OUTSTANDING AUSTRALIAN CLIMATE AND BUSINESS OPPORTUNITY

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The basic information in this presentation allows all readers make their correct opinion on the climate change causes and solutions.

EXECUTIVE SUMMARY

1) Australia has an outstanding opportunity to reverse desertification and productivity loss by repairing its climate with beneficial development.

2) Climate was indeed changed by humans because they changed most of the surface of the land, which is interdependent with the climate.

3) The Deforestation Climate Change Theory [9] includes and adds to the Carbon Emissions one* to explain all observed climate change forms.

4) Past deforestations altered the powerful water cycle **, damaging the environment, changing the climate and resulting in desertification.

5) Since deforestation altered the water cycle producing more climate change than carbon gases emissions, tree planting can repair the climate.

6) Special land management procedures and planting useful trees can boost economic development, capture CO_2 and restore the climate.

7) Large-scale land rehabilitation programs downwind from the coast move as avalanche greening and cooling (AGC), improving regional climate.

8) Revegetation with fruit trees prevents fires, provides food or fodder, triples agricultural production per hectare, and improves people's health.

9) Conservation of natural habitats and biodiversity becomes easily possible due to redistribution of economic and land priorities.

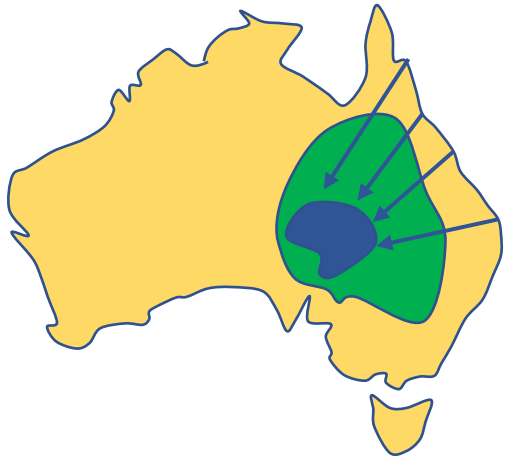
10) Through this new agriculture revolution, a large proportion of the land becomes available for (re)development, boosting the entire economy.

11) The energy sector should be free to provide for the new rural centers the energy mix required by users, including renewable energy.

12) By using the URB-style city development, the construction industry can efficiently and quickly provide comfortable but economic housing.

Notes: * We do not dispute the climatic effect or magnitude of carbon gases as stated by the IPCC; we only add the water effects.
** By water effects we do not mean its greenhouse effect as used by climate deniers, but we mean the large and the small water cycles.

THE AUSTRALIAN DESERTIFICATION PROBLEM AND RESTORATION PROJECTS



Australia is the driest continent, despite is surrounded by water, and having been green before humans.
The Bradfield Scheme from almost 100 years ago suggested creating a network of dams, pipelines and pumping stations that would send excess water from the NE rivers through a network of pipes and canals to lake Eyre to transform the surrounding area into a food basket.
Disadvantages: it underestimates the high present evaporation rate from central Australia, it is very expensive and energy intensive (for the pumping stations), the coastal dam lakes take valuable land, and their setup create disturbance in the existing ecosystems. **However, these lakes are useful to our new plan.**

The Australian Inland Sea is another project of re-greening the inland Australia that relies on the fact that lake Eyre is a depression under sea level. Sea water could be pumped into it to supposedly create air humidity from evaporation and hopefully promote rainfall in that area, making it more productive if it rains.
Disadvantages: it produces an additional very salty and unproductive large area in Australia; nothing will grow in that water and the water itself will hardly evaporate as the brine becomes more concentrated. The 200 billion price tag is too high, as it requires desalination plants which actually will not be able to work because of the excessive salinity, thus the idea of creating a Dead Sea in Australia is faulty at the basic physics level.

Greening Australia, **Mulloon Institute**, **Greenfleet** and many community-based groups are planting trees and restoring catchments, and habitats, this way improving regional climates according to millenary wisdom.

This new project compensates for the global warming of carbon gases with the larger cooling of water.
This can be done by re-balancing the natural processes to make water return as precipitations to the land.
The idea is to promote rainfall through continuous tree cover as soon as humid marine wind enters the land.
The vegetation line advances inland through the rainfall brought by the moisture pump created by trees.
The new agriculture products will deliver the income for extending the project. The startup investment is this way minimal and the project would gradually extend inlands as more rain forms due to the restored coastline.
Fruit trees are at the core of this project, providing food and fodder with much larger productivity than grains.
Improvement of agriculture can start up a major land restructure and a national economic boom.

WHAT IS CLIMATE CHANGE?

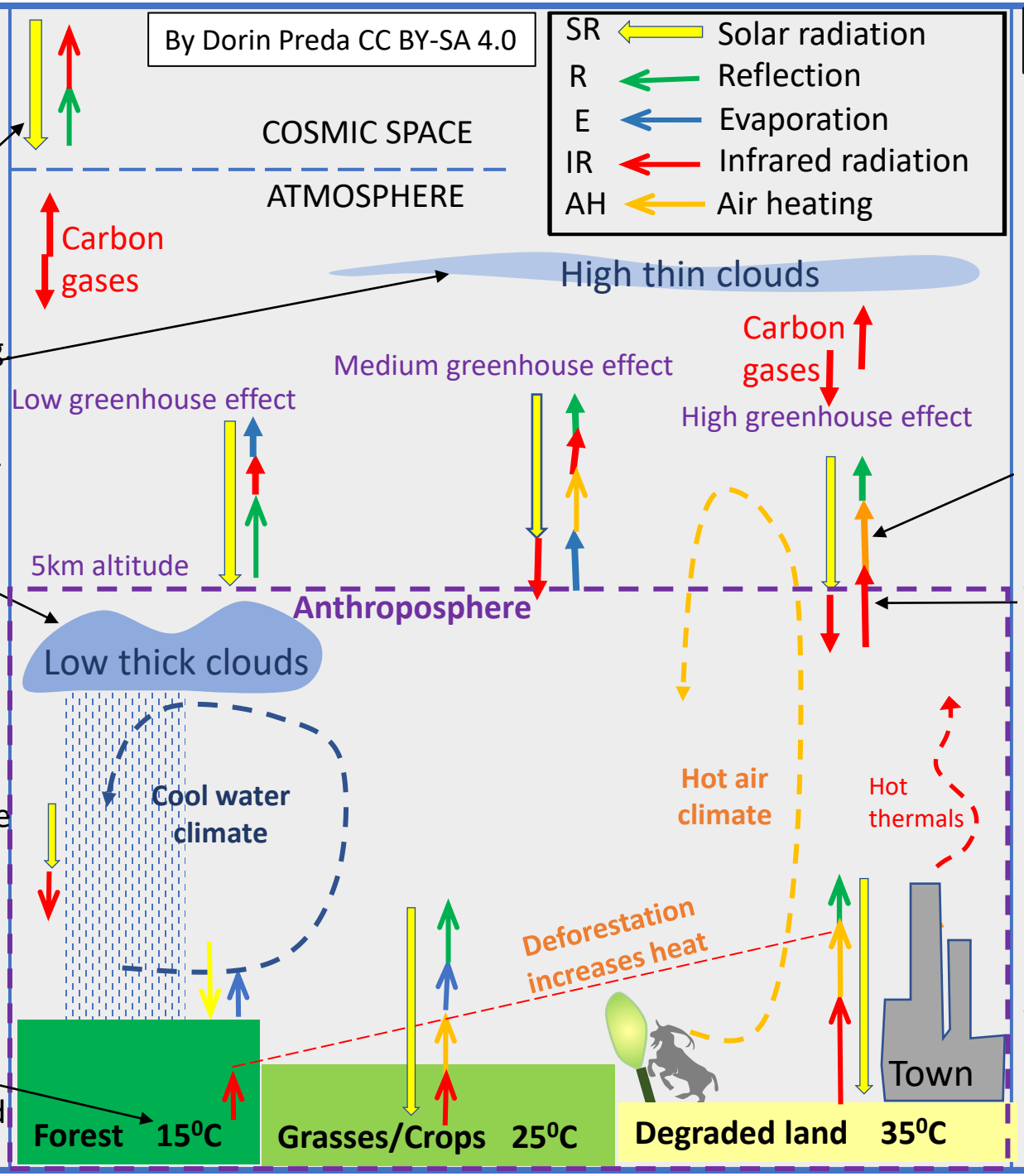
It is a change in: temperature, rain, snow, storms, or surface water (droughts, floods, ice, sea level).

