

# The SIDS-Caribbean Project

Preparedness to Climate Variability and Global  
Change in Small Island Developing States  
of the Caribbean Region



**World  
Meteorological  
Organization**

Weather • Climate • Water






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Category 4  
Hurricane *Ivan*  
and its 225 km/h  
winds devastated  
the island of Grenada  
in September 2004.  
It also affected Cuba,  
Grand Cayman, Grand  
Bahama, Jamaica and  
other small island  
States of the  
Caribbean.



The principal task of the Caribbean Institute for Meteorology and Hydrology (CIMH) located in Barbados, is training personnel in meteorology and hydrology for the Caribbean area. Many of the forecasters who are currently in charge were trained at the Institute. Courses in radar meteorology are regularly provided. The SIDS-Caribbean Project was based on the CIMH campus.

## Introduction

The availability of reliable information on weather, climate and water produced by the National Meteorological and Hydrological Services is considered crucial by the United Nations global conventions on climate change, ozone depletion and desertification and the Barbados Programme of Action for the Sustainable Development of Small Island Developing States to face natural hazards and support sustainable development. Frequent hurricanes crossing the Caribbean area have caused considerable damage and underscore the region's ecological and societal vulnerability. Caribbean countries are therefore in a vital position to benefit from the development of an early warning system for meteorological and climatological changes affecting a vast area of our planet.

In this context, the Government of Finland pledged to support the Caribbean Small Island Developing States for the installation and upgrading of meteorological equipment and staff training, in line with the Declaration of Barbados by way of a regional project known as the SIDS-Caribbean Project – Preparedness to Climate Variability and Global Change in Small Island Developing States, Caribbean Region.

The Finnish Government and the World Meteorological Organization officially launched the SIDS-Caribbean Project in November 2000. The Project, initially planned to last three years, was based on the campus of the Caribbean Institute for Meteorology and Hydrology in Barbados and included Anguilla, Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Montserrat, Netherlands Antilles and Aruba, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Trinidad and Tobago, and Turks and Caicos Islands.

The aim of the project was to develop better meteorological and climatological knowledge and improve the scientific capabilities to be used as tools for better planning for sustainable development in the Caribbean region. A steering committee and a supervisory board, chaired by the Association of Caribbean States, supplied the guidance.

Completed in 2005, the SIDS-Caribbean Project contributed to the reinforcement of the National Meteorological Services in the region and made it possible to improve the telecommunications of the participating countries.





A group of men, some in light blue uniforms, are gathered around a meteorological station tower. One man is kneeling and working on the base of the tower, while others stand around him, looking on. The tower is a metal structure with various cables and a weather vane at the top. The scene is outdoors on a grassy area with trees and a building in the background.

Developing enhanced meteorological and climatological knowledge and skills in participating countries by improving their capacities, which will benefit the Caribbean region as a whole.



Hurricane *Jeanne* (2004) over the Caribbean, where frequent hurricanes cause considerable damage, underscoring the region's ecological and societal vulnerability.

## Objective and components

The main objective of the SIDS-Caribbean Project is to provide tools for better planning for sustainable development in the Caribbean region by strengthening the National Meteorological Services so that they can provide the information needed for planning purposes at the national and international levels and the necessary expertise that would enable the countries to fulfil their international commitments to agreements such as the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification, the Convention on Biological Diversity and the Vienna Convention for the Protection of the Ozone Layer.

To achieve this objective, the project strategy focused on the following six lines of action:

- Improving the telecommunication system at the national and regional levels;
- Rehabilitating and upgrading the observing network;
- Renovating the regional laboratory for the calibration and maintenance of instruments;
- Upgrading the database management systems;
- Implementing data rescue programmes;
- Providing training activities and awareness-building campaigns.





The SIDS-Caribbean Project expert in telecommunications, Mr Victor Burgess, examines the telecommunications installations at the Anguilla Meteorological Service.

