radiation of the young sun with periodical oscillations also affecting the planet's interior, because according to this hypothesis the earth does not have a cohesive isolating lithosphere yet, so that exogenous and endogenous factors can interact over long periods of time. In Devonian in Siberia biogenic sediments in the interior melt and convert into magma. Pressure from expanding gases causes locally limited eruptions. The large part of the earth-embryo remains watery and permeable until the end of Carboniferous. The early continents continue growing by biological processes.

Stage 5: Embryonic stages until the cool watery Carboniferous

The early continents in their organically grown shapes are still partially under water. Since Cambrian more and more surfaces arise above sea-level. Paleo-Tethys and Tethys are the only deep oceans. Southern Gondwana freezes in a cold phase in the Late Carboniferous. Plants have conquered all marshy grounds and landmasses. Photosynthesis increases the atmospheric oxygen to its maximum in earth-history: 30%. High oxygen-availability allows insects to grow big. The evolution of plants and animals is booming. The earth-rotation is slow as the planet-embryo still contains lots of water and gases, less dense rock-materials and therefore has more volume.

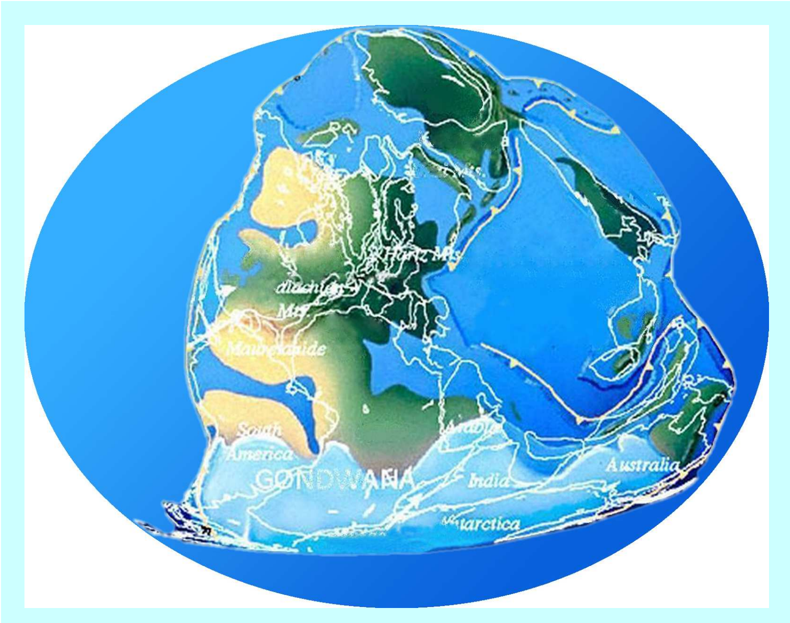


Fig. 5: Paleomap Scotese (2003): Carboniferous: Low global temperature.

Stage 6: A very hot phase in Permian and the emerging of the moon

Permian is an extremely hot phase. Most of the waters from seas and swamp-lands evaporate. More landmasses get exposed to the sun. The lithosphere dries out and hardens. New lithosphere-crusts hinder the release of heat from the interior causing an increase of pressure. Nuclear chain-reactions boost the heating by self-excitation. The melting of sediments becoming magma causes a decrease of volume. Some become metamorphic rocks. Mercury, Venus and Mars are affected as well with various results due to their different distances from the sun. Mars loses its atmosphere and most of its water-supplies.

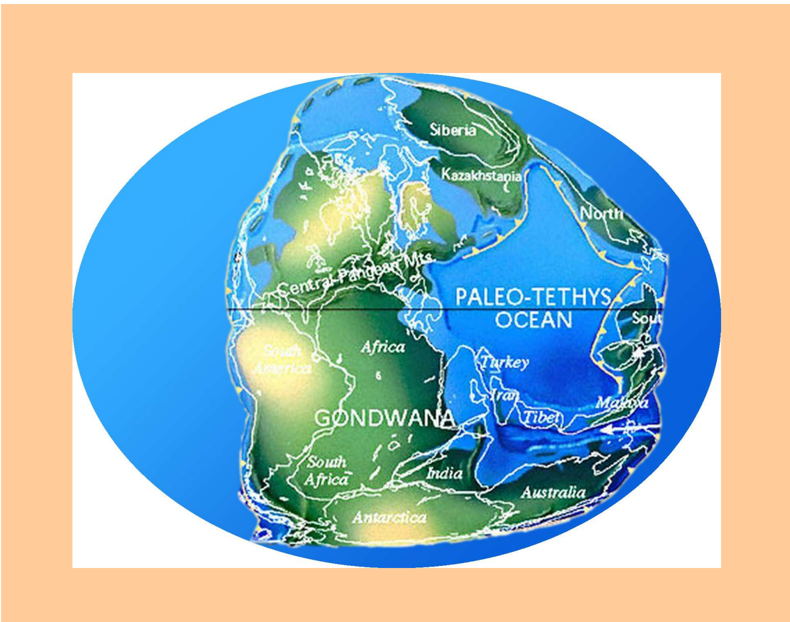


Fig. 6: Paleomap Scotese (2003): Permian: High global temperature.

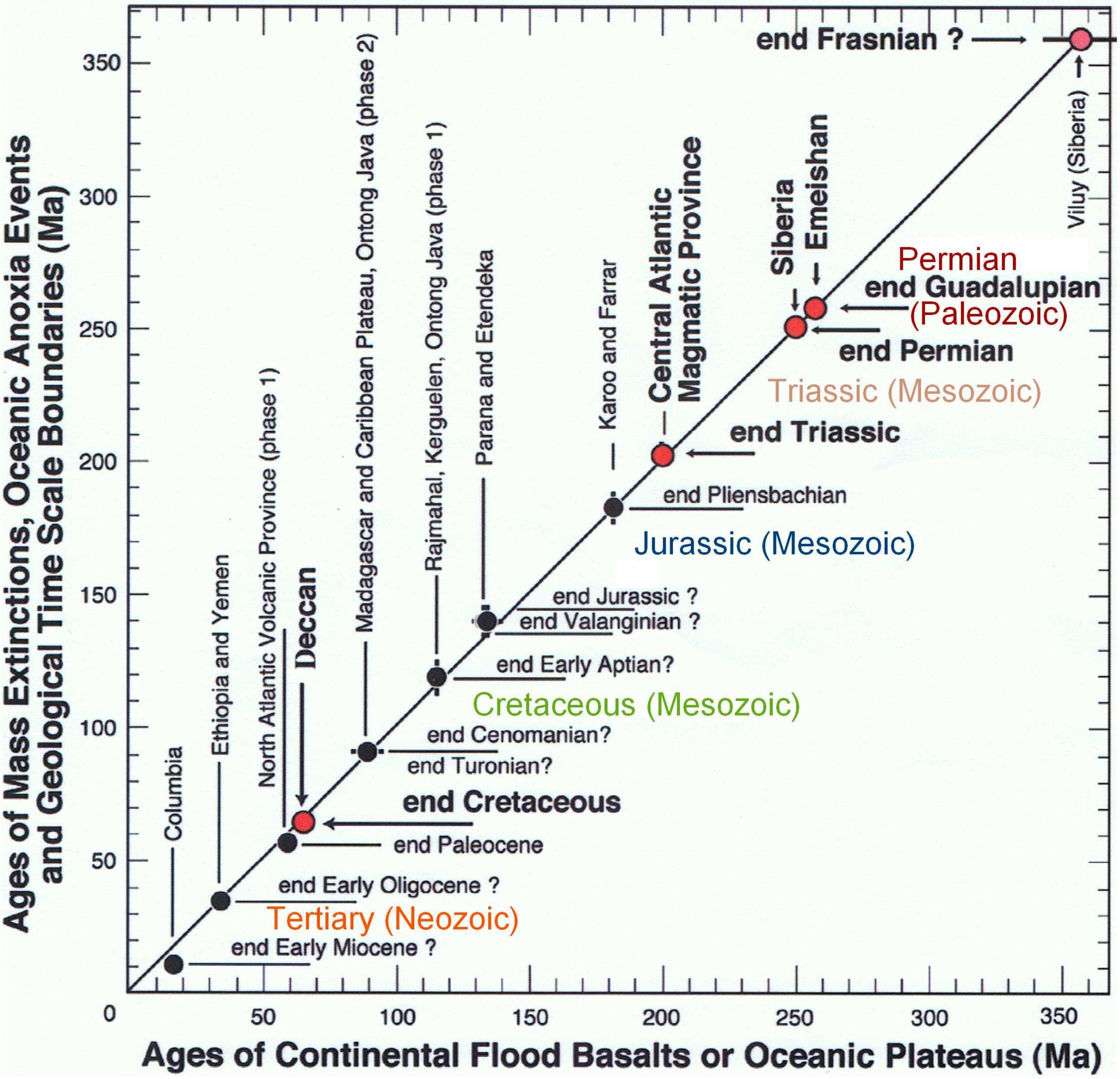
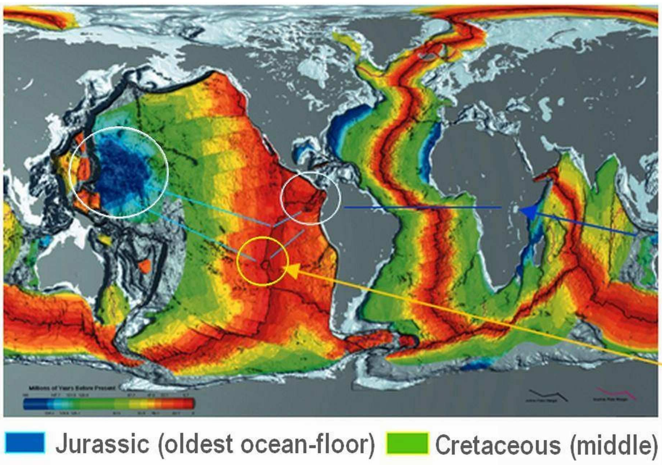


Fig. 7: Time-correlations of mass-extinctions and flood-basalt-events.
Graphic: COURTILLOT / RENNE: Comptes Rendus Geoscience 335(1) 2003.