Solar radiation provides the energy that actuates the engine of the atmosphere which has water cooling

High thin clouds warm the climate, while low thick clouds reflect 60% of SR, cooling the planet.

Water takes a lot of heat from the ground, which it cools down and transports that heat at low temperature to the clouds. There, water condenses releasing the heat that is lost to the cosmic space, while water returns to the ground.

Most of the climate happens in the Anthroposphere, where water has the major heat transfer role. Global warming is the above ground air temperature increase as is measured at the meteorological stations.



HOW DID WE CHANGE IT?

Rainwater quickly runs off the ground or seeps into it, thus only trees can extract groundwater and evaporate it to properly cool the air and the ground. Trees are essential.

As humans cleared out trees, they decreased the natural water cooling, and the above ground air started to warm up, producing the first and largest stage of global warming [8].

The infrared radiation of the hot ground heats the greenhouse gases like the carbon gases, which trap the heat underneath.

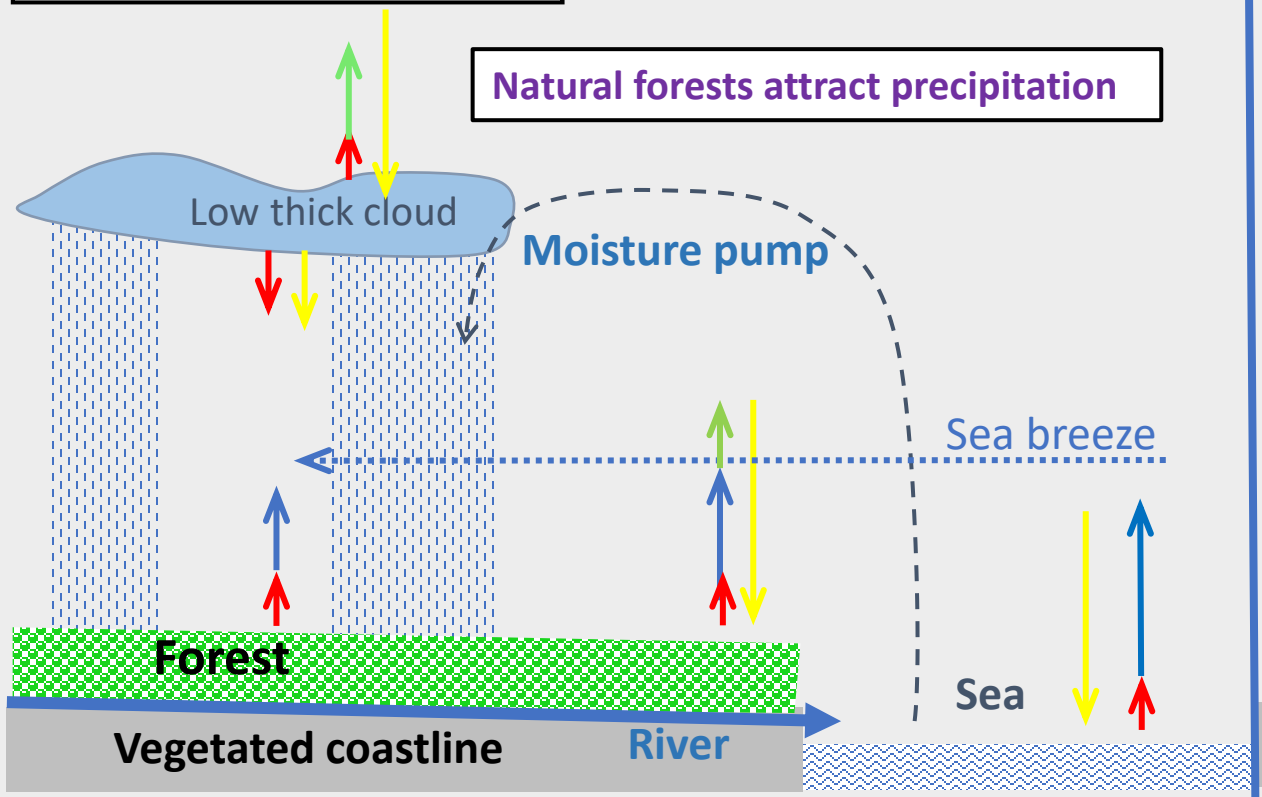
After deforestation and a few years of good crops, soil decay allows only goat pastoralism. Goats eat saplings and further ruin the remaining vegetation, starting desertification. The hot ground heats up the air, decreasing the low thick clouds (thus SR reflection) and increasing high thin clouds (thus global warming).

