

The Consolidated Climate Change Theory

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Based on the 2020 - 2024 study and books: <https://dpreda.net/earth/>

Basic explanations for everyone's understanding of the climate issue.

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- 1) We conquered the planet mostly through deforestation, and changed the land to our needs; therefore we changed the surface-linked regional climates.
- 2) The key to our proper Earth care and management are the open, correct assessment of the situation, fair debate, agreement and cooperation.
- 3) In the 20-th century the Land Use Theory (LUT) studied the land-atmosphere climatic interactions and recommended land use reduction.
- 4) In the 21-th century the Carbon Emissions Theory* (CET) studies the carbon gases greenhouse effect and recommends emissions reduction.
- 5) Neither reducing land development, nor reducing carbon gasses emissions have proven realistic, while Earth's climate entered a critical phase.
- 6) We need a theory that uses the consistent parts of all the other theories **for the actual restoration and improvement of regional lands and climates**.
- 7) The proposed Consolidated Climate Change Theory (CCCT) improves the explanation of the carbon greenhouse effect through the effects of water and trees.
- 8) Since tree clearing has changed regional climate more than carbon emissions, proper tree planting can restore climate while repairing the land (page 26).
- 9) Planting useful trees stops forest fires, hot air curtains (HAC) and avalanche solar heating (ASH), and more than triples agricultural production (page 29).
- 10) Large-scale land rehabilitation programs downwind from the coast move as avalanche greening and cooling (AGC), improving regional climate (page 32).
- 11) Compact, city-style Unitary Rational Building (URB) saves land, and has outstandingly low capital, running, maintenance and transport costs (page 31).
- 12) Conservation of old forests and natural habitats in large Reserves becomes possible due to the increase in land productivity and availability.

Note*: We do not deny the carbon gases effects or their magnitude as stated by the IPCC; we just add the effects of the large and small water cycles.

This new climate restoration strategy is made possible through its high financial benefits for the agriculture, infrastructure and public sectors.

Climate change is real and is amplifying because it is due to the coupling between the atmosphere and the Earth surface, which was changed.

Almost all the large, dense trees that created and stabilized the soils were cleared out, so now most of the Earth is desert, pavement or degraded land.

The sharp decline in the state of the natural environment and climate requires a realistic plan with immediate and long lasting results.

The single way to really solve the controversial Earth climate problem is to openly and correctly discuss the issues and find rational solutions.

Over time, the system of complex interests and feedbacks in society between economic, public, and scientific groups has led to this climate crisis.

The crisis is due to insufficient rationalism used in analyzing the economic, social and environmental interests and in generating suitable solutions.

The result is that the above interests have not yet been convinced and appeased on a correct line of action by the current climatic research.

Neither the Land Use Theories (LUT) or the Carbon Emissions Theory (CET) show how to really decrease land development or carbon emissions.

The benefit from the CET was the development of the renewables technologies, which still need improvement and growth [57].

Deforestation alters the surface – climate balance and the powerful water cycle, resulting in desertification and climate change [58].

Over the 40 years of CET and focus on carbon, damaging deforestation (tree clearing and fires) has accelerated, creating a real climate crisis.

Low latitude deforestation has warmed all the Earth by relocating clouds from lower to higher latitudes, flooding and overheating the latter [59].

The above were amplified by the enhanced greenhouse effect produced by the carbon gasses emissions, especially since the industrial revolution.

While CET considers water and vegetation minor, and many CET studies show them as unwanted, LUT holds them vital and is based on them.

Therefore, we could use CET and LUT to compensate for one another, while developing workable solutions for our society's interests.

Global land and climate restoration are really possible only if they would produce significant economic and financial benefits.

Therefore, to succeed, we must develop climate solutions that are beneficial for economy (agriculture, infrastructure, private and public sectors).

However, to set up the above, we have to properly inform everyone (hence this basic presentation), to create consensus for effective action.

1. OUR PROBLEMS WITH THE NATURAL ENVIRONMENT AND THE CLIMATE

Before humans, Nature was vibrant and thriving, covering the entire Earth in a brilliant living layer, while the climate was normal and livable. Creatures and the early humans were adapted to those normal conditions, which we started to change for our exclusive, apparent advantage. We detached ourselves from Nature, invented human society and an artificial way of life and started to change our surrounding environment. However, our artificial way of life also relies on the natural conditions, so when we changed them too much, our construction began to crumble. Pollution, loss of land productivity and a destabilized, damaging climate were observed in the past 40 years to produce significant losses [66]. Yet, for a while, the benefits from continuing to do business as usual were larger than the losses produced by the destabilized environment.

However, in the past 5 years the mega-forest fires, tornadoes, extreme floods and droughts have shattered our economy and public opinion.

Climate change through deforestation is increasing, despite it was known since Gilgamesh [89] that clearing trees degrades the land and the climate. Early climatology was dominated by the studies of land use and land cover change (LULCC), that form the LUT, as shown in Annex 1 and Annex 3. LUT reflects the complexity of Nature's interaction with climate, thus are very difficult to model with the present computer models, thus LUT fell behind.

Then in the 1980' climatology changed to a cosmic space reference point, and enhanced the role of carbon with uncertain computer models.

The result was the CET, inspired by a CO₂ model of planet Venus that does not fit well the water-dominated Earth, thus needed enhancements.

CET calculates only the greenhouse effect component of the climate, but the Earth has clear symptoms of a destabilised water cycle (see page 27).

CET prioritizes the albedo effect of open land over the evaporative cooling effect of forests, leading to inadvertent recommendations against reforestation.

Contrasting with the imperfect results, there is a push towards global management through carbon gasses emissions versus land use management.

Apparently, the incorrect solution of geoengineering solar radiation would delay this crisis, but it is even more damaging and unsustainable [60].

Should we risk our single planet, or use the old and verified path of working with natural means for our artificial purposes while protecting life?

Further, it will be shown how the imperfections of all climate theories brought us to this impasse with lack of solutions. We shall also show how the proposed Consolidated Climate Change Theory (CCCT) builds upon CET and LUT, improves them and suggests new solutions.

- **LUT comprises very diverse theories (see Annex 3) that describe the land - climate interaction, now overlooked as having only regional effects.**
- However, if there is international effort, the sum of regional climate restoration successes could become real global climate restoration.
- Climatologists now consider that since land occupies only one third of Earth, and is far below the reference system of CET, its effect would be negligible.
- Since before humans most land was covered with dense forests, it indeed evaporated about the same quantity of water like the surrounding oceans.
- However, after humans deforested almost all land, evaporation was substantially reduced, increasing solar air heating and reducing the low thick clouds.
- Leading climatologists also state that ground processes would be irrelevant for the top of the atmosphere, where they calculate the climate effects.
- **However, a change in vegetation cover changes albedo, evaporation (thus clouds) and infrared radiation, thus the top of Earth energy balance.**
- Another reason for CET overlooking many processes described in LUT is that they are too complex for the present computer simulations to model.
- Interdisciplinarity of the issues, interconnectivity and wide temporal span are other difficulties in assessing LUT processes, but they remain relevant.
- One of the main difficulty in applying LUT research is that quantification of the results of their studies is difficult and hard to ascertain.
- To ask for more funding, most LUT scientists state at the end of their published papers that more studies would be needed to know the truth.
- **Besides the above, the capital deficiency of the LUT is that it has opposed the socially powerful land development interests.**
- The human way since prehistory was and is to change the natural environment and transform it into a human environment.
- This very fabric of humans is impossible to change or diminish just by invoking the good of natural environment or climate versus that of humans.
- Deforestation and land development for natural resources, agriculture and settlements (real estate) holds the largest power in our society.
- However, the environmental and conservation movement at the end of the 20-th century has created societal stress by trying to oppose land development.
- **In the 21 century, LUT was replaced with CET that does not stop land development, and its demand of carbon emissions reduction is too difficult.**
- There is land development demand for quantity (population increase) and for quality (a more developed society needs more land and resources).
- The very little virgin land left is under increasing stress from the growing socio-economic demands; unfortunately, Nature always loses.
- **Since CET has taken over the climate change issue, deforestation and land development against LUT recommendations has accelerated everywhere.**
- At COP26 the IPCC has approved deforestation until 2030 (for the time being), thus deforestation and forest fires went rampant internationally.
- Moreover, some CET concepts and scientific papers justify deforestation [46] and oppose reforestation [51], decreasing the chances of recovery.
- Indeed, the IPCC reports quote both opinions that forests would be desirable and unwanted, but the recommended action discredits tree planting.
- Even a LUT author falls in the extremist mistake of opposing tree planting as it is not natural, despite we have no other realistic option.
- **Since climate restoration through planting trees has numerous opponents, we have to find realistic ways to appease them.**

Thus, we have to investigate the solution of a 2020 - 2024 study [24][25] that can restore regional climate, while producing financial benefit.

Accept that the enhanced greenhouse effect of carbon emissions is one of the main causes of global warming and climate change [1].

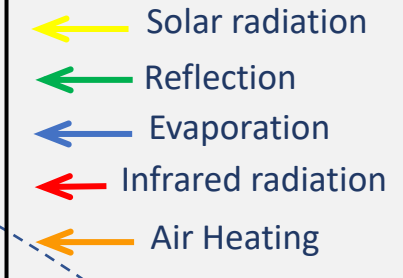
Find out the annual global average of the cloud radiative forcing, as only the low thick clouds substantially cool through their strong reflection [84].

Infer the ratio between the radiative flux of CO₂ in the lower troposphere and the other causes of global warming

Fossil fuels burning
Agriculture
Extractive carbon gases
Vegetation burning
Industry (cement)

Calculate the total radiative forcing of forests versus deforested land considering both the albedo and the cloud feedback, knowing that forests are mostly covered by clouds [84].

Improve the conceptual models referring to water by properly including all its radiative cooling to avoid unreal results showing water as a climate warmer [2]. Similarly for the problem of water being excluded or being a major driver of climate.[3]



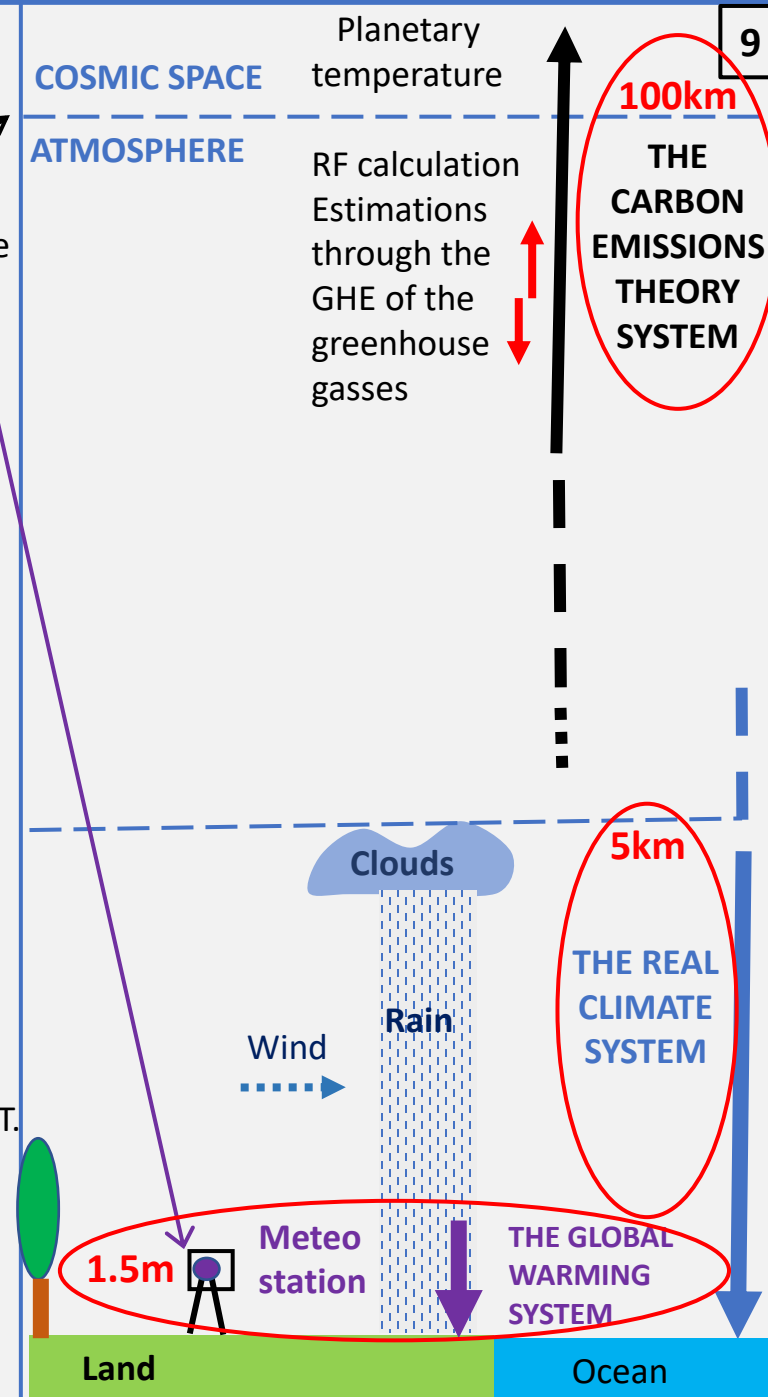
- Use the millenary ground observations/wisdom as validation information for the computer simulations.
- Ascribe levels of credibility to the computer simulations proportional to their ability to model the powerful water.
- Do not use for Earth management the computer simulations that cannot model the complex real mechanisms.
- **Consider that Earth is our single life support system when recommending simulations of insufficient credibility.**
- Consider all drivers of climate and their regional variability when attempting to generalize at global scale.
- Improve and widen assumptions instead of preferentially narrowing them towards carbon [61].
- Accept and support proper scientific debates with interdisciplinary specialists towards land and climate restoration.

It will be shown further that improvements of the Carbon Emissions Theory are needed before using it in practice.

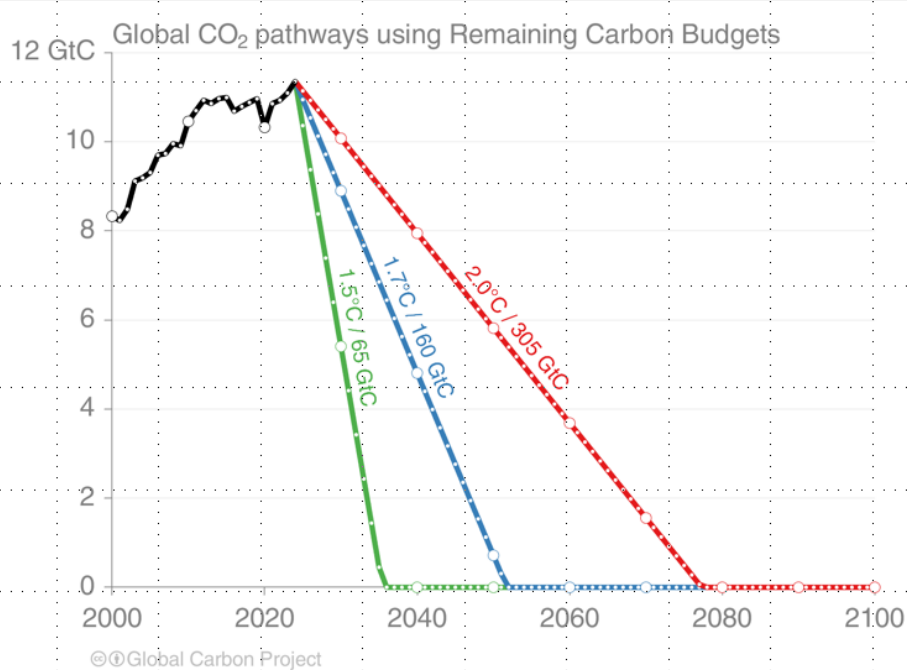
3.1 COMPARISON OF GLOBAL WARMING (GW) AND CARBON EMISSIONS THEORY (CET) PRINCIPLES

- **Reference system:** CET calculates estimates for the top of the atmosphere (100km) system of reference, while the real climate is under the clouds (5km) and the global warming (GW) refers to the air temperature measured at meteorological stations at only 1.5m above the ground. Given the great distance and differences in temperatures and other parameters, CET cannot represent GW or the real Earth climate.
- **The results of CET** cannot predict real climate, what weather where and when will occur.
- **Object of study:** GW uses actual temperatures, while CET uses the greenhouse effect (GHE) as a proxy.
- **Means of study:** GW accurately measures, while CET models some estimates.
- **Temporal aspect:** GW refers to past changes, while CET refers to estimations of future changes.
- **Method:** GW uses statistical analysis of real data, while CET uses computer simulations
- **Parameters:** GW uses the real temperature, while CET uses imaginary parameters like the planetary temperature, radiative forcing (RF), sensitivity, that cannot be directly correlated to the real processes.
- **Relevance to reality:** GW is on real processes, while CET excludes real processes that it cannot model.
- **Exclusivity:** CET excludes real climatic processes postulating that they do not influence RF, while they actually influence clouds and infrared radiation, which are crucial for the top of atmosphere RF balance.
- **Reciprocity:** GW can be calculated from all the local values, but this or the reverse are not possible with CET.
- **Management value:** GW extreme local values are more valuable than CET's global average.

While being qualitatively correct for the greenhouse effect of carbon gases, CET needs additional input from other theories to represent Earth's climate or global warming.

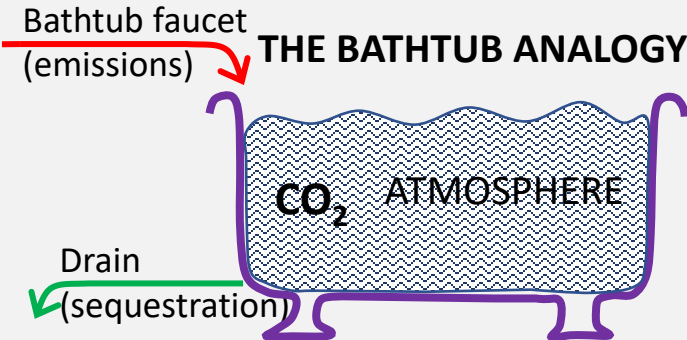


1. CET should accept a radiative forcing RF of deforestation and deforestation water, like it accepts that of irrigation water (Fig. SPM2 of [88]).
2. Accept basic physics: the greenhouse effect of carbon gases or any other gas does not depend on their residency time in the atmosphere [83].
3. All kinds of opinions and aspects of phenomena are mentioned in the IPCC reports, but only those pertaining to reducing carbon are favored for action.
4. There is more acceptance of destructive carbon capture and geoengineering, than of improvement of the insufficient conceptual models of theories.
5. There are larger climatic variations on land, at small latitudes and around civilization centers, , **suggesting deforestation as a main cause of climate change.**
6. CET insists that only a dramatic reduction in carbon gases emissions as in left graph can stop global warming by relying on the natural sequestration. In reality, most fossil fuels are used to produce heat, not electricity as from renewables, which in themselves need an increase in fossil fuels to be manufactured.

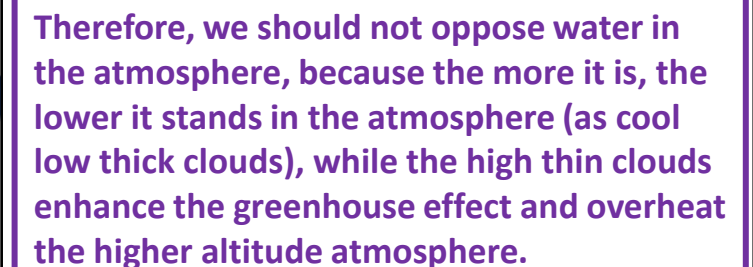


In a realistic bathtub analogy, as seen on the right, even if we could turn the faucet (emissions), at half flow to equal the water evacuated by the bathtub drain (the natural sequestration), the water level in the tub would remain the same.

However, to reduce the fossil fuel use to half, we would probably have to abandon the lands at more than 45 degrees of latitude, because heating is their largest fossil fuel requirement. Giving up to most developed countries is unacceptable, and as seen on right, it would not reduce the global warming. **Therefore, only an increase in carbon sequestration (the bathtub drainage) in a realistic way can decrease the CO₂ in the atmosphere, as it will be shown further in this presentation.**



We must reduce CO₂ by using all possible renewable energy, but to stop global warming we must create economical and environmentally friendly carbon sequestration.



