

FINAL NARRATIVE REPORT - 513RLA2000 (CAZALAC)

Project Title: Support for implementing The Regional Water Center for Arid and Semi-Arid Zones in Latin America and the Caribbean – CAZALAC

Target Country or Region: Latin America and the Caribbean

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Executing Agency: UNESCO

Implementing partners : Government of Chile, University of La Serena

Project starting date: January 2006

Project completion date: December 2009

Responsible Sector: Division of Water Sciences at the UNESCO Regional Office for Science in Montevideo

Name of Person completing Report: Maria Concepción Donoso

I. Summary and Background

The Centre for Arid and Semi-arid Zones for Latin America and the Caribbean is a Centre under the auspices of UNESCO that aims at strengthening the technical, social and educational development in the region on the basis of improving the water management in the arid and semi-arid zones in Latin America and the Caribbean as well as increasing the participation of local communities in the development of a water culture.

The Project aims to systematically address the main problems caused by extreme water shortages and impairment in arid and semi-arid environments and to develop favourable conditions for regional cooperation and exchanging experiences regarding these issues.

Within the main objectives of the programme it is possible to make an emphasis on:

- Promotion of scientific research on water and management difficulties in the arid and semi-arid zones in LAC.
- Promotion of networking among researchers working on water resources in the region.
- Dissemination of the results of researches carried out in relation to water resources in the arid and semi-arid zones in the region.
- Capacity-building and training on sound water resources management and support to the improvement of regional research capacities.
- Establishment of a programme on sustainable water management in pilot areas of the region based on Dublin principles.

During its II Phase (2006-2009), the workplan of the Centre has been devoted to consolidate research, capacity-building, dissemination and spreading of activities within the field of arid and semi-arid zones.

Additionally, during the last period, CAZALAC has incorporated to its activities projects connected with the drought and risk management issues associated with climate variability and its impacts in the more drought prone areas of LAC.

The development has thus been started, of a Drought Atlas in pilot areas of the region including zones of Argentina, Chile, and Peru (the incorporation process for Ecuador and Mexico has been initiated). This methodology was successfully extended to the rest of the region becoming a key tool for managers and practitioners.

Besides, in cooperation with the IRI of the University of Columbia a multidisciplinary effort has been launched in order to implement an approach and tools' development for Climate Risk Management (CRM) in connection with water resource management for semi-arid zones, addressing the issues of urban and consumption as well as non-irrigated and irrigated agriculture.

In connection with the fact that CAZALAC must become a regional node on the water-related regional database, significant advances have been achieved during the period, with ongoing development of a database system. This system includes so far a relational database on LAC specialists and institutions; a database on regional climatic information; the online publication of the Map of Arid Zones of LAC (Mapserver Platform), and a database of water and environment-related news. Also in this context CAZALAC participated and cooperated in the initiative of the database working group of the UNESCO/IHP-LAC towards the development of a unified platform of data bases of Centers, projects, working groups, and all other initiatives operating under the IHP-LAC. In addition, CAZALAC become a strategic partner for IHP-LAC in the joint implementation of the Programme's activities in arid and semiarid areas of the region.

II. Description of project activities undertaken during the reporting period

Research:

Erosion Assessment:

Establishment of surface runoff- and soil subsurface humidity measurement terrain parcels so as to set up water behavior models in slopes without vegetal cover in soils of the IV Region of Coquimbo, Chile. The Rain Simulator was used for such purpose.

Important progress was achieved during 2008 with the work initiated in 2005, as reported in various Master theses in Belgium, Chile and Venezuela. Also started in 2008 was the process of publication of the studies in scientific journals, which resulted in a publication in 'Soil Science Society of America Journal' under the heading Hydraulic Conductivity as Influenced by Stoniness in Degraded Dry lands of Chile.

The measurement equipments, such as the rain simulator, TDR, data logger, etc. were

transferred to a new experimentation site in the Melipilla Commune.

New cooperation agreements were developed with CONAF-Metropolitan Region and the CODELCO-El Teniente Division.

Development of a dissemination Seminar in Rancagua-CODELCO, El Teniente Division.

LAC Arid Zones Map: National Workshops held in Argentina, Brazil, Mexico, Ecuador, Venezuela, and the Caribbean for validation of the corresponding national maps.

