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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EXECUTIVE SUMMARY

1) We conquered the planet mostly through deforestation, and changed the land to our needs; therefore we changed the land-linked regional climates.

2) The key to our proper Earth care and management are the correct and open assessment, fair and logical 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 greenhouse effect of carbon gases and recommends carbon 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 climate theories **for the restoration of regional lands and climates, thus improve global climate.**

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 substantially changed regional climates, proper tree planting can restore climate while repairing the land (page 26).

9) Planting useful trees stops forest fires, decreases floods, protects and builds up soils, and more than triples agricultural production per hectare (page 29).

10) Large-scale land rehabilitation started from the coast move downwind 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 economic and public sectors.

INTRODUCTION

Man-made climate change is real and is amplifying because it is due to the coupling between the atmosphere and 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 land 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 current climatic research has not yet convinced and appeased all the above interests for a common line of climatic action.

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 are still insufficient and cannot replace most fossil fuels [57].

Continued 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 common 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 (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 sustained life.

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 natural conditions, so when we changed Nature too much, our way of life started to degrade.

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.

Thus, early climatology was dominated by 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, but cannot be modeled with the present computer systems; hence LUT fell behind.

The increase in computer power after 1980 allowed climatology to create the first global models, thus the reference point was moved to the top of atmosphere.

The result was the CET, inspired by a CO_2 model of planet Venus, that is substantially different from Earth, thus comparisons are difficult and deceptive.

Relying only on the radiative processes at the top of the atmosphere (TOA), CET ignores the atmospheric processes that it cannot include in its models.

CET calculates mainly the greenhouse effect at TOA, but the Earth has clear symptoms of a destabilised water cycle far below the TOA (see page 27).

Contrasting with the imperfect results, there is a push towards global management through carbon gasses emissions, while ignoring 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.

2. DIRECTIONS FOR IMPROVEMENT OF THE LAND USE THEORY (LUT)

- LUT comprises very diverse theories (see Annex 2) that describe the land - climate interaction, now overlooked as having only regional effects.
- **However, according to an obvious axiom [25], the global climate is the result of all regional climates, thus improvement of the land climate is possible.**
- Many still consider that land climate effects would be negligible, since land occupies only one third of Earth, and is far below the reference system of CET.
- 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.
- Some climatologists assume that LUT processes would cancel each other at 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 Global Circulation Models (GCM).
- Interdisciplinarity and interconnectivity of the LUT processes are other difficulties in quantifying them, despite they remain relevant.
- **However, the advent of artificial intelligence (AI) opens the possibility to improve the models and decrease the scale of the simulated processes [94]**.
- A significant barrier for LUT was that it has recommended a decrease in land development, opposing the dominant societal interests.
- **In the 21 century, LUT was replaced with CET that does not stop land development, and its demand of carbon emissions reduction is more difficult.**
- Deforestation and land development has accelerated everywhere, even as at COP26 was approved continued deforestation until 2030.
- Moreover, some CET concepts and some 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 some LUT authors fall in the extremist mistake of opposing tree planting as it would not be natural, despite we have no other land restoration option.
- **Since climate restoration through planting trees has numerous opponents, realistic ways must be found for land restoration through tree planting.**

Thus, we have to investigate the solution of a 2020 - 2024 study [24][25] that produces large financial benefits while restoring climate by planting trees.

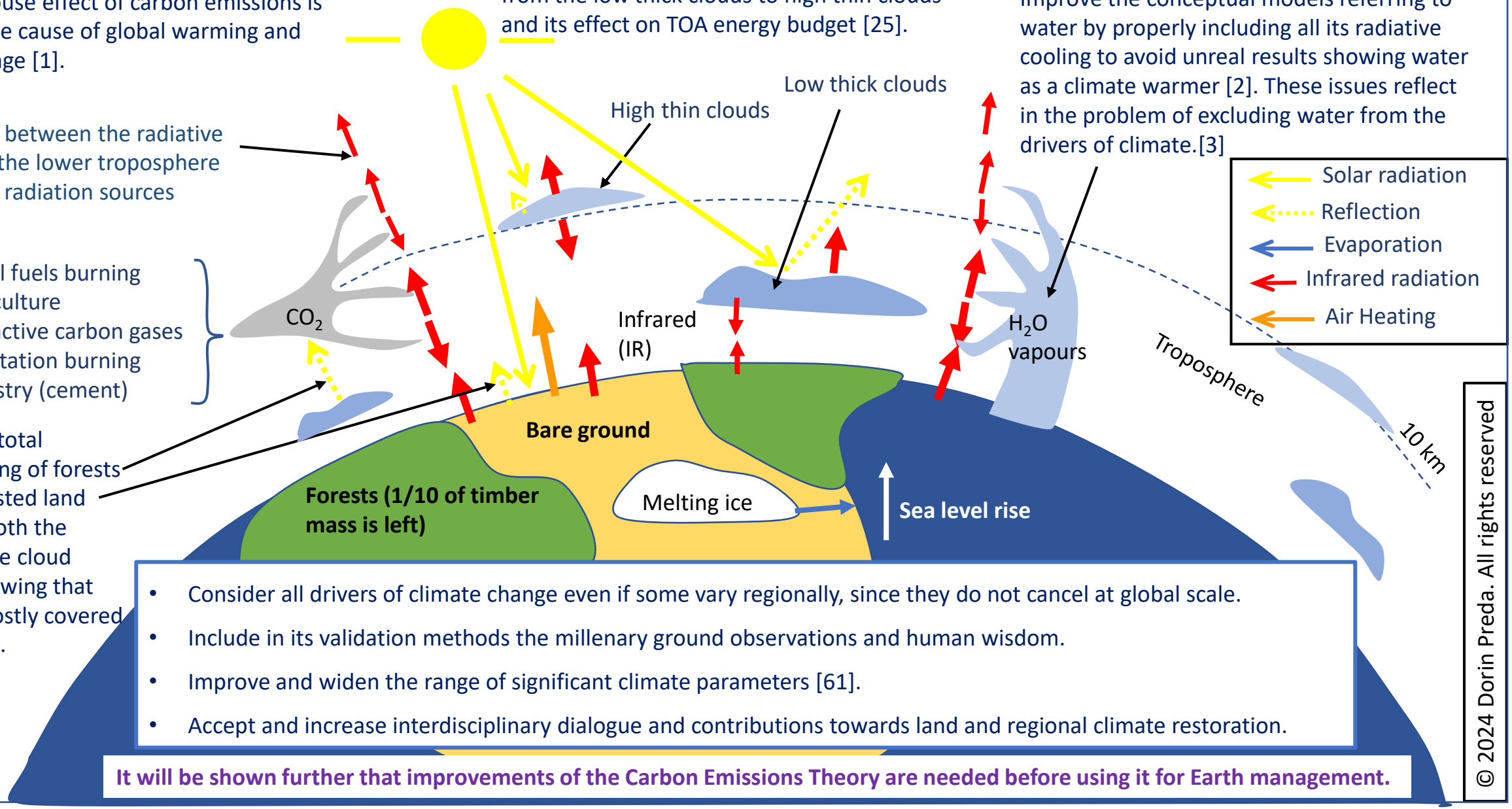
3. DIRECTIONS FOR IMPROVEMENT OF THE CARBON EMISSIONS THEORY (CET)

The greenhouse effect of carbon emissions is not the single cause of global warming and climate change [1].

Consider the cause of the global transition from the low thick clouds to high thin clouds and its effect on TOA energy budget [25].

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]. These issues reflect in the problem of excluding water from the drivers of climate.[3]

Infer the ratio between the radiative flux of CO_2 in the lower troposphere and the other radiation sources



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].

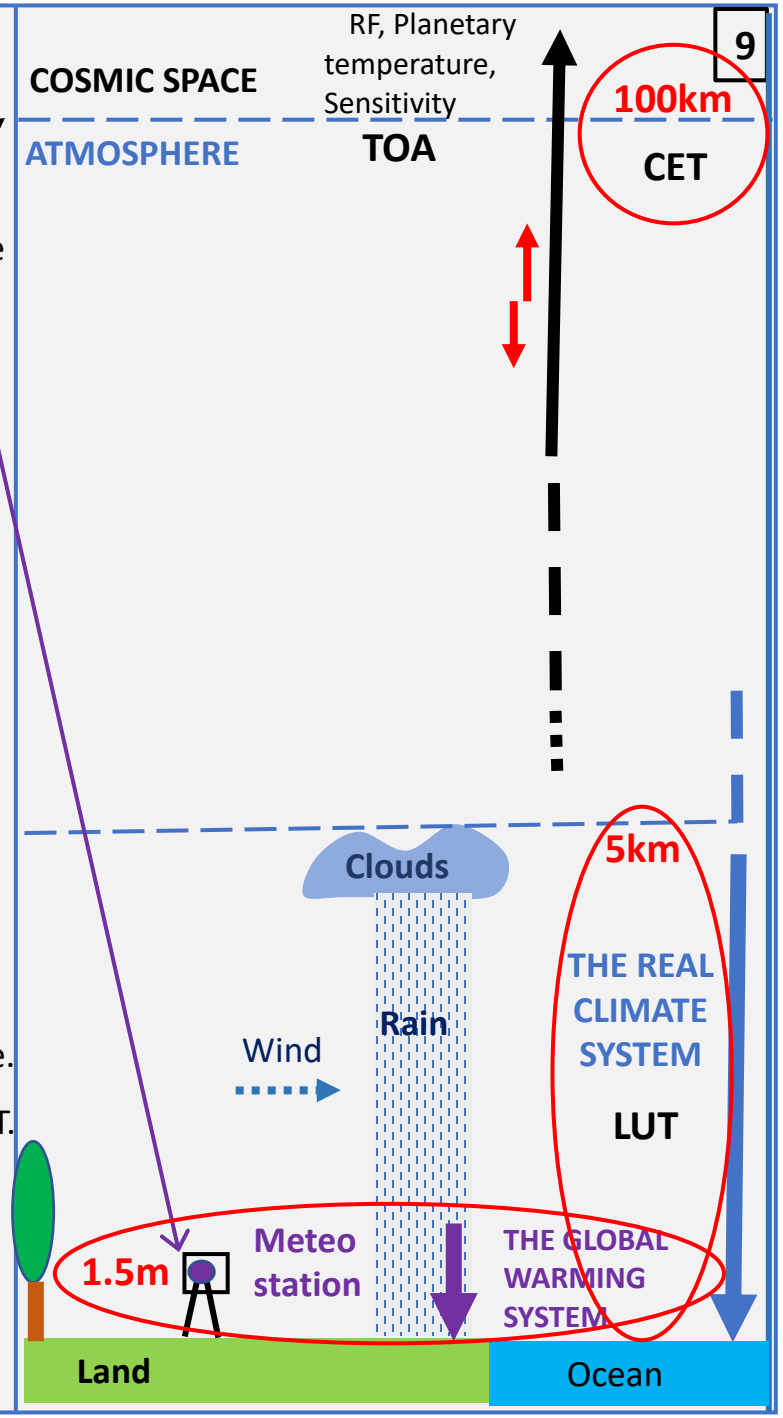
- Consider all drivers of climate change even if some vary regionally, since they do not cancel at global scale.
- Include in its validation methods the millenary ground observations and human wisdom.
- Improve and widen the range of significant climate parameters [61].
- Accept and increase interdisciplinary dialogue and contributions towards land and regional climate restoration.

It will be shown further that improvements of the Carbon Emissions Theory are needed before using it for Earth management.

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

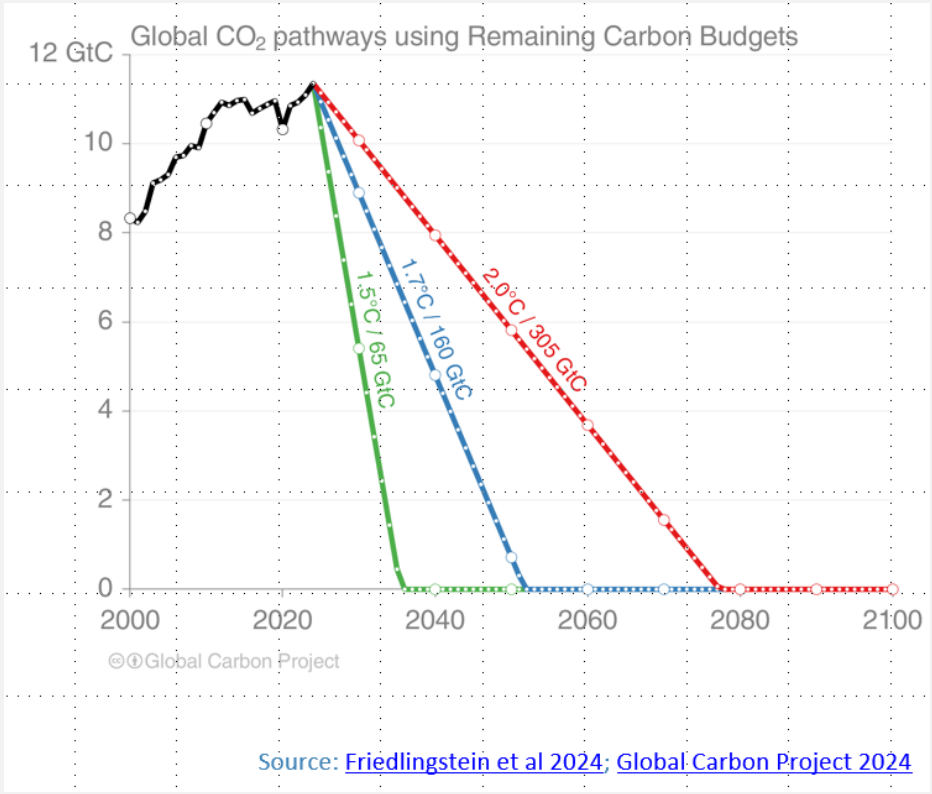
- **Reference system**: CET calculates estimates for the top of the atmosphere (100km) system of reference, while the real climate is under the clouds (5km) and the global warming (GW) refers to the air temperature measured at meteorological stations at only 1.5m above the ground. Given the great distance 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 real 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 measures reality, 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 energy balance.
- **Reciprocity:** GW can be calculated from all the local values, but this or the reverse are not possible with CET.
- **Management value**: the extreme local values of GW are more valuable than CET's global average.

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

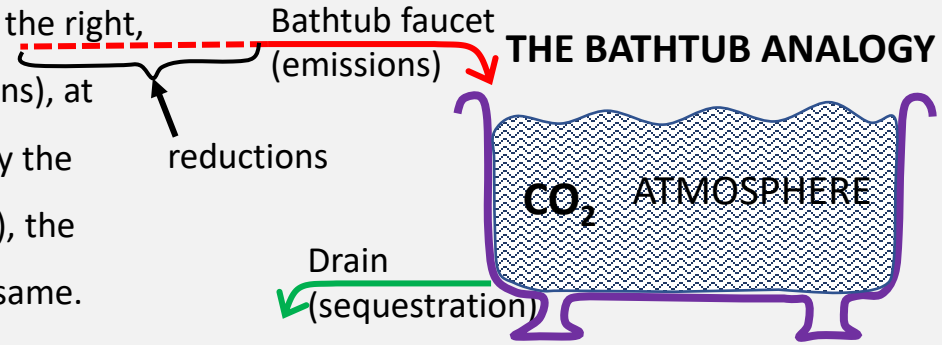


3.2 FURTHER IMPROVEMENTS FOR THE CARBON EMISSIONS THEORY (CET) [25]

1. The radiative forcing (RF) of deforestation water should be accepted, similar to the RF of irrigation water (Fig. SPM2 of [88]).
2. The greenhouse effect of carbon gases or any other gas does not depend on their residency time in the atmosphere [83], but only on their concentration.
3. Improvement of climatic theories can replace the development of the damaging geoengineering of solar radiation.
4. Essential phenomena like evaporation or condensation cannot occur at the average values resulted from the spherical geometry division of CET.
5. CET should only be used to study the greenhouse effect and evaluate the energy budget at TOA, resulting in forecasts for the long term, global climate.
6. The symptoms of climate change are more related to LUT processes, which should be used to analyze the near ground, short term and regional climate**.**
7. A reduction of emissions as in the graph on the left is unrealistic, as the manufacture of renewable energy generators requires increased fossil fuel use.



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.

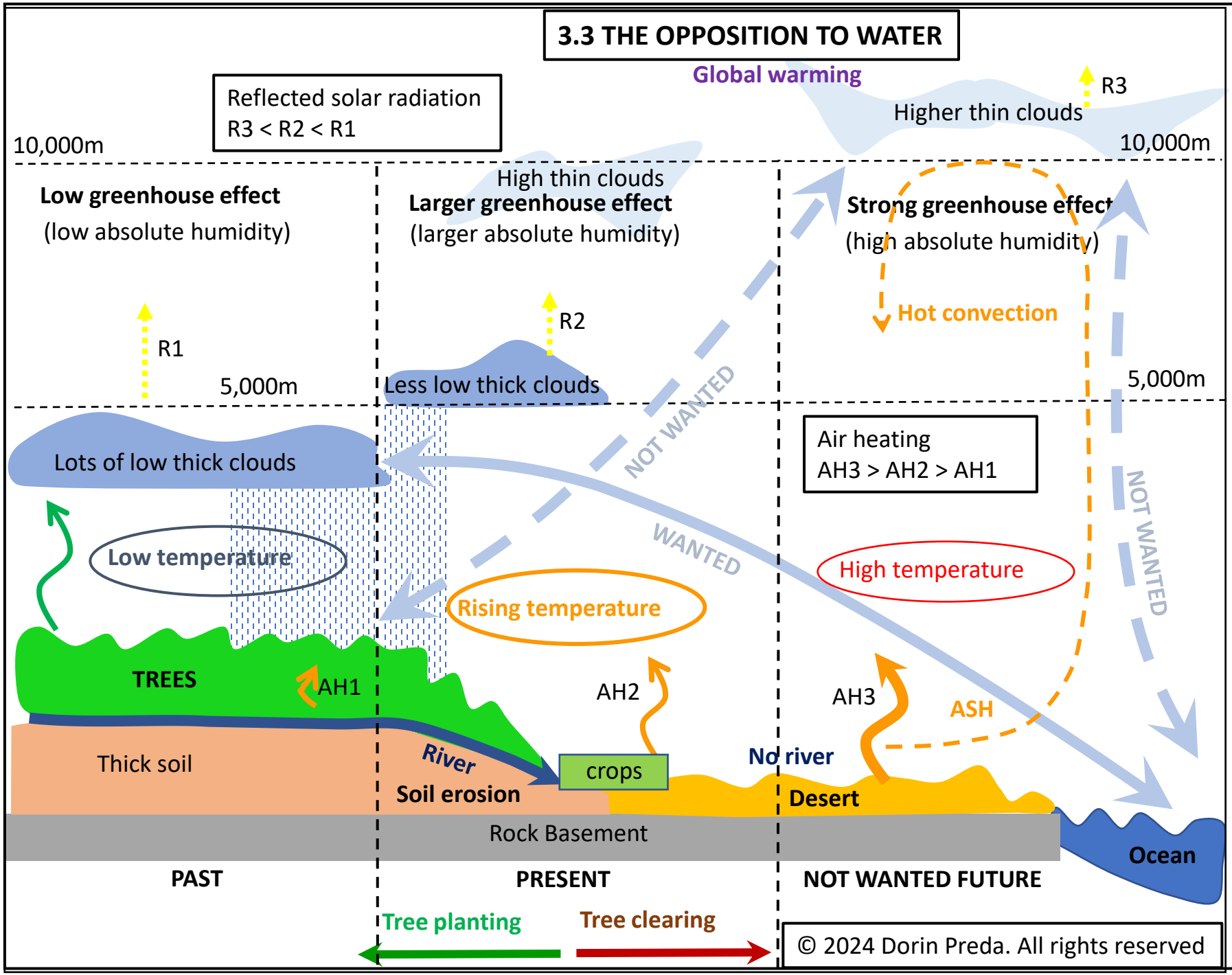


However, to reduce the fossil fuel use to half, we would have to abandon the lands at more than 45 degrees of latitude, because renewable energy cannot heat them. Evacuating people from most developed countries is unacceptable, and, as seen above, it would not reduce global warming.

