

# Report of Pre-Workshop meeting on the PRECIS Model

Hotel Copacabana

Habana, June 23-24

From June 23-24, 2003, a preparatory meeting was held in Havana, Cuba, as part of the efforts to develop a regional training course on PRECIS model for the Caribbean and Central America countries (see Annex 2 for more information on the objectives of PRECIS training course). The meeting objectives were to coordinate all the actions to develop a Regional PRECIS Training Workshop for the countries in the Caribbean and Central America, and to identify potential actions for future cooperation between countries.

The meeting was opened by Dr. Tomas Gutierrez, General Director of Institute of Meteorology in Cuba, who welcomed the participant and expressed the interest of Cuba in this initiative. Dr. Gutierrez highlight the importance of Regional Climate Models to produce climate change scenarios in a more consistent and collaborative regional basis.

In the introductory session Mr. Abel Centella, from Institute of Meteorology thanked all the participant for attending the meeting and explained some of the background and the efforts to develop a PRECIS training course for the region. Dr. Geoff Jenkins from Hadley Center recognized the interest of the countries in the region in the PRECIS model and thanked Institute of Meteorology in Cuba for hosting the preparatory workshop meeting.

The two days agenda meeting covered the following issues (see the enclosed agenda in Annex 1):

1. General Presentations of Projects: i) Mainstream to Adaptation to Climate Change in the Caribbean and ii) Capacity Building for Stage II Adaptation in Central America, Mexico and Cuba
2. Climate change scenario construction and PRECIS
3. PRECIS training course
4. General discussions on the way ahead for the collaboration

***1. General Presentations of Projects: i) Mainstream to Climate Change in the Caribbean and ii) Adaptation Project for Central America, Mexico and Cuba***

Neville Trotz from Barbados and Emilio Sempris from CATHALAC explained both projects, focusing on the objectives, expected results and time frame. The presenters addressed the issue of climate change scenarios and pointed out the need to have

regional rather than national climate change scenarios. It was very useful to hear about both initiatives and to share views regarding to a joint development of climate change scenarios.

## ***2. Climate change scenario construction and PRECIS***

Geoff Jenkins from Hadley Center made two presentations on the use of PRECIS to generate climate change scenarios and provided examples of the results in other regions. He also explained the issues related with the uncertainties involved in climate scenario construction.

In the same session Ruth Taylor from Hadley Center addressed the items related to the PRECIS system and experimental design. She provided the participants a detailed explanation about the hardware requirements, running time, domain choice, and data output formats.

At the end of the day Ruth Taylor made a demonstration of PRECIS, briefing the more relevant aspects and requirement of the model.

## ***3. PRECIS training course***

The outline of training course in September was shown by the Hadley Center experts. They explain the course would incorporate both, scientific presentations and hand on practical sessions. The participants express training course should dedicate more time to practical exercises sessions. This point will be considered by the trainers and a 60% of practical issues could be potentially possible.

The practical aspects of the training course in September, including participants, facilities and hardware requirements, were also addressed. The participant attending the training are expected to have background on Meteorology or Atmospheric Sciences and may also be acquainted with issues climate change science and impacts/adaptation. A Curriculum Vitae of each participant could help Hadley Center experts design the course according to the needs of the majority of participants.

The participants in the training course should come from Central America (six participants), Caribbean islands (six participants), Mexico (one participant) and Cuba (three participants). The pre-workshop participants agree on the possibility to include two participants from Venezuela and Colombia. However, the later two will be invited, but will not be directly involved in the collaborative work between the CARICOM and CATHALAC projects.

In the case of hardware requirements for the training, Cuba could provide up to 10 PCs with minimum configuration to run the model, while Hadley Center experts could bring 4 laptops for the course. The configuration of the computers will be acceptable for training purposes, but will not meet the requirements for running long numerical experiments. The Institute of Meteorology of Cuba is also expected to provide a DLT drive to assimilate the data for the training.

To run the model for long experiments in a reasonable time, the following minimum configuration is needed: a 3 GHz Pentium-4 or equivalent PC with, 1 Gb RAM, 80Gb Hard Disk and DVD/CD-ROM drive. Also a DLT drive or an extra hard disk will be needed for boundary data conditions. With this configuration each 50km/25km run takes about 5 months/4months.

