



ANNUAL REPORT SARAS<sup>2</sup> 2016

Annual Report SARAS<sup>2</sup> Institute 2016

Cover photo:

Critical Transitions, still image from video

Artist Tone Bjordam in collaboration with scientist and musician Marten Scheffer.



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## Institute & Foundation

*The SARAS<sup>2</sup> Institute is a joint initiative of Wageningen University (The Netherlands), the University of the Republic (UdelaR, Uruguay), the Resilience Alliance, the Ministry of Education and Culture of Uruguay (Uruguay), and the Municipality of Maldonado (Uruguay).*

*Through the Advisory Board, the Institute has strong linkages with: the Beijer Institute of Ecological Economics (Sweden), the Stockholm Resilience Centre (Sweden), the University of Wisconsin (USA), the Arizona State University (USA), the University of Waterloo (Canada), the Catholic University of Chile (CASEB, Chile), the Patagonic National Centre CONICET (Argentina), the University of Brasilia (Brazil), the University of Zurich, and Rutgers University (USA).*

The South American Institute for Resilience and Sustainability Studies (SARAS<sup>2</sup>) is an emerging transdisciplinary institute designed to generate critical insights allowing South America to build sustainable futures. It seeks integration across a broad range of knowledge using innovative approaches and integrating social and natural sciences, mathematics and arts.

SARAS<sup>2</sup> is now housed in a custom-designed building recently finished at the coast of Uruguay, providing space and facilities for workshops, courses and academic residencies, thus serving as a hub for the emergence of novel cooperative networks. We envision the kind and intense interaction at SARAS<sup>2</sup> to shape a new generation of broad visionary thinkers and creators.

The idea of SARAS<sup>2</sup> Institute was originally conceived in 2005 between Dr Marten Scheffer (Wageningen University) and Dr Néstor Mazzeo (UdelaR). In January 2006, a first document was drafted and at the same time, the Mayor of Maldonado Mr Oscar de los Santos was approached to explore the possibility of establishing SARAS<sup>2</sup> Institute in that area. With the strong support of the Municipality, a search for a suitable location started. Since the summer of 2007, the Advisory Board of SARAS<sup>2</sup>

began meeting regularly to discuss guidelines and shape the Institute's main features, targets and goals.

The Institute's academic life began between 2008 and 2009 with various scientific publications and several research project proposals presented at national and international levels. In 2009, SARAS<sup>2</sup> was granted a substantial support from the University of the Republic (UdelaR). Thank to this contribution, Dr Mariana Meerhoff joined the work team. There was also economic backing from the Ministry of Education and Culture. In connection with funded specific projects, a five year programme of annual conferences on topics relevant for Latin America was established. The cycle of annual conferences started in 2010 with the topic "Sustainable Future for Freshwater Resources in South America". In 2011, additional support from the Municipality of Maldonado was granted to construct the building in the coastal village Bella Vista.

As from December 2012, SARAS<sup>2</sup> works as a foundation to facilitate legal and administrative management.

During 2015 the first phase of SARAS<sup>2</sup> building at Bella Vista was finished, funded by the Ministry of Education and Culture and the Municipality of Maldonado. These institutions

provided the economic support to SARAS<sup>2</sup> until 2016. At present, the Ministry of Housing, Land Planning and Environment (MVOTMA) provides most of the economic support.

In December 2016, the SARAS<sup>2</sup> Institute and Foundation were composed as follows:

Advisory Board: Marten Scheffer (The Netherlands), Jordi Bascompte (Spain, Switzerland), Laurie Beth Clark (USA), Steve Carpenter (USA), Carl Folke (Sweden), Pablo Marquet (Chile), Osvaldo Sala (Argentina, USA), Ana Parma (Argentina), Eduardo Viola (Brazil), Frances Westley (USA, Canada), Mariana Meerhoff (Uruguay) and Jorge Marcone (Peru, USA).

Executive Committee: Marten Scheffer (Director), Osvaldo Sala (Co-Director), Néstor Mazzeo (Scientific Director), Mariana Meerhoff (Executive Advisory Board), Paula Bianchi (Communication

Officer), Ana Dubra (Executive Secretary), Cecilia Delgado (Accountant), William Rodríguez (Lawyer) and Mariella Busnadiago (Notary).

Administrative Board: Dr Néstor Mazzeo (UdelaR representative), Dr Juan Cristina (UdelaR representative), Dr Osvaldo Sala (Advisory Board representative), Dr Mariana Meerhoff (Advisory Board representative), Prof. Jorge Céspedes (Municipality of Maldonado representative), Ing. Quím. Marisol Mallo (MVOTMA representative) and Dr Álvaro Soutullo (local scientific community representative).

