



ORGANIZATION OF AMERICAN
STATES



INTERNATIONAL HYDROLOGICAL
PROGRAMME

**UNESCO/OAS ISARM Americas Programme
TRANSBOUNDARY AQUIFERS OF THE AMERICAS**

3rd COORDINATION WORKSHOP

Sao Paulo, Brazil

November 30th - December 2nd, 2005

FINAL REPORT

Washington, DC

January, 2006

UNESCO/OAS ISARM AMERICAS PROGRAMME (Transboundary Aquifers of the Americas)
THIRD COORDINATION WORKSHOP
Sao Paulo, November 30th – December 2nd, 2005

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LIST OF ACRONYMS

FAO	Food and Agriculture Organization/Organización de las Naciones Unidas para Agricultura y Alimentos (United Nations/Naciones Unidas)
GEF/ FMAM	Global Environment Facility/Fondo para el Medio Ambiente Mundial
GS/OAS/SG/OEA	General Secretariat of the Organization of American States/Secretaría General de la Organización de Estados Americanos
IAH/AIH	International Association of Hydrogeologists/Asociación Internacional de Hidrogeólogos
IHP/PHI	International Hydrological Programme/Programa Hidrológico Internacional
IGRAC	International Groundwater Resources Assessment Centre
ISARM	Internationally Shared Aquifer Resources Management/Gestión de los Recursos Acuíferos Internacionalmente Compartidos
NC/CN	National Coordinator/Coordinador Nacional
OAS/OEA	Organization of American States/Organización de Estados Americanos
DSD/DDS	Department of Sustainable Development /Departamento de Desarrollo Sostenible
PNUMA/UNEP	United Nations Environmental Program / Programa de las Naciones Unidas para el Medio Ambiente
ROSTLAC/ORCLAC	Regional Office for Science and Technology for Latin America and the Caribbean/ Oficina Regional de Ciencia de la UNESCO para America Latina y el Caribe
UN/ECE	United Nations Economic Commission for Europe / Comision Economica de Naciones Unidas para Europa
UNESCO	United Nations Educational, Scientific, and Cultural Organization/Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura
UNESCWA	United Nations Economic and Social Commission for Western Asia/Comision Economica y Social de las Naciones Unidas para Asia Occidental
UNEP/PNUMA	United Nations Environmental Programme/ Programa de las Naciones Unidas de Medio Ambiente
UN ILC	United Nations International Law Commission / Comision de Ley Internacional de Naciones Unidas

THE SAN PAULO WORKSHOP – November 30th – December 2nd, 2005

BACKGROUND

The UNESCO/OAS ISARM-Americas Programme is the regional initiative for the American hemisphere of the worldwide ISARM Programme and is jointly coordinated by the UNESCO International Hydrological Programme (IHP) and the Department of Sustainable Development – previously known as Office for Sustainable Development and Environment - of the Organization of American States (DSD/OAS).

The global “Internationally Shared Aquifer Resources Management - ISARM Programme” ” was launched at the 14th Session of UNESCO IHP Intergovernmental Council in June 2000, in cooperation with several other international organizations, notably the Food and Agriculture Organization (FAO), the United Nations Economic Commission for Europe (UNECE), the United Nations Economic and Social Commission for Western Asia (UNESCWA) and the International Association of Hydrogeologists (IAH). It aims to promote the recognition and understanding of transboundary groundwater resources, and foster collaboration among the countries sharing the same resource to achieve consensus on legal, institutional, socio-economic, scientific, and environmental aspects. Another important objective of the ISARM Americas Programme is the identification of case-studies of particular interest.

One of the most important objectives of the ISARM Americas Programme is to create a comprehensive Inventory of Transboundary Aquifers of the Americas, a collection of data regarding the hydro-geological characteristics, the actual use of the shared groundwaters and the legal and institutional aspects.

From the start of the activities in 2003 up to December 2005, the Programme has assessed the prevalence of transboundary aquifers in the Western Hemisphere, with the contributions of a network of National Coordinators, which represent 25 countries of the American hemisphere. Two previous Coordination Workshops¹ have been held, the first was held in Montevideo, Uruguay, on September 24th - 25th, 2003, and the second in El Paso, on November 10th-12th, 2004. According to the Inventory, as of November 2004, 62 transboundary aquifers were identified: 36 located in South America, 15 in Central America, 8 in North America, and 3 in the Caribbean.

Since the First Coordination Workshop in Montevideo, the countries proposed nine transboundary aquifers as possible case-studies for project implementation, using the ISARM approach. They are located in areas of particular concern in the Americas: arid and semi-arid regions; areas extremely vulnerable to natural hazards and to climatic variability due to climate change; areas with severe land/water degradation due to increased urbanization and industrialization, extensive agriculture and deforestation, which heavily impact entire ecosystems; and areas of potential water use conflict, with high levels of poverty and health uncertainty.