Most published studies now oppose tree planting arguing that it would exacerbate global warming and turn forests into carbon sources if trees were to decay, making the situation worse than it is [51]. This argument is clearly flawed, as trees cannot emit more carbon than they have absorbed. Unfortunately, many of these logical inconsistencies wrongly influence the IPCC. We should ask why would we push forests to decay or put fire to them? They thrived millions of years before us.

Other incorrect arguments against planting trees:

- That carbon dioxide intake by trees would decrease as CO_2 levels increase to a point where photosynthesis becomes saturated [52]. In reality, photosynthesis increases to double the present level of CO_2 .
- That it would decrease biodiversity, when in fact forests are more biodiverse than grasslands.
- That afforestation should not be used to convert grasslands [53] and pastures, ignoring that most of them are results of older deforestation, so we would be actually restoring tree areas, not making new ones.

The overstressed efforts to push for carbon emission reductions end in damaging the planet's water cycle by opposing tree planting and natural water cooling. The result is opposite, of overheating the Earth, and really damaging ecosystems through desertification.



In addition to restricting natural water cooling through reforestation, the IPCC has extended at COP26 deforestation to 2030, thus rushed clearings are now underway all over the world, deepening the climate crisis.

Unfortunately, damaging geoengineering methods for climate intervention are also envisaged. Repeatedly injecting harmful substances into the atmosphere will not fix the climate, but worsen it with more changes. **To restore the climate, we must reduce the changes we have made to the planet, not exacerbate them.**

Therefore, the Carbon Emissions Theory makes interesting estimations of the greenhouse effect part of global warming, but for Earth management it needs participation of other climate theories.



4. HUMAN CHANGES TO THE EARTH

If humans never existed, probably now it would be:

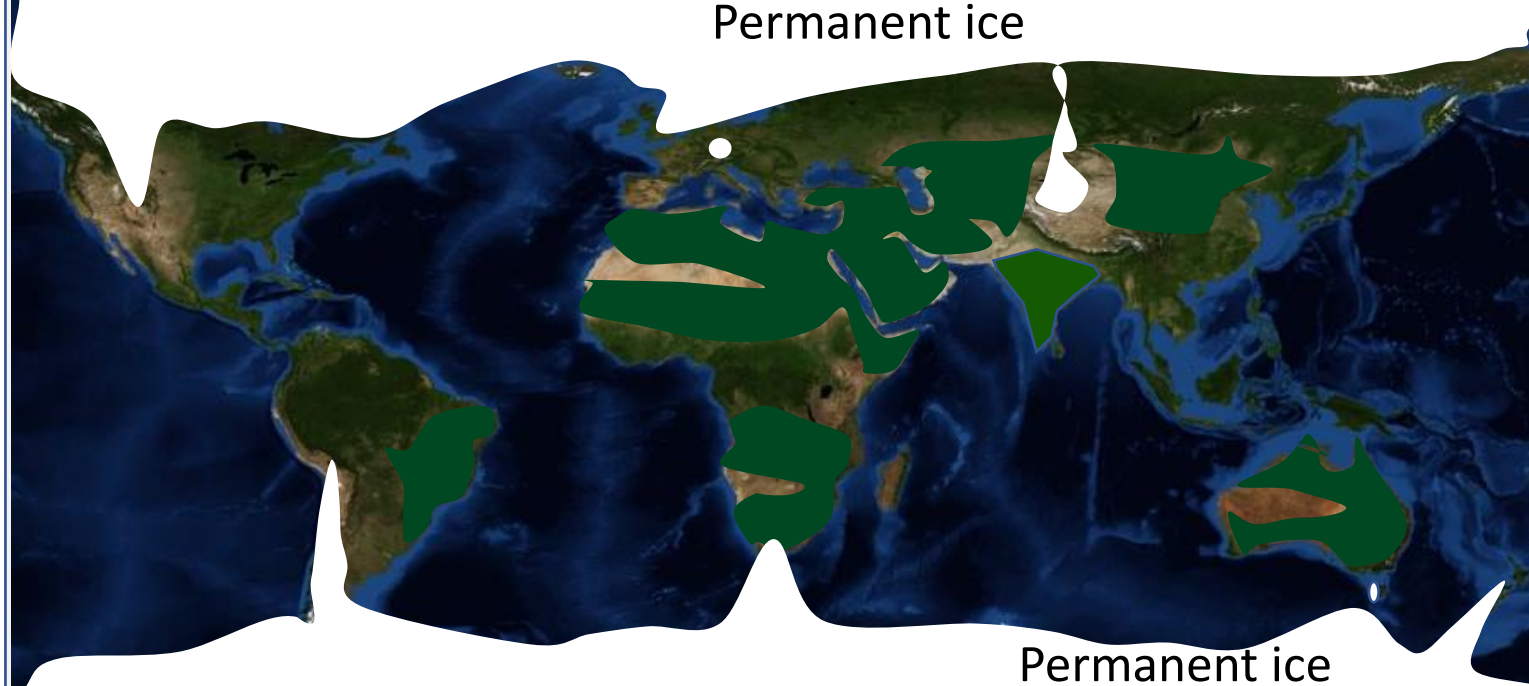
- Almost all land covered in forests; few savannas or deserts
- Full original biodiversity
- Much more water on land, more rivers and lakes
- Far less of today's CO_2 , so too little for plants
- More water in the lower, less in the upper atmosphere;
- Thick soils cover the land with deep, moist litter
- Frequent small rains, no floods or droughts because of abundant above land freshwater and groundwater.
- The beginning of a glaciation; much more ice [26]

Earth now:

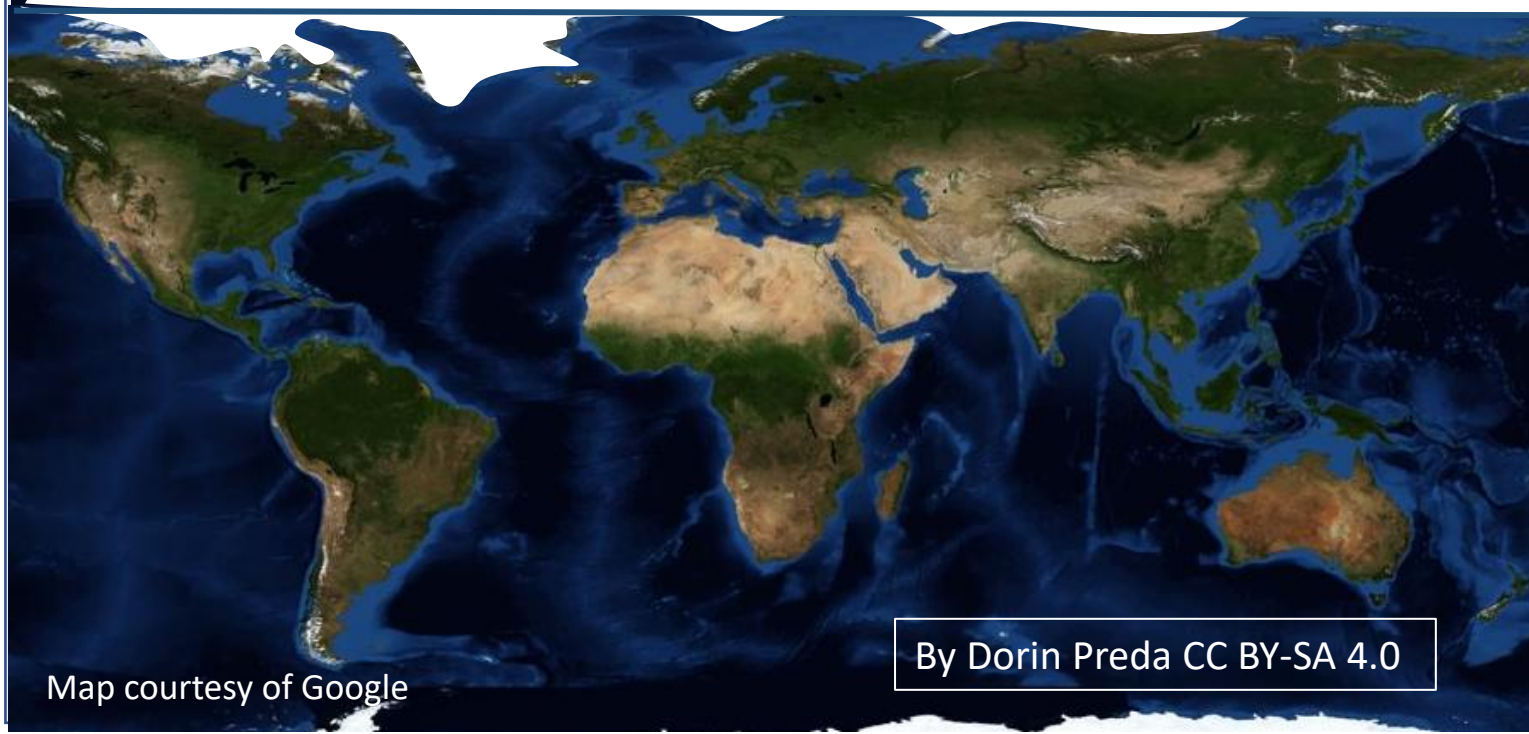
- About $\frac{1}{4}$ area and $\frac{1}{7}$ of the initial forest mass
- About half of Earth is barren land or desert
- The global air circulation is strongly influenced by the barren land due to its heating and cooling of the air.
- Global warming of a few degrees Celsius due to humans
- About 420 ppm of CO_2
- Far less biodiversity and mass of wild animals
- 90% of Earth is stressed by human input.
- More than $\frac{1}{3}$ of land are the deserts we created.
- Exceptional heat, floods, droughts, tornadoes.
- The land climate dominates the moderating sea climate.

Humans have produced the largest and sharpest changes in land and climate.

Permanent ice



Permanent ice



Map courtesy of Google

By Dorin Preda CC BY-SA 4.0

About 1 million years ago, humans invented artificial fire and used it to make clearances in forests for hunting and defence.

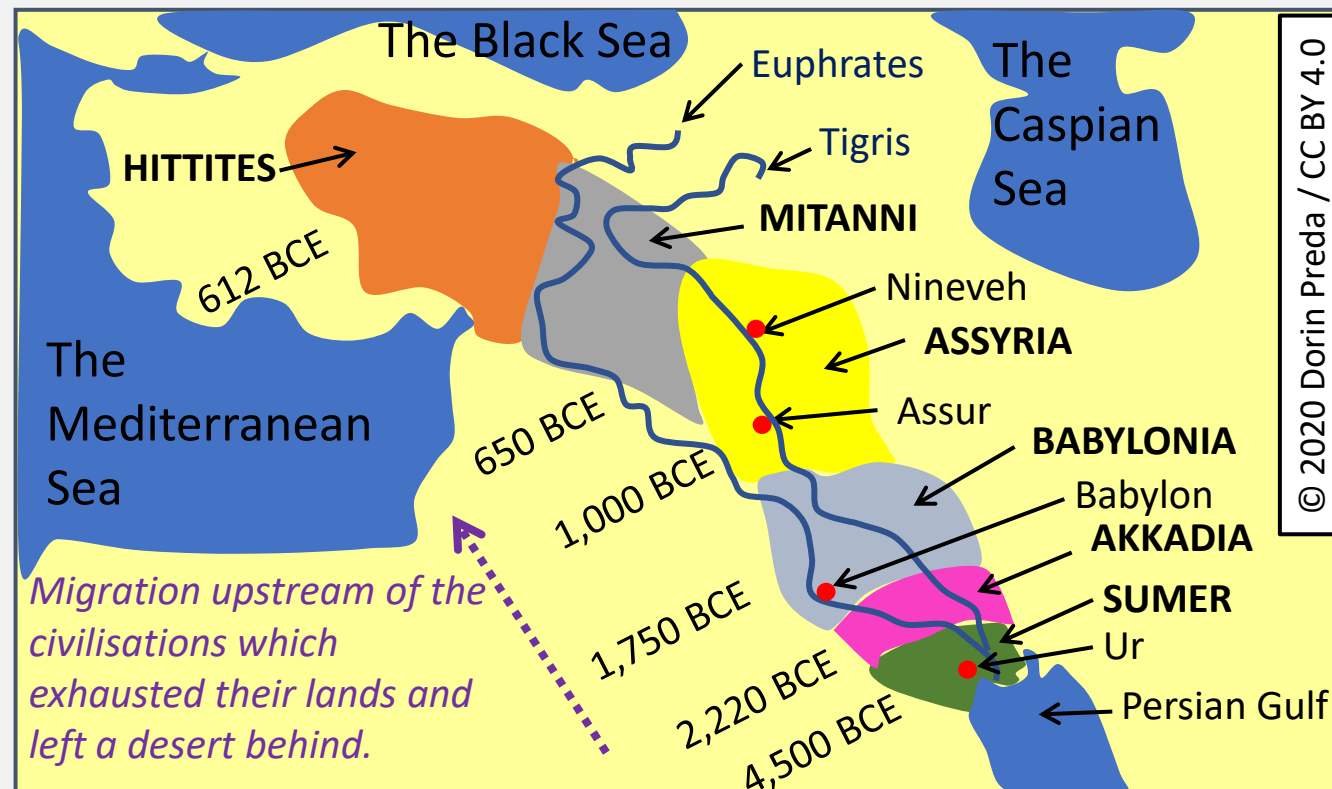
Later, they burned the forests to make room for pastures, settlements, crop fields [64].

However, when vegetation is cleared, less clouds are formed and precipitation decreases, leading to droughts and further vegetation loss [28 - 30], in a successive destructive process, like an avalanche.



Initially, people settled in the most fertile regions around river mouths, that were the best for the newly-invented agriculture. The first civilisations appeared on the Tigris and Euphrates rivers, in Mesopotamia, near the Persian Gulf. →

The formerly green Mesopotamia is now the Middle East desert, while elsewhere on the same latitude the land is still green [25].



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Deforested land quickly decays in the sun after agriculture tillage. Dried soil exhausted by irrigation is then eroded away and only the sand remains [65].

The pastoralists on the Eurasian steppe cut their forests and also lost their soils, resulting a chain of deserts from Europe to China.

All ancient civilisations grew on fresh good lands which they exhausted, then their power diminished as the fertility of their lands was lost, and people had to move on new lands.

Planetary cooling due to high cloud reflection

4.2 LOCAL EFFECTS OF SURFACE CHANGE [24]

Global warming

SR ← Solar radiation

R ← Reflection

E ← Evaporation

IR ← Infrared radiation

AH ← Air heating

SR = R + E + IR + AH

Deforestation increases global warming, damages the climate and produces desertification

High thin clouds

Greenhouse gases
Very high greenhouse effect

Sensible heat transfer

Hot air

Town

5km altitude
Anthroposphere

Medium greenhouse effect

High greenhouse effect

Greenhouse gases

Low greenhouse effect

Low thick clouds

Latent heat transfer

evaporation

Medium greenhouse effect

Ocean 20°C

Clouded forest 15°C

Forest 20°C

Crop field 25°C

Degraded land 30°C

Desert / town 35°C

The ocean does not heat objects (thus medium greenhouse effect), but uses almost all solar energy for water evaporation, shifting solar heat to upper troposphere. **The ocean has an excess of evaporation, which is attracted and precipitated by forests condensation [27].**

Low thick clouds created by forest evaporation and its aerosols cool the Earth by reflecting much more energy than they trap as heat underneath through their greenhouse effect. Water vapors condense in clouds which emit as infrared their latent heat energy, and return the water to the forest [30].

Only trees can extract and evaporate groundwater, transferring latent heat to the clouds at low ambient temperature, keeping the Anthroposphere cool, and the greenhouse effect low. Cutting down just one tree heats as much as a cooking hotplate, thus deforestation for crops and pastures has created most global warming.

Grasses evaporate less water than forests, so they are heated more by solar radiation, emit more in infrared, generating larger greenhouse effect than the one above forests. The **Anthroposphere** includes low thick clouds, all our interests, and the **meteorological stations** that are the benchmark for global warming [25].

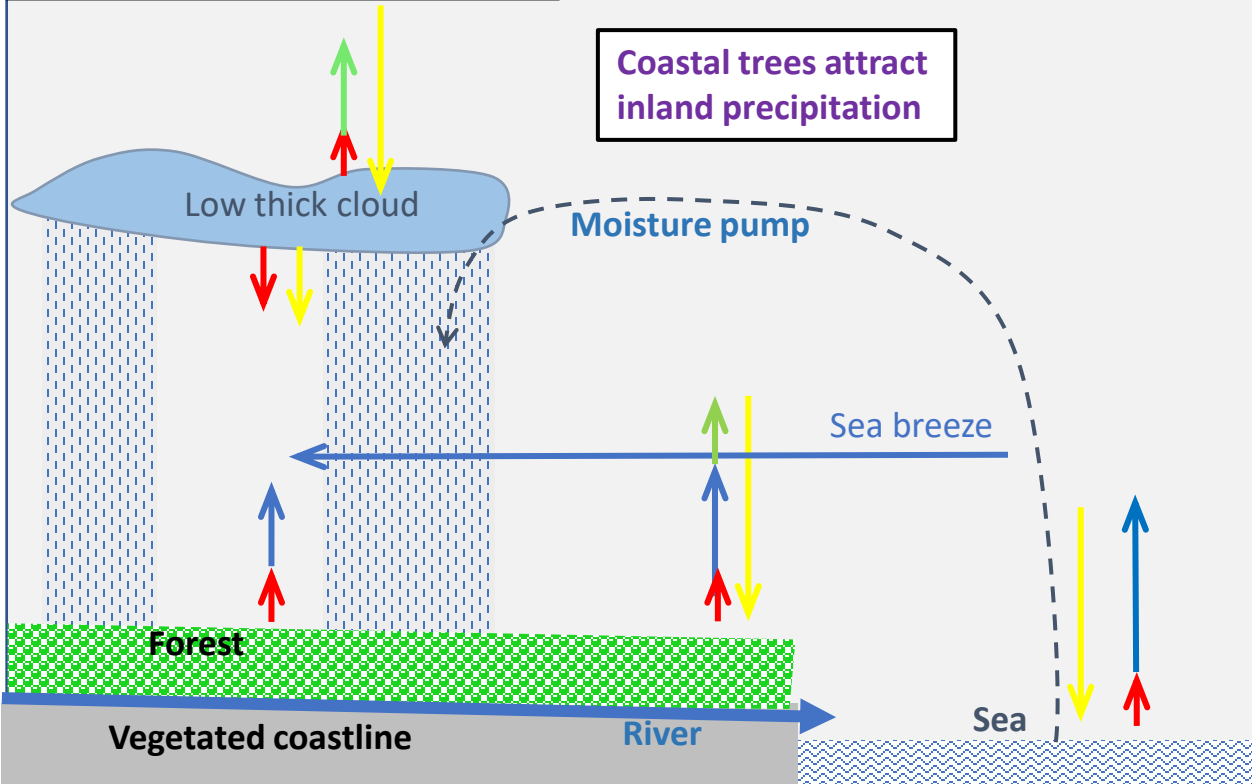
Less vegetation means less water for cooling, thus more infrared, hot air, and greenhouse effect. A few generations after deforestation and agriculture, the soil degrades and the scarce vegetation can only feed goats, which ruin the grass and eat tree shoots and bark, killing the last trees. **Goats start desertification.**

The vegetation-less desert or town overheat without water, and besides increasing IR, they heat the air which creates tall convection currents and high thin clouds that rise the greenhouse effect and global warming [28]. **Avalanche solar heating (ASH) uses the solar heat of previously dried lands to dry out new lands and change climate. Cutting down trees to build a town heats as much as a power plant.**

SR ← Solar radiation
 R ← Reflection
 E ← Evaporation
 IR ← Infrared radiation
 AH ← Air heating