## Improvement of the telecommunication system at the national and regional levels

An inexpensive yet effective telecommunication system utilizing the Emergency Managers Weather Information Network (EMWIN) provided by NOAA (see Figure 1), which broadcasts via the GOES satellite was recently introduced in the eastern Caribbean islands. The network provides these locations with access to weather information for aeronautical and civil purposes. The larger, more developed services have benefited by the upgrading of International Satellite Communications System (ISCS) workstations using the Transmission Control Protocol/Internet Protocol (TCP/IP). In coordination with NOAA for the upgrade of telecommunication systems for RA IV, the workstation and ISCS installations (see Figure 2) were completed in May 2004, connecting the forecast centres of Antigua and Barbuda, Barbados, Cuba, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Lucia, and Trinidad and Tobago. The Caribbean Institute for Meteorology and Hydrology has been operating a receive-only ISCS system for training purposes since 2004.

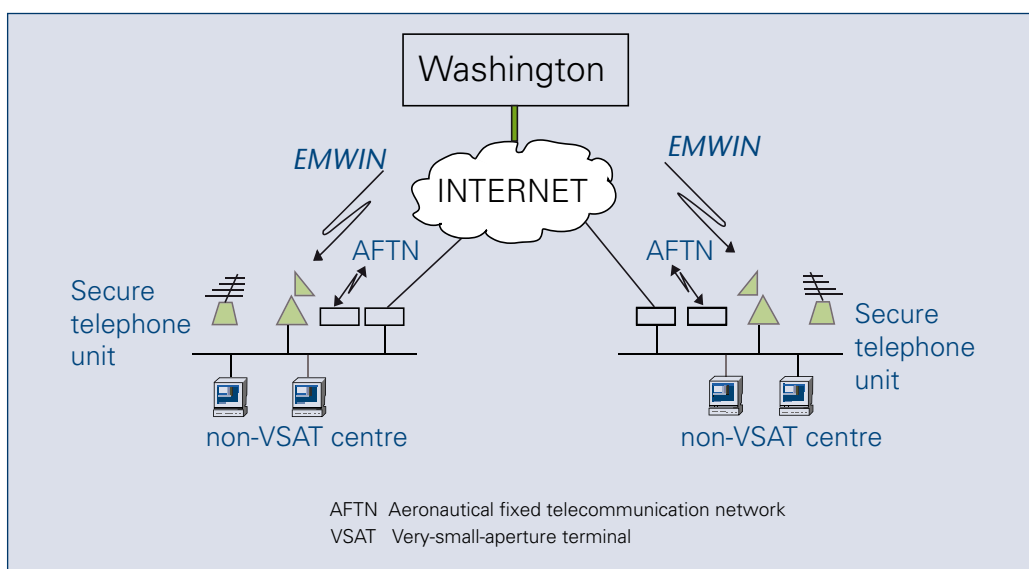


Figure 1. EMWIN solution for the non-VSAT islands: Anguilla, Dominica, Montserrat, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Turks and Caicos Islands





Interconnectivity was one of the outcomes of the SIDS-Caribbean Project.