Research Internships: Two students of the Ghent University (Flanders, Belgium), and one student each of the Talca University, Chile, the Central University of Venezuela, and the Francisco de Miranda University, Venezuela (2006). Implementation of the grade student internship activity in CAZALAC linked to the erosion assessment project, with 3 students from Chile and 2 from Flanders participating (2007). Support was provided to the following interns in water- and soil conservation matters: 2 from the Ghent University, 2 from Venezuela and 5 from Chile (2008). Support provided to the field activities for the drafting of the graduation memories of a student of Ghent University, Belgium and a student of the University of Cordoba, Argentina. Such memories deal with soil characterization in the CONAF-dependent farms of Loncha and Alto Loica (2009).

Endorrheic basins:

Support for and presentation of papers to the III Symposium-Workshop on Wetland Sustainable Management, with representatives of 4 countries (Argentina, Chile, Peru and Bolivia)

Development of a project proposal to be submitted to the European Union, on Protection and Sustainable Management of the American Puna Wetlands, WETPUNA. Participation workshop held: Chile, Peru, Argentina, Bolivia and three European research centers participated.

A second workshop was unnecessary, since the products of the first one helped develop the proposal for the European Union.

Incorporation of arid zones basins to the HELP programme: Initiated during 2006 were the activities for the process of incorporation of the Elqui River Basin to the UNESCO HELP Programme that finally approved the incorporation of such basin to the Programme. A workshop was held in such context during November 27th and 28th in order to analyze possible cooperation areas with the institutions and organizations involved in Elqui River matters. CAZALAC participation, on behalf of the

Elqui River Basin, in the workshop on indicators of Integrated management of Hydrographic Basins (Guayaquil, May, 2009).

Participation in the regional meeting of the HELP programme for 2010-2011 activity planning (Asuncion, July, 2009).

Development of an international seminar on Water Sustainability Index (WSI) for the Elqui River Basin, within the activity framework of the HELP programme (La Serena, November, 2009).

Climatic variability in water resources- New projects (NASA, IRI): On 3rd July, 2006, CAZALAC signed a cooperation agreement with the Institute for Water Resources (IWR) of the U.S. Army Corps of Engineers (USACE).

In coordination with the UNESCO IHP-LAC, contact was established with the U.S. International Research Institute (IRI) to develop a research project on forecasting and climate variability for the Coquimbo Region.

Development of a Training Course on Statistical Downscaling of Climate Forecasting Models GSA. Development of an Early Warning System in the IV (Coquimbo) Region.

Incorporation of arid zones basins to the HELP programme: The proposal was developed for the incorporation to the HELP programme of the Elqui River Basin, under the UNESCO procedures. Such efforts were added to this activity in order to put into practice the development of the WETPUNA project, exploring the possibility of incorporating a basin to this project.

CAZALAC-IWR Drought Atlas

Training workshop on L-moments and use of L-RAP software in Seattle, Washington.

Second Training International Workshop on Drought Atlas, Lima, Peru (March, 2009) with participants from Mexico, Chile, Peru, Ecuador, Argentina and the USA.

The project was presented in 3 international seminars and an international congress.

Product: Publication of an IHP-UNESCO Document on methodology and outcomes in pilot areas (in printer).

Climate Aggressivity Map

Map being developed by Freddy Neira (Colombia) with support from the Ghent University

Workshops/Training/Education:

Water and Mining (Argentina – Chile)

Updating Course implemented, on Key Factors in the Environment Assessment of Mining Projects, La Serena, May 23th-24th, 2006, Chile.

Water and Culture:

Two national workshops were held in Montevideo, Uruguay and Asuncion, Paraguay, during 9th-10th and 12th-13th October, 2007. Such events took place in the framework of the activities of the UNESCO International Hydrological Programme for Latin America and the Caribbean (IHP-LAC) as part of the 2006-2007 component of the Water and Culture Regional Programme, and with CAZALAC support

The Workshop on "Water and Culture" was held on 26th and 27th March at the Aula Magna of the School of Architecture of the National University, at the University Campus of San Lorenzo City, Republic of Paraguay, in the framework of the visit to Paraguay by the UNESCO Director General

Mapping Applications and Integrated Information Systems for Coastal Area Management: CAZALAC's Engineers Koen Verbist (Belgium) and Manuel Soto (Chile), participated in the training course on, supported by the IOC-Flanders

(Inter-Governmental Oceanographic Commission – Flanders). This course took place from 4th to 15th September, at the IOC Projects Office for the IODE, headquartered in Ostende (Belgium).