Flood-basalt-events are in a time-correlation with mass-extinctions and also with maxima of global temperatures (compare Fig. 3b and 7) [17, 18]. Exogenous and endogenous factors seem to interact in the hot phases affecting the geospheres for millions of years. Does the time-interval between two hot phases correlate with one orbit of the sun around the galactic centre? Can the radiation increase, when the sun approaches the periapsis to the galactic centre? Are there any or other calculable astronomic reasons for a periodic heating? Geological timescales can be rendered more precisely, when these questions are answered.

The oldest mineral on earth and moon is Zircon. “Studies of single zircons suggest… that surface temperatures were low enough for liquid water” [1]. On this basis the following scenario is possible: In the earlier Paleozoic the moon is still inside of the earth originating under the same conditions.



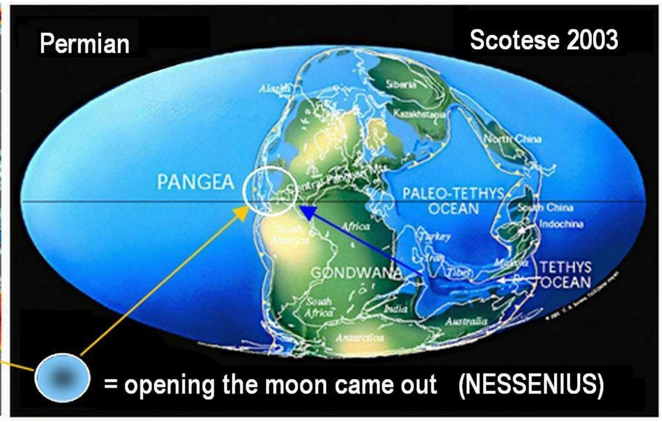


Fig. 8: Ages of origin of the ocean floors. Fig. 9: Emerging of the moon in Permian.

The material of the moon originates inside the earth and therefore has the same age. In Permian in the earth's interior at high gravitational pressure heating-processes start where boundary values for nuclear chain reactions are exceeded. Biogenic sediments in the deep interior are molten into magma. In upper layers the lithosphere dries. In a moderately heated region in between the sediments are transformed into metamorphic rocks. A loss of volume accelerates the planet's rotation. Centrifugal forces have their maximum effect at the equator. Prospective moon-material in the earth-interior has a different density. It slowly moves to the earth-surface. Along edges of the organically grown shapes of Pangaea the dried out lithosphere gets torn apart. The moon emerges slowly, causing a release of pressure in the earth-mantle. Pressure-reduction turns de-densified masses in the lower mantle into superplumes [19] rising under the opening." … in Pennsylvanian-Permian time. These times coincide with increases in world temperature, deposition of black shales, oil generation … and increased coal generation and gas accumulation in the Pennsylvanian-Permian, accompanied by … Pennsylvanian transgression of epicontinental seas. These geologic anomalies are associated with episodes of increased world-wide ocean-crust production and mantle outgassing, especially of carbon and nutrients. These superplumes originated just above the core-mantle boundary, … increased convection in the outer core" [20].

LARSON: http://geology.geoscienceworld.org/content/19/10/963.abstract?ck=nck

At the surface Rift Valleys open and sea-floor-spreading begins. Pacific and Atlantic ocean-floors start expanding simultaneously. The torn apart elements of the former Pangaea move in opposite directions. At first an east-west-aligned ridge makes South-America and Africa move southwards opening the Central Atlantic Ocean. The moon-opening (Fig. 8 yellow ring) moves southwards too. Then the continents move to both sides of the young north-south-aligned mid-ocean-ridges. The original opening is located under the Easter Islands today. In the following cold phase expansion slows down, but convection-currents keep driving the sea-floor-spreading.

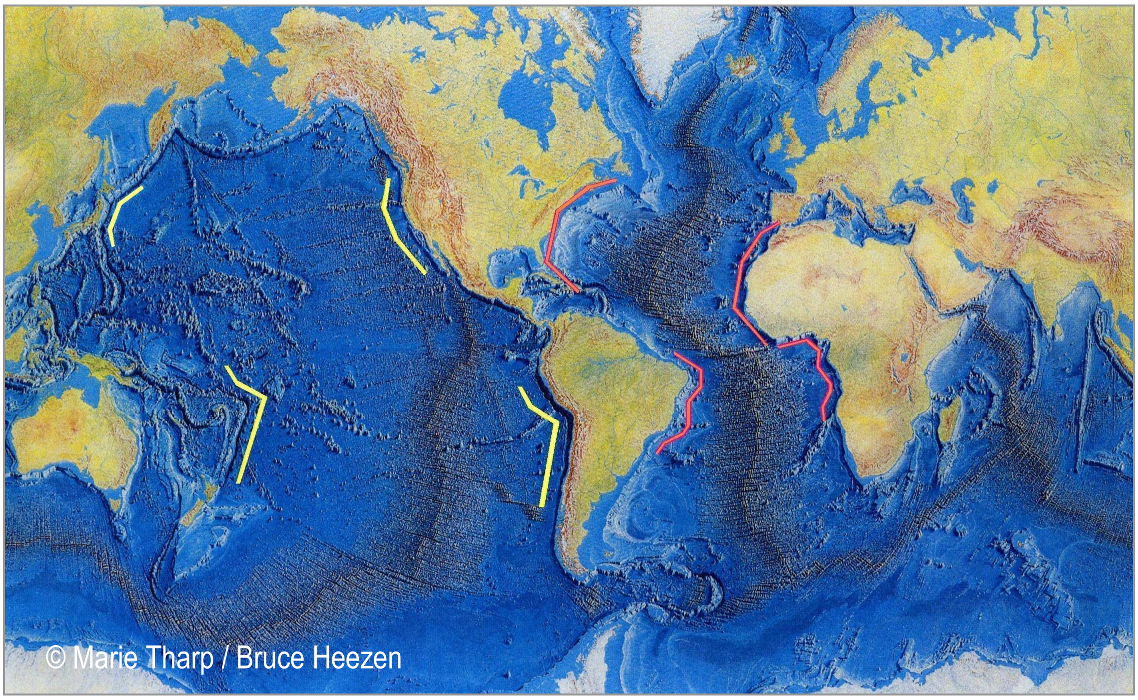


Fig. 10: Geomorphology of the world ocean floors in the Holocene, the latest time of the Neozoic. Before Permian the coast-lines (red and yellow) were located together as one not yet hardened but cohesive earth-surface. Bruce Heezen recognized the earth-expansion.

On the opposite edges of the ocean-floor-plates excess material gets pushed under the lighter continental plates. The following hot phase enhances the expansion again. The next cold phase slows it down again and so on. Geologic dating (fig. 8) proves the simultaneous forming of the Pacific and Atlantic ocean-floors. The oldest region is the “old hole” close to the Mariana-Trench (fig. 8 round dark blue area). East of the east-pacific-rise large parts of the Cocos-, Nazca- and Juan de Fuca plate submerged under America. Therefore in the East-Pacific the Cretaceous and Jurassic ocean-floors are missing. This has the following reason: Before the Pacific ocean-floor originated, the west coasts of North- and South-America were located together with the Asian east coast and the Tonga plate. The “old hole” was still located in the middle. After the emersion of the moon in Permian the newly originated ocean-floors are driven symmetrically in opposite directions. The eastern parts of the oldest ocean-floors disappear under America filling the vacated space left by the moon. At the Mariana- and Tonga-Trench less material submerges, because the moon came from the east moving westwards, when the eastward earth-rotation was accelerated. The Jurassic Atlantic ocean-floor between West-Africa and the Caribbean was the Central Atlantic Ocean. This is a trace of the moons pathway under the surface of Pangaea moving westwards along the equator closely under the surface and breaking it open before its complete emerging.

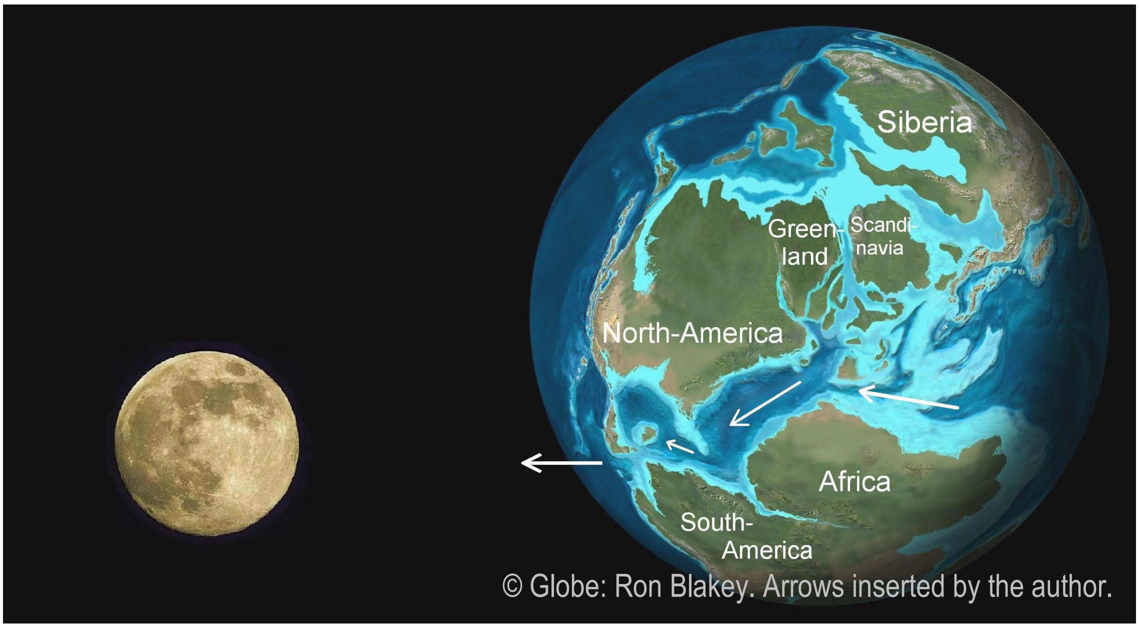


Fig. 11: The earth in Jurassic: The former pathway of the moon is still visible.

