DOMINICAN REPUBLIC

HEALTH & CLIMATE CHANGE

COUNTRY PROFILE 2021

Small Island Developing States Initiative

World Health Organization
United Nations Framework Convention on Climate Change
Pan American Health Organization World Health Organization Americas PAHO

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EXECUTIVE SUMMARY

Despite producing very little greenhouse gas emissions that cause climate change, people living in small island developing States (SIDS) are on the front line of climate change impacts. These countries face a range of acute to long-term risks, including extreme weather events such as floods, droughts and cyclones, increased average temperatures and rising sea levels. Many of these countries already have a high burden of climate-sensitive diseases that may be exacerbated by climate change. Some of the nations at greatest risk are under-resourced and unprotected in the face of escalating climate and pollution threats. In recent years, the voice of the small island nation leaders has become a force in raising the alarm for urgent global action to safeguard populations everywhere, particularly those whose very existence is under threat.

Recognizing the unique and immediate threats faced by small islands, WHO has responded by introducing the WHO Special Initiative on Climate Change and Health in Small Island Developing States (SIDS). The initiative was launched in November 2017 in collaboration with the United Nations Framework Convention on Climate Change (UNFCCC) and the Fijian Presidency of the 23rd Conference of the Parties (COP23) to the UNFCCC, held in Bonn, Germany, with the vision that by 2030 all health systems in SIDS will be resilient to climate variability and climate change. It is clear, however, that, in order to protect the most vulnerable from climate risks and to gain the health co-benefits of mitigation policies, building resilience must happen in parallel with the reduction of carbon emissions by countries around the world.

The WHO Special Initiative on Climate Change and Health in SIDS aims to provide national health authorities in SIDS with the political, technical and financial support required to better understand and address the effects of climate change on health.

A global action plan has been developed by WHO that outlines four pillars of action for achieving the vision of the initiative: empowerment of health leaders to engage nationally and internationally; evidence to build the investment case; implementation to strengthen climate resilience; and resources to facilitate access to climate finance. In October 2018, ministers of health gathered in Grenada to develop a Caribbean Action Plan to outline the implementation of the SIDS initiative locally and to identify national and regional indicators of progress.

As part of the regional action plan, small island nations have committed to developing a WHO UNFCCC health and climate change country profile to present evidence and monitor progress on health and climate change.

This WHO UNFCCC health and climate change country profile for the Dominican Republic provides a summary of available evidence on climate hazards, health vulnerabilities, health impacts and progress to date in health sector efforts to realize a climate-resilient health system.

KEY RECOMMENDATIONS

1 STRENGTHEN THE IMPLEMENTATION OF THE CLIMATE AND HEALTH STRATEGIC ACTION PLAN

Clarify and articulate institutional roles, and incorporate the necessary budget items to carry out the defined activities in national climate change instruments.

2 INCLUDE THE CLIMATE VARIABILITY FACTOR IN INTEGRATED RISK MANAGEMENT AND EARLY WARNING SYSTEMS

Establish integrated risk monitoring that includes a preventive approach to climate variability, which should contribute to the strengthening of the platform for dialogue and decision-making.

3 IMPROVE ACCESS TO INTERNATIONAL FINANCING FOR ADAPTATION TO CLIMATE CHANGE IN THE HEALTH SECTOR

Improve access to the sources of additional financing to help promote policy implementation and expand risk monitoring and early warning systems.

4 IDENTIFY THE CO-BENEFITS OF MITIGATION ACTIONS OF CLIMATE CHANGE IN THE HEALTH SECTOR

Identify the co-benefits of existing mitigation measures in the well-being of mental and physical health of Dominicans.

5 BUILD HEALTH INFRASTRUCTURE RESILIENT TO CLIMATE CHANGE

Prevent the devastating impacts of climate change on access and provision of health services, including a commitment to sustainable low emission practices to promote a recovery environment and mitigate the impacts of climate change.