Course on Hydrological Modeling, the Caribbean Developed in the University of the West Indies (UWI) in December, 2007, on hydrological models. Delivered by Professors P. Willems, Catholic University of Leuven, Belgium, Dr. V. Cooper and D. Gabriels, Ghent University, Belgium, and R. Clarke, UWI.

Snows and Glaciers in Arid Zones:

With the support provided by the UNESCO IHP-LAC and CAZALAC, the VI Meeting of the IHP-LAC Snows and Glaciers Working Group, and International Workshop on Geomatics was held at the Autonomous University of Mexico (UNAM) main campus, with the participation of national representatives and glaciology experts from different Latin American countries. Meeting of the IHP-LAC Snows and Glaciers Working Group and International Workshop on Geomatics applied to the study of Glaciers (May, 2007).

Water Augmentation Techniques:

CAZALAC co-organized the International Seminar on techniques to augment water resources scarcity areas, with the main purpose of establishing an instance of dissemination and experience exchange on technologies to augment water resource availability, desalination, water reuse, rainwater harvesting, fog and mist capture, and aquifer recharge. The event took place in December, 2007, in Santiago, Chile, with cooperation from GWADI.

4th International Fog Conference, Fog and Mist collection (La Serena, July, 2007)

Support for the development of the IV Conference on Fog and Mist – 2007, a global event held in La Serena City, Chile, from 22nd to 27th July, 2007, to contribute to management of natural resources for economic and social development, restoration of the environment, development and acquisition of new water resources, and risk prevention.

First Forum on Basin Management in Arid and Semi-Arid Zones

Cooperation in the organization of and participation in the “First Forum on Basin Management in Arid and Semi-Arid Zones”, with two representatives of CAZALAC and the University of la Serena, in order to establish a space for debate, exchange and discussion of water management experiences on issues connected with Lake Management, Water Quality, Wetlands, Biodiversity, Water Pollution, and Monitoring

VII Meeting of National Committees and Focal Points of the UNESCO International Hydrological Programme (IHP) for Latin America and the Caribbean

CAZALAC participated in the above event, held in Guatemala City, from 12th to 17th August, 2007.

Universal Forum of Cultures, Monterrey, Mexico

During the Universal Forum of Cultures, CAZALAC's Executive Director, and Koen Verbist, presented the paper “Water in a sustainable world”, an activity scheduled for the Natural Resources week.

Workshop on aquifer management (ISARM/GRAPHIC)

The VI Coordination Workshop of the UNESCO/OAS ISARM Americas Programme (Transboundary Aquifers of the Americas) took place at Juan Dolio, Dominican Republic, from 1st to 3rd December, 2008. The workshop was developed in coordination with the Water Resource National Institute of the Dominican Republic

Chile-Flanders joint platform

Objectives: Exploring water-resource initiatives that could be implemented in the Cooperation Agreement between the Government of Chile and the Government of Flanders. Agreement reviewed and updated by a Chile-Flanders joint commission in 2009. The outcomes of such workshop, with representatives of public organizations, universities and research centers connected, with water resource management in attendance, are an input for the initiatives and projects submitted by Chile, through the AGCI, to the Committee responsible for the drafting of the agreement.

ELAFIS Latin American School of Soils Physics.

IX ELAFIS - Latin American School of Soil Physics. Support for the organization of the Latin American School of Soil Physics, held at Cuenca, Ecuador, 1st-10th October, 2007.

