Weak Point Analysis of the Hypothesis of the “Man Made Climate Change”

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Kloten Switzerland

Communication of the Hypothesis of ”Climate Change” I

- Local warm periods are attributed to the „climate change“. Other weather anomalies as cold weather are not attributed to it.

- A ”climate change ” is regularly pictured as an amageddon. From a more neutral view it would have positive and negative effects as other events as well.

- Wordings as “climate denier” or “science is settled” (no fact oriented expert discussion about this hypothesis intended), the claim to own the absolute truth sounds more like a religion or ideology rather than a scientific hypothesis.

The communication is selective and similar to an ideology or religion rather than a scientific hypotheses.

Communication of the Hypothesis of ” Climate Change ″ II

- The Maldives should have sunken already(38)
- Al Gore told 2008 that the artic will be totally free of ice in 2013..(3).
- “The Himalaya glaciers will become molten till 2035 or earlier” reported the IPCC in 2007(37).
- „The president has 4 years left to save the world'“, James Hansen in the Guardian Jan. 17th, 2009(1) *(hypothesis positive feedback loop)*.

The leading “climate scientists(a)” dealing with facts seems very flexible. Established media does not challenge the “climate scientists” at all.

Communication of the Hypothesis of ″Climate Change ″ III

- John Kerry, Bidens climate envoy took a family owned private jet to Iceland to pick- up a climate award (62).

- Al Gore said 2006 that in 15 – 20 years „Even Manhattan would be in deep water“, bought an ocean front property in 2010 (51).

- The climate elite and allies used 400 private jets to travel to the climate summit in Glasgow 2021 (82).

The personal behavior of the leading climate scientists[(a)] seems not to correspond with their message. It seems that the “climate scientists” and other Leaders of “Climate Change” are kidding their message and their believers what they seem to accept with no sign of disagreement.

Communication of the Hypothesis of ″Climate Change ″ IV

In the Paris Climate Agreement 2015 a „climate target“ of a max. „warming“ of 1.5°C vs. The pre-industrial time is agreed. Within the 27 pages (English Version) there are no references on the definitions of the „pre-industrial time“, the reference temperature, or the measurement method.

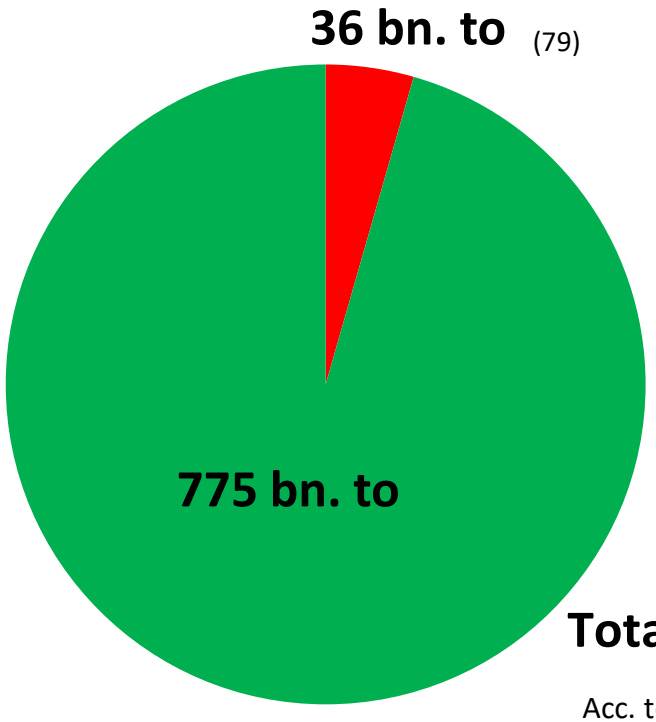
In the IPCC reports there are strong indications that the period 1850 – 1900 is considered as „pre-industrial time“. In these reports the GMST (Global Mean Surface Temperature) and GSAT (Ground Surface Air Temperature) are mentioned if it is defined at all. In the period 1850 – 1900 systematic temperature measurements took place in a few places of the earth most of them in Europe. The standards did not meet todays standards. The reference data is unnecessarily inaccurate, interpretable.

The use of unnecessary diversely interpretable reference data is very unusual for international treaties. It is not in line with the claimed scientific approach. It is the documentation of a common confession of faith.

By the way it is extremely arrogant to intend to control the climate by an international treaty.

Weak Point Carbon Cycle I

Annual CO_2 Emissions of the Earth to the Atmosphere



CO2 Emissions from burning fossil fuel 2021

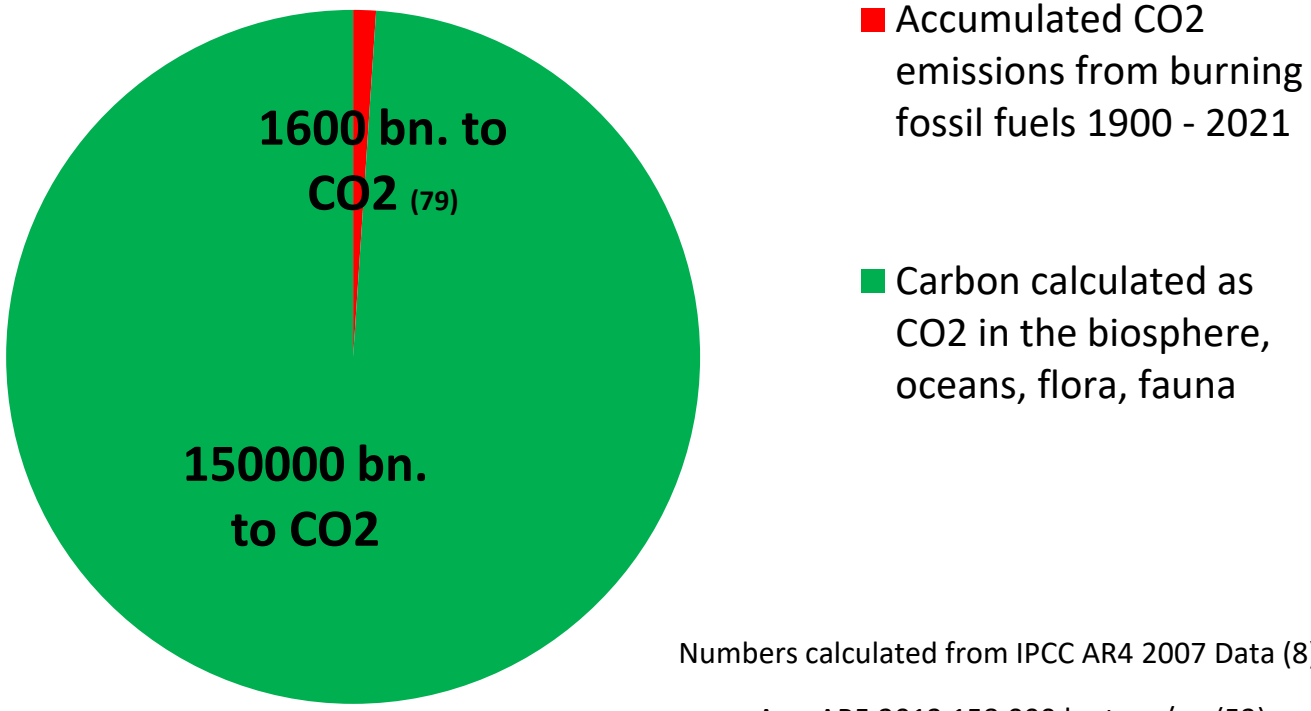
Total CO2 emissions, fauna, flora Land & ozeans
without emissions from burning fossil fuels

Total: 811 bn. to CO_2/year (8)

Acc. to IPCC AR5 2013 Total 776 bn. tons/yr. (53)

