REVIEW OF ACTIVITIES AND EVALUATION OF THE FUNCTIONING OF THE REGIONAL CENTRE FOR GROUNDWATER MANAGEMENT FOR LATIN AMERICA AND THE CARIBBEAN (CeReGAS), IN MONTEVIDEO, URUGUAY, AS A CATEGORY 2 CENTRE UNDER THE AUSPICES OF UNESCO

FINAL REPORT

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1. Introduction

The idea of creating a regional centre for groundwater in Latin America and the Caribbean was a consequence of the end of the Environmental Protection and Sustainable Development of the Guarani Aquifer System Project, also known as the Guarani Aquifer System Project (GASP). This six-year project (2003–2009) involved cooperation between Argentina, Brazil, Paraguay, and Uruguay, as well several international agencies, including the Global Environment Facility (GEF), the World Bank (WB), the Organization of American States (OAS), UNESCO, the Dutch and German Governments and the International Atomic Energy Agency (OAS, 2009). GASP significantly increased knowledge about the GAS’s characteristics within the four countries, however with the end of the project it was necessary to create a space to host all these data.

Even though the project had finished, Uruguay decided to propose the creation of a Category 2 Centre under the auspices of UNESCO dedicated to groundwater. The Intergovernmental Hydrological Programme (IHP) Council endorsed the proposal by editing Resolution XX-6. In the 37th session of the UNESCO General Conference (November 5-20, 2013), it was approved the establishment of the Regional Centre for Groundwater Management for Latin America and the Caribbean (CeReGAS, acronym in Spanish) as a Category 2 Centre (C2C) in Montevideo (UNESCO, 2013). After approval, the Government of Uruguay and UNESCO signed on March 20, 2014, an Agreement for the creation and operation in Montevideo, Uruguay, of the Regional Centre for Groundwater Management for Latin America and the Caribbean as a C2C under the auspices of UNESCO. This Agreement entered into force on December 20, 2016, with a term of six years, although CeReGAS had already started operating since February 2015.

The Agreement will expire on December 19, 2022, so the Government of Uruguay expressed its willingness to conduct the renewal procedure to maintain the CeReGAS status of UNESCO’s Category 2 Centre by presenting a letter of intention on October 7, 2021. The subsequent step involves a renewal evaluation conducted by a team of gender-balanced independent experts.

In this sense, Mr. Carlos Estevez Valencia and Ms. Pilar Carolina Villar presented this evaluation on March 2022, which aims a) to assess the Centre’s performance concerning its objectives and functions, as specified in the Agreement between UNESCO and the Government of Uruguay; and b) to verify if the Centre is in conformity with the terms of the 2019 Strategy for Category 2 Institutes and Centres under the auspices of UNESCO. The evaluation was based on the documents provided by the Centre (see the relation of documents on Annex 1 to 5) and in-person or online interviews (see Annex 6). Due to the COVID 19 situation and travel restrictions, only Carlos Estevez visited CeReGAS and participated in face-to-face meetings in Uruguay, while Pilar Villar participated in online meetings and reviewed documentation.

The recommendation of the team of independent experts is that the UNESCO Agreement with CeReGAS be renewed for an additional duration of eight years, in accordance with the provisions contained in the 2019 Strategy for Category 2 Institutes and Centres under the auspices of UNESCO (document 40 C/79).
2 CeReGAS’s structure, mission and objectives

The Structure of CeReGAS is formed by an Administration Board, a Directorate, and a General Secretariat. It also has the support of a National Technical Advisory Council and an International Technical Advisory Panel, as showed in its organizational chart (figure 1).

**Figure 1. CeReGAS Organizational Chart**

Elaborated by the authors based on the Agreement and CeReGAS website

The National Technical Advisory Council was created by the Ministerial Resolution nº 354/2015 and the nº 1111/2015. The acronym MVOTMA corresponds to the Ministry of Housing, Territorial Planning and the Environment. However, in 2020 said ministry was divided into two: Ministry of Housing and Territorial Planning and Ministry of the Environment. The place of MVOTMA in the National Technical Council of CeReGAS has been inherited by the Ministry of the Environment (MA).

As noted, the Administration Board of CeReGAS is made up of a representative of the Uruguayan government, who chairs it (currently, the Undersecretary of the Ministry of Environment), a representative of the Director General of UNESCO (currently, the IHP Regional Hydrologist in LAC) and representatives of State Members, currently, from
Argentina (06/07/2016), Bolivia (14/12/2016), Brazil (23/10/2017), Mexico (23/11/2015), and Paraguay (25/01/2016)\(^1\).

CeReGAS's mission is to articulate national and regional capacities at the public and/or private level for the sustainable management of aquifers and the protection of water resources under a comprehensive approach that includes environmental, economic, and social aspects, in accordance with the international commitments assumed by the country and the region in terms of sustainable development.

According to the 2014 agreement signed between Uruguay and UNESCO, the main objectives of CeReGAS are: a) to strengthen national capacities for the sustainable management of the country's aquifers, and b) to meet the needs and requirements of water consumption defined with other countries of the region, through cooperation. For the fulfilment of these objectives, the Agreement establishes as functions of the Centre:

a) Assist and provide training to various disciplines specialists, from Uruguay and other countries of Latin America and the Caribbean, about the development of instruments and the implementation of integration and management activities in hydrogeology and groundwater management.

b) Contribute to the application of the strategic action plan defined by the countries interested in the protection and sustainable development of the Guaraní aquifer system, as well as other activities agreed upon by them.

c) Maintain close collaboration with the network of national committees and focal points of the UNESCO Intergovernmental Hydrological Programme for the Latin American and Caribbean region, and with other category 2 centres with which it has spheres of interest inside and outside the region.

d) Associate and incorporate into the Centre the existing national research, teaching and management programmes related to groundwater and promote their articulation and cooperation.

e) Pursue synergies in matters related to water with UNESCO Centres and Chairs that deal with water resources in the Latin American and Caribbean region.

f) Contribute to the achievement of the objectives of the UNESCO Initiative on International Shared Aquifer Resources Management (ISARM) for the Americas by promoting knowledge about transboundary aquifers and collaboration between the countries that share them to obtain a global panorama of these resources and reach consensus in the scientific, environmental, institutional, socioeconomic, and legal fields.

\(^1\) Jamaica (11/25/2015) and Venezuela (03/10/2017) participated in the Administration Board of CeReGAS, but discontinued their participation due to the retirement of their representatives.
3. Alignment of Centre activities with the Agreement signed with UNESCO

Based on the information compiled in the biennial reports sent by CeReGAS, it was possible to conclude that a significant number of activities took place throughout the review period covering the years from 2015 to 2021 (see Annex 3, 4 and 5). Since its creation CeReGAS has participated in several international and national courses, conferences, workshops, seminars and events (see Annex 4). The Centre has promoted several capacity development initiatives related to groundwater governance and management aspects. The scope of this capacitation actions is very diverse. It includes very specific technical topics like the course on “Geophysical Surveys applied to groundwater exploration”, the Workshop “Optimal Design of Groundwater Monitoring Networks” or the “Course “Numerical Modelling applied to underground hydrology”. However, it also includes more broad initiatives like the Workshop and the Course on Groundwater Governance or the course “Groundwater, water security and governance with emphasis on transboundary areas”.