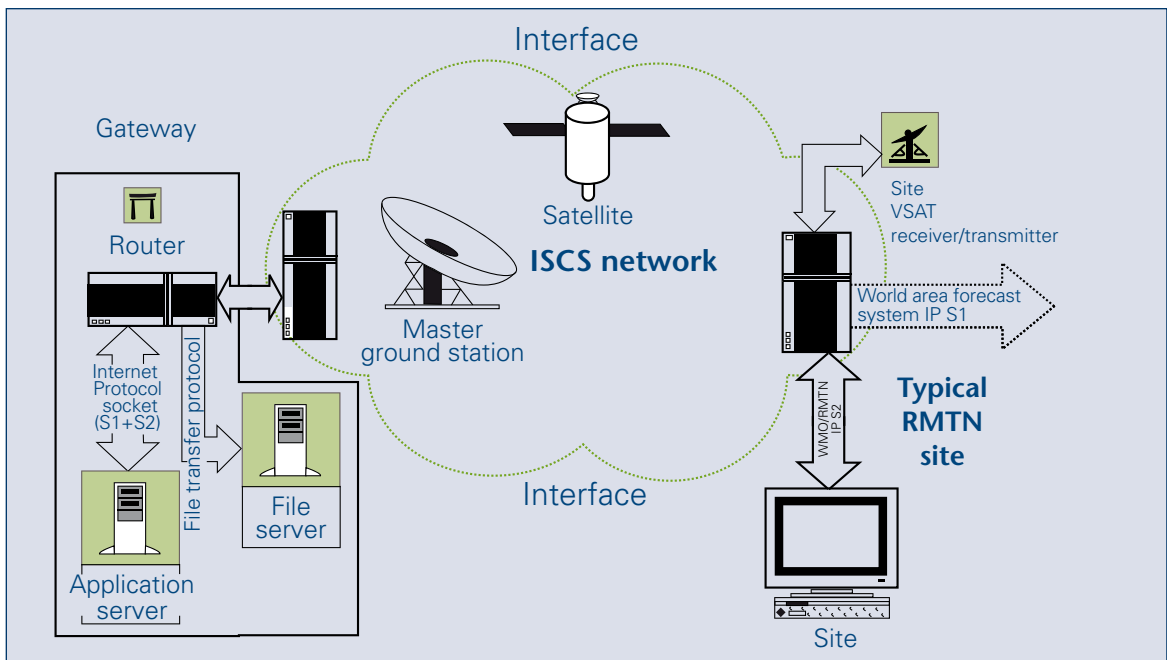


Figure 2. ISCS network for the satellite-based Caribbean broadcast and collection system

## Rehabilitation and upgrading of the existing meteorological networks

Some 29 automatic weather stations were installed in 13 countries with a view to rehabilitating and upgrading observing networks. They are now operational in the participating countries (see map, page 6). In addition, conventional meteorological equipment was delivered in 2004 to 11 countries across the region.





Geographical distribution of 29 automatic weather stations provided by the SIDS-Caribbean Project



A fully equipped calibration chamber was installed at the Caribbean Institute for Meteorology and Hydrology in Barbados.

## Renovation of the regional laboratory in Barbados – instrument calibration and maintenance

Instrument calibration and maintenance is crucial to the work of meteorologists and hydrologists. The SIDS-Caribbean Project supported the renovation of physical facilities at the Caribbean Institute for Meteorology and Hydrology leading to the installation of a state-of-the-art calibration chamber. Training for operators and maintenance technicians was also included in the plan.

## Upgrading of the database management system

A new database management system known as CLIDATA was introduced for use in the Caribbean. The installation and use of the new software and the development of data-sharing computer networks (see Figure 3) were also extended to the region. Lastly, specialized training in the new CLIDATA software for CLIDATA administrators was conducted on CIMH premises.

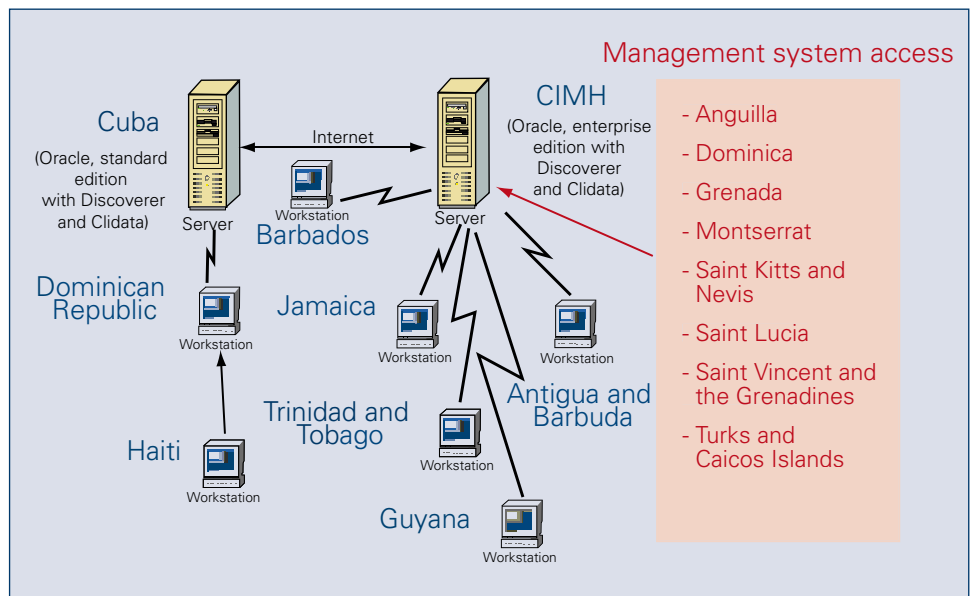


Figure 3. Caribbean database architecture





Historical climate data need to be digitized and fed into computerized databases for efficient analysis and use. The SIDS-Caribbean Project upgraded the climate database system in the region. Mr Radim Tolasz, a database management expert from the Czech Republic, and Mr Selvin Burton of the Caribbean Institute for Meteorology and Hydrology, are installing the CLIDATA database system at the Institute.

