GUYANA

HEALTH & CLIMATE CHANGE

COUNTRY PROFILE 2020

Small Island Developing States Initiative

World Health Organization

United Nations Framework Convention on Climate Change

PAHO

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“Strengthening health systems resilience is a high priority; act now.”

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 Guyana 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 INSTITUTIONALIZE CLIMATE CHANGE IN THE MINISTRY OF HEALTH AND MEDICAL SERVICES ORGANIZATIONAL STRUCTURE

Create a division within the Ministry of Health and Medical Services with existing supportive legislation to include climate change and health as a core function, to oversee the implementation of the Solomon Islands National Climate Change and Health Adaptation Plan 2011 and to strengthen the weak collaboration within the health sector and with other sectors. Relevant climate change and health activities to be streamlined into respective department's annual operational plan where relevant.

2 COMPLETE AND IMPLEMENT A HEALTH AND CLIMATE CHANGE STRATEGY/PLAN FOR GUYANA

Complete the development and implementation of a national health and climate change plan in alignment with the Guyana National Climate Change Policy and Action Plan (2019) and National Adaptation Plan (2019), 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.

3 STRENGTHEN INTEGRATED RISK SURVEILLANCE AND EARLY WARNING SYSTEMS

Develop systems that facilitate collection of data on climate-sensitive diseases and utilize meteorological information to inform early warning systems. Guyana is expected to be affected by a range of health threats due to climate change, including thermal stress, vector-borne, waterborne and foodborne diseases, and mental health and well-being issues, which should also be captured by risk surveillance and early warning systems.

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

Identify and address the main barriers (lack of connection by health actors with climate change processes and a lack of capacity to prepare country proposals) in an effort to access international climate change finance to support adaptation in the health sector.

5 BUILD CLIMATE-RESILIENT HEALTH CARE FACILITIES

Implement measures to prevent the potentially devastating impacts of climate change on health service provision, including the following: conducting hazard assessments, climate-informed planning and costing, strengthening structural safety, contingency planning for essential systems (electricity, heating, cooling, ventilation, water supply, sanitation services, waste management and communications). Additionally, promote and support low-emission, sustainable practices to improve system stability, promote a healing environment and to mitigate climate change impacts in keeping with the strategic objective of the Guyana Green State Development Strategy.

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

BACKGROUND

Guyana, the only English-speaking country in the north eastern corner of the South American continent, has four distinct geographical areas, including the low coastal belt that is 1 metre to 1.5 metre below mean high tide level *(1)*.

Temperatures in Guyana vary geographically with high altitude regions experiencing cooler temperatures than the coastal, lowland, and savannah zones. Mean air temperatures in the upland regions and the interior (west) side of the country are between 20°C to 23°C and from 25°C to 27.5°C across the rest of the country *(1)*.

Guyana's precipitation pattern is influenced primarily by the seasonal shift of the Inter-Tropical Convergence Zone (ITCZ), however, on an inter-annual and decadal basis, the country experiences the El-Niño Southern Oscillation (ENSO) effects. Coastal areas are dominated by a 'tropical wet' marine climate where mean annual precipitation is greater than 2000 mm/year, while the savannah experiences mostly a drier 'tropical wet-dry' climate with mean precipitation of 1400–1800 mm/year *(2)*.

Guyana is vulnerable to climate change and already experiences severe floods and droughts. Other impacts include sea level rise, changing precipitation patterns, increased temperatures, and extreme weather events that pose risks to human health, through the spread of vector-borne diseases, foodborne and waterborne diseases, food and economic insecurity, and saltwater intrusion of aquifers.

The Guyana Government has demonstrated unequivocal commitment to global efforts in climate change mitigation and adaptation. Notable initiatives include the Low Carbon Development Strategy in 2009 *(3)*, the Green State Development Strategy (2017), the Guyana Climate Change Policy and Action Plan (Draft) 2019 *(4)*, and the National Adaptation Plan (Draft, 2019) – all of which will provide the point of reference for Guyana to build resilience to climate change, adapt to the health effects of climate change, and maximize the health co-benefits available through climate mitigation and adaptation.