Fiscal Board: Lujan Criado (UdelaR representative), Gustavo Morales (UdelaR representative) and Bethy Molina (Municipality of Maldonado representative).

## Scientific activities

*Over the past years, SARAS<sup>2</sup> has organised several activities, including the international scientific conferences and workshops listed, and research and teaching activities focusing on the analysis of resilience and sustainability of social-ecological systems, many of key importance for Uruguay and the region.*

*The construction of the Institute at Bella Vista-Maldonado now marks a transition point to a new phase..*

In the last seven years, there has been a series of international scientific conferences and workshops:

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**2015-2016** Seeking sustainable pathways for land use in South America

**2014** Imagining resilience: Art-science collaboration for sustainability

**2013** Education for uncertainty

**2012** Transitions in terrestrial ecosystems

**2011** Sustainable Futures for Artisanal fisheries in Latin America

**2010** Sustainable Futures for Freshwater resources in South America

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For the next years, we envision working with partner institutions across Latin America interested in sharing the conceptual, methodological and organisational approaches used by SARAS<sup>2</sup> and by our “big sister” institution, the Stockholm Resilience Centre.

We envision the construction of diverse platforms across the continent to foster the interaction of scientific domains, as well as the arts, to expand our frameworks in the fields of sustainability and resilience. According to this idea, and to get that goal, SARAS<sup>2</sup> has organised the following workshop in December 2016:

**Future Search SARAS<sup>2</sup>**

## Networks

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*SARAS<sup>2</sup> can be considered a net of networks or a facilitator of networks. The research networks are organized around specific topics, independently of the disciplinary background of participant researchers. The list below includes some examples.*

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### Early warning signals

This network aims at developing methods and frameworks to identify early warning signals that could anticipate radical changes or critical transitions in both nature and society.

### Climatic change, science-policy interactions and decision making process

SARAS<sup>2</sup> is working with a network of South American universities, institutions and foundations, led by UNESCO and AVINA, to promote interactions among different partners in several decision-making processes (including public policies). During 2016, the network develops has focused on the project: Legacy in research and teaching in LAC, supported by CDKN and Fundación Futuro Latinoamericano Internacional.

### Multilateral cooperation on social-ecological systems research and teaching

The main goal of this network is to explore research and postgraduate activities in order to develop a scientific cooperation agenda between the Stockholm Resilience Centre (Sweden), CATIE (Tropical centre for research and teaching, Costa Rica) and SARAS<sup>2</sup>.

### Current and future climate variability and the relationship with the Uruguayan productive sectors

This network is oriented to analyse the current and future scenarios of climate variability and the relationship with key productive sectors of Uruguay.

### Adaptive management of the Laguna del Sauce (Maldonado, Uruguay) basin

The goal of this network is to develop and promote a series of adaptive strategies that will enable the sustainability of the critical ecosystem services provided by this reservoir (such as drinking water) for human wellbeing.

# Participation in the Construction of Public Policies

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## Ministry of Housing, Land planning and Environment (MVOTMA, Uruguay)

- Participation in the Development of the National Policy of Climate Change.
- Advisory activities regarding fresh water management (such as irrigation policy, monitoring schemes and regulations).

## MVOTMA and Ministry of Cattle, Agriculture and Fisheries (MGAP, Uruguay)

- Participation in a collaborative process to define the new national strategy for adaptation to climatic variability and climate change. National system for mitigation and adaptation to climate change (SNRCC).

## MVOTMA, MGAP, State Water Works (OSE) and Maldonado Council (Uruguay)

- Participation in the collaborative process to implement a communication plan for the Laguna del Sauce basin commission.
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# Training programs

*Teaching and training activities are crucial for SARAS<sup>2</sup>. We aim at contributing to the academia but also to the organizations with management and decision-making responsibilities. We therefore promote the exchange and integration of participants from these diverse sectors in several of our education activities, and expect to expand them further in the future.*

## Postgraduate courses

Postgraduate Course: **Socio-ecological systems: structure, dynamics and management.**

Location: SARAS<sup>2</sup> Institute and online (with access only to enrolled students).

Date: August 12th to November 18th, 2016.

Responsible: Néstor Mazzeo.

## PhD thesis

2012-2017 Rafael Bernardi **Grasslandforest transitions in subtropical South America.**

Supervised by: Dr. Milena Holmgren, Dr. Marten Scheffer and Dr. Matías Arim.