Stage 7: See transgressions and plate tectonics

In a following period of turbulence the new continents continue drifting apart. In Mesozoic two more hot phases occur with cool periods in between. In hot phases with new expansion-impulses and flood-basalt-events several heavings of ocean-floors at mid-ocean-ridges cause three Mesozoic sea-transgressions (Triassic-, Jurassic-, and Cretaceous-Sea). After Permian the planet becomes a dead geophysical orb and so does the moon also affected by the extreme heat in Permian. The lower lithosphere gets bake by interior magma-heat and becomes dead material, still filled with microorganisms but not consisting of them any more. The organically grown shapes of the continents are now modified by plate tectonics. The plates expand by the geophysical process sea-floor-spreading. Although subduction is happening the Pacific cannot become smaller, because the east-pacific-rise has the highest dilatation-rate of all mid-ocean-ridges on earth, even in a cool phase like Pleistocene and Holocene. Subduction cannot compensate the increase of volume. As there are two more hot phases to come end of Triassic and end of Cretaceous, so the Permian earth still has a high content of water and gases and continues gaining mass after Permian, mass and gravity are lower than today. Because of accelerated earth-rotation in Permian and very low gravity, centrifugal forces lifting the moon can overcome earth's gravity-field. The released motion of the moon would slow down, but with increasing altitude the effect of earth-gravity decreases. With increasing radius of the orbit, the rotation of the earth-moon-system slows down. Moon becomes independent from earth-rotation. As the moon stays connected in the moon-earth-system, it is always visible from the same side. Earth-rotation gets retarded by the moon but also as consequence of nuclear processes in the earth's interior causing an increasing volume, because the moment of inertia increases with the extension of the earth-radius.

3. Findings form the planet-embryo – morphological and genetic traces

The following can only be understood by a complete comprehension of the biogenic formation of the early continents. According to this idea, the early continents have organically grown shapes overprinted by biogenic sediments from the reef-building organisms. In the hot phases in Devonian, Permian, end of Triassic and end of Cretaceous the lithosphere died. Since Permian the geophysical process of sea-floor-spreading leads to the further dilatation.

Before, in the Precambrian global ecosystem many early Prokaryotes are able to perform horizontal gen-transfer. All genetic information from the gen-pool can be combined and collected in the **stem-cells of the planet-embryo.** Endosymbiosis is an important step developing Eukaryotes with a cell-nucleus conserving huge amounts of DNA. Multicellularity and segmentation with forming of heads are further steps in higher development. Coelenterates are on a stage comparable to the gastrula. Cephalopods and other non-segmented animal phyla like Molluscs develop many kinds of organs in the central part of their body which can be functionally considered as a head, as it contains the centre of the nervous system. The segmented animals develop out of non-segmented ones keeping the centre of their nervous system at the cranial end.

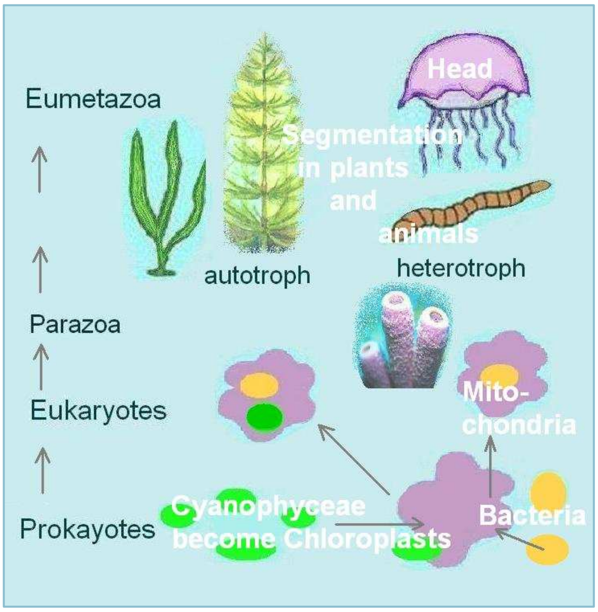


Fig. 12: Endosymbiosis, multicellularity, segmentation and head-forming.

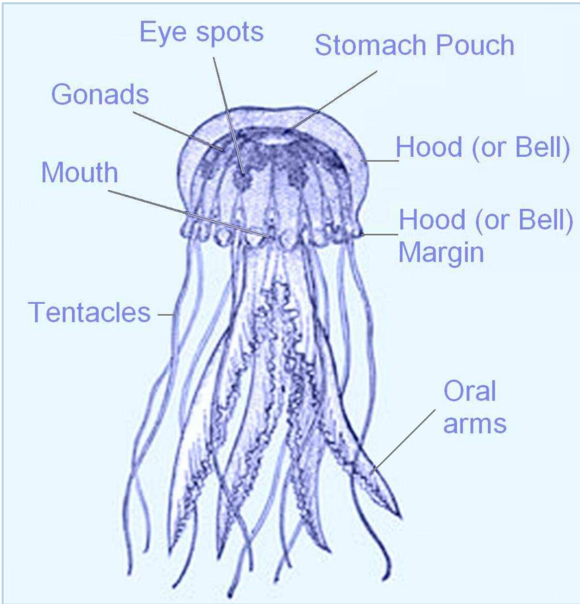


Fig. 13: Coelenterate

Coelenterates represent the embryonic stage of a gastrula, Cephalopods of the neurula. Vertebrate-embryos start the development of the head with the primordial embryonic spherical form. Humans conserved primordial shapes throughout their entire evolutionary development, disappearing on adult early humans. Even children of apes, have round heads as the primordial shape.

Biologists look for reasons for the rapid animal evolution in the Cambrian radiation. It can be interpreted as consequence of the existence of genetically rich stem-cells coming from a differentiated global ecosystem identical with the watery organism planet-embryo. Its gen-pool and its multitude of different stem-cells was the starting-basis for the Cambrian radiation. Therefore many new animal-phyla could originate simultaneously in such a short time.

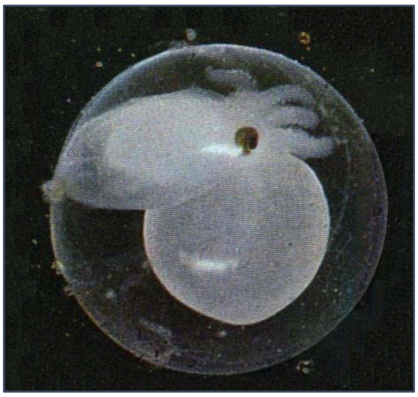


Fig. 14: Cephalopod-embryo.

Fig. 15: Cambrian Trilobite.

Cephalopods have highly developed eyes, although they are still protostomes. The eye appears early in evolution and early in the embryonic development. As you see on these examples (Fig. 13 and 14), principally a living being can consist of a head alone as a complete organism.

Only a small part of the DNA is used in the lifetime of an organism. The rest lies on introns or never gets expressed for other reasons. The entire genome of a living being is an assemblage of ancient characteristics not getting realized on the phenotypus. The characteristics can be reactivated appearing as atavism or in the course of higher evolutionary development. The term “biological species” is defined as entirety of individuals able to have common descendants. As the worldwide colonies of prokaryotes can exchange and collect genetic information by horizontal gen-transfer, the planet-embryo is identical with the hypothetical common ancestor of all living beings. In biological organisms most cell-nuclei contain the complete genome for the whole individual. Therefore there can have been cells in the planet-embryo containing the information to build the shape of an embryonic head. In some early phase of planet-formation silicium-molecules can have been a carrier of information as well. Now some interesting findings are presented with provable explanations in combination with non-provable speculations:

There are geomorphologic relicts of huge size on one hand and genetic-morphologic relicts in highly developed organisms on the other hand to which the genetic information has been passed on in sleeping genes all the way up the line of evolution beginning in Cambrian until Neozoic. Comparing both, correspondences can be seen and can be explained on natural-scientific basis, but the explanations are so hypothetical, that I do not expect a common acceptance. They are made available for those who find them interesting:

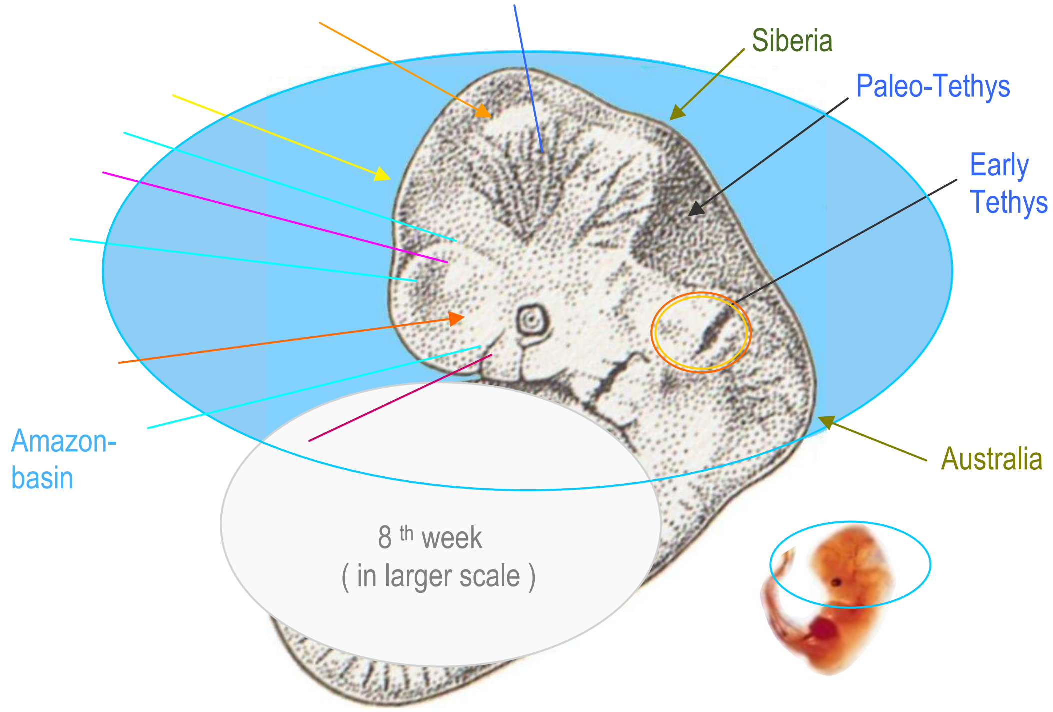
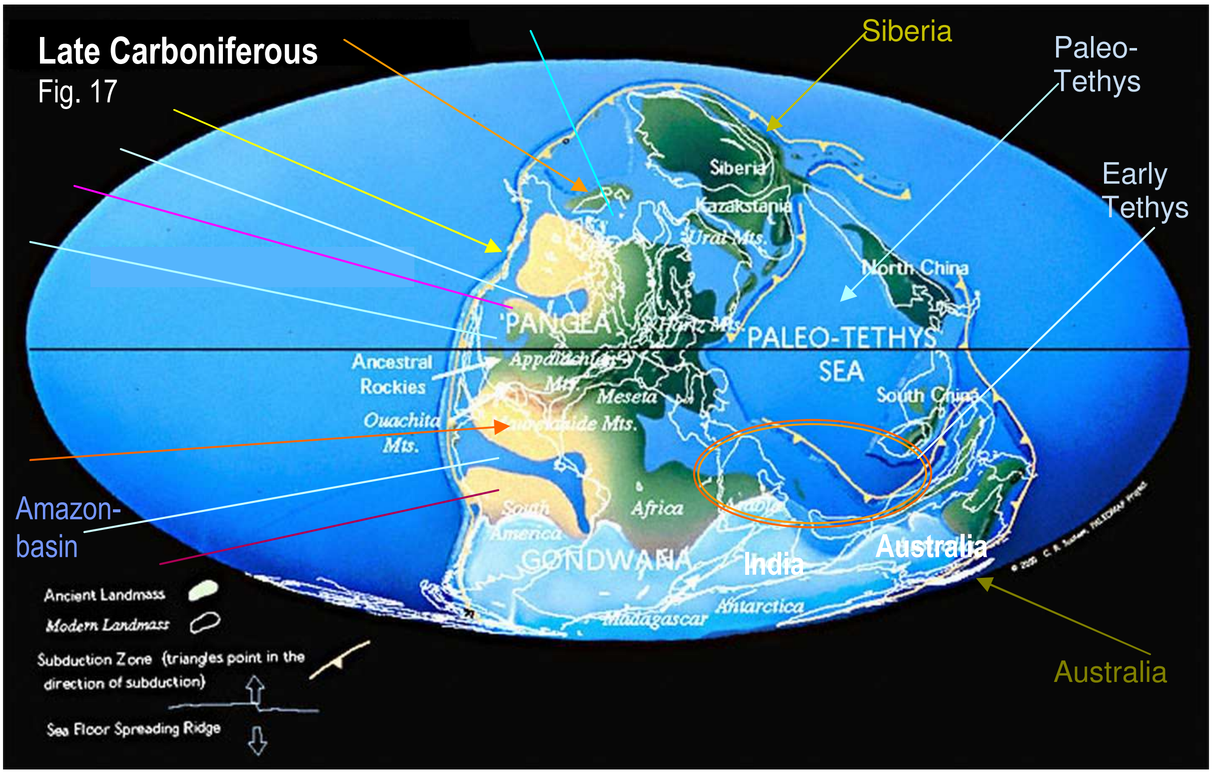


