



CARIB-HYCOS TECHNICAL MEETING

FORT DE FRANCE, MARTINIQUE

27 - 28 OCTOBER 2009

REPORT OF THE MEETING

A. BACKGROUND

1. Within the framework of the World Hydrological Cycle Observing System (WHYCOS), the World Meteorological Organization (WMO) in collaboration with the Institut de Recherche pour le Développement (IRD) developed the Carib-HYCOS project. The project is co-financed by the Regional Council of Martinique, the General Council of Martinique and the FEDER for a total of 1,317,000 with an additional, 1,200,000 euros as the IRD's contribution in kind. The project's objectives are the reinforcement of national capabilities in water resources management and promotion of international cooperation (exchange of data, technology and expertise).
2. The IRD is the Executing Agency while WMO is the Supervising Agency. IRD in Martinique hosts the Project Regional Center (PRC) including the Project Management Unit (PMU) and the server with a regional database. The PMU is assisted by the Caribbean Institute for Meteorology and Hydrology (CIMH) and the Instituto de Meteorologia (INSMET) for the English and Spanish speaking countries respectively.
3. A Steering Committee meeting was held at Fort de France in October 2008 to review and discuss the status, and the document of the project.
4. Completer avec activités Durant 1er semestre 2009

B. ATTENDANCE

5. The meeting was attended by Mr. SERVAT Eric, IRD – HSM, Mr. BOYER Jean-François, IRD – HSM, Mr. LARAQUE Alain, IRD – HSM, DE VARONA Pablo, Head of Technical Assistance Department Instituto Meteorologia (INSMET), Mr. NARAYAN Kailas, Caribbean Institute for Meteorology and Hydrology (CIMH), Mr. TAWFIK Mohamed, C/BSH-WMO. From the Carib-HYCOS Project Regional Centre/Project Management Unit-IRD Martinique, Mr., Project Coordinator, GUILLIOD Maurice, Hydrologist and ADELE Georges, IT Technician were present. A participant's list is attached as **Annex I**.

C. OPENING

6. After a brief self-introduction, Mr. MORELL Marc, IRD Representative in Martinique and Director of Fort de France Centre, welcomed participants to the PRC. He recalled the long and fruitful cooperation between WMO and IRD in the development and implementation of HYCOS projects since the MED-HYCOS project in the mid-1990ies and informed the meeting about the CARIBSAT project as a partner program in the Caribbean Islands. In his conclusion, he wished the participants a successful meeting.
7. Mr. LARAQUE Alain, Project Coordinator, briefed participants about progress in project activities including country visits. He also presented the technical and administrative difficulties he faced on organizing missions in the region and requested.
8. The PMU was established and fully staffed by experts seconded from IRD to PRC. The Project became operational since the start of the Preparatory Phase on 1st March 2008; questionnaires was circulated to all countries and country visits were carried out with the aim to establish a diagnosis of the National Hydrological Services in participating countries, identify their needs and collect missing information. PRC staff

(Alain Laraque and Pierre Marchand) conducted the visits with support from a representative of Spanish-speaking countries Mr. Pablo de Varona (INSMET) and Mr. Shawn, Boyce and Mr. Kailas Narayan for English-speaking countries (CIMH).

9. *Country Brief*

You will find below a short and brief presentation further to our country visits.

During these visits we met a lot of technical and administrative difficulties inherent in travels in this area (visa, flights troubles, etc...). The date of each stay is indicated.

a) Barbados (from 30/03 to 01/04)