Regarding the documentation support for the course, Geoff Jenkins informed that Hadley Center experts are finalizing both a Workbook and a Technical Manual, which will be available for the training. This documentation could be accompanied by scientific literature as a contribution for a sound and wide knowledge of the scientific basis of the model.

Finally, in the case of facilities for the training course, the participants expressed their opinion about the place for the training. In this case, Mr. Abel Centella suggested that trainers should provide the organizers in Cuba with information about all the logistic requirements needed to develop a very productive course. This information will be used to guide to choose of the venue and the appropriate conditions.

#### ***4. General discussions on the way ahead for the collaboration***

A provisional work plan was discussed to develop climate change scenarios at the appropriate time for both the CARICOM and CATHALAC projects. In this regards the model domain issue was discussed first.

For model domain there are two options:

1. One 50km grid resolution domain over the whole area and a 25 km grid resolution domain over east Caribbean. The last one is essential to represent the more small island.
2. Two 50km grid resolution domains, one over the West half (including central America and part of Cuba) and other over the East half (including Caribbean islands and also part of Cuba), both overlapping, as well as the eastern grid domain.

The final decision about model domain will be take as part of further discussion experts we will have before the course. This decision will also be dictated by computer resources available to the institutions.

As part of collaboration it is expected that CARICOM and CATHALAC projects will carry out several model experiments and will produce results on time for projects analysis. The targets for availability of scenarios for CARICOM and CATHALAC projects is July 2004 (this do not mean the projects are committed to wait for this results). However both parties expressed a willingness to continue modeling after this date. The timing to achieve the results was discussed and initially agreed by the participants at the meeting (see Annex 3 for more detailed information).

To ensure the collaboration on scenario issue and an appropriate link between the centers, was also agreed that Michael Taylor/Anthony Chen, from UWI, will act as

contact persons for CARICOM modeling and Abel Centella will serve as contact for CATHALAC project and also as a coordinator between both groups.

## **Main Outcomes**

The main outcome of the meeting was the real possibility for collaboration between the two main adaptation projects under execution in the wider Caribbean region. The projects are at a very favorable stage for this cooperation, particularly in the issue of generating regional climate change scenarios.

The initiative to produce common regional climate change scenarios could produce strong benefits for projects results and participants countries in terms of capacity building and research linkages, and pave the way for further collaborations as part of future research initiatives.

The possibility to produce jointly reports about the results can also improve the involvement of countries of the region for the IPCC 4AR. The following were the issues agreed:

1. To develop a training course on PRECIS in September 2003. The Institute of meteorology in Cuba will host the training. Hadley Center will provide the training and the PRECIS model and data. The Center also provide basic documentation on PRECIS and scientific literature.
2. To have a maximum of 20 participants in the training: Up to 6 participants from Central America, a maximum of 6 from Caribbean islands, 1 participant for Mexico and 3 for Cuba. The other 2 participant could come from Venezuela and Colombia, respectively.
3. To develop climate change scenarios for the Greater Caribbean Region, using PRECIS for 50km and 25km resolutions.
4. To carry out the model experiment three centers in CARICOM project (based in Jamaica, Barbados and Trinidad and Tobago) and three centers for CATHALAC project (Cuba, México and Panamá) will work together to achieve the expected results.
5. To ask potential participant to submit their CV before training course.
6. To designate Michael Taylor/Anthony Chen as contact point for CARICOM responsibilities and Abel Centella as CATHALAC project responsible. Abel Centella will also serve as coordinator between both projects for this issue.

# *AGENDA*

## **Pre-Workshop meeting on PRECIS model**

Copacabana Hotel, Havana, June 23-24

### **Objective**

Coordinate all the actions to develop a PRECIS Training Workshop for the countries in the Caribbean and Central America, and to coordinate actions for future and productive cooperation.

### **Monday 23**

09:00 Welcome by Dr. Tomas Gutierrez, General Director of Institute of Meteorology, Cuba.

09:05 Introduction (Abel Centella, Geoff Jenkins and Ruth Taylor).

09:15-10:15 Presentations of MACCC project and Adaptation Project for Central America, Mexico and Cuba (Neville Trotz, Emilio Sempris).

This session is dedicate to explain the projects, its requirements to develop climate change scenarios and to facilitate the coordination between the two projects in this issue. It would be particularly useful to get a clear idea of the interests of each project's partners, the resources (both in terms of time and computing capability) they might be able to contribute, and the timescales on which the data is requires.