HIGHEST PRIORITY CLIMATE-SENSITIVE HEALTH RISKS FOR GUYANA

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).*

CLIMATE HAZARDS RELEVANT FOR HEALTH

Climate hazard projections for Guyana

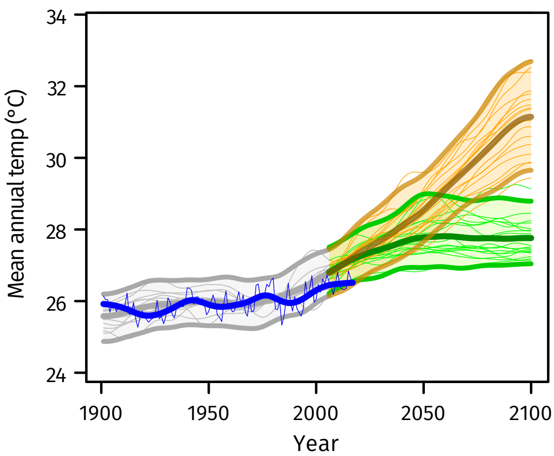
Country-specific projections are outlined up to the year 2100 for climate hazards under a 'business as usual' high emissions scenario compared to projections under a 'two-degree' scenario with rapidly decreasing global emissions (see Figures 1–5).

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

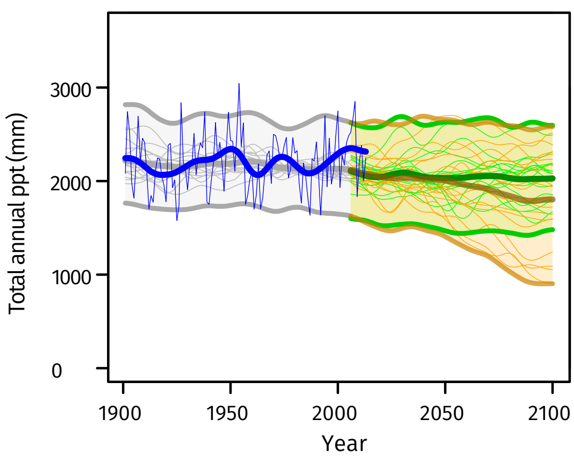
FIGURE 1: Mean annual temperature, 1900–2100



Under a high emissions scenario, the mean annual temperature is projected to rise by about 4.1°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 1.3°C.

Decreasing total precipitation

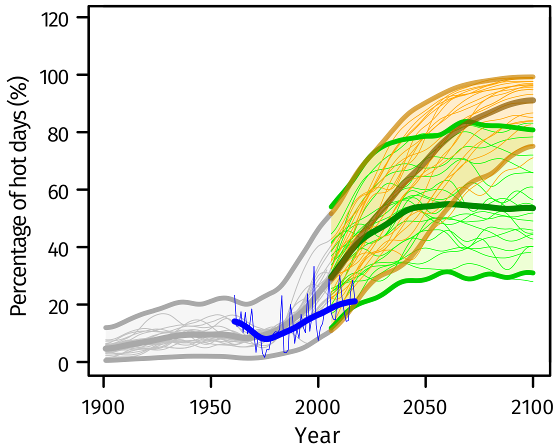
FIGURE 2: Total annual precipitation, 1900–2100



Total annual precipitation is projected to decrease by about 15% on average under a high emissions scenario, although the uncertainty range is large (-48% to +9%). If emissions decrease rapidly there is little projected change on average: with a decrease of 4% and an uncertainty range of -18% to +5%.