- i. The Barbados Water Authority (BWA) is the NHS Service in Barbados under the regulation of Ministry of Health The Barbados Water Authority (BWA) is the institution with overall responsibility for the development, management and assessment of the island's water resources. It has a limited number of staff dealing mainly with Groundwater as it is the only source of water resources in the country. There is a lack of coordination among various agencies working in the water sector. The Drainage Unit within the Ministry of Public Works and Transport is responsible for Control and Prevention of Inland Flooding, The Coastal Zone Management Unit is especially concerned with issues relating to coastal erosion and the application of management studies for dealing with coastal vulnerability. (quality of surface water, which flows into the sea and also with coastal flooding).
- ii. The BWA has a limited number of acoustic probes to measure the water table once a month. A significant number of wells are privately owned (mainly agriculture). Some rain gauges (24h) are installed at different places mainly in private homes. The Met office has a scattered network of rain gauges with little monitoring. The database is using Excel. There is a need to focus on Groundwater issues and strengthen BWA capacity.

b) Jamaica (from 2 to 04 April)

- i. The Water Resources Authority (WRA), under the Ministry of Water and Housing, is the NHS responsible for managing water resources in Jamaica. It has five technical units supported by Administrative and Financial Units; Resource Monitoring and Data Collection; Planning and Investigation; Permits and Licenses; Water Quality and Environment and GIS/Computer Unit. All its activities including monitoring water levels, flow measurements, well construction and testing and any other investigations required are carried out from one office in Kingston.
- ii. The WRA is a well-organized Service with a relatively good network albeit aging. The piezometric measures are done manually by an acoustic probe, routinely once a month. Most hydrological stations are equipped with float water level paper recorders some of which are equipped with encoders. A data management system using HYDATA with a web interface has been established.
- iii. The WRA has qualified and trained staffs, which regularly survey the network, and process, archive and manage the data into the database. All data are archived either in paper or digital form. They can provide expertise on GIS, IWRM and groundwater issues to the region. The WRA runs a flood warning system on one basin, with automatic-equipped (rain and water parameters) and radio connection. The government supports it. The NMS has rain gauges (24h) and six automatic stations out of which two are equipped with GOES transmission. It is expected to receive another 15 this year all equipped with GOES.
- iv. There is a need for encoders, telemetry system and a powerful computer to manage the database and retrieve telemetry data.

c) Cuba (from 05 to 10 April)

- i. The NHS in Cuba is under “Instituto Nacional de Recursos Hidráulicos (INRH)”. It is a well-organized service with a qualified and trained team and comprehensive hydrologic network. It is responsible for water resources planning and management within the national territory. INRH has been effected by embargos against Cuba, the technologies used have not been updated and INRH needs to modernize its equipment. It needs support in terms of suitable software to improve management of hydrological data banks which is currently using Excel. There is also a need for UPS due to frequent power cuts. The use of the new Internet broadband lines and the recent emergence of mobile telephones should be encouraged.

d) Dominican Republic (from 11 to 13/04)

- i. The INDRHI is the NHS in Dominican Republic and it manages an operational hydrometric network with remote data transmission. The status of INDRHI is very weak due to lack of financial and human resources. If no urgent action is taken to support INDRHI, the network may be in jeopardy or completely collapse in three years time.

e) Haiti (from 14 to 16 April)

- i. The “Service National des Ressources en Eau-SNRE” is the NHS in Haiti under “Direction des Infrastructures Agricoles-DIA” in the Ministry of Agriculture, Natural Resources and Rural Development. The service is in very poor operational conditions due to lack of financial and human resources. The hydrological network has been abandoned since 1993 due unavailability of budget for network operation and no new staff has been appointed for the last 15 years.
- ii. Two 4x4 vehicles were obtained recently by funds from the IDB and a project on early warning with an estimated budget of USD 5 millions is expected to provide 25 hydrometric stations but provisions have not been made for installation and maintenance. Unfortunately, the project is currently blocked by cost increase compared to initial estimates.
- iii. Few PC`s are available and there are frequent power cuts, Internet lines are scarce and at very low speeds. The software used is HYDROM. There are records of historical data in paper form and it needs to be computerized. The country is facing serious water problems and there is a need to reactivate the network, strengthening NHS capacity through training on models for integrated water resources management.

f) Guadeloupe (from 16 to 18 April)

