Submission from the Caribbean Community Climate Change Centre on its Activities in Climate Modelling, Scenarios and Downscaling

Introduction

The Caribbean Community Climate Change Centre (CCCCC) is pleased to present information regarding its efforts in climate modelling, downscaling and the use of climate change scenarios. This is in response to SBSTA's call contained in FCCC/SBSTA/2006/11 paragraph 42 inviting regional organizations to submit information on ways in which they contribute to:

(a) Development, availability and use of climate models, and development of, access to, and use of climate change scenarios, especially those that provide subregional and regional specificity, including data downscaled from general circulation models;

(b) Enhanced capacity and experience with the use of these different models, statistical approaches and outputs, and any available training opportunities; and

(c) Identification and reduction of uncertainties.

Background

The CCCCC is a regional organization established by the Heads of Government of the Caribbean Community in 2004 to coordinate the region's response to climate change. Since that time it has been involved in the development and execution of several regional projects, the provision of technical advice to governments, represented the region at regional and international fora, and coordinated the region in the climate change negotiation process.

The CCCCC is an articulated decentralized Centre that coordinates and utilizes the expertise and facilities in the region to undertake activities on climate change.

Activities in Climate Modelling, Scenarios and Downscaling

In general the scales of the global circulation models (GCMs) are at a resolution so coarse that many of the small island States of the Caribbean do not show up in the

model outputs. Even in the larger islands and mainland States, the range of climatic differences within the countries is not apparent. In response to the call of its Members for higher resolution climate scenarios applicable to the region, the Centre has undertaken several initiatives.

With the kind assistance of the World Bank and the Government of Japan, the Centre facilitated the study tours of two Caribbean scientists to Japan in 2005 to work on the Japanese Earth Simulator. These two meteorologists from the National Meteorological Service of Belize and the University of the West Indies Cave Hill Campus in Barbados undertook training in the use of the Japanese model and returned with high resolution climate outputs for the next 100 years for the entire Caribbean. This data is now housed at the National Meteorological Service of Belize, the University of the West Indies Cave Hill Campus in Barbados and at the headquarters of the CCCCC in Belize. The data is at a resolution of 20 km, covers the entire Caribbean and is available for use by all Members of the Centre.

At the invitation of the CCCCC, the Hadley Centre of the United Kingdom Meteorological Office facilitated a regional training workshop in Belize in 2006 on the installation and the use of the PRECIS model. The CCCCC then established a mechanism to coordinate the efforts of four regional institutions in their modelling efforts utilizing the PRECIS model. The Cuban Institute of Meteorology (INSMET), the University of the West Indies Mona Campus in Jamaica, the University of the West Indies Cave Hill Campus in Barbados, and the Centre in Belize are all now running PRECIS under various emission scenarios. They are utilizing the outputs of both the British Met. Office and the ECHAM GCMs to initialize the PRECIS runs which are being undertaken at 25 and 50 km resolutions. The area of the runs cover the greater Caribbean extending from Guyana in South America in the southeast to the Bahamas in the northwest, and Antigua and Barbuda in the northeast to Belize in the southwest. Several runs have been completed and the outputs are now available to the regional climate change community. The data is being utilized to provide scenarios of possible future climates in the Caribbean and as input into sectoral impact models.

The Centre has just concluded a study to compare the outputs of the completed model runs to quantify uncertainty and to show decision makers and policy makers the range of possible future climate scenarios.

The Centre will continue to facilitate training in the installation and use of the model and expects to convene at least two other national events in 2008 for the Bahamas and Trinidad and Tobago. The Centre will also enhance its capacity to disseminate the outputs of the model runs by expanding its Website capacity and Internet connectivity this year.

The Centre is sharing its experiences with the Central American subregion. Representatives of Central America and Mexico participate in the regional training events and a Memorandum of Understanding (MOU) has been signed between the Centre and CATHALAC in Panama which undertakes similar initiatives for Central America.

The Hadley Centre will soon provide the CCCCC with a new version of the PRECIS model along with the data utilized for the IPCC AR 4 scenarios to initialize 17 different runs each of which have been shown to be feasible outputs. These runs will be undertaken by the four regional institutions. To ensure the sustainability of these modelling initiatives, the collaboration has been formalized by MOUs with INSMET, the Hadley Centre and the University of the West Indies.

Conclusions

The results of the modelling activities are proving to be especially useful to the region as most Members are now undertaking the preparation of their Second National Communications. The results will also prove valuable for the preparation of the IPCC Fifth Assessment Report. The IPCC noted that there was less new scientific data from the Caribbean to prepare the Fourth Assessment Report than there was to prepare the Third Report. The Centre will ensure that this does not reoccur.

The Centre is also anticipating the GCM runs which will be undertaken for the IPCC Fifth Assessment Report to downscale those results for the Caribbean. It would also like the opportunity to downscale the outputs of other GCMs. Finally, the Centre urges the international scientific community to continue its downscaling activities in collaboration with scientists in the region, to improve the regional models, to address problems inherent in the models such as overcoming the extremes of topography in volcanic islands, and to extend these downscaling activities to regional oceanic circulation models.

The Centre would be pleased to share its experiences in downscaling with the SBSTA and at any side events or workshops.