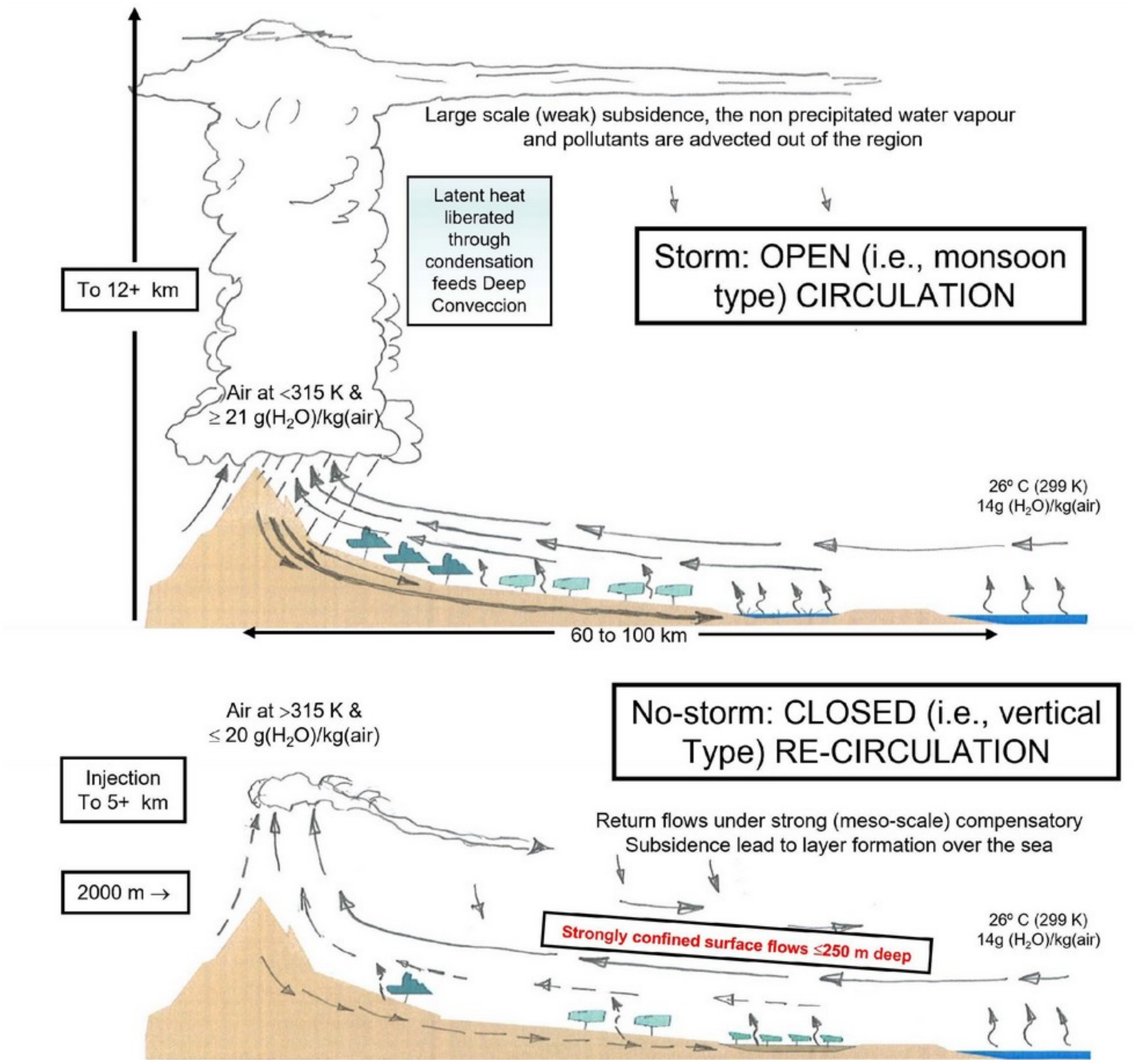
The biotic pump is a theory proposed by Russian atmospheric physicists Viktor Gorshkov and Alexandra Makarieva that explains the creation of rain on the continents: water vapor rising vertically from a forest or wetland due to evaporation and eVotranspiration cools the atmosphere, reducing the size of its molecules. This creates a vacuum effect, which, in turn, causes a suction that draws humid oceanic air over the land masses. The water vapor rising from the forest incorporates volatile organic compounds produced by trees (phytoncides), which form the nucleus around which the water droplets condense. The result is rain, and much of it, up to 60% or more, comes from this short water cycle—that is, from water that cyclically evaporates and condenses over the land. [1]

The Mystery of the Disappearance of Summer Storms in the Mediterranean

Millán Millán was a Spanish scientist, director of the CEAM (Central American Meteorological Institute), who managed to unravel the mystery of the disappearance of summer storms in the Mediterranean, common among our youth in the 1960s and 1970s. In the case of Valencia, humid air from the Balearic Sea reaches the coast with 14 grams of water vapor per kilogram of air. As it passes over wetlands, rice fields, and forests, its water vapor content increases until it reaches 21 grams per kilogram of air. It reaches the Iberian and Penibética mountain ranges, rises to 2,000 meters, and discharges rain. This discharge is precisely the 7 grams that had previously evaporated, hence the name short water cycle for this process. The remaining 14 grams rise to higher altitudes and join the general movement of atmospheric circulation on the planet.