The Centre has also participated in the development or execution of national and international groundwater technical projects (see Annex 5). For example, it has worked on the follow international projects:

a) Project Implementation of the Guarani Aquifer Strategic Action Program: Enabling Regional Action;
b) Strengthening capacities for the management and use of the La Plata Basin wetlands in cooperation with the RAMSAR UY office;
c) Project for the implementation of the Strategic Actions Program of the River Plate Basin (PPM);
d) The cross-border basin of the Cuareim-Quaraí River (Brazil-Uruguay) as a territory resilient to droughts and floods: risk management strategies (See Annex 5 – A).

On national level, the Centre has given technical consultancy to public organs and developed projects with many national universities, such as:

a) Geographic Information System (GIS)/Science and Technology (S&T) Integrating Project;
b) project Evaluation of the geothermal energy potential in the Salto pilot area - North Basin – Uruguay;
c) project “Technology and modelling for integrated water management as adaptation to climate change of the main source of drinking water in Uruguay; and
and
d) Project "Environmental Management of the Mercedes Aquifer System.

In addition, it has produced 17 publications, most of them in peer review journals (see Annex 3). These publications and technical initiatives give considerable prominence to the Guarani aquifer. Therefore, other topics and aquifers were included in the Centre' activities, per example studies on the Permo-Carboniferous Aquifer (Brazil and Uruguay), Mercedes Aquifer (Uruguay) or the Caribbean transboundary aquifers (Massacre, Artibonito, Los Lagos and Pedernales) shared by Dominican Republic and Haiti. The Centre has also published articles and documents related to general aspects of groundwater governance and management, as well on water indicators.

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2 Despite the Agreement entered into force on December 20, 2016, in practice CeReGAS has started its activities on 2015.
The Centre initiatives have highlighted the relation between groundwater with ecosystems, water security, climate change and geothermal potential. As well, it has been recognized as an important space to complement students' formation. Since its existence, it has received eleven students for technical visits or internships, five of them from abroad (Sweden, Colombia, and Brazil).

The analysis of the documents and the interviews conducted with Jorge Rucks, Gerardo Veroslavsky and Natalie Aubet allowed to conclude that CeReGAS has an important role in gathering groundwater data, providing technical consultancy, developing contact networks, and enabling opportunities to promote groundwater knowledge.

4. Alignment of the Centre’s activities with UNESCO strategies, objectives, and priorities

The activities of the Centre have contributed to UNESCO’s strategic objectives and those programmatic objectives contained in documents 37C/5, 38C/5, 39C/5 and 40C/5. The performance of the Centre began oriented to the actions of the 37C/5 main line of actions (MLA) 4 "Fostering international science collaboration for earth systems, biodiversity, and disaster risk reduction" and 6 "Strengthening freshwater security" which included the expected results: ER9. “Global cooperation in the ecological and geological sciences expanded”, ER12. Responses to local, regional and global water security challenges strengthened; and ER13. “Knowledge, innovation, policies and human and institutional capacities for water security strengthened through improved international cooperation”.

Those MLAs and the expected results were reaffirmed in the 38 C5 Programme and Budget. There is clarity for the evaluators that CeReGAS has effectively contributed to the expected results for compliance with the following Main Lines of Action:

MLA2 Building institutional capacities in science and engineering, specifically with the ER2 Capacity-building in research and education in the natural sciences enhanced, including through the use of ICTs, as described few paragraphs above No 3 Alignment of Centre activities with the Agreement signed with UNESCO.

MLA5 Strengthening the role of ecological sciences and biosphere reserves, specifically with ER9 Use of biosphere reserves as learning places for equitable and sustainable development and for climate change mitigation and adaptation strengthened.

MLA6 Strengthening freshwater security, ER10 Responses to local, regional and global water security challenges strengthened and ER11 Knowledge, innovation, policies and human and institutional capacities for water security strengthened through improved international cooperation.

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3 Rucks is a Consultant for CAF (Development Bank of Latin America). He was Director of Environment (and Undersecretary of the Ministry of the Environment) in which capacity he participated in the formation of CeReGAS.

4 Veroslavsky is a Doctor of Geology, a member of the Institute of Geological Sciences and a professor at the Faculty of Sciences of the University of the Republic.

5 Aubet is a Doctor in Geology and Director of the Agro-environmental Engineering career at the Technological University of Uruguay (UTEC)
The performance of CeReGAS remained connected to the 39 C/5 MLA 3 “Improve knowledge and strengthen capacities at all levels to achieve water security, which established the ER7 “Member States have improved their policies and increased institutional and human capacities for water security through scientific cooperation”.

Also, the activities of the Centre contributed to the Strategic Plan IHP-VIII (2014-2021): Water security: responses to local, regional and global challenges. Phase VIII contained 6 thematic axes:

- Theme 1: Water-related Disasters and Hydrological Changes
- Theme 2: Groundwater in a Changing Environment
- Theme 3: Addressing Water Scarcity and Quality
- Theme 4: Water and Human Settlements of the Future
- Theme 5: Ecohydrology, Engineering Harmony for a Sustainable World
- Theme 6: Water Education, Key to Water Security

Several of these topics relate to groundwater, for example, Theme 3: Addressing Water Scarcity and Quality, 4: Water and Human Settlements of the Future, and 6: Water Education, Key to Water Security. However, the second Theme deals with it in an express and explicit way. Among the goals of IHP-VIII for this theme included the contribution to: establishing principles for sustainable management of groundwater resources; methods for the appropriate development, exploitation and protection of groundwater resources; new groundwater resources maps; fostering transboundary aquifers management; and strengthening groundwater governance and water management in emergency situations.

To be more precise, theme II - Groundwater in a Changing Environment was divided into these 5 Focal Areas (FA), all of them directly related with CeReGAS objectives, functions and activities:

- FA 2.1 “Enhancing sustainable groundwater resources management”;
- FA 2.2 “Addressing strategies for management of aquifers recharge”;
- FA 2.3 “Adapting to the impacts of climate change on aquifer systems”;
- FA 2.4 “Promoting groundwater quality protection”;
- FA 2.5 “Promoting management of transboundary aquifers”.

Promoting a sustainable management of transboundary aquifers is the most evident feature of CeReGAS, especially with its technical work related to the Guaraní aquifer. During the CeReGAS mandate, a comprehensive array of research, education, training, and capacity development activities and projects have been conducted (See annexes 3, 4, and 5). There are 52 transboundary aquifers in the LAC region (IGRAC, 2021), which require technical data (ISARM AMERICAS, 2007) and only one has an international agreement. On the national level, most of countries face difficulties to manage groundwater due to the lack of data about aquifer's characteristics, rates of groundwater use or potential risk situations. Also, there is a lack of laws and regulations or these norms present deficiencies on their implementations and fulfilment. So, the Centre has a strategic role to promote this debate on the region.