Therefore, only an increase in a realistic way of carbon sequestration (the bathtub drainage) can decrease the CO_2 in the atmosphere, like it will be shown further in this presentation.

We must reduce CO_2 by using all possible renewable energy, but to really stop global warming we need economical and environmentally friendly carbon sequestration.

3.3 THE OPPOSITION TO WATER



Most climatological studies [85][86] deem unwanted the high humidity of forests, as it would increase the greenhouse effect.

In fact, in forests the greenhouse warming is much smaller than the evaporative cooling, while humidity is low above forest clouds [25]. Deforestation overheats the ground, promotes intense evaporation (thus absolute humidity) and produces high thin clouds and infrared radiation. That high infrared radiation meeting the air of high absolute humidity produces a higher greenhouse effect above a desert than above a forest.

This is confirmed by satellite infrared imaging, that shows much more infrared radiation from deserts than from (cloud covered) forests [90]. Additionally, at ground level it is known that average daily temperature in a forest is lower than that in an adjacent deforested area.

Thus, tree areas decrease global warming in the lower part of the atmosphere and may produce lower greenhouse effect in the upper atmosphere than the deforested areas.

Therefore, we should not oppose water in the atmosphere, because the more it is, the lower it stands in the atmosphere (as cool low thick clouds), while the high thin clouds enhance the greenhouse effect and overheat the higher altitude atmosphere.

3.4 THE OPPOSITION TO PLANTING TREES

Most climatological 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 grasslands are results of older deforestation, so we would be restoring tree areas, not making new ones.

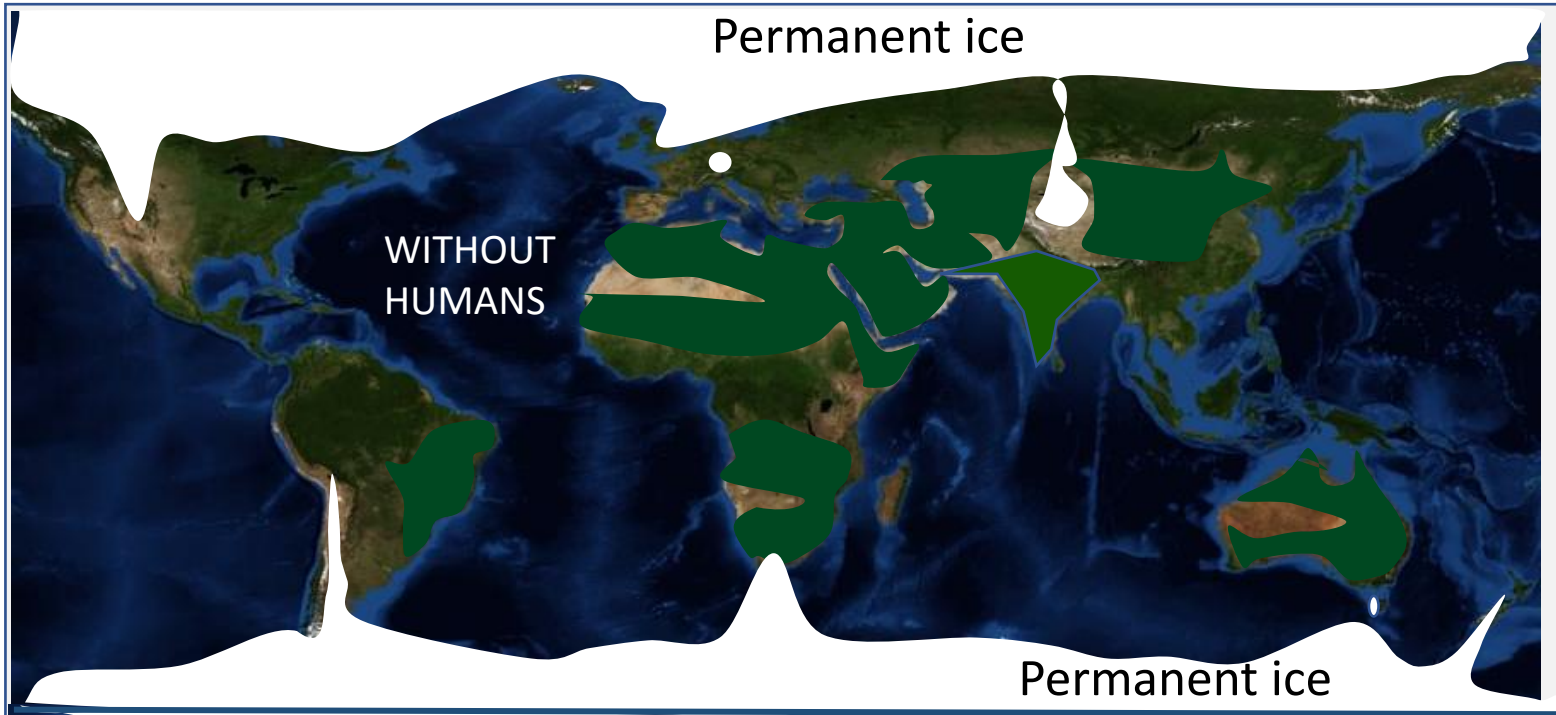
The overstressed efforts to push for carbon emission reductions end in damaging the planet's water cycle by opposing tree planting and natural water cooling. The result is opposite, of overheating the Earth, and really damaging ecosystems through desertification.

In addition to restricting natural water cooling through reforestation, deforestation has been extended at COP26 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.**

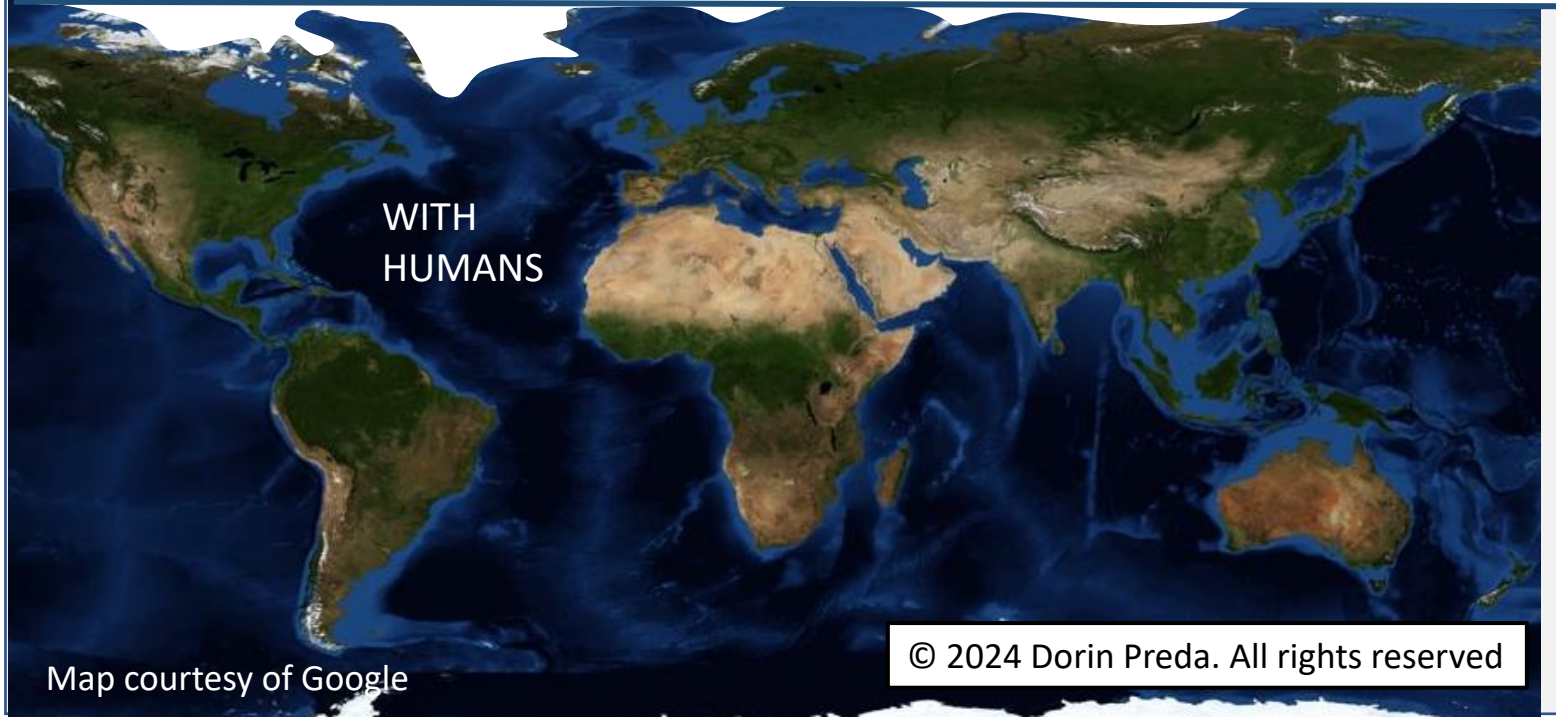
Therefore, the opposition to tree planting is unjustified and leads to irreversible destruction.

4. HUMAN CHANGES TO OUR PLANET



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 would cover the land with deep, moist litter
- Frequent small rains, no floods or droughts because of abundant groundwater and above land freshwater.
- The beginning of a glaciation; much more ice [26]



Map courtesy of Google

Earth now:

- About ¼ area and 1/10 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 day heating and night cooling of air.
- A few degrees Celsius global warming due to land heating.
- About 420 ppm of CO_2
- Far less biodiversity and mass of wild animals
- 90% of Earth is stressed by human input.
- More than 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 land and climate changes.

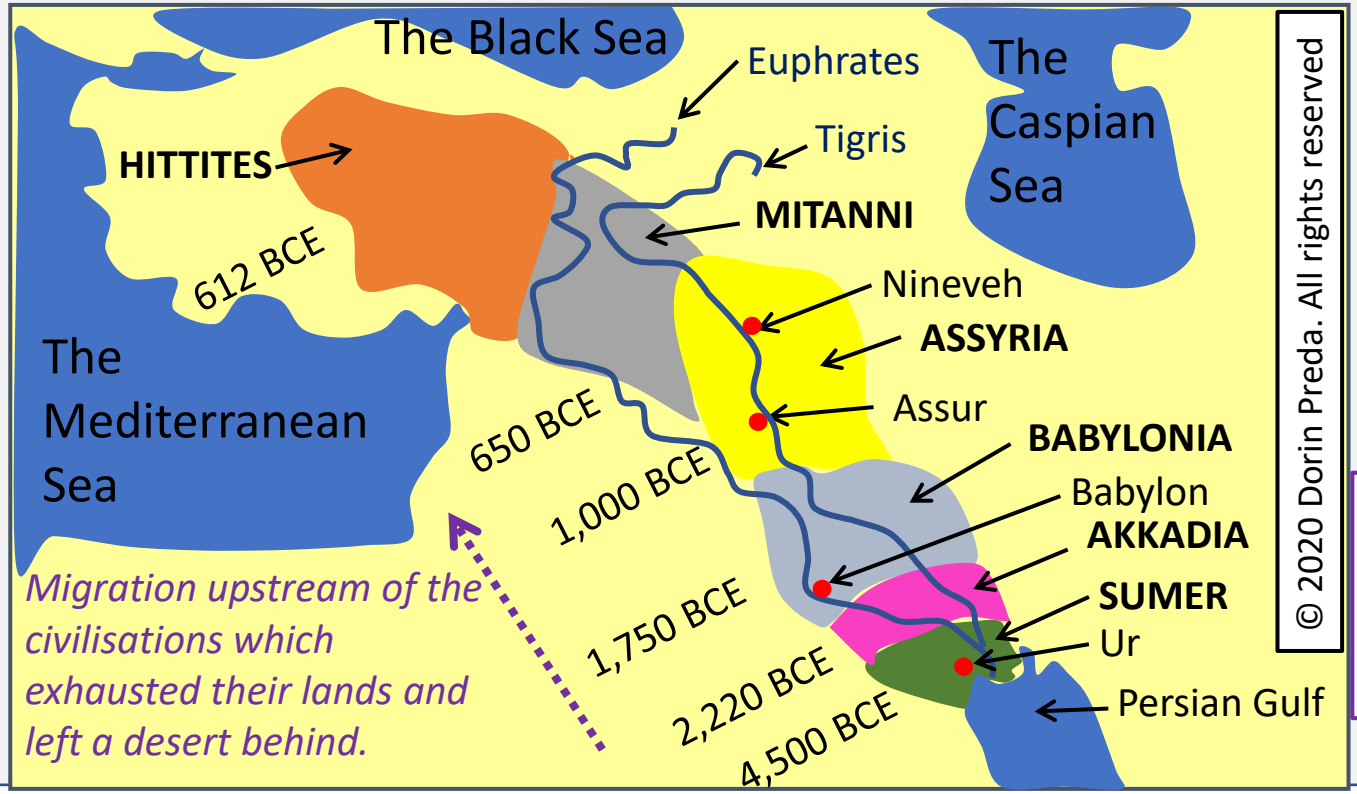
4.1 LAND EVOLUTION IN TIME [24]

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, agriculture [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 in the Americas or Asia the land is still green [25].



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.

4.2 LOCAL EFFECTS OF SURFACE CHANGE [24]

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

Global warming
High thin clouds

Greenhouse gases

Planetary cooling due to high cloud reflection

Low greenhouse effect

5km altitude

Anthroposphere is the climatic zone of the Earth

Greenhouse gases

Very high greenhouse effect

Sensible heat transfer

Medium greenhouse effect

Low thick clouds

Latent heat transfer

Low greenhouse effect

Medium greenhouse effect

High greenhouse effect

Meteo station

ASH

Hot air

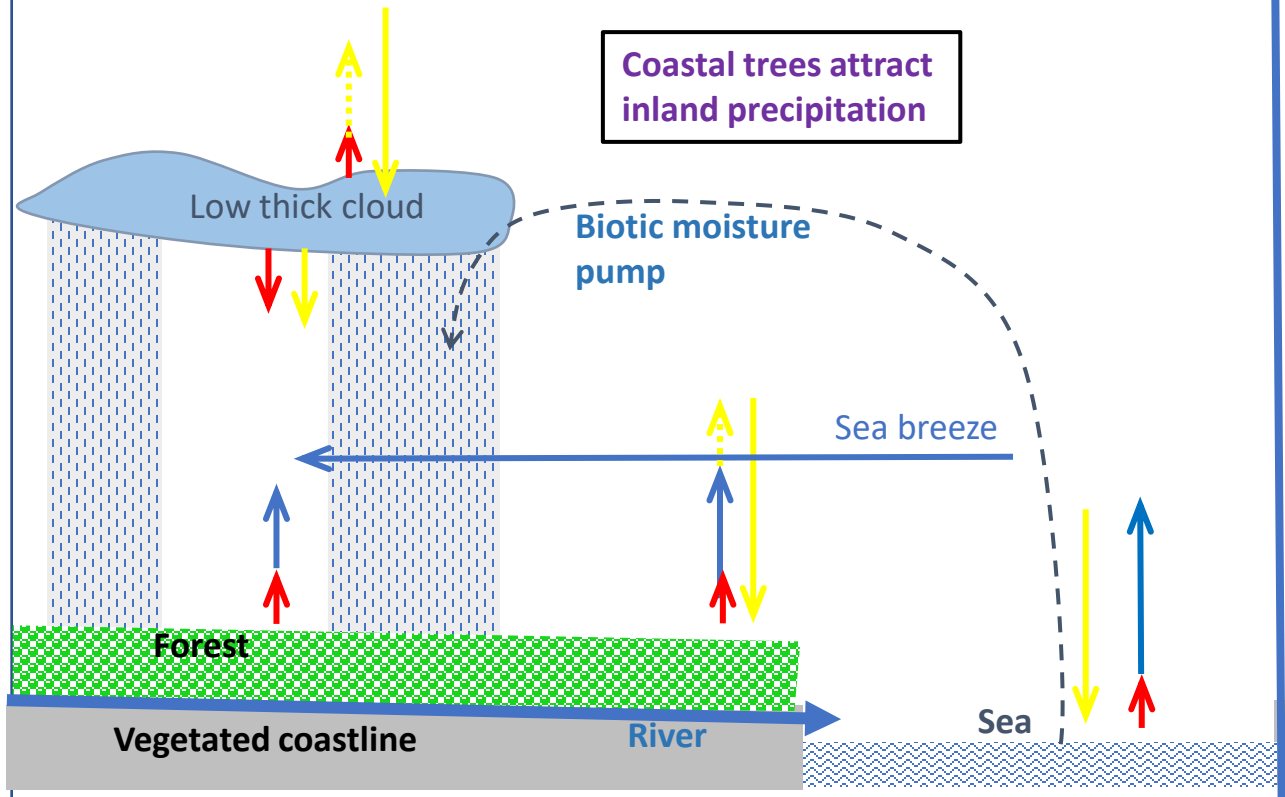
Town

Ocean 20°C	Clouded forest 15°C	Forest 20°C	Crop field 25°C	Degraded land 30°C	Desert / town 35°C
Despite the high air humidity, the ocean creates a medium greenhouse effect, as most solar radiation is used to evaporate water, thus IR is low. **The ocean has an excess of evaporation, which is attracted and precipitated by forests through 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, which 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.**