Fig.16: Human embryo 8th week. = underneath was the blastopore lip = early Tethys
Torso and limbs are not to be regarded here, but only the tissues belonging to the head.
Same color of arrows on the picture above and below means correlation.



Comparing the Paleomap SCOTESE [21] with embryonic stages of the human cranium, one can find morphological correspondences, implicating a genetic inherence for the genetic ability to form these shapes. The rocks are a geologic cast of a disappeared global living being. SCOTESE: http://www.scotese.com/earth.htm

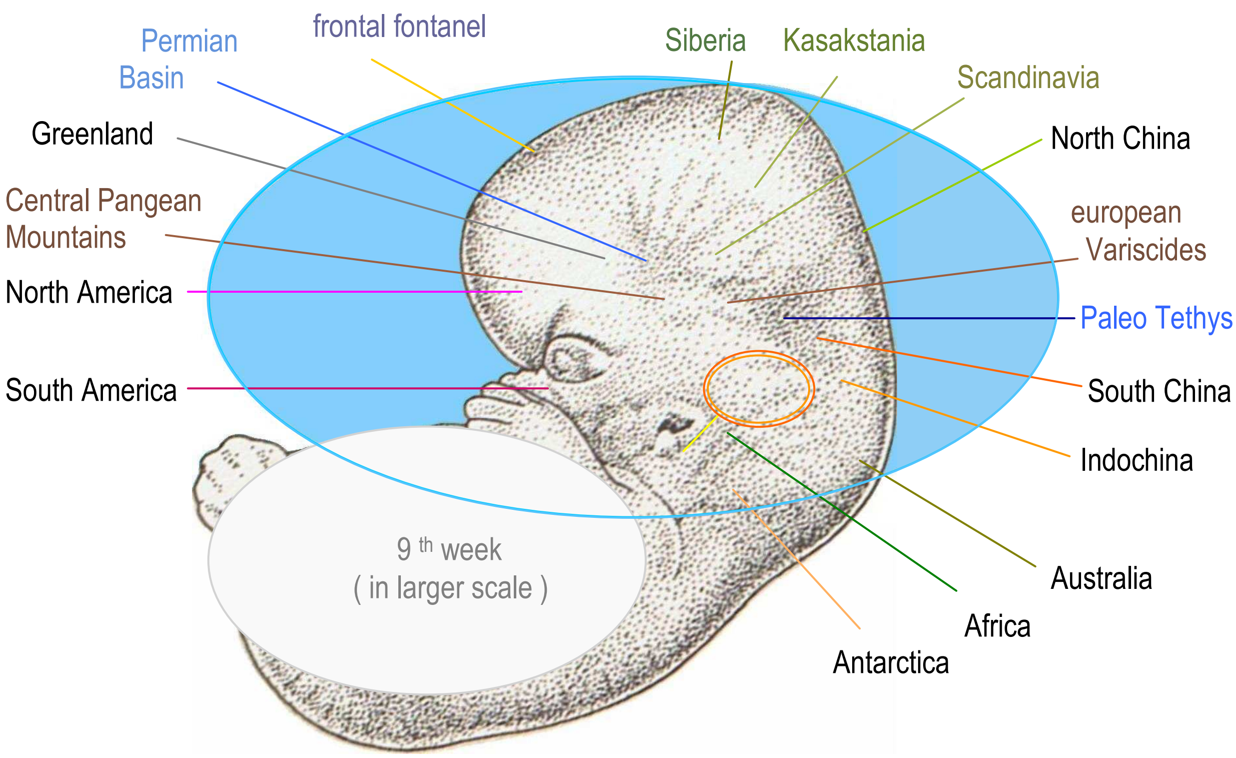
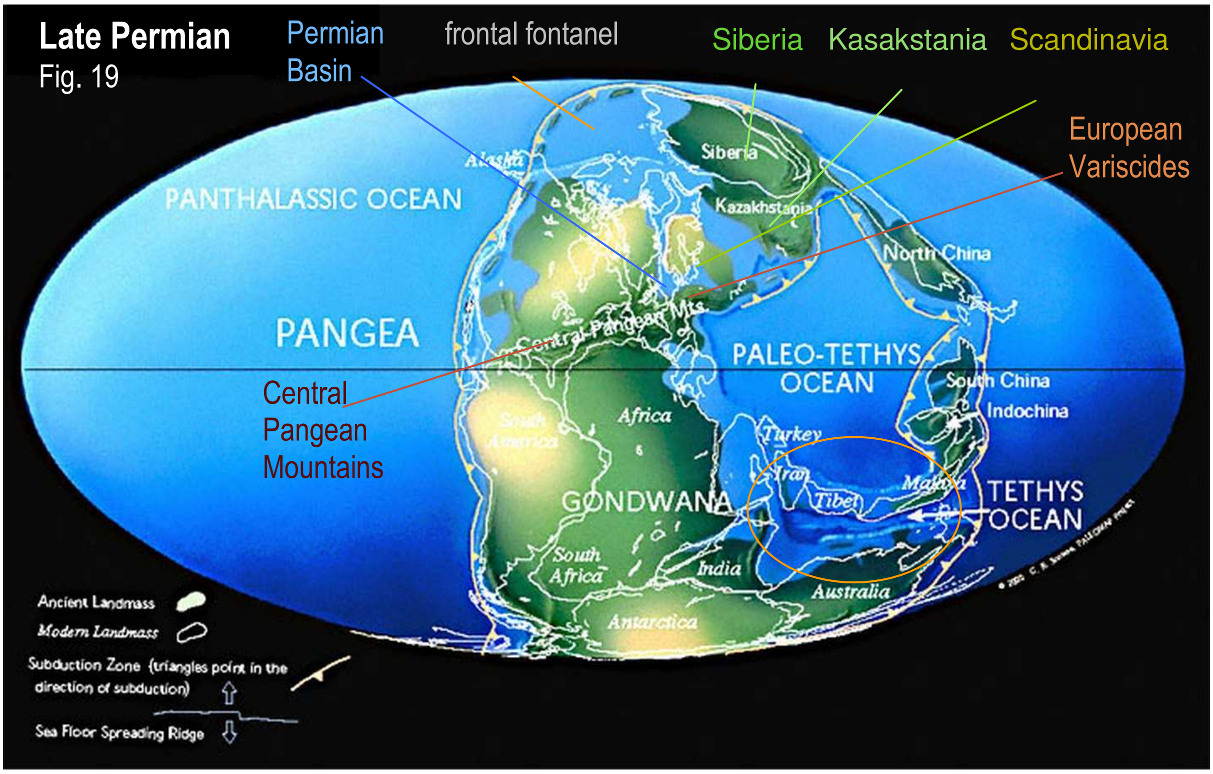


Fig. 18. Human embryo 9th week ◯ = underneath was the blastopore lip = Tethys. Torso and limbs are not to be regarded here, but only the tissues belonging to the head.



The Panthalassic Ocean never existed. SCOTESE [21] did **not** say this, but his way to paint the borders of the early continents allows this own interpretation. The Pacific opened after the emerging of the moon. Before that, the earth consisted of the Pangaea alone. Paleo-Tethys and Tethys were the only deep oceans.

