DOMINICA

HEALTH & CLIMATE CHANGE

COUNTRY PROFILE 2020

Small Island Developing States Initiative

World Health Organization

United Nations Framework Convention on Climate Change

Pan American Health Organization
World Health Organization
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, the World Health Organization (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 Commonwealth of Dominica 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 DEVELOP AND IMPLEMENT A HEALTH AND CLIMATE CHANGE STRATEGY/ PLAN FOR DOMINICA

Develop a national health and climate change plan, including a Health National Adaptation Plan (H-NAP), ensuring that adaptation priorities are specified, health co-benefits from mitigation and adaptation measures are considered, necessary budget requirements are allocated and regular monitoring and review of progress will support its full implementation.

2 STRENGTHEN INTEGRATED RISK SURVEILLANCE AND EARLY WARNING SYSTEMS

Expand upon existing health monitoring and surveillance systems, ensuring meteorological information is integrated. Dominica is expected to be affected by a range of health threats due to climate change, including heat stress, nutrition challenges, and mental health and well-being issues, which should be added to existing risk surveillance and early warning systems. The system should have the capacity to measure environmental risk. The purpose will be to develop a comprehensive monitoring and surveillance system, linking climate with health information, permitting early warning and tailored responses to health outcomes of climate change and their environmental determinants. Strengthening of environmental risk measurement will also assist in diagnosis and medical treatment.

3 ADDRESS BARRIERS TO ACCESSING INTERNATIONAL CLIMATE CHANGE FINANCE TO SUPPORT HEALTH ADAPTATION

No international funding is currently being accessed to aid with health and climate change initiatives. Additional funding would help to further the development and implementation of policies and to expand risk surveillance and early warning systems.

4 BUILD CLIMATE-RESILIENT HEALTH CARE FACILITIES

Measures can be taken to prevent the potentially devastating impacts of climate change on health service provision, including: conducting hazard assessments; climate-informed planning and costing; strengthening structural safety; climate-resilient storage of medications; contingency planning and back-up systems for essential services (electricity, heating, cooling, ventilation, water supply, sanitation services, waste management and communications); strengthening transport routes and systems; and developing staff capacity to address climate-related risks in communities surrounding health care facilities. A commitment towards low-emission, sustainable practices to improve system stability, promote a healing environment and to mitigate climate change impacts can also be taken.

5 HEALTH WORKFORCE DEVELOPMENT

Community resilience can be enhanced by involving them actively in the design of health care facilities and services and, by strengthening their capacity for health care responses. Dominica State College and other national, regional and international educational institutions and technical support agencies should develop capacity in areas such as surveillance and reporting of climate-sensitive health conditions; computerization and dissemination of surveillance, monitoring and evaluation data; sampling and testing of environmental determinants of health; and environmental impact assessment and psychological support following disasters.

WHO RESOURCES TO SUPPORT ACTION ON THESE KEY RECOMMENDATIONS:
https://www.who.int/activities/building-capacity-on-climate-change-human-health/toolkit/

BACKGROUND

Dominica is a volcanic island located between the Caribbean Sea and Atlantic Ocean. It has a mountainous terrain, with 90% of Dominica's population of approximately 71 000 people living along the shore *(1–3)*. Dominica's natural park system protects much of the island's biodiversity and rainforests, and promotes eco-tourism. The country is colloquially known as the Nature Island of the Caribbean. Rain-fed agriculture, particularly banana, citrus and coconut production, is a significant proportion of Dominica's income, accounting for 17% of gross domestic product (GDP) and 14% of employment *(2,3)*. However, despite the fertility of the soil, much of Dominica's food consumption comes from imports, creating challenges to food security.

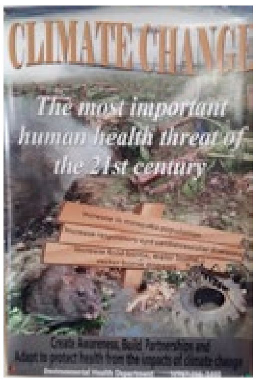
Climate change is projected to result in increased temperatures, rising sea levels, changing precipitation patterns, and more extreme weather events. Dominica is particularly vulnerable to climate change because so much of the population lives along the coast and the country's income is dependent upon agriculture and tourism. Threats to the health of the population include heat stress, food insecurity, vector-borne diseases, salt intrusion of fresh water aquifers, death and injury, and damage to environmental determinants of health from extreme weather events, and loss of marine and terrestrial habitats.