- i. There are several different water managing entities in the two Islands (different type of institution) without good coordination, uniformity and consistency among them. There may be several stations in the same place depending on different managers of various agencies. The ODE was established in 2005 and began operation in 2008 as an inter-service organization responsible for coordination among various agencies working in the field of water in Guadeloupe.
- ii. The DIREN is the NHS responsible for operating and maintains a reduced network of six stations only. The initial network installed by IRD (formerly ORSTOM) has been abandoned since 1984 but occasionally reactivated for specific period and only in restricted geographic areas. There are other entities involved in water management issues without good coordination.
- iii. The groundwater management service has 5 to 6 permanent staff for 35 piezometric wells spread over the two islands forming Guadeloupe. The durability of the traditional rainfall network is of great concern because one is equipped with latest technology. There are researches, carried out on rivers from the volcanic massif of the Soufriere to assess the mechanical and geochemical erosion of the watershed. A small remote controlled helicopter with a camera, a modem and a GPS 3D, allows photographing at different times of the hydrological season the changes in riverbeds after floods.

g) Trinidad Tobago (from 21 to 23 April)

- i. The Water Resources Authority (WRA) under the Ministry of Public Utilities is the NHS in Trinidad and Tobago. It is well equipped but with old equipment (> 15 years) which need to be renovated. It has anti vandalism alarm systems in stations. Water resources quantity and quality information are transmitted. Water quality is a major concern for the country especially the Institute of Marine Affairs (IME). It is for this reason that this service has several multi-parameters probes for water quality, which are regularly calibrated and maintained.
- ii. The WRA is using EXCEL for data management, as HYDATA software proved to be expensive and difficult to use. There is a need for remote transmission of data using GSM and user-friendly software and a multi-user database.

h) Martinique (from 24 to 25 April)

- i. Like Guadeloupe, the initial network installed and managed by the IRD (formerly ORSTOM) was transferred to the DIREN. The DIREN is the NHS responsible for operating and maintains a network of around ten stations. In the same way a network of more than thirty stations is managed by the General Council (CG) which has fully supported the Carib-HYCOS. The main stakeholders in the water sector are CR, DIREN, and ODE.
- ii. The CG and DIREN have mandate for the protection of roads from the risk of flooding and monitoring of water supply stations. Many of its stations receive and transmit data in real time, but like Guadeloupe, sometimes there is duplication as other services (different type of institution). But in 2008, the CG and DIREN have signed a MoU to share their tools in the field of observation and measurement. The apparent lack of coordination to streamline networks makes the situation confused, even though these institutions have important financial resources enabling them to acquire new technologies.
- iii. Surface hydrology lacks a unified service, a real backbone to manage resources, as are BRGM for groundwater and Meteo France for climatological data. Moreover, some of these services must be up-dated to international standards and / or of the European Community, following programmes, action plans, missions, guidelines and specific management criteria (SANDRE, SCHAPI, SDAC, SDAGE, SDDE, SDPC, etc. ...), which may present some complications! The ODE will probably play a major role in an attempt to clarify and streamline the situation.

D. BRIEF ON THE DISCUSSIONS

TOR for PRC, CIMH and INSME

10. The meeting noted with satisfaction the establishment of the PMU and the outcome of the country visits including the status of NHSs in participating countries and their need to strengthen capacities. It is also noted that the two collaborating centres (CIMH, INSME) have been collaborating with the PRC and actively participated in country visits, and circulation and analyses of the questionnaire to identify country needs. It was recommended to review and clearly identify the terms of reference (TOR) of the PRC, CIMH, and INSMET to be included in the final detailed project document. The revised TOR is attached as **Annex II**.

Hydrological Equipment

11. The meeting noted that the status of NHSs in participating countries varies from satisfactory to inadequate. It was agreed to provide a standard set of equipment to the countries in accordance with their needs and available budget to ensure equitable benefit. Each set will contain a automatic rain gauge, automatic water level sensor, data logger with transmission. Each country will receive also water quality monitoring. The final package can be adjusted according to individual countries. The proposed list of hydrological equipments to the countries is attached as **Annex III**.
12. The meeting discussed the issue of data transmission and requested the Project Coordinator to identify the most suitable system for data transmission (GOES, GSM,...) and to investigate the possibility of having a flexible slot time with GOES and mobile services if a GSM system is available.