Weak Point Carbon Cycle II

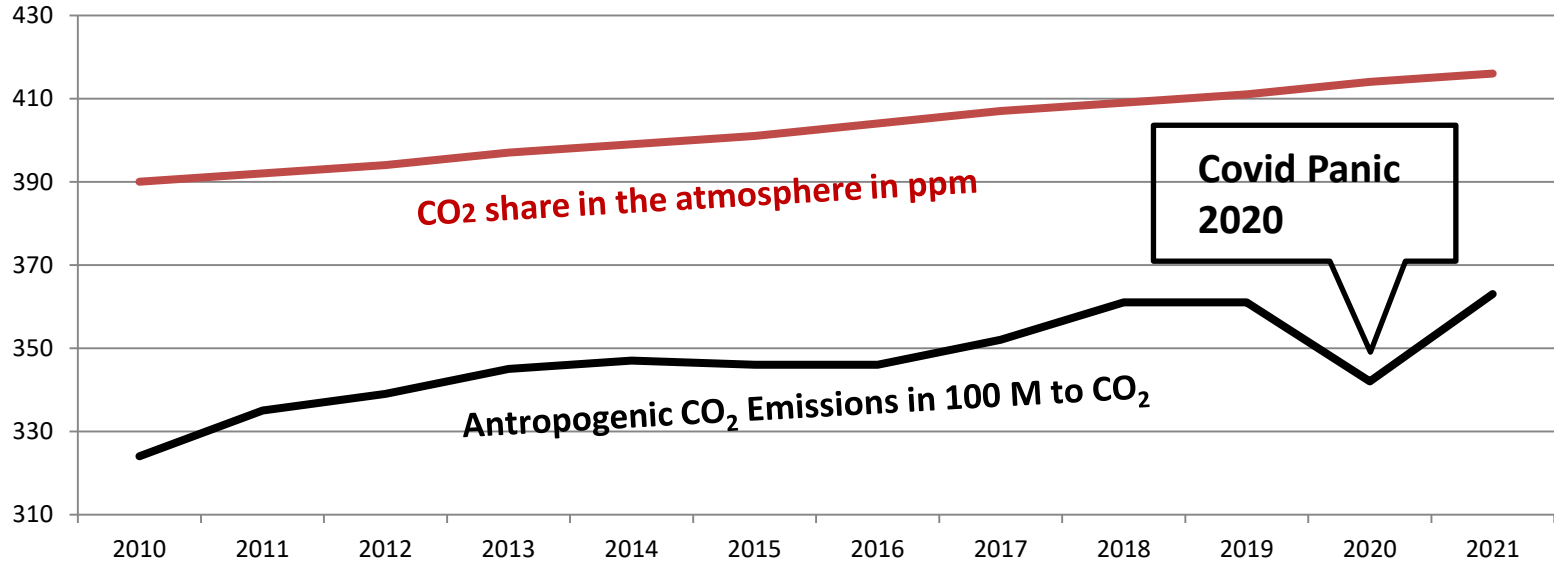
Accumulated CO_2 Emissions 1900 - 2021 from burning Fossil Fuels vs. Carbon *(calculated as CO_2)* in the biosphere (*Oceans,*



Numbers calculated from IPCC AR4 2007 Data (8)

Acc. AR5 2013 158.000 bn tons/yr. (53)

Weak Point Carbon Cycle III



Data Statista (79)

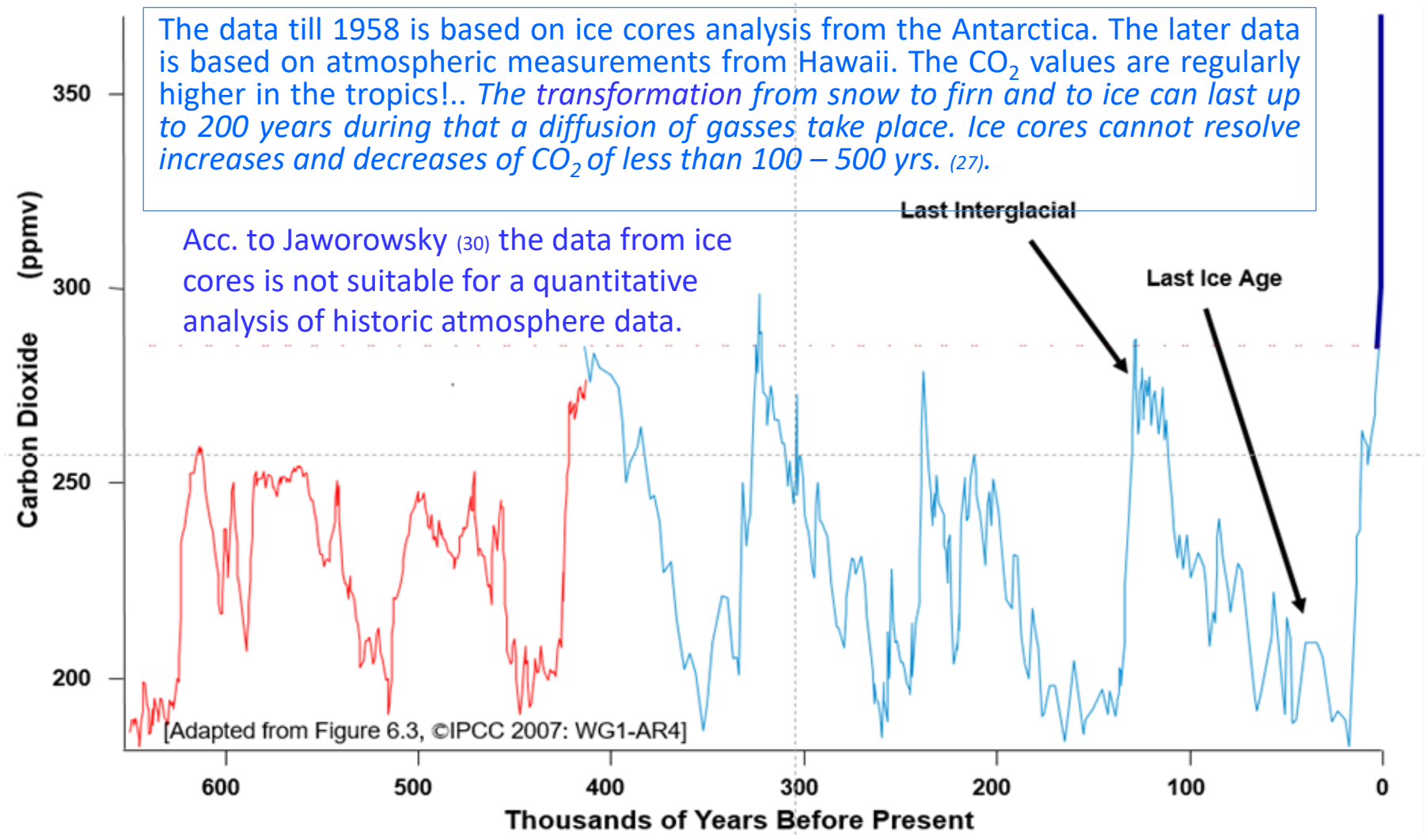
There is no apparent strong correlation between the changes of the share of CO_2 in the atmosphere and the anthropogenic CO_2 emissions. This contradicts the "climate scientists" but seems logic considering the negligible share of anthropogenic CO_2 emissions in the carbon cycle.

It is an indication that the anthropogenic emissions do not have a dominant influence on the possible increase of the CO_2 share in the atmosphere since 1960.

Weak Point Carbon Cycle IV

The data till 1958 is based on ice cores analysis from the Antarctica. The later data is based on atmospheric measurements from Hawaii. The CO_2 values are regularly higher in the tropics!.. *The transformation from snow to firn and to ice can last up to 200 years during that a diffusion of gasses take place. Ice cores cannot resolve increases and decreases of CO_2 of less than 100 – 500 yrs.* (27).

Acc. to Jaworowsky (30) the data from ice cores is not suitable for a quantitative analysis of historic atmosphere data.



Ref. (7) Supplement in dark blue Susan Salomon IPCC WGI

Weak Point Carbon Cycle V

It seems absurd that the insignificant CO_2 emissions from the usage of fossil fuels compared to the potentially much bigger fluctuations of the CO_2 emissions from oceans, unfreezing of the permafrost soil at the transitions from ice ages to warm ages and back, created an unprecedented increase of the share of CO_2 in the atmosphere within more than 600 K yrs..

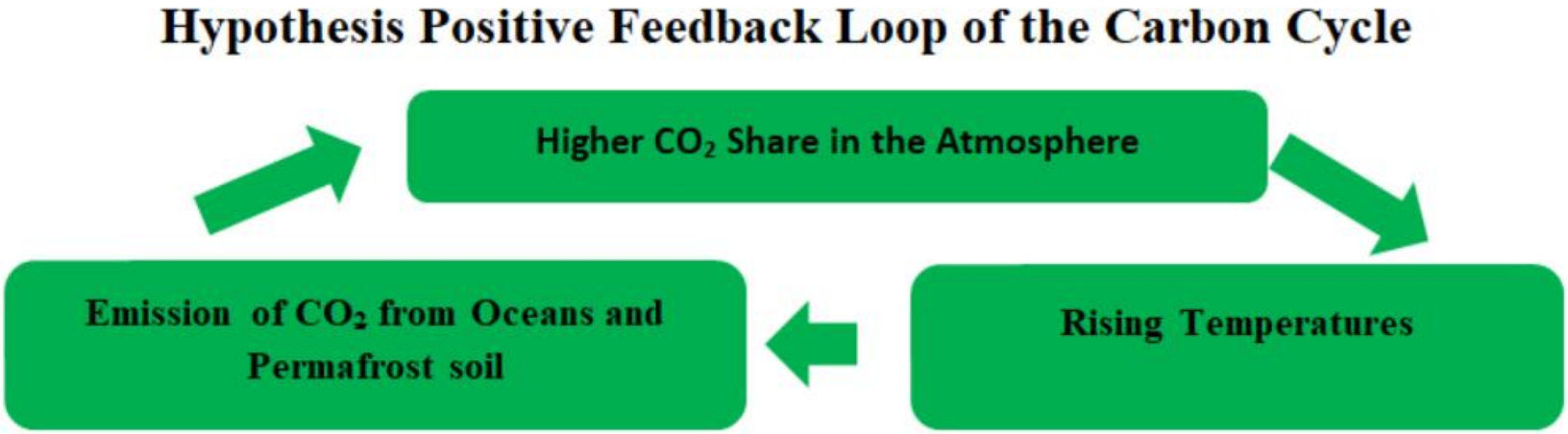
Weak Point - Dynamic of the Carbon Cycle

The hypothesis of the „climate change“ assumes that the carbon cycle is largely a static process like a saving account. A dynamic carbon cycle is not supportive for the hypotheses of the “climate change”. But it seems necessary to expect a dynamic.