The IHP ninth phase Strategic Plan “Science for a Water Secure World in a Changing Environment” has been launched for 2022-2029. During phase IX, IHP “will further develop activities dedicated to research and scientific cooperation on the essential role of groundwater to support resilient water use”. In addition, it states the need to assist Member States “in improving the scientific knowledge on groundwater and in strengthening groundwater governance frameworks at domestic and transboundary level” (UNESCO, 2021, p.12).
Priority Area 1: *Scientific research and innovation* includes the Expected output: 1.7. Development and sharing of knowledge bases on the impacts of global change and human usage on river and lake basins, aquifer systems, coastal areas, and cryosphere and human settlements by the scientific community supported so as to embed it in water resources and services management plans. The strategic document states that IHP-IX "will continue to develop a scientific knowledge base on groundwater, integrating considerations of global change effects for a rational and equitable management of the groundwater resources that include dependent ecosystems."

Similarly, Priority Area 5: "Water Governance based on science for mitigation, adaptation, and resilience" includes the expected result 5.2 "Science-based assessments on water governance, legal, policy and institutional frameworks undertaken and recommendations communicated ensuring that they are context-dependent, location-based, reflecting adaptation to climate change and IWRM, integrating surface and groundwater for their uptake to decision makers."

Consequently, the functions of the Centre are clearly aligned with the strategies, objectives and priorities of the UNESCO Intergovernmental Hydrological Programme, not only with those existing at the time of the signing of the Agreement with Uruguay, but also those supervening at the time of this evaluation.

**5. The relevance of the contribution of the activities of Centre to global development agendas**

The development plan and most of the CeReGAS activities are positioned within the context of the global landscape of water-related policies, highlighting key frameworks such as the 2030 Agenda and its Sustainable Development Goals (SDGs), specifically, SDG 6 on ensuring the availability and sustainable management of water and sanitation for all and its connecting role with all other SDGs.

Similarly, the SDG6 Global Acceleration Framework, the Paris Agreement within the United Nations Framework Convention on Climate Change, the Sendai Framework for Disaster Risk Reduction the Human Rights Framework and the human right to water and sanitation are observed. In addition, the Centre activities reinforce the importance and link between environmental and transboundary water cooperation stablished in the Ramsar Convention, the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, 1992), the Convention on the Law of the Non-Navigational Uses of International Watercourses (New York, 1997) and the Draft Articles on the Law of Transboundary Aquifer.

Although deployed initiatives and activities feed several of these global agendas, the Centre’s human team is not necessarily clearly aware of this wide range of action frameworks. CeReGAS has been related through other centres or programmes and specifically with the fulfilment of SDG 6 and most of its goals, in particular 6.3; 6.4 and 6.5.

In fact, CeReGAS has collaborated in different initiatives both in South America and with the Caribbean and Central American countries. Also, it was involved in initiatives promoted and developed by UNESCO and the United Nations Economic Commission for Europe (UNECE) who are the co-custodian agencies for assisting Member States in the monitoring process of SDG indicator 6.5.2 on transboundary water cooperation.
6. Quality of coordination and interaction with UNESCO Headquarters, other UNESCO Centre's and CeReGAS activities

The Centre attended regularly the meetings of “National Committees and Focal Points of IHP-LAC” and of “UNESCO Centres on water issues for Latin America and the Caribbean”. CeReGAS also works closely with the UNESCO Regional Office for Sciences in Montevideo through its participation in technical projects and events sponsored mainly by the Intergovernmental Hydrological Programme. This encompasses courses on water security developed with other UNESCO Centres and Chairs in the region, courses on groundwater, World Water Day events, and other regional initiatives, including on SDG 6.5.2. In addition, in December 2019, CeReGAS signed a Memorandum of Understanding with the International Groundwater Resources Assessment Centre (IGRAC), which is also a category 2 centre under the auspices of UNESCO.

CeReGAS has an important participation in UNESCO programmes and projects related to groundwater cooperation and data production since it is part of the working group of the Groundwater Resources Assessment under the Pressures of Humanity and Climate Change – GRAPHIC Programme, and coordinates the ISARM Americas Programme (Ref.: PHI-056/17). With GRAPHIC, CeReGAS has worked in the Salto Aquifer System case study (since June 2017) and participated in the “International Workshop Assessment of groundwater quality and quantity impacts and its mitigation”, organized by GRAPHIC Project (Foz de Iguazú, June 3-7, 2019).

Concerning the ISARM Programme the Centre organized the event “Groundwater Governance (GAASS) and the Consultation meeting for Latin America and the Caribbean (LAC) region” which gathered representatives from eleven Latin American and Caribbean countries (2017). In addition, it organized the ISARM Americas Symposium (September 2021) and actively participated in the “ISARM 2021 - International Conference on Transboundary Aquifers "Challenges and the way forward". During this event, it moderated section 11 – “Governance of TBAs: strengthening cooperation in the ISARM 2021” and presented five works, which were included in the conference agenda. On the scope of the ISARM Programme, transboundary studies were conducted on the Transboundary Aquifer System 7C Yucatan Peninsula-Candelaria-Hondo (Belize, Guatemala, Mexico) and in the Caribbean transboundary aquifers, shared by Dominican Republic and Haiti: 1CB (Massacre), 2CB (Artibonito), 3CB (Los Lagos), and 4CB (Pedernales).

In addition, CeReGAS together with the UNESCO Chair of Water and Culture of the University of the Republic has developed a methodology to propose a new indicator on water education, through the quantification and weighting of graduates in the field of water sciences and technologies in university and tertiary technical education in Uruguay (Taks, Manganelli & Samaniego, 2020). This study is linked to the objectives of the Resolution XXIII-9: "IHP support to Member States towards the proposal for a new sustainable development goal indicator 6.a.2 on Water Education, adopted by the 23rd Session of the IHP Council, on June 2018. In this way, the CeReGAS study is an important advance, once it presents a first definition and characterization of an indicator on water education in university and tertiary technical education in Uruguay (Taks, Manganelli & Samaniego, 2020).

There is enough evidence to corroborate that CeReGAS has actively and permanently contributed to UNESCO, collaborating with its strategies, programmes, and phases in water matters. This was confirmed by Miguel Doria, UNESCO hydrologist for the Latin American and Caribbean region. Doria added that the Centre has enthusiastically participated in different work meetings with the CONAPHIs and Focal...
Points of the water family in the region, in addition to training activities developed jointly with UNESCO-IHP and the Conference of Ibero-American Water Directors – CODIA.

Additionally, Alice Aureli (UNESCO-IHP HQ) confirmed that CeReGAS has fulfilled its purpose of consolidating the presence of C2C specialized in groundwater and, in particular, in the management of transboundary aquifers. That has shown to actively contribute to the IHP and, in regional instances, with other UN programmes. Aureli valued the Centre's collaboration in fine-tuning the evaluation methodology for indicator 6.5.2 of the 2030 Agenda.

