

THE CARIBBEAN SCIENCE SERIES

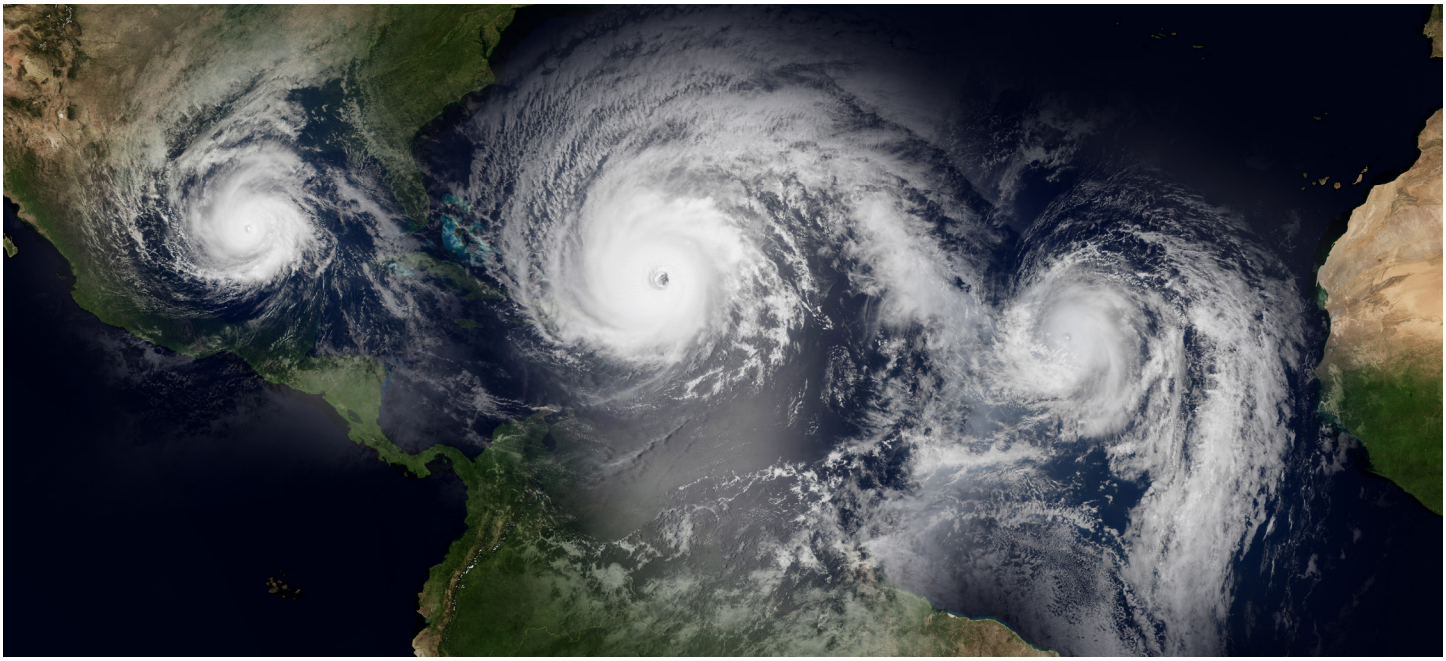
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Caribbean Development Bank

Caribbean Community Climate Change Centre

1.5 is...

...a necessity



Ongoing analysis of the Caribbean's historical climate data is painting a picture of what an approximate 1°C of global warming since pre-industrial times has meant for the region.

One degree has contributed to:

- a warming of both air and ocean surface temperatures in the Caribbean
- an increase in the number of very hot days and nights
- longer and more frequent periods of droughts
- an increase in very heavy rainfall events
- higher sea levels
- more intense hurricanes with stronger winds and lots more rain.

Since the region is very sensitive to climate variations, many things are impacted. These include agriculture and food production, population health, marine and terrestrial ecosystems, tourism, fresh water systems, energy systems, livelihoods, worker and student productivity, coastal infrastructure and ultimately the economies of Caribbean countries.

By running and analyzing the results of computer models, regional scientists are also providing a glimpse of what the future climate of the region may look like at high global warming levels. For example, if the world continues to emit greenhouse gases, at the current rate the world could potentially end up three or four degrees warmer than during pre-industrial times,. The Caribbean will be significantly warmer and drier (especially during times of the year it expects to get rain), face much higher sea levels, and experience more intense hurricanes of the likes of Irma and Maria in 2017. And even if global mean temperatures are constrained to just two degrees above pre-industrial levels, at least two-thirds of the year will be very hot and dry, and the southeastern Caribbean in particular will be significantly drier than at present.

By providing these comparative pictures, the science is making a strong case that the climate change already experienced is a challenge for the Caribbean, and the change to come may likely prove 'too much'. It stands to reason then, that a stringent global target that limits further warming to levels marginally higher than already experienced is more than just a logical option. According to Caribbean science, it is also a necessary one!