4.3 THE CLIMATIC ROLE OF COASTAL TREES

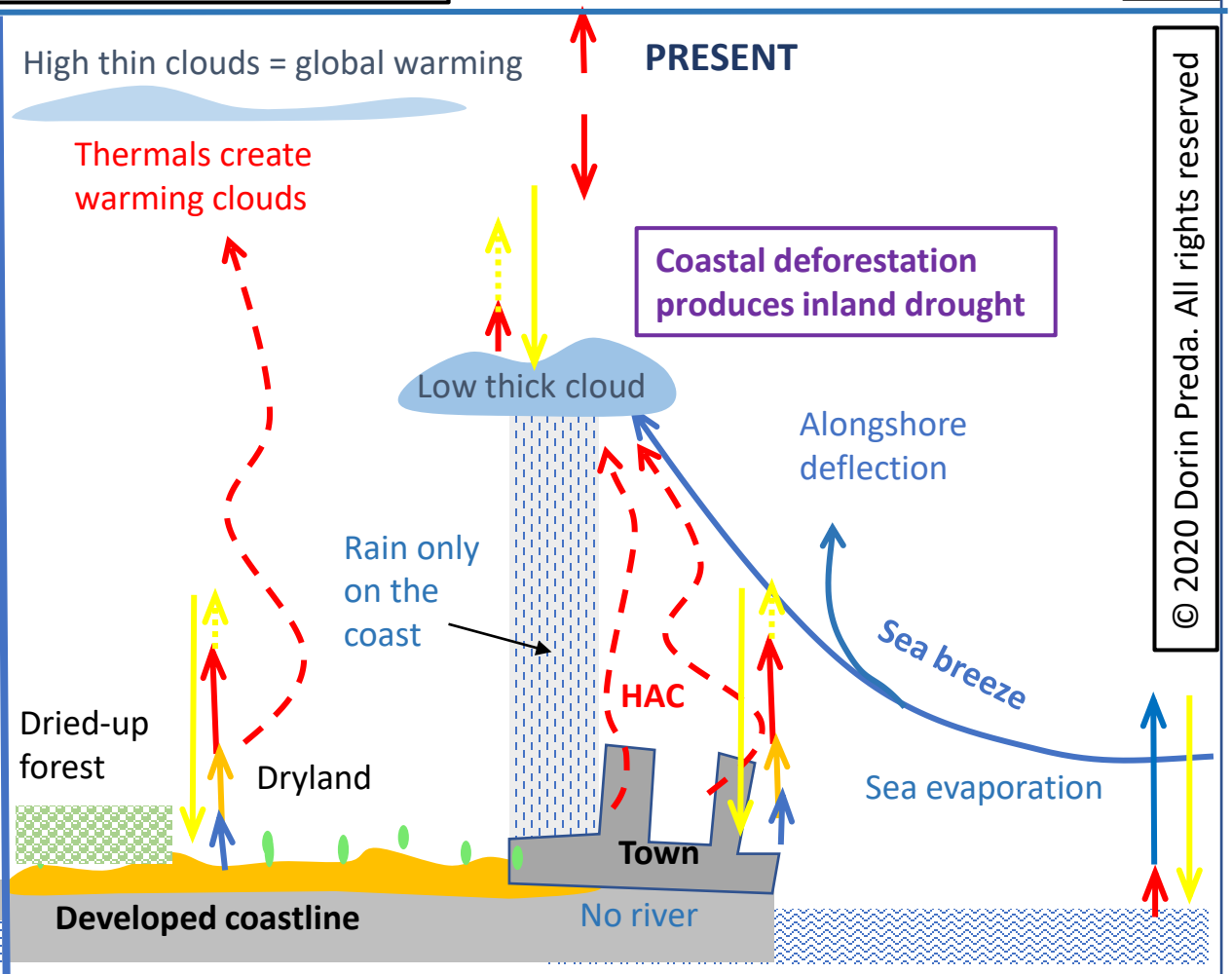
SR Solar radiation
R Reflection
E Evaporation
IR Infrared radiation
AH Air heating

BEFORE HUMANS



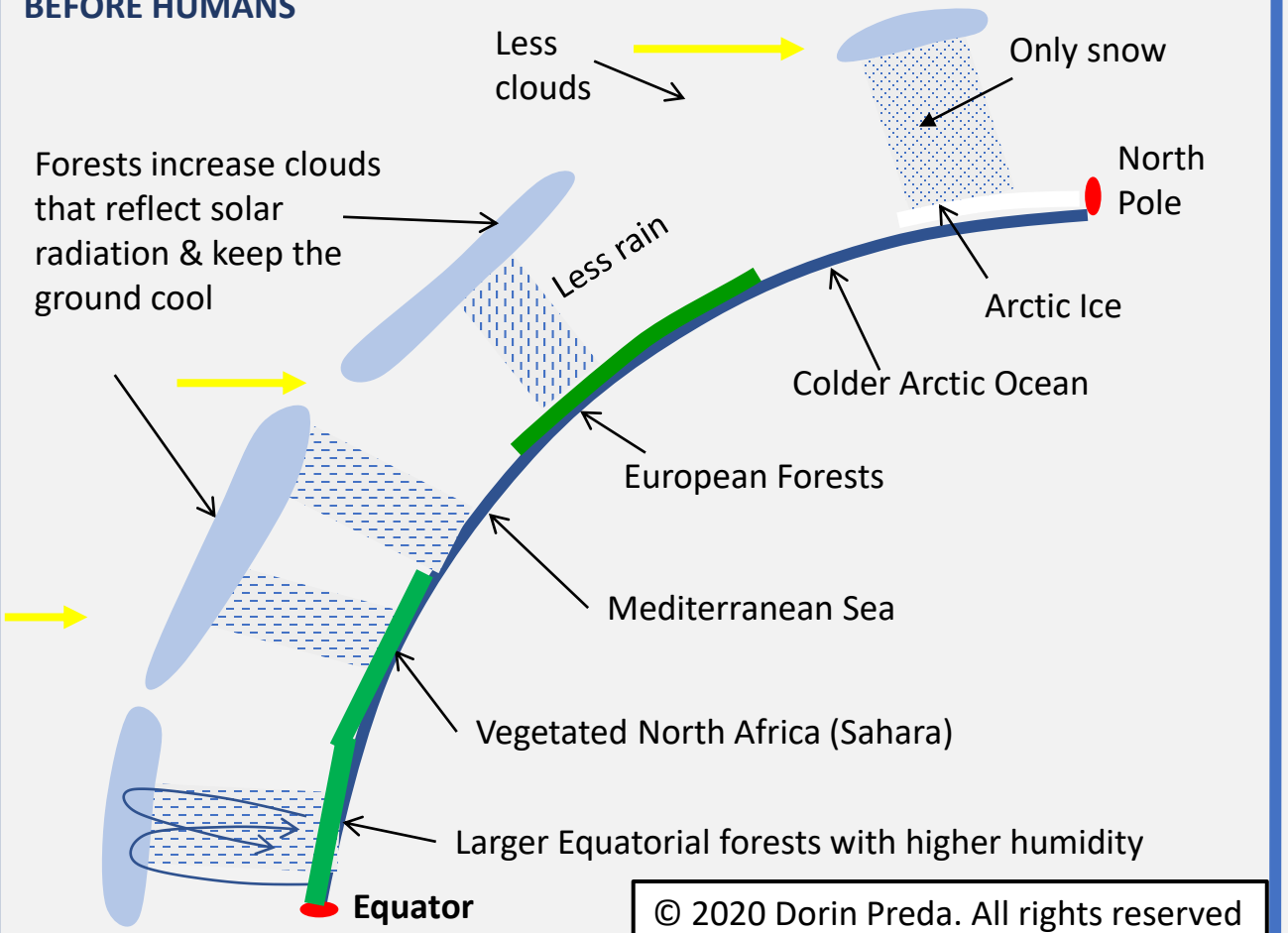
All coastlines were initially covered with forests that attracted marine humidity through biotic pumps [27], and ocean - land pressure differential [80], [25]. They favoured regular rain that fed the forests and created rivers from their excess precipitation/evaporation. **There would be no water on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

PRESENT



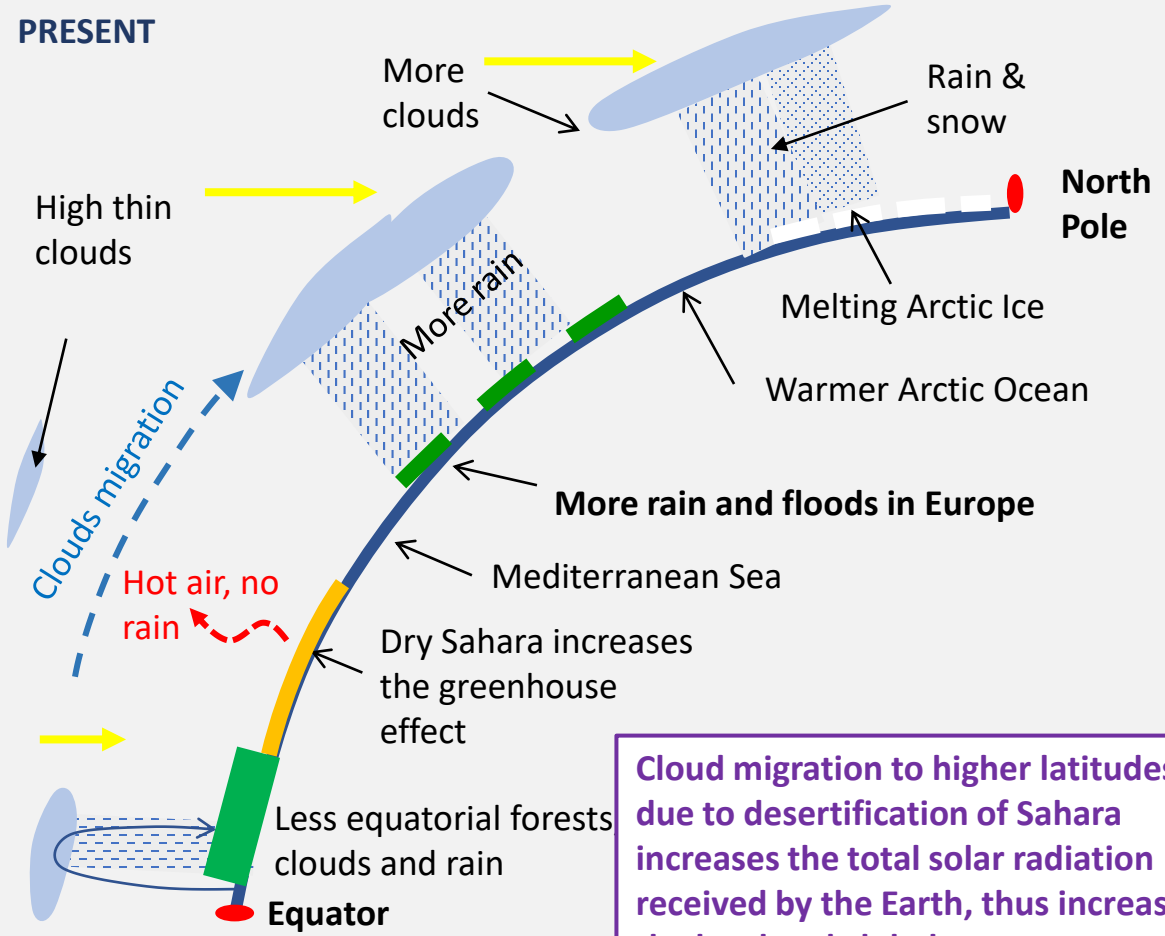
When coasts are deforested, they overheat the air that raises in strong thermals, creating a **hot air curtain (HAC) [24] that stops marine humidity from reaching the inlands, which this way dry out.** The sea breeze is either deviated alongshore, or pushed upwards to reach its condensation and precipitation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

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.

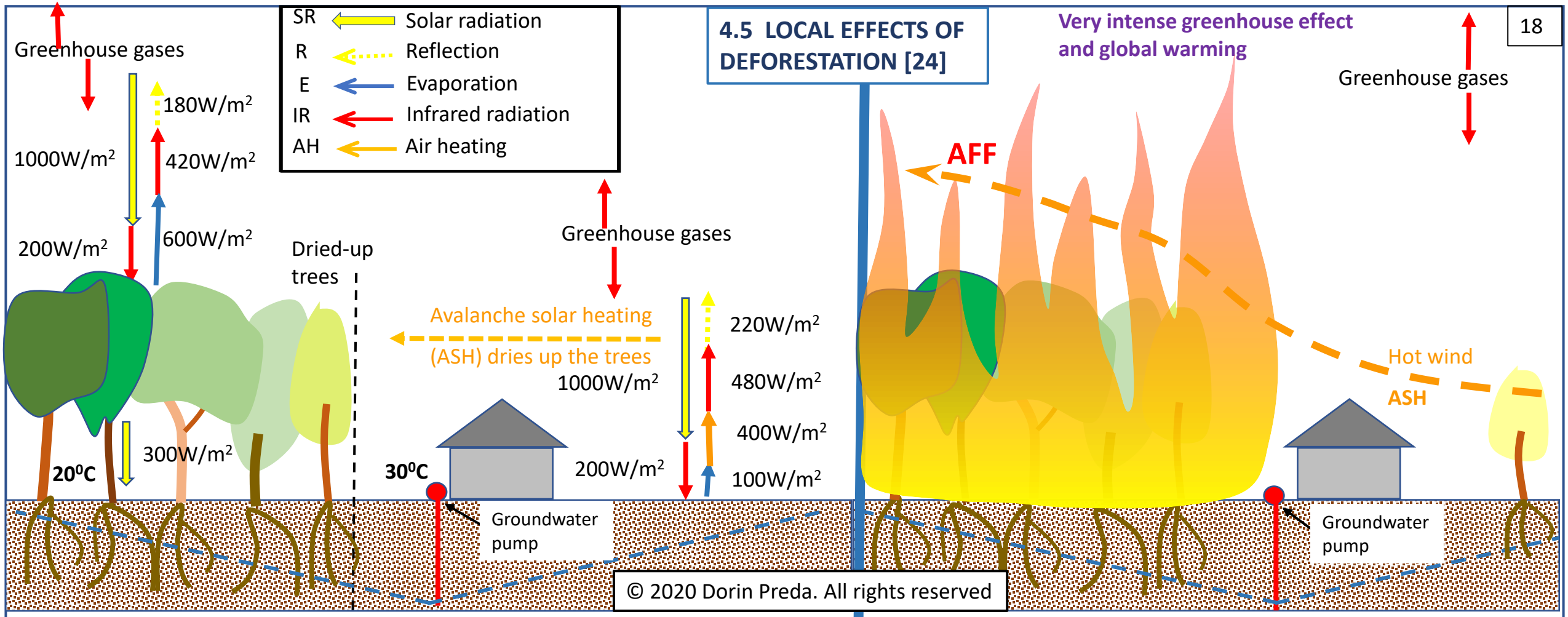
PRESENT



Cloud migration to higher latitudes due to desertification of Sahara increases the total solar radiation received by the Earth, thus increases the local and global temperatures

- North African forests were deforested in prehistory for pastures and by the Cartesians and the Romans for crops.
- 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.**

4.5 LOCAL EFFECTS OF DEFORESTATION [24]



Most solar energy in a forest is used to evaporate water, so there is no solar air heating and the temperature in the forest is much lower than above bare ground, despite trees reflect less solar radiation than bare ground and is said that would warm the climate.

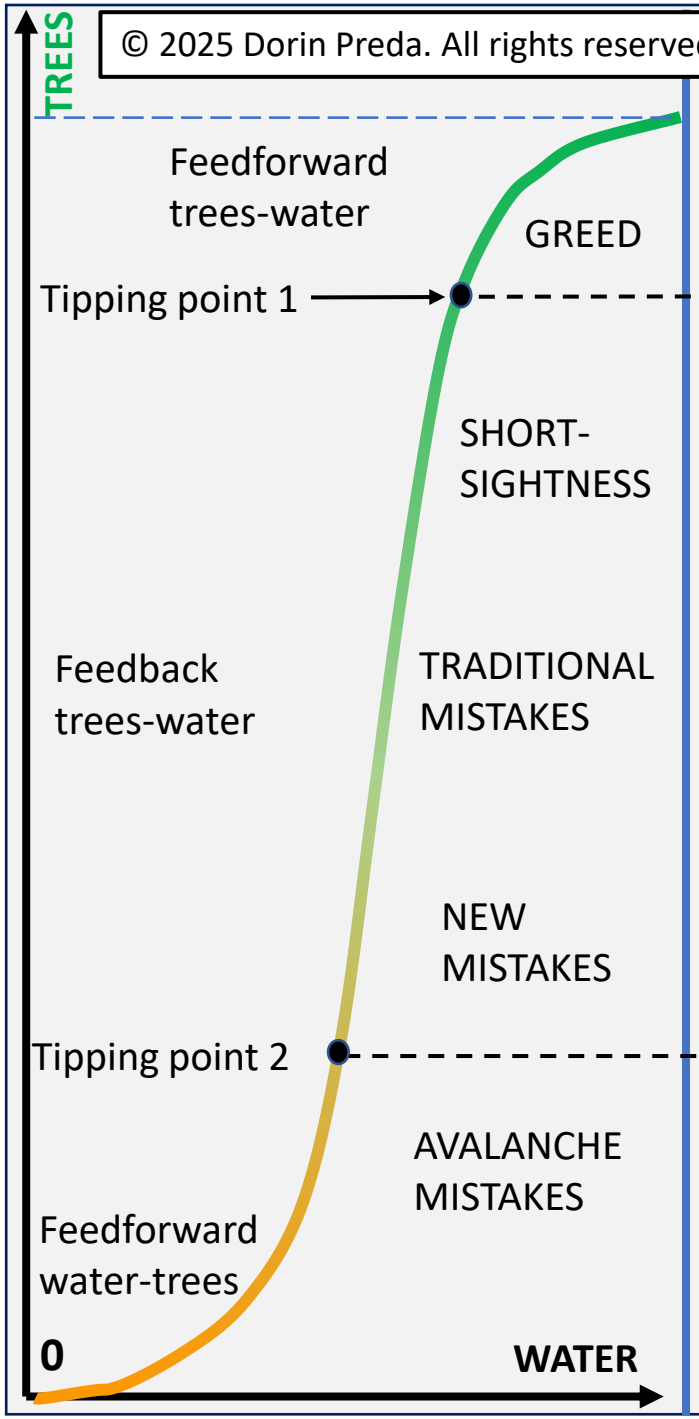
Deforestation decreases water evaporation, thus solar energy overheats the lower troposphere. **As above, local deforestation warming may be up to 460W/m² (corresponding to an instantaneous RF of many W/m²), [25], while the CO_2 produces a RF of only about 2W/m²**

Local deforestation warming may be larger than man-made carbon gases warming.