WHO RESOURCES TO SUPPORT ACTION ON THESE KEY RECOMMENDATIONS:

https://www.who.int/activities/building-capacity-on-climate-change-human-health/toolkit/

BACKGROUND

The Dominican Republic is a developing country, considered middle income, which occupies two-thirds of the island of Hispaniola, between the Caribbean Sea and the Atlantic Ocean. The territory of the Dominican Republic consists of steep mountains and highlands, interspersed with fertile valleys. The climate, typically tropical, presents great diversity due to the orographic characteristics of the territory, spacing from the perhumid of the areas exposed to the trade winds, to the arid– pre-desert of the leeward areas to the main mountain chains. Seasonal variations in rainfall are observed, with severe storms experienced from June to October. The majority of the population lives along the coast *(1)*. The Dominican Republic is one of the most exposed countries in the world to disasters caused by natural phenomena and, as such, is particularly vulnerable to climate change. Natural disasters have had a huge financial impact in the Dominican Republic, since individual hurricanes have cost up to 14% of gross domestic product (GDP) in damages *(2)*.

Climate change is anticipated to increase the risk of extreme weather events, variations in precipitation, sea level rise, destruction of marine habitats, and rising temperatures. For human health, these changes could have significant direct and indirect detrimental effects, among which are: impacts in terms of food and water insecurity, in the generation and supply of electricity, population displacement, death, injuries and mental health due to extreme weather events, loss of livelihoods and the spread of vector-borne and waterborne diseases.

The Government of the Dominican Republic recognizes the country's vulnerability to climate change and is actively working to increase its resilience. In 2015, the government submitted its Nationally Determined Contribution (NDC) to the UNFCCC. Adaptation to climate change is identified as a constitutional priority in its NDC. Health is identified as a key sector to address the greatest vulnerabilities to climate change and it is also recognized that public health is severely affected by extreme weather events, with future climate changes that represent major threats to the population's health *(3)*.

HIGHEST PRIORITY CLIMATE-SENSITIVE HEALTH RISKS FOR DOMINICAN REPUBLIC

Direct effects	
Health impacts of extreme weather events	✔
Heat-related illness	
Indirect effects	
Water security and safety (including waterborne diseases)	✔
Food security and safety (including malnutrition and foodborne diseases)	✔
Vector-borne diseases	✔
Air pollution	✔
Allergies	✔
Diffuse effects	
Mental/psychosocial health	
Noncommunicable diseases	
Mitigation actions to reduce emissions through sustainable procurement	
Mitigation measures to reduce emissions of health facilities	
Mitigation measures by coordinating with other sectors	

Source: Adapted and updated from the PAHO *Health and Climate Country Survey 2017 (4)*

CLIMATE HAZARDS RELEVANT FOR HEALTH

Climate hazard projections for the Dominican Republic

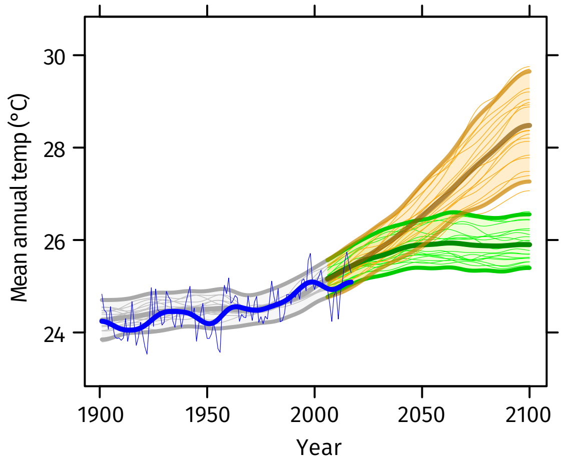
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

The climate model projections given below present climate hazards under a high emissions scenario, Representative Concentration Pathway 8.5 (RCP8.5 – in orange) and a low emissions scenario (RCP2.6 – in green).[a] The text describes the projected changes averaged across about 20 global climate models (thick line). The figures[b] also show each model individually as well as the 90% model range (shaded) as a measure of uncertainty and the annual and smoothed observed record (in blue).[c] In the following text the present-day baseline refers to the 30-year average for 1981–2010 and the end-of-century refers to the 30-year average for 2071–2100.