1 https://es.wikipedia.org/wiki/Teor%C3%ADa_de_la_bomba_bi%C3%B3tica



In the 1980s and 1990s, intensive coastal urbanization eliminated much of this rising moisture contribution, replacing forests and fields with hard surfaces (hotels, housing estates, roads, airports, etc.). As a result, clouds are unable to accumulate these 21 grams, as the cool, humid air that once rose is now replaced by dry, warm air from materials with high thermal inertia, i.e., heat accumulators. The result is that clouds rise to 12,000 meters, discharge into the mountains, and return to the sea or move to other regions, causing extreme weather events such as storms, Mediterranean hurricanes (medicanes), floods, and torrential rains in countries such as France, Germany, and Italy. [2]

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Thus, the disruption of the biotic pump mechanism due to massive urbanization and the displacement of millions of people to the Mediterranean coasts over the last 50 years is the cause of the disappearance of summer storms and the unstoppable desertification predicted by

2 https://www.resilience.org/stories/2023-07-17/millan-millan-and-the-mystery-of-the-missing-mediterranean-storms/

IPCC scientists for the Mediterranean basin, an ecosystem already deficient in water (only the entry of water from the Atlantic prevents the drying up of the Mare Nostrum).

This phenomenon is replicated in other Mediterranean climate zones such as California, Central Chile, and South Africa. We all share mountain ranges close to and parallel to the sea: the Tramuntana mountain range in Mallorca, the Sierra Nevada in California, the Andes mountain range in Chile, and the Great Escarpment in South Africa. The implications of these two investigations are devastating:

1) The disappearance of Mediterranean storms has a human origin, and this causal relationship, known since the 1990s, has been intentionally ignored, as it directly linked the tourism and urban development boom with climate change.

2) The phenomenon is **completely reversible**: in areas where reforestation and soil water management have been implemented, allowing rainfall to accumulate underground, it has started raining again, and the temperature has dropped. Let's look at two examples, one urban, the other rural:

Medellín: Green Corridors

Medellín's city council has managed to lower the city's temperature by 2°C, thanks to 30 green corridors and parks that have been planted over several decades. In the corridors and parks, the temperature drop is 4 degrees, and now the city continues to open new corridors, with the aim of lowering the temperature even further. Thus, Medellín is the first city in the world to have managed to eliminate the "heat island" effect generated by hard surfaces, which is estimated at precisely 2 degrees Celsius. [3]

Rahendra Singh: Rajasthan

Rajendra Singh is an Ayurvedic doctor who has managed to restore rain to his dry region in northern India, including the restoration of seven rivers that had dried up and the return of hundreds of villages that had been abandoned because agriculture was no longer possible due to the drought. As a result of restoring the water cycle, the temperature in the region has dropped by 2 degrees Celsius. [4]

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Therefore, the disappearance of summer storms that prevented heat waves and climatic events are not biblical curses, but rather completely reversible events, with a surprisingly affordable cost-benefit ratio. Balears Verd proposes the creation of an edible forest of 1 million trees at a cost of 9 million euros

Rajasthan and Medellín have demonstrated that great results can be achieved with limited budgets. The Balearic Islands are one of the richest regions in Spain, the fourth-largest economic power in the eurozone, and a potential recipient of EU funds related to adaptation and mitigation of the effects of climate change. The Balearic Islands have higher rainfall than Rajasthan, and we know that they were wetter and more tree-covered just 100 years ago thanks to chronicles written by 19th-century travelers. [5]

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3 https://www.bbc.com/mundo/articles/cp3d1v0rryro

4 https://en.wikipedia.org/wiki/Rajendra_Singh

5 Juan Cortada:*Viaje a Mallorca en el estío de 1845*); George Sand: *Un invierno en Mallorca.* (1839)

Balears Verd will make our archipelago a world leader, inspiring similar projects in the region and beyond. We have everything we need: a very contained area of 5,000 km^2—half of which is already covered by forest—sufficient machinery, human resources, and logistics to complete in a few years what took 25 years in Rajasthan. But none of this will happen if we continue to focus on optimizing what exists instead of completely redesigning it.

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Balears Verd is a proposal for the regeneration of the terrestrial and marine ecosystems of the Balearic Islands. Its main objective is the planting of one million fruit trees and shrubs in an Edible Forest (Food Forest Garden) regime, the restoration of the water cycle, the carbon cycle, the return of biodiversity, and the reactivation of the primary and secondary sectors. Indirectly, it aims to restore Posidonia by progressively eliminating agricultural waste and reducing runoff, erosion, and salinization of our soils. We firmly believe that the objective of agricultural and livestock production must be reoriented towards the production of foods with high nutritional content that heal the planet and its inhabitants.

Artifexbalear is the first entity registered in the Balearic Government's Balearic Registry of Compensation Projects (File 001/2024) and also the first in Spain certified by a public administration to issue Regenerative Carbon Credits, i.e., Carbon Credits generated by the application of Regenerative Agriculture techniques, recovery of the water cycle, and return of plant and animal biodiversity.

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