A higher CO_2 partial pressure in the atmosphere resp. carbonate concentration in the sea shifts chemical and biological processes in favor of a CO_2 absorption. It increases together with the higher temperature since the end of the little ice age *(app. 1850)* the growth of the vegetation. There are many biological organisms that react on higher temperatures and CO_2 concentrations with a higher rate of photosynthesis. Typical examples are the cyanobacterium synechococcus *(blue algae)* and C2 plants.

Positive Feedback Loop of the Carbon Cycle

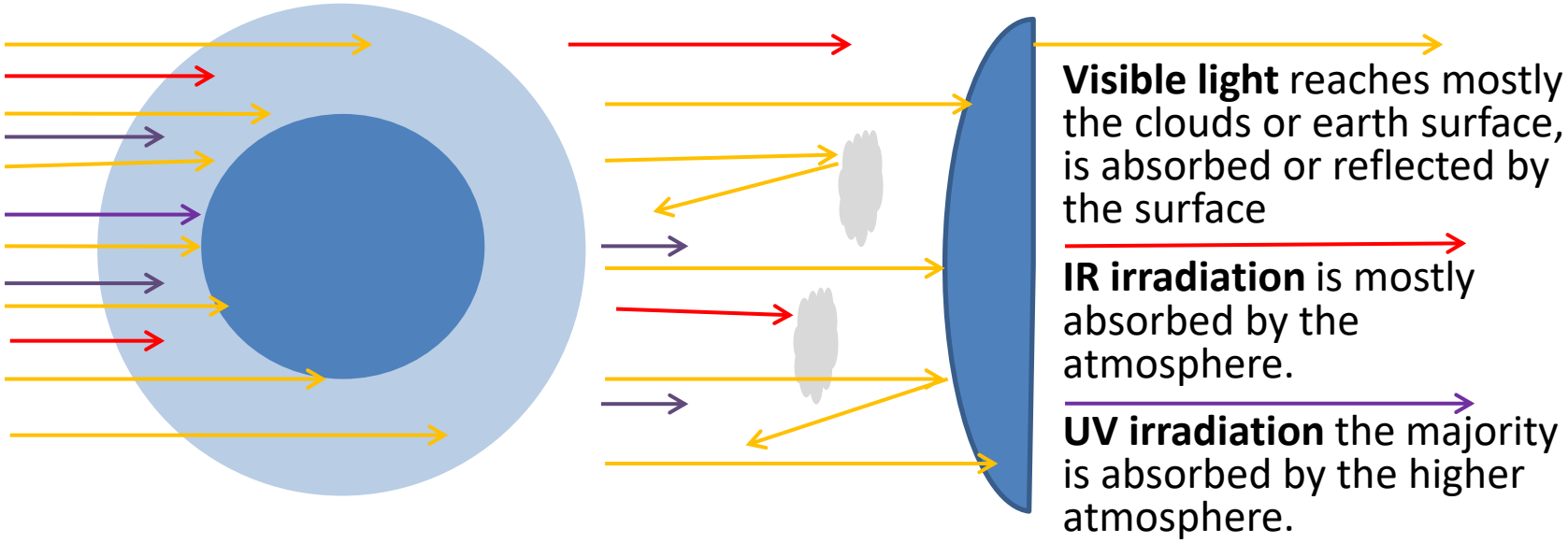
Some of the "climate scientists" assume a positive feedback loop. The CO_2 solvability of the seawater decreases with increasing temperatures. The defrosting of permafrost soil emits enormous quantities of CO_2. These emissions would increase according to the hypothesis of climate change the temperature of the earth and these higher temperatures would further increase the CO_2 emissions from the oceans and the permafrost soil. There is acc. to some "climate scientists[(a)]" a trigger point for such a self-intensifying CO_2 level increase - climate warming - feedback loop.



The potential reasons that such a development did never happen during the last 600 M years might be acc. to my own assessment potentially the dynamic of the carbon cycle and a potentially very low sensitivity of the climate toward an increase of the CO_2 levels in the atmosphere.

Explanation Solar Irradiation I

Due to its surface temperature of 5900 K *(5630 °C)* the sun emits most of its energy in the short wave ir, the visible light and the UV spectrum.

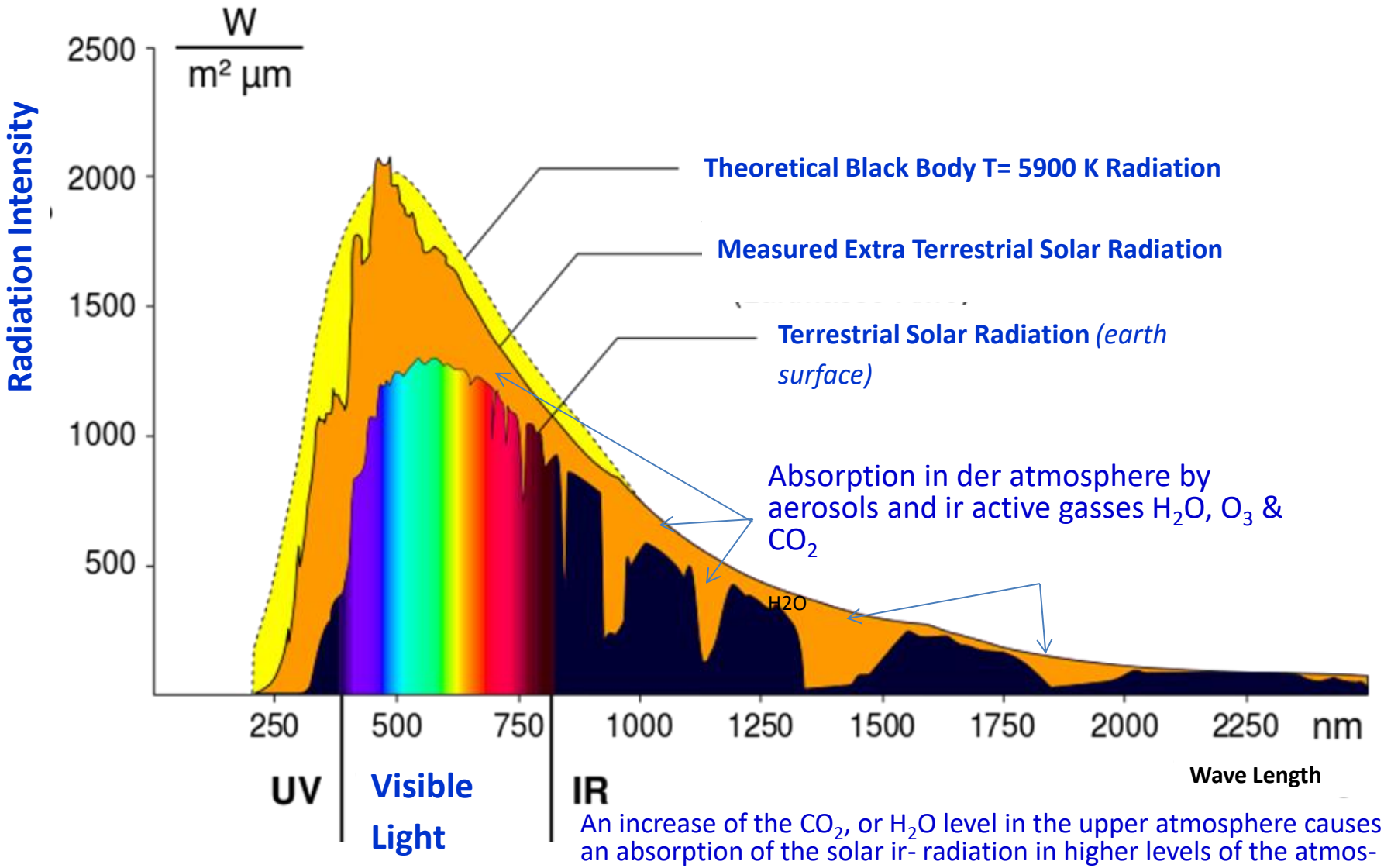


Visible light reaches mostly the clouds or earth surface, is absorbed or reflected by the surface

IR irradiation is mostly absorbed by the atmosphere.

UV irradiation the majority is absorbed by the higher atmosphere.

Explanation Solar Irradiation II



An increase of the CO_2, or H_2O level in the upper atmosphere causes an absorption of the solar ir- radiation in higher levels of the atmosphere and thus reduces slightly the energy received from the sun.