In the Spring of 2004, the ISARM-Americas Steering Committee² identified three priority case-studies from the list: the Artibonite and Masacre aquifers in the Hispaniola Island (Haiti – Dominican Rep.) as an example of inter-mountainous and coastal transboundary aquifers in Small Islands Developing States (SIDS); the Yrenda-Toba-Tarijeno aquifer system in

¹ Workshop Reports of the two events are available in PDF. files at the OAS web-site: http://www.oas.org/dsd/isarm/ISARM_index.htm

² The Steering Committee consists of UNESCO-ROSTLAC, OAS, IAH and UNESCO-ISARM Coordinator

the Gran Chaco Americano (Argentina-Bolivia-Paraguay), representing transboundary aquifers in semi-arid zones of South America; and the Hueco Bolson aquifer (Mexico-USA), as a striking example of transboundary aquifers in urban areas.

1. SUMMARY

The Third UNESCO/OAS ISARM-Americas Workshop has been held in San Paulo, Brazil, on November 30th – December 2nd, 2005. Seventeen American countries were represented by the ISARM Americas National Coordinators who attended to the meeting together with officers from international organizations, experts from scientific centers, and observers from donor countries (Agenda and List of Participants, annexes 1, 2). The meeting was organized in collaboration with the Brazilian Ministry of Environment–Water Resources Secretary, and with the support of UNESCO-PHI y UNESCO-ROSTLAC.

The main topic of the workshop was the structure of a 3-volume publication “TRANSBOUNDARY AQUIFERS IN THE AMERICAS – Preliminary Assessment”, based on the information collected in the UNESCO-OAS ISARM Americas Programme. The UNESCO publication will be possibly presented at the IV International Water Forum in Mexico, in March, 2006.

The first volume which will provide essential baseline information gathered during the last two years of activities of the Programme, as a result of the tremendous effort made by the American countries. The baseline will include a compilation of geological, hydrogeological information, as well as groundwater actual use, expected demand and future scenarios. A map for each transboundary aquifer will integrate the information. The data will be analyzed and a preliminary assessment for each sub-region and a vision for the whole hemisphere will be provided.

The other two volumes will be edited in the years 2007-08: the second volume will integrate the hydrogeological baseline with socio-economic drivers, institutional forces and legal aspects related to transboundary groundwaters in the Americas. The integrated information will provide indications for a regional approach towards implementing integrated groundwater management in the transboundary context, within the current legal and institutional framework. The third volume will most likely focus on policy recommendations in light of the evolving international legal instruments such as the United Nations International Law Commission’s draft law on transboundary aquifers.

During the meeting the countries discussed and agreed the final version of the contents of the publication, the list of transboundary aquifers to be published and their official names. They also started editing brief descriptions of the transboundary aquifers based on the gathered information.

Major problems affecting the aquifers and the benefits foreseen with the adoption of sustainable integrated groundwater joint-management were identified.

At the end of the Workshop, the participants planned the activities for the year 2006-2007; the countries representatives were also briefed on the international coming events related to shared groundwaters.

The representative from El Salvador kindly offered to host the IV Coordination Workshop of the UNESCO/OAS ISARM-Americas Programme in 2006, and the representatives of Dominican Rep. and Argentina proposed to serve as alternate venue.

2. WELCOME TO PARTICIPANTS AND WORKSHOP AGENDA

The workshop was opened with the welcoming remarks by **Mr. Julio Kettelhut**, Director of the Planning Department. of the Secretary of Water Resources - Ministry of Environment of Brazil, and ISARM Americas National Coordinator. He thanked for the challenge offered by the ISARM workshop to the State of San Paulo, which supplies 72% of its 645 municipalities with groundwater, and gave a brief overview on the transboundary main aquifers shared by Brazil.

Mrs. Maria Concepcion Donoso, regional hydrologist at the UNESCO Regional Office for Science and Technology for Latin America and the Caribbean (UNESCO/ROSTLAC), presented the excellent results of the ISARM Americas Programme from its start up to 2005, thanks to the countries active participation and to the inter-agency cooperation between UNESCO and OAS.

Mr. Nelson Da Franca dos Anjos, Principal Water Resources of the DSD/OAS and General Coordinator of the UNESCO/OAS ISARM Americas Programme (Transboundary Aquifers of the Americas) thanked the Brazilian authorities, and **Mr. Uriel Duarte**, President of the Brazilian Groundwater Association -ABAS, and welcomed the ISARM National Coordinators, the representative of the Italian Ministry of Environment and Territory, **Mr. Salvatore D'Angelo**, and **Mr. Jac van Der Gan** from the International Groundwater Resources Assessment Centre the Institute – IGRAC. He then explained the objectives of the workshop and the structure of the agenda.