BEFORE HUMANS

Coastal trees attract inland precipitation



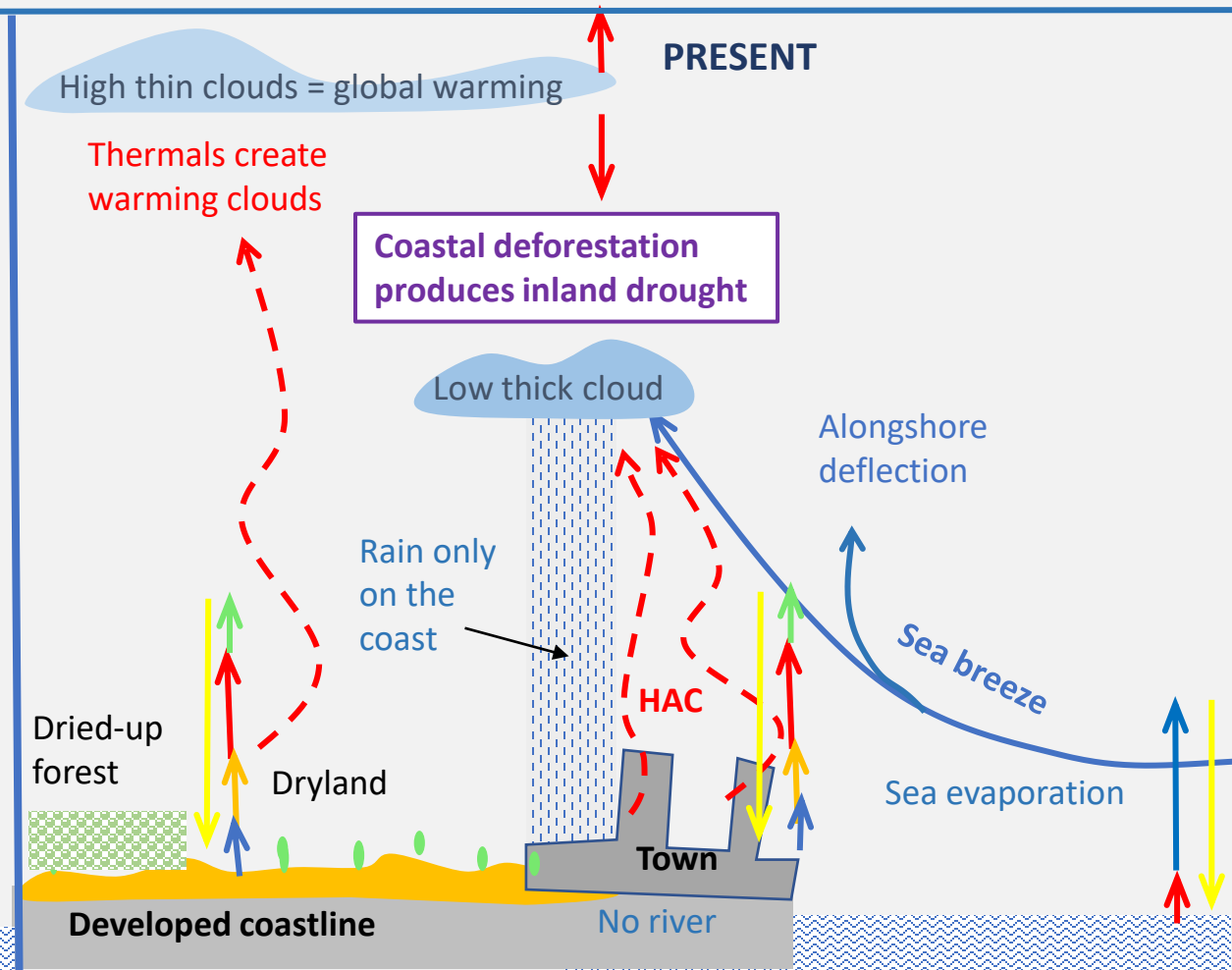
All coastlines were initially covered with forests that attracted marine humidity through moisture pumps [27], and ocean - land pressure differential [80], [25]. They favoured regular rain that fed the forests and created rivers from their excess precipitation/evaporation. **There would be no water on land if precipitation would not be induced more above the land than above the sea. Locally, only dense trees and mountains induce precipitation on land.**

PRESENT

High thin clouds = global warming

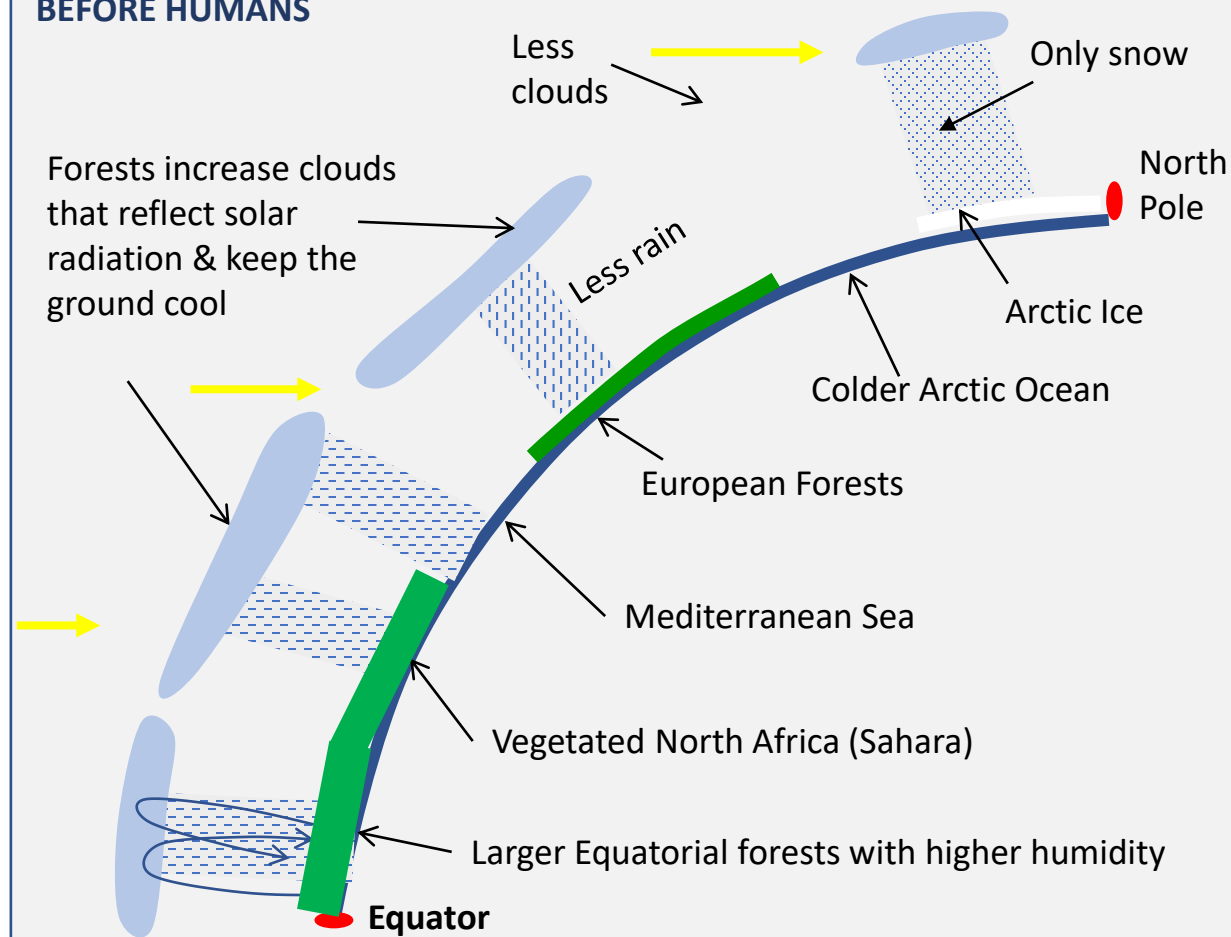
Thermals create warming clouds

Coastal deforestation produces inland drought



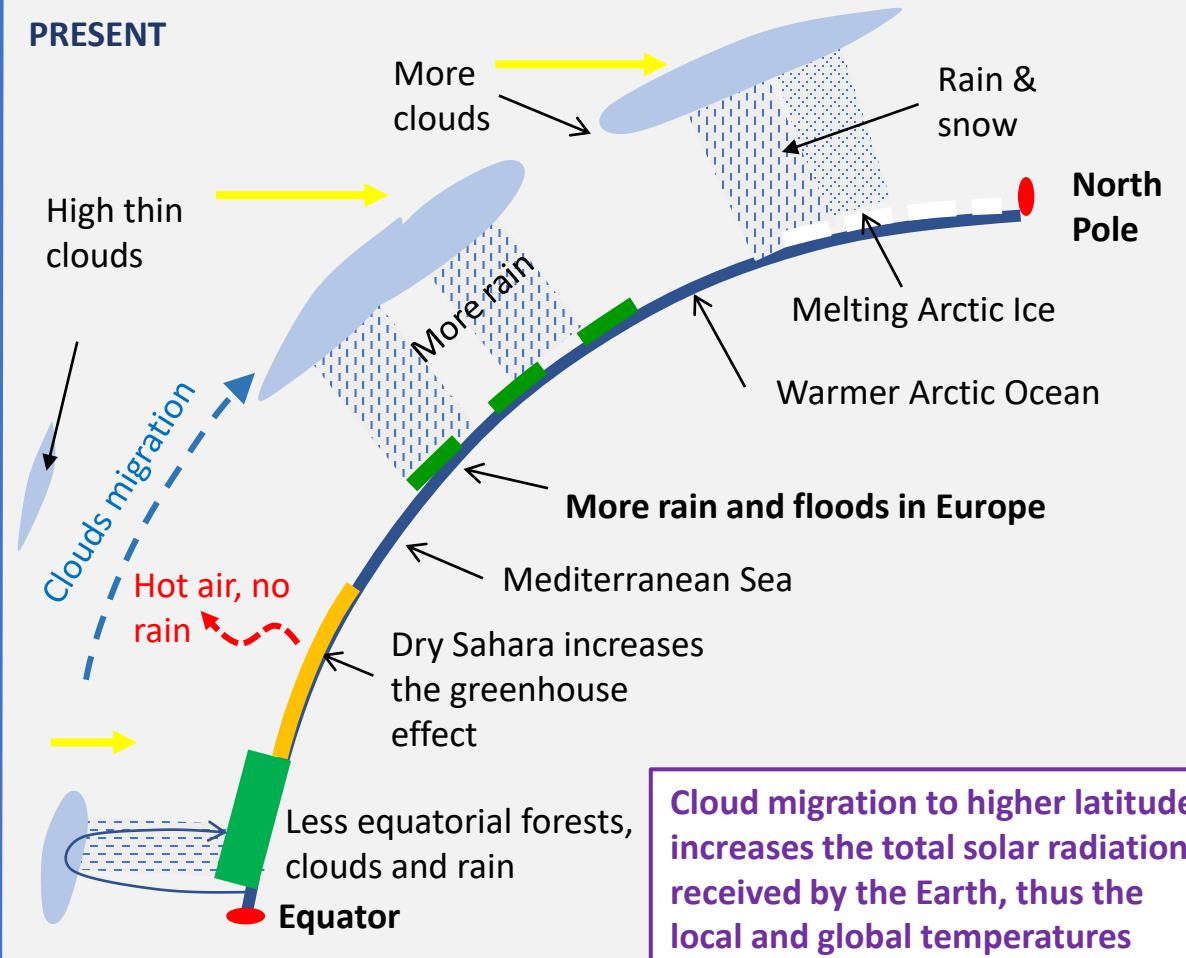
When coasts are deforested, they overheat the air that raises in strong thermals, a **hot air curtain (HAC)** [24] stopping marine humidity from reaching the inlands, which this way dry out. The sea breeze is either deviated alongshore, or pushed upwards to reach its condensation and precipitation height to create excessive coastal rain. Water that naturally would evenly feed the inlands is **now flooding the coasts.**

BEFORE HUMANS

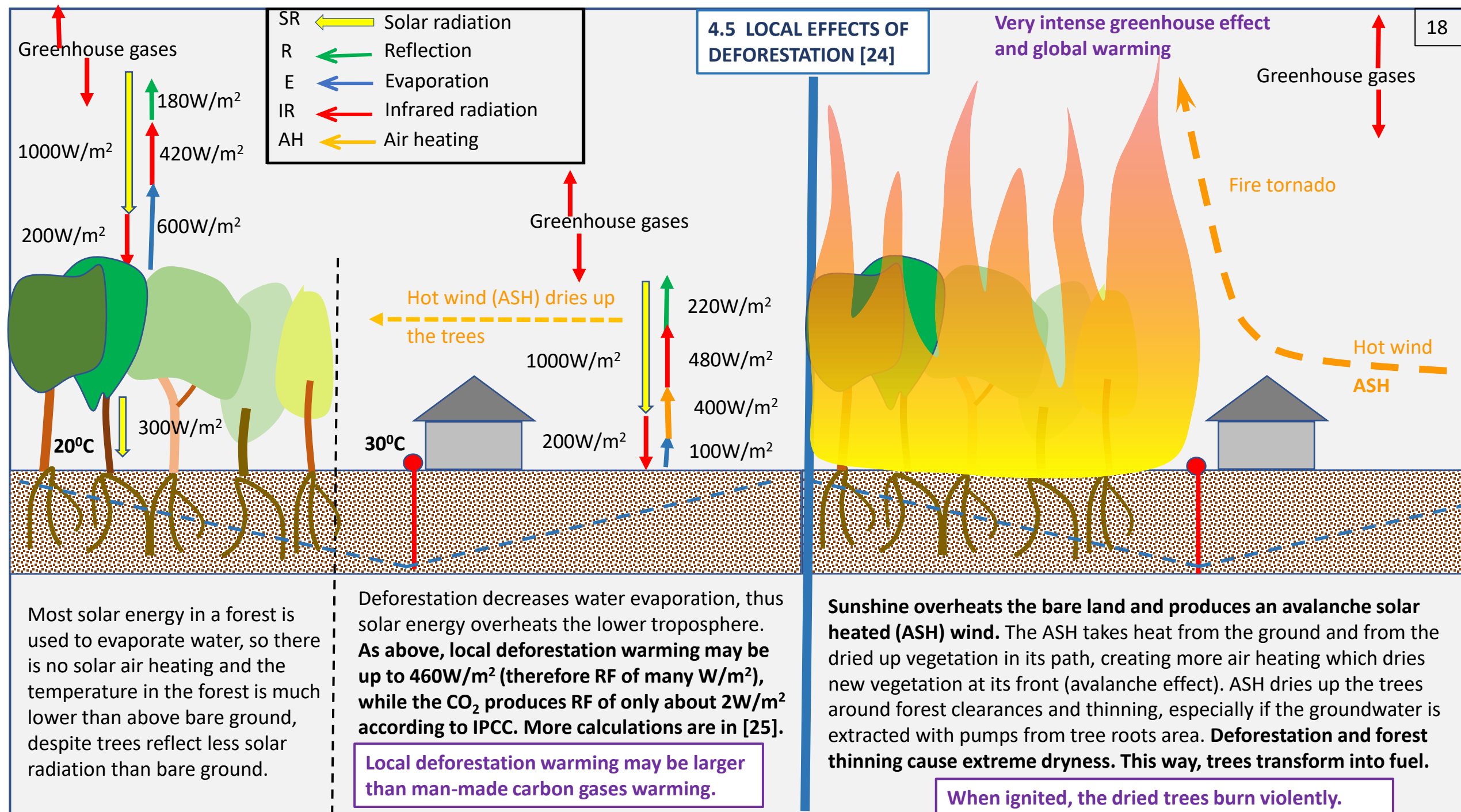


- The African equatorial forests were larger and wetter.
- Sahara had lakes, forests, elephants, crocodiles, thus wet climate.
- More clouds in the low latitudes meant less solar radiation on Earth.
- Most tropical ocean vapours condensed in the low latitude lands.
- Less clouds, precipitation and heat reached the higher latitude lands.
- Colder air, clearer sky allowed only snow than kept the Arctic frozen.

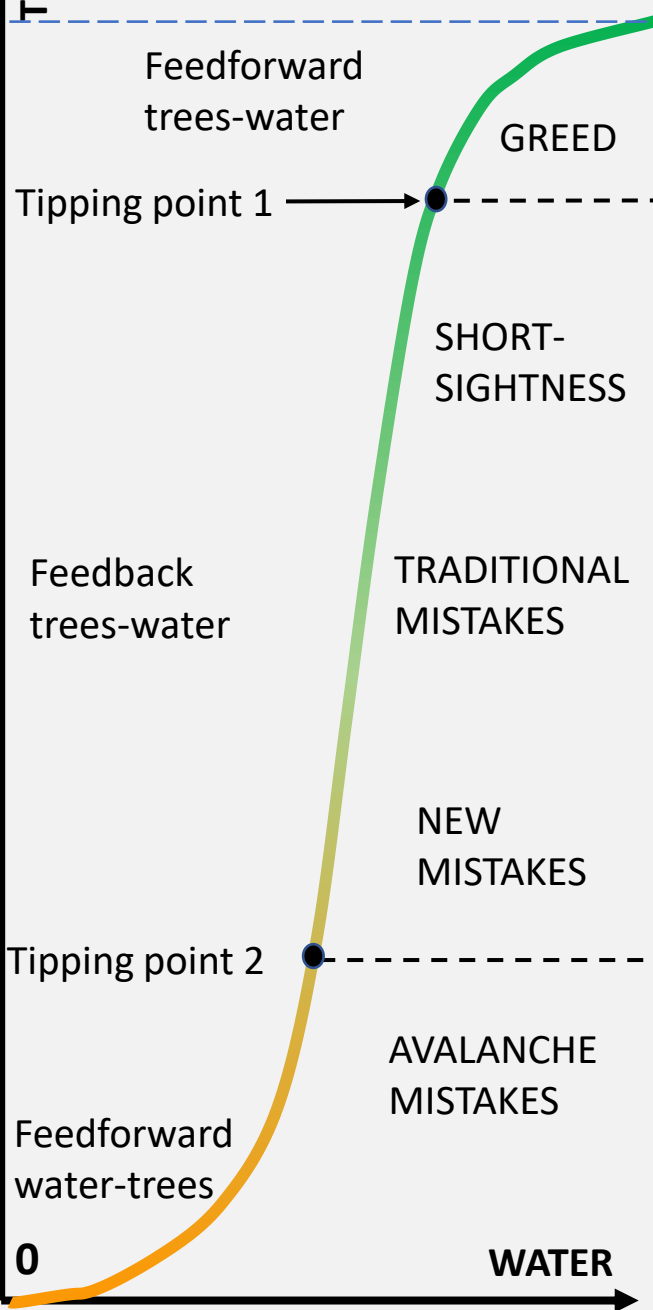
PRESENT



- North African forests were deforested for pastures BC and crops AD.
- Lack of forest evaporation decreased clouds & increased insolation
- The hot air convection due to the hot ground stopped condensation in medium-low latitudes Africa, producing the Sahara desert.
- **Tropical ocean vapours can now only condense at higher latitudes, overheating and flooding them and increasing global warming.**



4.6 THE DEFORESTATION – DESERTIFICATION MECHANISM (IN NORTH AFRICA) [24]

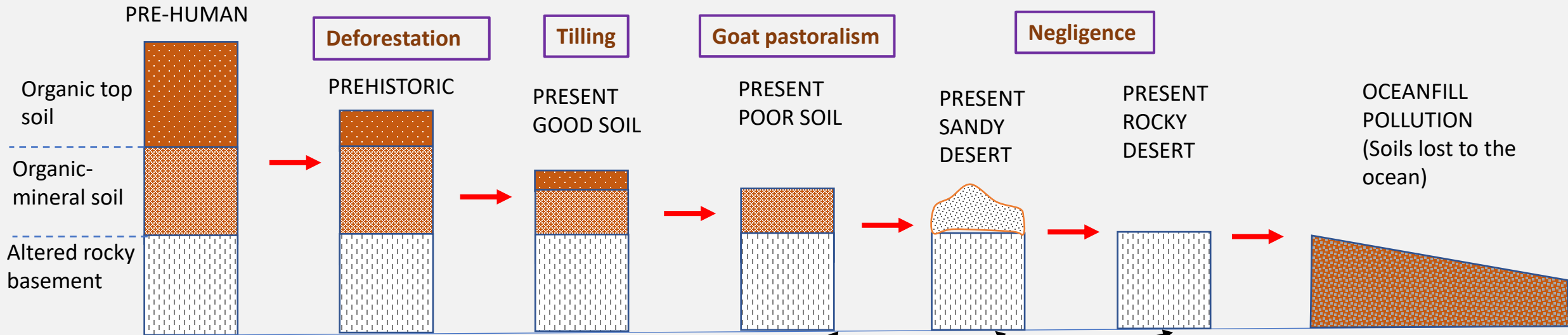


Before humans, N Africa had forests, lakes and savannas with lions, elephants, antelopes, crocodiles. Humans have put fire to vegetation for hunting and to promote grasses for antelopes versus useless trees. As result, the central Saharan belt dried out, most forests disappeared and the dryness cycles begun. Later, the Egyptians, Carthaginians and the Romans cleared out North African vegetation for their grain crops. **Upon deforestation, moisture input from the Mediterranean had stopped, drying out the entire North Africa.**

Civilisations abandoned their dried crop fields which were taken over by the local nomad goat herders. As desertification progressed in North Africa, people specialised as goat herders and camel traders. Goats ate all vegetation that tried to survive on seasonal moisture, while people cut last trees for fire. In the East, Somalia used to have a wet monsoonal climate that supported forests until 1000 years ago. As North-Africans lacked trees they cut for fire, a demand for charcoal aroused, supplied by the Somalians. A tradition of charcoaling their forests was formed in Somalia, goat herders then using the cleared land. Pastoralism is more suitable to drylands than growing crops, but goats destroy all vegetation (feedback). Pastoralism is also a more comfortable occupation, children and women doing most of the work. Somalia used to have a powerful monsoon supplied by abundant moisture evaporated in the Indian Ocean. As forests disappeared, the climate of Somalia dried out and the intense monsoon mostly stopped. That monsoonal rain that fed the Nile in Ethiopia had diminished, reflected in Egyptian civilisation decay. As deforested Somali land further degraded due to goat pastoralism, population stresses appeared. Therefore, piracy became a traditional trade in Somalia in the past 500 years, as result of deforestation. CET climatologists consider the above a natural, cyclical, tropical process amplified by carbon emissions.