## MSc Thesis

2015-2016. Lic. Rocio Martinez Cillero. **Tree seedling recruitment at the ecotone between riparian forests and grasslands in subtropical South America (Uruguay).**

Wageningen University Master of Science Program (Netherlands).

Supervised by Holmgren M., Bernardi R. & Mazzeo N.

2015-2016. Lic. Iván Raniero Hernandez Salmeron. **Tree seedling removal and emergence at the ecotone between riverine forests and grasslands in subtropical South America (Uruguay).**

Wageningen University Master of Science Program (Netherlands).

Supervised by Holmgren M., Bernardi R. & Mazzeo N.

2015-2016. Lic. Bart Verdijck. **Tree seed dispersal patterns at the ecotone between riverine forests and grasslands in subtropical South America (Uruguay).**

Wageningen University Master of Science Program (Netherlands). Supervised by Holmgren M., Bernardi R. & Mazzeo N.

2015-2016. Lic. Jasper Buijs. **Tree patch configuration, structure and composition at the ecotone between riverine forests and grasslands in subtropical South America (Uruguay).**

Wageningen University Master of Science Program (Netherlands).

Supervised by Holmgren M., Bernardi R. & Mazzeo N.

# Activities conducted during 2016

## Organised by SARAS<sup>2</sup> with other institutions:

September 22th. Webinar: **Decision Making and Climate Change: bringing together science and policies in Latin America and the Caribbean**. SARAS<sup>2</sup> Institute, ITBA Argentina, Centro de Cambio Global Pontificia Universidad Católica de Chile, Climate

October 5th to 7th. Conference: **Good governance for energy transition - Second conference on energy transition in Latin America and Germany**. SARAS<sup>2</sup> Institute, LatinClima and Konrad Adenauer Foundation (Perú). Location: SARAS<sup>2</sup> Institute (Bella Vista) and Four Point Hotel (Montevideo).

## Participation of SARAS<sup>2</sup> in seminars, workshops and meetings:

May Workshop: **Scientific cooperation between México and Uruguay, and between USA and Uruguay** organized by the National Agency for International Cooperation of Uruguay (AUCI).

June 16th. Workshop: **Development agenda of Latin America**, organized by AUCI and the Spanish Agency for the Development of International Cooperation (AECID).

June 2nd. **Water quality problems of Laguna del Sauce (Maldonado): causes, consequences and alternatives**. Municipality of Punta del Este.

June 2nd. **Water quality problems of Laguna del Sauce (Maldonado): causes, consequences and alternatives**, organised by the Municipality of Piriápolis.

June 27th. Workshop: **Human Rights and the Environment: Progress and challenges for sustainable development**, organized by AECID and MVOTMA.

July 4th. Workshop: **New integrative system of the international cooperation program from Uruguay**, organized by AUCI.

October 26th to 29th. **30° National Fair of Science Clubs**. SARAS<sup>2</sup> participated as a jury and also awarded the prize Sustainability and Resilience. The activity is annually organized by the National Directorate of Education of the Ministry of Education and Culture.

November 30th. **National Water Plan: transition from command-control to integrative management**, organized by Presidencia de la República, OSE, MVOTMA, MGAP and Grupo Banco Mundial.



## The staff of SARAS<sup>2</sup> was invited to participate in the following activities as in Uruguay invited speakers:

June 9th. Seminar: **Water quality and water ecosystems management in Uruguay**. For journalist training, organized by the Chamber of Commerce of agro-chemical products (CAMAGRO).

June 14th. Public conference: **Effects of climatic variability on ecosystem and ecosystem services**, organised during the collaborative process to define the new national strategy for the adaptation to climatic variability and climate change. National System for Mitigation and Adaptation to Climate Change (SNRCC), MVOTMA and MGAP, Uruguay.

September 8th. Conference: **The challenge of integrating climate change into decision making processes**. CILAC I Latin American and Caribbean Open Science Forum. Science, Technology and Innovation for Sustainable Development in Latin America and the Caribbean. Organised by United Nations Educational, Scientific and Cultural Organization (UNESCO), Asociación de Universidades Grupo Montevideo (AUGM), University of the Republic (UdelaR), Municipality of Montevideo (IM), National Agency for Research and Innovation (ANII), AUCI and Ministry of Education and Culture (MEC, Uruguay).

September 28th and 29th. Round-tables: **The challenge of integrating climate change into the decision making processes and Water resources management in Uruguay: progress, constraints and challenges** during the Latin American Congress on Interdisciplinary Research and Higher Education, organized by the Espacio Interdisciplinario of UdelaR.