## Implementation of data rescue programmes

Data rescue activities were supported by the installation of computers, digital cameras and scanners, along with other ancillary equipment for the capture of data to CD-ROMs. This prevented any further loss of data from paper media pending the final transfer of these data to digital files. To date, 11 centres, including the Caribbean Institute for Meteorology and Hydrology, have been supplied with this equipment. Special support was given to Guyana and the Dominican Republic to accelerate the rescue of historical climate data.



Historical climate data is vital for understanding and predicting future climate change. In many developing countries old data have not been saved properly. The SIDS-Caribbean Project assisted the Caribbean Meteorological Services in rescuing data. This is an example of partly destroyed climatological data that had suffered fire and water damage from Clarendon parish, Jamaica.



Six participants from the Caribbean region attended the Second WMO Conference on Women in Meteorology and Hydrology at WMO Headquarters in Geneva in 2003.

## Training activities and awareness building

Training activities were an important project component with ongoing training programmes being held on many fronts. Fourteen students completed the 18-month training course for operational forecasters at the Caribbean Institute for Meteorology and Hydrology in October 2003. Another three students from the Dominican Republic completed a similar training course at the University of Costa Rica in June 2004. A number of courses were provided to six students from Haiti at the Météo-France facilities in Toulouse, France. Training in the use of statistics in time series analyses was conducted for six regional climatologists, and four students from Trinidad and Tobago received training assistance in basic instruction packages in meteorology at the University of the West Indies. With the installation of the automatic weather stations, 12 technicians received maintenance training at factories, in the field and in workshops. Graduate-level training for faculty replacements at the Caribbean Institute for Meteorology and Hydrology was also provided for two students through the SIDS-Caribbean Project.

In the area of awareness building, a general website was set up for the project. Other websites were established with the assistance of the United States National Weather Service. Additional websites have been further developed for the smaller islands with a view towards increasing the visibility of aeronautical weather services. Six women meteorologists from the Caribbean attended the Second WMO Conference on Women in Meteorology and Hydrology held in Geneva in March 2003 as part of the WMO gender mainstreaming programme. School outreach Internet programmes and training of regional meteorologists in TV/radio/media presentations were also organized. A decision-making seminar for permanent secretaries and managers was held in Barbados in April 2004 on the expected role of the Caribbean Meteorological Services and the need to continue supporting them.





The SIDS-Caribbean Project enabled the installation of 29 automatic weather stations in 13 countries.

## Main achievements

The Small Island Developing States of the Caribbean region received the following benefits from the SIDS-Caribbean Project: stronger National Meteorological Services and the development of an early warning system for extreme weather and climate events in the area. An enhanced meteorological infrastructure in the Caribbean will be an asset in addressing climate variability and climate change issues and will promote public awareness, preparedness and effective mitigation of damages caused by climate events.

As regards the institutional impacts, the Meteorological Services of the Caribbean region are keen to enhance their partnerships with the public and private sectors by offering them meteorological and climate products and information. In order to implement these partnerships, however, they still require additional support and advice in legal, institutional and technical aspects and training. Likely areas for partnerships include tourism, insurance, trade, legal services, and sports and disaster management organizations. Further training and capacity-building for senior managers, for example, are required in order to ensure the sustainability of the Meteorological Services and allow the establishment of partnerships offering better products and services to potential stakeholders in the public and private sectors.

The Project has also produced a number of beneficial societal effects. As a primary sponsor and vehicle for gender mainstreaming in meteorology and hydrology in the region, it has provided support under the training and awareness-building component for Caribbean participants in the aforementioned Conference on Women in Meteorology and Hydrology. Furthermore, the Project demonstrated the importance of a cooperative approach among Caribbean institutions and meteorological personnel beyond language barriers in a common effort aimed at integration for development, capacity-building and the prevention and mitigation of frequent natural hazards affecting the Caribbean, hence improving living conditions in the region.





A man in a white lab coat and glasses is looking at a piece of scientific equipment. The equipment has a label that says "POWER". The background is a dark blue gradient.

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