IT Equipment

13. In view of individual country situations, participants discussed suitable software for the data management system. It was recommended to investigate the possibility with donors to directly order selected software for Data Base Management instead of international tender in order to benefit from experience gained in other HYCOS projects.
14. Regarding the hardware, it was agreed to provide each country with a basic set of equipment including powerful PCs, laptops, and printer on an equitable basis. Participants requested the Project Manager to investigate with donors the possibility of countries to buy locally the IT equipment to ensure an after sales service. The proposed list of IT equipment for each country is attached as **Annex IV**.

Capacity Building (Training)

15. Participants discussed and analyzed the information received from countries through the questionnaire and country visits. It is clear that there is a need for developing training programmes for short periods to improve human capacity in NHSs. Based on topics requested by countries and in accordance with WHYCOS Guidelines, participants identified eight modules to be included in the training program.
16. It was agreed to consider 4 modules during the current phase and to merge two others in one topic. Due to budget restriction, the first four topics have been identified as

priorities and are to be considered for organizing training sessions in 2009 and 2010. The other four topics will be considered if budget allows. **See Annex V**

Budget issues

17. Participants reviewed the budget and agreed on allocations for each item. It was noted that 2,517,000 Euro have been secured as funds for the implementation of the project activities. The donors contributed 1,317,000 Euro in cash while 1,200,000 Euros was committed by IRD as contribution in kind. IRD's contribution will cover the cost of salaries of the PRC staff, office rent, furniture and running cost of the PRC for three years. It was recommended that the IRD contribution in kind be reflected in the budget in the project document. The distribution of the budget and the allocation for each item is attached as **Annex VI**.

Way forward (Work plan)

18. Participants discussed and agreed on actions to be taken to conclude the preparatory phase and organize the first Steering committee meeting in October 2008. The agreed actions and responsibility of each partner are as indicated below:
- a. Letter to be circulated to the countries to confirm the name and address of SC member and inform them about the time and venue of the planned steering committee. (PMU- 15 June 2008)
 - b. The project coordinator will circulate to countries a proposed letter of commitment between the country and PRC indicating its acceptance to participate in the project, to facilitate implementation of activities related to the project within the country, and to agree on data exchange and dissemination. Such a letter of commitments should be signed by a high level officer (preferably a Minister). (PMU - June 30th)
 - c. Letter to be circulated to countries to gather information about GSM capacities in the country, station list with the final Report of WMO/IRD/CIMH/ INSMET meeting in June 2008. Also copies of the final report will be circulated to donors, and partners. (PMU - 7 July 2008).
 - d. PMU in collaboration with the two collaborating centres, should convince countries to provide requested information to finalize the project document. (PMU/CIMH/INSMET/Countries by 31st July)
 - e. PRC will send invitations to countries and WMO/CIMH/INSMET to attend the 1st SC meeting for Carib-HYCOS, including all relevant information to travel to Martinique (hotel, location of meeting,...) (PMU-1 August 2008)
 - f. Draft of detailed project document including the work plan and detailed budget to be circulated to WMO if possible in English or French with changes highlighted. (PMU - 31 of August)
 - g. WMO provide comments and revised version by 20th September 2008.
 - h. PMU to circulate to countries and partners revised version of the project document with detailed budget and work plan and including a list of equipment, proposed stations, telemetry system, training program for comments by 30th September 2008.

- i. Organization of first steering committee meeting in Fort de France, 21st - 23rd of October 2008.