Mrs. Michela Miletto, Senior Environmental Specialist of the DSD/OAS, presented a preliminary version of the index for the Monograph “TRANSBOUNDARY AQUIFERS IN THE AMERICAS – Preliminary Assessment”, as a starting-point for the discussion.

Mr Shammy Puri CoCoordinator of the Global ISARM Programme joined the meeting, expressing his delight at the progress made so far and heartily congratulated the efforts of ISARM

Americas to date. Mr Puri also informed the meeting of his new position as the UNEP Liaison to UNESCO and UNEP-DGEF³ Task Manager for Groundwaters.

3. WORKSHOP PRESENTATIONS

During the three-day Workshop, some of the country experts welcomed the opportunity to make presentations.

The following country representatives presented an overview of the collected data in their countries:

- **Mr. Alfonso Rivera**, Canada National Coordinator,
- **Mrs. Hilda Candanedo**, Panama National Coordinator,
- **Mr. Fabrício Bueno da Fonseca Cardoso**, Brazil ISARM Americas collaborator
- **Mr. Juan Ledesma**, Uruguay National Coordinator
- **Mr. Guillen Ruben Chavez**, Mexico National Coordinator

Other country representatives presented the advances of case-studies in process or under consideration, like the case of the Artibonite-Masacre transboundary aquifers shared by Dominican Rep. and Haiti, presented by the Haitian National Coordinator, **Mr. Yvelt Chery**, and the case of the Ostua-Metapan transboundary aquifers shared by Guatemala and El Salvador, presented by the representatives for Guatemala **Mr. Fulgencio Garavito** and **Mr. Mario Retana** for El Salvador

Mrs. **Ofelia Tujchneider**, National Coordinator of Argentina, made a presentation on the legal issues on groundwaters, a subject of particular interest for the future activities of the UNESCO-OAS ISARM Americas Programme.

Mr. Shammy Puri, provided an overview of the progress made globally in the ISARM initiative, noting that the region in the Americas has provided an essential baseline of the distribution of transboundary aquifers, complementing the work in Africa, Balkans and Europe. He then went on to explain how the regional inventories could be taken on to the next level, as was set out within the ISARM Framework Document of 2001. Integration of the information from the other four focal aspects (Institutional, Socio-Economic, Legal & Environmental) of the Programme would be awaited by the interested policy makers. Significant actions were being taken by the Global ISARM initiative. Some of these included the support that the ISARM is giving to the ILC with expert advice, the adoption by the GEF of the importance of groundwater in environmental management, the adoption by the RAMSAR Convention Secretariat of the role of groundwater in wetland sustainability, as well as the institutions such as UNEP-DGEF responding to the GEF call for mainstreaming groundwater into the GEF.

Mr. Jac van Der Gan, from IGRAC, which will process the data of the transboundary aquifer maps and edit the final version of the maps for publication, made a presentation on the possible solutions and results of the map processing.

³ DGEF- UNEPS's Division of GEF Coordination

The last day of the meeting, **Mr. Salvatore D'Angelo** from the Italian Ministry of Environment and Territory kindly accepted the invitation of the Steering Committee to give an overview of the projects and actions financed by his government, in the world and in particular in the American region.

4. DISCUSSION ON THE CONTENTS OF THE BOOK, AGREEMENTS AND RESULTS

Part of the workshop was devoted to discuss topics related to the scientific aspects of the transboundary aquifers, agreements on technical and conceptual definitions as well as on the aquifer terms and names to be officially adopted.

4.1 Scientific and technical aspects

For what concerned the scientific and technical aspects, the participants discussed about the possibility of

- defining aquifer categories based on their physical characteristics, dimensions, degree of exploitation;
- considering mainly the geologic formations that contains aquifers;
- adopting the Hydrogeological Map of South America as a base-map;
- adopting a more practical approach, considering specific aspects like the aquifer hydrodynamics.

It was also suggested to use, in case of uncertainty, the term “preliminary” for the borders of the aquifers and the term “estimated” for the recharge volumes; and the isotopic methodology to obtain the groundwater age.

Problems and uncertainties were also raised, among the others 1) the problem of poor - or lack of – information from a country with respect of the other/s; 2) scarce contact and exchange among some neighboring countries; 3) not recognizing an aquifer as “Transboundary” from one of the countries.

It was then agreed that:

- the aquifers known at least from one country will be reported into the publication, specifying that the information is unilateral⁴;
- the UNESCO-OAS ISARM Americas Secretariat will facilitate the exchange of information among countries: all the information provided by the National Coordinators on the transboundary aquifers will be distributed through the Secretary.

⁴ An observation was made by one participant that in this situation it may be wiser to include bilateral information in the later volume

4.2 Adoption of official names for the Transboundary Aquifers

Based on the preliminary contents of the book, the country participants selected the list of transboundary aquifers to be published and decided the numeration based on a sub-regional division of the hemisphere. They also reached an agreement on the official names for the transboundary aquifers to be adopted in the publication.