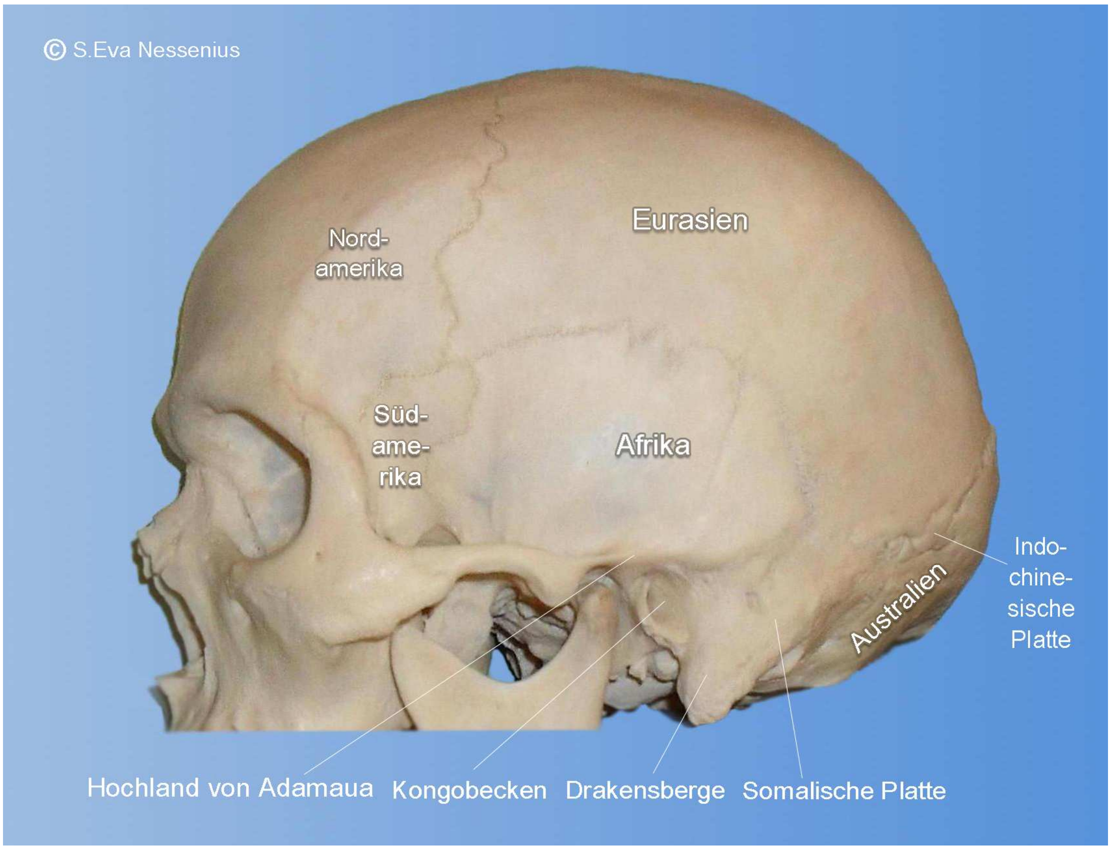


Fig. 20: Cranium of Homo sapiens. The skull-bones correspond to the continents.

A long evolutionary development is performed before a cranium as the human one appears, yet the cognation with the earth is still visible. It can be seen best on maps of the Paleozoic and Mesozoic before the continental drift tore apart the organically grown early continents.

The sutures between the skull-bones correspond to the fissures in the Pangaea torn open by the motion of the moon under the earth-surface and the following earth-expansion (discussed in chapter 4.2.). These weak zones must have existed before, like predetermined breaking-points, in this case breaking-lines.

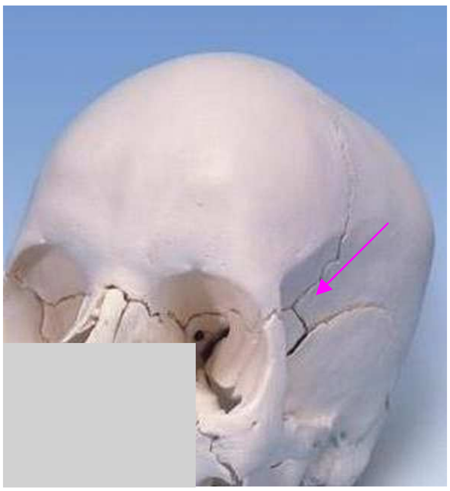


Fig. 21: Suture at the temple

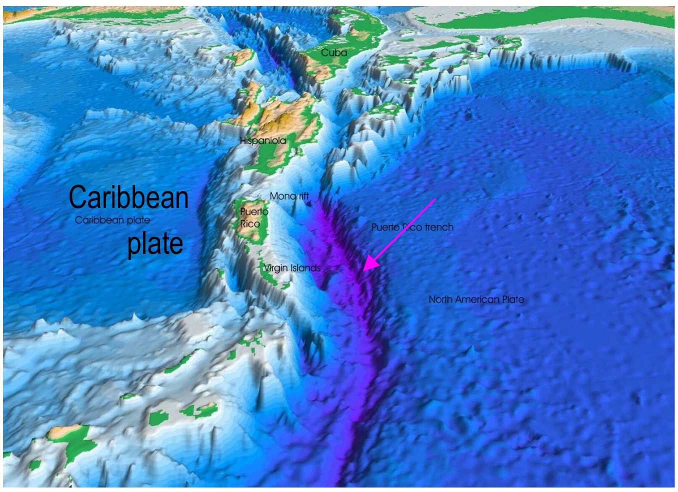


Fig.22: Subduction-zone at the Puerto Rico trench

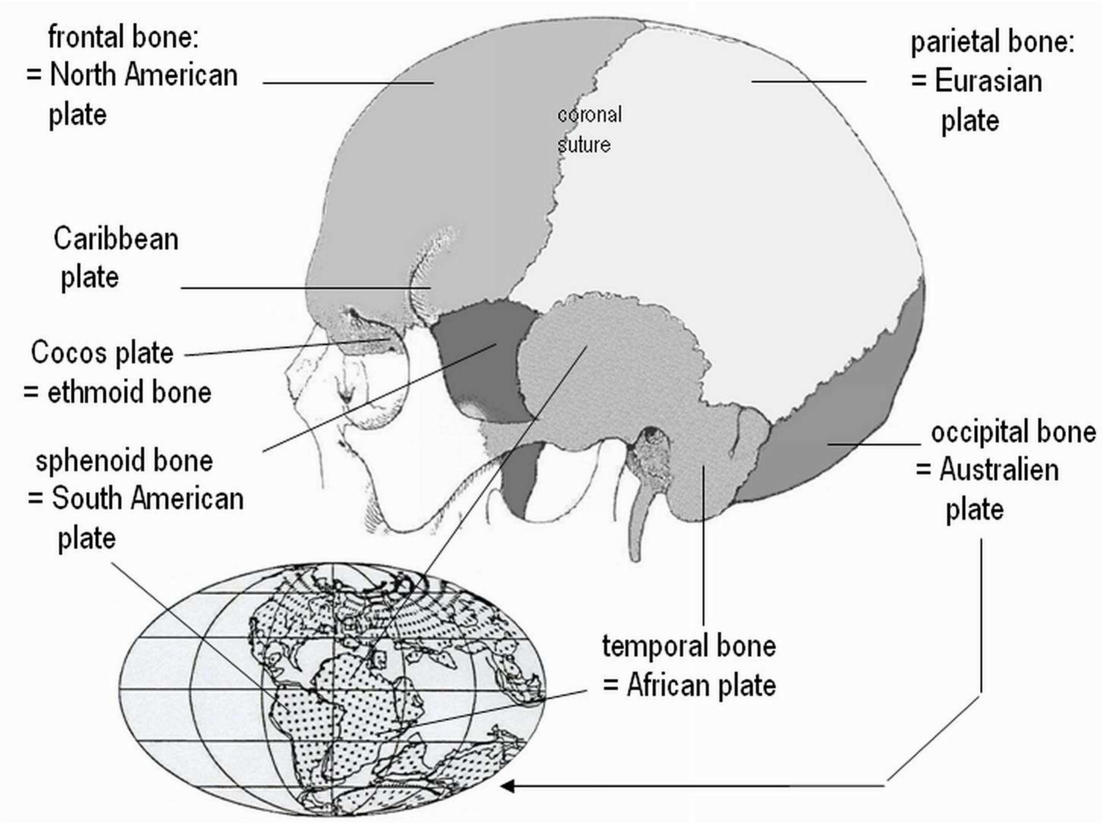


Fig. 23, 24: The human skull-bones are comparable to the continents in Jurassic.

In the human cranium the bones are paired like every part of the skeleton and nervous system of the vertebrates as Bilateria. In the Precambrian, when the planet-embryo grew, evolution was on an ancient stage where there were no symmetrical organs yet. Therefore the earth has the same shapes unpaired. The tissue where the vertebrate-embryo develops the eye under the skin is in correspondence to the area on the earth where the moon originated. The eye-socket corresponds to the area on the earth, where the moon emerged (comp. fig. 8, 9, 11, 16 and 18).

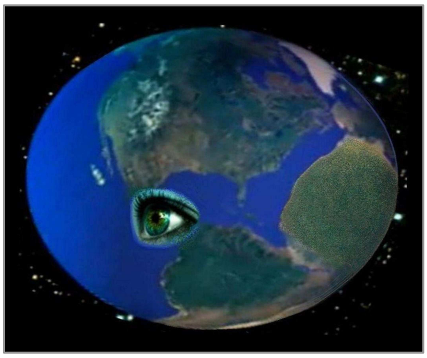
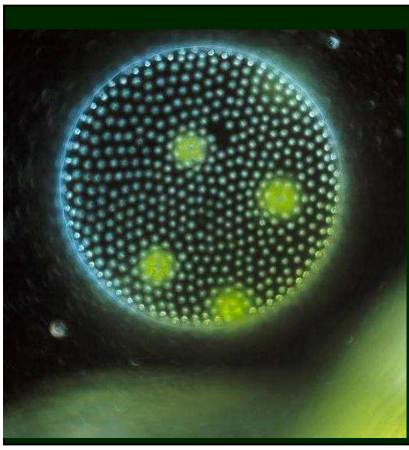


Fig. 25: Collage from an artist.

This is an unexpected phenomenon. Biogenic planet-formation is the natural-scientific explanation. It cannot be proven but in can be seen macroscopically.