7. Partnerships developed and maintained with government agencies, public and private partners as well as donors

CeReGAS established alliances with national and international actors, such as governmental agencies, universities, international organizations, funding organizations, and UNESCO Centres and programmes. The Centre maintains a direct relationship with Uruguayan governmental agencies through the provision of technical assistance and the promotion of knowledge and training for groundwater, such as the Ministry of Housing, Territorial Planning, and the Environment (MVOTMA) and its successor the Ministry of the Environment, the National Water Directorate (DINAGUA), the National Directorate of Biodiversity and Ecosystem Services, the Departmental Government of San José (Uruguay); and the Commission of the Guarani Aquifer System from the Departmental Government of Rivera (Uruguay). The Centre provides permanent technical assistance to DINAGUA and to the National Directorate on Environmental Quality and Assessment (DINACEA) which has replaced the National Directorate of Environment (DINAMA). Also, to promote groundwater knowledge, the centre has established partnerships with international organizations such as the Ibero-American Conference of Water Directors (CODIA), the Spanish Agency for International Development Cooperation (AECID), the Latin American Network of Centres of Excellence in Water Management (RALCEA), the Global Water Partnership and the Ibero-American Shallow Geothermal Network (RIGS - CYTED).

In addition, It has worked with several universities and institutes like Universidad de la República (UDELAR) (Uruguay); Universidad Tecnológica del Uruguay (Uruguay) Universidad Nacional Autónoma de México (Mexico); University of Strathclyde (United Kingdom); University of Lund (Sweden); Universidad Industrial de Santander (Colombia); University of São Paulo (Brazil), Federal University of Rio Grande do Sul (Brazil), Universidade Júlio de Mesquita Filho (Brazil) and Universidade de São Paulo (Brazil).

8. Nature and efficiency of the Centre’s governance, financial resources and autonomy

The CeReGAS team is composed of an Executive Director, a technical adviser, a computer technician, and another official technical adviser from the National Water Directorate (DINAGUA) who is in a functional role in CeReGAS. In addition to these four professionals, there are two technical advisors who work in the National Directorate for the Environment (DINAMA) and another two in DINAGUA (both are public services that depend on the Ministry of the Environment), who were formally assigned to collaborate with the activities of the Centre, according to demand. Except for the computer technician, all staff have backgrounds in geology and groundwater technical knowledge.
The responsibilities signed by the Government of Uruguay with UNESCO are materialized through the financial contribution of the Ministry of Environment, which is carried out through a public body with legal personality and its own assets that does not depend on the Ministry of Environment, but is related with the Presidency of the Republic through the Ministry of Industry, Energy and Mining (MIEM). Thus, the financial and administrative management of the Centre is carried out by the Technological Laboratory of Uruguay (LATU), which strengthens the autonomy of CeReGAS. LATU is a non-state public law body created in 1965 to provide services to the production chain. The MIEM delegates technical, legal, and administrative powers to LATU.

Consequently, the Ministry of the Environment allocates economic resources to support the Centre, and these are administered by LATU, as an autonomous institution with legal personality. Within the scope of LATU administration, CEREGAS has a specific account, which annually receives the amount of US$120,000.00 (one hundred and twenty thousand US dollars), and this amount is made up through contributions of US$60,000.00 (sixty thousand US dollars), both from DINAGUA and DINACEA-DINAMA. This amount is enough to pay CeReGAS staff, the office expenses and have some background funds to invest in projects. Additionally, the building where CeReGAS operates is owned by LATU. The agreement signed between the Ministry of the Environment and LATU specifies that the Centre will function in those dependencies.

In an interview with Elina Ordoqui, Director of Environment at LATU (and of the environmental quality laboratory) who also is a member of the Centre’s Directorate (see CeReGAS Organizational Chart), she explained that this organization work with a logic of absolute transparency and manage funds from various other agencies. To access the financial resources, CeReGAS must fulfill some requirements. For minor expenses, CeReGAS need to present the invoices to be reimbursed. Other expenses require a prior request, which must be approved by the Ministry of the Environment and LATU. All funds spent need to be evidenced with the invoices or other financial documents to LATU and the Ministry of Environment.

It's important to highlight that LATU passes through regular auditing process since its quality management system is based on ISO 9001 and is certified by the Swiss Association for Quality and Management (SQS). Since CeReGAS financial and administrative management is under LATU responsibility, all these documents are audited.

Approximately 80% of CeReGAS expenses are to finance human resources. The centre has a small but highly qualified team, which allows the development of several initiatives related to groundwater. Although it does not have fully legal autonomy, the juridical arrangement built subordinating its administrative and financial management to LATU, has allowed the Centre to retain a degree of autonomy that enables the execution of its mission by hiring professionals and services, buying goods and conducting projects.

In a meeting held with the Ministry of Environment, with DINAGUA, DINAMA, representatives of the Ministry of Foreign Affairs and the Regional Hydrologist of UNESCO; Gerardo Amarilla, Undersecretary of the Ministry of Environment, was asked by the team of consultants if the Government of Uruguay would maintain the financing and supervision relationship with CeReGAS, through LATU. The Undersecretary's response was clear in stating that there is an intention to present a bill to Congress to grant legal status under Public Law to CeReGAS. However, despite having the written text in a draft bill format, this situation may take time, since a bill requires the times and majorities of the National Congress. Consequently, for now the Government of Uruguay will maintain the CeReGAS financing mechanism under the responsibility of LATU.
Finally, the Undersecretary for the Environment, who also chairs the CeReGAS Administration Board, explicitly expressed the interest of the government in renewing the original agreement signed between the Government of Uruguay and UNESCO.

9. Conclusions and recommendations

Based on the review of CeReGAS activities and budget during the 2015 – 2021 period in the light of the objectives of its 2014 Agreement with UNESCO and the feedback received from stakeholders the following observations can be made:

CeReGAS has obtained significant results towards the achievement of each of the specific objectives listed in the 2014 UNESCO-CeReGAS Agreement, making tangible contributions to achieving the Strategic Objectives of UNESCO and in particular to the implementation of the UNESCO-IHP Programme:

- It is the only Centre dedicated to groundwater in the LAC region and it helps to improve groundwater knowledge and governance, in a region that faces limitations in terms of the aquifer data availability and groundwater policies.
- The Centre has an important role in compiling and disseminating groundwater data, as well to promote awareness over these waters.
- The Centre has been very active in supporting the Uruguayan Government to promote groundwater monitoring, assessment, and governance.
- The Centre has been very active in promoting knowledge in the Guarani Aquifer System.
- The Centre has positioned itself as an internationally renowned actor in regional groundwater governance by conducting training and knowledge initiatives, research projects and publications on groundwater.

Recommendations

1. CeReGAS should continue to play a proactive role for the national government by providing scientific and operational assistance in Uruguay.
2. CeReGAS should continue to explore synergies with LAC countries institutions and other stakeholders, to amplify its international role in the region.
3. CeReGAS should further strengthen its existing links with the UNESCO category 2 centres and the UNESCO Water Family.
4. CeReGAS might consider creating an internship programme with universities in the region dedicated to undergraduate and graduate students from different backgrounds, to explore the different dimensions of groundwater governance.
5. CeReGAS should seek to establish cooperation initiatives with other regional groundwater institutes like Southern African Development Community – Groundwater Management Institute – SADC - GMI (Southern Africa), The Sahara and Sahel Observatory – OSS (Northern Africa and Sahel), and Regional Centre on Groundwater Resources Education, Training and Research in East Africa –
RCGRE (East Africa). This could help to improve groundwater collaboration, capacity building efforts and data exchange practices.