E. ANY OTHER BUSINESS (A.O.B)

19. Participants also discussed issues, which were not foreseen at the time the agenda was prepared but needed to be discussed during the meeting. The CIMH representative informed the meeting about other English speaking countries not participating in the project as they have no NHS and therefore no network of monitoring stations, nor personnel and equipment.
20. He enquired about the possibility of including them in the project. The project coordinator and WMO's representative briefed the meeting on procedures followed for developing the project and how participating countries were selected after they expressed interest and participated in the project planning and documentation. Since donors provided funds based on the initial list of participating countries, financial resources do not allow any addition of participating countries. In this regard it was agreed to invite these countries as observers to the meeting and training sessions without any financial commitments. They could be considered as full members in phase II of the project, when it is developed.
21. Considering the similarity in nature and environment between Carib-HYCOS and Pacific-HYCOS it was agreed to invite the Project Coordinator of each project to the Steering Committee meetings as observers to exchange experience in project implementation.
22. Collaborating centres should provide PRC with guidelines on travel arrangements and visa requirements in the region to assist participants in their travel arrangements in the region.

F. CONCLUSION & CLOSING

23. It was agreed that the meeting offered a good opportunity to WMO, IRD, CIMH and INSMET to discuss and agree on issues related to project implementation. It was decided to continue consultations to ensure smooth implementation of the project and to maintain cooperation between partners.
24. Mr. TAWFIK, the WMO representative once again expressed satisfaction with the outcome of discussions and congratulated the Carib-HYCOS team for their cooperation. He also thanked CIMH and INSMET representatives for their valuable contributions and cooperation with the PMU. He assured participants of WMO's full support to the Carib-HYCOS team to ensure successful implementation of the project.

Acronyms glossary or used abbreviations

ADCP	: Acoustic Doppler Current Profiler
AEC/ACS	: Association Etats Caraïbes / Association of Caribbean States
BRGM	: Bureau de Recherches Géologiques et Minières
BWA	: Barbados Water Authority
CARICOM	: CARIBbean COMmunity
CG	: General Council
CH	: Caraïbe-HYCOS
CIMH	: Caribbean Institute for Meteorology and Hydrology (à la Barbade)
CMO	: Caribbean Meteorological Organization (à Trinidad)
CNUED	: Conférence des Nations Unies sur l'Environnement et le Développement
COCAC	: Conseiller de Coopération et d'Action Culturelle
CR	: Regional Council
DCE	: Directive Cadre Européenne sur l'Eau
DDAF	: Direction Départementale de l'Agriculture et de la Forêt
DIREN	: Direction Régionale de l'Environnement
DOM	: Département d'Outre-Mer
DSDS	: Direction Régionale de la Santé et du Développement Social
EPIC	: Etablissement Public d'Intérêt Commercial
FEDER	: Fonds Européen de Développement Régional
FRIEND	: Flow Regimes from International Experimental and Network Data
GOES	: Geostationary Operational Environmental Satellites
GIRE	: Gestion Intégrée des Ressources en Eau
GWP	: Global Water Partnership
HYCOS	: Hydrological Cycle Observation System
IME	: Institute of Marine Affairs
INDRHI	: Instituto Nacional De Recursos Hidráulicos
INDRHI	: Instituto Nacional De Recursos Hidricos (Rép. Dominicana)
INRH	: Instituto Nacional de Recursos Hidraulicos (Cuba)
INSMET	: Instituto de Meteorologia
INTERREG	: Initiative communautaire du FEDER en faveur de la coopération entre régions de l'Union Européenne
IRD	: Institut de Recherche pour le Développement
IPGP	: Institut de Physique du Globe de Paris
MAE	: Ministère des Affaires Etrangères
MARNDR	: Service National des ressources en Eau Ministère de l'Agriculture des Ressources Naturelles et du Développement Rural
Met. Service	: Meteorological Service
MISE	: Mission Inter Service de l'Eau Elargie en pôle de compétences
OBHI	: Observatoires Hydrologiques et Ingénierie
ODE	: Observatoire de l'Eau
OMM	: Organisation Météorologique Mondiale
ORSTOM	: Organisme de Recherche Scientifique et Technique d'Outre Mer
OVG	: Observatoire Volcanologique de Guadeloupe
PHI	: Programme International en Hydrologie
PNUD	: Programme des Nations Unies pour l'Environnement
SANDRE	: Système d'Aide à la décision pour la Gouvernance de l'eAu
SCHAPI	: Service Central d'Hydrométéorologie et d'Appui à la Prévision des Inondations
SDAC	: Système Départemental d'Alertes de Crues