THE EFFECT OF COASTLINE DEFORESTATION ON THE OUTBACK

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

BEFORE HUMANS

Natural forests attract precipitation



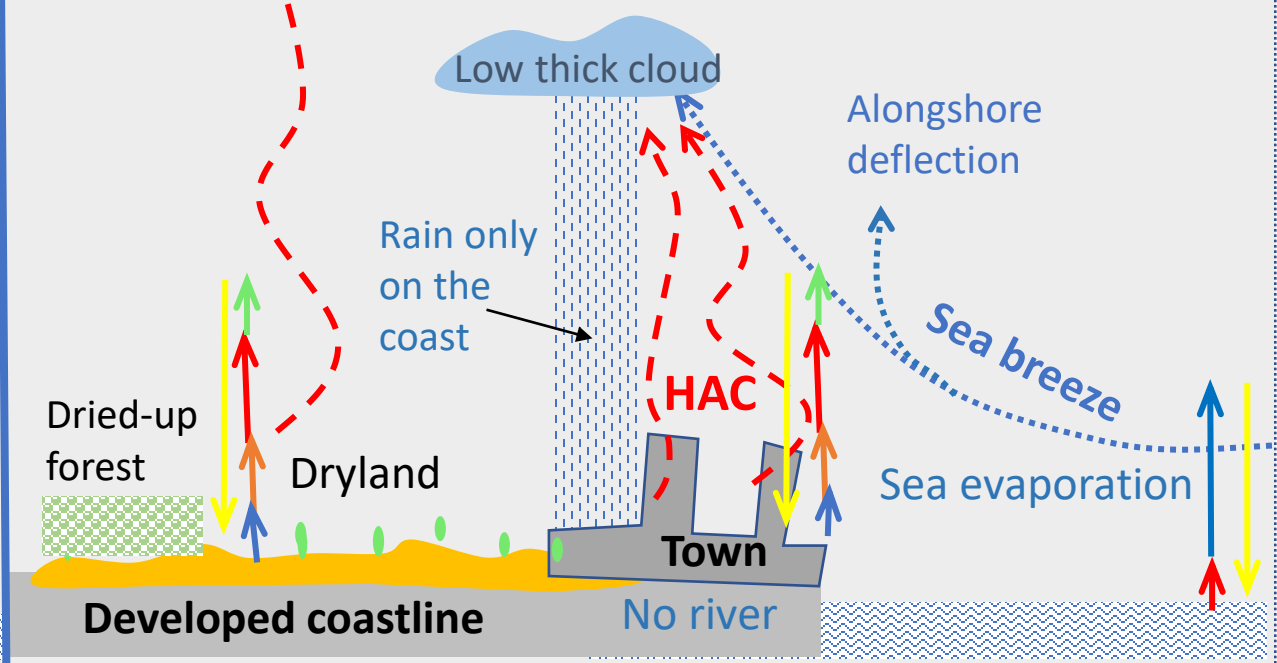
All coastlines were initially covered with forests that attracted marine humidity through **" moisture pumps" [5], [7].** Through evaporation and aerosols they favoured regular rain that fed the forests and created rivers from their excess precipitation/evaporation. **There would be no water on land if precipitation would not be induced. Only dense tall vegetation and mountains induce regional precipitation on land.**

PRESENT

High thin clouds = global warming

Thermals create warming high thin clouds

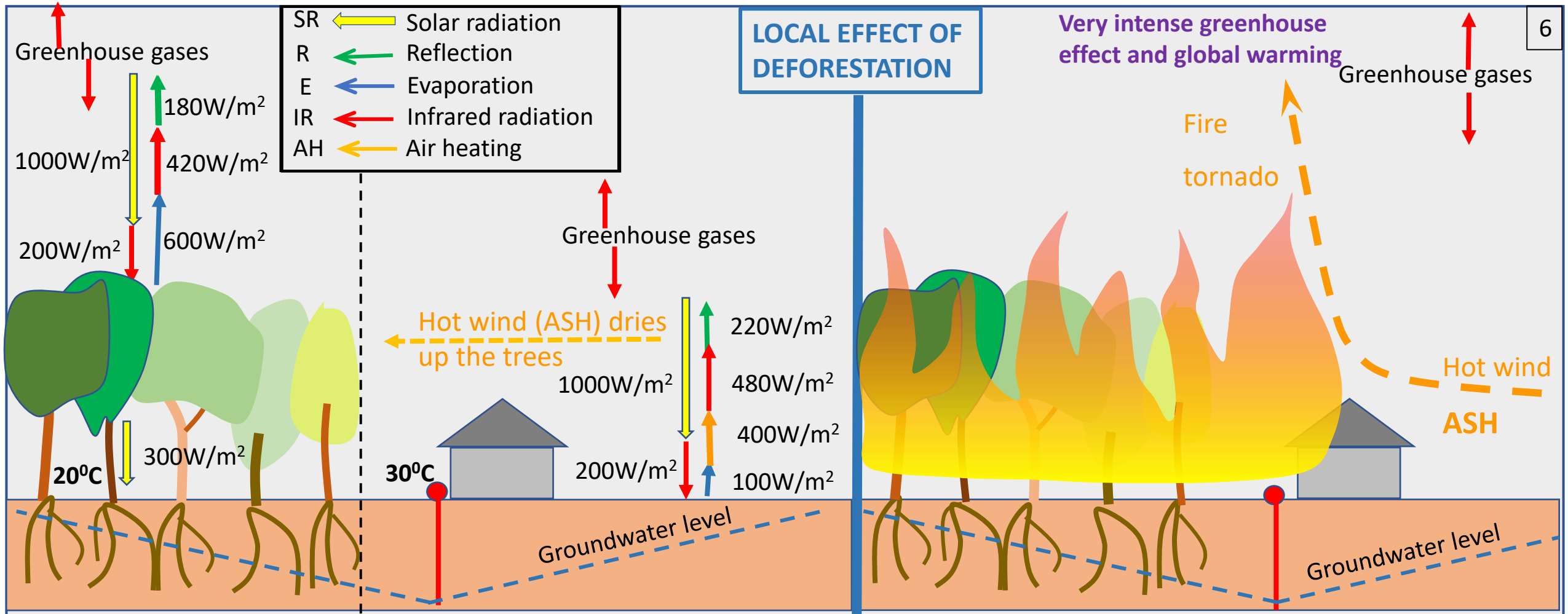
Coastal deforestation produces inland drought



When coasts are deforested, they overheat the air that raises in strong thermals, creating **a hot air curtain (HAC) [7], stopping marine humidity from reaching the inlands, which this way dry out.** The sea breeze is either deviated alongshore to higher latitudes, or pushed upwards to reach its precipitation height and create excessive coastal rain. Water that naturally would evenly feed the inlands is now **flooding the coasts.**

LOCAL EFFECT OF DEFORESTATION

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



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.

Deforestation decreases water evaporation, thus solar energy transforms into heat of the atmosphere. **As above, local deforestation warming may be 460W/m² (therefore tens of W/m² globally), while carbon warming is 2W/m², or 5W/m² including water feedback**

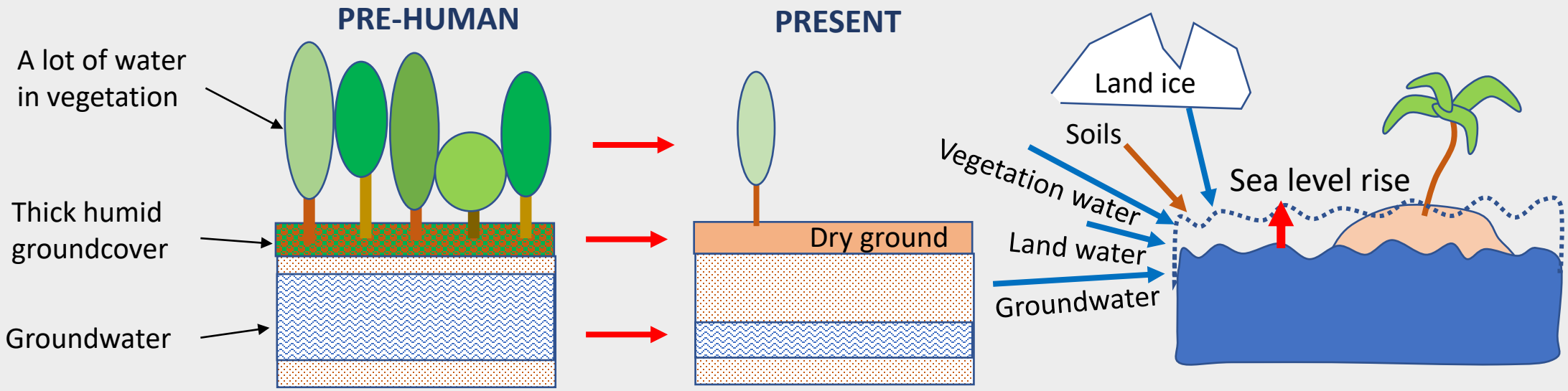
Deforestation warming is thus much larger than man-made carbon gases warming.

