

**Using the text and your knowledge, explain the origins of climate change. Justify the difficulty for humans to solve this problem.**

Climate change is one of the most complex issues facing us today. It is a global problem, felt on local scales, that will be around for decades and centuries to come. Carbon dioxide, the heat-trapping greenhouse gas that has driven recent global warming, lingers in the atmosphere for hundreds of years, and the planet (especially the oceans) takes a while to respond to warming. So even if we stopped emitting all greenhouse gases today, global warming and climate change will continue to affect future generations. In this way, humanity is “committed” to some level of climate change.

How much will climate change? That will be determined by how our emissions continue and exactly how our climate system responds to those emissions. Despite increasing awareness of climate change, our emissions of greenhouse gases continue on a relentless rise. In 2013, the daily level of carbon dioxide in the atmosphere surpassed 400 parts per million for the first time in human history. The last time levels were that high was about three to five million years ago, during the Pliocene Epoch.

Because we are already committed to some level of climate change, responding to climate change involves a two-pronged approach:

- reducing emissions of and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere (“mitigation”);
- adapting to the climate change already in the pipeline (“adaptation”).

**Document : carbon dioxide concentrations at Mauna Loa Observatory**