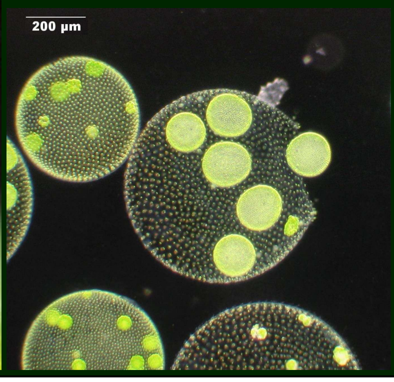


Fig. 26: Volvox aurea Fig. 27: Volvox aurea opening Fig. 28: Periophthalmus

Volvox and Periophthalmus are symbols for earth-formation and origin of the moon. Volvox aurea and Volvox globator are rotating spherical colonies of eukaryote algae on the ancient evolutionary stage of flagellates connected with jelly, bearing daughter-colonies growing inside. When daughter-colonies are mature the mother-colony opens, the descendants come out and leave. After opening the mother-colony dies, like the planet-embryo of the earth died after the emerging of the moon.

Periophthalmus is performing the transition from aquatic to terrestrial life in the Neozoic other fishes performed in Devonian and Carboniferous becoming amphibians and then reptiles. In Permian under dramatic life-conditions with global temperatures over 24°C lakes dried out and oceans were polluted by anoxia events. Many species died out. Periophthalmus makes this transition today, and its eyes are almost coming out of its head, which remembers me to the moon coming out of the earth. On a superficial level these phenomena can be regarded as analogies, but going deeper into the matter of genetic inherence of animals from the planet-embryo one can recognize some kind of homology in these morphologic developments. For an animal like this looking over the water surface is an evolutionary advantage, but why could the species realize this character? It had the sleeping genes prepared from his ancestral being, the Precambrian planet-embryo, in its genome.

4. Discussion

4. 1. Morphological correspondences

Although there is evidence on the level of macroscopic sight, the coherence can not be proven. It is impossible to find fossils of these stem-cells, because in the hot phases most of the sediments got melted and converted to magma or metamorphic rocks and the traces were destroyed.

The Edicara-Fauna in Australia is precious because it is exceptional to find fossils of that age, but the question if they contained the specific sleeping genes or if others did, cannot be answered, because it can not be recapitulated any more. Most of the ancestral beings have died out and it is most unlikely to find fossils with a DNA evaluable for this purpose. The only trace is the vertebrate cranium in its high stage of evolutionary development in the human being. The other vertebrate craniums consist of the same elements in reduced variations. The craniums of vertebrate embryos still have the spherical forms and they loose it during the differentiation for their specialisations. Sometimes in animal-ontogenesis progressive evolutionary developments go backwards again, in case the specialisations are reductions. The seemingly highest developed character in evolution, the spherical human cranium, is an embryonic form. The ancestry from a biogenic planet-embryo cannot be proven, but it cannot be falsified either. The phenomena make it most likely.

4. 2. Subduction versus earth expansion?

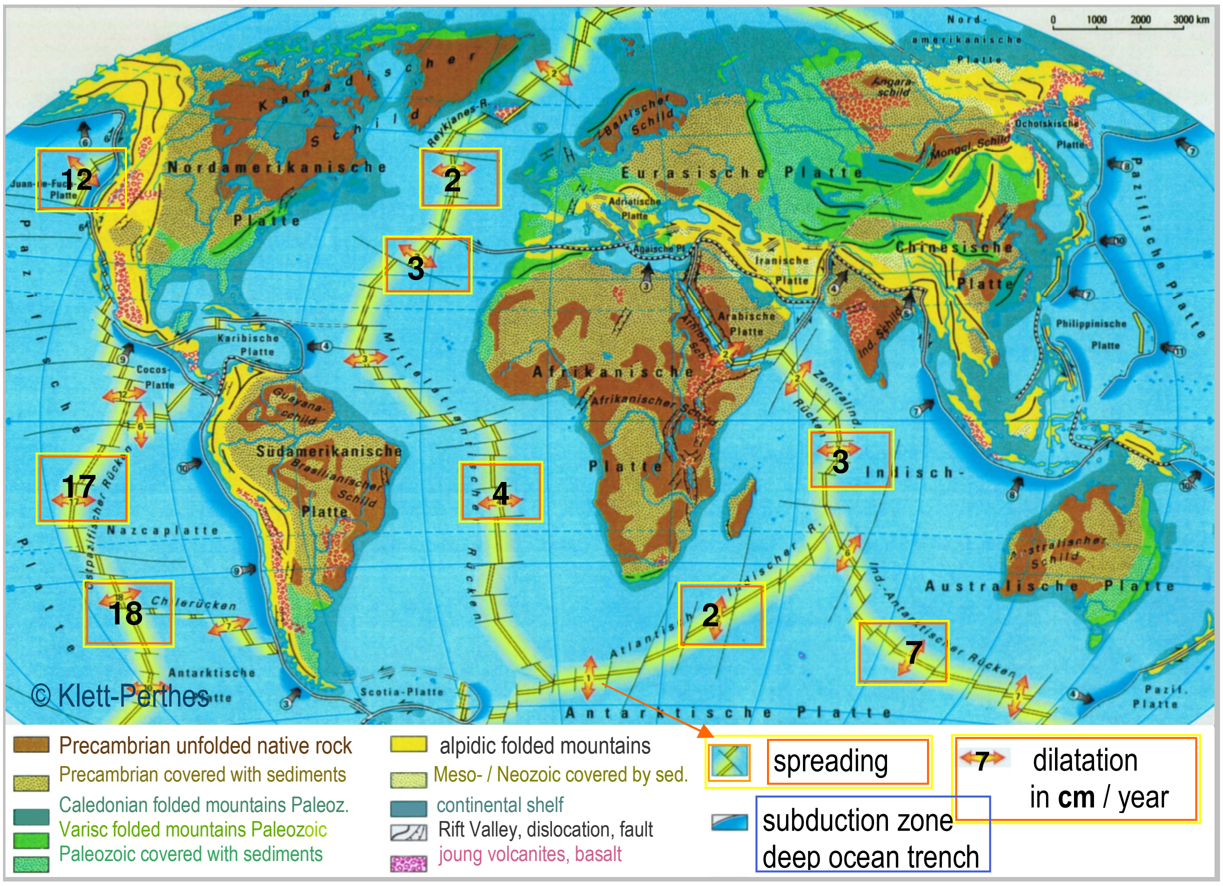


Fig. 29: Dilatation velocities in centimetres per year at the mid-ocean-ridges.

Fig. 30: The earth expansion began after the emerging of the moon in Permian.

Questions about earth expansion had no satisfactory results yet, because some expansionists deny subduction. Ignoring this fundamental finding of geosciences they put themselves in a difficult position. Before 1950 there was no agreement about the question, if an expanding earth gains mass. Those who said, it would not gain mass, had the problem that a smaller earth with equal mass must have had gravity forces not allowing big terrestrial animals to walk. Mass and gravity must have been less as huge dinosaurs could walk and pterodactyls and dragonflies could fly. So there is a consensus today, that an increase of mass is necessary. Another question is, were the water came from, when the growth of the earth is supposed to start with a globe without oceans. There are **no** geological findings verifying a former existence of a Panthalassic Ocean in the size of the Pacific. Problems can be solved by biogenic planet-formation: An early earth consisting of hydrocolloids, marine microorganisms, biogenic sediments, biofilms and products of biomineralisation cannot be small. It must be voluminous. When the radiation of the young sun increases like in Permian, water evaporates from the young watery lithosphere because of heat and is driven out from the interior by pressure. The earthly substance becomes denser and less voluminous, as the water goes up as water-vapour into the atmosphere. When biomass is burned, ashes are left. Heated mineral-substance turns into magma, while the dried lithosphere forms an isolating crust. Concentrated masses in the interior are under pressure. Where local release of pressure initiates the origin of plumes, the volume expands without increase of mass, independently from the other question. Plumes are not only the reason for hot-spot volcanism. As there are very long fissure-volcanoes at the Rift-Valleys there must be very long fissure-plumes as well.

In Carboniferous the earth-density was relatively low due to the high content of gases and water. In Permian 98% of all species died out under catastrophic conditions. The density became temporarily high while the volume decreased. In Triassic the density decreased again due to the plumes, as nuclear chain reactions in the interior continued producing heat. Rift Valleys were torn open by convection-currents again and again. Each time the release of pressure caused new fissure-plumes going up, the driving forces of expansion.

“The dual geospheres view brings the importance of hydrogen into focus. If the earth primordially was entirely dominated by hydrogen, the gradual escape of hydrogen to space would have led to the oxidized carapace (crust; lithosphere) …, while leaving the interior still hydrogen-dominated. … To understand why hydrogen is so important, one must know that hydrogen nucleii (without electrons) under mantle-depth pressures are able to penetrate metal atoms and thus transmute and densify them. Pressure reduction leads to escape of hydrogen and de-densification. … Density changes with consequential volume changes at sub-crustal levels can be set in motion by…” (HUNT, C. W.: Dual geospheres of the expanding hydric earth. 2008) [19].

Some geoscientists don’t agree with HUNT in each detail but some results are relevant for planetary science. Explanations for an increase of mass will be interesting. However it is unnecessary to decide, how the volume increased. The geological ages of oceanic-crusts and directions and velocities of the plate-movement leave no doubt about earth-expansion as a factum.

The Austrian geologist Ampherer, Wegener's friend, had suggested the origin of the moon as cause for the continental-drift. They could not complete their research, because the ages of ocean-floors were still unknown and therefore the opening, the moon came out, could not be localised. On figure 8. 9 and 10 in this publication this region is localised precisely. Vacated spaces left by the moon got filled. This was the beginning of subduction and the precondition for earth-expansion. There is no point in discussing, if there is expansion "or" subduction. They both have the same reason and starting basis. Both processes are perfectly compatible if expansion is seen in the hot phases and subduction compensates a slowed down dilatation only in the cold phases of earth-history.