It was established that the ISARM-AMERICAS Secretariat would send all the documents produced during the Workshop to the countries that couldn't participate to the meeting, for their consultation and endorsement.

Figure 1 and Figure 2 present respectively the list of transboundary aquifers up to Jan. 2006 and the 2004 version of the map of the Transboundary Aquifers of the Americas that is being updated after the Sao Paulo meeting by IGRAC/UNESCO.

Fig. 1 List of the transboundary aquifers up to Jan. 23, 2006

<i>UBICACION MAPA / MAP LOCATION</i>	<i>ACUIFEROS TRANSFRONTERIZOS / TRANSBOUNDARY AQUIFERS</i>	<i>PAISES / COUNTRIES</i>	<i>NUM. PAISES / COUNTRIES NO.</i>	<i>NUEVA NUMER./NEW NUMBER</i>
	AMERICA DEL NORTE/NORTH AMERICA			
	ABBOSTFORD-SUMAS	CANADA-UNITED STATES	2	1N
	OKANAGAN-OSOYOOS	CANADA-UNITED STATES	2	2N
	GRAND FORKS	CANADA-UNITED STATES	2	3N
	POPLAR	CANADA-UNITED STATES	2	4N
	ESTEVAN	CANADA-UNITED STATES	2	5N
60	CAMBRIAN - ORDOVICIAN	CANADA-UNITED STATES	2	6N
	CHATEAUGUAY	CANADA-UNITED STATES	2	7N
52	TIJUANA-SAN DIEGO	MEXICO-UNITED STATES	2	8N
53	CUENCA BAJA DEL RIO COLORADO	MEXICO-UNITED STATES	2	9N
	SONOYTA-PAPAGOS	MEXICO-UNITED STATES	2	11N
56	NOGALES	MEXICO-UNITED STATES	2	12N
55	SANTA CRUZ	MEXICO-UNITED STATES	2	13N
57	SAN PEDRO	MEXICO-UNITED STATES	2	14N
58	CONEJOS MEDANOS-BOLSÓN DE LA MESILLA	MEXICO-UNITED STATES	2	15N
59	BOLSÓN DEL HUECO-VALLE DE JUÁREZ	MEXICO-UNITED STATES	2	16N
	EDWARDS-TRINITY-EL BURRO	MEXICO-UNITED STATES	2	17N
	CUENCA BAJA DEL RÍO BRAVO/GRANDE	MEXICO-UNITED STATES	2	18N
	CARIBE/CARIBBEAN			
50	MASACRE	HAITI-REPUBLICA DOMINICANA	2	1CB
49	ARTIBONITO	HAITI-REPUBLICA DOMINICANA	2	2CB
	LOS LAGOS	HAITI-REPUBLICA DOMINICANA		3CB
51	PEDERNALES	HAITI-REPUBLICA DOMINICANA	2	4CB
	AMERICA CENTRAL/CENTRAL AMERICA			
43	SOCONUSCO-SUCHIATE-COATAN	GUATEMALA-MEXICO	2	1C
42	CHICOMUSELO-CUILCO-SELEGUA	GUATEMALA-MEXICO	2	2C
40	OCOSINGO-USAMACINTA-POJOM-IXCAN	GUATEMALA-MEXICO	2	3C
41	MARQUES DE COMILLAS-CHIXOY-XACLBAL	GUATEMALA-MEXICO	2	4C
39	BOCA DEL CERRO-SAN PEDRO	GUATEMALA-MEXICO	2	5C
	LA TRINITARIA-NENTON	GUATEMALA-MEXICO	2	6C
	PENINSULA DE YUCATAN-CANDELARIA-HONDO	GUATEMALA-MEXICO-BELICE	3	8C
	MOPAN-BELICE	GUATEMALA-BELICE	2	9C
	PUCILA-MOHO	GUATEMALA-BELICE	2	10C
	SARSTUN	GUATEMALA-BELICE	2	11C
	TEMASH	GUATEMALA-BELICE	2	12C