X ELAFIS. CAZALAC-ELAFIS-University of Lavras (Brazil). Participation of professionals from Brazil, Argentina, Colombia, Mexico, the USA, Panama, Costa Rica, the Dominican Republic, Chile, and Uruguay in 2009

Course on Water Supply Augmentation for Caribbean countries

CAZALAC plus Caribbean Water Center CEHICA (Dominican Republic) with participation of 8 Caribbean countries, and professors of Chile (Water reuse), and Mexico

AGROCLIM 2009

Development of the course. Intensive workshop on agroclimatology and related scientific techniques. Participation of professionals from Bolivia (15), Venezuela (2), Colombia (2), Peru (2) and Ecuador (2)

International Seminar on Droughts and Climatic Risk Management

Development of an International Seminar on Droughts and Climatic Risk Management, with over 100 persons in attendance, including participants from Argentina, Uruguay, Peru, Paraguay, Chile, Spain, USA, Cuba, Ecuador.

Course on use of bioindicators in freshwater systems

Delivered by Dr. N. de Pauw in 2007, with HELP Programme both in Brazil and in Jamaica. CAZALAC support through cooperation in the organization of the course, supporting the participation of the CEAZA doctorant Biologist, Catherine Orth.

Course on Applied Hydrogeology

The International Course on Applied Hydrogeology, Arid Zones Groundwater Management, was held in La Serena, Chile. The course was attended by a total of 27 Chilean students, professionals from the public and private sectors, academicians and students who wished to update and deepen their knowledge on assessment of the theoretical-practical basic hydrogeologic parameters. The event was also attended by 15 grade students from the Ruhr-University of Bochum, and the Technical University of Darmstadt, Germany.

COSWAND-Training: Water and Soil Conservation in Andean Countries

From 27th to 29th November, 2006 a course was held on soil and water conservation in the Andean Countries (COSWAND), for local farmers and family members of the Namza, Huigra, Alausí community (Ecuador).

A second course on Water and Soil Conservation in Andean Countries (Venezuela 2008) took place in the Sucre Municipality, Mérida, Venezuela, from 6th to 8th March, 2008.

Courses through Internet

Rainwater harvesting, courses for basic education professors, Water quality standards and protocols. A retainer was signed with Dr. Fernando Santibáñez for the development of an e-learning course for basic education professors, on water resource use and conservation themes. A change of strategy involving the development of Water Resource Use and Conservation courses for basic education professors, and a Rainwater harvesting course.

Development of the contents of the rainwater-harvesting course in e-learning format. (ESPOL-Ecuador)

International meeting on Erosion and Sedimentation for Managers, Decision-makers, Technicians and Communicators

These meetings were held at the School of Technology, University of Brasilia, Brazil, in 2007, and in Panamá, 2008. Cooperation in the development of the course.

Water and Education / Pilot projects (IHP Israel)

CAZALAC supported the organization of the Blue Planet Workshop, Mar del Plata, Argentina (November, 2007). developed by the Blue Planet programme (Mrs. Orit Ben Zvi and Mr. Nir Orion) of the Ben Gurion University and the IHP National Committee of Israel, and supported by UNESCO IHP-LAC and CAZALAC. It was attended by 55 participants from Argentina, Uruguay, Chile, Santa Lucia and Mexico. Two thousand books in Spanish were printed and began to be distributed on the occasion of the workshop, in addition to a freely downloadable CD.

Capacity building and training activities - CAZALAC-IWR

Participation de 4 professionals in training activities in statistical downscaling methodologies in IRI/Columbia University (1 month. Partial financing).

Publications

- “Methodological guide for the development of the arid, semi-arid and sub-humid dry zones of Latin America and the Caribbean”. Publication of the IHP-UNESCO technical document N° 3,
- “Map of Arid Zones of Latin America and the Caribbean” was published in the Center’s website, for visualization, consultation and analysis of the information generated in the project through the web by means of the Internet Map Server technology, in order that such information became accessible to the LAC Region specialists: www.cazalac.org/mapa_za.php.
- “Guidelines for Water Management in Arid and Semi-arid Zones with Mining” and “Minería sustentable en zonas áridas, aportes temáticos del Proyecto CAMINAR” (“Sustainable mining in arid zones, thematic contributions of the CAMINAR Project”) Coordination with the partner institutions for the development of two publications in the UNESCO/IHP-LAC Technical Series.
- Support to Erosion and Sedimentation methodological guide

Other activities

- The final agreement between UNESCO and the Government of Chile was signed in February, 2006. The agreement deals with the establishment and launching of the CAZALAC Center as an UNESCO Category II regional center.