Ref. (20) Wikipedia, Author Degreen, Amendments in blue

Explanation Solar Irradiation and Back Radiation

When the solar radiation hits the surface of the earth a major share of it is absorbed, the remainder is reflected back from the surface depending of the surface and the angle of impinge. The reflected share varies depending the kind of surface, the weather and the season. The IPCC estimates an albedo of 0.3 and without the greenhouse effect a „global average temperature“ of -18C° (GMST?), equivalent a greenhouse effect of 33 °C. The earth emits about the same quantity of energy as received back to the space.

Received radiation + terrestrial heat + anthropogenic heat = emitted radiation.

Otherwise the earth cools down or warms up till a new equilibrium is achieved.

Explanation Back Radiation from Earth I

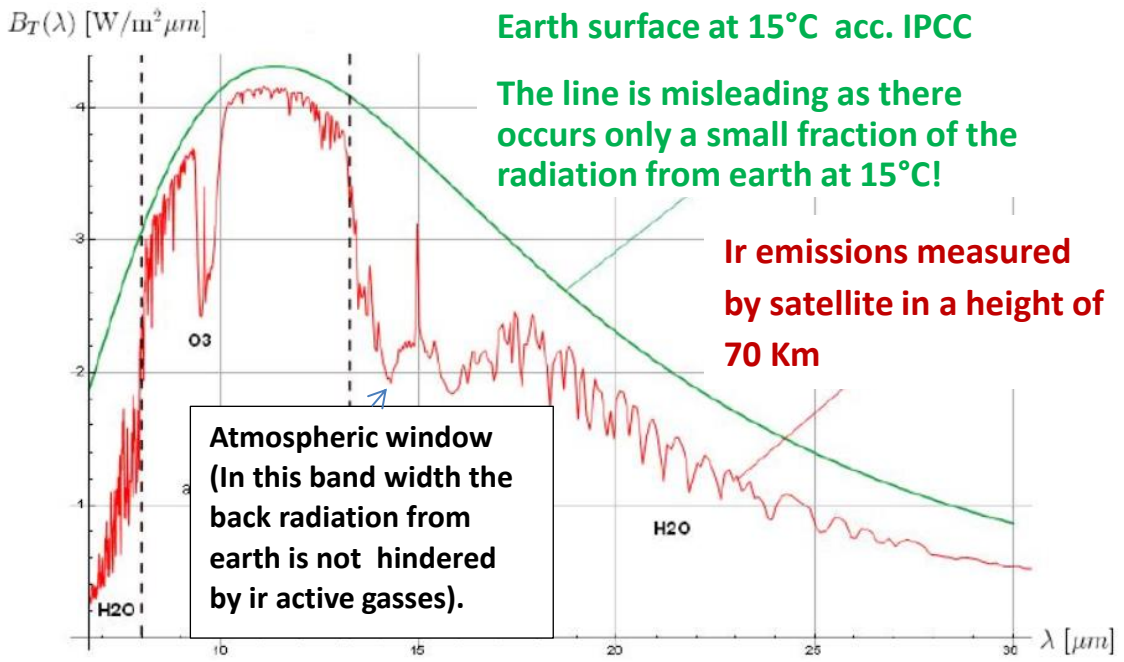


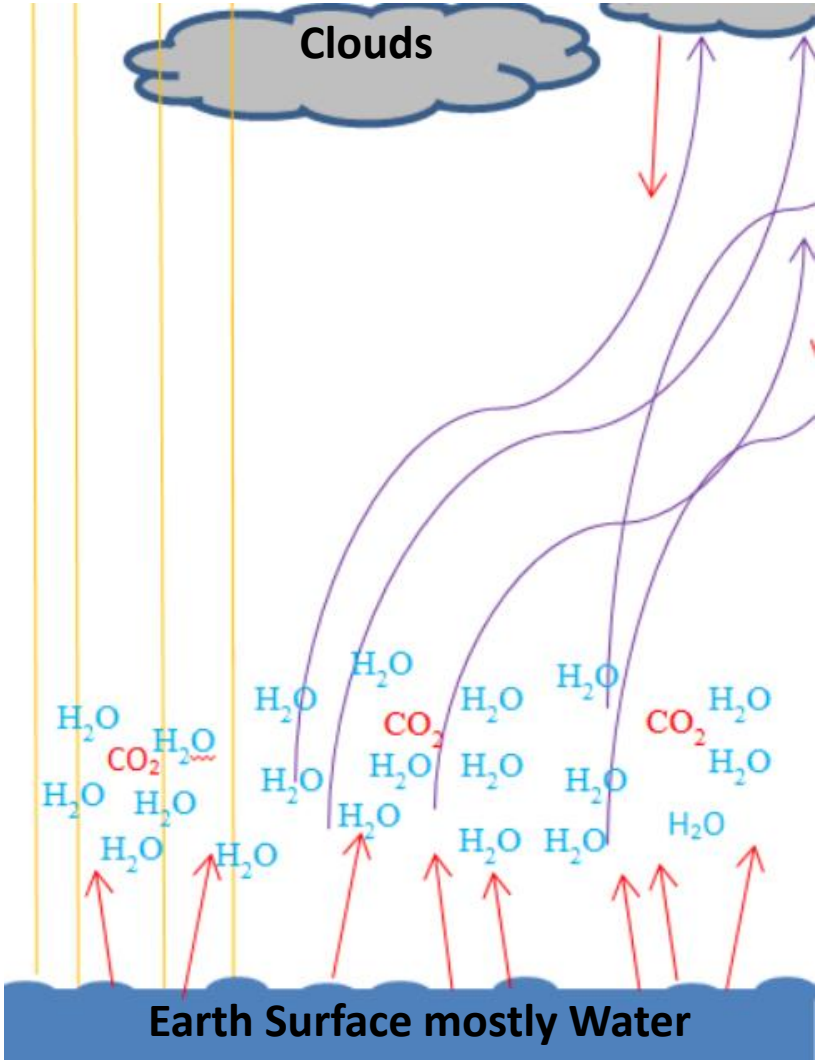
Abb. 2.10.: Erdstrahlung an der Erdoberfläche und nach Absorption durch die Atmosphäre in 70 km Höhe. Daten simuliert mit MODTRAN.

Radiation from earth, (red) earth surface in a height of 70Km. Data simulated by MODTRAN Ref. (13)

The figure left gives the impression that CO_2 has an important effect on the radiation from earth in the band between 13 – 17 ym. In many publications the gap in the back radiation from the earth between 13 and 17ym wave length is communicated induced by increased CO_2 levels. A deeper gap is predicted for higher CO_2 concentrations.

The reality is by far more complex as the illustration seems to show. In the following figure the process of the energy transport from earth to space is sketched roughly. The majority of the radiation from the earth takes place in a height of 2.8 – 85 Km in a long wave infrared spectrum.

Explanation Back Radiation from Earth II

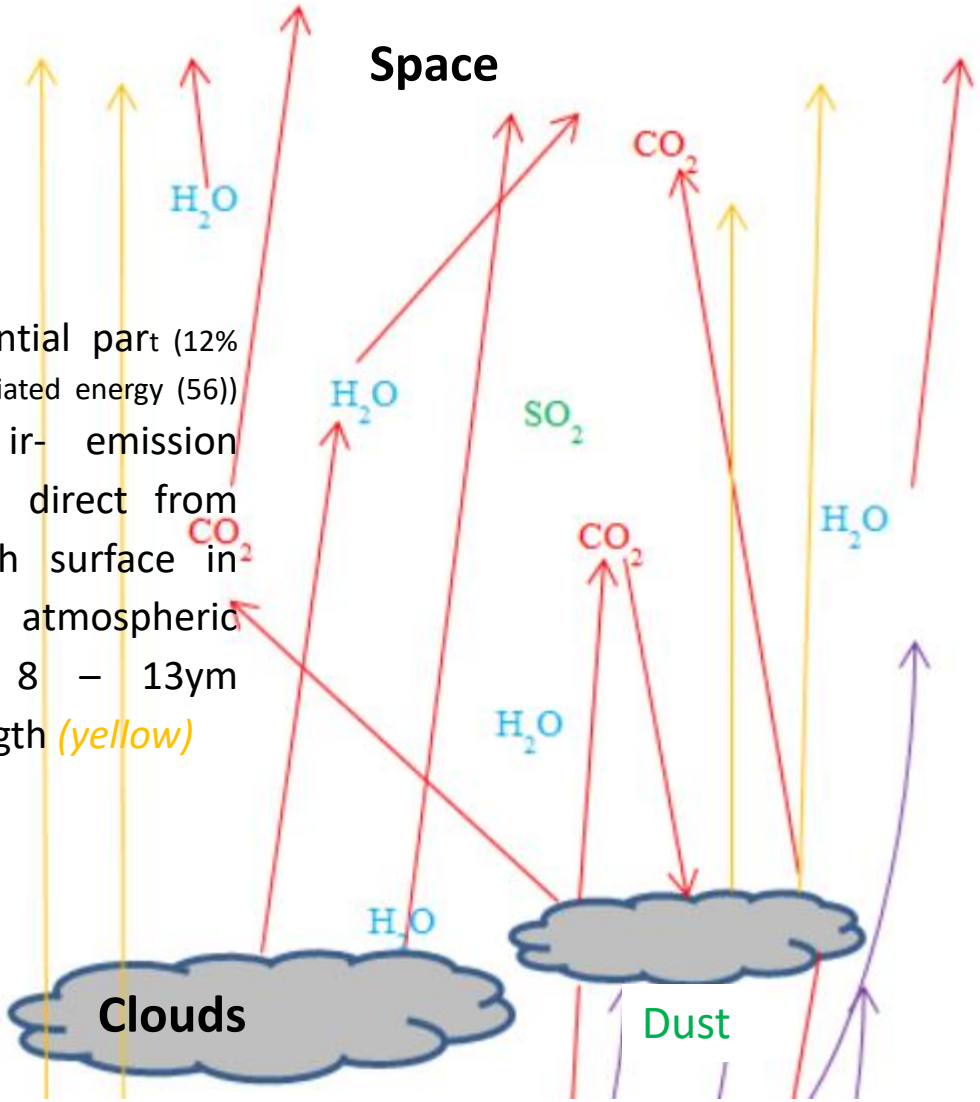


The heat transport to the higher atmosphere takes place mostly by ascending air and water vapor.