Sunshine overheats the land and produces an avalanche solar heated (ASH) wind. The ASH takes heat from the ground and from the dried up vegetation in its path, creating more air heating which dries new vegetation at its front. ASH dries up the trees around forest clearances, especially if the groundwater is extracted with pumps from the tree roots. This way, trees transform into fuel.

When ignited, the dry trees burn violently.

CHANGED VEGETATION, CLIMATE AND LAND

- Man-made climate change is real because the climate is connected to Earth's surface, which has been significantly altered by humans [6].
- Deforestation, especially of low latitudes is the main cause of global warming and climate change, to which the carbon gases effect adds up*.
- Therefore, restoring the disrupted water cycle with large vegetation can fully compensate for the climatic effects of carbon gasses.
- Coastal deforestation creates damaging HACs that produce the **global warming** high thin clouds, **coastal floods** and **inland droughts**.
- The inland droughts are amplified by the ASH of local deforestation and by carbon gases, drying up the forests and fueling the **forest fires**.
- Marine moisture stopped by HAC to discharge into the intertropical lands is pushed to **higher latitudes, overheating and flooding** them.
- After long periods of drought, rain events trigger **intense rainfall** through temporary moisture pumps, resulting **large floods** and **soil erosion.**



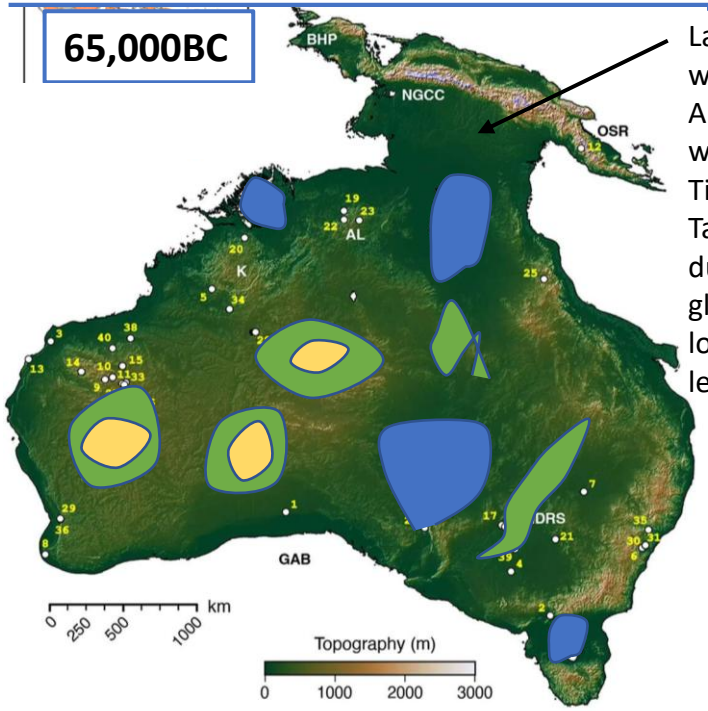
The thinner and coarser present soils hold less water, leading to sea level rise together with the land ice melting and all the other water [9].

* While IPCC reports mention all causes of climate change, deforestation was extended to 2030 at COP21. Mainstream climatologists insist on carbon gasses emissions as being the main cause of man-made climate change, and refuse proper debate on the size of deforestation effects.

HUMAN-INDUCED CHANGES TO AUSTRALIAN BIOGEOGRAPHY AND CLIMATE

1. **Before humans, Australia had mostly lush, very diverse and abundant vegetation** of statistically different species than at present [12] .
2. Not only that all the continent including the center had trees, but they were tall and in high density, since they supported tree kangaroos.
3. The dense, tall trees created a large evapotranspiration that kept the forests/jungle cool and attracted shadowing clouds and rain.
4. The abundant vegetation provided for rich fauna including herbivores of more than one ton, and the trees created and maintained thick soils.
5. The climate was much more humid because of the strong feedback between land cover and precipitation. There also was a NW monsoon.
6. After the first humans entered Australia and started using fire as their main hunting tool like in Africa, the vegetation abruptly declined.
7. **Deforestation through fires has produced a decrease in both precipitation and vegetation through the vegetation-precipitation feedback.**
8. The rarer but more violent precipitations have totally eroded the soils unprotected by trees, leaving behind the inland sandy or rocky deserts.
9. **Forests with large trees that did not burn have survived in the wetter coastal areas until the white settlers cut them down for their timber.**
10. Prehistoric deforestation through fire that transformed the outback into a desert repeats now on the coasts through mechanical deforestation.
11. **If we do not change our ways, in short time soil erosion will leave no usable land in Australia, but scorched bare land, sandy or rocky desert.**
12. **Thus, deforestation interrupts the water cycle, which is the single cooling mechanism that can protect the land from overheating in the sun.**
13. Climatology now insufficiently claims that global warming due to CO_2 increase would cause all climate damage. In fact, deforestation reduces water cooling, thus solar radiation produces sensible and radiative heat (tens of W/m^2), which is then only amplified by CO_2(W/m^2) [3].
14. Some climatology theories claim that desertification was produced by the cyclical interglaciation, but Australian deserts are not cyclical.
15. Other theories claim that desertification was produced by Australia migrating into the tropics, but that was much slower than 65,000 years.
16. Unsupported new theories claim that First Nations did well managing the land with fire, to produce regeneration of vegetation**.** This is illogical: why kill by burning a large mass of vegetation and animals to recover only little nutrients in ash while most goes up in smoke? In nature, dead grass gradually decays downwards and forms a mesh above, that protects from sunlight and evaporation, keeping moisture underneath. Invertebrates, microbes and fungi create a living layer that protects and creates new soil. That living layer is destroyed by the unnatural fire.
17. **Their ground fires burn the tree saplings to stop tree propagation and allow only grass growth, which is needed for their desired kangaroos.**
18. The complex and difficult prescribed burns have small overall success in preventing large fires, which actually propagate as crown fires, and are caused by high dryness and ignition by humans (including the prescribed burns). The best are the green forests with wet soil that do not burn.
19. The certain effect of human lit fires is to kill the tree saplings to make room for and accelerate grass growth for kangaroos, cattle and sheep.
20. **Australia's dryness and fires are caused by disrupting the water cycle with deforestation (HAC) [7], forest thinning and "controlled" burns.**