Sunshine overheats the bare land and the already dried vegetation to produce Avalanche Solar Heating (ASH) , which dries up more vegetation in its path (avalanche effect). ASH dries up the trees around forest clearances and thinning, especially if the groundwater is extracted with pumps from tree roots area. **Deforestation and forest thinning cause extreme dryness. This way, trees transform into fuel.**

When ignited, the dried trees burn violently, creating an Avalanche Forest Fire (AFF).

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

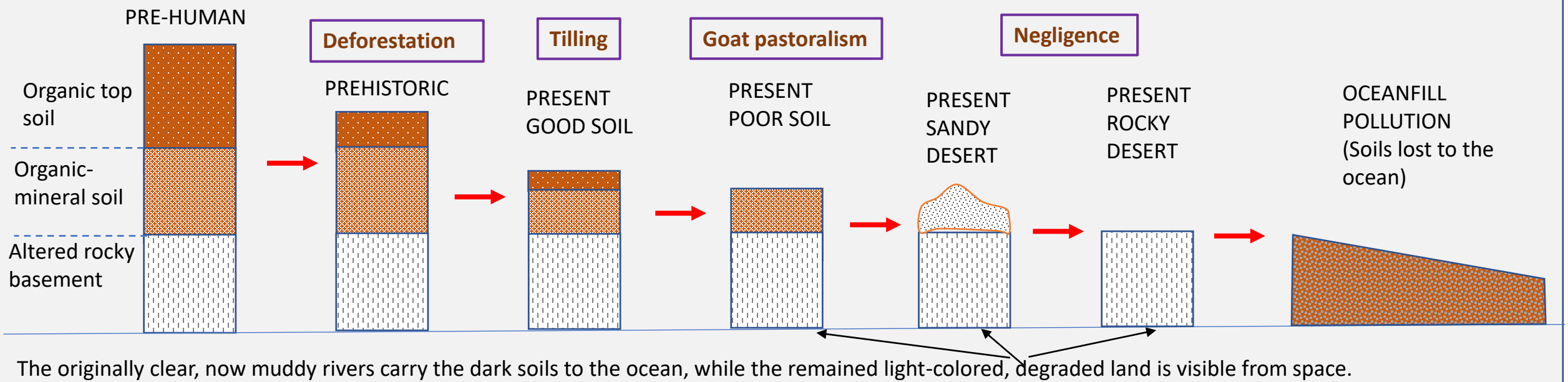


Before humans, N Africa had forests, lakes and savannas with lions, elephants, antelopes, crocodiles.
Humans have put fire to vegetation for hunting and to promote grasses for antelopes versus useless trees.
As result, the central Saharan belt dried out, most forests disappeared and the dryness cycles 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 the 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 had 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 Somalian 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.
Climatologists consider the above a natural, cyclical, tropical process amplified by carbon gasses emissions.

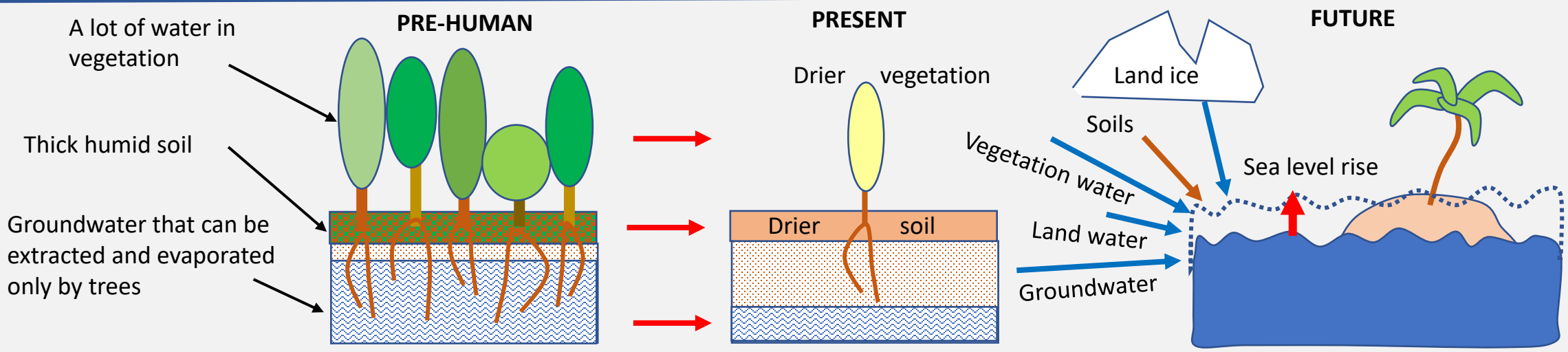
ASH power increases as it dries out vegetation from larger areas and produces more sand by soil erosion.
People were pushed south by the advancing sand, creating the Sahel and its socio-economic problems.
The ill-designed African Great Green Wall was supported financially in 2022 despite the 2020 correct 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, which 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.

5. THE PROPOSED CONSOLIDATED CLIMATE CHANGE THEORY (CCCT)

The Reason for a Consolidated Climate Change Theory (CCCT) is that using exclusively any of the theories hampers correct action on other theories lines.

The purpose of the CCCT is the theoretical and applied study of regional climates with a view towards their economically beneficial restoration.

The CCCT includes properly validated information from all theories (see Annex 3), to which it adds new insights.

Suggested Principles of the CCCT:

1) The relative magnitude of CET and LUT processes change spatially and temporally; none is considered universally dominant.
2) CET is useful for TOA assessments of the long term, global climate, while LUT is suitable to analyze the near ground, short term and regional climate*.
3) The integrative study of the global climate should support, not impose contrary conclusions or take precedence over regional climate studies.
4) The assessment of climate issues should be based on open, interdisciplinary and independent scientific debate, not on the number of similar opinions.
5) Conceptual simulations and the associated basic calculations take precedence over computer simulations and modelling when they give divergent results.
6) Direct, local observations and measurements take precedence over modelled interpretations of remote sensing, and serve to validate the latter.
7) Coupled surface-atmosphere simulations produced by self-trained AI could accurately model regional climates and guide their rehabilitation.
8) Change versus the natural state should be minimized, and burning of organic matter (including fossil fuels) should be avoided.
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**: There is no scale of value between climate models. "Regional" – "global" may be theoretical, but for land management only "regional" is relevant.*

****Note**: Some indigenous populations had a detrimental action upon their land and climate, thus their input in management should be balanced accordingly.*

1) Feedforward

CAUSE 1 **feedforward** EFFECT 1 / CAUSE 2 **feedforward** EFFECT 2

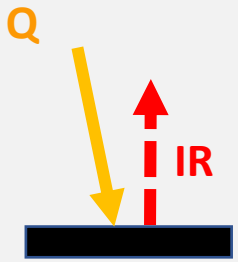
Distinct from "feedback" used in climatology, we introduce the term "feedforward" where the reaction does not return to the initial causal element, but is transmitted forward to another. Feedforward is also better than "chain reaction" because a chain cannot exert force in the forward direction.

2) Avalanche

CAUSE 1 **avalanche** EFFECT 1 / CAUSE 2 **avalanche** EFFECT 2 / CAUSE 3

Additionally, for cascading processes which are close to the tipping point, we suggest the term "avalanche" for a feedforward with amplification (pages 18, 32).

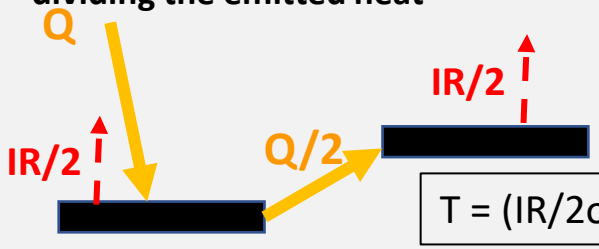
Classic emission



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

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

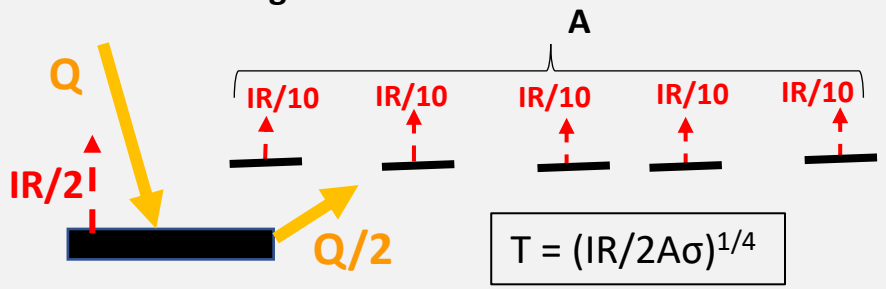
3) The Divided Heat Emission (DHE) decreases emission temperature by dividing the emitted heat



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

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

4) Divided & Dispersed Emission (DDE) further decreases temperatures through an emission area larger than the area that received the heat.

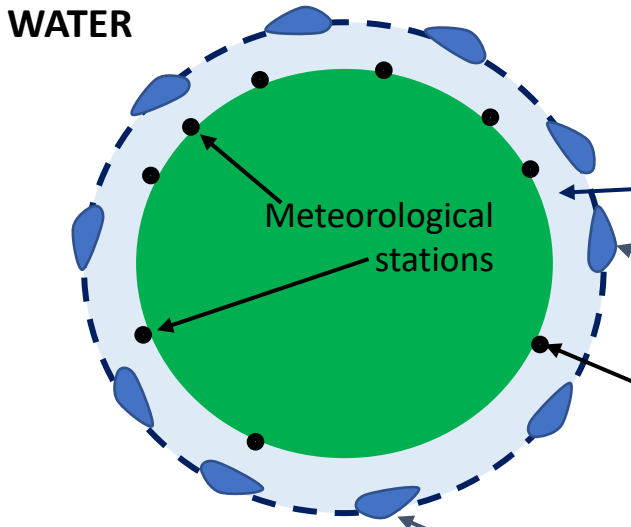


$T = (IR/2A\sigma)^{1/4}$

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 trough mechanisms like DHE and DDE. The more heat is dispersed, the lower is the temperature in the climatic zone of the Earth.

5.2 THE SYSTEM AND THE ENERGY TRANSFERS OF THE CCCT

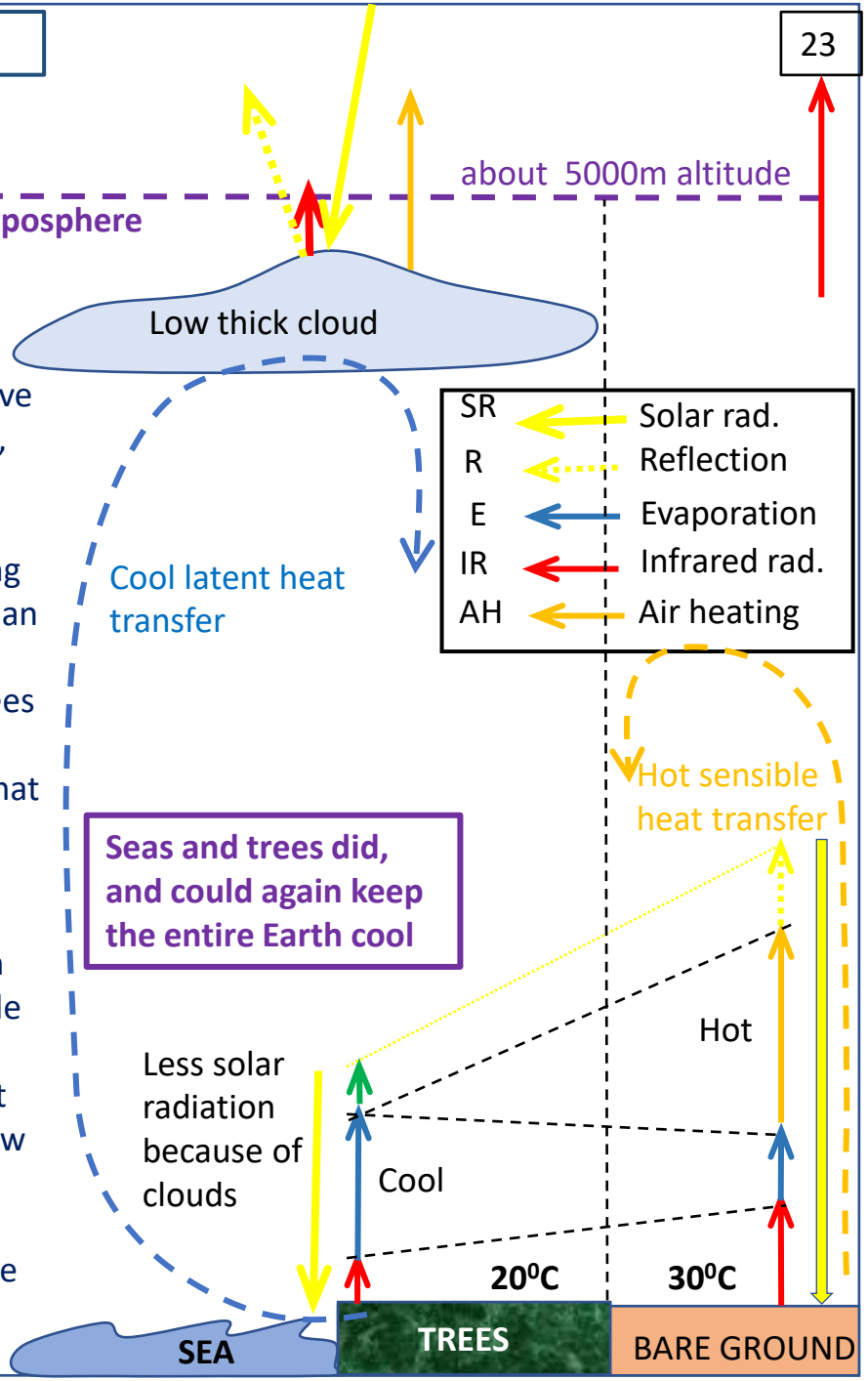


The system of the Consolidated Climate Theory (CCCT) is the Anthroposphere near the ground, under the low clouds, where the climate happens, and the meteorological stations are (the benchmark of global warming), and all the interests of our society. The CCCT also includes the carbon gases effect in the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

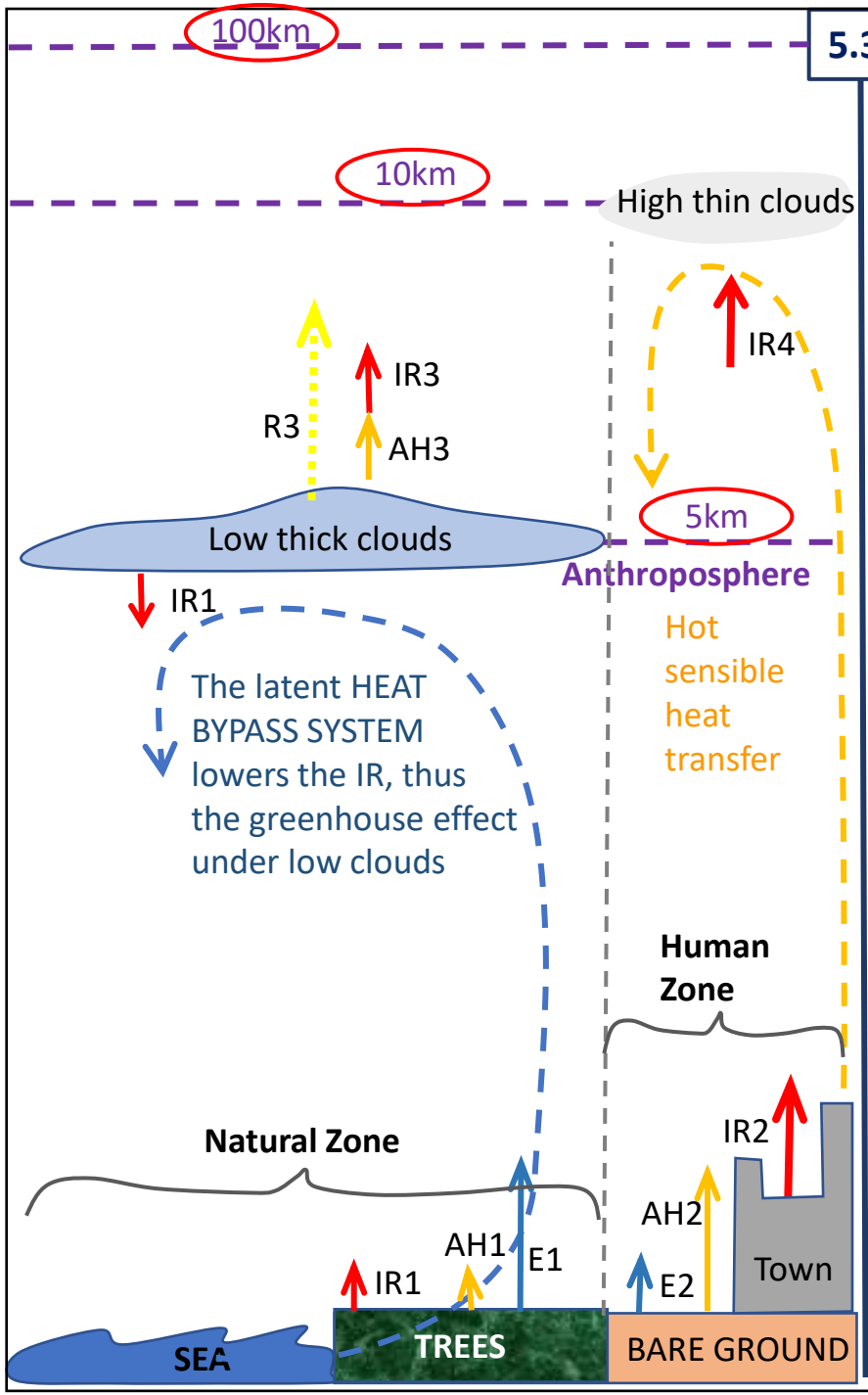
The CET system has detached us from Earth and immobilized our actions because its reference system was set too far, at the top of the atmosphere and analyses only the average temperature increase.