47-48	MOTAGUA	GUATEMALA-HONDURAS	2	13C
	CHIQUMULA-COPAN RUINAS	GUATEMALA-HONDURAS	2	14C
	ESQUIPULAS-OCOTEPEQUE-CITALA	GUATEMALA-HONDURAS-EL SALVADOR		15C
46	OSTUA-METAPAN	EL SALVADOR-GUATEMALA	2	16C
45	RIO PAZ	EL SALVADOR-GUATEMALA	2	17C
62	ESTERO REAL-RIO NEGRO	HONDURAS-NICARAGUA	2	18C
36	SIXAOA	COSTA RICA-PANAMÁ	2	19C
	AMERICA DEL SUR/SOUTH AMERICA			
	EL CHOCO-DARIEN	COLOMBIA-PANAMA	2	1S
	TACHIRA-PAMPLONITA	COLOMBIA-VENEZUELA	2	2S
31	GUAJIRA	COLOMBIA-VENEZUELA	2	3S
33	GRUPO RORAIMA	BRASIL-GUYANA-VENEZUELA	3	4S
17-18	BOA VISTA-SERRA DO TUCANO-NORTH SAVANNA	BRASIL-GUYANA		5S
34	ZANDERJI;;	GUYANA-SURINAM	2	6S
34	COESEWIJNE	GUYANA-SURINAM	2	7S
34	A-SAND	GUYANA-SURINAM	2	8S
20	COSTEIRO	BRASIL-GUYANA FRANCESA	2	9S
26	TULCAN-IPALES	COLOMBIA-ECUADOR	2	10S
22	ZARUMILLA	ECUADOR-PERÚ	2	11S
64	PUYANGO-TUMBES-CHIRA-CATAMAYO	ECUADOR-PERU	2	12S
11	AMAZONAS	BOLIVIA-BRASÍL-COLOMBIA-ECUADOR-PERÚ-VENEZUELA	6	13S
29	TITICACA	BOLIVIA-PERÚ	2	14S
13	PANTANAL	BOLIVIA-BRASÍL-PARAGUAY	3	15S
28	AGUA DULCE	BOLIVIA-PARAGUAY	2	16S
24	OLLAGUE-PASTOS GRANDES	BOLIVIA-CHILE		17S
23	CONCORDIA – ESCRITOS-CAPLINA	CHILE-PERÚ	2	18S
27	AQUIDAUANA-AQUIDABAN	BRASIL-PARAGUAY	2	19S
8	CAIUA-ACARAY	BRASIL-PARAGUAY	2	20S
1	GUARANI	ARGENTINA-BRASIL-PARAGUAY-URUGUAY	4	21S
9	SERRA GERAL	ARGENTINA-BRASIL-PARAGUAY-URUGUAY	4	22S
4	LITORNEO-CHUY	BRASIL-URUGUAY	2	23S
14	PERMO-CARBONIFERO	BRASIL-URUGUAY	2	24S
5	LITORAL-CRETÁCICO	ARGENTINA-URUGUAY	2	25S
3	SALTO-SALTO CHICO	ARGENTINA-URUGUAY	2	26S
	PUNEÑOS	ARGENTINA-BOLIVIA	2	27S
2	YRENDA-TOBA -TARIJENO	ARGENTINA-BOLIVIA-PARAGUAY	3	28S
7	EL CÓNDR-CAÑADON DEL CÓNDR	ARGENTINA-CHILE	2	29S