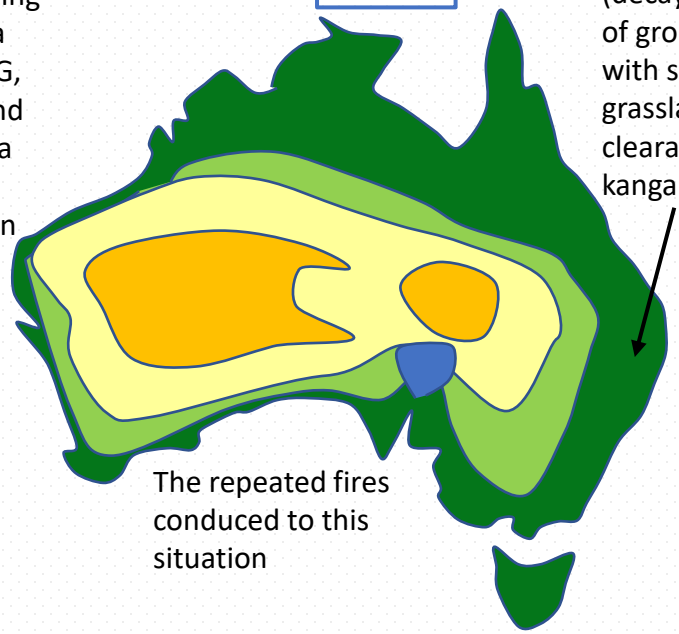
65,000BC



Credit: Nature Communications

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

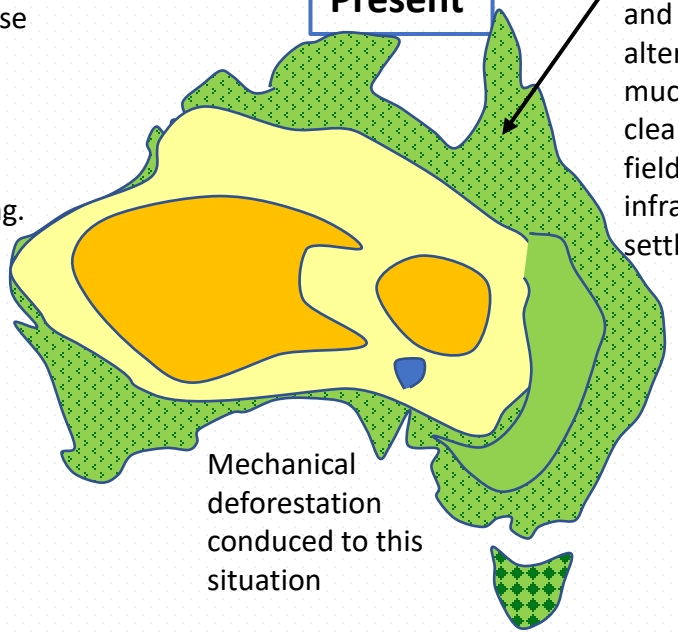
1700



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

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.

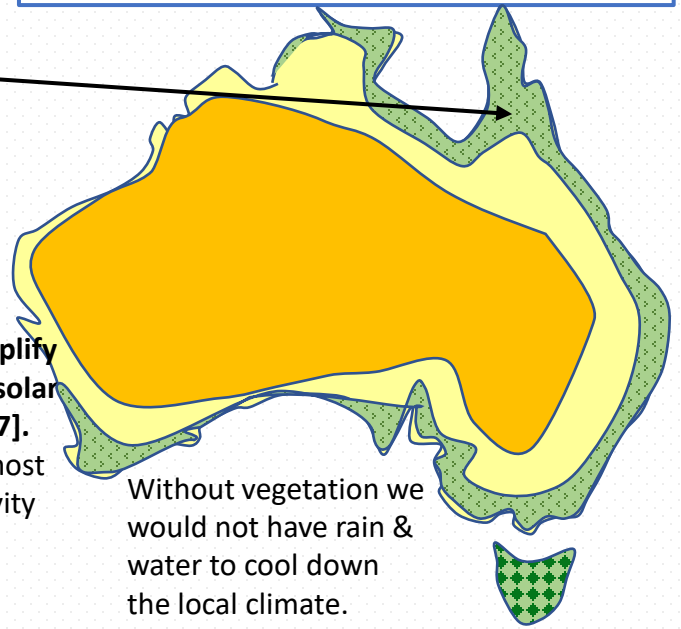
Mechanical deforestation conduced to this situation

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

LEGEND

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

2300 if we do not change our ways

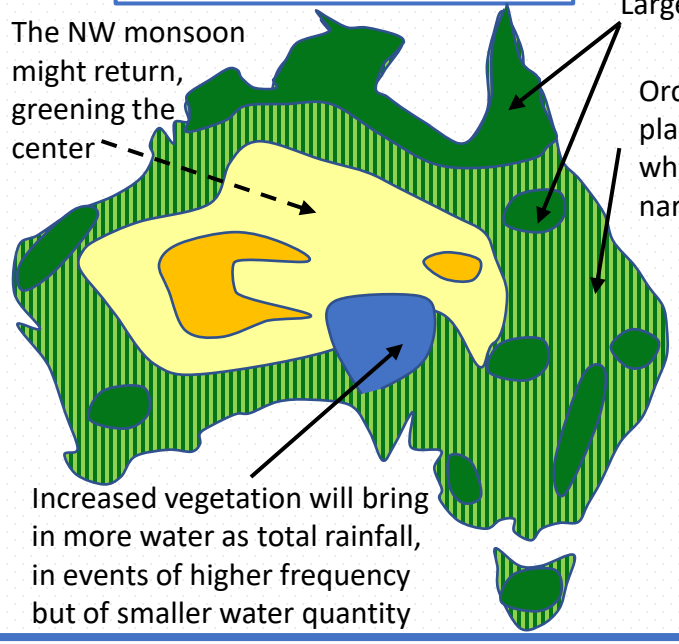


Very few small forests with rarer trees alternating with much larger areas of crop fields, quarries, infrastructure and settlements.

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.