6. CeReGAS should continue its activities in the Guarani Aquifer, but at the same time it should expand its initiatives over other regional transboundary aquifers, in order to stimulate technical cooperation between countries and stakeholders.

7. The Centre should continue to raise awareness about the importance of groundwater monitoring and assessment, especially through collaborative efforts between States and with other UN-Water member/partner agencies.

8. It is strongly recommended that the Government of Uruguay keeps the financial support to CeReGAS in the terms of the Agreement and commit its best efforts in the sense to maintain or even amplify the autonomy of the Centre.

10. References


UNESCO. The 2019 Strategy for Category 2 Institutes and Centres under the auspices of UNESCO. UNESCO: 2020. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000373390

11. List of Annexes

Annex 1 – List of Cooperation with UNESCO Centres and Programmes

International Groundwater Resources Assessment Centre (IGRAC)
Coordination of the ISARM Americas Program - Ref.: PHI-056/17 (since May 2017). CeReGAS is part of the working group of the GRAPHIC program, in which it collaborates with Uruguay in the preparation of the Salto Aquifer System case study (since June 2017).

Actions with UNESCO Centres and Programmes

Participation in the meeting of PHI-LAC UNESCO Chairs and Centres related to water and in the PHI-LAC Coordinators Meeting (Santiago, Chile, October 29-30, 2015).


Participation in the XIII Meeting of National Committees and Focal Points of IHP-LAC (Panama City, from October 23 to 25, 2018).


Participation in the International Workshop Assessment of groundwater quality and quantity impacts and its mitigation, organized by GRAPHIC Program (Foz de Iguazú, June 3-7, 2019). CeReGAS present the conferences: Assessment of impacts and risks to groundwater quantity, including safe wells production (sustainable flow), recharge and discharge, and Assessment of impacts and risks to groundwater quality, including vulnerability to aquifers contamination and the pollutants potential and application examples.

Meeting UNESCO Water-related Centres and Chairs in Latin America and the Caribbean (August 4, 2020)
Annex 2 – List of Memoranda of Understanding (MoU’s)

Memorandum of Understanding between the International Groundwater Resources Assessment Centre (IGRAC)\(^6\) and CeReGAS. Signed in: December 19, 2019.

Cooperation Framework Agreement between the Foundation for Water Conservation in the Metropolitan Region of Guatemala (FUNCAGUA) and the Regional Centre for Groundwater Management

\(^6\) IGRAC’s mission is to contribute to world-wide availability of relevant information and knowledge on the groundwater resources of the world, with particular emphasis on developing countries, in order to support sustainable utilisation and management of the groundwater resources, to promote the role of groundwater in integrated water resources planning and to elucidate the importance of groundwater for aquatic ecosystems.
Annex 3 – List of selected publications, reports, chapter and monograph contributions (2014 – 2020)


5. Paris, Marta; Manganelli, Alberto (compiladores). Gestión Integrada del Agua Subterránea en Latinoamérica - Casos y experiencias del curso regional Gestión Integrada de Aguas Subterráneas (GIAS) 2019 – Plan Interconecta. RALCEA – Cátedra UNESCO Agua y Educación para el Desarrollo Sostenible – CeReGAS. AECID.


11. TAKS, J.; CLAVIJO, I.; MANGANELLI, A., SAMANIEGO, L. Desarrollo de un indicador dedicado a la educación sobre el agua en el marco del ODS6. Cátedra


15. Cezimbra, Flora; Manganelli, Alberto; Veroslavsky, Gerardo; Maahs, Ricardo; Kirchheim, R.; Reginato, Pedro.(2021) The Permo-Carboniferous Aquifer between Brazil and Uruguay: In search of the transboundary link. ISARM 2021 - International Conference on Transboundary Aquifers "Challenges and The way forward"


17. Samaniego, Lucia; Veroslavsky, Gerardo; Manganelli, Alberto; Aubet, Natalie (2021) Advances in Geological Knowledge in the Transboundary Outcrop Area of the Guarani Aquifer System, Artigas City and Surroundings, Uruguay. ISARM 2021 - International Conference on Transboundary Aquifers "Challenges and The way forward"
Annex 4 – List of activities

YEAR 2015

Partnership with DINAGUA to prepare the Guarani Aquifer System monitoring proposal.

Course on Geophysical Surveys applied to groundwater exploration carried out in partnership with the Institute of Mechanics of Fluids and Environmental Engineering of the Faculty of Engineering of the University of the Republic - UY (13-16 October 2015)

Assistance for Ms. Alexandra Verbinsi (student at the University of Lund) who developed the thesis project entitled "Transboundary sustainable development and hot springs ecotourism in the Guarani Aquifer region".

Workshop on Groundwater Governance, which was the result of a submission made to the British Council Researcher. Co-organized by CeReGAS, University of Strathclyde and UNESCO-PHI LAC (Salto, Uruguay, February 22 to 26, 2016)

Participation in the 4th Session of the Commission of the Guarani Aquifer System held on March 12, 2015 at the Departmental Government of Rivera (Uruguay)

CeReGAS’ Official presentation during the activities celebrating the World Water Day (22 March 2015), organized by the Ministry of Housing, Territorial Planning and the Environment (MVOTMA).

Presentation of CeReGAS at the XI Meeting of National Committees and Focal Points of the IHP Program (Santiago, Chile, from October 26 to 28, 2015)

Participation in the International Conference “Water, Megacities and Global Changes”, organized by UNESCO in Paris, from December 1 to 4, 2015, coinciding with the 21st Conference of the Parties to the UNFCCC (COP21).

Meeting on the Guarani Aquifer with the participation of IMS, DINAGUA, North Regional of UDELAR and assistants from Concordia and the Secretariat of Water Resources of Argentina (Salto, December 4, 2015)

YEAR 2016

Workshop “Optimal Design of Groundwater Monitoring Networks” organized by the Faculty of Engineering (Universidad Nacional Autónoma de Mexico) and CeReGAS. (Montevideo, July 19 to 23, 2016)

Presentation at the Course on Water Governance, organized by the Ibero-American Water Training Program, thematic area: Integrated Planning and Management of Water Resources (Montevideo from July 13 to 15, 2016)


Participation in the Workshop “Blue Planet from the Uruguayan perspective” and dialogue on computer applications focused on the solution of hydrological problems, in
the First Open Forum of Sciences of Latin America and the Caribbean CILAC 2016 (Montevideo, September 7 to 10, 2016)


Presentation of the paper “Mathematical modeling as a tool for the generation of policies for the exploitation of the Guaraní Aquifer in the Concordia-Salto area” at the VIII Uruguayan Congress of Geology and I Symposium on Water Resources of the Plata Basin (November 17 -19, 2016)

Course “Numerical Modeling applied to underground hydrology”, organized by the Faculty of Engineering-UNAM-CeReGAS (Montevideo, December 5-9, 2016)

YEAR 2017

Presentation of the conference Cuareim – Quaraí basin case, FMAM Cuenca del Plata Project", in the webinar "Joint management of surface water and groundwater", which was developed within the framework of the IW: LEARN project component (March 30, 2017)

Co-organization of the Regional course "Groundwater, water security and governance with emphasis on transboundary areas" organized and supported by the following organizations: CODIA, AECID, RALCEA, UNESCO PHI-LAC, CeReGAS, UNESCO Chair on Water and Education for Sustainable Development, CAP-NET, LA-WETNET and IDB – HYDRO-BID SUPPORT CENTRE (CeSH) (Montevideo – UY, April 3 to 7, 2017).

