A Sobering Summary of the latest IPCC Report by the Healthy Reefs Initiative

"Not surprising but still alarming" are the findings of the 6th IPCC report, released August 9th, 2021. The destructive trajectories of increasing CO_2, air and sea temperatures, ocean acidification, droughts and flooding will continue. However, we still have a small window of time left to take actions that reduce CO_2 that will reduce these impacts.

"Human-induced climate change is already affecting many weather and climate extremes in every region across the globe. Evidence of observed changes in extremes such as heatwaves, heavy precipitation, droughts, and tropical cyclones, and, in particular, their attribution to human influence, has strengthened since the Fifth Assessment Report (AR5)."

We need to reduce emissions, move to zero-carbon energy sources, reduce agriculture-related emissions through improved practices and soil carbon management, reduce meat consumption, and pursue blue carbon restoration to remove carbon in the atmosphere and move it into the biosphere.

The scale and severity of coral bleaching and mortality events have increased in recent decades (Hughes *et al*., 2018), with profound implications for the recovery of coral climate archives from new and existing sites.

Ocean acidification is affecting marine life, especially organisms that build calciferous shells and structures (e.g., coral reefs). Together with less oxygen in upper ocean waters and increasingly widespread oxygen minimum zones and in addition to ocean warming, this poses adaptation challenges for coastal and marine ecosystems and their services, including seafood supply.

A warming ocean can affect marine life (e.g., coral bleaching) and also are among the main contributors to long-term sea level rise (thermal expansion). Marine heatwaves can accentuate the impacts of ocean warming on marine ecosystems. Also, knowing the heat uptake of the ocean helps to better understand the response of the climate system and hence helps to project future warming.

Here are some facts taken from the IPCC North and Central America Report:
https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_North_and_Central_America.pdf

- Relative sea level rise is projected to increase along most coasts (*high confidence*), and are associated with increased coastal flooding and erosion (also in observations). Exceptions include regions with strong coastal land uplift along the south coast of Alaska and Hudson Bay.
- Ocean acidification (along coasts) and marine heatwaves (intensity and duration) are projected to increase (*virtually certain* and *high confidence*, respectively).

- Tropical cyclones (with higher precipitation), severe storms, and dust storms are expected to become more extreme (Caribbean, US Gulf Coast, East Coast, Northern and Southern Central America) (*medium confidence*).
- Temperature change (mean and extremes) in observations in most regions is larger than the global mean and is attributed to human influence. Under all future scenarios and global warming levels, temperatures and extreme high temperatures are expected to continue to increase (*virtually certain*) with larger warming in northern subregions.