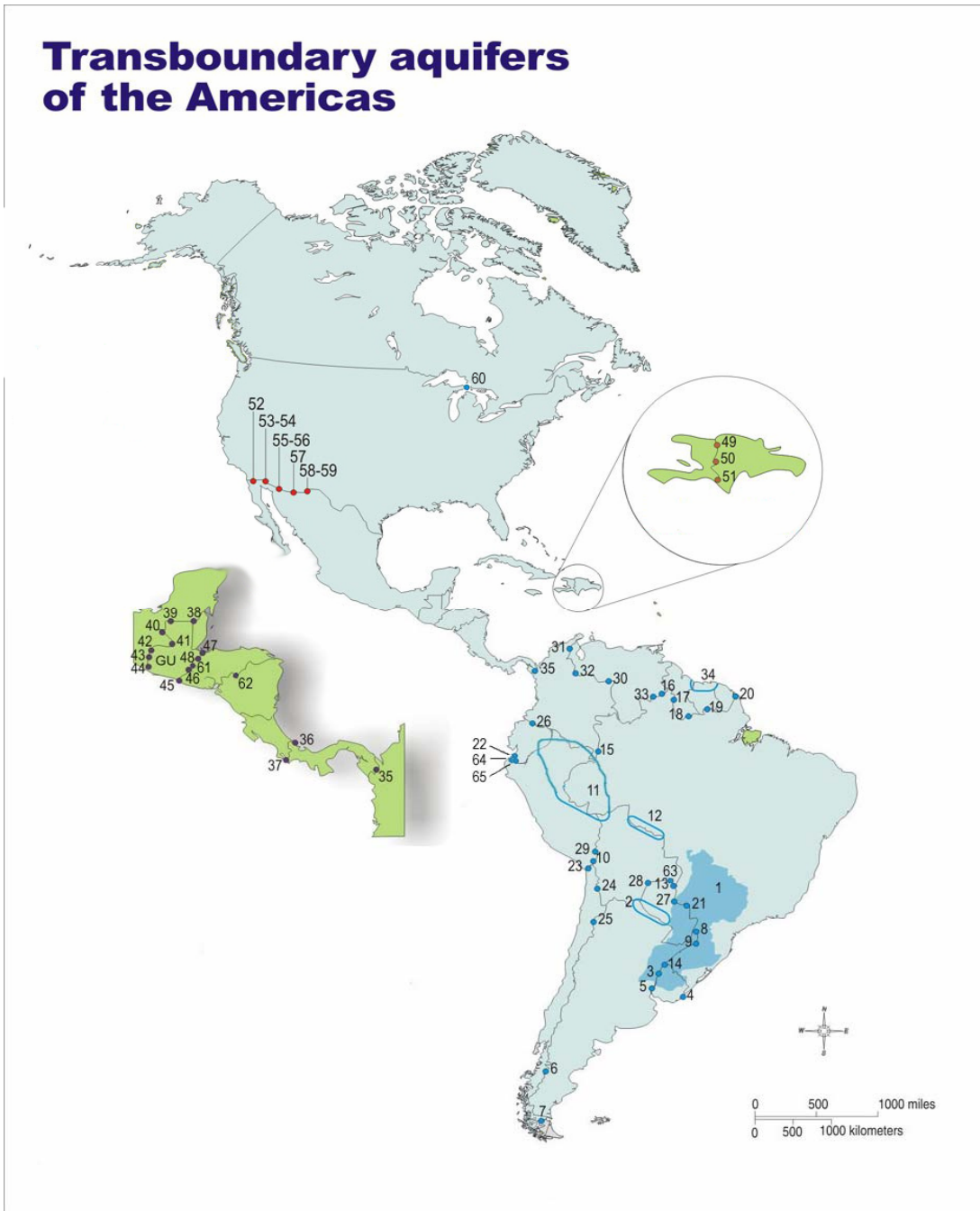


Fig. 2 - 2004 Map of transboundary aquifers of the Americas, to be update by IGRAC/UNESCO.

4.3 Structure of the book and contents

The participants of the meeting decided that the structure of the book should mainly consist of six parts:

PREFACE

EXECUTIVE SUMMARY

1. INVENTORY OF THE TRANSBOUNDARY AQUIFERS OF THE REGION

- 1.1 background and methodology
- 1.2 data analysis

2. TRANSBOUNDARY AQUIFERS OF NORTH AMERICA

3. TRANSBOUNDARY AQUIFERS OF THE CARIBBEAN

4. TRANSBOUNDARY AQUIFERS OF CENTRAL AMERICA

5. TRANSBOUNDARY AQUIFERS OF SOUTH AMERICA

6. CONCLUSIONS AND RECOMMENDATIONS

AUTHORS AND PARTICIPATING INSTITUTIONS

The country representatives agreed on the following points:

- A scientific team, composed by 4 National Coordinators, should write the Chapter 1. The participants selected the National Coordinators of Argentina, Brazil, Canada and Colombia.
- The book should be published in two languages, English and Spanish; the choice of the language adopted for the first publication to be prepared will depend on possible restriction of time editing.
- The description of each transboundary aquifer should follow the template distributed during the meeting (Fig.3).
- The reference for the aquifer data and the list of authors and participating institutions should be located at the end of each description. For the Reference, the “Guidelines for the Elaboration of Consultancy Partial and Final Reports”, published by the OAS/UNEP/GEF in 2005 will be adopted.
- The country representatives agreed to send to the ISARM Americas Secretariat the additional information and specific formats for the maps requested by IGRAC. The Secretary should collect the information and send them to IGRAC.
- Date for submission of the copy-ready document to the publisher was set for February 1st, 2006. The follow-up of the activities from Dec. 2005 to Feb. 1st, 2006, will include tasks like: i) integration of the map information from the countries; ii) realization of the final maps by IGRAC; iii) archive of all information by OAS prior sending it to IGRAC; iv) revision of the descriptions of the 68 aquifers in electronic format and last validation

from the countries; v) elaboration of the different chapters of the text of the book, comments, final revision.; vi) preparation of the reference. The time-schedule shown in Fig. 4 was accepted by all participants.

- The aquifer descriptions will be prepared and/or integrated by the countries by the end of December 2005. The final version will be revised by the ISARM Secretary and send back for approval.
- It was agreed that IGRAC should prepare a map for each aquifer with basic information, like limits of the aquifers, border lines, and toponomastics.
- IGRAC should also prepare a general map of the location of the transboundary aquifers of the hemisphere, similar to that prepared by the Secretary in the years 2004-2005, and location maps for each sub regions, to be inserted in the book.

ISARM AMERICAS FACTUAL BASELINE

INTRODUCTION & THE BACKGROUND
THE TRANSBOUNDARY AQUIFER SYSTEM
THE SIGNIFICANCE OF THE TRANSBOUNDARY AQUIFER SYSTEM
AUTHORS:

Fig. 3 – Template adopted for the transboundary aquifer descriptions.