SDAGE	: Schéma Directeur d'Aménagement et de Gestion des Eaux
SDDE	: Schéma Directeur des Données sur l'Eau
SDPC	: Schéma Directeur de Prévision des Crues
SEAS	: Surveillance de l'Environnement Assisté par Satellite
SGAR	: Secrétariat Général pour les Affaires Régionales
SIAEAG	: Syndicat Intercommunal d'Alimentation en Eau et Assainissement de la Guadeloupe
SIG	: Système d'Information Géographique
SMHN	: Services Météorologiques et Hydrologiques Nationaux
STEP	: STation d'EPuration
UAG	: Université des Antilles et de la Guyane
UMR	: Unité Mixte de Recherche
UNESCO	: Organisation des Nations Unies pour l'Education, la Science et la Culture
US	: Unité de Service
WASA	: Water & Sewerage Authority
WHYCOS	: World Hydrological Cycle Observing System
WRA	: Water Resources Agency
WMO	: World Meteorological Organization
PMU	: Project Management Unit
PRC/CRP	: Project Regional Center/ Centre Régional Pilote
IWRM	: Integrated Water Resources Management
DCP	: Data Collection Plateform
SC	: Steering Comitee
UPS	: Uninterruptible Power Supplies
TOR	: Terms Of Reference
NHS/SHN	: National Hydrological Service /Service Hydrologique National
NMS/SMN	: National Meteorological Service/Service Météorologique National

ANNEX 3 - AGREED LIST OF HYDROLOGICAL EQUIPMENTS TO THE COUNTRIES (427 k€)

Country	Station Equipment	Cost €	Additional equipment	Cost €	%
Antigua	2 basic stations 1 WQ probe	11000 5500	1 netbook	500 0	4.60
Barbados	3 basic stations (round water) 1 WQ probe	33000 5500	1 netbook	500	10.55
Cuba	4 basic stations 1 WQ probe	20000 5500	4 netbook 1 ADCP	2000 17500	12.17
Dominica	3 basic stations 1 WQ probe	16500 5500	2 netbook	1000 0	6.22
Guadeloupe		0	1 Fluorimetre	5000	1.35
Haiti	2 basic stations Lump sum for staff gauges and installation on field	11000 10000	2 netbook 1 Doppler current meter 1 leveling set	1000 7500 500	8.11
Jamaica	3 basic stations 2 WQ probes	9900 11000	2 netbook 1 Doppler current meter 1 ADCP 1 radar sensor	1000 7500 17500 2000	13.22
Martinique			1 Fluorimeter + Sonde de jaugeage à effet Doppler	5000 35000	10.82
Dominican Rep.	4 basic stations 1 WQ probe	21600 5500	1 netbook 4 piezo probes 1 Doppler current meter	500 8000 7500	11.65
Ste. Lucia	3 basic stations 1 WQ probe	16200 5500	2 netbook Doppler current meter	1000 0	6.14
Trinidad & T.	4 basic stations 1 WQ probe	21600 5500	2 netbook Doppler current meter 1 leveling set	1000 7500 500	9.76
PRC	Lump sum	10000	Basic station + Q probe + Doppler current meter	10000	5.41
TOTAL		230300		139500	100

Installation & maintenance	35 000 €
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Transportation	22 000 €
TOTAL	426 800 €

We propose to define a standard set of equipment (± 6000 €) for each country including:

- data logger + water level probe + raingauge + GSM (GPRS)

Countries have expressed equipment compatibility issues regarding ease of use and maintenance of proposed hydrometric equipment.

