

REFLECTIONS ON RECENT IPCC (INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE) ASSESSMENT REPORT

Anyone reading this has probably already read the key headlines from the recently released IPCC Sixth Assessment Report such as “Global warming is dangerously close to spiraling out of control,” “ Unless immediate, rapid, and large-scale action is taken to reduce emissions...,” and “Red Alert”. This note will thus focus on one image and five important reflections that received less coverage.

A picture is worth a thousand words – a great image of the current situation was used as the introduction and conclusion of an article by The Economist. The image features Sheriff Brody of *Jaws* fame when he realized that the terror could no longer be hidden.



Here are the five reflections which have generally been overlooked.

1. **The Authors** – IPCC reports are compiled by thousands of atmospheric scientists, climate modelers, oceanographers, ice experts, economists and public health experts who work on a volunteer basis. It is often cited as the biggest peer-review exercise in the world. It does not conduct research itself but draws on thousands of published studies. 195 countries are members of the IPCC. As scientists, where there is uncertainty or even lack of definitive findings, they openly express this.
2. **Changes from Previous Reports** – This is the Sixth Assessment, with the last one being in 2013. The following is a summary of some of the bigger changes outlined in this updated report:
 - Human impact – this has moved from “warming is unequivocal in 2007 to “human influence is clear” in 2013 to “unequivocal human impact” and “a “principal driver”;
 - Temperature increase since 1850/1900 average – increase of 0.1 ° C since 2013 to 1.09° C (with a range of 0.95-1.2) in 2021;
 - Global Water System – from “likely affected” in 2013 to “high confidence detected changes in global water system” due to GHG emissions;
 - Extreme Events – from “human influence detected” in 2013 to a full chapter on this issue in 2021 concluding that it is an “established fact that human-induced greenhouse gas emissions have led to an increased frequency and/or intensity of some weather and climate extremes since 1850, in particular for temperature extremes. Evidence of observed changes and attribution to human influence has strengthened for several types of extremes, in particular for extreme precipitation, droughts, tropical cyclones and compound extremes”;

- When temperature likely to increase by 1.5 °C – from 2030-2052 in 2013 to early 30's in 2021;
- Temperature history over last 60 million years (demonstrated in Figure 1);

