

The Earth: first in geoengineering

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Abstract

The Earth is saved from the fate of Venus by a process that has efficiently removed CO₂ from the atmosphere since its origin. The first step of this process is the weathering of silicates, which results in the formation of bicarbonate solutions. After these have been transported to the oceans, they are sustainably stored as carbonate rocks (limestones and dolomites), which contain around a million times more CO₂ than the atmosphere, the oceans and biomass combined. Later on this process was complemented by the formation and storage of organic carbon (as coal, oil, gas and carbon particles in sediments). On Venus none of these processes has operated, because Venus lacks liquid water, which is an essential requirement for weathering and for life. As a consequence all the CO₂ emitted by the volcanoes on Venus has stayed in the atmosphere, which now has a pressure of 75 bars CO₂ and a surface temperature of 465 degrees centigrade (Fraser, 2008), which makes that planet obviously unfit for life.

Keywords: Earth, Venus, Water, CO₂, Olivine, Climate, Topography, Ocean.