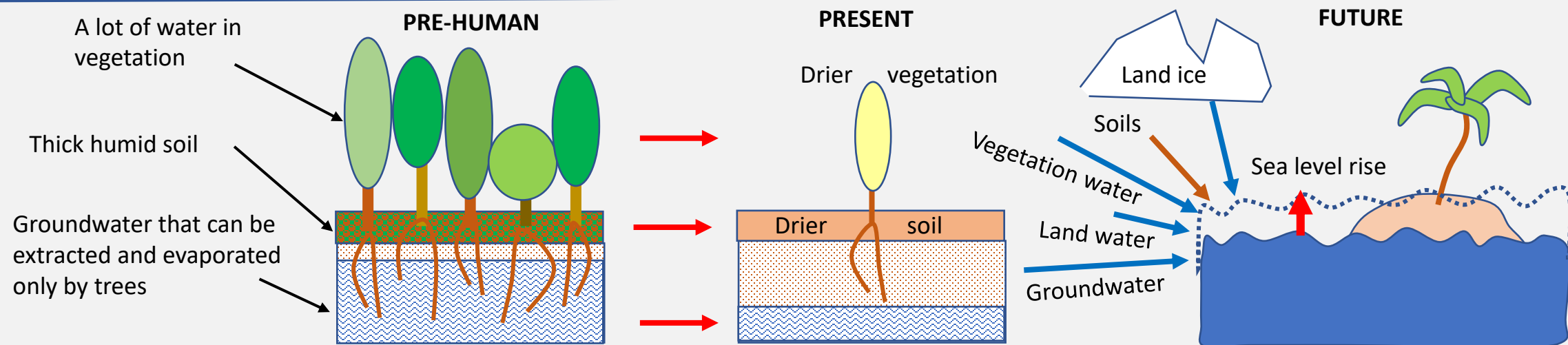
ASH power increases as it dries out vegetation from larger areas and produces more sand by soil erosion. People were pushed south by the advancing sand, creating the Sahel and its socio-economic problems. The ill-designed African Great Green Wall was supported financially in 2022 despite the 2020 correct advice [24]. Some misinformed African community leaders inform their population that trees would enhance drought [87]. Thus Sahel people cut the remaining trees to stop them evaporating the water needed for their goats' grass. By exceeding the tipping points, avalanche desertification advances to the south with the dominant wind. Desertification now threatens Central Africa, that through mismanagement can become as dry as Somalia.

The further decrease of the water cycle in Central Africa will have grave consequences for the global climate.



The originally clear, now muddy rivers carry the dark soils to the ocean, while the remained light-colored, degraded land is visible from space.

The largest loss is that of the irreplaceable soils, because only thick soil can support large trees which could restore climate.



THERE IS MAJOR DAMAGE TO EARTH AND TO LONG TERM HUMAN INTERESTS DUE TO IMPROPER MANAGEMENT.

The Reason for a Consolidated Climate Change Theory (CCCT) is that using exclusively any of the theories hampers correct action on other theories lines. (*For example, carbon emissions reduction is shown at present like the single solution, while forests burn due to inadequate water and trees management.*)

The purpose of the CCCT is the theoretical and applied study of regional climates with a view towards their restoration and/or adaptation to human needs.

The CCCT includes verified correct information from all theories in Annex 3, to which it adds new insights; it does not consider any theory dominant.

Suggested Principles of the CCCT:

- 1) The assessment of climate issues should be based on open, interdisciplinary and independent scientific debate, not on the number of similar opinions.
- 2) Conceptual simulations and the associated basic calculations take precedence over computer simulations and modelling when they give divergent results.
- 3) Direct, local observations and measurements take precedence over remote sensing or modelled interpretations, and serve to validate the latter.
- 4) Preference should be given to natural processes or their closest artificial derivatives, and the results should be judged through experience*.
- 5) Change versus the natural state should be minimized and implemented only in small spatial and large temporal steps. Fire should be banned.
- 6) For both theoretical study and climatic management, Earth should be divided into regions of distinct climate within each country**.
- 7) The integrative study of the global climate should support but not impose contrary conclusions or take precedence over regional climate studies.
- 8) Each biophysical factor influences a regional climate in different spatial-temporal measure and may be a driver in that region at that time***.
- 9) The state of the climate in each region should be analyzed in co-operation with local and traditional experts depending on their previous results****.
- 10) Regional climate management should be devised considering all significant information and adapting it to regional biophysical and economic conditions.

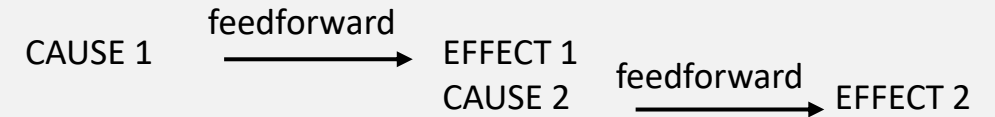
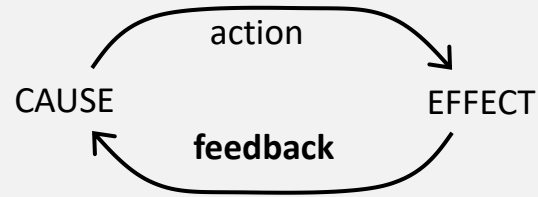
***Note:** *For example, it is not admissible to state that water or vegetation would warm the planet when millenary experience shows the opposite.*

****Note:** *These climatic regions could continue in adjacent countries (cooperating with one another), but they should be national for management purpose.*

*****Note:** *There is no global scale of value between climate factors. “Regional” – “global” may be theoretical, but for management only “regional” is relevant.*

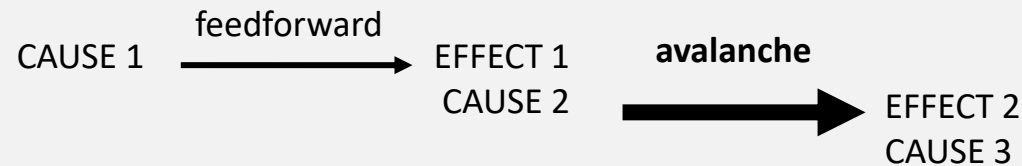
******Note:** *Some indigenous populations ruined their land and the climate, thus their input in management should be balanced accordingly.*

1) Feedforward



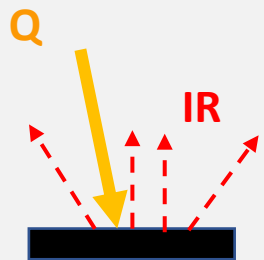
Distinct from “feedback” used in climatology, we introduce the term “feedforward”, which is better than the known term “chain reaction” because a chain cannot exert force in the forward direction. Also, in a feedforward the reaction does not return to the initial causal element, but is transmitted forward to another.

2) Avalanche



Additionally, we suggest the term “avalanche” for a feedforward with amplification instead of “cascade”. Pages 18, 32, explain a few kinds of climatic avalanches.

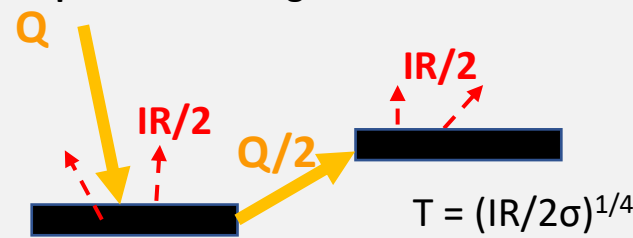
Classic emission



$$T = (IR/\sigma)^{1/4}$$

Emission temperature of the received heat Q is according to the Stefan-Boltzmann law

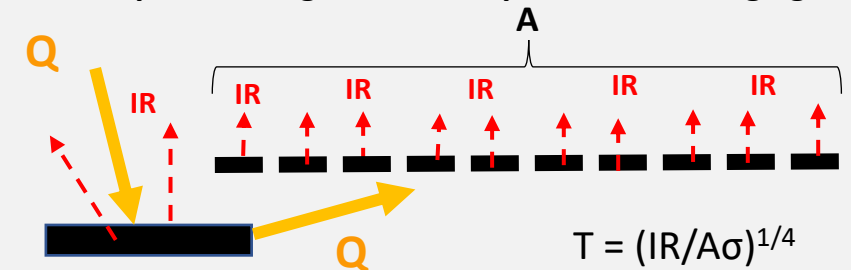
3) Divided Heat Emission (DHE) enhances the evaporative cooling effect of water



$$T = (IR/2\sigma)^{1/4}$$

Emission temperature decreases if Q is divided among two or more objects that emit independently (e.g. ground and air)

4) Dispersed & Divided Emission (DDE) further increases the radiative capacity of water vapor, making it the most powerful cooling agent.



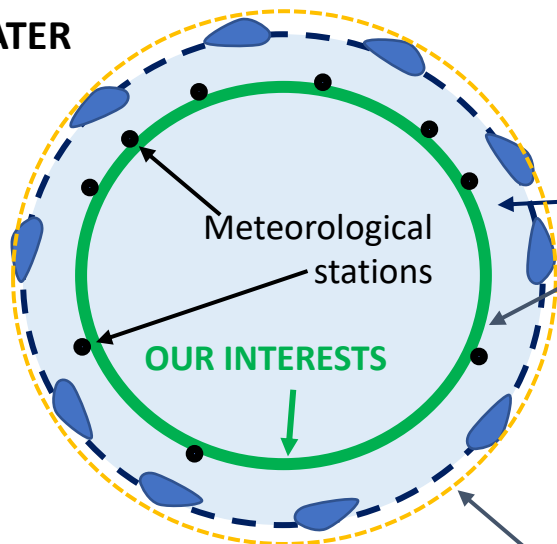
$$T = (IR/A\sigma)^{1/4}$$

Emission temperature decreases further if the object shares its heat with another object like water that is then dispersed over a larger infrared emission area A . This is similar but additional to the known “emission in layers” mechanism..

Heat is dispersed in the atmosphere between multiple agents: ground, vegetation, water liquid or vapors, air layers, etc., all emitting infrared radiation through mechanisms like DHE and DDE. The more heat is dispersed, the lower is their temperature and therefore Earth's temperature.

5.2 THE SYSTEM AND THE ENERGY TRANSFERS OF THE CCCT

WATER

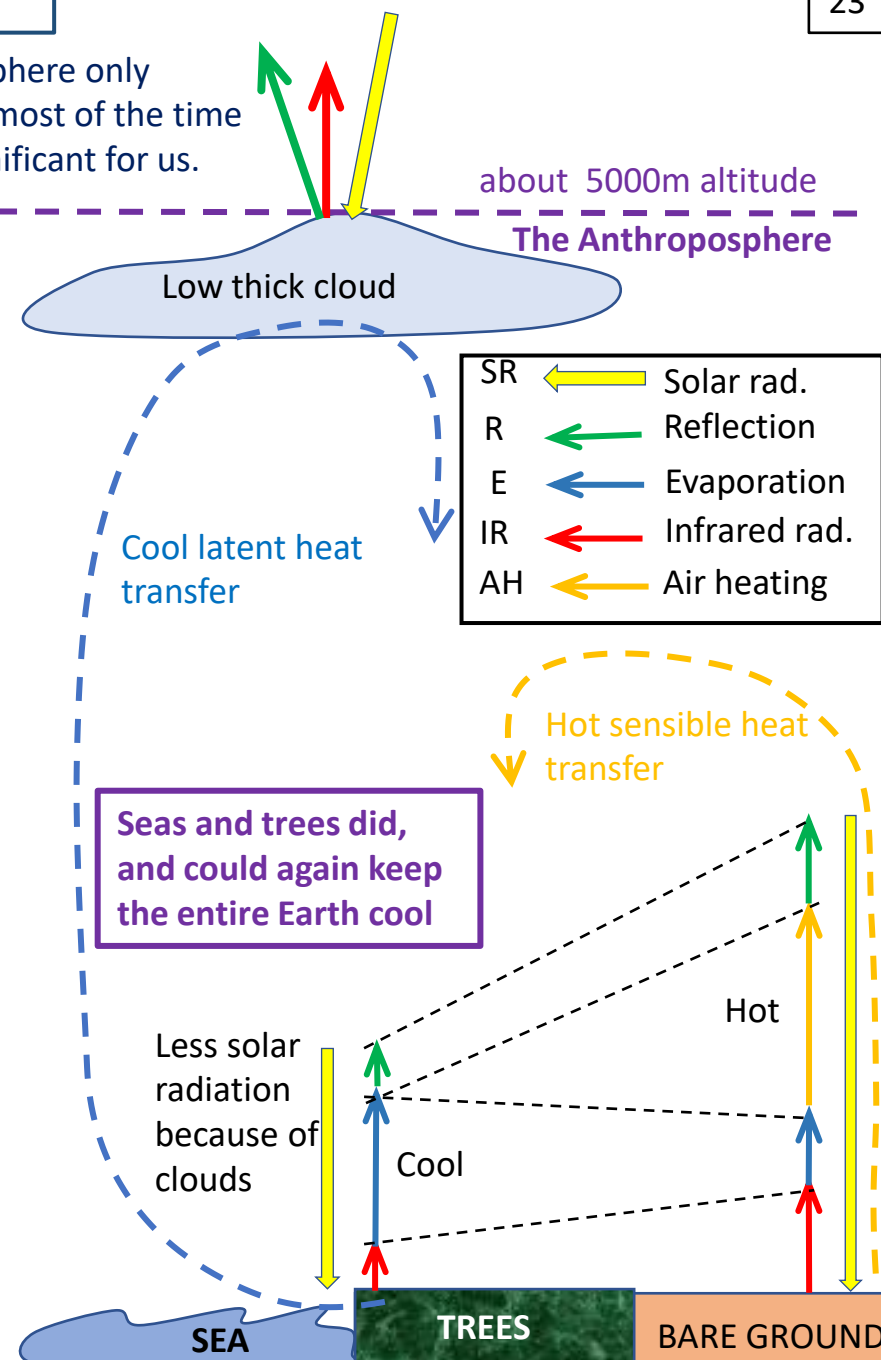


The system of the **Consolidated Climate Theory (CCCT)** is the Anthroposphere near the ground, under the low clouds, where the climate happens, and the meteorological stations are (the benchmark of global warming), and all the interests of our society. The CCCT also includes the carbon gases effect in the Anthroposphere.

The **CET system** has detached us from Earth and immobilized our actions because its system of analysis was set too far, at the top of the atmosphere and analyzed only the temperature increase.

The area above the Anthroposphere only receives the heat from below; most of the time it has no climate processes significant for us.

Despite claims of CET models that water bodies and forests would heat the planet [84] [85], they do not get hot because they evaporate much more water than the bare land which has far less water. Evaporating water, forests and seas cool the Anthroposphere and evacuate that heat above the clouds. This process happens all over the Earth and it is not diminished if all land surface is cooled this way. Since meteorological stations are near the ground, they would all record cooling if we cool with water all drylands and deserts; **this way the result would be global cooling.** This obvious result of the CCCT is opposite to the results of CET modelling.



High thin clouds

R3
AH3

Low thick clouds

IR1

The latent HEAT BYPASS SYSTEM lowers the IR, thus the greenhouse effect under low clouds

Anthroposphere

Hot
sensible
heat
transfer

Human Zone

Natural Zone

IR1
AH1
E1
TREESAH2
E2
BARE GROUND

Town

SEA

It is often stated [2] that trees have a global warming effect because they reflect less solar radiation than bare ground. In reality, due to their high evapotranspiration, large tree areas are covered by low thick clouds [90] about 70% of time, cooling the Earth through the high cloud reflection [24].

Tree areas have a cooling effect because they are mostly covered by low thick clouds.

Deforestation reduces evapotranspiration, this way increasing the above ground air temperature, thus the recorded global warming. It also increases infrared radiation that drives the greenhouse effect. It also changes the sensible and latent heat transfers, this way changing the climate.

Deforestation is a main driver of global warming and climate change.

The greenhouse effect happens in 2 stages: in the first solar radiation is transformed by the ground into infrared radiation emitted upwards, and in the second stage that energy is amplified by the greenhouse gases. However, in the Natural Zone on the left the higher evaporation $E1 > E2$ (due to trees and the sea) substantially reduces the infrared radiation $IR1 < IR2$ and therefore the greenhouse effect compared to the Human Zone. Since infrared radiation is proportional to the fourth power of temperature, ground water cooling decreases dramatically the IR and the greenhouse effect. **Thus, the coupled action of tree areas, water vapors and low thick clouds creates a latent heat bypass system (HBS) in the lowest atmosphere.**

Deforestation decreases the heat bypass system between surface and clouds

Additionally, due to deforestation the overheated ground is sending rather small quantities of water vapors in strong hot air currents to high altitude, where they freeze. This way, the high thin clouds are formed by the hotspots of deforestation [24]. The high clouds are known to produce intense global warming, unlike the low thick clouds that cool by reflecting more energy than they trap underneath.

The high thin clouds increase due to deforestation dangerously accelerates global warming.

It is really debatable that clouds trap heat underneath and would have net warming effect due to their greenhouse effect [84]. In reality, average 24h temperatures are about one degree Celsius lower under the low thick clouds than in sunny times[25].

Thus, low clouds have a net cooling effect.

Deforestation increases both the above ground temperature and the greenhouse effect in the upper atmosphere.

5.4 THE CCCT IMPROVES CET

We can check the CET simulations of the greenhouse effect (GHE) by using a basic conceptual equation: **Greenhouse effect = infrared radiation x greenhouse gases**

The small local variations of CO₂ control the water vapors effect according to the CET principle. Ground-absorbed solar radiation is transformed in energy for water evaporation (E), infrared radiation (IR) and air heating (AH), the latter being the temperature for global warming (GW).