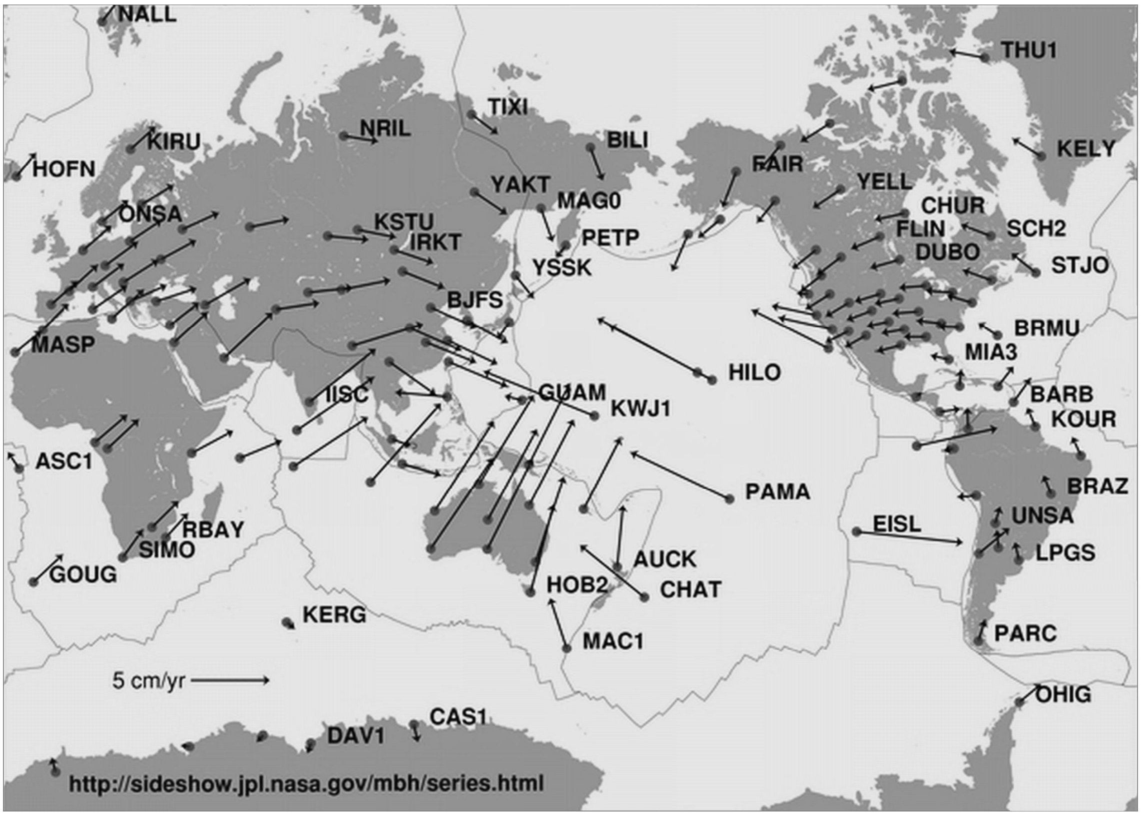


Fig. 31: Global plate motion measured by GPS devices.

The GPS-math-formulas build in an assumed constant earth-size. Images like this are deceiving, because it is not the number of arrows, that shows the velocity of the plates, but it is their length. In this figure many short arrows were drawn close to each other pointing in the same direction, provoking an optical illusion, that the Pacific would become smaller. Six arrows are drawn from Australia behind each other, their lengths get summarised unconsciously. Arrows from points HILO, PAMA, EISL and KWJ1 showing the dilatation velocity of the east pacific rise are longer. Although on opposite edges of plates some subduction is happening, the Pacific is expanding. The Holocene is a warm part of the Pleistocene ice-age. End of Triassic and Cretaceous the dilatation was faster. The extent of subduction should not be overestimated. Since the hollow space from the moon has been filled by material moving inwards, the ocean-crust can only submerge into the denser earth-mantle to a limited depth driven by material-congestion from behind. Subduction cannot compensate the increase of volume. Now I use paintings (Fig. 32) easily to recognize as works of art, emphasizing that all images of subduction-zones are works of art, as nobody has ever seen one from this perspective.

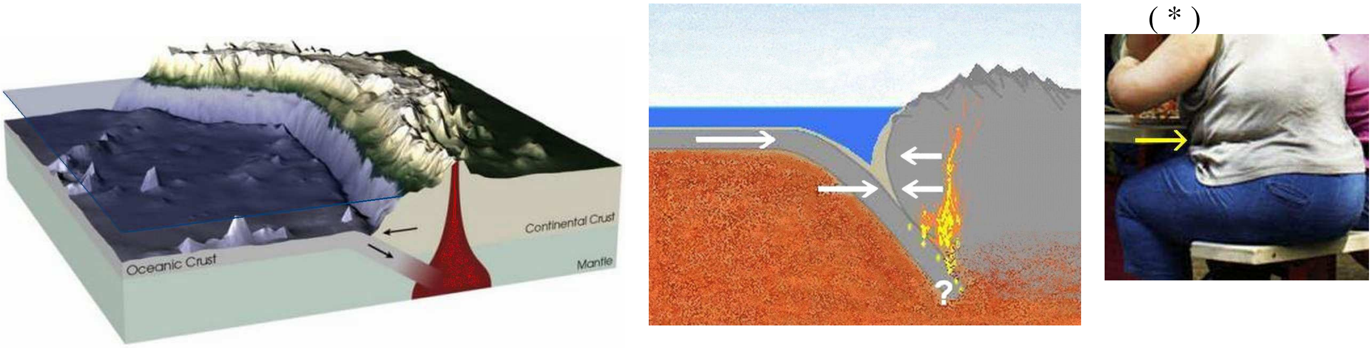


Fig. 32: Paintings of subduction-zones, each one with another problem. On the left the continental crust was put proportionally like an iceberg in the sea-water instead of in the upper mantle. This was done because the density of the upper mantle is so high, that the continental crust cannot be deeper. The same applies for the oceanic crust. On the right the continental crust is deeper, but the oceanic crust cannot merge so deep without melting and being transformed chemically. (* If subduction could prevent an increase of volume, that would be a relief for people suffering form overweight.)

When subduction-zones are painted, always the following problem occurs: Either the continental-crust goes very deep down like the ice of an iceberg, much thicker than the part over water. Therefore descending oceanic crust seems to reach a depth physically impossible due to high density of mantle-material. Or thin continental crusts are painted to give space for subduction. However oceanic plates are pushed against continents from behind, because mid-ocean-ridges make plates grow, but the continental crust-material underneath puts a massive resistance against this motion slowing it down, so little material can move under the continent going through chemical transformations. Subduction is **not** caused by low pressure in the upper mantle like in outer parts of a convection-cell, pulling material in, but only by congestion-pressure. Deep-ocean-trenches are fault-zones. The subduction-zones underneath take in a certain percentage of the ocean-crust produced at the ridges. I have to emphasize that at the African west-coast and the North- and South-American east-coast subduction-zones are missing. This is contradictory to the idea of worldwide magma-circulation in the upper mantle causing subduction. Subduction-zones exist in the areas affected by the emerging of the moon. The only exception in the Atlantic is the Puerto-Rico Trench (Fig. 22), where the moon had partially emerged over the earth-surface on its underground rising-way, coming from under the Tethys-ocean, moving westwards (Fig. 11).

According to the neutrino-theory, particles coming from the sun increase the volume in the earth-interior. The moon works as lens focussing a neutrino-beam [22]. In addition to this the moon's gravitation does not only have a tidal effect on the oceans but on the magma as well. According to these two aspects an emerging of the moon in Permian is logically necessary, as it is consistent with the beginning of sea-floor-spreading and earth-expansion after Permian.

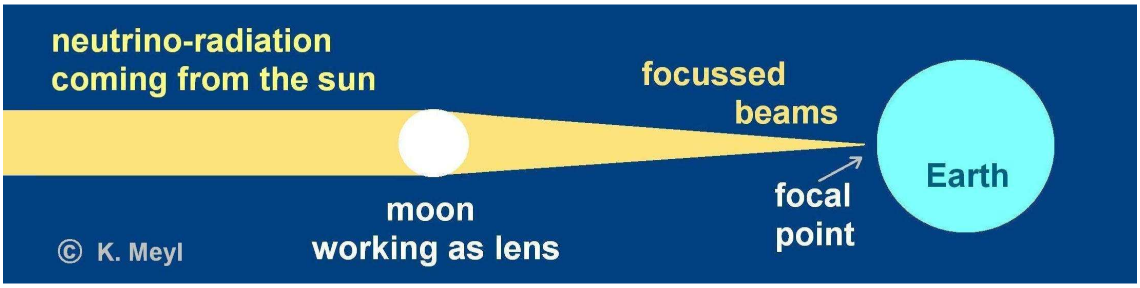


Fig. 33: Neutrino-radiation being focussed by the moon working as lens (MEYL 2003).

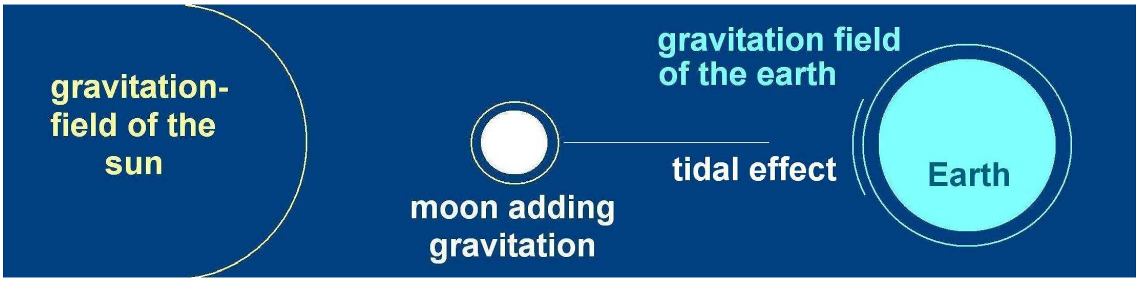


Fig. 34: The tidal effect of the moon must have been enormous shortly after emerging.

