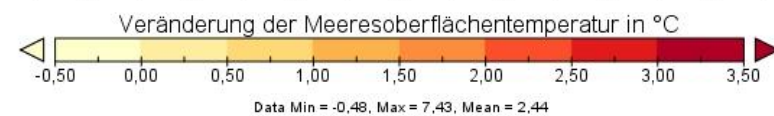
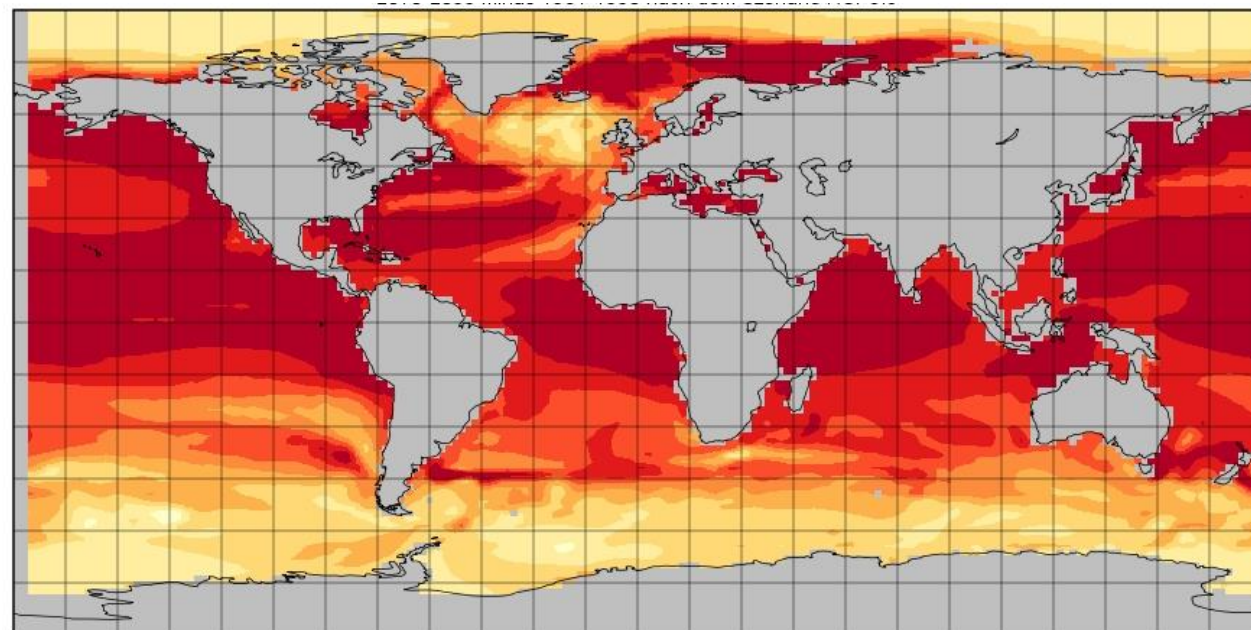


Why does ocean warming increase global warming?

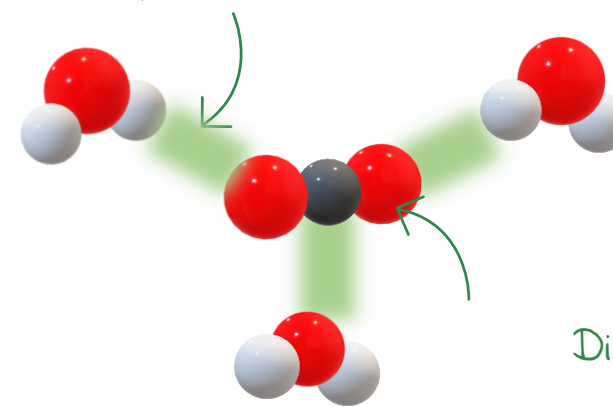
Background:

The oceans have a dual role in tempering global warming: On the one hand, they store heat and, on the other, they absorb CO₂ from the atmosphere. However, when the temperature of the water increases, these buffers lose their effect: Warm water absorbs less heat as the temperature difference with the environment becomes smaller, and it can also dissolve less CO₂. It even releases it again at higher temperatures! Acidification also leads to the dissolution of lime, which releases additional CO₂ into the atmosphere. The water vapour, which is produced to a greater extent as a result of the increased water temperatures, is as a greenhouse gas much stronger than CO₂ and thus leads to an additional increase in the greenhouse effect.

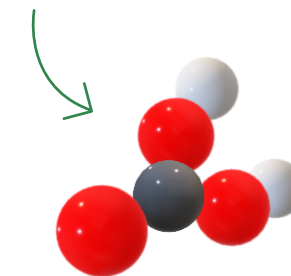
Change in annual mean sea surface temperature
2070-2099 minus 1961-1990 according to the scenario RCP8.5



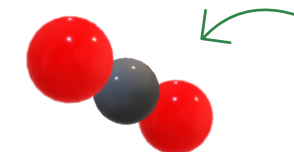
The CO₂ molecules are only weakly bound to H₂O molecules!



A small part of the dissolved CO₂ molecules reacts with water to form carbonic acid (H₂CO₃)



Dissolved CO₂ molecule



With a bottle of mineral water, you can observe that the dissolved CO₂ is released again by shaking or adding heat!