We will endeavour and investigate the possibilities of meeting each country's specific requests. However the PRC can not make any guarantees on this point.

The PRC request the country to express their choice for the type of water level (pressure, bubble, float, radar) and to indicate the length between the sensor and the station infrastructure.

Heading	quantity	Estimated total cost (€)
Hydrological station	29	170 800
Water quality probe = WQP ²	10	55 000
Netbook	17	8 500
Current meter (Doppler effect)	5	37 500
ADCP	2	35 000
Levelling survey set	2	1 000
Radar sensor probe	1	2 000
Piezometer sounding probe	4	2 000
Lump sum (Haiti)	1	10 000
Doppler gauging probe	1	35 000
Fluorimeter	2	10 000
PRC	1	3 000
TOTAL		369 800

1 :standard set of equipment = data logger with water level sensor + rain gauge + GSM

2: Water Quality Probe : pH, Dissolved Oxygen , Electric Conductivity, Turbidity

ANNEX 4 - LIST OF IT EQUIPMENT FOR EACH COUNTRY (135 K€)

Headings	Estimated unit price (€)	License numbers	Estimated total cost
DBMS	8 000	12	96 000
DBMS Installation	Package basis		24 000
IT Equipment			15 000
			135 000

Country	Requested	Proposition	Cost
Antigua	1 Laptop	-1 basic set	1000 €
Barbados	- 2 ruggedized laptop	-1 basic set	1000 €
Cuba	- 15 desktop - 4 laptop	-2 basic sets	2000 €
Dominica	2 desktop 1 Laptop	-1 basic set	1000 €
Guadeloupe		-1 basic set	1000 €
Haiti		-1 basic set	1000 €
Jamaica	- 1 Desktop	-2 basic sets	2000 €
Martinique	- 1 Desktop - 2 Laptop	-1 basic set	1000 €
Rep Dom	3 laptop 5 desktop 3 scanners 5 printers	-1 basic set	1000 €
St Lucia	2 desktop 1 Laptop	-1 basic set	1000 €
Trinidad	5 desktop 2 Laptop	-1 basic set	1000 €
CIMH	-2 servers	-1 basic set	1000 €
INSMET		-1 basic set	1000 €
TOTAL			15 000 €

We propose to provide a maximum of 1000 € to each country to acquire computer equipment to host the database of Carib-HYCOS and receive telemetry data.

The PRC will send the technical specifications and will try to find a solution to offer the possibility of acquire computer in local supplier..

All the data collected for the project will be put on the regional data base located in PRC, CIMH & INSMET. The proposal for each country includes DBMS. Countries with established DBMS will not be compelled to acquire a new one. Whatever Database Management System was eventually purchased, countries could continue, if desired, to use their existing database structure. However data should be quality controlled and provided in a user-friendly format.

ANNEX 5 - TRAINING PROPOSITION (130 K€)

PRIORITY ORDER	TITLE	PLANNED DATE
1	Data acquisition and validation (both for ground and surface water)	2010 second semester
2	Data base maintenance and management / Quality control	2010 first semester
3	Rating curves (with leveling survey and location of station)	2011 first semester
4	Installation, maintenance of a hydrometric network	2010 second semester
5	WEB Maintenance et Hydrological Information System	If external funding
5	Hydrological expertise and IWRM / Early Warning System	If external funding
6	Modelling	If external funding

ANNEX 6 - REVISED BUDGET OF CARAIBE-HYCOS PROJECT

OPERATIONAL PHASE

Conseil Régional	Conseil Général	INTERREG	FEDER	Total
<i>130 k€</i>	<i>100 k€</i>	<i>802 k€</i>	<i>25 k€</i>	<i>1 057 k€</i>
Expenses items				
<i>Hydrometric equipment</i>			427 k€	
<i>IT equipment</i>			135 k€	
<i>Training</i>			170 k€	
<i>Operating costs and support to PRC</i>			300 k€	
<i>WMO supervision</i>			25 k€	

This budget is established including the 3 new participating countries.