In the dense lower atmosphere ir-radiation *(red)* is absorbed quickly. Acc. to Clive Best (14) the average absorption length for a 15,4ym photon is at a 300ppm CO_2 concentration 25m. At a higher CO_2 concentration the ir-radiation is absorbed even closer to the ground*.

The absorbing molecules gets excited. The mean free time of the excited molecules till a radiative decay is by far longer as the mean free time till a collision with another molecule[(d)] (24),(25). Most of the absorbed energy (94%) is not radiated but heats up the gasses by collisions and warming them[(d)].

Explanation Back Radiation from Earth III



A substantial part (12% of the irradiated energy (56)) of the ir- emission radiates direct from the earth surface in the atmospheric window 8 – 13ym wave length *(yellow)*

An increase of the H_2O, or CO_2 level in the higher atmosphere effects a higher irradiation height and thus a lower irradiation temperature and longer wave length[(b)] an increase of the greenhouse effect.

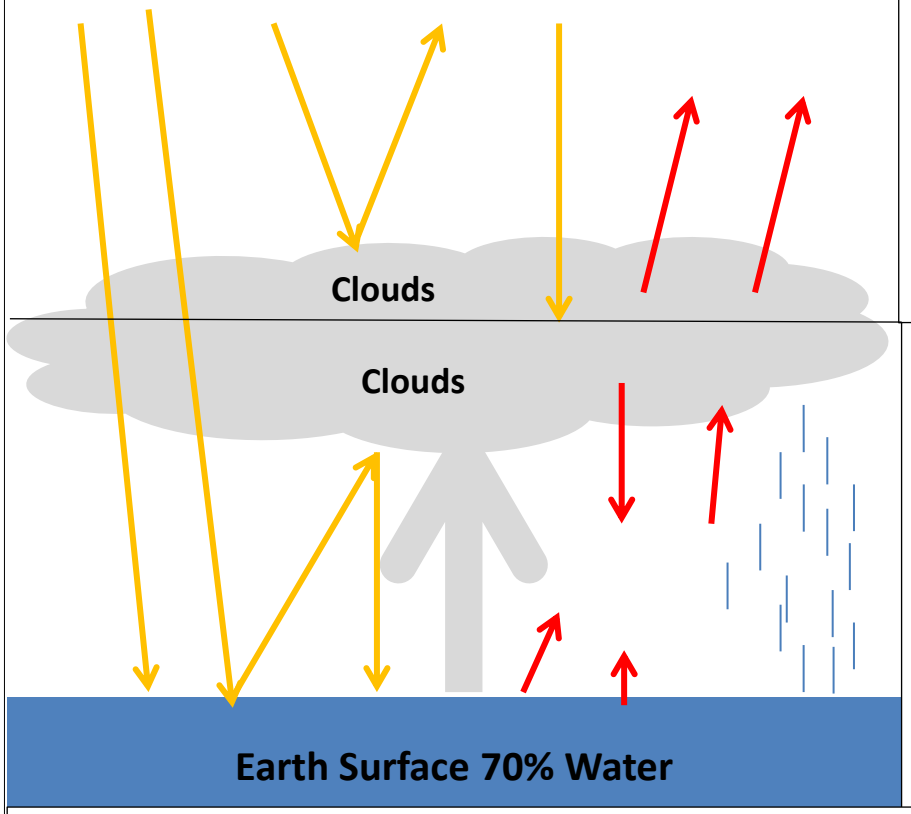
The majority of the irradiation emissions of the earth occur from an average height of app. 5500m** at a temperature of -18°C. The particle density in this height is lower and the ir-absorption cross sections are smaller at this temperature(49).

**The final radiation height to space depends on the wave length 2.8 -85Km.

A Challenge for Climate Modelling I

The Versatile Effects of the Clouds

Clouds are not the same. Different cloud types cause different effects.

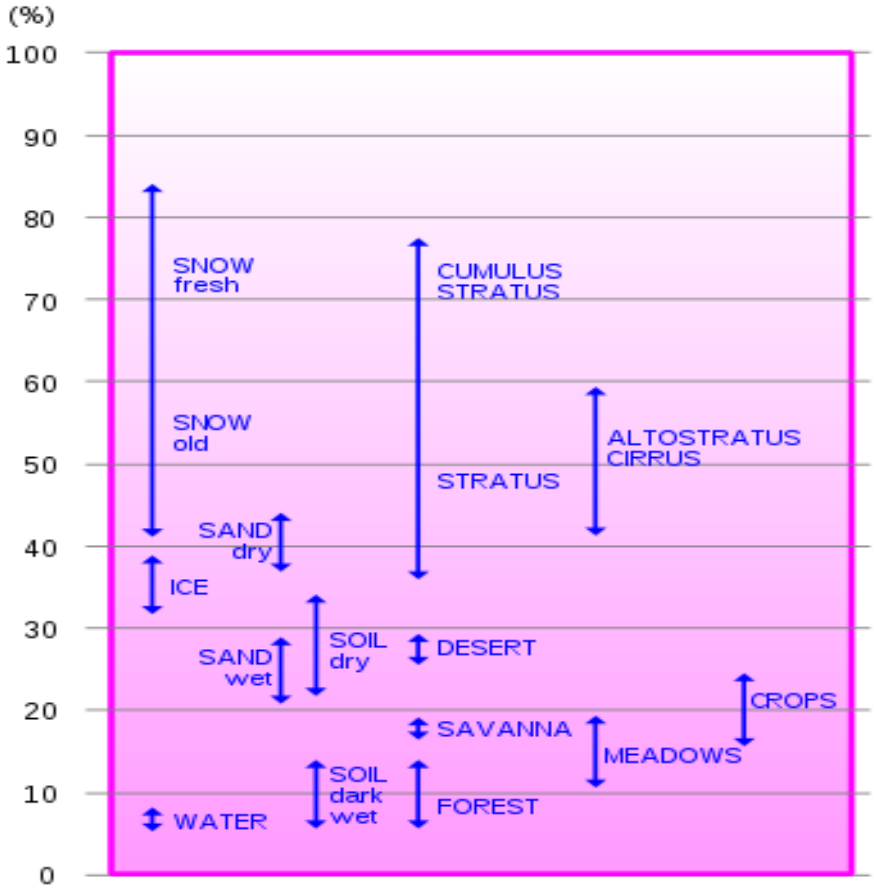


-Clouds let the majority of the solar irradiation pass to the earth surface.
-Clouds absorb and reflect a significant share of the solar irradiation cooling the earth.
-The condensation of the water vapor ascended from the surface takes place in the clouds. The energy is irradiated to space.

-Clouds reflect a share of the solar irradiation reflected from the earth surface and back radiation from the earth back to the earth and thus warming the earth.
-Water vapor transports ½ of the solar energy absorbed by the earth surface(78) to the atmosphere where it condensates (cooling) and returns to surface as rain.

Clouds are versatile, have versatile effects and are substantial for the earth climate. **Without a quantification of the effects of the clouds climate modelling generates arbitrary results.**

The Challenge to estimate the Albedo of the Earth



The albedo - reflexion of the sunlight received by the earth atmosphere – is estimated to 30% - 31% by “Climate Scientists”.

It is varying strongly with snowfall, clouds, dry vs. wet soil, fields. It varies from daytime, day to day the weather and seasons.

It is at best a very rough estimate. It would be extremely challenging to estimate the change in albedo in case of a global warming and cooling.

It would be one of the key challenges if someone would try to make a serious climate modelling. The estimation error of the albedo might exceed the influence of the CO_2.