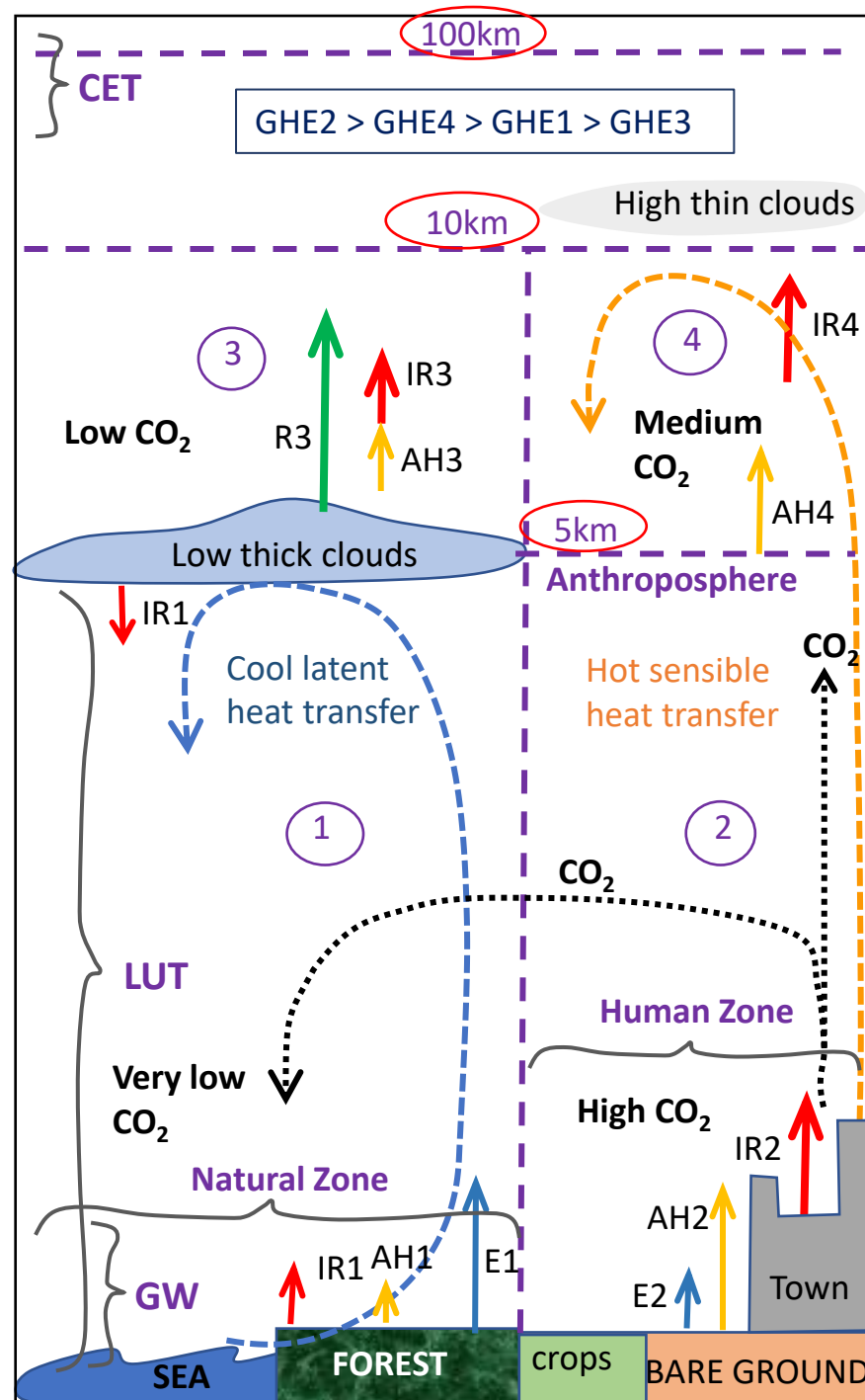
1) The Natural zone of the Anthroposphere absorbs (thus has low CO₂) and is shaded by the low thick clouds, so less than half of solar radiation reaches the ground, where the high water evaporation E1 allows only little solar air heating AH1 and infrared radiation IR1. Since CO₂ is small here, water is condensed in the thick clouds, and IR1 is small, **the greenhouse effect GHE1 is also small**. Also, average air temperature in zone 1 is small.

2) The human part of the Anthroposphere has and emits a lot of CO₂ and is slightly shaded by the high thin clouds, so most of solar radiation reaches the ground, where the small water evaporation E2 results in high infrared radiation IR2 and solar air heating AH2. Since CO₂ is high here, and IR2 is large, **the greenhouse effect GHE2 is also large**. Additionally, the average air temperature in zone 2 is the highest of the 4 zones.

3) The top part of the natural zone is dominated by the high reflection R3 that removes most of energy without climatic outcome. It has little CO₂ and water which is condensed in the below cloud, while IR3 is small as detected by satellites, therefore **the greenhouse effect GHE3 is smaller than GHE1 and much smaller than GHE2**. Air temperature is the lowest in this area, as it includes the altitude effect).

4) The top part of the human zone is dominated by the hot air currents that create the high thin clouds. It has medium CO₂ and water vapors, while IR4 is much larger than IR3 according to satellites, **therefore GHE4 and average air temperature are higher than in zone 3**.

This way, the Consolidated Climate Theory can improve CET modelling by showing that the greenhouse effect is larger in deforested areas than in areas with large trees.



1. The cloud feedback is concluded by most studies [90] as being positive (creating global warming); however, calculating diurnal temperature averages results that under compact clouds it is about 1°C cooler than in cloudless 24 hours [25]. Additionally, satellites measure less infrared radiation emitted above the low clouds.
2. Most studies show that areas with dense tall trees attract clouds [91], more than compensating through their high reflection for the lower albedo of forest [24].
3. As suggested at page 18, calculation of energy budget in the lower troposphere shows that from the average solar input of 340 W/m^2 , around 60 W/m^2 are used for average 800mm/year evapotranspiration* of a forest, while only around 20 W/m^2 are used in other areas for evaporation, resulting in 40W/m^2 forest cooling. Thus, deforestation or large tree planting can be regionally about 20 times more powerful than the global warming of carbon dioxide emissions (2.17W/m^2).

It is therefore possible to reverse regionally the effects of anthropogenic carbon emissions with the evaporative effect of planting large, dense trees.

5.6 THE CCCT CAN CLARIFY THE CLIMATE CHANGE DEBATE

1. The climate change debate is largely semantical, because the climate change definition is not universally accepted, used, and precise (is missing a time reference)
2. In the newer IPCC definition [92], climate change is **a change in the climate properties** that persists for an extended period, and may be due to natural internal processes or external forcings like solar cycles, volcanic eruptions and persistent anthropogenic changes in **the composition of the atmosphere or in land use**.
3. Global warming is calculated through the global average temperature variation, which is not directly representative for most regional climate properties.
4. The change in climate properties is essentially regional, and the artificial averaging to characterize it as global makes it lose its regional meaning and power.
5. Therefore, a correct general statement would be “**man-made climates changes**”, referring to all climate properties changed by humans even before 1750.
6. This is not only correct semantically, but by including the deforestation (land use) changes since prehistory, **it makes climate change irrefutable**. Deforestation destroyed most trees, wildlife, soils and water cycle, which nobody can deny. Every 10km^2 of deforestation heats the land as much as a power plant (from above 40W/m^2 forest cooling lost $\times 10,000,000\text{m}^2 = 400\text{MW}$ of continuous heating). Past tree cuts of 96×10^6 acres of USA heats it continuously as 384,000 power plants. However, the “**man-made carbon climate change**” is much smaller than that of deforestation and more difficult to calculate and to prove for some people.

*Note *: There is significant local variation in evapotranspiration of forests that depends on many factors, but is usually quoted between 500 and 1300mm per year.*

- Heatwaves are due to deforestation lowering evapotranspiration and cloud cover. They are amplified by the greenhouse effect.
- Drought is produced by deforestation raising temperatures, decreasing relative humidity and precipitation; it is amplified by HAC and ASH.
- Tornadoes are generated by the sharp rising of the slabs of ground hot air of deforestation. Tornadoes do not happen in forests.
- Floods are due to (a)biotic moisture pumps discarding excessive atmospheric moisture produced at present through increased ocean evaporation due to deforestation increasing temperatures that are amplified by the carbon gases emissions. Deforestation also decreases soil water absorption.
- Sea level rise is due: to deforestation heat melting land ice, to deforestation producing soil erosion, to dead vegetation from deforestation losing its water to the ocean, to the above-land water and groundwater losses through the drought of deforestation.
- Forest fires are due to: HAC, to forest clearing and thinning (that increases sunshine, wind and dryness), to ground clearing of thick wet residues, to groundwater extraction from tree roots, to controlled and cultural burns, and to the many points of ignition at critical moments.

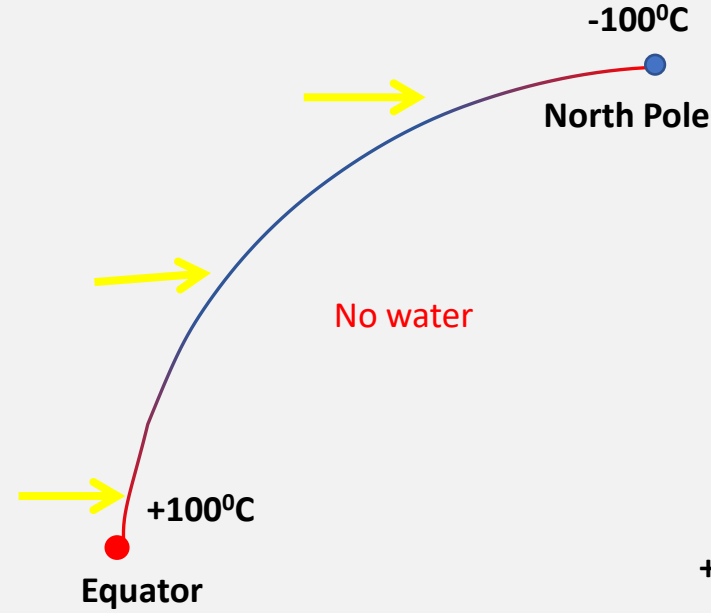
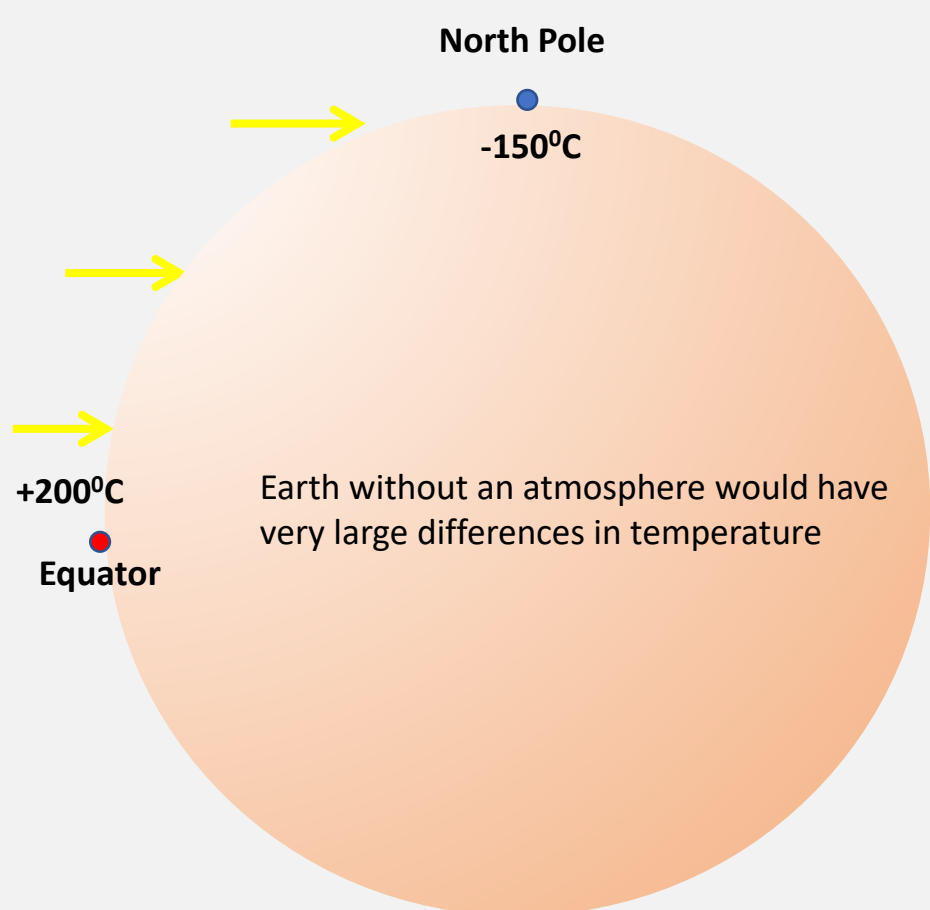
5.8 THIS CCCT PROVIDES A REALISTIC SOLUTION FOR CLIMATE RESTORATION

Since climate change symptoms are due to imbalances of water and vegetation, we can restore the climate with water and tree planting.

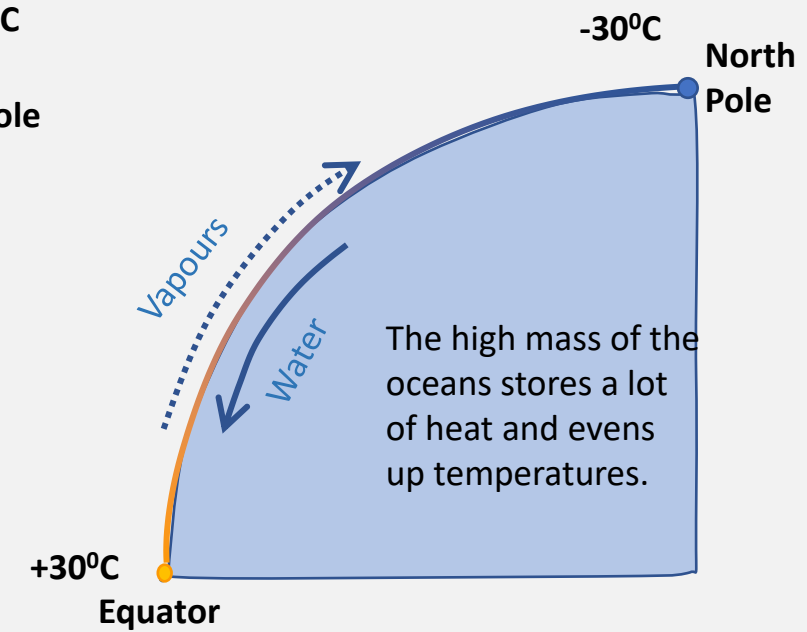
Since regional heating of deforestation is larger than that produced by carbon gases emissions, tree planting can regionally offset the latter.

While the carbon gasses effect is global, the climate restoration effect by tree planting is regional, but each regional initiative can be expanded, while their success would stimulate other similar initiatives, becoming global. There is enough oceanic evaporation for the entire land to be re-occupied by trees.

The LULCC climate studies, and our 2024 work [25] show real climate restoration means that bring high benefits to the dominant interests.



An atmosphere made out only of dry air would have too large temperature differences for life because the troposphere is thinner than the above line, and air barely transports heat (it is a heat insulator).

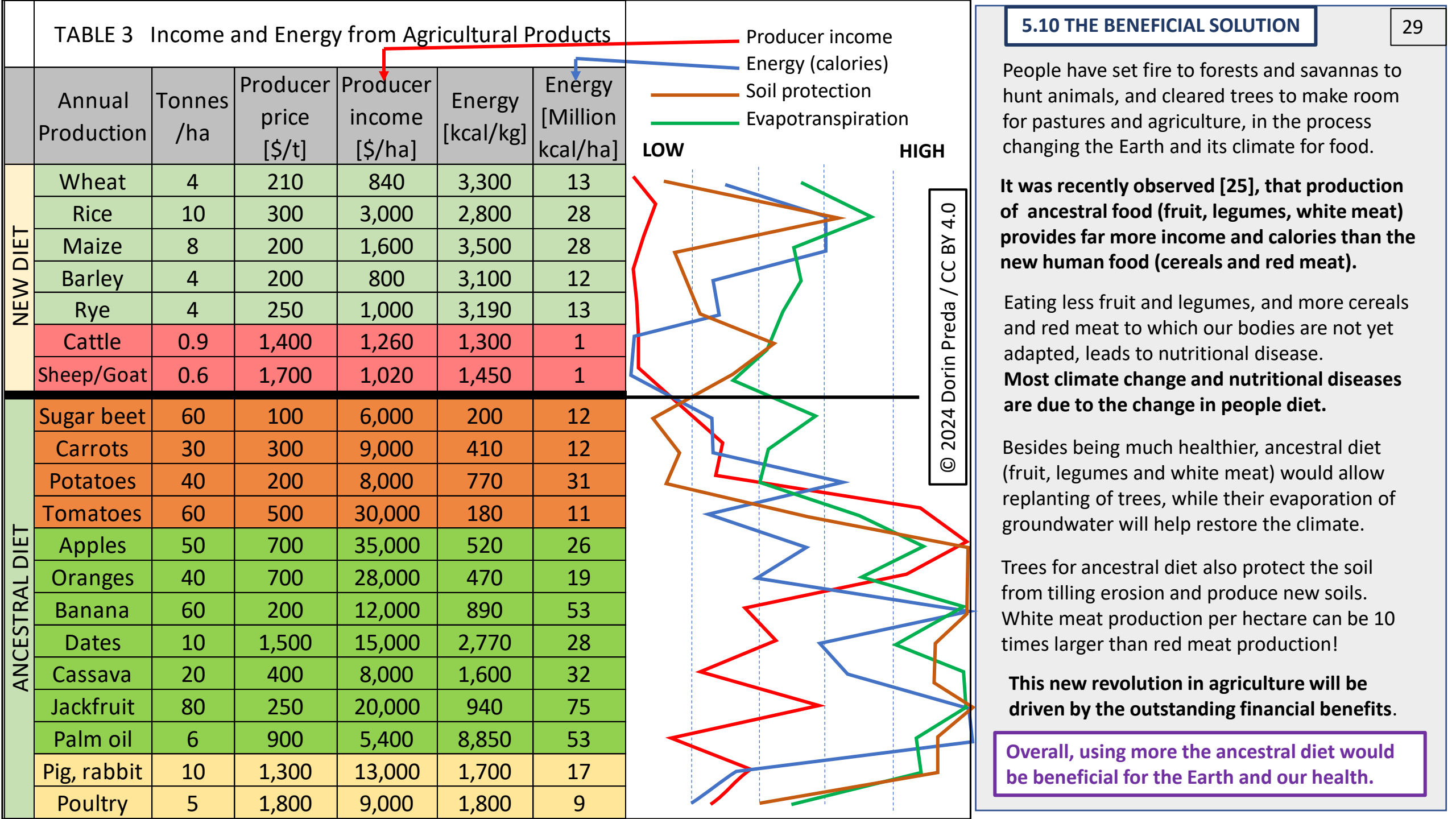


Water is the most powerful heat transporter in the atmosphere due to its evaporation-condensation cycle. It lowers equatorial temperatures and raises polar temperatures, allowing life to exist.

All vegetation has a positive effect on the regional climate, but trees are much more efficient than grasses especially at medium - low latitudes. The best and the most economical means of managing and evaporating water on land are trees, that evolved to create their lively local climate.

Trees have a much larger evaporative area than grasses, can extract groundwater and can attract precipitation by emitting organic compounds. Their dense shade is essential in lower latitudes, they protect from erosion and create organic soils, sequester carbon and give useful produce.

For millions of years, through water, trees created and enhanced life on Earth. We should adapt our Earth management accordingly.



5.11 DETAILS ON THE SUGGESTED AGRICULTURE CHANGES [25]

Replacing most pastures and crop fields with orchards and other useful tree plantations would greatly increase income and land value. Lines of useful trees in the remaining pastures and crop fields would boost productivity, prevent soil degradation and retain land water. Transitioning from a red meat diet to a white meat diet would greatly increase meat production per hectare and enhance people's health. Probably the main reason in prehistory for switching from fruit to grains was the possibility of long time storage of the latter.

The above solution to increase ancestral diet and decrease new diet must thus provide economic methods of fruit preservation and storage. A direct method is **drying** at medium-low latitudes with solar thermal methods and at high latitudes with wind-driven heat pumps. **Freezing** in batches can be done in large freezer warehouses that have high thermal inertia, thus they can use intermittent renewable energy. **Conserving** in suitable size recyclable containers is an energy efficient method of preservation of fruit and legumes for food or animal feed.