The Anthroposphere

Some carbon-centric studies consider that water (through its greenhouse effect) would heat more than its ignored evaporative cooling effect [84] [85]. Similarly, trees would warm the planet through their lower albedo than the bare land, and by evaporating too much water, thus producing an increased greenhouse effect.
In fact, by evaporating water, trees and water bodies cool the Anthroposphere and evacuate that heat above the clouds. This process happened all over the planet before humans, when almost all land was covered with plants and the climate was livable while life was thriving.
A deforested land as on the right overheats the ground and the low air layers, where the meteorological stations are, and record global warming as 8^0C due to deforestation and 2^0C to the carbon greenhouse effect.



5.3 THE LATENT HEAT BYPASS AND DEFORESTATION EFFECTS IN THE CCCT



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 water cycle, resulting in all the symptoms of climate change.

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

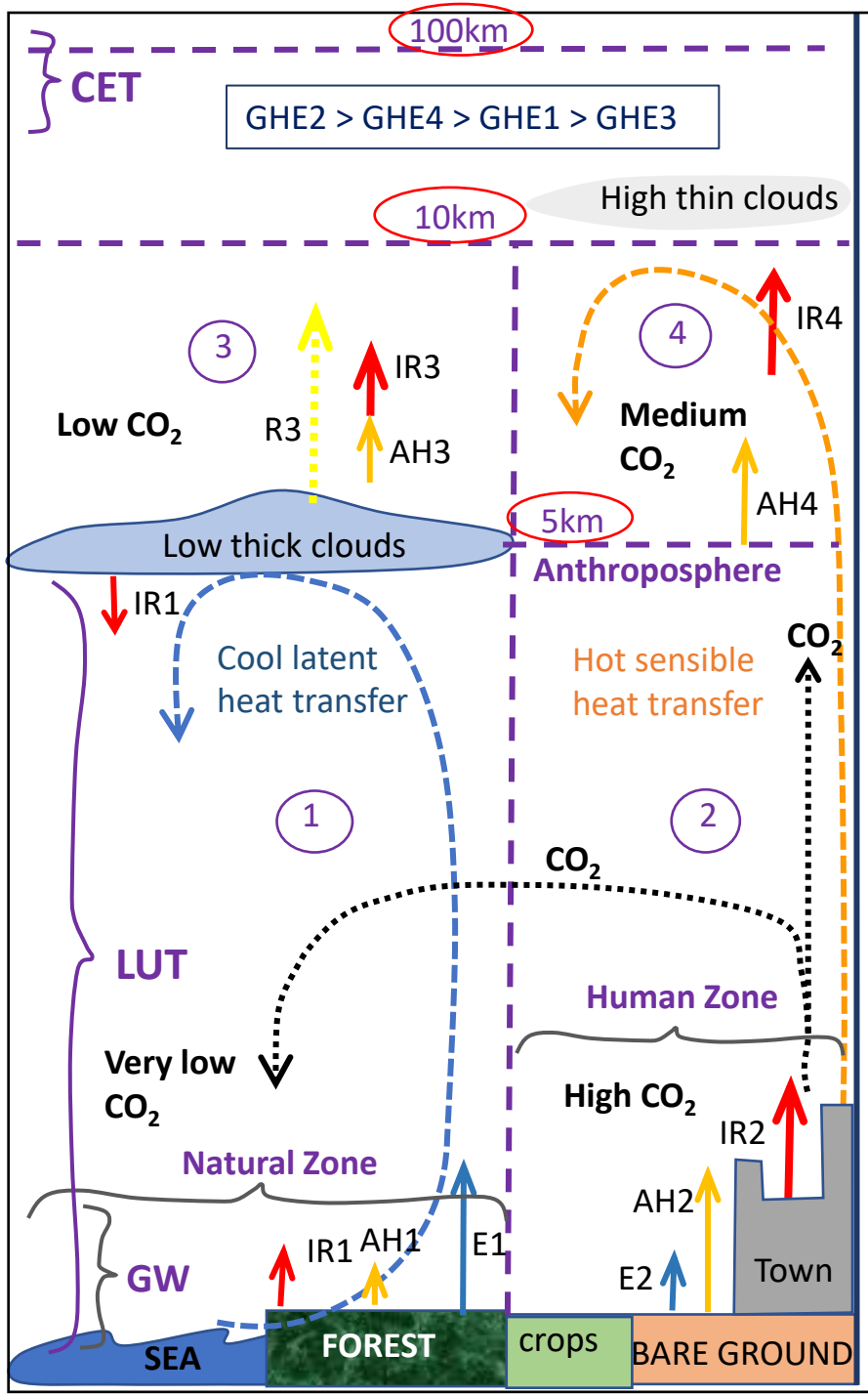
Additionally, due to deforestation the overheated ground is sending rather small quantities of water vapors in strong hot air currents to high altitude, where they freeze. This way, the high thin clouds are formed by the hotspots of deforestation [24]. The high clouds are known to produce intense global 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 CO_2 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 relating to the global warming (GW) temperature.

1) The Natural zone of the Anthroposphere absorbs CO_2 (thus has lower CO_2 concentration) and is shaded by the low thick clouds, so less than half of solar radiation reaches the ground. The high water evaporation E1 allows only little solar air heating AH1 and infrared radiation IR1. Since CO_2 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 CO_2 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 CO_2 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 CO_2 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 (lapse rate).

4) The top part of the human zone is dominated by the hot air currents that create the high thin clouds. It has medium CO_2 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.

5.5 QUANTITATIVE OBSERVATIONS AND CALCULATIONS SUPPORTING THE CCCT

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 1^0C 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. Similarly to 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 (incorrect 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, an improved 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 x 10,000,000m^2 = 400MW of continuous heating). Past tree cuts of 96x10^6 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.*

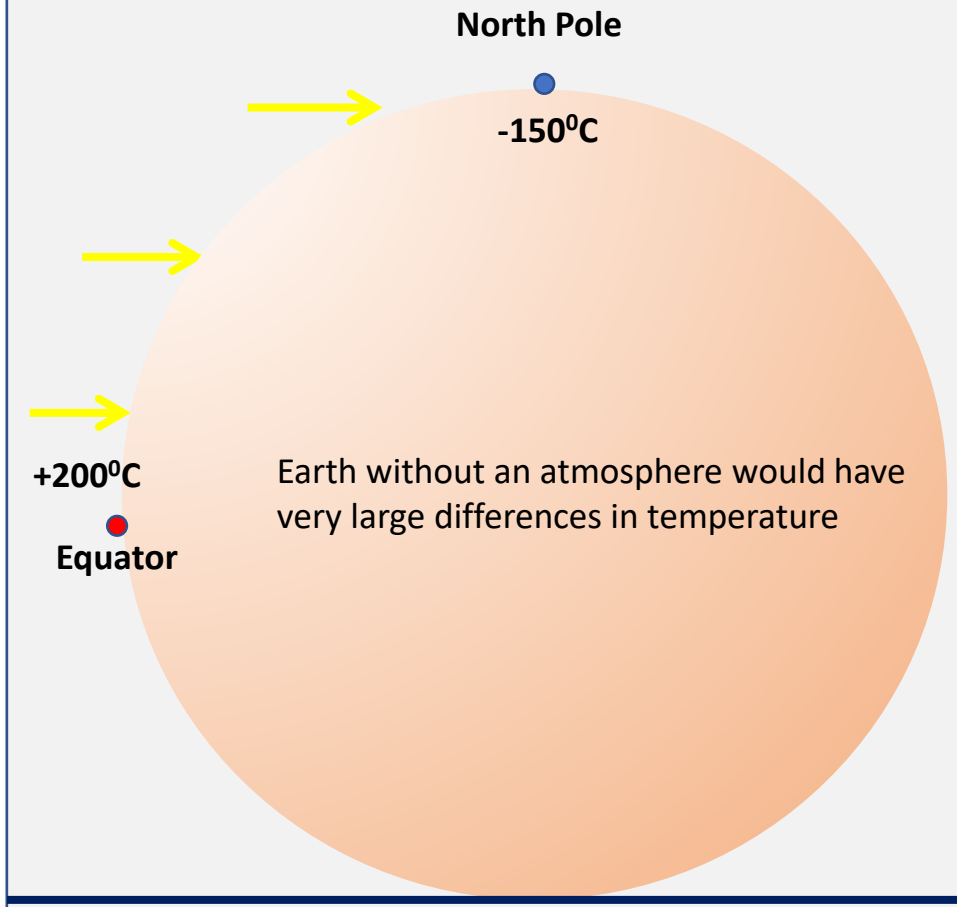
5.7 THE CCCT CAN PROPERLY EXPLAIN THE CLIMATE CHANGE SYMPTOMS [24]

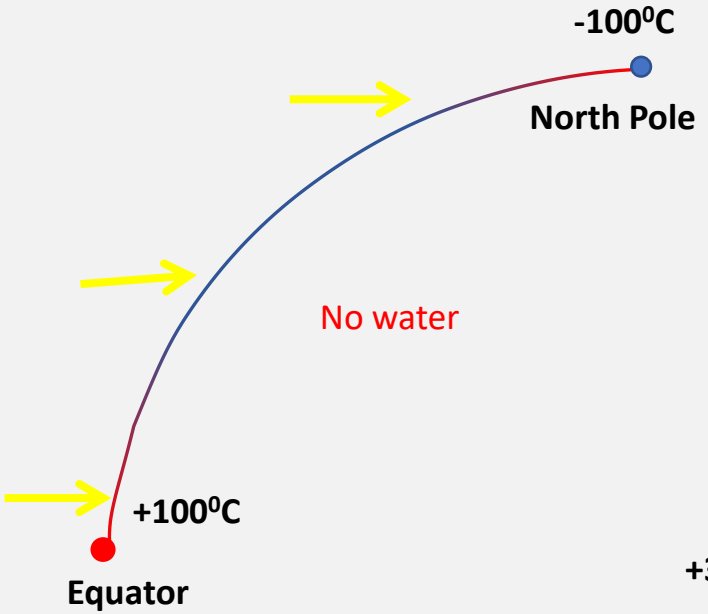
- Heatwaves are due to deforestation lowering evapotranspiration and cloud cover. They are amplified by the greenhouse effect.
- Drought is produced by deforestation raising temperatures, decreasing relative humidity and precipitation; it is amplified by HAC and ASH.
- Tornadoes are generated by the 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 that flows to the sea, 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 simultaneous points of ignition at critical moments.

5.8 THE CCCT PROVIDES A REALISTIC SOLUTION FOR CLIMATE RESTORATION

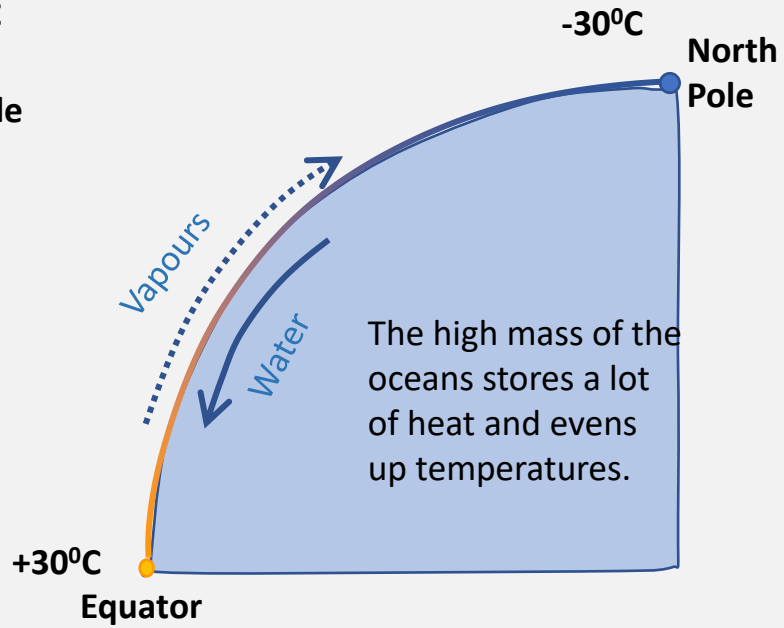
- Since climate change symptoms are due to imbalances of water and vegetation, we can restore the climate and the water cycle by planting useful trees.
- Since regional heating of deforestation is larger than that produced by carbon gases emissions, tree planting can regionally offset the latter.
- In already built environment, where more trees cannot be planted, cooling can be re-established with green canopies and evaporative cooling [24].
- As shown further, planting useful trees would easily reduce atmospheric carbon to pre-industrial levels, while restoring eco-climate balance.
- The LULCC climate studies, and our 2024 work [25] show real climate restoration means that can bring high benefits to the dominant interests.

5.9 WHY WATER AND TREES ARE THE SOLUTION





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.

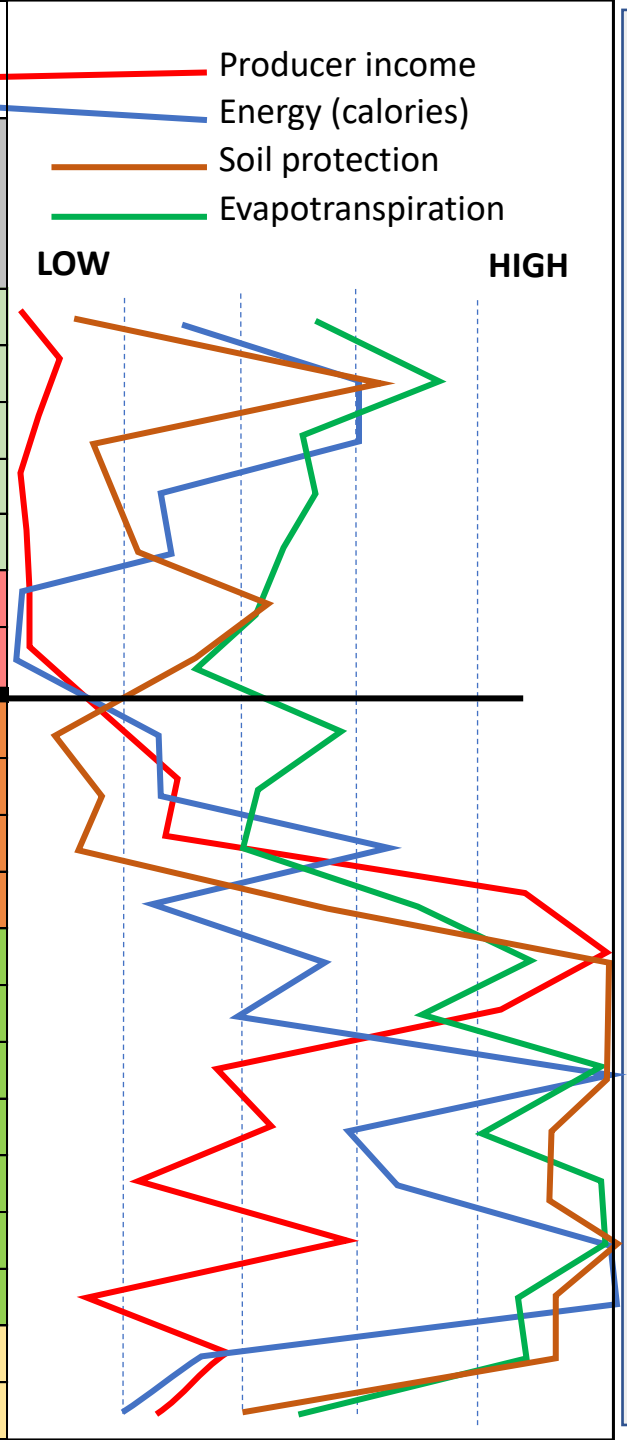
Trees have a much larger evaporative area than grasses, can extract groundwater and can attract precipitation by emitting organic compounds. Their dense shade is essential at lower latitudes, they protect from erosion and create organic soils, sequester carbon and give useful produce.

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

5.10 THE BENEFICIAL SOLUTION

TABLE 3 Income and Energy from Agricultural Products

	Annual Production	Tonnes /ha	Producer price [$/t]	Producer income [$/ha]	Energy [kcal/kg]	Energy [Million kcal/ha]
NEW DIET	Wheat	4	210	840	3,300	13
	Rice	10	300	3,000	2,800	28
	Maize	8	200	1,600	3,500	28
	Barley	4	200	800	3,100	12
	Rye	4	250	1,000	3,190	13
	Cattle	0.9	1,400	1,260	1,300	1
	Sheep/Goat	0.6	1,700	1,020	1,450	1
ANCESTRAL DIET	Sugar beet	60	100	6,000	200	12
	Carrots	30	300	9,000	410	12
	Potatoes	40	200	8,000	770	31
	Tomatoes	60	500	30,000	180	11
	Apples	50	700	35,000	520	26
	Oranges	40	700	28,000	470	19
	Banana	60	200	12,000	890	53
	Dates	10	1,500	15,000	2,770	28
	Cassava	20	400	8,000	1,600	32
	Jackfruit	80	250	20,000	940	75
	Palm oil	6	900	5,400	8,850	53
	Pig, rabbit	10	1,300	13,000	1,700	17
	Poultry	5	1,800	9,000	1,800	9



People have set fire to forests and savannas to hunt animals, and cleared trees to make room for pastures and agriculture, in the process changing the Earth and its climate for food.

It was observed [25], that production of ancestral food (fruit, legumes, white meat) provides far more income and calories per hectare than the civilisation food (cereals and red meat).

Eating less fruit and legumes, and more cereals, milk and red meat to which our bodies are not yet adapted, leads to nutritional disease. **Most climate change and nutritional diseases are due to the change in people diet.**

Besides being much healthier, ancestral diet (fruit, legumes and white meat) would allow replanting of trees, while their evaporation of groundwater will help restore the climate.

Trees for ancestral diet also protect the soil from tilling erosion and produce new soils. White meat production per hectare can be 10 times larger than red meat production!

This new revolution in agriculture will be driven by the outstanding financial benefits.

Overall, using more the ancestral diet would be beneficial for the Earth and our health.

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 and pickling in suitable containers is an energy efficient preservation method 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 CO_2 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.

