



Environment and
Climate Change Canada

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Changement climatique Canada

Country Profile: Antigua and Barbuda

1. PHYSICAL GEOGRAPHY

Antigua and Barbuda is a two island state located in the eastern Caribbean, approximately 250 miles Southeast of Puerto Rico and is the most central of the Leeward Chain of Islands (UNFCCC 2009). Antigua is centred on 17° 10' N Latitude and 61° 55'W Longitude, while the corresponding location for Barbuda is 17° 35' and 61°48'. Antigua is known for its 365 sandy beaches, is roughly round in shape and has a land area of 280 square kilometers (108 square miles), which ranks it as the largest of the Anglophone Leeward Islands. The land area of Barbuda is 160 square kilometres (62 square miles) (UNFCCC 2009, <http://www.antiguamet.com/>). The highest point in Antigua, Mt. Obama at 402 m (1,319 ft), is located in the southwest where the steepest slopes can be found. Antigua has three distinct geographic zones (UNFCCC 2009):

- Zone 1: Mountainous and volcanic (southwest)
- Zone 2: Flat Central Plains
- Zone 3: Rolling Limestone Hills and Valleys

By contrast, Barbuda is relatively flat with some low lying hills rising to just under 40m (125 ft), most slopes are under 2°. This island is dominated by coralline limestone rocks (UNFCCC 2009).



Figure 1 Map of Antigua and Barbuda. (Credit: Wiki Commons)

Temperatures across Antigua and Barbuda are fairly constant throughout the year averaging about 27°C, at a mean annual relative humidity of 77% (UNDP 2010, www.antiguamet.com). In Antigua, the wet season spans May to November each year with a mean annual total of 1050 mm in low-lying areas, and somewhat more in the higher hills (the Green Castle station receives about 1350 mm annually on

average) (rcc.cimh.edu.bb). Relatively low rainfall levels as compared to evapotranspiration rates in both islands, combined with mostly sandy soils, means most of the island’s vegetation consists of scrub. The central plain on Antigua is more fertile, thanks to volcanic ash in the soil.

2. CLIMATOLOGY

The Antigua and Barbuda Meteorological Services, is sited at the VC Bird International Airport, the service maintains a network of 15 active stations, 9-automatic weather stations (AWS) and 6- rain gauges. Fourteen of these stations are sited in Antigua and one in Barbuda (see Table 1). Plans are afoot to add a further 10 automatic weather stations (five each in island) and this will bring the total number of stations in the network to 25 stations.

The rainfall and temperature climatology at VC Bird International Airport (1981-2010) are presented in Figure 2, with summary statistics presented in Table 1. As a relatively flat and small island relative to the Windward Islands or Guadeloupe, annual precipitation totals are generally similar to the surrounding Leeward Islands. April and May can in some years be relatively wet, while June tends to be drier. Then rainfall steadily increases from July to October, then decreases in November and December on average. Variability is largest in between September and November, with the 10th percentile being below 50 mm and the 90th percentile above 200 mm. The annual temperature range is between 25.3°C in February and 28.2°C in August.

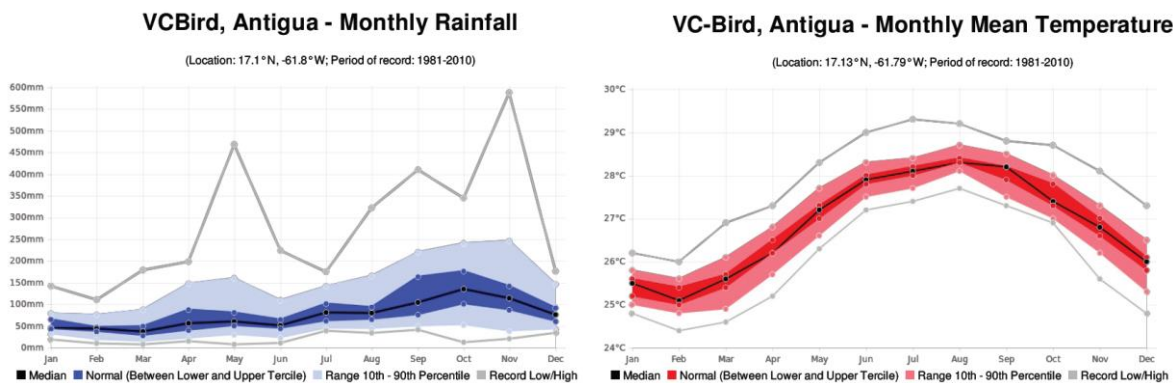


Figure 2 1981-2010 reference climatology of monthly rainfall totals (left) and mean near-surface air temperature (right) at the VC Bird airport station. Source: rcc.cimh.edu.bb (data from Antigua and Barbuda Meteorological Services)

Table 1. Summary statistics of rainfall and temperature for the VC Bird International Airport in Antigua