October 17th. **Conference: Climate change and challenges for the management of continental aquatic resources**. organized by LATIN and CLIMA CATIE.

October 25th to 26th **Management of Continental Aquatic Resources** Symposium "Water is Life" organized by the Iniciar Foundation for Global Action

October 28th to 30th. Conference: **Current challenges of water resources management**. 1st Forum: Relevance of aquatic resources and wetland preservation. Organized by Maldonado Municipality and the National Third Level of Government

November 16th to 17th. **Aquatic resources management from the perspective of land planning of ecosystem services. Round table: Water and Economy**. Organized by Red Temática de Medio Ambiente of UdelaR.

November 17th to 19th. Conference: **The national monitoring program of aquatic ecosystem: transition from integrative to adaptive management**. VIII Congreso Uruguayo de Geología and I Symposium of Aquatic Resources of La Plata Basin. Organized by the Sociedad Uruguaya de Geología.

November 28th to December 2nd. Conference: **Building a science-political dialogue in the analysis and management of persistent problems**. Jornadas Interdisciplinarias en Biodiversidad y Ecología, organized by CURE of UdelaR.

December 6th. **Eutrophic systems rehabilitation and the archetype of ecosystem services**. Workshop: Restoration of Aquatic Ecosystems: Santa Lucía Watershed, organized by DINAMA-MVOTMA

### Awards:

**Néstor Mazzeo: Light and Truth prize 2016**, awarded by the B'nai B'rith, Uruguay

### Proposal submitted and approved:

**Legacy in research and teaching of CDKN** (Climate and Development Knowledge network) program in America. Coordinated by Latin American Future Foundation, Climate Change and Decision Making of UNESCO-AVINA and SARAS<sup>2</sup>

**UNITWIN – UNESCO Chair Programme: UNITWIN Network in Climate Change and Decision Making.** Coordinated by Climate Change and Decision Making of UNESCO-AVINA and SARAS<sup>2</sup>

Erasmus+ Programme. Capacity-Building projects in the field of Higher Education **Empowering climate resilience/CARE**. By Universidad Pablo De Olavide (UPO) of Seville, Union Iberamericana de Municipalistas (UIM), Politecnico di Milano (POLIMI), Poliedra- Politecnico di Milano, Centro Regionale d’Intervento per la Cooperazione ONLUS (CRIC), Faculty of Geo-Information Science and Earth Observation (ITC) at University of Twente, Pontificia Universidade Catholica De Chile (PUC), Departamento de Urbanismo & Departamento de Geografía- Universidad de Concepción UdeC , Universidade Federal do Pará (UFPA), Universidade Federal do ABC (UFABC), Universidad de Ibague (UNIBAGUE), Universidad del Tolima (UT), Universidad Nacional De Colombia (UNAL), Universidad De La Republica (UDELAR), Universidad Tecnológica Equinoccial (UTE), Universidad Técnica Estatal de Quevedo- UTEQ, SARAS<sup>2</sup> and Resilience Lab.

### Proposals submitted

**Valuing buffer zones to increase resilience of surface fresh waters**, submitted to 2016 ESTH SMALL GRANTS, USA

**Contribution to Water Sustainability in Uruguay: Scenarios thinking for the Santa Lucía watershed**, submitted to US Water Consultant program

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## Diffusion and Communication

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*SARAS<sup>2</sup> activities and outputs have increasing visibility.*

*Specific strategies of diffusion and communication were enforced for each activity. Those strategies aimed at national and regional levels, and involved specific actions to reach local and national newspapers, radio programs, TV programs and Social Networks.*

*Also, we have developed a new web page with specific tools to improve the communication and visibility of the Institute.*

*We have implemented new technologies to increase the access to SARAS<sup>2</sup> activities*

- In the last public conference (March 2016), 40 foreign participants from different countries could follow and participate via livestreaming.*
- The Posgraduate course: Socio-ecological systems: structure, dynamics and management, held in Bella Vista, was also transmitted in real time to students outside Uruguay.*
- The on-line seminar (webinar) "Challenges of integrating climate change in the decision making process", via gotowebinar platform, allowed for the participation of technicians, academics, and decision makers of Latin America and the rest of the world.*

*The communication area also worked with other institutions, coordinating tasks with governmental organisms and civil society organizations, including the communication strategy for the Sauce Lake committee and round tables on freshwater issues.*

*SARAS<sup>2</sup> is seen as a reference to journalists in topics such as sustainability, water and natural resources management.*

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# Publications 2009 - 2016

## SCIENTIFIC PAPERS

### 2015

**Dual thinking for scientists. *Ecology and Society*** 20(2): 3. <http://dx.doi.org/10.5751/ES-07434-200203>.  
Scheffer M, Bascompte J, Bjordam TK, Carpenter SR, Clarke LB, Folke C, Marquet P, Mazzeo N, Meerhoff M, Sala O & Westley FR . C.