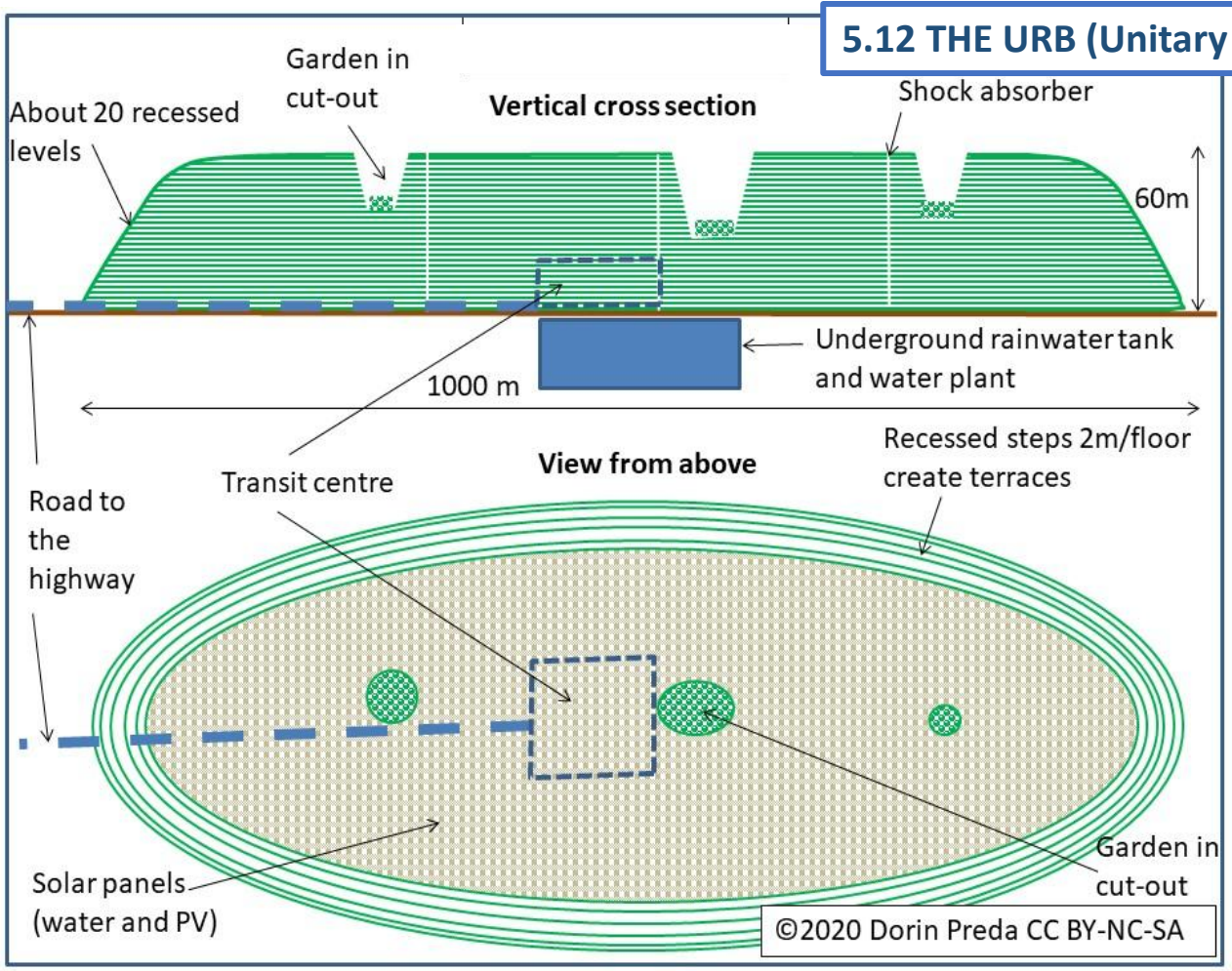
The remaining pastures should be planted with rows of useful trees which also provide shade and coolness, and stabilise the soil and climate.

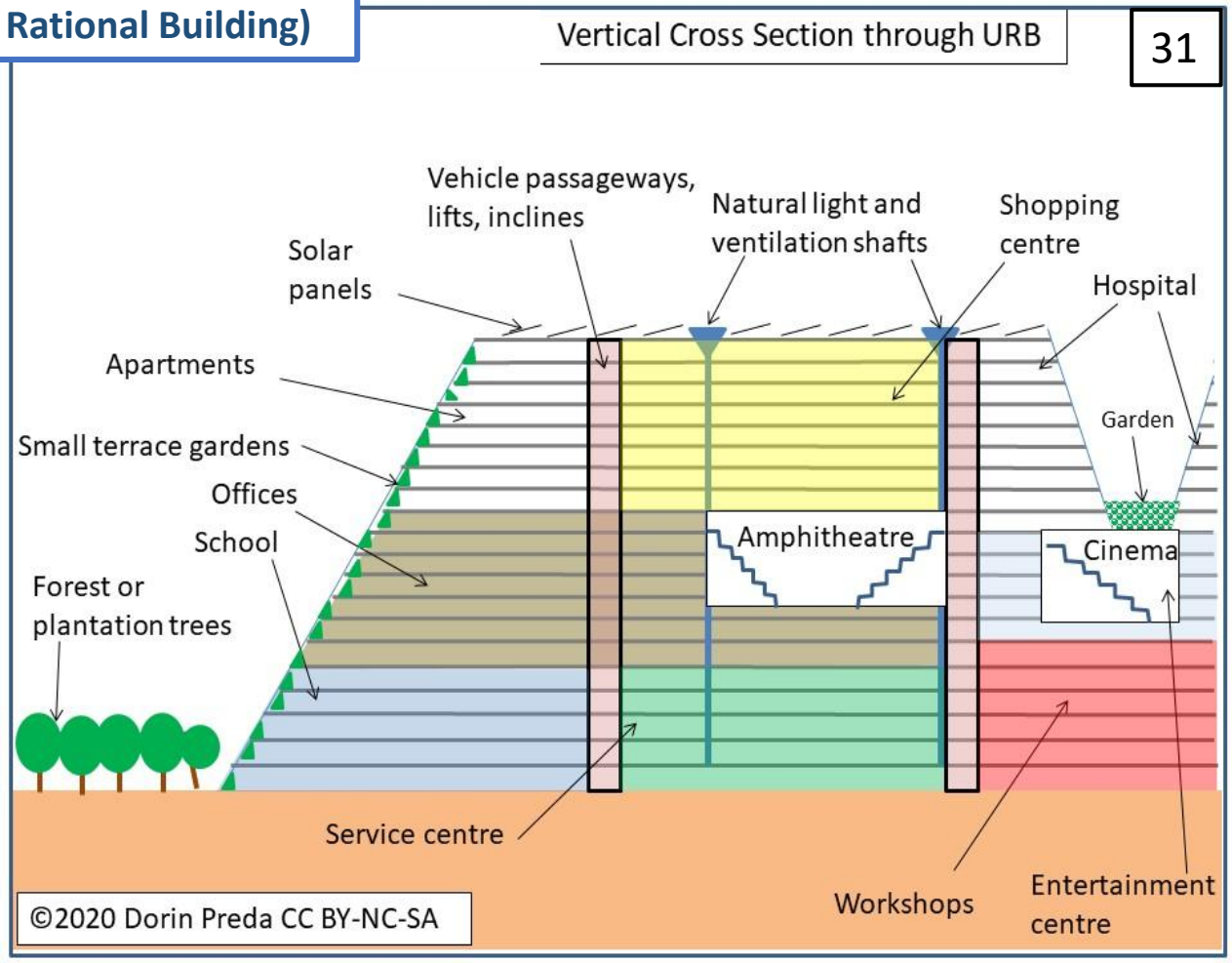
The backbone of this new strategy are fruit trees, mostly requiring work for harvesting that can be done through mechanisation/automation.

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 (see next page).

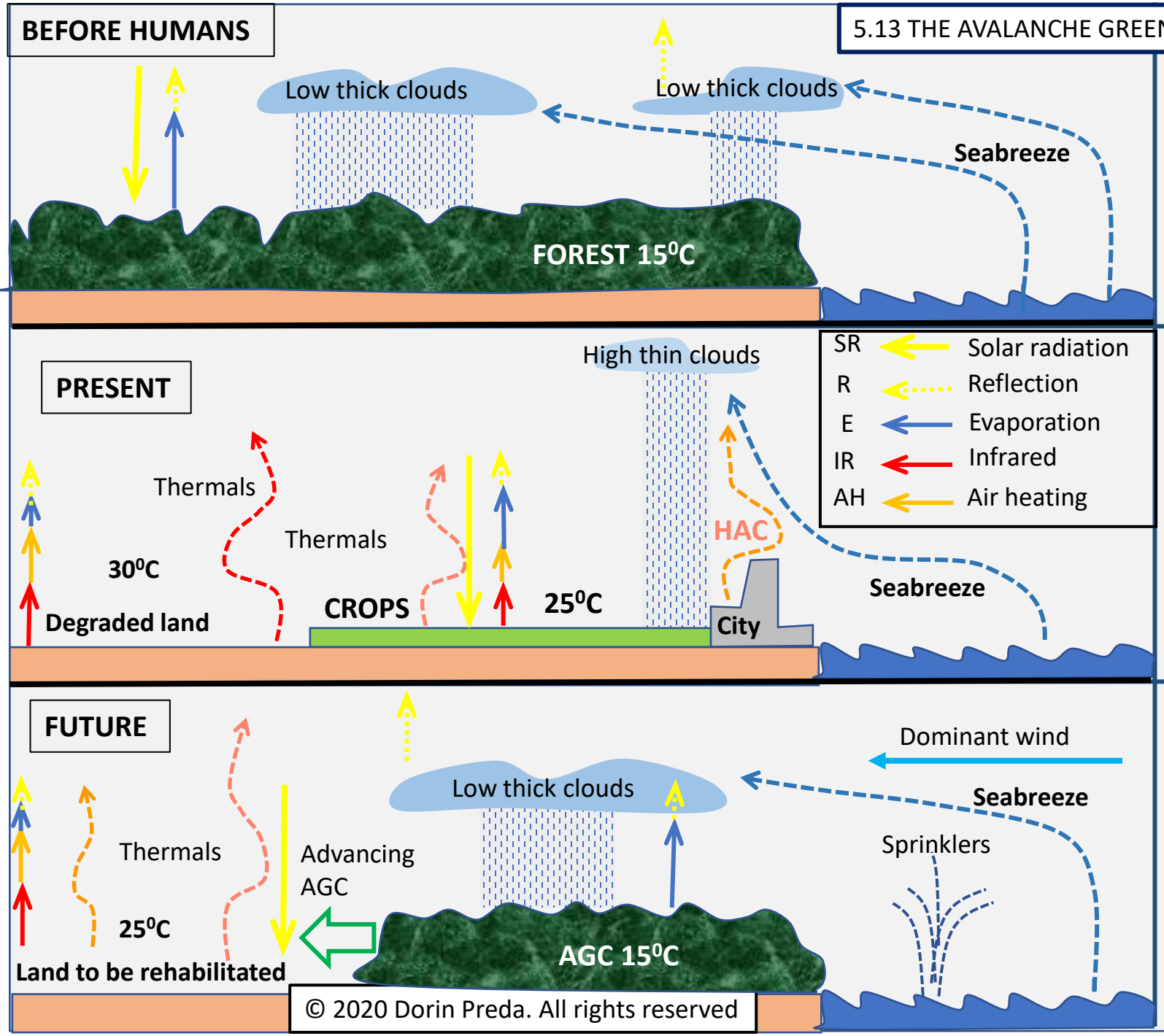
5.12 THE URB (Unitary Rational Building)





- **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, total 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.**

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.

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.

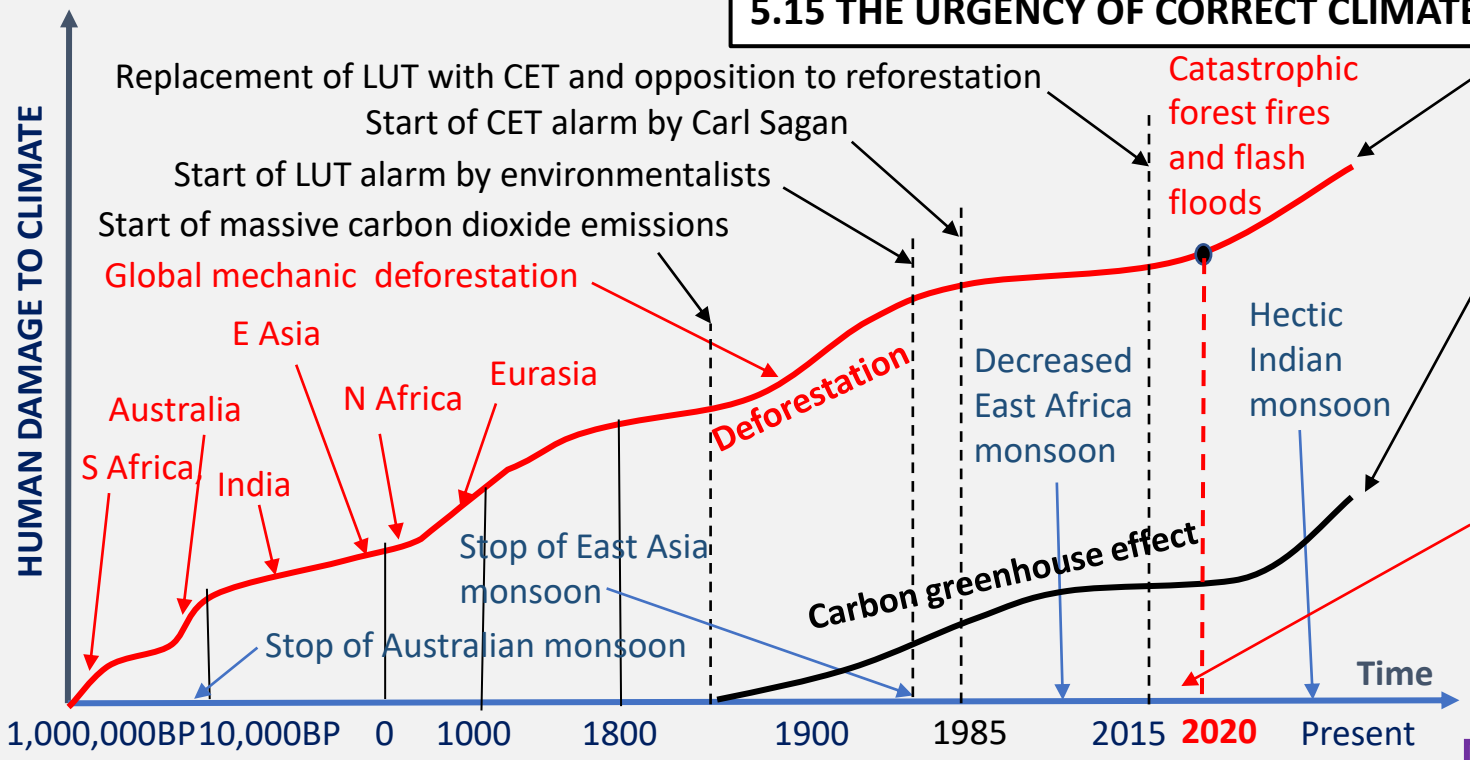
Once started, the coastal AGC advances inland through the excess water it generates and through self financing from the profits it generates.

5.14 BENEFITS FROM THE SUGGESTED PLANTING OF USEFUL TREES

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. Grow crops in tropical latitudes critically requires to shade the ground with north - south lines of useful trees that also create and protect new soil.
4. It would restore evapotranspiration and therefore precipitation in the intertropical areas, transforming present drylands into valuable land.
5. **It is essential to increase evapotranspiration with as many trees as possible in the coastal areas which are now deforested and dry their inlands.**
6. In dense settlements where no more trees can be planted, green canopies and artificial evaporation means must be provided to prevent HAC and ASH.
7. More dense trees means more low thick clouds that reflect more solar radiation, reducing the above ground and planetary temperatures.
8. Denser, taller vegetation on land is wetter, and when combined with private property of useful trees will prevent catastrophic fires.
9. **As the climate improves by restoring the water cycle and sequestering CO_2 in trees and soil, carbon emission reduction becomes a bonus.**
10. Halting Amazonian, Central African and other low latitude deforestations are the highest priority for climate and biodiversity preservation.
11. **Large-scale land rehabilitation with avalanche greening and cooling (AGC) in Africa and Australia would significantly re-balance global climate.**
12. As intertropical sea evaporation returns as rain to intertropical lands, the overheating and flooding of higher latitudes will cease.
13. Cooling the high latitudes will re-freeze them (the Arctic, permafrost, glaciers), and would reverse sea level rise by restoking water on land.
14. Compact city style URBs de-congest existing megacities and are needed for the people who will work in the rehabilitated present drylands/deserts.
15. **All sectors of the economy can benefit from engaging in this large developmental program, contrary to the austerity of emissions reduction.**
16. The increased land productivity would free land, making it available for setting up large Natural Reserves for conservation of biodiversity.
17. The present socio-economic tensions due to climate change would dissipate because all parties would co-operate for mutual benefit.

The climate can be beneficially repaired through revegetation without the dangerous additional solar radiation geoengineering.

5.15 THE URGENCY OF CORRECT CLIMATE ACTION



Deforestation has dramatically increased the Earth deserts, their erosion erasing proof of the state before humans. We can observe by comparison with other lands on the same latitude.

The greenhouse effect is driven by the increased infrared radiation of deforestation, and aided by its carbon emissions, thus the greenhouse curve has similar shape with the deforestation curve. However, due to feedbacks, the greenhouse effect increases faster than deforestation, thus we risk it start a runaway greenhouse effect due to recent forest and peat fires. The catastrophic forest fires that started in 2019 and marked 2025 (Annex 5) and the associated excessive floods (Annex 8) indicate that a dangerous tipping point was overpassed by destabilizing the very powerful global water cycle that is also threatening the crucial Amazon and Congo (Annex 9).

WE MUST URGENTLY PUT ASIDE ANY CONTROVERSY AND REPAIR THE WATER CYCLE AND DECREASE CO_2 THROUGH PLANTING USEFUL TREES.

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 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 vegetables & white meat; this improves climate and protects soils.
5) Educate people to change their consumption from red ruminant meat to white meat, to significantly improve the economy and people's health.
6) Start AGC projects based on trees that do not require tilling and other mechanized work, this way creating new soil and further reducing atmospheric carbon.
7) Start building in URB style, which use far less energy for heating/cooling/transportation; this will effectively reduce the future carbon dioxide emissions.

DISCUSSION AND CONCLUSIONS

Despite the change 30 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 40W/m^2,** producing hot air currents which evaporated reflective 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 acts upon the increased CO2 from fossil fuels, deforestation and livestock to create an **enhanced warming of 2.5W/m^2 through the greenhouse effect**. About half of emissions now accumulate in the atmosphere, from where carbon can be removed through natural sequestration if carbon emissions are dramatically decreased, and in parallel, through artificial sequestration in new trees and soils.