Modelling uncertainties associated with the relatively coarse spatial scale of the models compared with that of small island States are not explicitly represented. There are also issues associated with the availability and representativeness of observed data for such locations.

Rising temperature

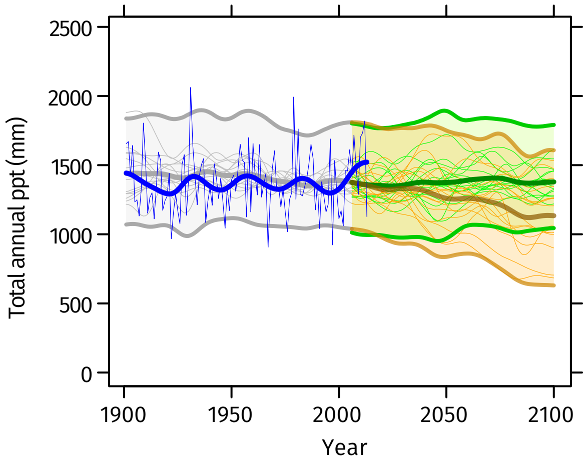
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 3.2°C on average by the end-of-century (i.e. 2071–2100 compared with 1981–2010). If emissions decrease rapidly, the temperature rise is limited to about 1.0°C.

Decrease in total precipitation

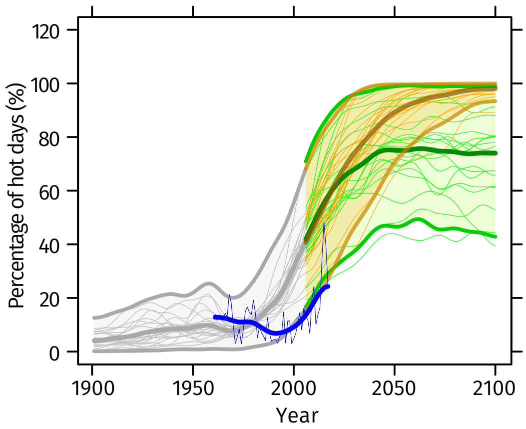
FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to decrease by about 16% on average under a high emissions scenario, although the uncertainty range is large (-43% to +4%). If emissions decrease rapidly, there is little projected change on average, with an uncertainty range of -8% to +9%.

More high temperature extremes

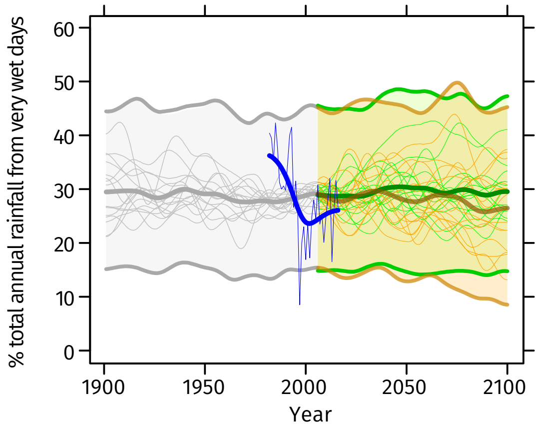
FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days[d] is projected to increase substantially from about 10% of all observed days on average in 1981–2010. Under a high emissions scenario, about 95% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 75% of days on average are 'hot'. Note that the models overestimate the observed increase in hot days (about 25% of days on average in 1981–2010 rather than 10%). Similar increases are seen in hot nights[d] (not shown).