Station Name	VC Bird International Airport (Year/Month of Occurrence)
Mean Annual Rainfall	1041 mm (1971-2015)
Wettest year/Month / three month period	1695.6 mm (1999) / 588 mm (Nov. 1999) / 917.9 mm (Sep. to Nov. 1999)
Driest Year/Month / three month period	504.6 mm (2015) / 5.8 mm (Jun. 1974) / 51.1 mm (Mar. to May 2003)
Mean Temperature	26.8 °C (1971-2015)
Warmest Year/Month / three month period	27.8 °C (1998) / 29.3°C (Jul. 1998) / 29.2 °C (Jun. to Aug. 1998)
Coldest Year/Month / three month period	26.1 °C (1974) / 23.8°C (Jan. 1976) / 23.9 °C (Jan. to Mar. 1976)

Source: <http://rcc.cimh.edu.bb/>

3. SOCIO-ECONOMIC LANDSCAPE

Antigua and Barbuda has a combined population of 90,900 (<http://data.worldbank.org/country/antigua-and-barbuda>) The UNDP (2014) Human Development Index (HDI) for the twin island state was 0.783-which put the country in the high HDI category and positions it at 58 out of 188 countries and territories (UNDP 2015). The (2014) GDP was estimated by the World Bank at USD 1.221 billion (<http://data.worldbank.org/country/antigua-and-barbuda>). Tourism and Government Services are the key income earning and employment sectors though recent focus has been placed on economic diversification by encouraging growth and investment in the transportation, communications, and internet gambling sectors (UNFCCC 2009).

4. KEY NATIONAL STAKEHOLDERS AND THEIR NEEDS

A 2015-2016 survey of user climate information needs in the Caribbean captured responses from 9 sectoral users representing the agriculture, water, disaster risk management, health, tourism, fisheries and environment sectors. There were no responses from the energy sector. Three representatives from the agriculture and tourism sectors participated in stakeholder interviews in 2016, while two stakeholders from the DRM and health sectors participated in focus group discussions convened in May 2016.

Users of climate information in Antigua and Barbuda obtain this from a variety of sources including the National Meteorological and Hydrological Services and the Caribbean Institute for Meteorology and Hydrology. Users reported that climate services are of high value in their organisation’s operations and planning and as such, they routinely try to integrate climate information considerations into their professional decisions to inform day-to-day strategic planning in their organisations.

When asked about potential benefits associated with the use of climate information, one Fisheries user in Antigua and Barbuda reports that the Caribbean Coral Reef Watch helps them “to determine critical reef areas under stress especially when planning for Marine Protected Areas”. Another Tourism user

reports that the “Drought Outlook would help how we can give support to nature based attractions. Precipitation and Temperature Outlooks could help if circulated to hotels so that hotels are able to advise guests, if required. Also, the coral reef information would be useful information to assist in guest choices re: reef visits”.

5. RANGE OF CLIMATE SERVICES

As of November 2015, the Antigua and Barbuda Meteorological Services (A&BMS) classified itself as a Category 2 climate services provider offering a basic range of climate services and products, as well as, climate predictions. The A&BMS reports that it has been delivering climate information for 6 to 10 years.

The socio-economic sectors that benefit from climate services are the agriculture, water, disaster risk management, health, energy and tourism sectors. Specific organisations with which the ABMS interacts¹ are:

- The Antigua Public Utilities Authority;
- The Ministry of Agriculture, Agricultural Extension Division;
- The Central Marketing Corporation;
- The Caribbean Farmers Network;
- The National Office of Disaster Services; and
- The Ministry of Health.

Feedback is routinely collected from users through mediums such as email, a telephone hotline, face-to-face discussions and interviews. The construction sector has been identified as one sector that could potentially benefit from the provision of climate services going forward. Antigua and Barbuda has not yet convened a National Climate Outlook Forum.

The A&BMS recommendations for improving its climate services capability include:

1. An expanded observation network with more Automatic Weather Stations that are as evenly spaced as possible across the islands;
2. An organisational structure with the required staff level to satisfy existing needs, then to further deliver services to users;
3. A strategic plan to deal with the emerging demands of climate services and within which capacity needs would be addressed;
4. Establishment of a climate section or department which would include someone to lead research; and
5. Hosting and sustaining a NCOF.

¹ Information gleaned from participant lists from 6 regional meetings, namely: 1) the 2014 Wet Season CariCOF, May 2014; 2) the 2014 Dry Season CariCOF, November 2014; 3) the 2015 Wet Season CariCOF, May 2015; 4) the 2015 Dry Season CariCOF, November 2015; 5) the Workshop on Enhancing Climate Indices for Sector-specific applications in the Caribbean, 15-19 February, 2016; and 6) the 2016 Wet Season CariCOF, May 2016.

6. REFERENCES

United Nations Framework Convention on Climate Change (UNFCCC). 2009. Antigua and Barbuda's Second National Communication on Climate Change to the UNFCCC.

United Nations Development Programme (UNDP). 2015. Human Development Report 2015. Work for Human Development Briefing note for Countries on the 2015 Human Development Report. Antigua and Barbuda

Web Sites

<http://carogen.cimh.edu.bb/>

<http://rcc.cimh.edu.bb/>

<http://www.antiguamet.com/>

<http://data.worldbank.org/country/antigua-and-barbuda>