Due to: carbon emissions increasing instead of dramatically decreasing, artificial scrubbing of CO2 from the atmosphere not being feasible, and the climatological 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 this initiative can be found at: https://climatechangetheory.org/the-initiative

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ANNEX 1: OPINIONS ABOUT THE MAN-MADE CLIMATE CHANGE

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 CO_2 [6]: Wrong, how comes it coincided with largest human activity?
4) The CO_2 saturation effect would diminish the role of additional CO_2 [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 CO_2 [9]: Yes, but its cycle is much shorther than that of CO_2
7) Water has higher concentration and infrared absorbtion than CO_2 [10]: Yes, but this does not mean that CO_2 has no effect
8) Most water evaporates from ocean, not due to humans [11]: Yes, but human influence on water precipitation is significant
9) CO_2 absorption spectra overlaps with the water one [12]: Yes, but only partially, as CO_2 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 CO_2 [16]: Yes, but the CO_2 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 CO_2 cause [20]: Yes, because of other causes like the pest, wars
18) Palaeoclimatic data show CO_2 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 CO_2 effect is small, while the climate change effects are large [23]: Yes, because of large man-made vegetation changes.

Correct
Partially correct [Reference]
Incorrect

Therefore, the man-made climate change is real

ANNEX 2: CLIMATE CHANGE THEORIES

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 strongly changes climate through water.
- **Multi-Scale Vegetation-Climate Feedbacks** (Miralles, Vilà-Guerau, McVicar, and Mahecha)[67]: from local microclimates to global climate.
- **Optimizing Forest Carbon Sequestration and NbCS Efectiveness** (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.

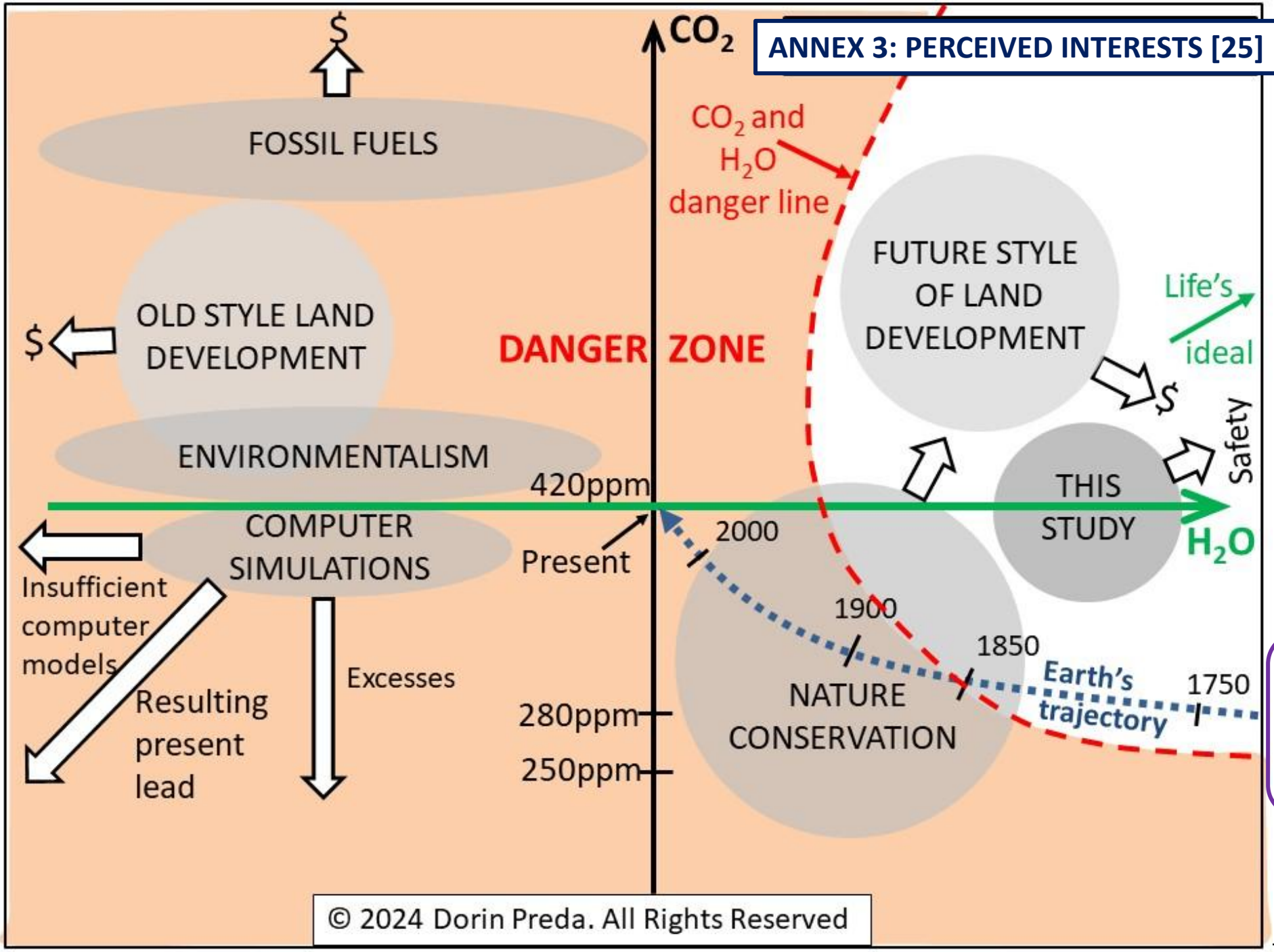
CARBON EMISSIONS THEORIES (CET)

- **The Greenhouse Effect** (Fourier J., Arrhenius S.) [73] postulated and respectively quantified CO_2, CH_4, N_2O's role in warming the atmosphere.
- **The Keeling Curve** (Keeling C. D.) [74] Empirical Evidence of Rising CO_2 through continuous measurements at Mauna Loa Observatory.
- **Human's Influence on Climate** (IPCC) [1] Climate models confirm that post-industrial CO_2 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 CO_2's Secondary Effect** (Caldeira K., Mann M. E.) [77] Excess CO_2 dissolves in oceans, lowering pH and harming life.
- **Prehistoric CO_2 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 CO_2, and its feedbacks control climate.
- **Urban Heat Island Effect Theory** (Watts, A.) [82]: Temperature records are biased by urbanization, exaggerating global warming trends.

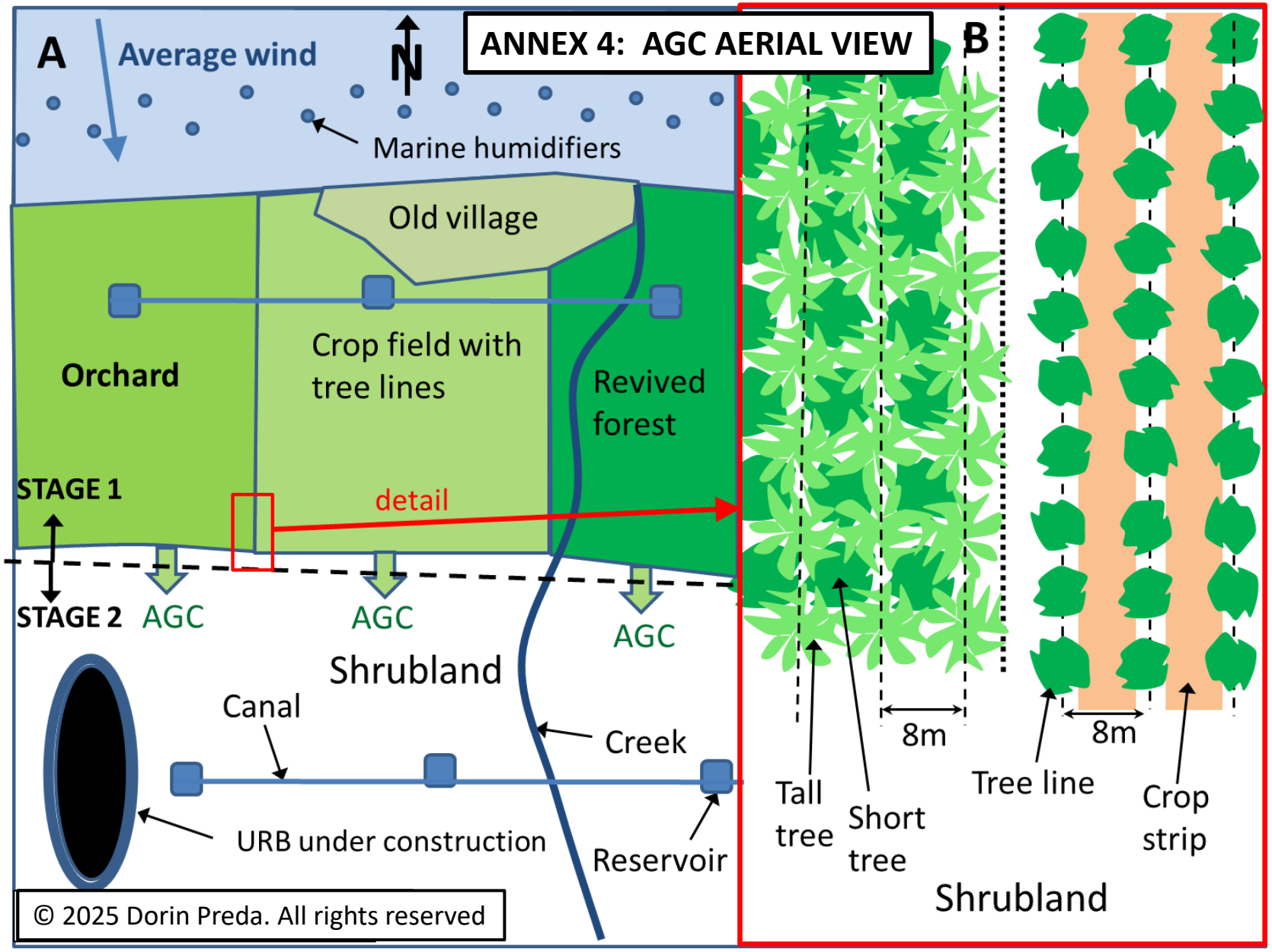
ANNEX 3: PERCEIVED INTERESTS [25]



The dotted blue line shows Earth' s trajectory in time through its own framework of conditions.
Around the beginning of the industrial revolution the Earth probably crossed the danger line into the destructive reddish area.
The reasons were too little water on land for life and climate due to mechanized deforestation, and the increased carbon gasses emissions from deforestation and the growing fossil fuel use.
Human society is mainly driven by economic interests, thus any attempt to large scale action must appease those interests.

The key to restoring the climate is to make land development and agriculture businesses aware that they would have greater benefits through planting useful trees.

The global climate is the result of all regional climates, thus we can act regionally to restore all Earth's land.



The Avalanche Greening and Cooling (AGC) is the land restoration that could 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: large AGC started from the shoreline and propagating downwind inlands, large tree density, reconstituted soil, etc. [24] The source of energy is solar radiation, 25MJ/m^2 daily at medium-low latitudes. Under 65% reflecting clouds and if under trees remains 1MJ/m^2, means that the maximum average to compensate for after reflection of 10 MJ/m^2 is 14 MJ/m^2. This can evaporate around 1,300mm of water per year and is the evapotranspiration of a mature orchard that compensates for the increase in solar radiation of past deforestation. **Once AGC is started artificially with reservoir water, it re-starts the natural biotic moisture pump and rain for its inlands propagation.**

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

ANNEX 5: EXAMPLE OF DEFORESTATION EFFECTS ON CLIMATE: THE 2025 LOS ANGELES FIRES

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 on the American continent.

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 13^0C 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/m^2 per year. All energy used by world humans is $6x10^{14}$MJ/year, and can be produced through deforestation of 200,000km^2 (2/3 of Nevada state). **This huge power is the reason for which we can cool the ground only by evaporating water to send directly that vast amount of heat to upper atmosphere and space.**
2. Pacific coast deforestation has produced HACs which stopped ocean humidity reaching the inlands, slowly drying their vegetation.
3. Traditional use of flammable materials for buildings.
4. Wells and extraction of groundwater dried out the nearby trees by removing water from their roots.
5. Improper prevention measures and protection against sources of ignition and against the fires themselves once started.

Method of prevention/protection of houses against fires:

- Use only non-flammable building materials.
- Each house should have an always full 5 ton water tank and sprinklers actuated by 12V pumps and batteries, independent from the grid.

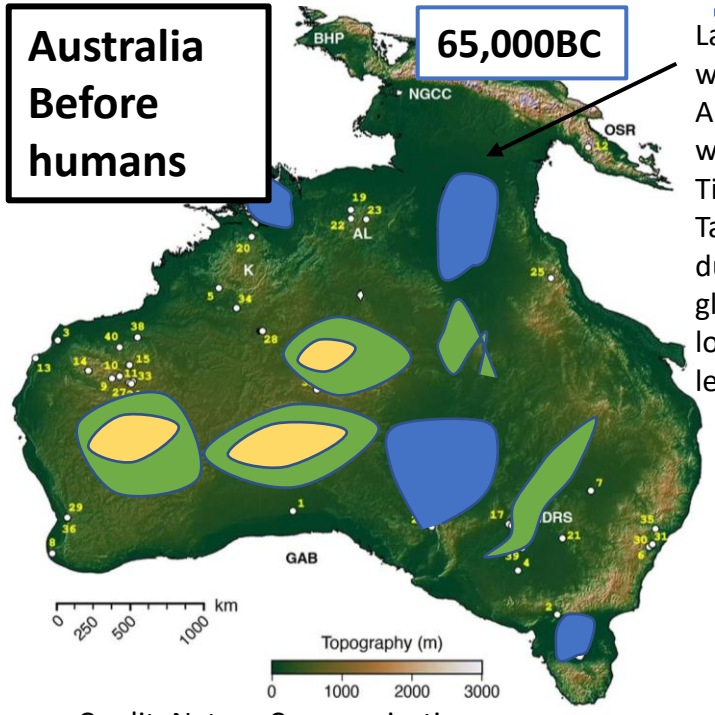
NATURAL VERSUS MAN-CHANGED FORESTS

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 trees alive. **Moist forests attract clouds and precipitation, in a lively feedback.**

Thinning the forest or/and cleaning the ground from the litter 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.**

Australia Before humans

65,000BC

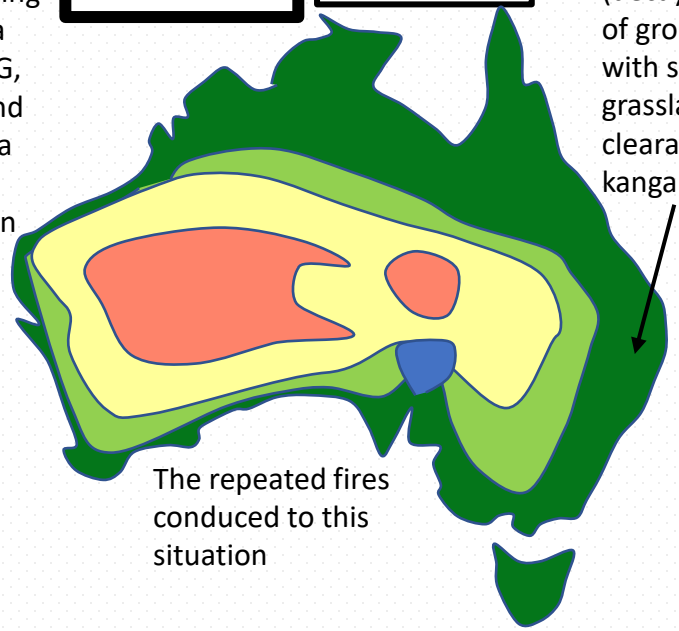


Credit: Nature Communications

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

ANNEX 6

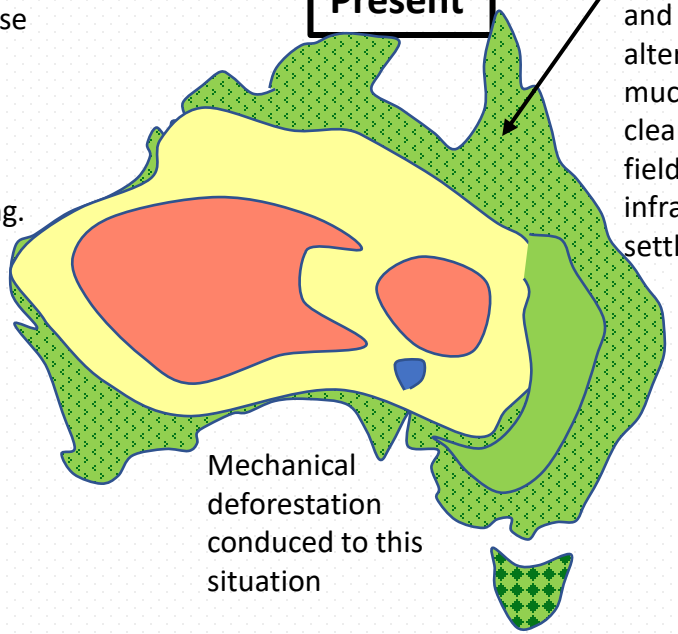
Year 1700



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

The repeated fires conduced to this situation

Present



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

Mechanical deforestation conduced to this situation

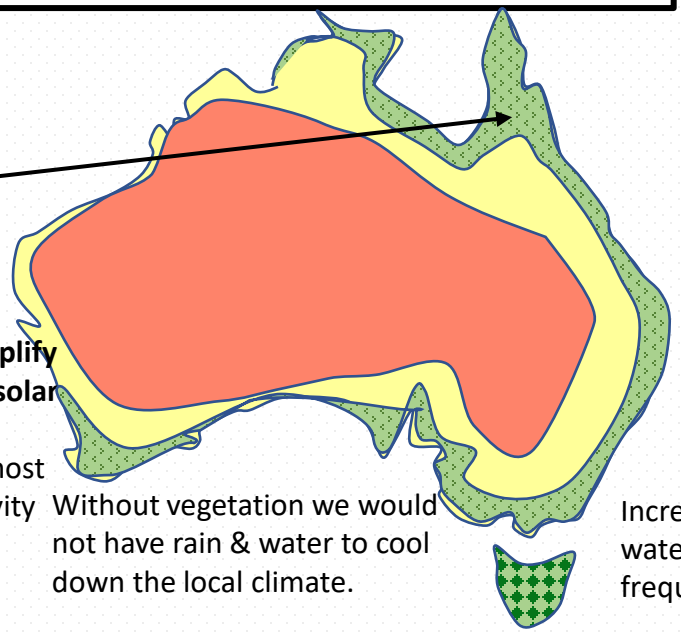
The hot air curtain (HAC) process due to coastal deforestation has increased the dryness of Australia

LEGEND

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

Year 2300 if we do not change our ways

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

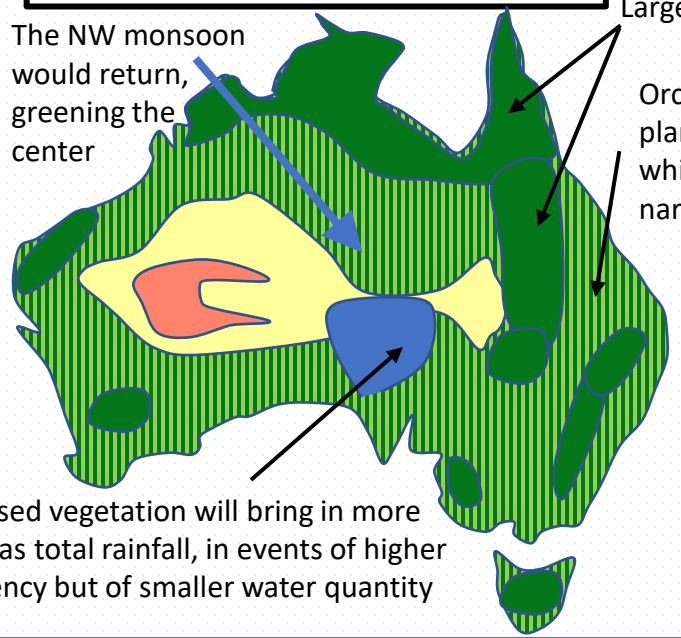


Dryness will quickly amplify through the avalanche solar heating (ASH) process. Australia would lose almost all agricultural productivity because of lack of rain, despite more dams.