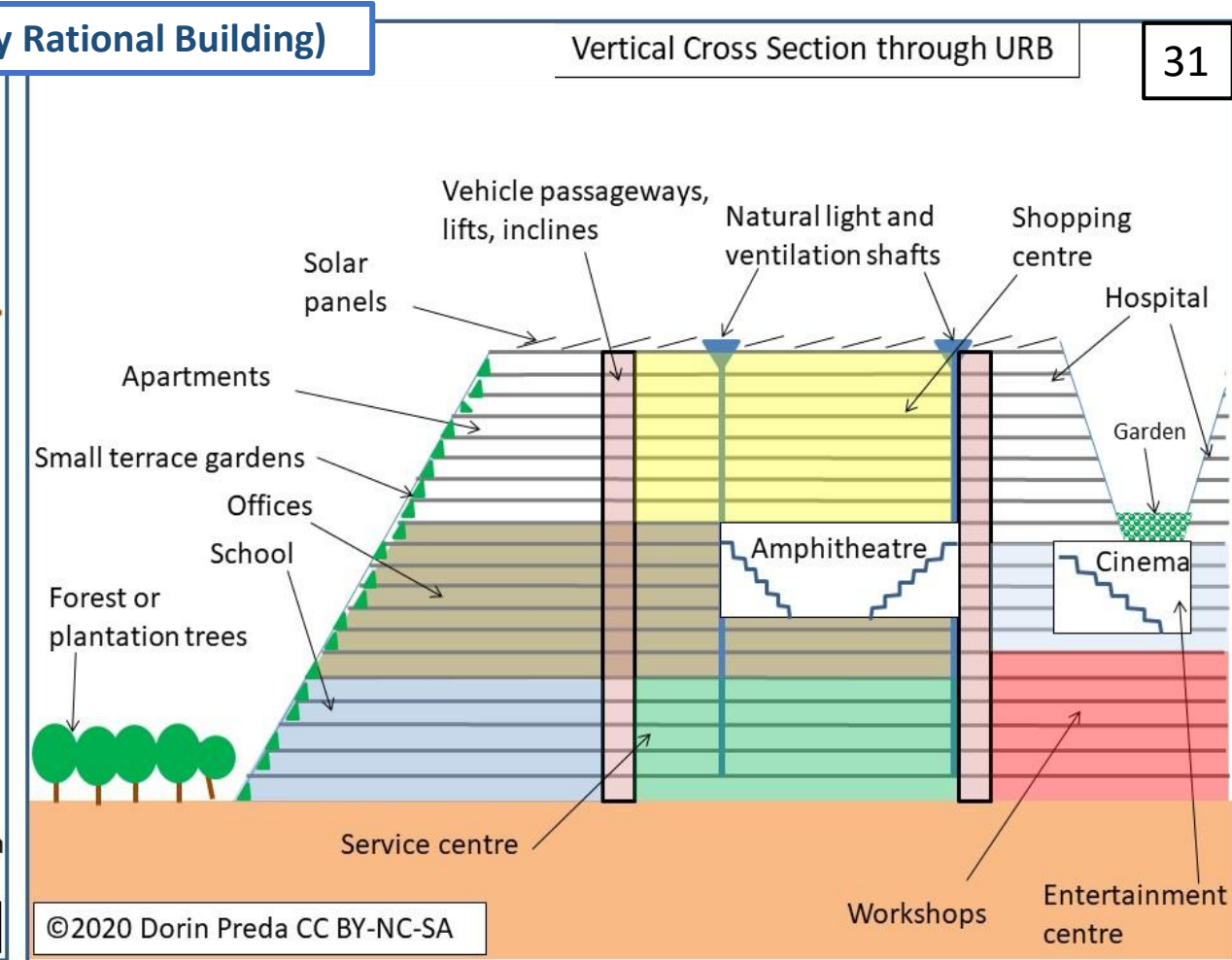
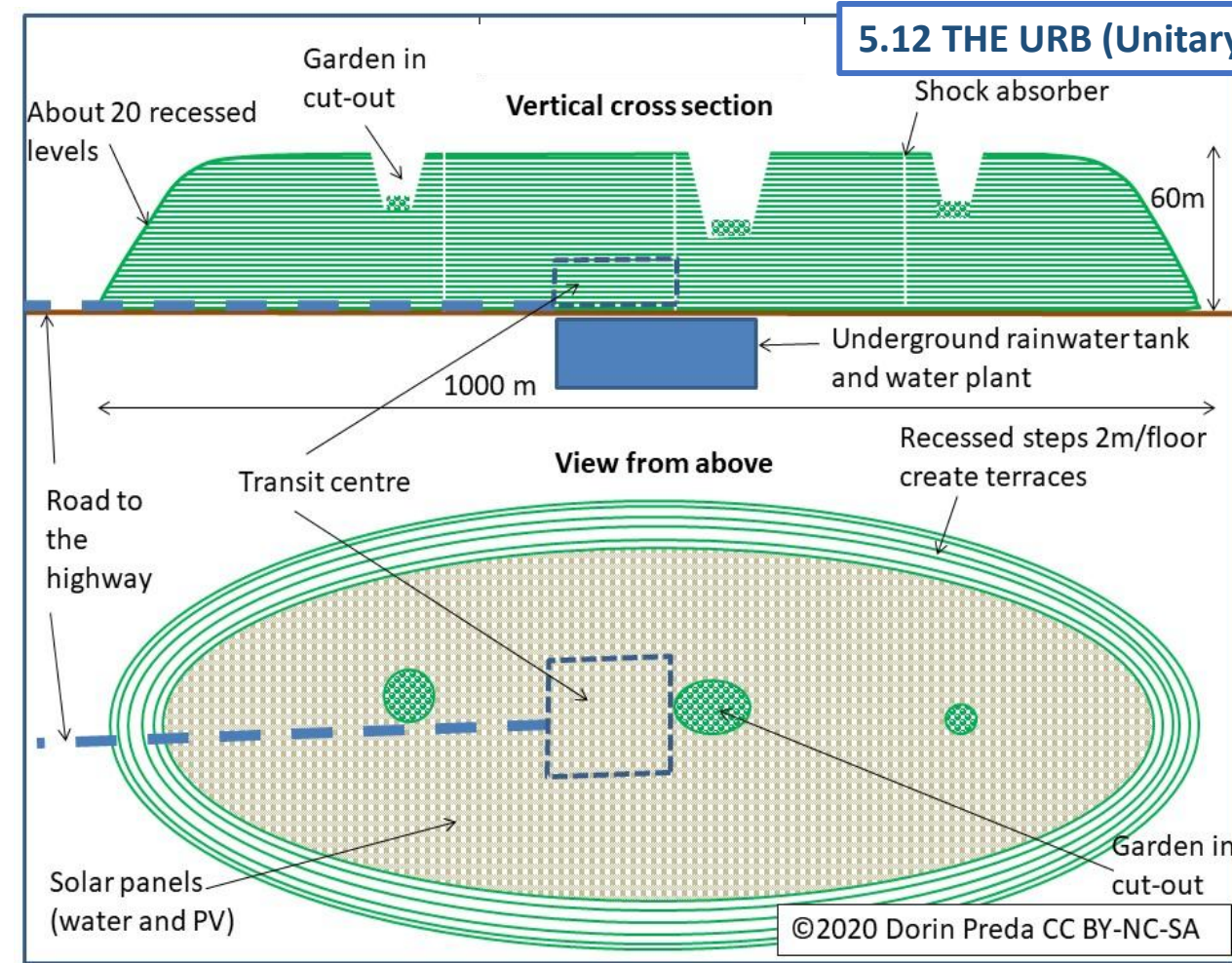
Pastures use now most agricultural land, therefore they are the largest cause of climate change through the loss of evapotranspiration cooling. Pastures produce low income and calories red meat (see page 29), while being the major emitter of CO₂ in agriculture and cause of colon cancer. **Income per hectare could be greatly increased by replacing pastures with orchards that feed meat producing animals for human consumption.** Former pastoral farms planted with fruit trees could have large warehouses with preserved fruit near their meat producing animal barns. The remaining pastures should be planted with rows of useful trees which also provide shade and coolness, and stabilise the soil and climate.

The backbone of this new strategy are fruit trees, mostly requiring work for harvesting that can be done through mechanisation/automation. This revolution in agriculture requires the work and supervision from a dedicated population that has to live near or on those lands. **Communities of skilled agriculturalists can be housed in civilised, unitary rational buildings (URB)s spread in the developed territory (page 31).**

5.12 THE URB (Unitary Rational Building)

Vertical Cross Section through URB

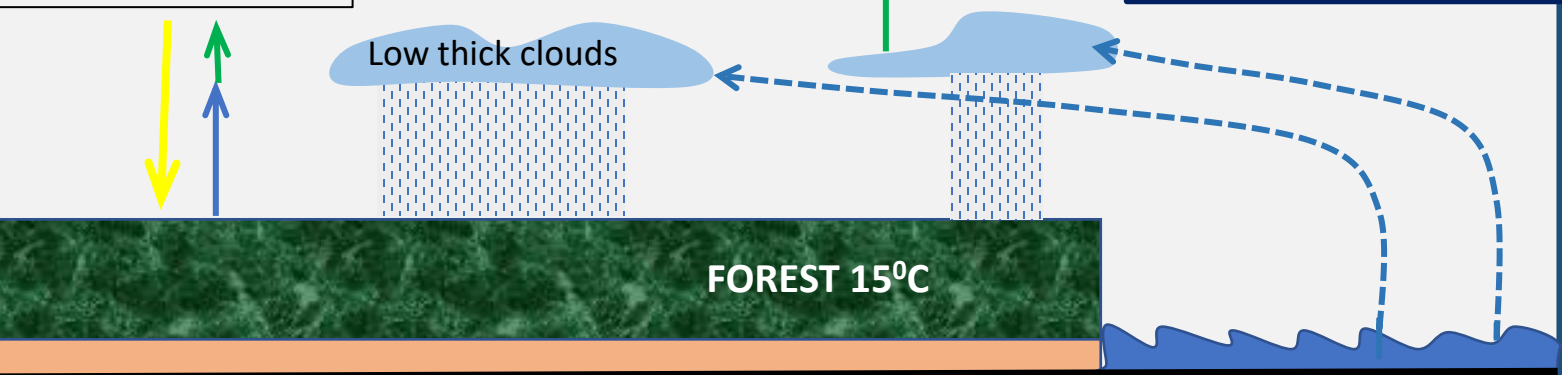
31



- **The URB [7, 8] unites many buildings of different destinations into a large structure which optimizes space and reduces tens of times the settlement's footprint.**
- This way, the URB can be surrounded by parks, forests, plantations, or orchards that improve local climate, are productive and protect the natural environment.
- Since distances are small, there is no need of cars inside the URB, so people could walk or use PEV (personal electric vehicle), while using their cars outside URB.
- Each apartment has large terraces, open towards the wonderful green surroundings of the URB. There is no chemical, sound or visual pollution for residents.
- Apartments have glass walls towards the open, wide, outside landscape with perfect privacy and aesthetics, unlike present town houses open towards streets.
- **URBs can be built easily with existing construction methods and materials, cost at least 3 times less than conventional buildings and can last hundreds of years.**
- Since the construction has a uniform layout of concrete slabs and pylons, URBs can be quickly built, while apartments can be reshaped by moving the internal walls.
- Being simple to build (though large) and lasting hundreds of years, the capital cost per user of this new type of building is low, making it affordable and beneficial.
- **The largest advantages of URBs are their low land and energy requirements, low specific capital cost, very low running cost and the low transport cost.**

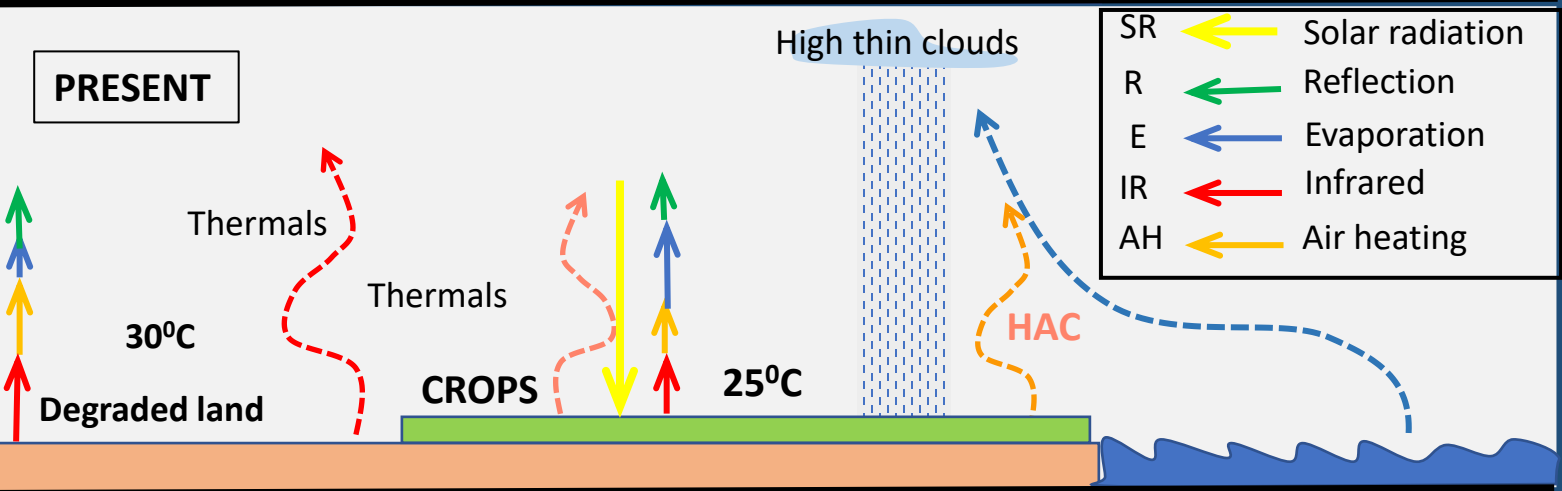
BEFORE HUMANS

5.13 THE AVALANCHE GREENING AND COOLING (AGC) [24]

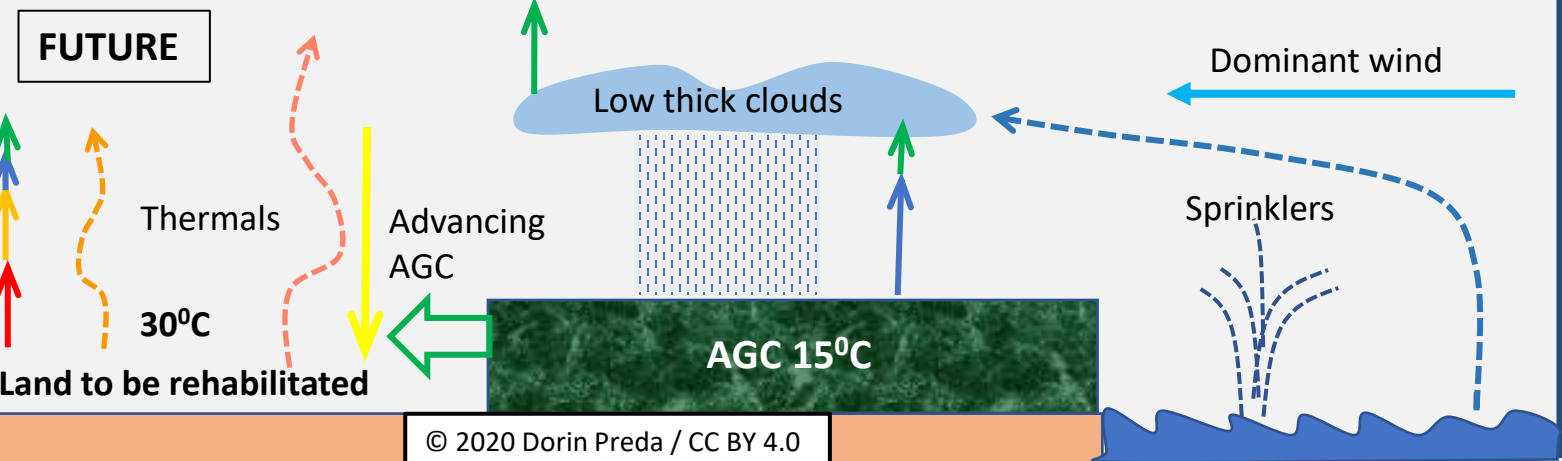


Before coastal development, the forest used all absorbed solar energy to evaporate water and did not heat the air, thus the forest was cool. Marine moist breeze easily passed over the coast and delivered water to the forest through moisture pumps [27] [24]
The climate was cool and wet.

PRESENT



After coastal deforestation less water is evaporated, thus most solar energy is used to heat the air and increase infrared radiation, thus the greenhouse effect. The formed hot air curtain (HAC), prevents marine breeze from penetrating deep on the land. Some coastal rain occurs due to the marine humid air being pushed upwards by the thermals. In total, less marine moisture enters the draught-stricken land.
The climate turned hot and dry.



The avalanche greening and cooling (AGC) is land and climate restoration that plants useful trees under **certain bio - economic, agrarian and hydrological rules** and combines them with crop lines and reconstituted forests. This re-creates moisture pumps with the water bodies and the atmosphere and restores water cycles.
Once started, the coastal AGC advances inland through the excess water it generates and through self financing from the profits it generates.

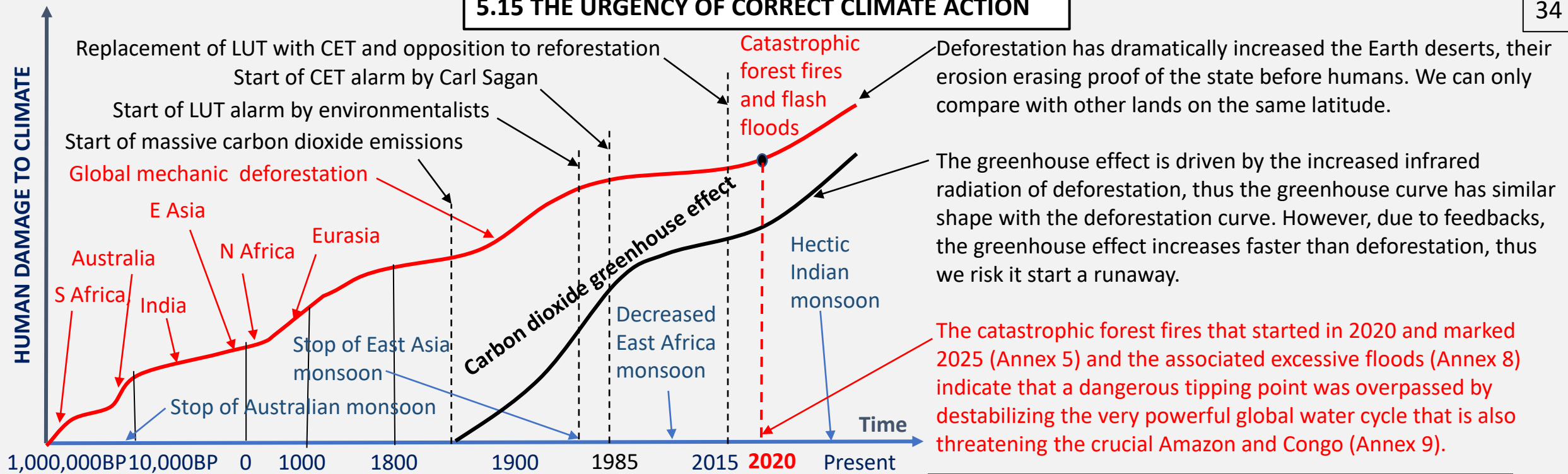
1. As shown above, land degradation and climate change happened because of human interests mostly for food, resources and settlements (real estate).
2. **These are the most powerful interests in society, and take strong precedence to benevolent and unprofitable environment conservation.**

3. It is preferable to grow crops in tropical latitudes by shading the land with north - south lines of useful trees that create and protect new soil.
4. It would restore evapotranspiration and therefore precipitation in intertropical areas, transforming present drylands into valuable land.
5. Increasing evapotranspiration in settlements with trees, green canopies and artificial evaporation will cool them and prevent HAC and ASH.
6. More dense trees means more low thick clouds that reflect more solar radiation, reducing the above ground and planetary temperatures.
7. Denser, taller vegetation on land is wetter, and combined with private property of useful trees (most vegetation) will prevent catastrophic fires.
8. **As the climate improves by restoring the water cycle and sequestering CO₂ in trees and soil, carbon emission reduction becomes a bonus.**

9. Halting Amazonian, Central African and other low latitude deforestations are the highest priority for climate and biodiversity preservation.
10. **Large-scale land rehabilitation with avalanche greening and cooling (AGC) in Africa and Australia would significantly re-balance global climate.**
11. As intertropical sea evaporation returns as rain to intertropical lands, the overheating and flooding of higher latitudes will cease.
12. Cooling the high latitudes will re-freeze them (the Arctic, permafrost, glaciers), reversing sea level rise by restocking water on land.