- On 13th December, 2006 CAZALAC signed a scientific-technological cooperation agreement with the Pontifical Catholic University of Valparaiso (Chile).
- Development of the CAZALAC-GWA pilot project for the restoration of potable water rural systems destroyed by the Stan Storm, Guatemala. Financing for the operation comes from the Gender and Water Alliance, GWA, with CAZALAC and SER (Services for Development, Quetzaltenango, Guatemala, Central America) responsible for its execution.
- On 26th and 27th October, 2006 the X CONAPHI-Chile Days took place in the Santiago campus of the University of Talca. The organization of the event was coordinated in this instance by CAZALAC in cooperation with the different institutions that make up the Chilean National Committee.
- Convention to Combat Desertification: CAZALAC participated in the eighth session of the Conference of the Parties in the United Nations Convention to Combat Desertification (COP 8), held at Madrid, Spain, September, 2007. The CAZALAC-UNCCD Cooperation Agreement was signed during such event.
- GWADI meeting Representing CAZALAC, Engineer Ana María Gangas, Modeling Area, Water General Directorate, participated in the “International Training Workshop on Groundwater Modeling in Arid and semi-arid Areas” held in June, 2007, in Lanzhou, China.
- VI Inter-American Dialogue on Water Management. This meeting was organized by the OAS-connected Inter-American Network on Water Resources, with the UNESCO IHP-LAC and CAZALAC participating as cooperation organizations. CAZALAC took part in two thematic groups on aridity as panelist and moderator.
- The UNESCO IHP-LAC Regional Office, the GWADI Network, and the Water Center for Arid and Semi-Arid Zones of Latin America and the Caribbean supported the GWADI work network international meeting. The participation of the GWADI delegates propitiated the celebration of an International Seminar on Water Augmentation. Sixty-two persons participated, including the Environmental Matters Manager of INIMA, a Spanish desalinization firm.
- Visit of the Minister of Foreign Affairs, Administrative Matters, Media and Tourism of the Flanders Government – Belgium. Support from UNSCO Montevideo
- Support provided to 2 regional IHP meetings: ISI regional meeting and HELP regional meeting
- Participation of CAZALAC in the XIII Work Days of the Chilean National Committee.
- Strategic Meeting for the Planning of CAZALAC's Phase III (Santiago, August, 2009)
- Agreement with the Eremology Center signed - Ghent University, Belgium

- Cooperation agreement signed in September, 2009, with this desert study center of Ghent University (Flanders-Belgium), for the development of joint actions in knowledge areas connected with water and soil conservation.
- Participation in a UNCCD and COP9 Regional Meeting. CAZALAC participated in a regional meeting of the Party Countries of the Convention to Combat Desertification (UNCCSD), which took place in Montevideo Uruguay, from 29th June to 3rd July, 2009, to plan the Region's strategies for the world meeting (COP9), Buenos Aires Argentina, from 21st September to 2nd October, 2009.
- Participation in the G-WADI annual working group meeting and the international Workshop Programme: Climate Change Impact on Water Resources, Risk, Assessment and Management in Arid and Semiarid Regions
- Participation in a Regional Meeting with the Presidents of the National Committees and Focal Points, participation in the International Conference on Ecohydrology, UNESCO/ IHP-LAC programmes, working groups, and Centers coordination meeting, and IHP-LAC Data Base Group Coordination Meeting (Asunción, Paraguay, July 2009).
- CAZALAC-UTN Agreement signed, Mendoza. Agreement developed and signed between CAZALAC and the Mendoza Regional School of the National Technological University, Argentina.
- Meeting with the Finance Committee, House of Representatives. On 17th June, 2009 CAZALAC attended a meeting with the Finance Committee of the House of Representatives in order to submit first-hand background information on the Water Center, its objectives, activities and impacts in the national and international arena.
- During the session, such Committee approved the draft agreement between the Government of Chile and UNESCO, and the draft was thereupon sent to the House plenary.

III. Difficulties and Problems encountered and measures taken, any changes in implementation.

The Government of Chile has approved the motion of giving CAZALAC the status of international organization based in the country, but the approval by the senate is now pending. The delay to such decision was due to the change in the Government, that has lead to changes in all the public spheres. However, there is a strong commitment of the General Water Directorate and of the Chilean Committee of the IHP to continue working towards obtaining such recognition in 2010.