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

Year 2300 as suggested in [93]

The NW monsoon would return, greening the center

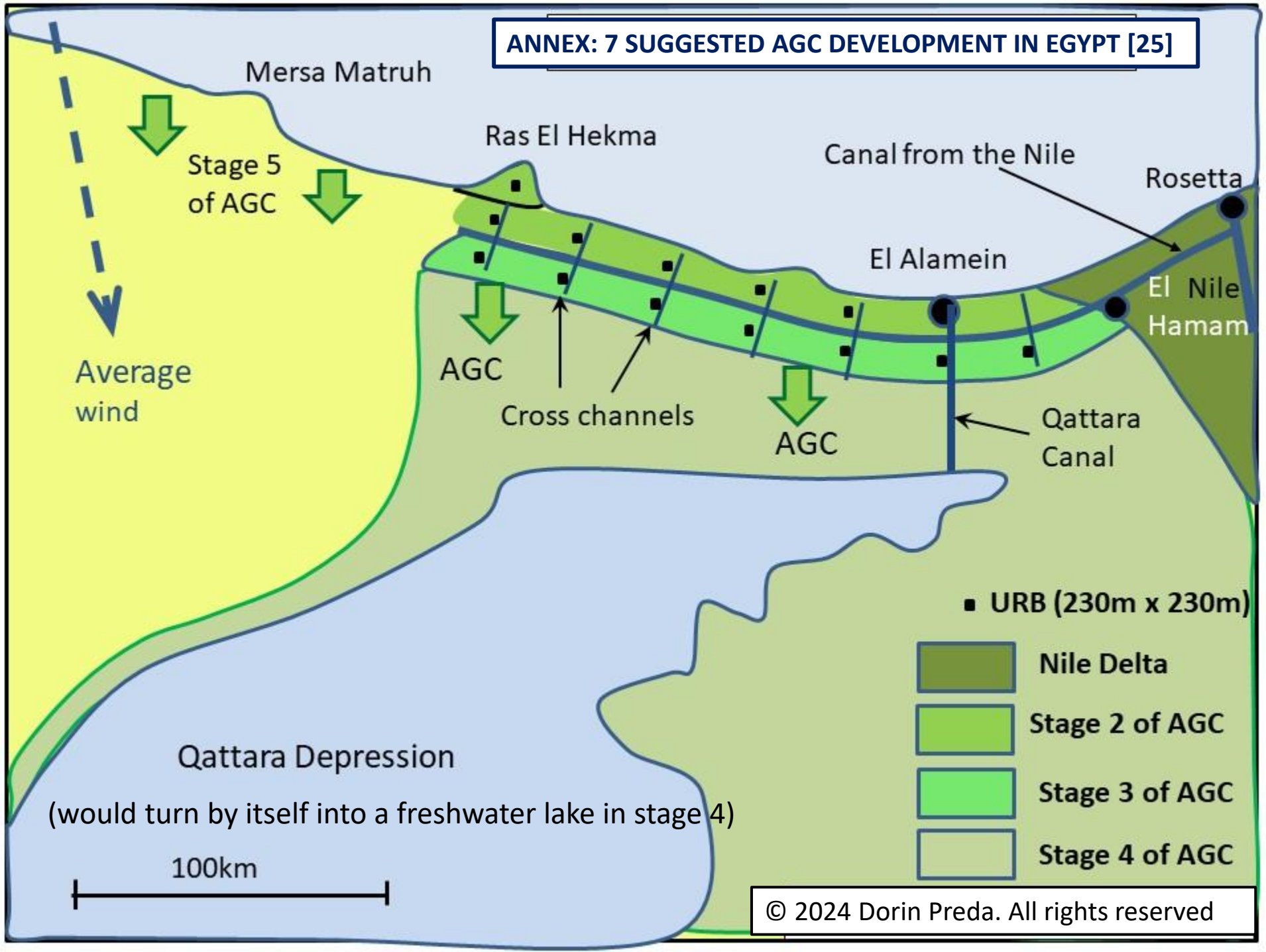


Large Nature Reserves

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.

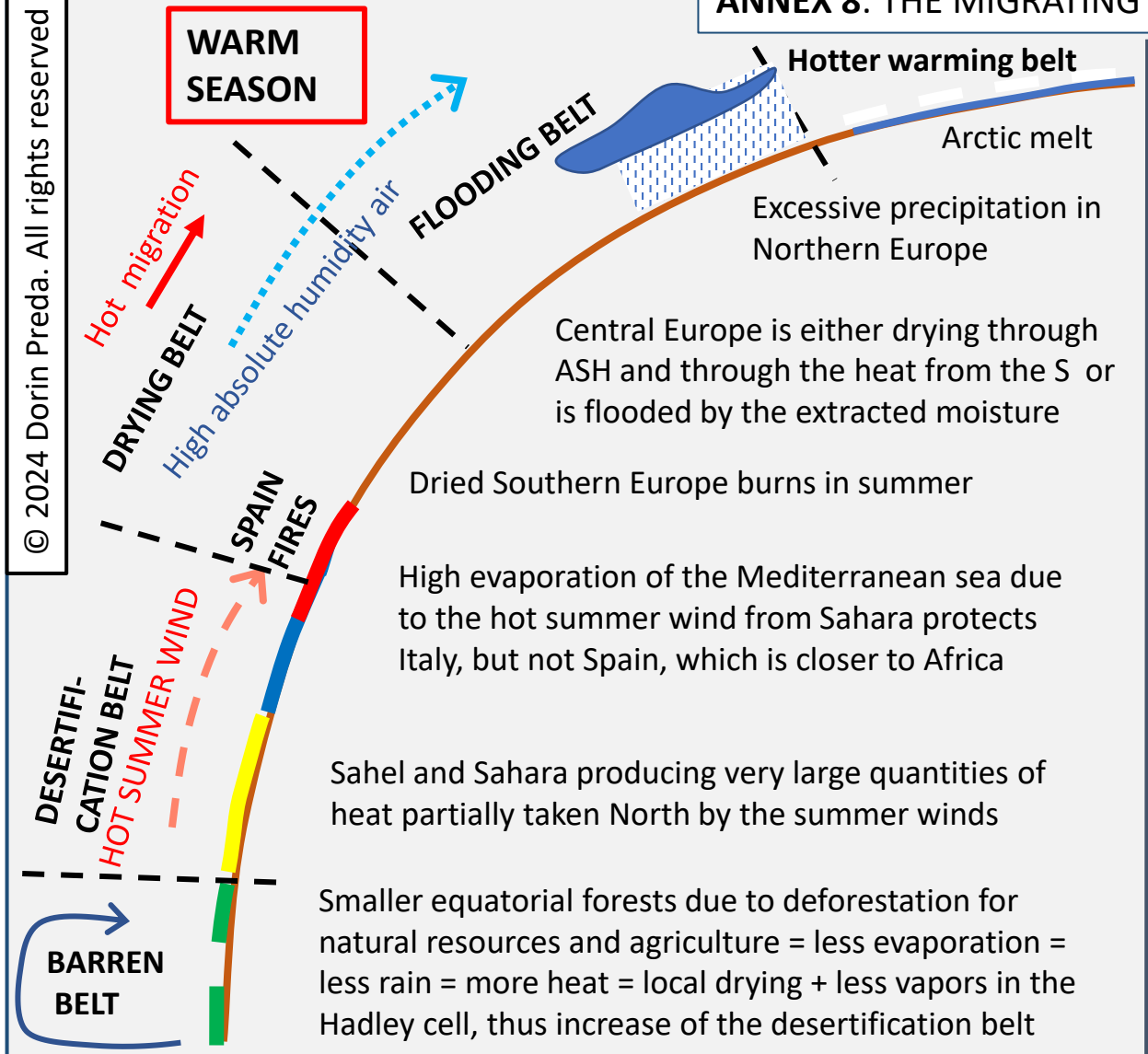
Increased vegetation will bring in more water as total rainfall, in events of higher frequency but of smaller water quantity

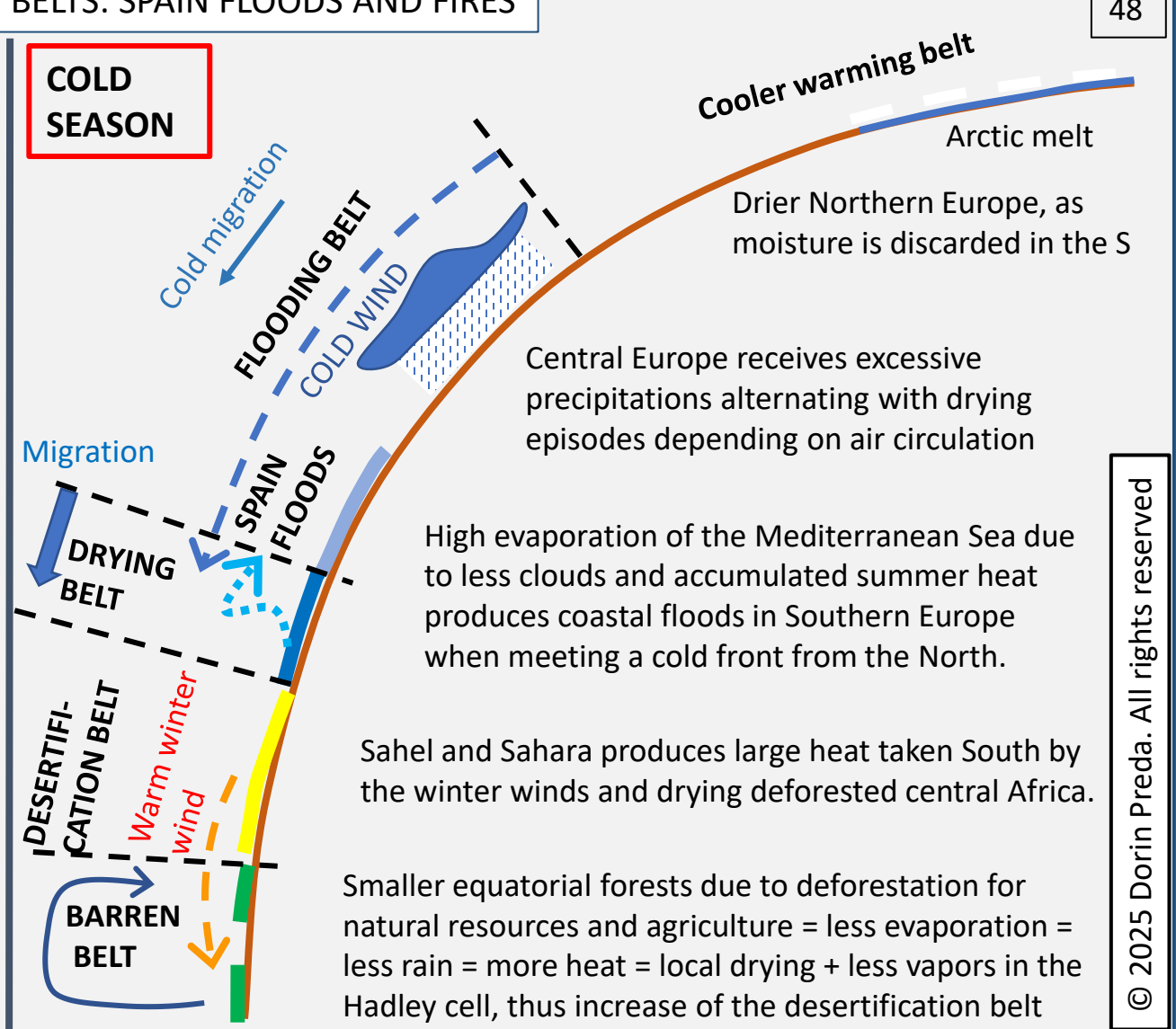


The Nile area was always wetter than the rest of North Africa due mostly to the Blue Nile River and its periodic floods related to the monsoonal rains on the high plateaus of Ethiopia. Humans did contribute to the setup of dryness in North Africa, but recently it was decided to build a N -S canal to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

ANNEX 8: THE MIGRATING BELTS: SPAIN FLOODS AND FIRES





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.

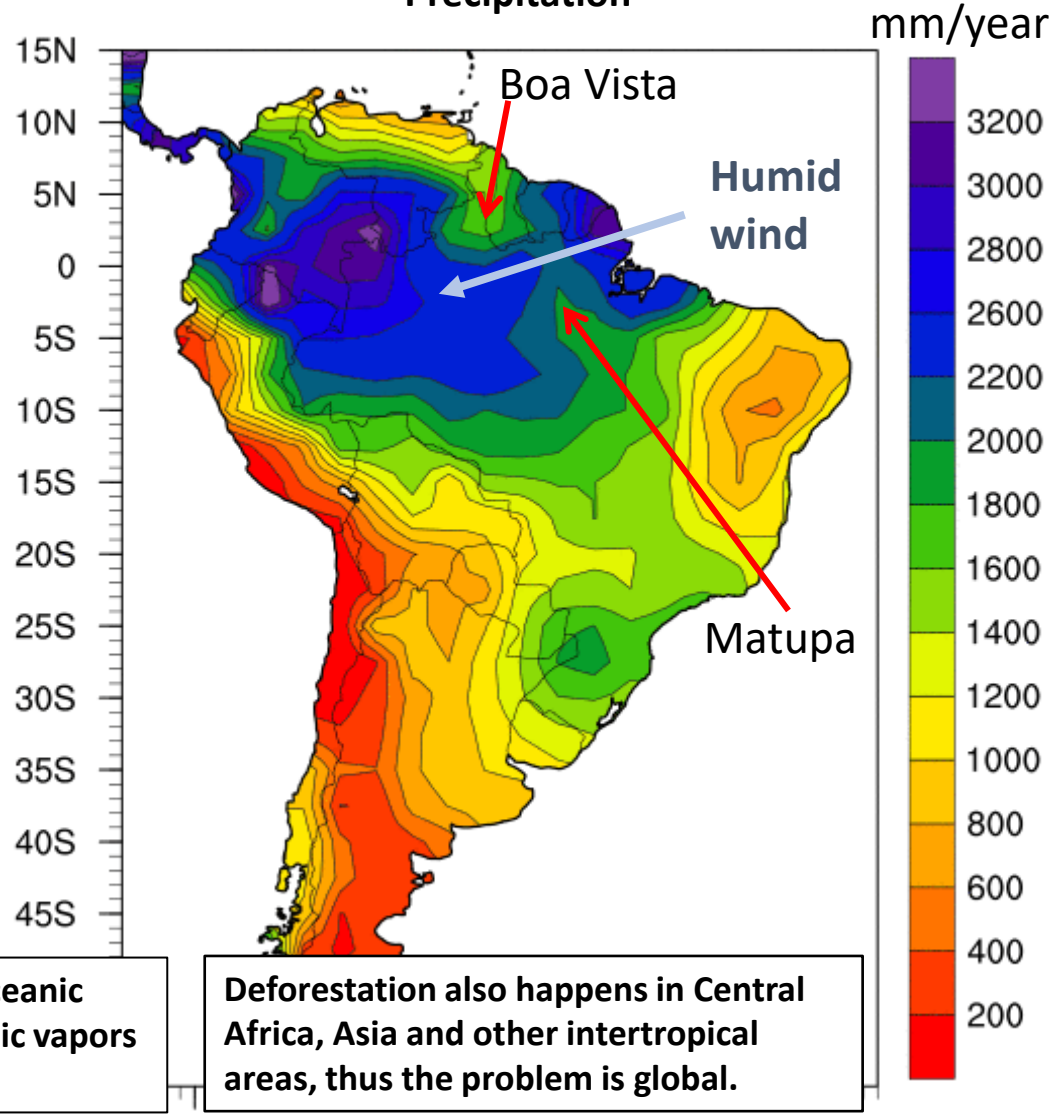
Seasonal migration of the Hadley cells moves the limits between the belts towards south in winter and towards north in summer. Jet stream dynamics create unpredictability, hence the Spain floods of 2024 and the fires of 2025, which in turn favor floods through their moisture and ash.

ANNEX 9: SOUTH AMERICAN DEFORESTATION

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.

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

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.

ANNEX 10: ABOUT THE AUTHOR

Mr Dorin Preda https://dpreda.net/earth

Qualifications: Earth sciences engineer 1982, The University of Bucharest
Scientific research specialization 1986, I.G.G.

Work - two scientific research institutes: Eco-geo-marine
Meteorology-Hydrology
- Managing Director of a solar thermal company; retired in 2024

Author of:
- Many renewable energy designs, prototypes, pilot installations, industrial and domestic solar air heaters and driers
- A new solar air heating technology with applications in industry, buildings and agriculture
- A few patents of invention on heat transfer systems and solar thermal devices
- A 2020 – 2024 study and books on climate change https://dpreda.net/earth/ supporting this presentation.

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.

ANNEX 11: ANTICIPATED CRITICISMS AND RESPONSES

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 CO_2 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 (CO_2 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 CO_2. 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.