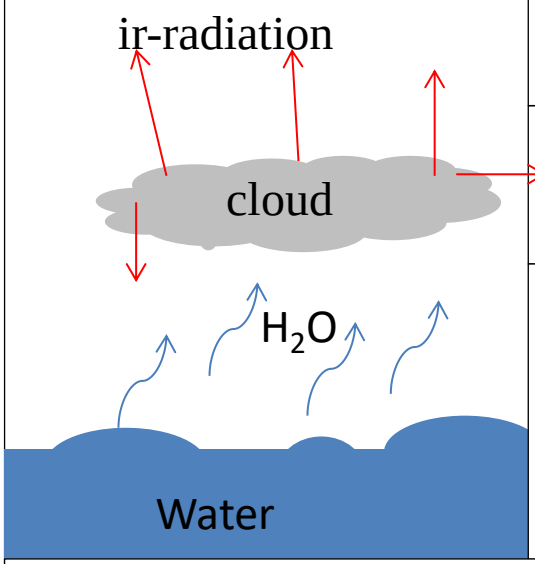
(83) Wikipedia Albedo

On the average, the earth reflects 31 units of solar radiation back to the space for every 100 units received (thus, the total earth albedo is 0.31). The cloud albedo accounts for 23 units of the 31. For individual clouds, local albedo may be in excess of 0.7 (84).

A Challenge for Climate Modelling II

Water Evaporation

Acc. to the NASA (78) ½ of the solar energy absorbed by the earth surface is discharged back to the sky by water evaporation.



The water evaporation of tropical seas is about 10-fold that of polar seas (from Babkin).

The quantity of the water evaporation depends on wind, waves, water temperature, solar irradiation, relative humidity of the air.

The correlation between water/air temperatures and water evaporation is not linear, indirect. Wind is an effect, caused by temperature differences. There are some estimated empiric correlations. That`s it!

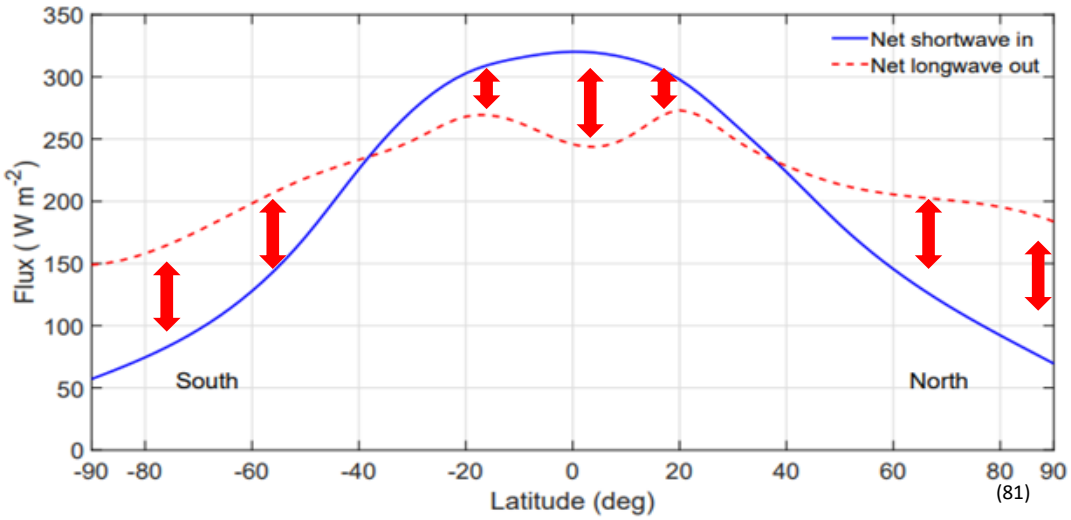
A quantitative assessment of the water evaporation depending on water and air temperatures is a need for a realistic climate modelling, but would be a hard challenge for a serious climate modelling as well.

A Challenge for Climate Modelling III

Ocean Currents and Wind

Energy radiated to the earth over the degree of latitude

Energy radiated from earth over the degree of latitude



(81)

The reallocation of the energy radiated in by sea currents and wind is too significant to ignore. The poles get twice as much energy by currents than by solar irradiation.

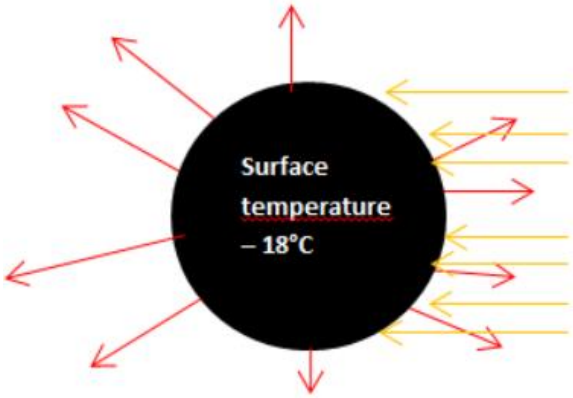
A calculation of this energy reallocation depending on the temperature would be very, very challenging but necessary for a realistic climate modelling.

Till today the estimates of the heat transfer by ocean currents and wind are not more than guesses. A effect of a different climate on it are guesses at best.

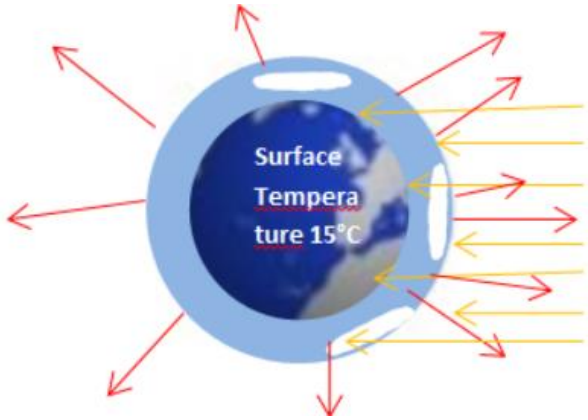
A realistic calculation of the effects of the heat transfer of ocean currents and wind would be necessary for a realistic climate modelling.

Deceptive Comparison Base for the Greenhouse Effect I

IPCC Reference Fictional Celestial Body



Planet Earth with Atmosphere



(66)

The calculation of the irradiation from the sun is based on a circular area with the diameter of the earth and 30% reflection (Grey body). The back radiation is calculated by the Boltzmann formula based on the surface of an earth sized ball with a black body surface and an averaged! surface temperature. The surface temperature of this fictional celestial body is calculated to -18°C (255K).	The radiation to the earth surface and as well the back radiation from the earth surface is influenced by the atmosphere, clouds, aerosols, ir-active molecules and dust. Due to all these effects the average earth surface air temperature is 15°C. The final back radiation to space takes place mostly in the higher atmosphere at lower temperatures.

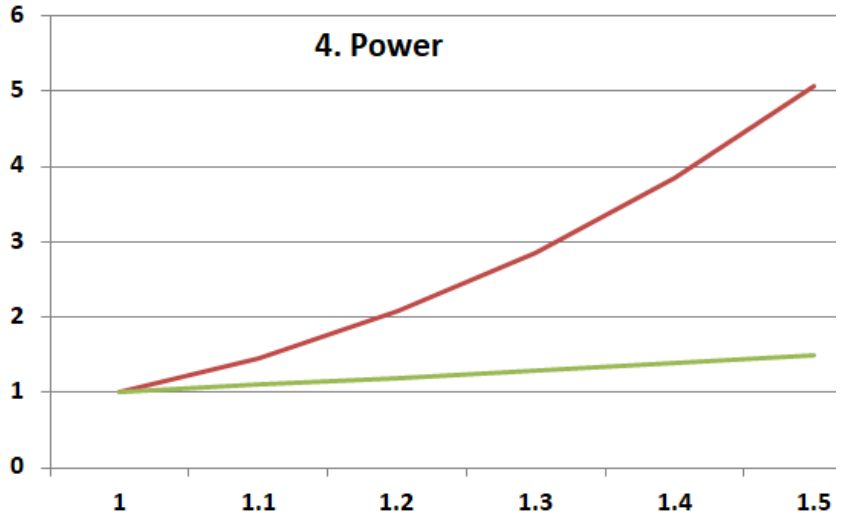
Deceptive Comparison Base of the Greenhouse Effect II

"*Black body is an abstraction of a physical concept, hardly any substance on the Earth is a black body. The assumption that the earth's surface is a black-body surface ε =1, is never true. If ε is not 1, but 0.9, 0.8, 0.7 or 0.6, T (surface temperature) would be -11.4℃, -3.6℃, 5.5℃ or 16.5℃ respectively. The finding of -18°C is simply a result of a technical error* (sloppiness). *In fact, the emissivity of the earth surface can be determined ε ≈ 0.7 from satellite outgoing radiation spectra. estimate of a „greenhouse effect" of 33°C is a deception"*, Jinan Cao(12). A realistic value of the greenhouse effect is much below that.

"There is no surprise that scientists can make errors, but it is perhaps a surprise that the technical errors have been shared by so many scientists across a discipline to such an unprecedented extent", Jinan Cao (12). From my point of view this fatal flaw is a result of the missing scientific discussion.

A comparison of the earth with a fictive celestial body with a black body surface, without atmosphere, water covering, linear averaged surface temperature, is a fatal deception.