Organization of the event: Groundwater Governance (GAASS) and the Consultation meeting for the Latin America and the Caribbean (LAC) region. Representatives from eleven countries of Latin America and the Caribbean attended and the Groundwater Governance Consultative Meeting took place as a continuation of the project "Groundwater Governance: a global framework for action", which generated an instance of consultation with the countries to monitoring the project in its priority areas linked to groundwater governance (Montevideo, June 6 and 7, 2017).

Participation in the Meeting of National Committees and Focal Points of IHP-LAC (Nassau, September 18-20, 2017)


Participation of CeReGAS with the theme "Investigations in the Guaraní Aquifer System" in the Teacher training for the protection of the Guaraní Aquifer System, organized by the Department of Local Articulation SAG -Municipality of Concordia- Pilot Cross-Border Commission SAG Concordia (AR)-Salto (UY) and General Education Council of the Entre Ríos Province (CGE) (November 2, 2017).

Presentation of the paper Regional Strategy for the evaluation and management of Transboundary Aquifer Systems in the Americas because of the ISARM Americas program and a brief review of the Project for Environmental Protection and Sustainable Development of the Guaraní Aquifer System, at the preparatory event Towards the 8th. World Water Forum", organized by the National Water Agency of Brazil (ANA), with the
support of the Uruguay National Water Directorate and IHP-UNESCO (Montevideo, November 23, 2017).

Preparation of the project "The cross-border basin of the Cuareim-Quaraí River (Brazil-Uruguay) as a territory resilient to droughts and floods: risk management strategies", in partnership with DINAGUA (UY) and SEMA, submitted within the framework of the EUROCLIMA+ program. (It was not approved)

Promoted the preparation of the project: "IMPLEMENTATION OF THE GUARANI AQUIFER STRATEGIC ACTION PROGRAM: ENABLING REGIONAL ACTIONS", with the participation of the 4 Guarani Aquifer System countries (Argentina, Brazil, Paraguay and Uruguay), to be presented to the GEF, with CAF as implementing agency and UNESCO as executing agency. (start of presentations in November 2017)

YEAR 2018

The Program for the Development of Basic Sciences (PEDECIBA) Geosciences of Uruguay, awarded Dr. Natalie Aubet a postdoctoral scholarship for a period of one year from May 2018, to carry out the project "Towards a sustainable management of the Guarani Aquifer in Uruguay: integrated territorial study of the SAG recharge area in Artigas" under the academic guidance of geologists Gerardo Veroslavsky (Faculty of Sciences – PEDECIBA) and Alberto Manganelli (CeReGAS). The work proposal presented by Dr. Aubet is considered of the Centre interest, since it is part of its objectives. The project promotes scientific and technological research on groundwater, particularly focused on the improvement of aquifer management tools. Within this framework, and with the auspices of the Centre, Dr. Aubet developed part of her tasks at the CeReGAS facilities.

Reception of Vitor Malagutti (University of São Paulo) as an intern. The objective of his internship was to complete its geology undergraduate degree project "Hydrogeological study and development of the conceptual flow model in the transboundary basin of Quaraí Brazil/ Uruguay, under the supervision of Dr. Alexandra Suhogusof (USP) and Roberto Kirchheim (Geological Survey of Brazil-CPRM).

Participation in the VIII World Water Forum and co-organization with UNESCO of the side event: Cooperation in the field of water: Progressing towards 2030. CeReGAS was responsible for the presentation: The Guarani Aquifer System: Climate Change and bases for shared management (Brasília, March 18 to 23, 2018).

Participation in the “II Latin-American Symposium on Groundwater Monitoring” (Belo Horizonte, April 8 to 11, 2018).

Participation in the project: "Strengthening capacities for the management and use of the La Plata Basin wetlands", in conjunction with the RAMSAR UY office, which intends to promote courses in Bolivia, Paraguay and Uruguay.

Support and follow-up of the work: "Study of the geohydrology of two areas in the Farrapos Wetlands" carried out by the Faculty of Engineering and whose objective is: to analyze the groundwater-wetlands relation in the study areas.

Participation in the coordination of the Planning and Management Thematic Area in the X Argentine Congress of Hydrogeology, the VIII Hispanic Latin American Seminar on Current Issues on Groundwater Hydrology and the XIV Latin American Congress of
Groundwater Hydrology, ALHSUD. Presentation of the work Groundwater Monitoring in Latin America: Introduction to the GGMN (Salta – AR, October 23 to 26, 2018).

Presentation of the products resulting from the Project "Environmental Management of the Mercedes Aquifer System" carried out by the Underground Hydrology Group of IMFIA (UDELAR) (June 12, 2018).

Distance course "Water security and sustainable development goals" dedicated to decision makers. CeReGAS sent to organizers the presentation: “Guarani Aquifer System. Shared management and Water Security", as part of the Topic 3: Groundwater in a changing environment.


Presentation of the conference “SDG and groundwater: the role of ISARM”, at the Workshop “Advances in the Implementation of SDG 6.5.2 in Latin America and the Caribbean", organized by GWP and UNESCO, (Montevideo, 13 September 2018)

YEAR 2019

Co-organization, with the Technological University of Uruguay and the Centre-South Technological Institute (UTEC – ITRCS), of a technical seminar on the World Water Day, to discuss on how to guarantee the availability and sustainable management of water and sanitation for all of here to 2030 (Durazno – UY, March 22, 2019).

Participation in the preparatory meeting of the Guarani Aquifer Project held in Montevideo on March 25 and 26, 2019, in which representatives from Argentina, Brazil, Paraguay, Uruguay, GEF, CAF, UNESCO had participated. Its objective was to review the submitted project document considering the GEF observations about governance issues.

Participation in the GWP World Assembly (June 25, 2019)

Collaboration with the GIS/SyT Integrating Project related to the Agro-environmental Engineering career of the Technological University of Uruguay (UTEC), which is taught at the Central-South Regional Technical Institute based in the department of Durazno - Uruguay (first semester of 2019).

Holding of the First Conference of the Centre for Groundwater Management in Latin America and the Caribbean (CeReGAS) on the topic: Groundwater Monitoring", which took place at the Technological Laboratory of Uruguay (LATU) (July 30, 2019)

Reception of six students from the Agro-environmental Engineering Degree at UTEC, Durazno, to carry out an internship working on the consolidation of the GIS/S&T Integrating Project, unifying the information generated during the semester and consolidating it in a single GIS project (July 29 to August 2, 2019).