Little change in extreme rainfall

FIGURE 4: Contribution to total annual rainfall from very wet days ('extreme rainfall' and 'flood risk'), 1900–2100

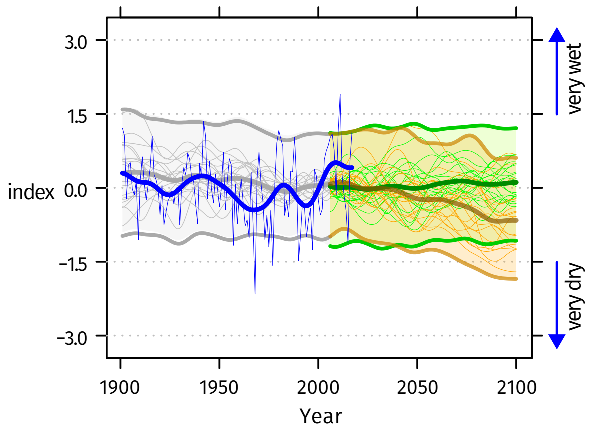


The proportion of total annual rainfall from very wet days[e] (about 30% for 1981–2010) shows little change on average by the end-of-century although the uncertainty range is somewhat larger (about 10% to almost 50% under a high emissions scenario). Total annual rainfall is projected to decrease under a high emissions scenario (see Figure 2).

FIGURE 5: Standardized Precipitation Index ('drought'), 1900–2100

The Standardized Precipitation Index (SPI) is a widely used drought index which expresses rainfall deficits/excesses over timescales ranging from 1 to 36 months (here 12 months, i.e. SPI12).[f] It shows how at the same time extremely dry and extremely wet conditions, relative to the average local conditions, change in frequency and/or intensity.

Under a high emissions scenario, SPI12 values are projected to decrease to about -0.6 on average by the end of the century (2071–2100), with a number of models indicating substantially larger decreases and hence more frequent and/or intense drought. Year-to-year variability remains large with wet episodes continuing to occur into the future.



NOTES

[a] Model projections are from CMIP5 for RCP8.5 (high emissions) and RCP2.6 (low emissions). Model anomalies are added to the historical mean and smoothed.

[b] Observed historical record of mean temperature and total precipitation is from CRU-TSv3.26. Observed historical records of extremes are from JRA55 for temperature and from GPCC-FDD for precipitation.

[c] Analysis by the Climatic Research Unit, University of East Anglia, 2018.

[d] A 'hot day' ('hot night') is a day when maximum (minimum) temperature exceeds the 90th percentile threshold for that time of the year.

[e] The proportion (%) of annual rainfall totals that falls during very wet days, defined as days that are at least as wet as the historically 5% wettest of all days.

[f] SPI is unitless but can be used to categorize different severities of drought(wet): above +2.0 extremely wet; +2.0 to +1.5 severely wet; +1.5 to +1.0 moderately wet; +1.0 to +0.5 slightly wet; +0.5 to -0.5 near normal conditions; -0.5 to -1.0 slight drought; -1.0 to -1.5 moderate drought; -1.5 to -2.0 severe drought; below -2.0 extreme drought.

Future rainfall projections at a subnational level

Future climate scenarios based on historical climate data for the Dominican Republic provided by the National Meteorological Office (ONAMET) and analysed by experts from the Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC), concluded :

- The conditions of total annual precipitation by 2050 may decrease by 15% on average throughout the national territory, aggravating the decrease to values of 17% by 2070, compared to the average of the baseline 1950–2000.[a]
- The southern and western regions of the country will be the most affected by the decrease in rainfall by 2050 and 2070, while the eastern and northern regions could even show even small positive changes.[b]
- The total monthly precipitation during the dry season may decrease drastically by 2050 and 2070.[c]
- The beginning of the rainy season in May and June could present a sudden increase in the total accumulated rainfall.[d]

The period of relative droughts between the months of July–August could be more intense.