



Climate Change Information Fact Sheet

HAITI

<i>Definitions</i>
Ensemble: A collection of model simulations characterizing a climate prediction or projection. [IPCC AR5]
Representative Concentration Pathway (RCP): Scenarios that include time series of emissions and concentrations of the full suite of greenhouse gases and aerosols and chemically active gases, as well as land use/land cover. RCPs usually refer to the portion of the concentration pathway extending up to 2100, for which Integrated Assessment Models produced corresponding emission scenarios. [IPCC AR5]
RCP8.5: Generally, high emissions. One high pathway for which radiative forcing reaches $>8.5 \text{ W m}^{-2}$ by 2100 and continues to rise for some amount of time. [IPCC AR5]
RCP4.5: Generally, moderate emissions. One of two intermediate stabilization pathways in which radiative forcing is stabilized at approximately 4.5 W m^{-2} after 2100. [IPCC AR5]

CLIMATE IMPACTS AND VULNERABILITIES

TEMPERATURE

Current (based on historical climate conditions and recent trends, generally over the past few decades)

Daily temperatures typically range between 19°C and 28°C in the winter and 23°C to 33°C during the summer months [GFDRR]. Since 1960, mean temperatures have increased by 0.45°C, with warming occurring most rapidly in the warmest months (June-November). The frequency of hot days and hot nights increased by 63 and 48 days per year, respectively, between 1960 and 2003. The frequency of cold days and cold nights has decreased steadily since 1960. Mean annual rainfall has decreased by 5 mm per month per decade since 1960.

Future: 2030 (generally 2020-2049)

The mean annual temperature in the country is projected to increase by 0.52°C, 0.76°C, and 1.14°C for the 10th, 50th, and 90th percentiles respectively for the RCP4.5 model ensemble runs by 2030 [CCKP]. Projections under RCP8.5 are 0.64°C, 0.87°C, and 1.24°C for the 10th, 50th, and 90th percentiles. Maximum temperatures are projected to increase by 0.69°C to 0.83°C, and minimum temperatures by 0.75°C and 0.86°C for the RCP4.5 and RCP8.5 median model ensemble.

Future: 2050 (generally 2040-2059)

At mid-century, the 10th, 50th, and 90th percentiles for the RCP4.5 ensemble project mean annual temperature increases in Haiti of 0.78°C, 1.23°C, and 1.71°C, respectively [CCKP]. Similarly, the 10th, 50th, and 90th percentiles for the RCP8.5 ensemble project increases of 1.11°C, 1.58°C, and 2.16°C. Trends of increasing numbers of hot days and nights, and decreasing numbers of cold days and nights, are expected to continue.

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PRECIPITATION AND FLOODING

Current (based on historical climate conditions and recent trends, generally over the past few decades)

Rainfall varies according to the island's varied topography, with the center regions receiving more rainfall than the North and West [GFDRR]. Northern and windward slopes in the mountainous regions receive up to three times more precipitation than the leeward side. Annual precipitation in the mountains averages 1,200 mm, while the annual precipitation in the lowlands is as low as 550 mm. The wet season is long, particularly in the northern and southern regions of the island, with two pronounced peaks occurring between March and November. Floods are the leading factor of vulnerability in Haiti. The country's most populated cities are all nestled in the valleys along the coast. When it rains, the steep, often barren hills that surround them flush rainwater toward the urban areas.

Future: 2030 (generally 2020-2049)

The median ensemble runs for RCP4.5 and 8.5 indicate an average annual rainfall change of -0.1mm/day, by the middle of the 2030s [USGS].

Future: 2050 (generally 2040-2059)

Rainfall projections project decreases in rainfall during June-August, while rainfall projections during the remainder of the year are less certain [GFDRR]. Under RCP4.5 projections, the ensemble median projection for annual rainfall at mid-century is approximately the same as the historical baseline, with small decreases in some months [CCKP]. Under RCP8.5 projections, the ensemble median projection for annual rainfall at mid-century is a decrease (country-wide) between May and November. The total annual projected decrease in precipitation under this scenario is approximately 43 mm.