2300 as suggested here



The NW monsoon might return, greening the center

Large Nature Reserves

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

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

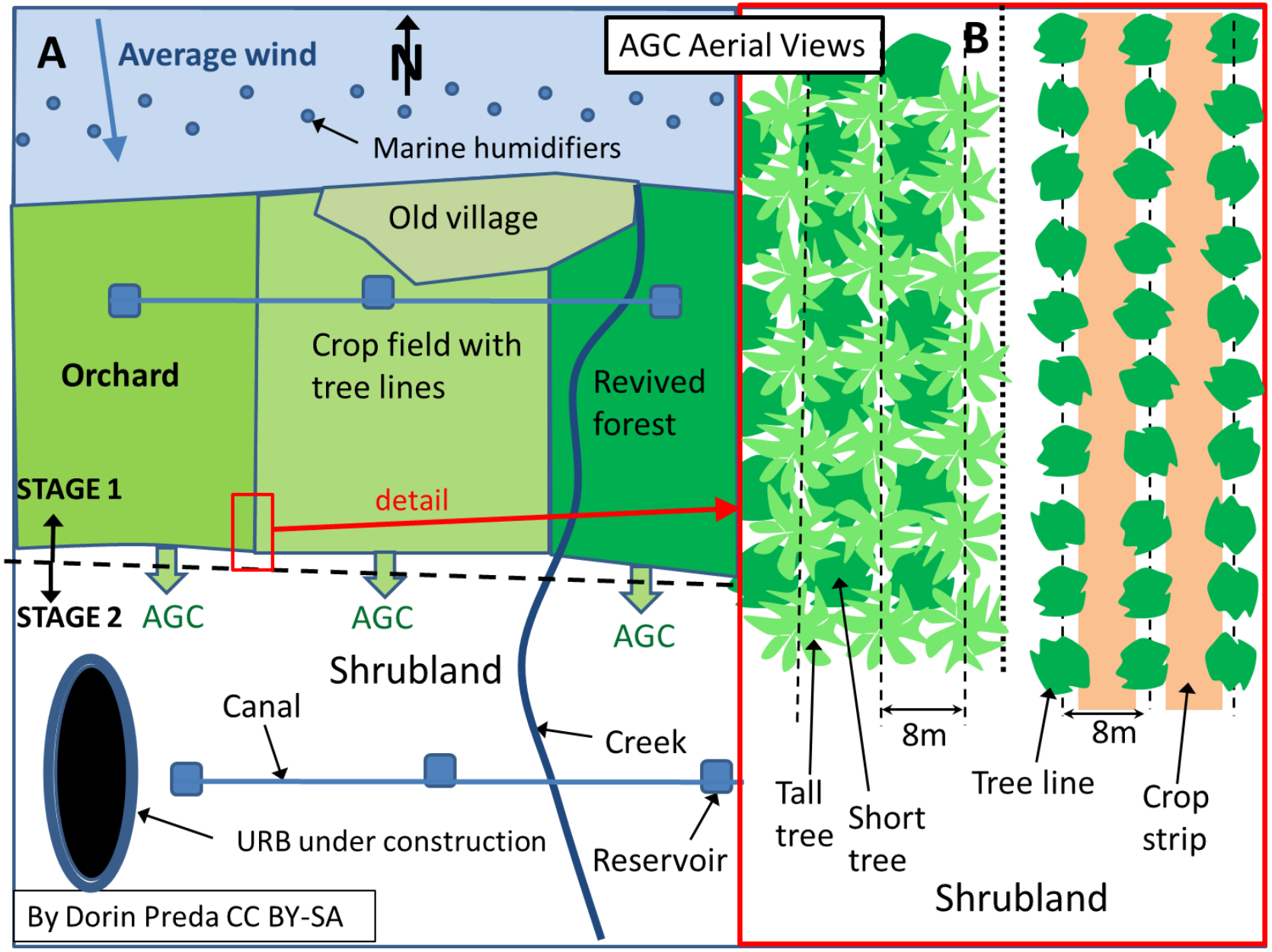
To stop the hot air curtain (HAC) process [7] in deforested areas and settlements we increase their vegetation and add artificial evaporative cooling.

THE AUTHOR'S METHOD OF LAND AND CLIMATE RESTORATION (based on [7])

1. Rely on dominant winds to bring air with high absolute humidity from large water bodies, where humidification may be artificially increased.
2. Provide a startup source of freshwater input (lakes and/or river) for the avalanche greening and cooling (AGC) program.
3. Provide a soil supplement where necessary and promote its increase as the AGC progresses in time.
4. The key is to prevent land objects from being heated by solar radiation; cool them with water evaporation and increased reflectivity.
5. Increase relative humidity of air by cooling, pressure variation, water evaporation, or biochemical agents to promote rain.
6. Create a continuous vegetated or cooling land cover from the shore towards the inlands that promotes rainfall and attracts more marine air.
7. Setup a dense and/or multistorey vegetated ground cover of trees that does not allow solar radiation heating of the ground.
8. The startup AGC area should be wider than 5km along the shore and at least 5km deep inland.
9. The Eastern coast of Australia has the most favorable conditions for starting AGC projects because of dominant humid winds.
10. Support the start-up of the AGC with the freshwater from lakes/river until the fully established vegetation generates a rainwater excess.
11. The statistical rainwater excess will allow advance of the AGC inlands by planting new vegetation until all excess water is used.
12. The non-agriculture areas of the AGC (settlements, quarries, roads, etc.) must not heat the air more than a forest, thus they need to be planted with as many trees as possible, with green canopies and/or supplemented with artificial evaporation [7].
13. AGC vegetation consists of simulated forests (plantation of mixed species similar to native forests), plantations of useful trees, fruit trees orchards, beds of vegetables and lines of crop fields in agroforestry or shelterbelts setup (see slide 10), natural reserves, leisure parks.
14. There is a potential to restructure agriculture and obtain more benefits by switching from the new diet to humans' ancestral diet (slide 12).
15. The URB is an environmentally friendly new settlement for around 10,000 self-sufficient communities which work for AGC projects (slide 13).
16. There is need of independence of the energy sector, to freely and efficiently provide energy (including renewable) to remote URBs.
17. The highly efficient use of land of AGC and URBs allows large, uninterrupted natural reserves and green areas for people's enjoyment.
18. AGC extends in area with the income it has produced or demonstrated that it can produce, therefore there is reduced financial risk.
19. The AGC advance in the outback will be relatively slow due to: a) the need to build the URBs and processing centers, b) the slow gaining of improved soil; c) the slow growth of valuable trees; d) the slow growth of needed population. However, these growths mean good progress.

We cannot just reforest Australia because we need the land for settlements and food production, but we can improve it, as shown above. Of all countries, Australia has the best conditions for land and climate restoration, as it is surrounded by oceans and it is not fully developed.

