

The Future Is 3 Million Years Ago

By Don Sutherland

2100: With CO₂ at 700 parts per million (PPM), the clouds quivered, then unraveled, dissolving into ragged tatters. Sunlight poured through the breach in a hot torrent. Ocean surfaces, once insulated by the low clouds, warmed dramatically. The world stood 3°C (5.4°F) warmer than it had during the pre-industrial era.

2300: Large parts of New York City, Miami, London, and other great coastal metropolises have been lost to the relentlessly rising seas. New York City and Toronto had transitioned into humid subtropical climates. The winter tradition of skating on Ottawa's Rideau Canal had long been abandoned. Snow, once a defining characteristic of Canadian winters, had largely disappeared from southern Canada. Phoenix saw temperatures erupt past 50°C (122°F) on multiple days each summer.

That's the future human society, or at least its political and many corporate leaders, are building. Almost 130 years after Svante Arrhenius first estimated the impact of a doubling of carbon dioxide (CO₂), the world continues to burn fossil fuels at a frenzied rate. The consequences of humanity's huge annual injections of CO₂ into the atmosphere are no longer matters of conjecture or uncertainty. The consequences are well-established and widely known. Ignorance is not a valid defense for any sector of society.

At present, global energy demand is rising faster than renewables can scale. Population growth, economic development, and industrial expansion in emerging markets are driving electricity and fuel consumption to record highs. Although solar and wind power generation is growing at double-digit rates, they are adding to energy supply rather than displacing fossil fuels. COP 28 and COP 29 were farcical gatherings where the attendance of fossil fuel polluters ensured that binding reductions in fossil fuel burning and enforcement mechanisms were never under consideration. Early indications are that COP 30 could produce a similar failed outcome.

The United States has made a dramatic U-turn on policy, increasingly rejecting renewable energy, embracing fossil fuel-driven energy, and suffocating scientific research. The European Union appears poised to shrink from climate ambition. These outcomes will prolong, if not increase, the excessive and ongoing burning of fossil fuels.

The most disconcerting question today concerns whether the world's policy makers have chosen the Mid-Pliocene or the even hotter Eocene as their destination. With the expected 3°C (5.4°F) warming likely by 2100 on the present course, the Mid-Pliocene might merely be a stop along the way of an even longer journey into a hotter climate.

About three million years ago, during the mid-Pliocene Warm Period, average global temperatures were 2°C-3°C (3.6°F-5.4°F) higher than today. That shift was enough to melt large portions of the polar ice sheets, driving sea levels at least 10 to 25 meters higher. CO₂ atmospheric concentrations then were estimated between 350 and 450 PPM. In 2024, atmospheric CO₂ averaged almost 423 PPM.

The Eocene, some 50 million years ago, palm trees and crocodiles thrived in the Arctic, while tropical ecosystems extended deep into regions that today enjoy temperate climates. CO₂ levels were likely more than double today's, in the range of 1,000 to 1,500 PPM.

Today, the greatest challenge isn't one of technology. It is the lack of political will. The destination of a warmer world and its implications are well-established from model projections and the paleoclimate record. Nevertheless, as of this writing, the world remains firmly on a course to a Mid-Pliocene climate. Much worse could lie ahead afterward.