Sloppy Assumption of the Earth Surface Temperature

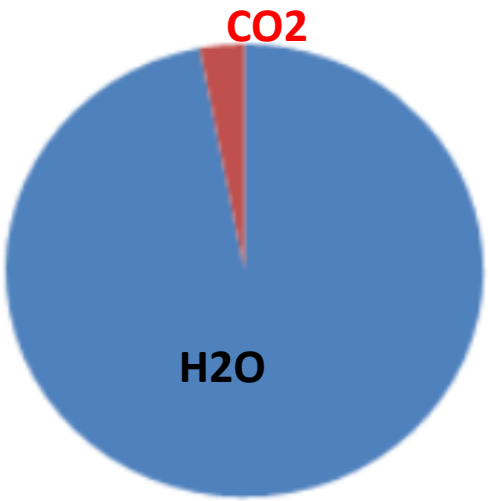


The irradiation from earth varies acc. to the Stefan Boltzmann with the 4th power of the temperature. The irradiation of a tropical sea with a surface water temperature of 30°C can be calculated to be 50% above that of an arctic ocean with a surface temperature of -1°C.

The assumption of a linear averaged temperature of the earth surface means accepting a systematic error that probably exceeds the effect of a potential increase of the CO_2 share in the atmosphere x-fold.

Weak Point - Overestimation of the minor ir-active gas CO_2

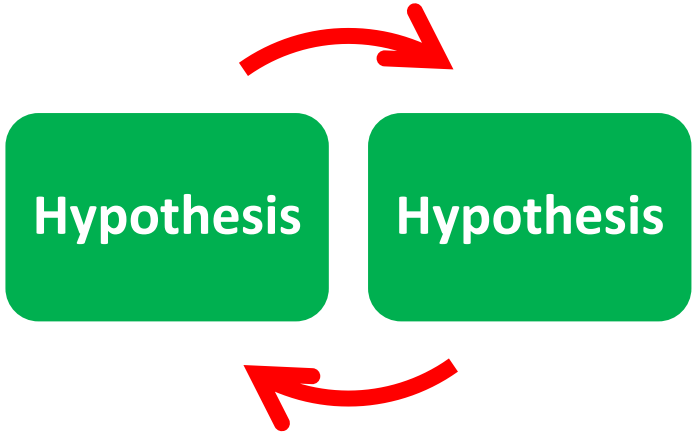
Asymmetric oscillating molecules have in certain wave length bands very high absorption cross sections for radiation. It is called infrared active. The major infrared active molecules are:



- **H_2O** app. 13000 ppm in the atmosphere, absorbs ir-radiation in several wide band ranges
- **CO_2** app. 400 ppm in the atmosphere, absorbs ir radiation in 2 narrow band ranges at 4 and 15ym
- CH_4 app. 2 ppm in the atmosphere, absorbs ir irradiation in narrow bands ranges at 3-4, 7-8ym in which H_2O is activ as well.
- O_3 troposphere, stratosphere, absorbs ir irradiation in the range <0.3 and 10ym

The numbers above clearly show that water vapor is the dominant greenhouse gas. The significance of the minor ir-active gas CO_2 is strongly overestimated.

Weak Point - Estimation of the CO_2 Sensitivity of the Climate I - Empirical Methods



The estimates about the CO_2 sensitivity of the earth climate are based in many IPCC predictions/models on empiric data. Simplified the allegedly increased CO_2 concentration of the atmosphere is attributed to the temperature increase since the end of the little ice age and the claimed „climate change“.

The hypothesis is used as a proof of the hypothesis.

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Modelling the CO_2 Sensitivity of the Earth Climate I

Another method used by the “climate scientists” to estimate the CO_2 sensitivity of the earth climate is modelling. The earth surface and the atmosphere is complex and characterized by many effects that interact with each other.

Acc. to the NASA GISS Climate Modelling of 1988 the average temperature should be already 2,1°C (GSAT?) above the temperatures of the period 1850 – 1900 (Target Paris Climate Agreement 1.5°C). (71)

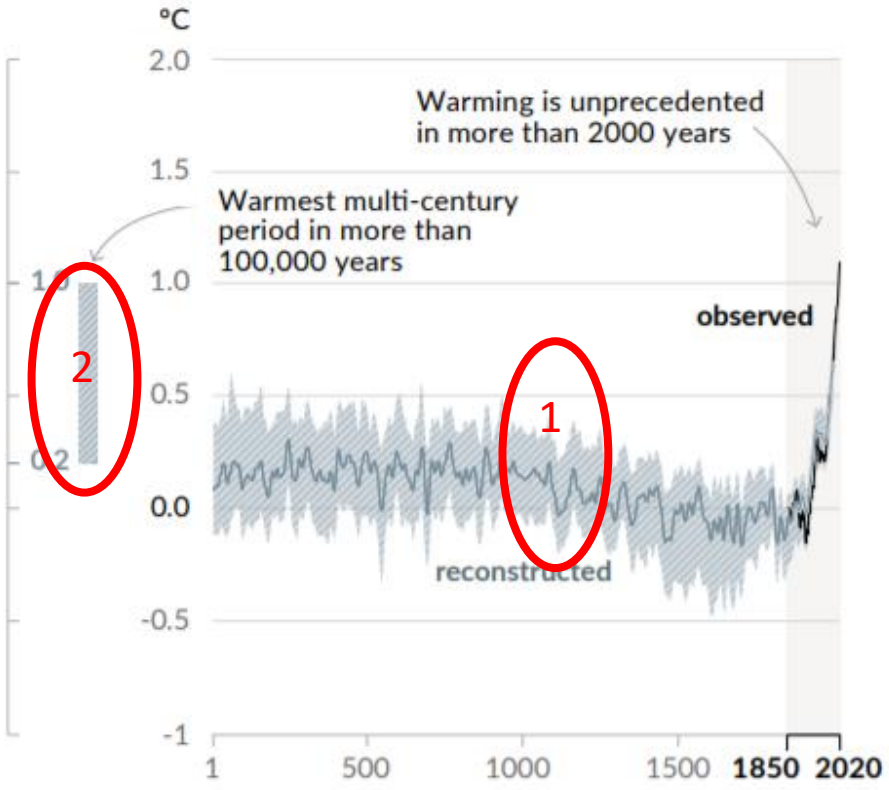
Acc. to the first IPCC Climate Report 1992 the ″average temperature ″ should have already reached the Paris Agreement target of 1,5°C (GSAT?) above the temperatures of the period 1850 – 1900. (73)

If the trend line of the Al Gore documentary "An Inconvenient Truth“ is extended till 2021 the “climate target” of the Paris Agreement of a temperature increase of 1,5°C (no definition) vs. the period 1850 – 1900 is already passed. (76)

The previous climate models regularly overestimated the increase of temperature. They are regularly adjusted to reality to avoid the ″climate change″ is becoming outdated by the time passed by.

***** 00:20:53, dec. 2006, based on the data of Mann et Al published in the Climate Report of 2001

Modelling the CO_2 Sensitivity of the Earth Climate II



In the IPCC report 2021 IPCC AR6 WGI the

1. Medival Warm Period 900 – 1200 AD
2. Mid-Holocene Warm Period 8500 – 6500 years ago

Which were clearly recognizable in previous reports disappeared completly respectively partially.

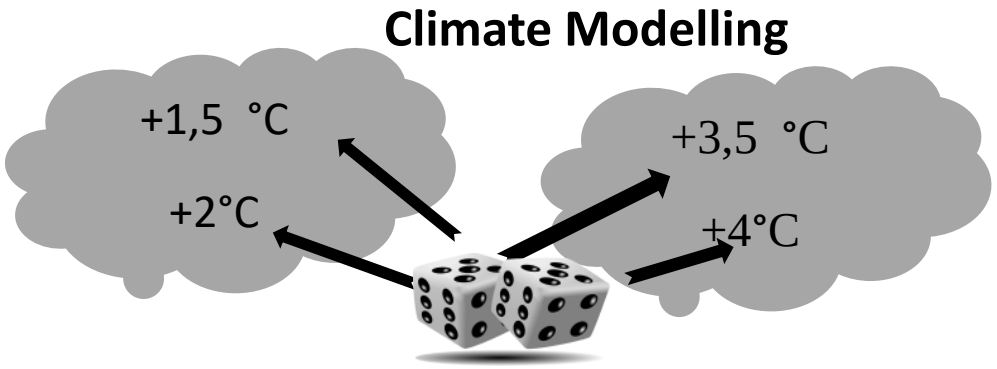
Figure SPM.1: History of global temperature change and causes of recent warming. (75)

The historic estimated temperatures published in the 2021 IPCC AR6 WGI report fit much better to the climate models.

Higher temperatures in the past, as the Medival Warm Period, combined with presumed lower CO_2 values would require complex adjustments of the CO_2-sensitive climate models.