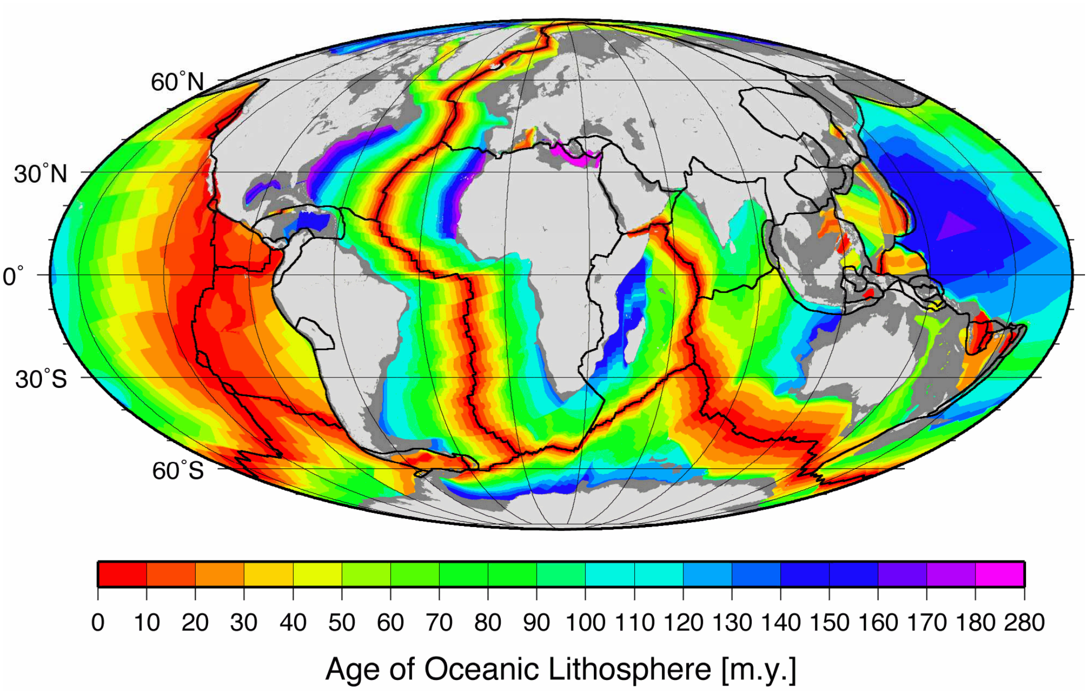


Fig. 35: Spreading-zones produce oceanic crust symmetrically to both sides. The oldest ocean-floor is under the Mediterranean because the moon came from east (cp. Fig. 11). In Paleozoic moon caused a spreading-zone in the Tethys dividing Greece and Italy from Africa. Since Jurassic the ring of spreading-zones on the southern hemisphere pushes Africa towards Eurasia, so that the Mediterranean became a subduction-zone.

It is a question if the time-intervals between hot phases are in correlation with the sun's orbit around the galactic centre or other astronomical factors like close ranks between the sun and neighbour stars. This needs to be answered by Astronomers. Acting on the assumption that tectonic plates have a constant velocity since the beginning of their motion, not considering an oscillation due to hot and cold phases, and then calculating the time by measuring distances can lead into circle-conclusions. All released movements slow down meeting resistances, in this case at subduction-zones. Therefore the drift must have gone faster before. An oscillation of expansion-processes is not yet considered by all expansionists. Some need to integrate the findings about hot phases [17] in their research. Unfortunately some are trying to teach ideas completely out of scope. Still the basic findings about earth-expansion at mid-ocean-ridges cannot be ignored, no matters if the explanations for the increase of mass that have been suggested until know are already satisfying or not. Remember photosynthesis and biomineralisation have been going on until the Holocene. The year-numbers in geological time-scales can be rendered precisely, as soon as Astronomers can give exact answers to these questions. This is important, because after correcting the geological time-scale the reversal of the earth's magnetic field can turn out to be in correlation with the Milankovic-cycles.

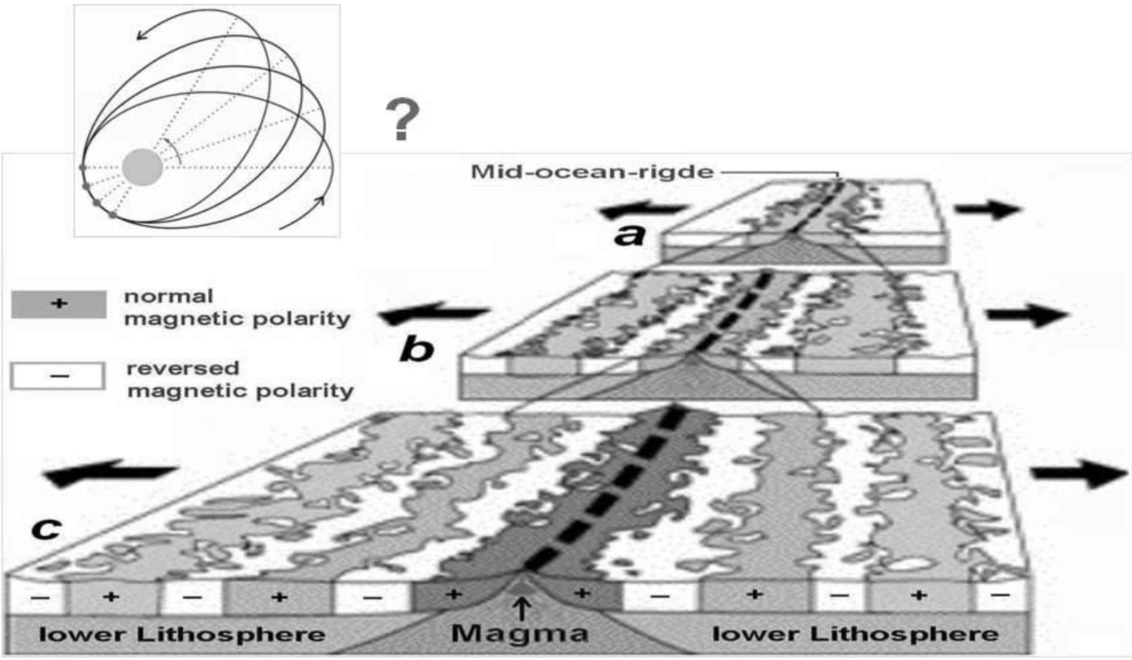


Fig. 36: Symmetrical ocean-floor-basalts show repeated changes of magnetic polarity.

The reversal of the earth's magnetic field is interesting for the geological age dating. The intervals seem to vary from 150.000 - 300.000 years with an average of 250.000. An apsidal cycle is 21.000 years x 12 = 252.000. One platonic year (equinox precession) is 25.700 years x 10 = 257.000 years. The magnetic field gets instable and reduced nine times, each time it recovers again. At the tenth time it reverses. Therefore I propose: During 12 apsidal-cycles the earth-axis is only once in a certain position of equinox precession, which might have synergistic effects. Centrifugal forces and resonance-effects from repetitions cause an escalation. At the intersection point of 10 equinox-precessions with 12 perihelion precessions a synergistic effect occurs provoking the complete turn-around of the geodynamo in which convecting and electrically conducting fluids generating the magnetic field.

In the same way as a planet performs a perihelion-cycle around the sun, the sun also performs an elliptic cycle around the galactic centre. If the radiation of the sun varies at a certain point of its orbit is an interesting question. Astronomers and planetary scientists should scrutinize this and give clarity to the geologists, who have given up on this question before coherences between sea-floor-spreading and the possibility of a varying velocity of the continental-drift with cold and hot phases came into consideration. If the hot phases really depend from the suns orbit or other calculable astronomic factors, the geological time-scale can be reworked maybe with the result that the reversal of the magnetic field just turns out to happen every 252.000 years. The long pause between today and the last reversal can be an artefact caused by slow-motion and stagnancy of the plates in Pleistocene. When sea-floor-spreading is not happening at all for a certain period, how can we find volcanic material on which reversals are recorded?

4. 3. Emerging of the moon in Permian

The emerging of moon in Permian is consistent with radiation and nuclear processes as driving force for earth-expansion. Planetary scientists need to succeed in finding new calculations for increasing and decreasing velocities of earth-rotation and the moon's movement away from earth on the basis of this new conception of the properties of the planet-embryo. Geologic findings [20, 21] prove the moon's emerging at that time in this area. The morphological correspondences with the animal-genomes are no proof but a confirmation of the consistency of this hypothesis in general.

4. 4. Hydrous accretion and biogenic formation of primordial continents

In the conference "Planet Formation and Evolution 2012" HOGERHEIJDE [23] said in a conversation: "The pressures in protoplanetary discs are too low to allow the existence of liquid water". The measurement-data for laboratory experiments are form discs in outer space, because the disc our solar system evolved from does not exist any more. They are comparable, but each one has its own properties. The newly suggested idea of hydrous accretion based on secondary aerosols and hydrous silicon shielded by icy aggregations around a rotating cloud needs to be tested in laboratory experiments. The simulations generating turbulences to find areas of pressure sufficient for the hypothetical accretions can also be modified to find habitable areas in the interior of huge atmospheric orbs. In the Miller-Urey-Experiment even in gaseous water-vapour enriched with other compounds amino-acids form. In a rotating orb the night-side has the function of a condenser. If someone succeeds in proving this idea experimentally, the chemical evolution can begin from there on.

5. Conclusions

This hypothesis can solve problems like the question how mineral-elements in protoplanetary discs stick together and form growing globes with diameters of many thousand kilometres: Aerosols dissolved in condensing water-nebula become metabolites for the development of extremophile Protobionta, archaea- and bacteria-colonies in a global living organism, the Precambrian planet-embryo, held together by hydrous silicon as matrix for proteins [5]. Icy surfaces and water-clouds protect early life-processes from weak radiation of the young sun.

The cool biogenic planet formation is a new basis to understand the earth-expansion. Dilatation and subduction are compatible, both initiated by the emerging of the moon.

Comparing morphological characters in living beings showing their derivation from a living planet-embryo, we can say that the human beings as well as the animals, fungi and plants are not only children of the earth in some poetical sense but also its biologic descendants in the sense of modern genetics and planetary science.
In case details need to be improved, the idea of arranging the known processes in a different succession remains a useful innovation enhancing the progress in the research about planet formation. This can be a solution to the problems we have been working on in the passed decades.

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Links to publications listed above and others:

VALLEY: http://www.geology.wisc.edu/zircon/cool_early/cool_early_home.html

SALYK: http://peggysue.as.utexas.edu/SIRTF/PAPERS/pap121.pub.pdf

MILLER-UREY- Experiment: http://glencoe.mcgraw-hill.com/sites/9834092339/student_view0/chapter26/animation_-_miller-urey_experiment.html

MEINERHENRICH: http://www.pnas.org/content/101/25/9182.full.pdf

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MEYL: www.meyl.eu

WILSON: http://eearthk.com/

NESSENIUS: http://www.raum-und-zeit.com/raum-zeit/archiv/2011/ausgabe-169/das-leben-erschuf-die-erde.html

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Heidelberg, October 2, 2012 S. Eva Nessenius