In relation to the implementation of the agreed workplan of the II phase that was revised and adapted every year in coordination with the donor, the Centre, and UNESCO-IHP, several changes were made in the specific activities foreseen at the beginning of the phase. This flexibility allowed the Centre to better respond to the needs of the countries of the region, which requirements raised along the development of the activities of the Centre were the drivers for the reorientation of the Centre. This reorientation was towards focusing in those issues that represent a greater concern for the region's arid and semiarid zones water management, and thus made the Centre's contribution more efficient and demand-driven.

IV. Project Results achieved during the reporting period

The Centre has continued strengthening its presence in the region by establishing linkages with research institutions in the region and worldwide. Moreover, an active relationship with the IHP National Committees and Focal Points of Latin America and the Caribbean has been fostered by CAZALAC, allowing the Centre to become a reference institution in the field of water management in arid and semiarid zones.

Besides, strategic partnerships have been established in the reporting period between CAZALAC and other organizations with similar missions and visions. It has to be highlighted the Memorandum of Understanding signed with the International Research Institute for Climate Prediction of Columbia University, and with the UN Convention on Combat to Desertification.

In order to encompass the growing responsibilities acquired by the Centre in terms of projects and actions implemented, new administrative and professional staff was recruited. These new staff members provide additional expertise and knowledge to the Centre, broadening its capabilities and expertise to the ongoing Centre's programme as well as to promote new initiatives based on the region needs.

Moreover, cooperation agreements were initiated with the new UNESCO Category II centers in the Americas in areas of common interest, strengthening the network of water-related centers, as it is the aim of UNESCO's Division of Water Sciences.

V. Lessons learned and Sustainability

The Centre has acquired a mature status in the professional and administrative level that makes itself able to take care of its own agenda with the support of both UNESCO and the donors. However, additional financial and technical support will allow the Centre to make a comprehensive work in the region and especially out of it, to promote its capabilities as a service provider, and to develop new projects with external funding.

During the reporting period, and addressing the growing concerns in the countries of the region, the Center has incorporated the issues of droughts and climatic risk management to its working lines. In this sphere, links with universities and research centers have been established in several countries of the region.

Furthermore, the Centre together with various partner institutions is executing several projects funded by the European Union and other external sources. In addition, the region's Member States have expressed their interest of continue developing activities in joint cooperation with CAZALAC by providing support to the development of programmes and projects on water management in scarce areas.

The consolidation of the Centre will benefit from a III Phase, in order to strengthen its activities in those lines of action in which the countries of the region have emphasized the need of further research, capacity-development, training, and dissemination. Moreover, the donor will also benefit from an additional phase by strengthening the links created with research and academic institutions in LAC that have been acquainted through CAZALAC's work, of the interest of the government of Flanders on science development for sustainability

VI. Evaluation recommendations when applicable

In view of the above, it is clear that CAZALAC has successfully achieved the objective of addressing the problems linked to extreme water shortage and impairment in arid and semi-arid environments and has developed favourable conditions for regional cooperation and exchange of experiences regarding these topics.

It is therefore recommended the continuation of the technical and financial support to CAZALAC. The Center demonstrated to have reached a state of maturity and recognition in the region with good research and capacity-building capabilities. In addition, the Center is presently contributing to the overall agenda of the water science sector (IHP) of UNESCO in Latin America and the Caribbean.

The Centre has been working in close coordination with the donor and UNESCO in the elaboration of a III Phase of support from the FUST. In this sense, an additional consultation with experts representing key partner institutions of the Americas was included in the proposal development in order to reflect in such document the needs of the whole region in terms of water resources management in scarce regions, from a broad perspective.

The document of the III Phase shall be presented to the FUST Steering Committee for its consideration and potential funding starting in 2011 for an additional 4-year period.

VII. Visibility: describe any visibility action implemented during the reporting period

The actions performed on the drought and climate risk management issues have been instrumental in achieving greater regional visibility on such matters, and positioning the Center on this significant issue throughout the region. Both the CAZALAC and the donors have given wide dissemination to these initiatives in different regional and international settings, making these tools a reference element for water management in arid and semiarid environments.