Member of the Groundwater thematic group. CeReGAS also assist the launch of the Project for the implementation of the Strategic Actions Program of the River Plate Basin (PPM), Intergovernmental Coordinating Committee of the La Plata Basin Countries (CIC) (Montevideo, August 15, 2019).
Participation in the “1st Ibero-American Shallow Geothermal Conference” organized by the Ibero-American Shallow Geothermal Network (RIGS-CYTED), at the University of San Martín (Buenos Aires – AR, October 7-10, 2019)

Financial support to the geology student Laura Ríos for carrying out groundwater chemical analyzes. The student was from the Industrial University of Santander, Colombia, and was enrolled in the academic exchange modality of the Faculty of Sciences (University of the Republic).

Reception of María Luisa Telarolli, student of the postgraduate program in Human Geography at the University of São Paulo – Brazil to support her in the development of her research on the Agreement on the Guaraní Aquifer (October 16 to 18, 2019).

Internship of the student Flora Dallagnol Cezimbra of the Federal University of Rio Grande do Sul to conclude her graduation work “Bonito River Aquifer Hydrogeological and Hydrochemical Characterization in the Aceguá, Hulha Negra and Candiota Municipalities and its analysis of the transfrontier Aspect” (November 2019).

Participation in the Course: "Integrated Groundwater Management, with emphasis on transboundary aquifers", organized by the Ibero-American Conference of Water Directors (CODIA), the Spanish Agency for International Development Cooperation (AECID), the UNESCO Water and Education Chair for Sustainable Development, CeReGAS, and Latin American Network of Centres of Excellence in Water Management - RALCEA (November 19 to 21, 2018 and November 25 to 29, 2019).

Support for the postgraduate course: “Isotope Hydrology”, organized by PEDECIBA, Department of Geosciences and Environmental Sciences of the Faculty of Sciences, with the cooperation of the São Paulo State University Júlio de Mesquita Filho (UNESP, Brazil) (December 9 - 13 of 2019 in Montevideo.

Participation in the poster “Ibero-American Atlas of Shallow Geothermal Energy by RIGS-CYTED” presented at the American Geophysical Union (AGU) Meeting 2019. This work was carried out within the framework of the Ibero-American Shallow Geothermal Energy Network of which CeReGAS is a member.


Participation in the project: "Evaluation of the geothermal energy potential in the Salto pilot area (North Basin - Uruguay)" presented by the Faculty of Sciences and financed by the Sectoral Commission for Scientific Research (CSIC) of the University of the Republic. This project will last for 2 years ending in December 2020.

Participation in the project: “Technology and modeling for integrated water management as adaptation to climate change of the main source of drinking water in Uruguay”, presented by the National Water Directorate to the Water Management component related to the Urban Resilience Perspective of the EUROCLIMA+ Project. This project was approved in July 2019 and will have a duration of 3 years.
Participation in the project: "Strengthening capacities for the management and use of wetlands in the Plata Basin", coordinated by the RAMSAR UY office and whose scope is the Plata Basin and to promote courses in Bolivia, Paraguay and Uruguay. CeReGAS will deliver a module on groundwater.

CeReGAS was part of the Workshop "Support for compliance with the 2030 Agenda - Cooperation on Transboundary Water Matters - Follow-up of the implementation of indicator 6.5.2 of the SDGs in Central America and the Caribbean". It was held at the Training Centre of AECID in Antigua-Guatemala from November 5 to 7, 2019.

YEARS 2020

Webinar Governance of transboundary groundwater and aquifers

Cycle of Online Conferences on Integrated Groundwater Management (July 2020). Organized by: CODIA – CeReGAS - Water and Education Chair – RALCEA – LA WETnet


Participation in the special panel on groundwater education and capacity development on the Online Conference IWRA 2020 (October 2020)


Participation in the project: "Evaluation of the potential of geothermal energy in the pilot area "Salto" (Cuenca Norte - Uruguay)" presented in the Faculty of Sciences and financed by the Sectoral Commission for Scientific Research (CSIC) of the University of the Republic. This project will last for 2 years.

Participation in the project: "Technology and modelling for integrated water management as adaptation to climate change of the main drinking water source in Uruguay", presented by the National Water Directorate to the Water Management component with an Urban Resilience Perspective of the EUROCLIMA+ Project. This project was approved in July 2019 and will have a duration of 3 years.

YEARS 2021

Presentation of the ISARM Americas Programme in the High-Level Seminar on Transboundary Water Management in Countries in the field of CODIA – XXI CODIA (February 2021)

Organization of the Regional Course "Governance of Transboundary Aquifers CODIA-UNESCO-CeReGAS (June 2021)
GIAS Course (May-July 2021) Course Organized by RALCEA with the participation of CeReGAS


Presentation of the conference “Groundwater and transboundary cooperation in Latin America and the Caribbean” in the Second introductory webinar to the 2022 International Conference "Groundwater, key to the Sustainable Development Goals" (November 2021),

Presentation of the conference “Groundwater Quality and well construction” in the Workshop More Water for Rural Development. Organized by Sociedad Fomento Rural Castillos. November 2021

Participation as International Presenter in MODULE III – Water Planning on Theme 11 in the Seminar “Water and your city, we are all part of a basin, 2021 Edition: The Valley of Mexico Basin” (Valley of Mexico Aquifer, March 2021)

Presentation of the conference: Guarani Aquifer, its importance in Uruguay, its cross-border aspects and its situation regarding oil exploration in the First Regional Dialogue: Is Fracking a Development Alternative for our region? Organized by the Uruguayan Network of Environmental NGOs (June 2021).

Participation in the project: "Evaluation of the geothermal energy potential in the pilot area of "Salto" (North Basin - Uruguay)" presented by the Faculty of Sciences and financed by the Sectoral Commission for Scientific Research (CSIC) of the University of the Republic.

Participation in the project: “Technology and modeling for integrated water management as adaptation to climate change of the main drinking water source in Uruguay”, presented by the National Water Directorate to the Water Management component with an Urban Resilience Perspective of the EUROCLIMA+ Project.

Moderation of Section 11 - Governance of TBAs: strengthening cooperation in the ISARM 2021 - International Conference on Transboundary Aquifers "Challenges and The way forward" (December, 2021).

Presentation of 5 works (abstracts) in the ISARM 2021 - International Conference on Transboundary Aquifers "Challenges and the way forward".

Organization of the ISARM Americas Symposium – September 2021 with UNESCO and ISARM Programme.

In the context of the ISARM Programme, CeReGAS carried out works on the: a) Transboundary Aquifer System 7C Yucatan Peninsula-Candelaria-Hondo (Belize, Guatemala, Mexico). A knowledge updating document was produced through the hiring of 3 consultants (1 from Mexico - 1 from Guatemala - 1 from Belize); b) Four documents
were produced about Caribbean transboundary aquifers, shared by Dominican Republic and Haiti: 1CB (Massacre), 2CB (Artibonito), 3CB (Los Lagos), e 4CB (Pedernales).
Annex 5 – List of technical projects

Section A – International Projects

Project proposal: The cross-border basin of the Cuareim-Quaraí River as a territory resilient to droughts and floods: risk management strategies
Countries: Brazil and Uruguay –Dirección Nacional de Medio Ambiente (DINAMA) and Rio Grande do Sul Environmental State Secretary
Funding agency: EUROCLIMA+ program.
Year: 2017
Status: SUBMITTED, BUT NOT APPROVED

Countries: Argentina, Brazil, Paraguay and Uruguay
Funding Agency: Development Bank of Latin America, Global Environmental Facility and UNESCO
Year: 2017, until now
Status: SUBMITTED, APROVED, WAITING THE START.