CLIMATE RESTORATION EXAMPLE



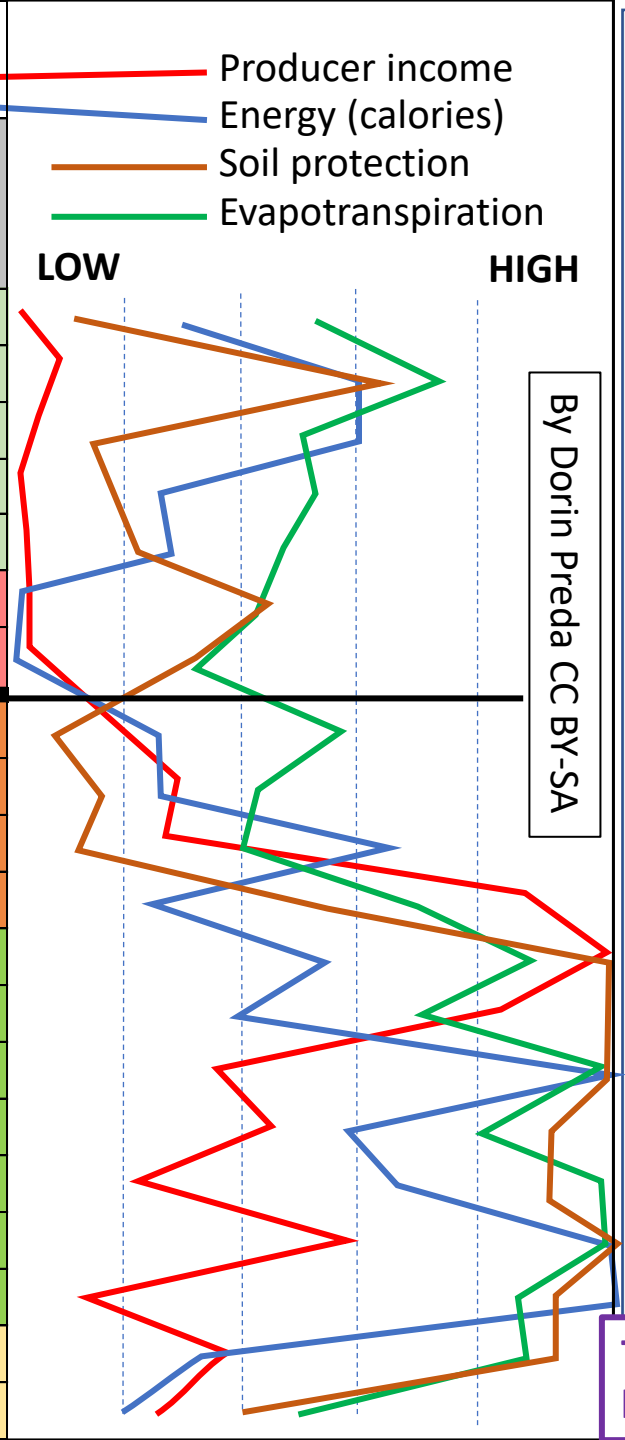
Success keys: AGC size, startup line setup, tree density, groundwater, etc. **Finding out the power** needed for climate repair: the source of energy is solar radiation; at mid-latitudes the daily average is 15MJ/m^2. Under 65% reflecting clouds and thick forest cover it may drop to 1MJ/m^2, meaning that the maximum average to compensate for is 14 MJ/m^2, or 10 MJ/m^2 after accounting for reflection. That is sufficient to evaporate around 1,500mm of water per year and is the evapotranspiration of a mature orchard that can compensate for the increase in solar radiation due to past deforestation.

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.

The Avalanche Greening and Cooling (AGC) [7] is the land restoration that restores climate. 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.

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



THE OUTSTANDING SOLUTION

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

We recently observed [8], that production of new human food (cereals and red meat) provides less income and calories than the ancestral food (fruit, legumes, white meat).

Additionally, eating less fruit and legumes, and more cereals and red meat to which our bodies are not yet adapted, led to nutritional disease.

Most of climate change and of nutritional diseases are due to the change in people diet.

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

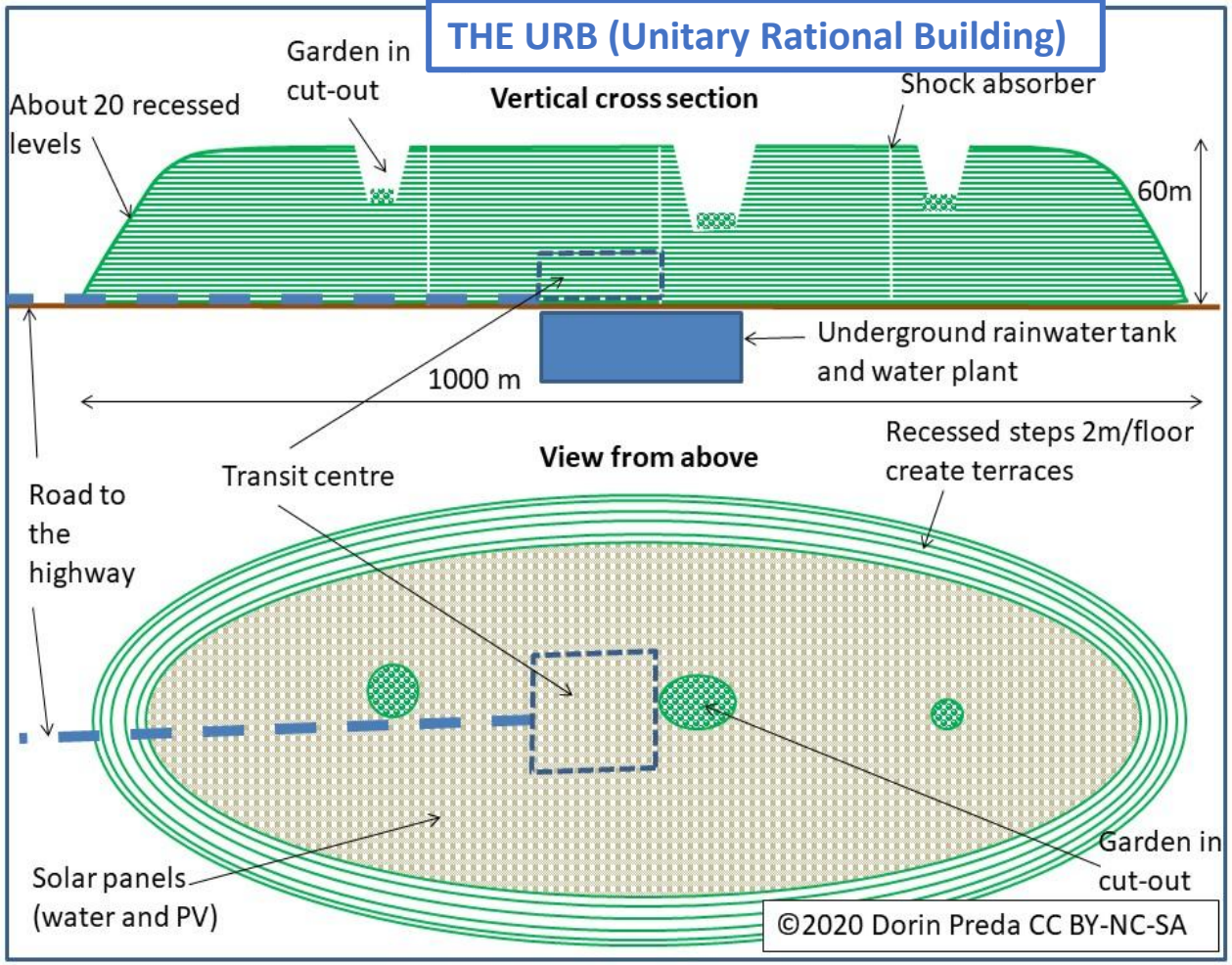
Ancestral diet also protects the soil from tilling erosion and through the new tree roots.