The Government of Dominica is committed to sustainability and established the Environmental Coordinating Unit in 1999. Dominica's nationally determined contribution (NDC) recognizes the climate risks posed to human health, especially via extreme weather events. The implementation of climate change policies is the joint responsibility of the Ministries of Health and Social Services, and Environment, providing excellent opportunities for maximizing health co-benefits of mitigation and health adaptation actions *(4)*.

HIGHEST PRIORITY CLIMATE-SENSITIVE HEALTH RISKS FOR DOMINICA

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 (5).*



Poster depicting climate and health links, by the Environmental Health Department, Dominica. This poster from the Dominica Ministry of Health and Social Services echoes the statement by the World Health Organization prior to the United Nations Climate Change Conference (COP-21) in Paris in December 2015, "Climate change is the greatest threat to global health in the 21st century." *(6)*

Photo credit: Dominica Ministry of Health and Social Services, 2018 *(7)*

CLIMATE HAZARDS RELEVANT FOR HEALTH

Climate hazard projections for Dominica

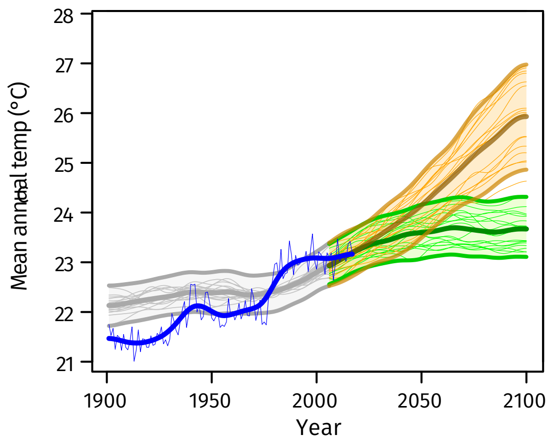
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

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

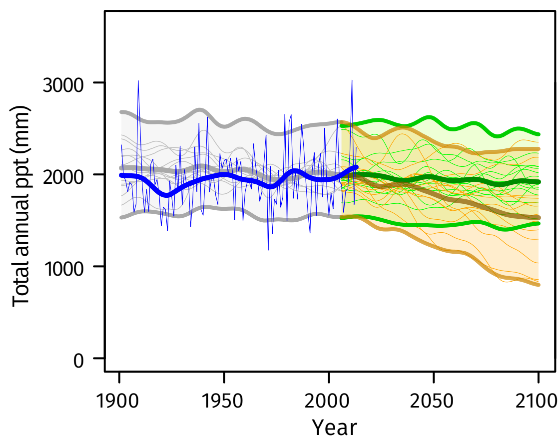
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 2.9°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 0.9°C.

Decreasing total precipitation

FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to decrease by about 20% on average under a high emissions scenario, although the uncertainty range is large (-50% to +6%). If emissions decrease rapidly there is little projected change on average: a decrease of about 4% with an uncertainty range of -15% to +8%.