More high temperature extremes

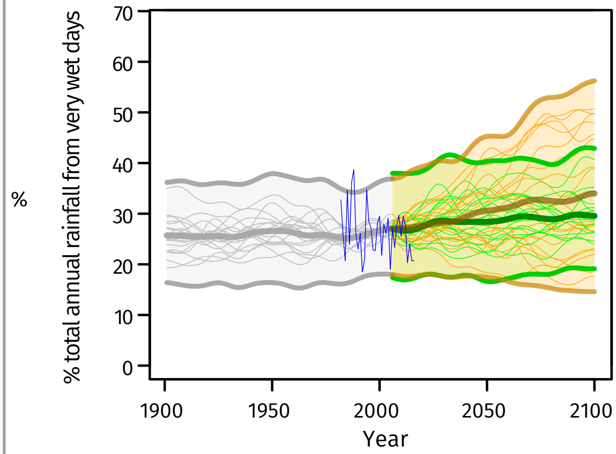
FIGURE 3: Percentage of hot days ('heat stress'), 1900–2100



The percentage of hot days[d] is projected to increase substantially from about 15% of all observed days on average in 1981–2010 (10% in 1961–1990). Under a high emissions scenario, almost 90% of days on average are defined as 'hot' by the end-of-century. If emissions decrease rapidly, about 55% of days on average are 'hot'. Note that the models overestimate the observed increase in hot days (about 20% on average in 1981–2010 rather than 15%). Similar increases are seen in hot nights[d] (not shown).

Small increase in extreme rainfall

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

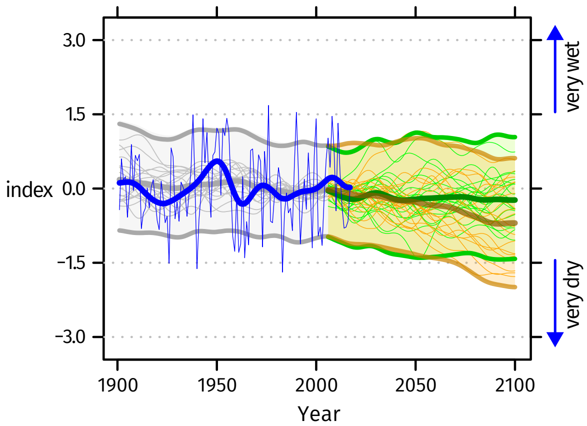


Under a high emissions scenario, the proportion of total annual rainfall from very wet days[e] (about 26% for 1981–2010) could increase by the end-of-century (to around 33% on average with an uncertainty range of about 15% to 55%), with less change if emissions decrease rapidly. Total annual rainfall 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).[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] Analysis by the Climatic Research Unit, University of East Anglia, 2018.

[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.

Sea level rise

From 1951 to 1979, sea level off Guyana rose at a rate some five times the global average (0.4 inch, or 10.2 millimetres per year), around six times the twentieth century average or three times the 1993 to 2009 annual average *(6)*.

Guyana is particularly vulnerable to sea level rise stemming from climate change, plus regional shifts in the height of the sea. The Guyana initial National Communication to the UNFCCC (2002) states that the mean sea level along the Atlantic coast of Guyana is projected to rise by about 40 cm by the end of the twenty-first century, that is, at a rate 2–4 mm per year. Moreover, the contribution of meltwater from land ice would increase the rate of sea level to approximately 60 cm by the end of the next century *(6)*.

According to the Vulnerability and Adaptation Assessment Report (draft, Office of Climate Change, 2019): calibration and assembly of global estimation of sea level rise carried out by a continuous series of satellite altimeter sea level measurements from the T/P, Jason-1, and Jason-2 reveal that sea level has been rising over the past 17 years at a mean rate of 3.4 ± 0.4 mm per year after correction for glacial isostatic adjustment (GIA) *(7)*. The report further states that there is considerable interannual variation due to ENSO processes, so the rate average over any individual four-year period can be significantly different.

1.7 mm/year (±1.3)

Average change in Caribbean sea level over the period 1993–2010 *(8)*

with substantial spatial variability across the region

0.5–0.6 m

Further rise in the Caribbean by the end of the century *(9)*[a]

with variation amongst models and emissions scenarios

Impacts of sea level rise include

- Coastal erosion
- Ecosystem disruption
- Higher storm surges
- Population displacement
- Water contamination and disruption
- Mental health