Project proposal: Strengthening capacities for the management and use of the La Plata Basin wetlands.
Partnership with RAMSAR UY office
Countries: Argentina, Bolivia, Brazil, Paraguay and Uruguay.
Funding agency: RAMSAR
Year: 2018
Status: SUBMITTED, APROVED, DEVELOPING

Project Proposal: Project for the implementation of the Strategic Actions Program of the River Plate Basin (PPM) (Member of the Groundwater thematic group)
Countries: Argentina, Bolivia, Brazil, Paraguay and Uruguay.
Agency: Intergovernmental Coordinating Committee of the La Plata Basin Countries (CIC)
Funding agency: Organization of American States (OAS), the Global Environment Facility (GEF) and CAF - Development Bank of Latin America
Year: 2019
Status: SUBMITTED, APROVED, DEVELOPING

Project Proposal: “Guarani-Apuã Giant – Socio-environmental diagnosis, training and planning for the recuperation and protection of the Capivara and Alambari micro watersheds in the recharge areas of the Guarani Aquifer System.
Institutions involved: INTERSSAN – Centro de Ciência e Tecnologia para Soberania e Segurança Alimentar e Nutricional do Instituto de Biociências da UNESP de Botucatu-SP
Partners: Instituto Giramundo Mutuando, Instituto Itapty, Associação Brasileira de Agricultura Biodinâmica, Empresa Terra Sapiens, Conselho da Área de Proteção Ambiental Botucatu y CeReGAS/UNESCO – Montevideo – Uruguay. (2020 –)
Funding agency: FEHIDRO
Country: Brazil
Status: WAITING THE START
Section B – National Projects

Project Proposal: Study of the geohydrology of two areas in the Farrapos Wetlands
Institutions: Underground Hydrology Group of IMFIA – UDELAR
Funding agency: Facultad de Ingeniería-CeReGAS-SNAP-RAMSOR
Year: 2018
Status: Finished

Project "Environmental Management of the Mercedes Aquifer System"
Institutions: Underground Hydrology Group of IMFIA (UDELAR).
Funding agency: Fondo de Cooperación México-Uruguay
Year: 2018
Status: Finished

Project proposal: GIS/SyT Integrating Project
Institution: Agro-environmental Engineering career of the Technological University of Uruguay (UTEC) at the Central-South Regional Technical Institute based in the department of Durazno – Uruguay.
Funding Agency
Year: 2019
Status: Finished

Project proposal: Evaluation of the geothermal energy potential in the Salto pilot area (North Basin - Uruguay)
Institution: Faculty of Sciences – Universidad de la República
Funding agency: Sectoral Commission for Scientific Research (CSIC) of the University of the Republic.
Year: 2019
Status: Finished

Project proposal: Technology and modelling for integrated water management as adaptation to climate change of the main source of drinking water in Uruguay
Institution: National Water Directorate
Funding: EUROCLIMA+ Project.
Year: 2019
Status: Developing
### Annex 6 – List of contacted persons for the stakeholder survey

<table>
<thead>
<tr>
<th>Contact Person</th>
<th>Institution</th>
<th>Type of interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elina Ordoqui</td>
<td>Director of Environment and Fray Bento Unit of The Technological Laboratory of Uruguay (LATU)</td>
<td>In-person</td>
</tr>
<tr>
<td>Vanessa Artus</td>
<td>Project Accounting Manager of LATU</td>
<td>In-person</td>
</tr>
<tr>
<td>Margarita Batthyany</td>
<td>Executive Secretary of LATU</td>
<td>In-person</td>
</tr>
<tr>
<td>Jorge Rucks</td>
<td>Consultant of the Development Bank of Latin America</td>
<td>Online</td>
</tr>
<tr>
<td>Natalie Aubet</td>
<td>Professor at Universidad Tecnológica del Uruguay - UTEC</td>
<td>In-person</td>
</tr>
<tr>
<td>Gerardo Veroslavsky</td>
<td>Professor at Universidad de la República de Uruguay, Montevideo (UDELAR)</td>
<td>In-person</td>
</tr>
<tr>
<td>Matias Paolino</td>
<td>Subdirector at Environmental Division at the Ministry of External Affairs</td>
<td>In-person</td>
</tr>
<tr>
<td>Andrés Sánchez</td>
<td>Specialist in integrated management of water resources at the Department of Sustainable Development of Organization at American States</td>
<td>Online</td>
</tr>
<tr>
<td>Alice Aureli</td>
<td>Chief of the Groundwater Resources and Aquifer Systems Section of UNESCO’s International Hydrological Programme</td>
<td>Online</td>
</tr>
</tbody>
</table>
## Annex 7 – Calendar of interviews and meetings

### February 21

<table>
<thead>
<tr>
<th>Hour</th>
<th>Interviewed</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00</td>
<td>Alberto Manganelli, Executive Director and Lucía Samaniego, geologist.</td>
<td>CeReGAS offices</td>
</tr>
<tr>
<td>10:30</td>
<td>Miguel Doria</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>15:00</td>
<td>Elina Ordoqui, Vanessa Artus y Margarita Batiani</td>
<td>LATU</td>
</tr>
<tr>
<td>17:00</td>
<td>Miguel Doria and Jorge Ellis</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>18:00</td>
<td>Jorge Rucks - CAF</td>
<td>Online</td>
</tr>
</tbody>
</table>

### February 22

<table>
<thead>
<tr>
<th>Hour</th>
<th>Interviewed</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30</td>
<td>Natalie Aubet. Universidad Tecnológica del Uruguay - UTEC</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>10:00</td>
<td>Gerardo Veroslavsky. Science Faculty Universidad de la República de Uruguay</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>11:30</td>
<td>Environment Undersecretary&lt;br&gt;DINAGUA and IHP National Committee president&lt;br&gt;DINAMA&lt;br&gt;Foreign Ministry officials&lt;br&gt;UNESCO representatives</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>13:00</td>
<td>Andrés Sánchez Organization at American States (OEA)</td>
<td>Online</td>
</tr>
<tr>
<td>15:00</td>
<td>Alberto Manganelli and Lucía Samaniego</td>
<td>UNESCO Montevideo</td>
</tr>
<tr>
<td>15:45</td>
<td>Evaluation meeting between the consultants</td>
<td>Online</td>
</tr>
</tbody>
</table>

### March 2

<table>
<thead>
<tr>
<th>Hour</th>
<th>Interviewed</th>
<th>Place</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:00</td>
<td>Alice Aureli (HQ UNESCO)</td>
<td>Online</td>
</tr>
<tr>
<td>13:00</td>
<td>Evaluation meeting between the consultants</td>
<td>Online</td>
</tr>
</tbody>
</table>