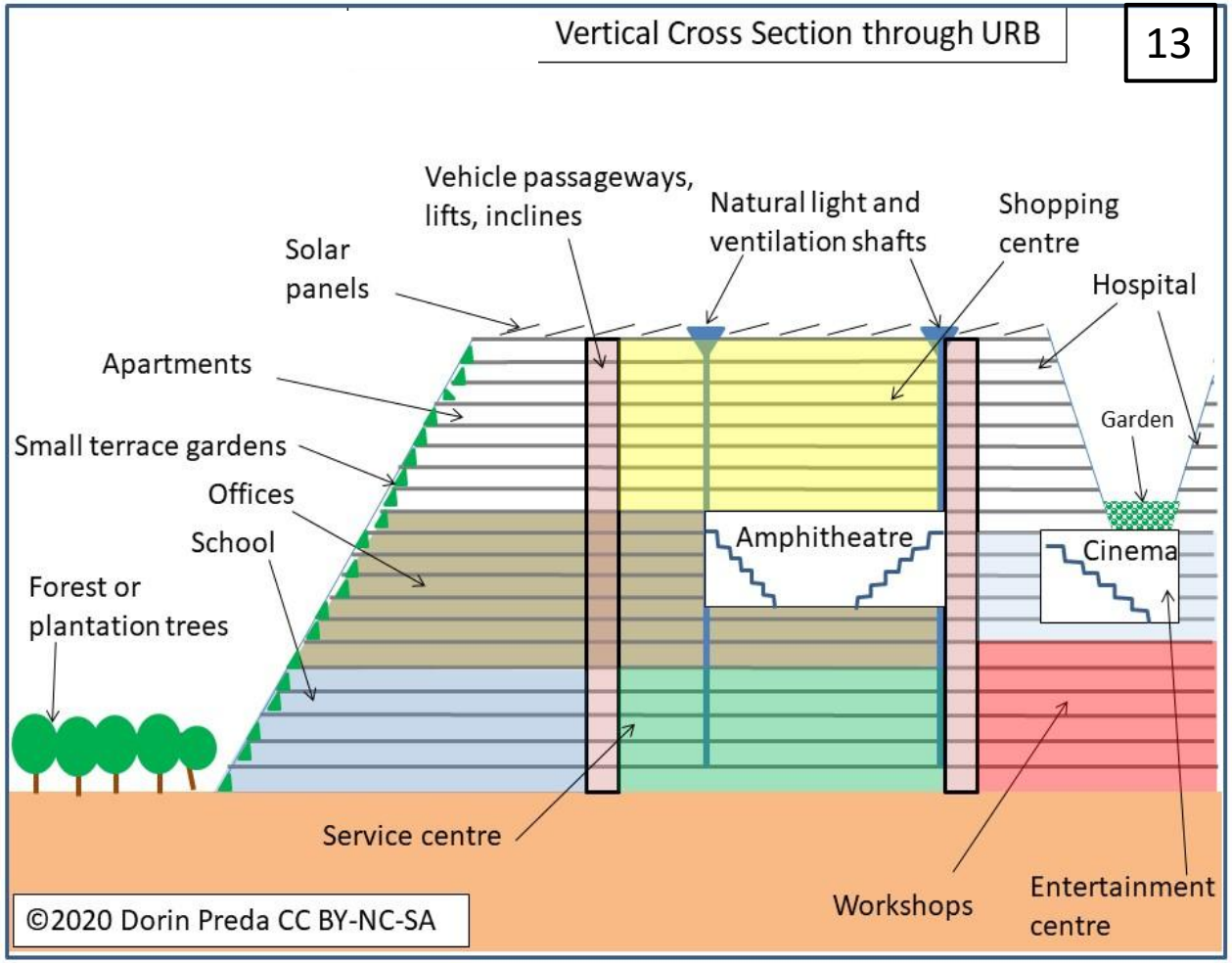
White meat production per hectare can be 10 times larger than red meat production!

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

Thus, using more the ancestral diet would be benefic for climate, economy and our health.

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, similar to a "10 minute city", there is no need of cars inside the URB, so people could walk or use their PEV (personal electric vehicle).
- Each apartment has large terraces, open towards the green and unpolluted surroundings of the URB. There is no chemical, sound or visual pollution for residents.
- The terraces are made only of glass and concrete, thus they are simple to maintain and last for a long time while providing plenty of air and light to the apartments.
- Apartments have perfect privacy and aesthetics, while being wide open towards the outside, unlike present town backyard conditions.
- URBs can be built easily with existing construction methods and materials, cost at least 5 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 so inexpensive to build and lasting hundreds of years, the capital cost of this new type of building is low, bringing many advantages and benefits to everyone.

CONCLUSIONS

1. Australia has an outstanding opportunity to restore its climate and its lands while boosting its economy with low start-up cost.
2. Cultural/prescribed burning of vegetation should be stopped because it has turned the lush green Australia into drylands and deserts [7].
3. Deforestation of the tropical North should be stopped, as its moisture floods the southern coasts, while HACs dry out their inlands.
4. Gradual land and climate restoration are possible through large scale AGC programs advancing downwind, mainly from the East coast.
5. Increasing evapotranspiration in settlements with trees, green canopies and evaporative cooling, will cool them and prevent HACs and ASHs.
6. As the climate improves by restoring the water cycle and sequestering CO_2 in trees and soil, carbon emission reductions may be a bonus.
7. Wetter soil, larger and denser vegetation on land, and private property of useful trees (the majority of vegetation) will prevent forest fires.
8. Replacing most pastures and crop fields with orchards and crop fields with tree lines would increase income, production and land value.
9. Increasing the proportion of white meat and fruit in diet would increase production per hectare and would enhance people's health [8].
10. Compact city-style URBs can accommodate the needs of about 10,000 inhabitants who work for the rehabilitation of the surrounding land.
11. All sectors of the economy can benefit from engaging in this large developmental program, contrary to the austerity of emissions reduction.
12. There is a real need of education on energy efficiency, while the energy sector should provide the type of energy required by its customers.
13. The climate can be naturally repaired by planting useful trees without introducing the dangerous additional changes of geoengineering.
14. The present socio-economic tensions due to climate change would dissipate because all parties would co-operate for mutual benefit.
15. Setting up all the needed Natural Reserves allows properly planned development on the rest of the land.
16. A debate with the mainstream climatologists could unify points of view and allow progress on these important issues.
17. **This new theory shows that, even if the global climate continues to deteriorate, Australia could improve its regional climate and thrive.**

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* ***NOTE:*** *The above selection is not exhaustive or substantially representative for the vast array of climatic opinions.*

ANNEX : ABOUT THE AUTHOR

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Qualifications: Earth sciences engineer 1982
Master-equivalent 1986

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

Author of:
- Many renewable energy designs, prototypes and pilot installations
- A new solar air heating technology with applications in industry 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 high information and 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
- Thus, the author has made in 2020 the first edition of his book freely available to all scientists and authorities (but was ignored).
- Open, correct scientific debate and dissemination of information should be allowed and supported for everyone's benefit.