Modelling the CO_2 Sensitivity of the Earth Climate III

A quantification of a potential temperature increase in case of a potential increase of the secondary ir-active gas CO_2 in the atmosphere would be a very, very tough scientific challenge. An appropriate calculation method could be a Monte Carlo simulation analog the reactor physics with the cross sections of the atmospheric gasses in the different wave lengths, clouds, the different earth surfaces, latitudinal lines, weather, seasons, variation of the gas composition in combination with a calculation of the heat transmission. It could make plenty of nuclear research centers busy for decades. Without a deeper knowledge – a proper quantification – of the effects of the clouds, the water evaporation, the results are arbitrary.



Models that does not reflect the complexity of our planet earth provide random results.

Stability of the Earth Climate

The earth climate is kept by 3 control mechanism that stable that sophisticated life did never extinct during the last 600 million years.

- Acc. to the Stefan Boltzmann law the counter radiation of a body (earth) increases with the 4^{th} power of the temperature

  $P = \sigma * A * T^4$ with $\sigma = 5{,}67 * 10^{-8}\ W/m^2/K^4$

- The water evaporation increases with increasing temperatures heavily, respectively decreasing heavily with decreasing temperatures. This control mechanism keeps the climate of the earth very steady. The temperature variation is much bigger in dry deserts than in wettish areas of the earth.

- The enormous heat capacity stored in the oceans softens temperature changes for several thousand years. A warming of the oceans by 1°C is equivalent to the solar irradiation of 15 years (J).

Conclusion of the Analysis

The hypothesis of the anthropogenic CO_2 stimulated climate change is very poor and sloppy.

The "science" of the "climate change" is a thin coating for a social or religious confession of faith.

"For me, it's a religious thing…." said N. Pelosi ((D) House Speaker) (80).

Global Warming more an Opportunity than a Risk

- Due the back radiation that increases with the 4th power, the strong increase of the water vaporization with higher temperatures the temperature increase would be higher at the poles than at the equator. The share of the earth surface supportive for life and agriculture would increase.
- Due to the increase of the water vaporization with increasing temperatures the planet would become more humid and fertile.
- A higher temperature would increase CO_2 emissions from oceans and permafrost and would thus increase the fertility of our planet.
- Higher temperatures would melt the ice in Greenland and glaciers in other parts of the world faster. The Helmholtz Institute in Germany estimates the sea level rise from it to 0.8mm actually (67). The Antarctica with an average inland temperature of -58°C would probably gain ice mass due to the higher humidity. Potentially the rise of the sea levels would increase slightly.

Appendix

Further stock, economic and political analysis…

https://holgernarrog.hpage.com/

Explanations, comments, references, see full text doc.
https://holgernarrog.hpage.com/get_file.php?id=34437128&vnr=994717

1 (hier). http://www.theguardian.com/environment/2009/jan/18/jim-hansen-obama

3. https://www.thegatewaypundit.com/2013/12/five-years-ago-today-al-gore-predicted-the-north-pole-will-be-ice-free-in-5-years/

7. Assessing the Physical Science of Climate Change: IPCC Working Group 1 (2007) From Material Presented by Susan Solomon, co-chair WG I at the Royal Society London, March, 2007 and Norwegian Academy Of Sciences Oslo, Norway April 2007

8. IPCC, 2007: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Chapter 7, P515 Figure 7.3 Carbon emissions Respiration land 119.6, Ocean 70.6 + 20

12. Common errors in the use of the Stefan-Boltzmann equation Jinan Cao 08/2012 http://jonova.s3.amazonaws.com/guest/cao-jinan/jcao_common-errors-stefan-boltzman_aug2012.pdf

13. Absorption thermischer Strahlung durch atmosphärische Gase, Stefan Sirtl, Nov. 2010 Uni Freiburg.

14. Doubling CO2 and basic physics, Posted on February 4, 2010 by Clive Best, http://clivebest.com/blog/?p=1169

20. Wikipedia, Zugriff 02.06.2017, Ersteller DEGREEN
https://de.wikipedia.org/wiki/Sonnenstrahlung#/media/File:Sonne_Strahlungsintensitaet.svg

24. Skeptikerirrtümer III: Der Treibhauseffekt und die Thermalisierung, Michael Krueger, 29. Oktober 2014 http://www.science-skeptical.de/klimawandel/skeptikerirrtuemer-iii-der-treibhauseffekt-und-die-thermalisierung/0012906/

25. Infrared absorption of atmospheric carbon dioxide, F. K. Reinhart, Swiss Federal Institute of Technology, Lausanne, CH-1015 Lausanne, Switzerland, p4.

http://www.entrelemanetjura.ch/BLOG_WP_351/wp-content/uploads/2017/01/2017.01-20-FKR-sur-CO2.pdf

27. Van Hoof et al. , Tellus 57B, 351-355 (2005)

30. CO_2: The Greatest Scientific Scandal of Our Time, by Zbigniew Jaworowski, M.D., Ph.D., D.Sc., EIR March 16, 2007

37. IPCC Finally Acknowledges Its “Himalayan Blunder”. American Scientific Guest Blog, By Pallava Bagla on April 4, 2014, https://blogs.scientificamerican.com/guest-blog/ipcc-finally-acknowledges-its-e2809chimalayan-blundere2809d/

38. Threat to Islands, The Canberra Times sept. 26, 1988 https://wattsupwiththat.com/2018/10/03/fail-30-year-old-climate-prediction-proves-to-be-a-load-of-bunkum/

48. US Dept. of Energy, CDIAC, Zugriff 29.01.2019 https://cdiac.ess-dive.lbl.gov/ftp/ndp030/global.1751_2014.ems

49. Messung von CO2-Säulengehalten in der Atmosphäre mit Lidar-Methoden, Dissertation an der Fakultät für Physik der Ludwig-Maximilians-Universität München, Dipl.-Phys. Axel Amediek 30. Januar 2007

51. Forbes, Rising Tides Of Terror: Will Melting Glaciers Flood Al Gore's Coastal Home? Larry Bell, Jun 26, 2012, 11:11am
https://www.forbes.com/sites/larrybell/2012/06/26/rising-tides-of-terror-will-melting-glaciers-flood-al-gores-coastal-home/#70479a514ee8

53. IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp. Chapter 6, Figure 6.1 Page 471 Ocean atmosphere 78.4 + Freshwater Outgassing 1 + Land use change 1.1 + Respiration Land 118.7+Vulcano 0.1

56. http://earthguide.ucsd.edu/virtualmuseum/images/CO2History.html

62. John Kerry took private jet to Iceland for environmental award, Fox News, Feb, 3rd, 2021 https://www.foxnews.com/politics/john-kerry-private-jet-iceland-climate-award

66. http://de.gofreedownload.net/free-vector/vector-misc/world-map-vector-177799/#.YFwx9K9KhPZ

67. https://www.helmholtz.de/erde-und-umwelt/groenlands-eismassen-auf-der-waage/

71. IPCC, 2018: Summary for Policymakers. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.

https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf

73. IPCC First Assessment Report Overview and Policymaker Summaries and 1992 IPCC https://www.ipcc.ch/site/assets/uploads/2018/05/ipcc_90_92_assessments_far_wg_I_spm.pdf

75. IPCC, 2021: Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press. In Press.

78. NASA Earth Observatory, Climate and Earth's Energy Budget, by Rebecca Lindsey January 14, 2009, Download May 2021.

79. IEA https://www.iea.org/reports/global-energy-review-co2-emissions-in-2021-279.

https://www.statista.com/statistics/1091926/atmospheric-concentration-of-co2-historic/

80. https://news.yahoo.com/this-is-gods-creation-pelosi-invokes-religion-for-climate-change-action-after-un-summit-182151094.html

81. Influence of Greenhouse Gases on Thermal Radiation from the Earth, W. A. van Wijngaarden and W. Happer , Department of Physics and Astronomy, York University, Canada, Department of Physics, Princeton University, USA, July 31, 2019

82. Blick 02.11.2021 um 14:38 Uhr Klimakonferenz COP26 in Glasgow: Politiker reisen mit Privatjets an, https://www.blick.ch/ausland/keine-spur-von-nachhaltigkeit-elite-reist-mit-400-privatjets-an-klimakonferenz-id16952745.html

83. https://commons.wikimedia.org/wiki/File:Albedo-e_hg.svg

84. https://glossary.ametsoc.org/wiki/Cloud_albedo American Meteological Society Glossary

85. https://wiki.bildungsserver.de/klimawandel/index.php/Albedo_(einfach)

86. Der Tagesspiegel 27.07.2023 15.31 Jan Kixmüller

87. https://climate.copernicus.eu/july-2023-sees-multiple-global-temperature-records-broken

88. https://weltwoche.ch/daily/temperaturen-um-bis-zu-acht-grad-zu-hoch-vorausgesagt-srf-meteo-liefert-regelmaessig-falsche-zahlen-wie-die-weltwoche-herausfand-chef-thomas-bucheli-gibt-der-technik-die-schuld/

89. https://www.cash.ch/news/top-news/hitze-in-miami-die-eiskappen-schmelzen-schneller-624833

90. https://gml.noaa.gov/webdata/ccgg/trends/co2/co2_annmean_mlo.txt

91. Handelsblatt Evening Briefing v. 06.09.2023