DROUGHT

Current (based on historical climate conditions and recent trends, generally over the past few decades)

The North-West, Artibonite, North-East, and Central departments frequently experience repeated droughts, brought about by a combination of erratic rainfall patterns coupled with a limited water management infrastructure [GFDRR].

Future: 2030 (generally 2020-2049)

Estimates are highly uncertain and information is not readily available. Consider the exposure to future droughts based on the most extreme past experience.

Future: 2050 (generally 2040-2059)

Projected increases in temperature, coupled with decreases in rainfall during the critical summer months (June-August) are likely to intensify drought conditions in the center of the country [GFDRR]. Rainfall variability is projected to increase through this century; droughts are expected to be more extreme in the dry season while precipitation will be more intense in the wet season [Oxfam]. The departments that are projected to be most at risk of drought in coming decades are the North-West, North-East, Artibonite, and West [GFDRR].

SEA LEVEL RISE AND STORM SURGE

Current (based on historical climate conditions and recent trends, generally over the past few decades)

The mean rate of sea level rise in the Caribbean region over the last 60 years was similar to the global average of approximately 1.8 mm/yr [IPCC].

Future: 2030 (generally 2020-2049)

Interpolation of sea level rise estimates for the Caribbean results in a projected increase of between 0.05 and 0.22 m at 2030 in the Caribbean [from GFDRR projections for 2090]. Global sea level could rise by 0.13 meters [RCP4.5] up to 0.4 meters [RCP8.5] by 2030 (from a reference time period of 1971-2010).

Future: 2050 (generally 2040-2059)

Sea level rise is projected to increase between 0.13 and 0.56 m by 2090 in the Caribbean [GFDRR]. In addition to sea level rise, increased storm surges are expected for Haiti over coming decades, exacerbating the flooding and erosion problems in coastal departments that include the South and South-East [Oxfam].

WINDS AND OTHER STORMS

Current (based on historical climate conditions and recent trends, generally over the past few decades)

Hurricanes and tropical storms routinely hit the small island nation and in particular, the West and South Departments lie in the path of the strongest hurricanes [GDFRR]. During hurricane season, as much as 40 mm of rain falls per day, causing rapid runoff and flooding [Oxfam]. In Bokozel, during hurricanes and other tropical storms, sea water backs up the Artibonite River, frequently causing the river to overtop its banks.

Future: 2030 (generally 2020-2049)

Estimates are highly uncertain and information is not readily available. Consider future winds and storms based on the most extreme past experience.

Future: 2050 (generally 2040-2059)

The future intensity and frequency of hurricanes in the Atlantic are still a subject of research, but according to the US Climate Change Science Program, increases in hurricane rainfall and wind speeds are likely, with simulations showing that for each 1°C increase in sea surface temperatures, core rainfall may increase by 6-17% and surface wind speeds of the strongest hurricanes will increase between 1-8%, with associated increases in storm surge levels [GDFRR]. Haiti's South, Grand Anse, South-East, and West departments are particularly prone to risk from increased hurricane frequency and intensity as they are statistically more likely to be in the direct paths of hurricanes and other tropical storms [Oxfam].

Climate information sources	CCKP = World Bank Climate Change Knowledge Portal
	CW = Climate Wizard
	GDFRR = GDFRR, 2011. Vulnerability, Risk Reduction, and Adaptation to Climate Change: Haiti. Climate Risk and Adaptation Country Profile
	IPCC = IPCC WG II, 2014. Climate Change 2014: Impacts, Adaptation, and Vulnerability. Chapter 29 (Small Islands)
	Oxfam = Cohen, Marc and Bhawan Singh, 2014. Climate Change Resilience: The Case of Haiti. Oxfam Research Reports
	USGS = Alder, J.R. and Hostetler, S.W., 2013. CMIP5 Global Climate Change Viewer. US Geological Survey.