13. Compact city style URBs de-congest existing megacities and are needed for the people who will work in the rehabilitated lands.
14. **All sectors of the economy can benefit from engaging in this large developmental program, contrary to the austerity of emissions reduction.**

15. The increased land productivity would free land, making it available for setting up large Natural Reserves for conservation of biodiversity.
16. **The climate can be naturally repaired through revegetation without the dangerous additional changes of solar radiation geoengineering.**
17. The present socio-economic tensions due to climate change would dissipate because all parties would co-operate for mutual benefit.



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ACHIEVABLE METHODS:

- 1) Stop all fires by addressing their causes of local dryness and ignition and taking proper prevention measures.
- 2) Stop all deforestations (especially of old grown forests and especially at low latitudes) because forests are critical for climate and biodiversity.
- 3) Plant fruit tree lines alternating with legume beds in pastures to produce feed for non-grazing animals; this will improve land productivity, climate and our diet.
- 4) Plant fruit tree lines in grain crop fields to replace part of cereals in human diet with healthier fruit; this improves climate and protects soils.
- 5) Educate people to change their consumption from red ruminant meat to white meat, to significantly reduce the carbon dioxide emissions from agriculture.
- 6) Start AGC projects based on trees that do not require tilling and other mechanized work, this way further reducing the carbon emissions from agriculture.
- 7) Build from now on in URB style, which use far less energy for heating/cooling/transportation; this will effectively reduce the future carbon dioxide emissions.

Despite the change 40 years ago from LUT to CET, anthropogenic carbon emissions continued to grow, along with an **increase in climate change due to:**

1. **Deforestation decreased the water cycle, so solar radiation overheated the ground regionally by about $40\text{W}/\text{m}^2$** , producing hot air currents that evaporated the cooling low clouds and propelled vapors at altitude, producing warming high thin clouds. The decreased water cycle on land also created all the symptoms of climate change: heat waves, ice melting, sea level change, and excessive droughts, fires, floods and storms. Deforestation can be reversed by tree planting.
2. The larger infrared emission of the deforested areas adds to that of forested areas to create an **enhanced warming of $2.7\text{W}/\text{m}^2$ through the greenhouse effect with the increased anthropogenic emissions** from fossil fuels, deforestation and livestock. About half of emissions accumulate in the atmosphere, from where carbon can be removed through natural sequestration if carbon emissions are dramatically decreased, or through artificial sequestration in new trees and soils.

Due to: carbon emissions increasing instead of dramatically decreasing, chemical scrubbing of CO_2 from the atmosphere being not feasible, and the increasing opposition to planting trees, it appears **a by default leaning towards solar radiation geoengineering**, the most destructive follow-up to climate change.

It is therefore imperative to correctly assess the solutions presented by CCCT, because they reverse in a beneficial way the damages done through human mistakes.

The regional avalanche greening and cooling (AGC) could increase in number and size through their benefits, merging towards significant global restoration.

There were many actual local land and climate restoration projects which improved local climates and demonstrated the viability of the AGC principle [36 - 47].

We can boost the economy, restore the Earth 's land and climate and improve our health by using the CCCT principles and the ancestral diet.

END NOTE: Updates on the CCCT and an invite to join and contribute to this initiative can be found at: <https://climatechangetheory.org>

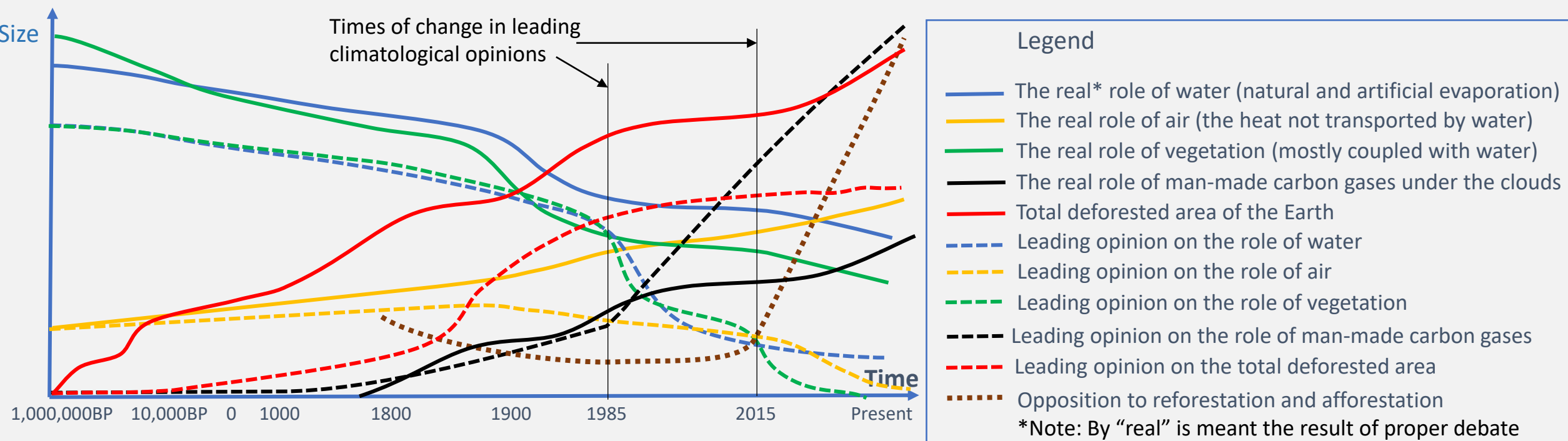
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- 1) Without humans, there would have been only horizontal continuous lines at their value (size) as seen on the left vertical axis (with small glaciation variations).
- 2) Therefore the variation in the slope of each line is proportional to the human-induced climate change and its understanding.
- 3) The differences between the two blue lines are due to climatology decreasing the radiative and evaporative cooling of water, that it considers only follower of CO₂
- 4) The differences between the two green lines are due to prehistoric deforestation and to climatology considering vegetation only as a follower of water.
- 5) The differences between the two yellow lines are due to climatological preference of radiative over sensible heat transfers, despite most climate is under clouds.
- 6) The differences between the two black lines are due to climatology not considering enough the climate effects under the clouds (where the real climate is).
- 7) The US Congress address of astrophysicist Carl Sagan in 1985 has directed climatology to a cosmic space point of reference and has exacerbated the role of carbon.
- 8) In reality, the climatology reference are not the planetary simulations, but the ground meteorological stations, which are influenced by water and vegetation [24].
- 9) The carbon gases role is small compared to that of water, that is in a strong feedback with vegetation and especially with trees, which can extract groundwater.
- 10) Proposals like [33], [24] for reduction of CO₂ through tree planting have triggered a strong climatologists opposition and scientific bias in approved literature
- 11) The excessively theoretical and conservative view of leading climatologists (from high latitudes) is due to not witnessing the tropical land and climate processes.

- 1) That there would be no man-made climate change: Wrong, because our large land changes force large reaction changes.
- 2) That it was climate change before humans [5]: The man-made changes are more rapid and on other directions.
- 3) That the solar factor would be much stronger than CO₂ [6]: Wrong, how comes it coincided with largest human activity?
- 4) The CO₂ saturation effect would diminish the role of additional CO₂ [7]: Partially wrong, as demonstrated by planet Venus.
- 5) Cosmic rays would influence cloud formation, not humans [8]: Not supported by the spatial and temporal cloud distribution
- 6) The Pacific Southern Oscillation would be much stronger than CO₂ [9]: Yes, but its cycle is much shorter than that of CO₂
- 7) Water has higher concentration and infrared absorbtion than CO₂ [10]: Yes, but this does not mean that CO₂ has no effect
- 8) Most water evaporates from ocean, not due to humans [11]: Yes, but human influence on water precipitation is significant
- 9) CO₂ absorption spectra overlaps with the water one [12]: Yes, but only partially, as CO₂ also has its own window
- 10) Uncertainty due to water models imperfections [13]: This uncertainty of modelling extends on all modelled parameters
- 11) Human influence on water evaporation would be negligible [14]: Wrong, it is major on land, which is an important sector
- 12) Water has a short residency time in the atmosphere [15]: Wrong, residency time has nothing to do with its greenhouse effect
- 13) Due to water, there would be lower climate sensitivity to CO₂ [16]: Yes, but the CO₂ effect still exists even if it is weaker
- 14) Increased radiative cooling due to increased temperature [17]: Yes, but the loss of heat before equilibrium is smaller
- 15) Could the cloud feedback create an iris thermostate? [18]: Yes, luckily for the oceans, because land deforestation opposes it
- 16) Satellite observations support the iris hypothesis. [19]: As above, but for it to act, an increase in temperature is necessary
- 17) There were climatic changes like the Little Ice Age without CO₂ cause [20]: Yes, because of other causes like the pest, wars
- 18) Palaeoclimatic data show CO₂ being a follower of temperature [21]: Yes, because of other causes like the vegetation effect
- 19) Historic temperature records are unreliable because of urban heat effect [22]: Yes, because of increased deforestation
- 20) The CO₂ effect is small, while the climate change effects are large [23]: Yes, because of large man-made vegetation changes.

Correct**Partially correct****Incorrect**

[Reference]

Therefore, the man-made climate change is real

LAND USE THEORIES (LUT)

- **Land Use Changes, Albedo, Hydrology** (Pielke R. Sr.) [78]: Deforestation/urbanization alters reflectivity (albedo) and water cycles.
- **The Climate-Soil-Vegetation Nexus** (Rodriguez-Iturbe I.) [68] : Vegetation's hydrological regulation (Ecohydrological Optimality Hypothesis)
- **Ecohydrological Optimality and Evolutionary Adaptation** (Eagleson P.) [69]: Vegetation tends to minimize water stress over time.
- **Dual Regulation and Sustainable Management** (Zalewski M.) [70]: Shift from a structure-oriented to process-oriented thinking management
- **The Biotic Pump Hypothesis** (Makarieva A., Gorshkov V.) [27] Forests create low-pressure zones that draw moist air inland, sustaining rainfall.
- **Latent Processes as Origin of Wind** (Makarieva et al.) [80]: How water vapor condensation influences atmospheric pressure and dynamics
- **Land-Use Changes & Disrupted Moisture Recycling** (Millan M.) [28] deforestation disrupts local "low-level moisture feedback loops,"
- **A Comprehensive Framework for Ecological Climatology** (Bonan G.) [66]: global environmental sustainability through "interconnections".
- **The Deforestation Climate Change Theory** (Preda D.) [24] [25] [54]: Prehistoric to present deforestation is a main cause of climate change.
- **Multi-Scale Vegetation-Climate Feedbacks** (Miralles, Vilà-Guerau, McVicar, and Mahecha) [67]: from local microclimates to global climate.
- **Optimizing Forest Carbon Sequestration and NbCS Effectiveness** (Anderegg W.) [71]: Nature-based Climate Solutions (contribution approach)
- **Economic and Equity Validation of Nature-Based Solutions** (Vicarelli M.) [72]: Nature-based Climate Solutions are consistently cost-effective.

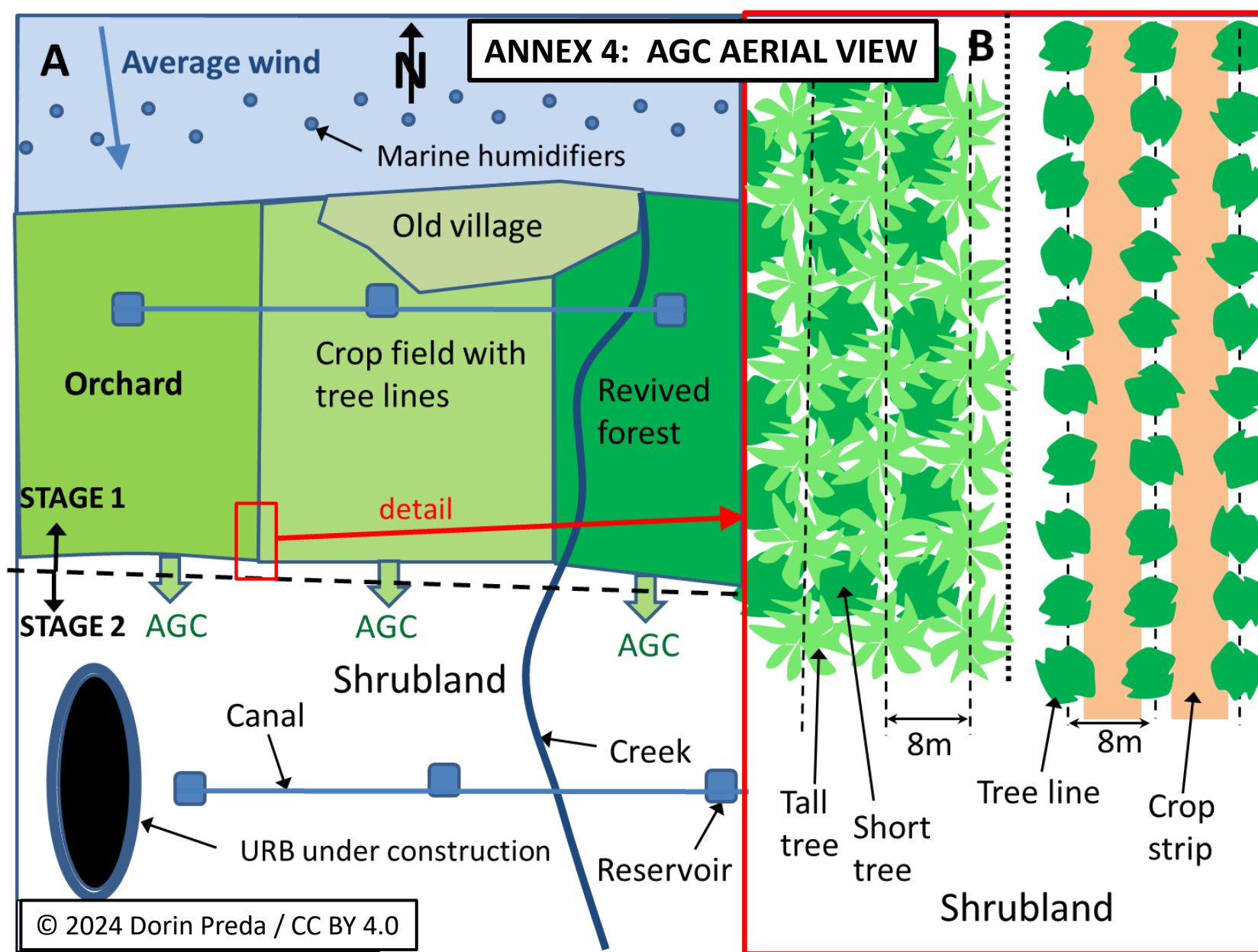
CARBON EMISSIONS THEORY (CET)

- **The Greenhouse Effect** (Fourier J., Arrhenius S.) [73] postulated and respectively quantified CO₂, CH₄, N₂O's role in warming the atmosphere.
- **The Keeling Curve** (Keeling C. D.) [74] Empirical Evidence of Rising CO₂ through continuous measurements at Mauna Loa Observatory.
- **Human's Influence on Climate** (IPCC) [1] Climate models confirm that post-industrial CO₂ emissions are the main driver of global warming.
- **The Carbon Budget - Quantifying Safe Emission Limits** (Allen M.) [75] Maximum 500 gigatons emissions for 2020 to limit warming to 1.5°C.
- **Feedback Mechanisms** (Hansen J.) [76] Rising temperatures trigger feedback loops, amplifying or dampening effects, accelerating warming.
- **Ocean Acidification as CO₂'s Secondary Effect** (Caldeira K., Mann M. E.) [77] Excess CO₂ dissolves in oceans, lowering pH and harming life.
- **Prehistoric CO₂ emissions through deforestation** (Ruddiman W. F.) [26] The Anthropogenic Greenhouse Era Began Thousands of Years Ago.

OTHER CLIMATE CHANGE THEORIES

- **Orbital (Milankovitch) Cycles** (Milankovitch M.) [79]: Ice ages are driven by changes in Earth's orbit (eccentricity, axial tilt, precession)
- **Water Vapor Dominance Theory** (Dyson F., Christy J.) [81]: Water vapor is a more potent gas than CO₂, and its feedbacks control climate.
- **Urban Heat Island Effect Theory** (Watts, A.) [82]: Temperature records are biased by urbanization, exaggerating global warming trends.

ANNEX 4: AGC AERIAL VIEW



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The Avalanche Greening and Cooling (AGC) is the land restoration that may self-propagate. It involves a network of water reservoirs and canals that store and distribute freshwater for the dense orchards, useful tree plantations and restored conservation forests of high evaporation.

Success keys: AGC size, startup line setup, tree density, soil, etc. [24] The source of energy is solar radiation, 15MJ/m^2 daily at mid-latitudes. Under 65% reflecting clouds and dense trees it is 1MJ/m^2 , meaning that the maximum average to compensate for is 14MJ/m^2 , after reflection 10MJ/m^2 . This can evaporate around 1,500mm of water per year and is the evapotranspiration of a mature orchard that compensates for the increase in solar radiation of past deforestation.

Once artificially started with reservoirs water, AGC re-starts the natural moisture pump and creates its own rain for inland propagation.

It results that dense, mature orchards are needed to cool the climate where previously there were natural forests. At low latitudes the orchards should preferably also have ground plants or tree canopies on 2 levels.

As seen on page 6 above, total deforestation for pastures and crop fields leads to rapid soil decay, erosion and desertification (page 14). Some people wanted to live in forest clearances (page 18), leading to intense forest and house fires as those in Europe, Australia and now America.

The January 2025 Los Angeles fires had the following causes:

1. Like the prehistoric burning for North Africa's antelopes [24], the cultural burning for Bisons [30] has turned the Nevada forest and its lake landscape into a desert [31]. Similarly, the pine forests of Sierra Nevada and Cascade Ranges were cleared out [32] for human interests [33], those areas becoming solar air heaters for the hot ASH winds. The Santa Ana wind heats up by 13°C when descending 2000m, and overheats due to above quoted **deforestation which also caused air to be very dry**. Therefore, the main cause of the damaging winds is the Central and West USA deforestation. The heating power of deforestation may be half of solar radiation, therefore 3500MJ/m² per year. All energy used by world humans is 6x10¹⁴MJ/year, and can be produced through deforestation of 200,000km² (2/3 of Nevada state). **This huge power is the reason for which we can decrease ground heat only by evaporating water to send that heat to upper atmosphere and space.**
2. Pacific coast deforestation has produced HACs which stopped ocean humidity reaching the inlands, slowly drying coastal vegetation.
3. Traditional use of flammable materials for buildings.
4. Wells and extraction of groundwater dried the nearby trees.
5. Improper prevention measures and protection against diverse sources of ignition.

Method of prevention/protection of houses against fires:

- Use only non-flammable building materials.
- Each house should have an always full 10 ton water tank and sprinklers actuated by 12V pumps and batteries, independent from the grid.

NATURAL VERSUS MAN-CHANGED FORESTS

Wet natural forests cannot burn; their ground has a thick cover of moist decaying vegetation that creates soil and is pierced by many young tree shoots, small plants and bush which stop solar radiation and wind from drying up the ground. This mulch, well-known from gardening practice, is what keeps the soil and the natural forest moist, cool and alive. **Moist forests attract clouds and precipitation, in a lively feedback.**

Thinning the forest allows sunshine and wind to dry out the trees. Clearing the forest floor and repeatedly burning it with controlled burns allows solar radiation to dry up the soil that is gradually eroded, leaving the large trees with no support. This human action transformed wet, dense forests into bare lands that have no other function but to create global warming. **Dry lands repel clouds and precipitation, in a deadly feedback.**

ANNEX 6

AUSTRALIA

65,000BC

Land bridge was uniting Australia with PNG, Timor and Tasmania due to glaciation low sea level

1700

Tall forests (decaying because of groundfires) with small grassland clearances for kangaroo hunting.

Present

Forests of smaller and rarer trees alternating with much larger clearances for crop fields, quarries, infrastructure and settlements.

The hot air curtain (HAC) process [7] due to coastal deforestation has increased the dryness of Australia

Mechanical deforestation conducted to this situation

The repeated fires conducted to this situation

2300 if we do not change our ways

2300 as suggested here

LEGEND

- Lakes
- Forest/Orchard/ Tree plantation
- Grassland/cropping
- Dryland
- Desert

Very few small forests with rarer trees alternating with much larger areas of poor crop fields, quarries, infrastructure and settlements.

Dryness will quickly amplify through the avalanche solar heating (ASH) process [7].
Australia would lose almost all agricultural productivity because of lack of rain, despite more dams.

Without vegetation we would not have rain & water to cool down the local climate.

