



Out of sync (misaligned o desynchronized)



540 million years of constant changes: The Earth's climate has always been in motion, shifting from tropical periods to ice ages. These natural changes are due to forces such as the movement of the continents, volcanic activity, and geological processes that trap CO₂. Although the climate is sensitive, the current change is exceptionally rapid in comparison with the slow pace of nature.



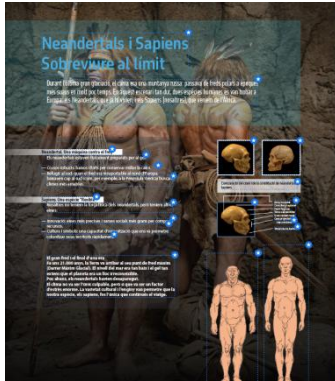
The greenhouse effect, the blanket that allows us to live: The atmosphere acts as a natural blanket that traps part of the sun's heat, allowing an average temperature of 15 °C suitable for life. CO₂ and other gases are the primary drivers; if we add too much, the "blanket" thickens and the planet warms, triggering reactions such as ice melt that further accelerate the process.



The detectives of climate. How do we read the past?: Before thermometers, nature already recorded the climate in "time capsules": air bubbles in Antarctic ice, marine sediments, tree rings, and cave stalactites. These data confirm that current warming is an abrupt leap without natural precedents.



The Pleistocene. The cyclical oscillation of cold and heat: Between 2.58 million and 11,700 years ago, the Earth alternated periods of intense cold [glaciations] with others that were warmer. These cycles were caused by the astronomical movements of the Earth's orbit and axis [Milankovitch cycles], which altered the solar energy received.



Neanderthals and sapiens. Subsisting at the threshold of habitability: During the last glaciation, Neanderthals [physically adapted to the cold] and sapiens coexisted in Europe. While Neanderthals became extinct under climatic stress, the cultural flexibility, innovation, and ingenuity of sapiens allowed us to survive and colonize new territories.



The Holocene: 12,000 years that changed everything: Since the end of the last glaciation, we have lived in a period of exceptional climatic stability. This “long summer” was the key that enabled humanity to cease being nomadic, to invent agriculture and to build the first cities and civilizations.



The Holocene. The cradle of civilizations: Ice melt raised sea level and created fertile landscapes where hunter-gatherers settled. In various parts of the world, humanity learned to domesticate nature simultaneously, initiating the Neolithic Revolution.



When the Sahara was a garden: Between 9,000 and 5,000 years ago, the Sahara was a green region with lakes, grasslands, and wildlife due to a variation in the Earth's position. When it began to dry about 6,000 years ago, populations moved toward river valleys, a process that drove the emergence of civilizations such as Ancient Egypt.



Cities, empires, and the puzzle of climate: Ancient civilizations flourished thanks to favorable climates, but they were vulnerable to prolonged droughts that could lead to their collapse. In response to these challenges, our ancestors developed irrigation systems and grain storage facilities to survive years of scarcity.



From the splendor of Rome to the great cold: Rome prospered during a period of mild climate, but in the 6th century AD, major volcanic eruptions darkened the sun, causing famines, diseases such as the Plague of Justinian, and political instability. Stability is a fragile gift of nature.



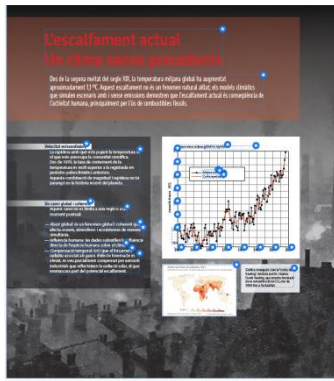
From the medieval summer to the ice of modern history: The Middle Ages experienced a warm period that favored the Vikings and agriculture in the north. This was followed by the Little Ice Age [1350–1850], with harsh winters and frozen rivers. Unlike those regional changes, current warming is global and synchronized.



The great rupture: The Industrial Revolution constituted a paradigm shift with the massive use of coal, oil and gas. In just a few decades, we have emitted into the atmosphere the energy stored over millions of years, turning the human species into the dominant climatic force.



The Keeling Curve. The pulse of a warming planet: Since 1958, measurements at Mauna Loa show that CO₂ concentration is continuously increasing, exceeding 420 ppm in 2023. This 50% increase in record time comes from fossil fuels and exceeds the sequestration capacity of carbon sinks such as oceans and forests.



Current warming. A rate without precedent: Since the late 19th century, global temperature has increased by 1.1 °C due to human activity. The speed of this increase since 1970 has no parallel in the planet's history and affects oceans, atmosphere, and ecosystems simultaneously.



Oceans and ice in transformation. The system under pressure: The oceans absorb 90% of the excess heat and a quarter of the CO₂, inducing thermal expansion of seawater [sea-level rise] and acidification. The cryosphere is melting rapidly, and permafrost thaw threatens to release additional methane and CO₂.



Terrestrial transformations and climate extremes: Warming intensifies extreme phenomena such as torrential rainfall, droughts, and "sixth-generation" wildfires. This alters the biological cycles of plants and endangers biodiversity and the security of human societies.



The future is not written. Decisions for the 21st century:

The future climate depends on our current emissions. Science proposes various scenarios, from sustainability to dependence on fossil fuels, in which our collective decisions will determine the magnitude of impacts for future generations.



From mismatch to resilience. Mitigation, adaptation, and a shared future:

It is necessary to act along two axes: mitigation [reducing emissions through renewable energy and efficiency] and adaptation [creating resilient infrastructures and systems]. The objective is to synchronize the pace of humanity with the limits of the planet.