In addition, actions have been taken in order to improve CAZALAC's web site by translating it into English, and making the information on the Centre's activities available for a greater audience interest in this theme worldwide. Moreover, a five-year report of the Centre was developed by CAZALAC both in English and in Spanish including the Centre's activities in the period 2003-2008.

Besides, CAZALAC link with UNESCO G-WADI programme aims at widening the visibility of the Centre at the international level within the area of water management in arid zones. This is done both by strengthening collaboration with G-WADI participating institutions and by using G-WADI network for dissemination purposes.

Additional specific activities are listed below:

Dissemination

Databases

- On 22nd and 23rd February CAZALAC participated in the coordination meeting of the IHP database regional coordination group, which took place in Santo Domingo, Dominican Republic. This workshop established the standardization of information- and data procedures and tools in the projects developed by the different institutions and working groups operating under the

UNESCO IHP umbrella, in order to facilitate their exchange in the framework of the IHP work. Participation in the meeting for the development of an integrated UNESCO/IHP-LAC data base system.

- The updating work for the database of publications on arid zones hydrology available for consultation in the Center's web site was continued. Such database has been implemented in MySol platform and published in the CAZALAC website. It can be accessed through the www.cazalac.org/titulos.php link. It presently holds 794 publication titles.
- Mapserver implementation server in CAZALAC, for the online deployment of the information from the arid zones map.
- The development of a relational databases system was started, for institutions, specialists, projects, and publications connected with the water resource issues in the region of Latin America and the Caribbean.
- Implementation of a climatic database for the region. Its source is FAO 2001.
- Implementation of a water and environment news database. Using the rss (Really Simple Syndication) format contents –in this case, news-- are redistributed on the CAZALAC activities-related issues. Such news pieces are obtained in real time from various informative sources at a world level. http://www.cazalac.org/noticias_agua.php

Webpage/electronic bulletin

- Electronic bulletins continued to be issued and distributed by e-mail to the Center's subscribers throughout the Caribbean region (2100 subscribers). , together with the periodic updating of the CAZALAC Website.
- CAZALAC has also been updating and maintaining the website of the Chilean National Committee, www.phi.cl

Forum of the Americas

Participation in the preparatory process of the Americas towards the V World Water Forum.

Climate variability in water resources - (IRI; IWR; others)

Development of two workshops on climate variability in water resources and climate risk management, to train professionals of different institutions and create working groups.

Fellowships/grants

- Support for the development of postgraduate courses on the water theme in arid zones (students, specialists, institutions)
- Two Doctorate students supports: Carla Salinas (Doctorant, Sciences, University of the Basque Country – Spain) and Mauricio Francisco Lemus (Doctorant, National Forestry Corporation - Chile)

CAZALAC-IWR Drought Atlas (FRIEND Link)

First workshop on the CAZALAC-IWR Drought Atlas. During 25th and 26th March, 2008 a workshop was held in Santiago, with professionals from Argentina, Peru and Chile in attendance. Agreement reached to implement the initiative in three pilot areas in the relevant countries.

Flemish Missions

- Exploration of a project of support for the rural potable water (RPW) system of the Punta de Choros town.
- During November, 2008 Santiago and the Coquimbo Region were visited by a Flemish delegation formed by Peter Desmet, from the Ministry of Foreign

Affairs, Frank De Poorter and Ortwin Deroo (VMW: potable water utility), and Donald Gabriels from Ghent University.

Drought Atlas

Presentation of the CAZALAC-IWR-led project on Drought Atlas in pilot areas of Latin America at the Water and Global Change Conference, 8th-10th September, in Montevideo

Communications Plan

The CAZALAC Memory was published in Spanish and English versions. (300 copies)
Dissemination materials developed

Dissemination strategy

A communications program designed and implemented for CAZALAC.

Outcomes:

Phase 1: Diagnosis. Sounding on perceptions on CAZALAC among its audience

Phase 2: Communications Strategy including

Phase 3: Implementation of the Communications Strategy

VIII. Annexes

Considering the numerous activities carried out by the Centre, the reports and documents of the core lines and actions referred in this report can be found in CAZALAC's website (www.cazalac.org).