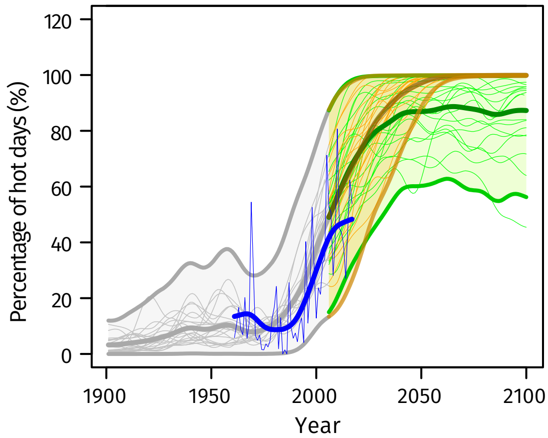
NOTES

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

More high temperature extremes

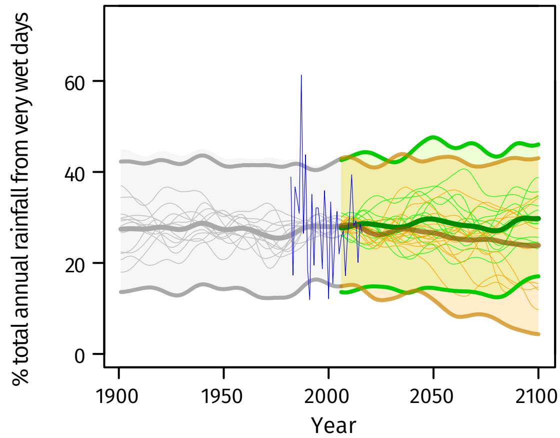
FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days[d] is projected to increase substantially from about 25% of all observed days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, almost 100% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 85% of days on average are 'hot'. Note that the models tend to overestimate the observed increase in hot days (about 30% of days on average in 1981–2010 rather than 25%). Similar increases are seen in hot nights[d] (not shown).

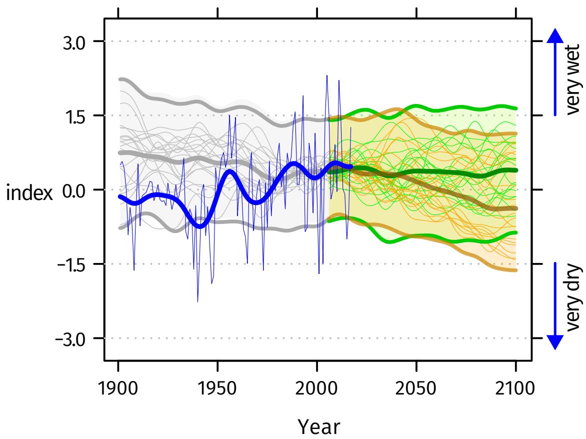
Little change in extreme rainfall

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



The proportion of total annual rainfall from very wet days[e] (about 28% for 1981–2010) could decrease a little by the end-of-century (to around 25% on average with an uncertainty range of about 5% to 40%), with little change if emissions decrease rapidly. Total annual rainfall is projected to decrease (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). Under a high emissions scenario, SPI12 values are projected to decrease to about -0.3 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.[f]

Dominica has already experienced severe drought conditions. The 2010 drought led to: loss of 18% of GDP and 27% of employment; 43% drop in banana exports in the first 11 weeks of 2010; 160 fires in the first quarter of 2010; and damage to 23 000 hectares of agricultural land *(8)*.

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

[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): +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.

Tropical cyclones

Hurricanes and tropical storms have repeatedly set back economic development in Dominica, notably Hurricane David in 1979, in which around 75% of the population was rendered homeless *(9)*. Particularly damaging are events associated with excessive or prolonged rainfall, which provokes flooding and landslide activity. Within the past four years there have been two major tropical cyclones with devastating impacts on human development, the health system, the economy and infrastructure: Tropical Storm Erica (27 August, 2015) and Hurricane Maria (18 September, 2017). The following table shows that the damage caused by Hurricane Maria cost more than double the annual GDP of the country. The figures on mortality account only for immediate deaths from injury or drowning; total mortality resulting from Hurricane Maria is likely to be higher if deaths resulting from reduced access to health care and sanitation are taken into account *(10)*.

TABLE 1: Mortality, displacement and impact on GDP of Tropical Storm Erika (2015) and Hurricane Maria (2017) in Dominica

Event	Dead	Homeless/ displaced	Losses as percentage of GDP
Tropical Storm Erika	11	574	90%
Hurricane Maria	27	1862	226%

Sources: Government of Dominica, 2017 and 2015 *(11,12)*.

Photo credit: Tomás Ayuso/Irin. Impact of Hurricane Maria flood waters on a house In Dominica, September 2017.

FIGURE 6: Wind gusts of Hurricane Maria as it passed over Dominica