The NW monsoon might return, greening the center

Increased vegetation will bring in more water as total rainfall, in events of higher frequency but of smaller water quantity

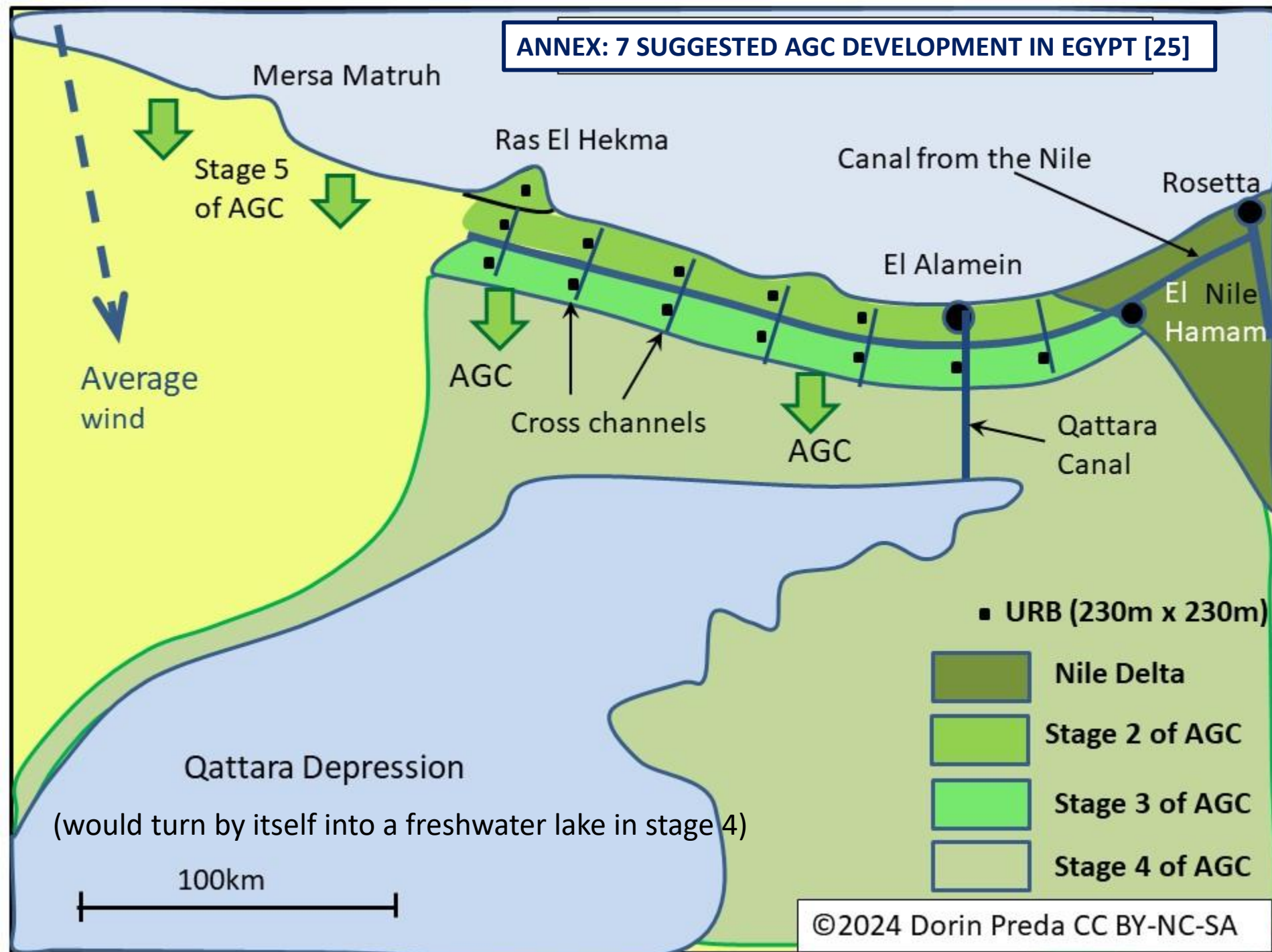
Large Nature Reserves

Orchards & useful tree plantations in lines which protect very narrow crop lines [8].

To stop the hot air curtain (HAC) process [7] in deforested areas and settlements we increase their vegetation and add artificial evaporative cooling.

Credit: Nature Communications

ANNEX: 7 SUGGESTED AGC DEVELOPMENT IN EGYPT [25]



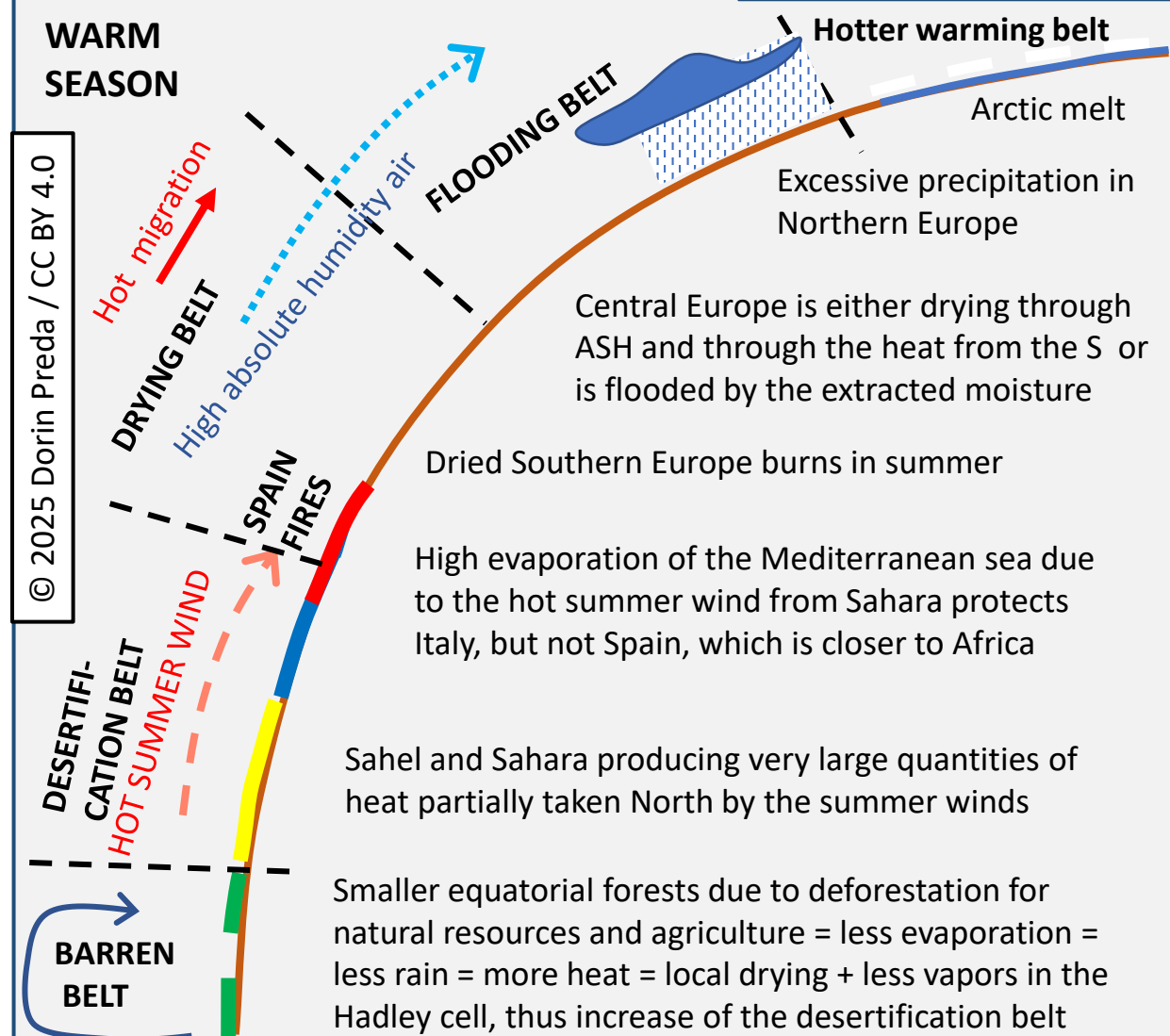
The Nile area was always wetter than the rest of North Africa due mostly to the Blue Nile River and its periodic floods related to the monsoonal rains on the high plateaus of Ethiopia. Humans did contribute to the setup of dryness in North Africa, but recently it was decided to build a N-S canal to extend agriculture.

This is a proposal for a more beneficial E-W canal. The present desert west of the Nile could be improved by bringing water from the Nile through an along-shore canal, and use it in an AGC. It is essential to start the land rehabilitation from the shore of the Mediterranean and advance south together with the improved precipitation conditions. The AGC is made possible by the dominant N-S winds of Northern Africa [25].

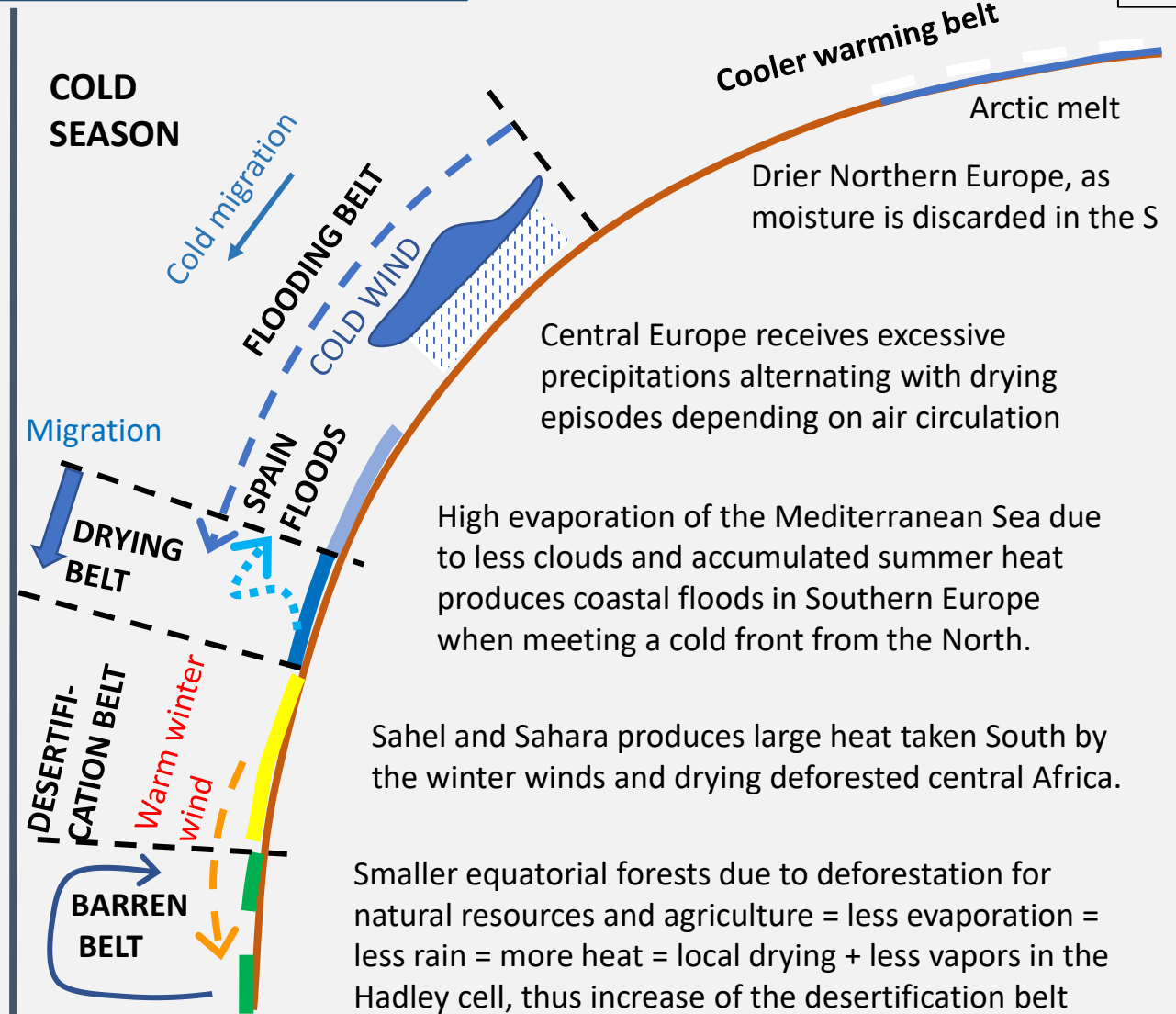
The AGC would expand in larger and larger stages, proportional to the local climate restoration.

WARM
SEASON

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The increasing ASH of the deforested intertropical areas create a drying belt and hot winds that advance poleward with increased strength gained in Sahara. They dry out and produce fires in Southern Europe and carry that moisture poleward, creating a flooding belt.

COLD
SEASON

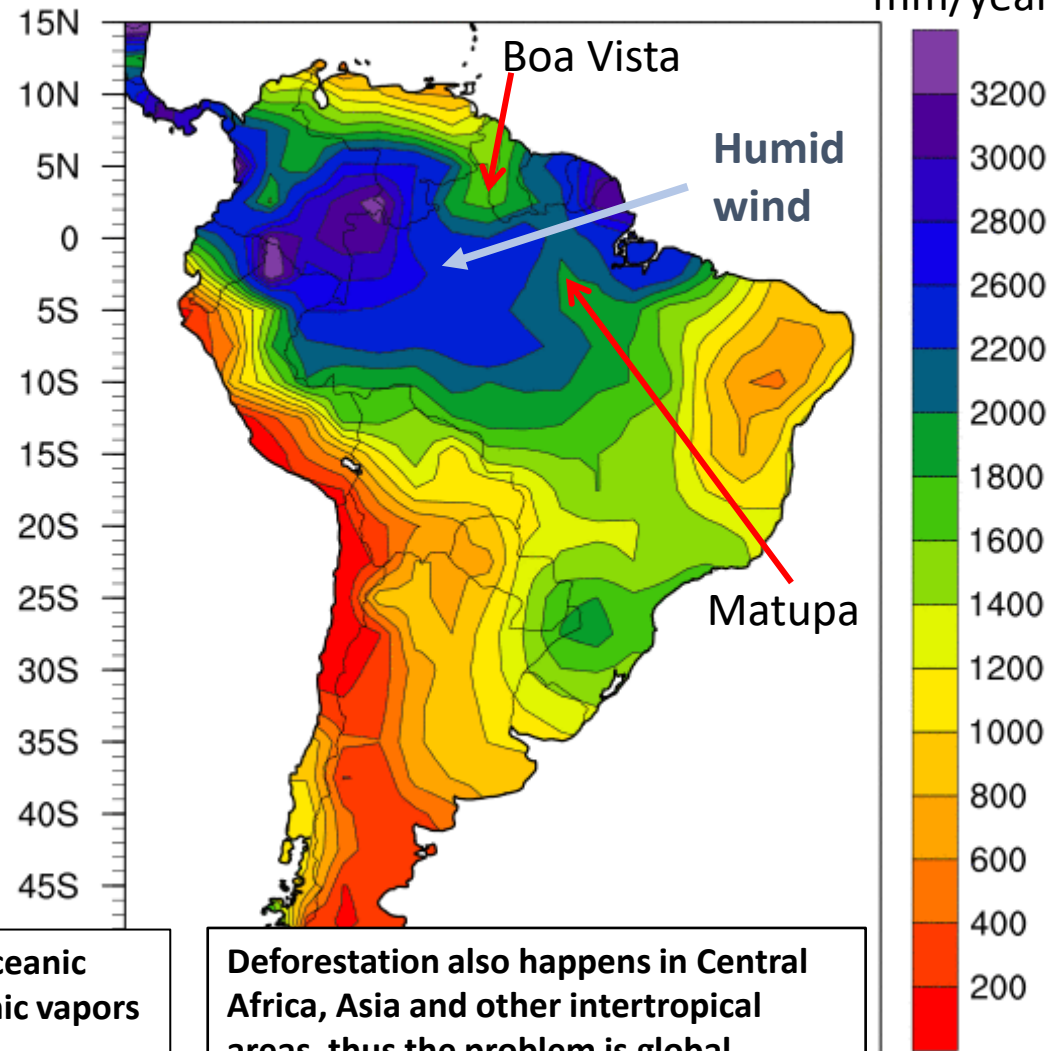
Seasonal migration of the Hadley cells moves the limits between the belts towards south in winter and towards north in summer. Jet stream dynamics create unpredictability, hence the Spain floods of 2024 and the fires of 2025, which in turn favor floods through their moisture and ash.

Deforestation



Deforestation decreases precipitation and stops oceanic humidity from reaching Amazonia. All those oceanic vapors have to condense in other regions, flooding them.

Precipitation



Deforestation also happens in Central Africa, Asia and other intertropical areas, thus the problem is global.

The southern part was almost totally deforested since the European colonization to make room for cattle ranches and mainly soybean crops, but the northern part remained intact and green until 100 years ago.

Unfortunately, deforestation of Amazonia is now accelerating for development purposes because many studies state that deforestation would cool climate through albedo [26] and would also increase precipitation [28].

In reality, deforestation might favor some local rain, but produces intense and permanent regional drought.

When the two lines of deforestation (Boa Vista and Matupa) will meet, they will create a hot air curtain (**HAC**) that will stop the incoming humid Atlantic wind reaching the interior of the continent and will dry it out. The Amazon has already started to dry out, while the oceanic moisture that was due to it has started flooding other places like the Southern USA.

Therefore, it is urgent to stop deforestation and start planting large areas of useful trees at low latitudes.

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- Many renewable energy designs, prototypes, pilot installations and an industrial solar air heater and drier
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Passionate for:

- Deciphering Physics (the interface between real phenomena and human understanding)
- Creating balanced solutions for environment protection and rational economic development.
- Intellectual independence: not associated with any group of interests.

Believes that:

- The first requirement for a scientist is the high moral standing
- Open, correct scientific debate and dissemination of information should be allowed and supported for everyone's benefit. Thus, the author has made in 2020 the first edition of his book freely available on the internet, but was ignored.

In order to strengthen the Consolidated Climate Change Theory (CCCT) and clarify its scope, this annex anticipates potential criticisms from conventional carbon-emissions-focused climatology and provides corresponding responses.

1. **“CCCT underestimates the role of carbon and focuses excessively on deforestation.”** Response: CCCT does not deny or diminish the role of greenhouse gases. Instead, it demonstrates that regional land–surface changes (e.g., evapotranspiration loss from deforestation) can exceed the regional effects of carbon emissions in many cases. The CCCT framework integrates both the CET global perspective with the CCCT regional mechanisms and solutions.
2. **“The calculations on page 26 are too simplified and not regionally calibrated.”** Response: The calculations are conceptual checks, showing orders of magnitude rather than precise forecasts. They are intended to highlight the scale of evapotranspiration’s regional climatic effect compared to CO₂ forcing. As with early greenhouse-effect models, simplified physics are a foundation for more refined local and regional studies.
3. **“The comparison of 40 W/m² (forest cooling) to 2.17 W/m² (CO₂ forcing) is misleading, as one is regional and the other global.”** Response: The comparison is done at ground level, where both are valid. Climate is experienced regionally, and the aggregation of many such regional imbalances leads to global effects. Averaging processes globally obscures regional significance. CCCT restores the proper scale of analysis for climate management, which must begin regionally.
4. **“Terminology such as ‘feedforward’, ‘avalanche’, and ‘divided heat emission’ is unconventional.”** Response: New terminology is introduced only where existing vocabulary is insufficient to describe observed processes. These terms are meant to clarify rather than replace CET or LUT language. They provide conceptual tools to explain mechanisms that mainstream models currently simplify or ignore.
5. **“The claim that deforestation effects are 20 times larger than carbon forcing exaggerates their impact.”** Response: This ratio is explicitly regional. In many regions, the combined heating effects of deforestation (albedo change, evapotranspiration loss, and increased infrared flux) can exceed the influence of CO₂. CCCT highlights this to encourage regionally tailored solutions. It does not suggest that carbon forcing is negligible globally.
6. **“CCCT lacks validation through global climate models or peer-reviewed consensus.”** Response: Current global models cannot yet adequately represent water and land processes. CCCT therefore emphasizes conceptual and empirical approaches to fill this gap. The framework is not a rejection of CET but an extension of it, intended to improve model accuracy once regional land–surface mechanisms are integrated.