...a compromise

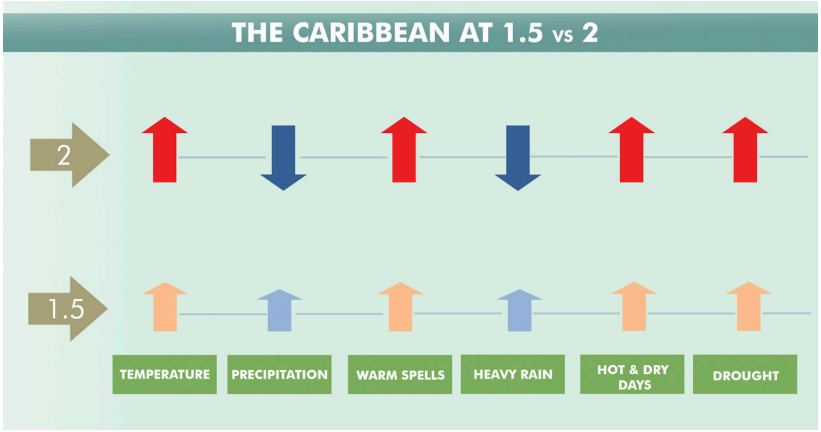
The science being undertaken in the Caribbean is also offering a clearer picture of the region in a world that is 1.5°C warmer. Even if global warming beyond the 1°C already experienced were limited to only a further half a degree, there would still be consequences for the Caribbean region.

The most noticeable differences will be related to mean temperature and temperature extremes. When compared to the climate of the present, the region will be significantly warmer, with many more very hot days in any given year, and longer spells of hot and dry conditions. Although there may also be more instances of moderate to extreme droughts, an increase in the intensity of some rain events may partially offset the lack of rainfall during some times of the year and for some parts of the region. The picture is, however, one of generally harsher climatic conditions in the Caribbean than present when the mean global surface temperature is 1.5°C above pre-industrial levels.

The picture only gets worse when we project what the Caribbean could experience in a world that is 2°C warmer (see figure below). Just another half degree of global warming will result in almost year-round hot conditions, the transition to a mean drier Caribbean compared to the present., and an increase in the frequency of extreme drought occurrences.

The science also suggests that as a result there will be significant impacts on freshwater and energy availability and agricultural yields (among other things). These impacts will be more severe at higher global warming targets (e.g. 2°C), but still very challenging even if warming is limited to 1.5°C.

Even though the Caribbean has argued for 1.5°C as the global limit for further warming, the emerging message from science is that it does not represent a 'safe' climate for the region. This level may only offer a less risky climate state than occurs at even higher global warming levels. 1.5°C is, for the region, the 'compromise climate'.



Some relative changes in Caribbean climate for global warming of 1.5°C vs 2°C above pre-industrial levels. Up/down indicates increase/decrease relative to a 1971-2000 baseline. Size/Shading indicates magnitude/intensity of change.

...a call to action

Even with pledged emissions reductions associated with the National Determined Contributions (NDCs) of the countries which are signatories to the Paris Agreement, the world is well on its ways to global warming in excess of 2°C by the end of the current century.

Science emerging from the Caribbean suggests that for Representative Concentration Pathway 4.5 (which puts the world on a path to attain global mean temperature increase between 2 and 3 °C by the end of the century compared to the pre-industrial period), the world will be 1.5°C warmer world sometime between the late 2020s and the mid 2030s, and could be 2°C warmer approximately mid-century. In other words, even if the world pursued this more optimistic trajectory, there is little time for the Caribbean to prepare for the harsher climate challenges that will emerge at 1.5 or 2°C.

The emerging science message is clear: Urgent global action taken now, and which goes well beyond what has already been committed to, is needed to delay the onset of more adverse Caribbean climate states. This is what is implied in the region's stance that 1.5°C must be an end-of-century global goal. "1.5 to Stay Alive", the central message anchoring the Caribbean's position, is more than a just a catchy slogan. It is a rallying call for the global community to take action now, from those most vulnerable to climate change.

About the Caribbean Science Series

On December 21, 2015 at the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change, 195 nations agreed to hold "the increase in the global average temperature to well below 2 °C above pre-industrial levels and [to pursue] efforts to limit the temperature increase to 1.5 °C" (The Paris Agreement). The Caribbean Community (CARICOM) in alliance with other small island developing states galvanized the world around the idea of a 1.5 target. In late 2016 the Caribbean Development Bank supported an effort by the Caribbean climate science community to determine the significance of a 1.5°C global warming target for the region. Other support came from the Investment Plan for the Caribbean Regional Track of the Pilot Program on Climate Resilience. This science series captures the emerging messages from the Caribbean 1.5 Project.

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