MAPS

Dic. 9, 2005 – Last day for the countries to send maps to the Secretary

Dic. 12, 2005 - Sec sends maps to IGRAC

Dic. 22, 2005 - IGRAC sends preliminary maps to the Sec.

Jan. 3, 2006 – Sec sends maps to NC for final revision and approval

Jan. 17, 2006 – Last day for the countries to send revised maps

Jan. 17, 2006 – Sec. sends revised maps to IGRAC

Jan. 25, 2006 – IGRAC sends final maps to Sec.

Feb 1, 2006 – Sec sends manuscript ready to print to the editor

ACUIFERS TEMPLATES

Dic. 12, 2005 – last day for the Sec. to send the revised templates to the NCs

Dic. 16, 2005 - last day for the countries to send revised templates, reference, and list of the authors and institutions to the Sec.

Dic. 22, 2005 - Last day for the scientific team to send the draft of Chapter 1 to the Sec.

January, 2006 - The Sec and the Coordination Group Revise and Edit the Manuscript

Feb 1st 2006 – Sec. send manuscript ready to print to the editor

Fig. 4 - Time-schedule of the activities from Dec. 2005 to end of Jan., 2006

5. UNESCO-OAS ISARM AMERICAS PROGRAMME FUTURE ACTIONS, CASE-STUDIES AND RECOMMENDATIONS FOR THE 2006-2007 ACTIVITY PROGRAMME

The participants discussed the new phase – Phase II - of the UNESCO-OAS ISARM Americas Programme, starting in 2006.

Phase II will be focused on the Diagnostics of Institutional and Legal Framework as well as the socio-economic & environmental aspects. This will be also the topic of the next Workshop, upon request of the countries during the ISARM Americas III Coordination Workshop in El Paso in 2004.

The activities in 2006 will be mainly focused on the identification of the legal and institutional issues related to transboundary groundwaters in the American countries.

An ad hoc questionnaire, also based on the comments and recommendations made by Prof. Tujchneider in her presentation, would be possibly prepared and circulated during the year 2006.

The gathered information will be the indispensable source for the elaboration of the II volume of the ISARM Americas.

In 2007, ISARM Americas will start the III Phase of the Programme, which will be on the “Conceptualization of a Regional Strategy for Managing Transboundary Aquifers”.

ISARM AMERICAS PHASES:

- **Phase I – Inventory of Transboundary Aquifers of the Americas**
Publication
- **Phase II - Institutional and Legal issues & related issues**
Data analysis,
Diagnostics of Institutional and Legal Framework & the socio economic needs in the countries
Publication
- **Phase III – Conceptualization of a Regional Strategy for Managing Transboundary Aquifers (Groundwater Convention).**
Strategy definition
Publication

The list of priority case-studies for project implementation was up-dated with cases presented as shown below:

ON-GOING CASE STUDIES (2005):

- **BOLSON DEL HUECO (MX.+USA)**
- **ARTIBONITO-MASACRE (RD + HT)**
- **TOBA-YRENDA- CHACO TARIJENO (AR+PY+BO)**
- **GUARANI (AR+BR+PY+UY)**

NEXT CASE-STUDIES, STARTING IN 2006 – 2007

- **PANTANAL (BR/ BO / PY)**
- **ZARUMILLA (EC / PE);**
- **OSTUA-METAPAN (SV – GT)**

6. COMING EVENTS AND CLOSURE OF THE WORKSHOP

Mrs. Maria Concepcion Donoso presented the coming events planned in the UNESCO International Hydrologic Programme - IHP for the year 2006-2007, which are:

FUTURE EVENTS 2006-2007:

- **World Water Forum IV, March 2006, Mexico**
- **Presentation of the Inventory of Transboundary Aquifers of the Americas**

- **IV Coordination Meeting the IHP LAC programme UNESCO-OAS ISARM Americas, 2006: Venue to be announced**

- **ISARM Global Conference, 2007, France**

The representative of El Salvador kindly offered to host the IV Coordination Workshop of the UNESCO/OAS ISARM Americas Programme in 2006. The Dominican Republic and Argentina NCs proposed to serve as alternate venue.

At the end of the workshop, the UNESCO/OAS ISARM Americas team congratulated the countries for the excellent contribution to the meeting and auspicated a successful preparation of the book.

ANNEX 1

Programa UNESCO/OEA ISARM Américas - UNESCO/OAS ISARM Américas

ACUÍFEROS TRANSFRONTERIZOS DE LAS AMÉRICAS -TRANSBOUNDARY AQUIFERS OF THE AMERICAS

3^{ro} TALLER DE COORDINACION/3rd COORDINATION WORKSHOP

Sao Paulo, BRASIL

30 Nov-02 Dic 2005/Nov 30th-Dec 02th 2005

Lugar del evento/Meeting Place: Hotel Transamerica Flat International Plaza

Se ruega a los participantes llegar el día 29 de noviembre a Sao Paulo y dirigirse al HOTEL Transamerica Flat International Plaza donde tienen ya la reserva.