We could also discuss the interests of other "end users" of the output data, such as impacts modelers.

10:15-10:30 Break

10:30- 12:30 Climate change scenario construction and PRECIS (Geoff Jenkins and Ruth Taylor)

- Outline and examples in other regions (Geoff Jenkins)
- Uncertainties involved in climate scenario construction (Geoff Jenkins)
- The PRECIS system and experimental design. Issues such as time and hardware requirements, domain choice, data output formats will be addressed.
- Demonstration of PRECIS (Ruth Taylor)

12:30-14:30 Lunch at hotel restaurant

14:30 Visit to Institute of Meteorology of Cuba.

### **Tuesday 24**

9:00–10:30 PRECIS training course (Ruth Taylor)

- Outline of the training course
- practical aspects of the training course in September: numbers expected to attend, facilities & hardware requirements etc

10:30-11:00 Break

11:00-12:30 General discussions on the way ahead for the collaboration (Ruth Taylor and Geoff Jenkins)

- Provisional work plan, which should include coordinating the choice of domain(s), validation of the model, assigning simulations to the project partners, collating and exchanging model data, and
- Organization of follow-up workshops;
- Obtaining observations for validation of the model;

12:30-14:00 Lunch at hotel restaurant

14:00-16:00 General discussions on the way ahead for the collaboration (Cont ...)

- Making scenarios available for use in National Communications. Some information about the UK Climate Impacts Program (UKCIP);
- Hadley Center future plans for PRECIS (running with boundary conditions from other models, possibility of probabilistic use) and how they might be of use to your projects;
- Other "institutional" matters, etc.

## **ANNEX 2. The PRECIS regional climate modelling system**

PRECIS is a climate modelling system developed at the Hadley Centre. Its core component is a regional climate model - a limited area based on HadCM3 - ported to run on a PC, under the Linux operating system

The rest of the "system" consists of a user-friendly interface for setting up a climate simulation over a particular region of interest, as well as software for monitoring and analysing the results of the simulation.

This represents a huge simplification of the standard procedure for setting up and running a limited area climate model.

We intend to supply the PRECIS system to scientists in countries which do not yet have the capacity for climate modelling at this resolution, thereby:

**building capacity** in less developed countries;

**drawing on expertise** in local climate, and

**promoting collaboration** between neighbouring countries in production of ensemble simulations.

The end users would typically be government scientists studying local vulnerability to the impacts of climate change. The data generated will be useful for studies of impacts and vulnerabilities at the national scale, and would assist countries in the preparation of National Communication, as required under the UNFCCC.

## ANNEX 3. MODEL EXPERIMENTS, PROPOSED TIMELINE AND COORDINATIONS

### Model Experiments

Each 50km run takes about 5mo

Each 25km run takes about 4mo

ECMWF re-analysis		1		
1961-90 HadAM3		1	2	3
2071-2100 HadAM3	A2	1	2	3
		=3	=5	=7

When available:

1961-90 ECHAM		1 (+)
2071-2100 ECHAM A2		1 (+)

### Model Domains

25km over E Caribbean (2 x CARICOM centres)

plus: 50km over whole area (3 x CATHALAC centres + one CARICOM centre)

OR 50km over E area (+ N Atlantic?)

50km over W area

### Proposed timeline:

Targets for availability of scenarios: CARICOM + CATHALAC July 2004 latest. (Both collaborations willing to continue modelling after this date.)

T-2 : Dialogue with end users of data to establish data requirements (variables and time resolution). Procurement of hardware, installation of Linux and decision about input & data storage medium.

T + 0 (September 2003) : Training course.

### Domain choice:

For each resolution (25km + 50km) one centre to undertake work in consultation with partners.

T + 2 months : domain decided.

For each domain (25km + 50km), parallel runs in three modelling centres. All timings based on 3 Ghz PC! :

ERA (15 year run, no sulphur cycle, 1 month?)

1961-1990 (3 months)

2070-2100 (A2 scenario) (3 months)

Other ensemble members will be required eventually, so run in parallel if capacity allows.

### Preliminary analysis.

T + 6 months : model output available.

Validation, analysis – means/extremes; construction of scenarios from model outputs.

Scaling to produce other scenarios (e.g. A1)

T + 9 months: initial scenarios available.

**Follow-up workshop suggested for July 2004?**

## ANNEX 4 Participant List

	Name and Country	Title and work address	Email
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