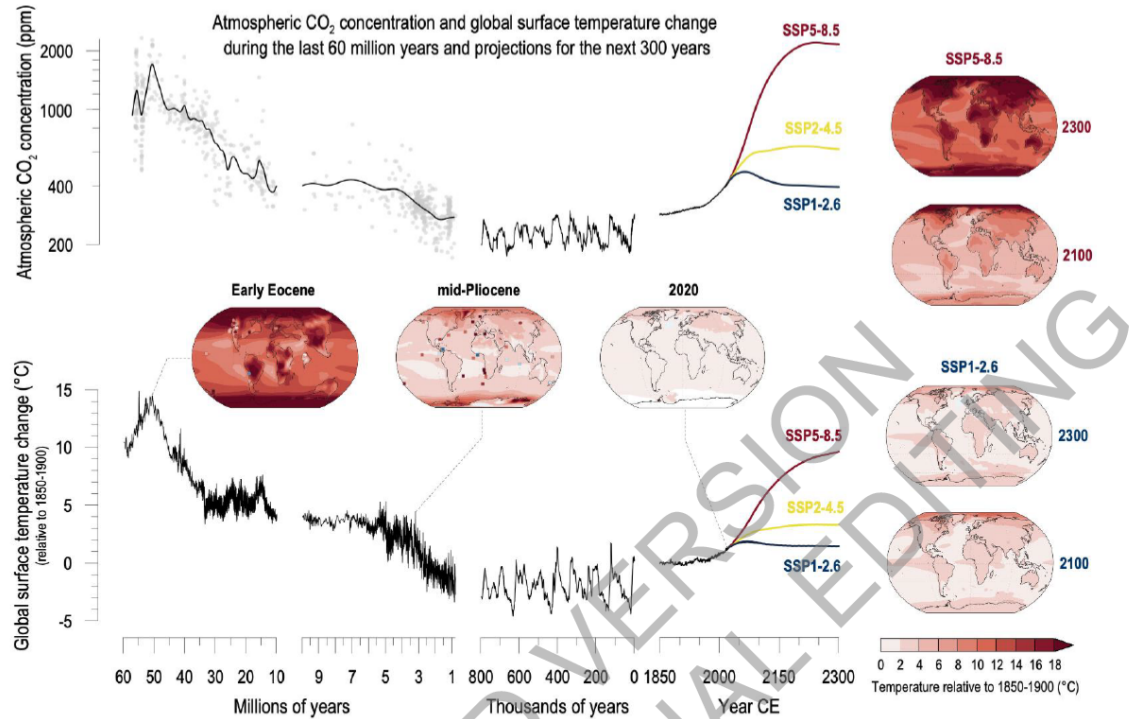


Figure 1

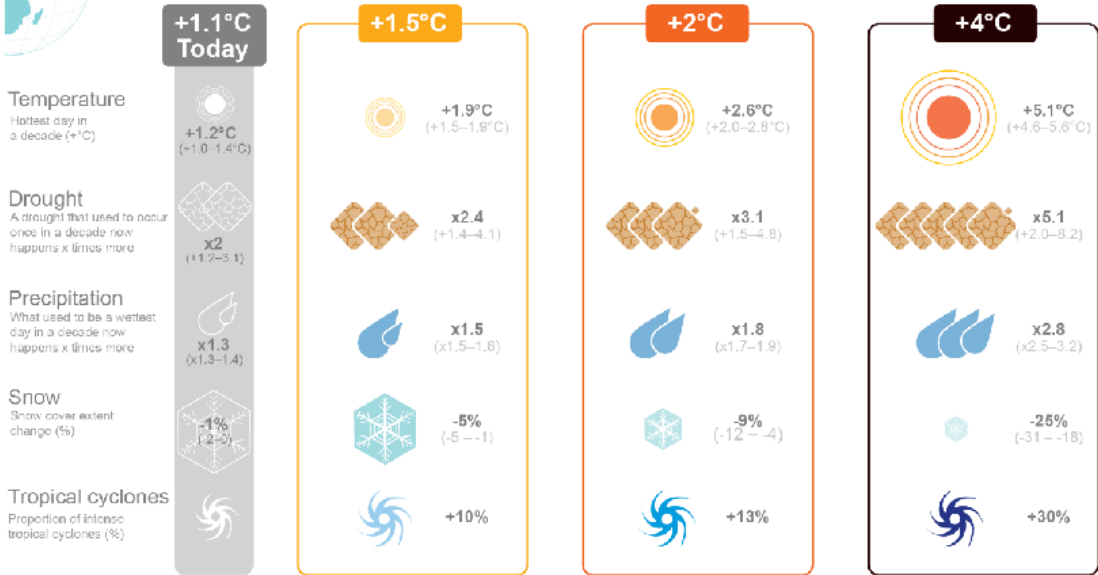
3. Impact of Warming – To some, especially in Canada, the idea of a warmer climate might sound appealing . The previous IPCC report contained the potential impacts on food, water, ecosystems, extreme weather events and the risk of abrupt and major irreversible changes at different temperatures. The following table (Figure 2) is from the Technical Summary.
4. Models and Scenarios – The findings are based on the results from 23 models under five (5) major scenarios that include a range of socio-economic as well as climate science assumptions. The report emphasizes that they do not assign a probability to any of these scenarios as they are intended to present a range of likely outcomes.
5. Mitigation and Adaptation – The report makes brief mention of these two main approaches to reducing GHGs but noted that this will be the subject of a subsequent report expected later this year.
6. Other World Issues – Perhaps not surprisingly, the report makes limited reference to other world issues such as wildlife/habitat destruction, air/water pollution, depletion of soils or national/international inequality. It thus leaves it to others to decide where their issue should rank in terms of public importance.

Climate futures



Response of the climate system relative to 1850–1900

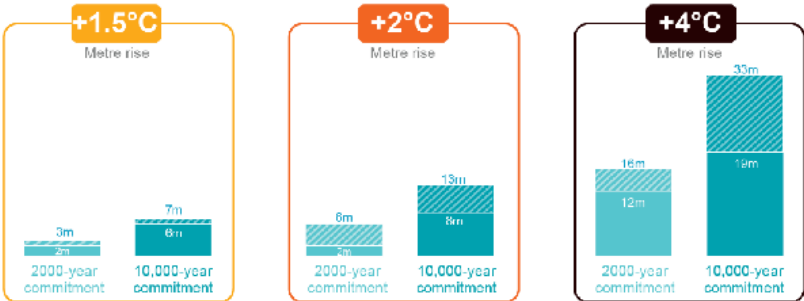
Many aspects of the climate system react quickly to temperature changes. At progressively higher levels of global warming there are greater consequences (min/max range shown).



Long-term consequences: Sea level rise

Today, sea level has already increased by 20 cm and will increase an additional 30 cm to 1 m or more by 2100, depending on future emissions.

Sea level reacts very slowly to global warming so, once started, the rise continues for thousands of years.



The future...

The climate we and the young generations will experience depends on future emissions. Reducing emissions rapidly will limit further changes, but continued emissions will trigger larger, faster changes that will increasingly affect all regions. Some changes will persist for hundreds or thousands of years, so today's choices will have long-lasting consequences.

Figure 2