We ask participants to arrive in San Paulo the 29th November and go directly to Transamerica Flat International Plaza Hotel where your reservations will be ready.

AGENDA / AGENDA

Noviembre 30 /November 30th	
08:30-09:00	BIENVENIDA A LOS PARTICIPANTES / WELCOME TO PARTICIPANTS - Sr. Julio Tadeo Kettelhut, Representante de la Secretaria de Recursos Hídricos de BRASIL, Maria Concepción Donoso, Hidrologa Regional, UNESCO, Nelson da Franca Ribeiro dos Anjos, Coordinador General Programa UNESCO/OEA ISARM Américas, OEA/OAS.
09:00-09:15	PRESENTACION DE UNA ESTRUCTURA PARA ACTIVIDADES FUTURAS DE ISARM AMERICAS/PRESENTATION OF AN STRUCTURE FOR FUTURE ACTIVITIES OF ISARM AMERICAS. S Puri & Maria Donoso
09:15-09:30	PRESENTACION DE UNA PROPUESTA DEL LIBRO (PRIMER VOLUMEN) “INVENTARIO DE LOS ACUIFEROS TRANSFRONTERIZOS GESTION DE LOS ACUIFEROS TRANSFRONTERIZOS DE LAS AMERICAS” / PRESENTATION OF THE BOOK PROPOSAL (FIRST VOLUME) “INVENTORY OF THE TRASNBOUNDARY AQUIFERS - MANAGING TRANSBOUNDARY AQUIFERS OF THE AMERICAS ”
09:30 – 10:30	DEBATE Y DISCUSIÓN SOBRE LA PROPUESTA DEL LIBRO / DEBATE & DISCUSSION ON THE PROPOSED BOOK
10:30 – 12:30	CONTRIBUCION DE LOS PAISES: DISCUSION DE LA INFORMACION A DISPOSICION/COUNTRIES CONTRIBUTION: DISCUSSION ON THE AVAILABLE INFORMATION
	América del Norte/North America

12:30 – 14:00	Almuerzo/Lunch
14:30-18:30	CONTINUACION DE LA DISCUSION / CONTINUING THE DISCUSSION Caribe/Caribbean – América Central/Central America
18:30-18:45	Conclusiones del dia/ Wrap up of the day

Diciembre 01/Diciembre 1º	
09:00-12:00	CONTRIBUCION DE LOS PAISES.: DISCUSION SOBRE LA INFORMACION A DISPOSICION/COUNTRIES CONTRIBUTION.: DISCUSSION ON THE AVAILABLE INFORMATION América del Sur/South America
12:30-14:30h	Almuerzo/Lunch
14:30 – 18:00	FINALIZACION DE LA DISCUSION. / DISCUSSIONS' RESULTS.
18:30 – 18:45	Conclusiones del dia/ Wrap up of the day
Diciembre 02/December 2nd.	
09:00-10:30	CONTRIBUCION DE LOS PAISES.: DISCUSION SOBRE LA INFORMACION A DISPOSICION/COUNTRIES CONTRIBUTION.: DISCUSSION ON THE AVAILABLE INFORMATION América del Sur/South America
10:30-12:30	INVENTARIO DE ACUIFEROS TRANSFRONTERIZOS DE LAS AMERICAS: VISUALIZACION DE RESULTADOS Y DESARROLLO DE UN SISTEMA DE INFORMACION/INVENTORY OF TRANSBOUNDARY AQUIFERS OF THE AMERICAS: VISUALIZATION OF THE OUTCOMES AND DEVELOPMENT OF AN INFORMATION SYSTEM – <i>Jac van der Gun – Internacional Groundwater Resources Assessment Center - IGRAC</i>
12:30-14:30	Almuerzo/Lunch
14:30 – 16:00	ACTIVIDADES FUTURAS: RECOMENDACIONES Y PROGRAMA PARA EL 2006 /
16:00-16:30	CIERRE DEL TALLER/WORKSHOP CLOSURE

ANNEX 2

PROGRAMA UNESCO/OEA ISARM AMÉRICAS (Acuíferos Transfronterizos de las Américas)

UNESCO/OAS ISARM AMERICAS (TRANSBOUNDARY AQUIFERS OF THE AMERICAS)

3ER. TALLER DE COORDINACION/3RD. COORDINATION WORKSHOP

Sao Paulo, Brasil Noviembre 30-Diciembre 02, 2005/Sao Paulo, Brazil Nov- 30-Dec- 02, 2005

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