### 2014

A special feature of the *Journal of Ecology* was published in November synthesizing the results of the 2012 SARAS<sup>2</sup> workshop: **Grass-woodland transitions: determinants and consequences for ecosystem functioning and provisioning of services. *Journal of Ecology*** 102:1357-1362.  
Sala, O.E. and Maestre, F.T.

### **The forgotten half of scientific thinking.**

Opinion. **PNAS**. Vol.111 (17): 6119  
Scheffer, M.

### **Co-management in Latin American small-scale shellfisheries: assessment from long-term case studies. *Fish and Fisheries***. 32, 29 - 39

Defeo O., Castrejón M., Pérez-Castañeda R., Castilla J.C., Gutiérrez N.L., Essington T.E., Folke C.2013.

### **Impacts of climate variability on Latin American small-scale fisheries. *Ecology and Society*** 18 (4): 30.

Defeo O., Castrejón M., Ortega L., Kuhn A., Gutiérrez N.L., Castilla J.C.

### 2012

**Anticipating Critical Transitions. *Science*** 338: 344:348.  
Scheffer, M., Carpenter, S.R., Lenton, T.M., Bascompte, J., Brock, W., Dakos, V., van de Koppel, J. van de Leemput, I. A., Levin, S. A., van Nes, E. H., Pascual, M., Vandermeer, J.

**Environmental warming in shallow lakes: a review of potential changes in community structure as evidenced from space-for-time substitution approaches. *Advances in Ecological Research*** 46: 259-349.

Meerhoff, M.; Teixeira-de Mello, F.; Kruk, C.; Alonso, C.; González-Bergonzoni, I.; Pacheco, J.P.; Lacerot, G.; Arim, M.; Beklioğlu, M.; Brucet, S.; Goyenola, G.; Iglesias, C.; Mazzeo, N.; Kosten, S. & Jeppesen, E.

**Bio-manipulation as a restoration tool to combat eutrophication: recent advances and future challenges. *Advances in Ecological Research*** 47: 411-488.

Jeppesen, E.; Søndergaard, M.; Lauridsen, T.L.; Davidson, T.; Liu, Z.; Mazzeo, N.; Trochine, C.; Özkan, K.; Jensen, H.S.; Trolle, D.; Starling, F.; Lazzaro, X.; Johansson, L.; Bjerring, R.; Liboriussen, L.; Larsen, S.; Landkildehus, F.; Egemose, S. & Meerhoff, M.

**Governance and governability of coastal shellfisheries in Latin America and the Caribbean: multi-scale emerging models and effects of globalization and climate change. *Current Opinion in Environmental Sustainability*** 4: 344-350.

Defeo, O. and Castilla J.C.

### 2009

**Early-warning signals for critical transitions. *Nature*** 416(3)53-59.

Scheffer M1, Bascompte J, Brock WA, Brovkin V, Carpenter SR, Dakos V, Held H, van Nes EH, Rietkerk M, Sugihara G.

## BOOKS & BOOK CHAPTERS

**2016**

Book: **Earth, water and sky: An Anthology of Environmental Poetry**. Yaugurú, Montevideo.

Kercheval, J.L. (ed.)

Book Chapter: **Construcción del diálogo ciencia-política en el análisis y la gestión del cambio climático** (Building a dialogue between science-policy in the analysis and management of climate change), en Toma de decisiones y cambio climático: acercando la ciencia y la política en América Latina y el Caribe (Decision Making and Climate Change: bringing science and policy in Latin America and the Caribbean). Ryan, D.; Gorfinkiel, D. (ed.). **UNESCO**, Montevideo. pp: 34-48.  
Mazzeo, N. and Jacobi, P.R

**2015**

Book chapter: **"Aguas urbanas en Uruguay: Avances y desafíos hacia una gestión integrada"** (Urban

waters in Uruguay: advances and challenges towards integrated management), in Desafíos del agua urbana en las Américas. Perspectivas de la Academia de Ciencias (Challenges of urban water in the Americas: perspectives of the Academy of Sciences). Roldán, G.; Torregrosa, M.L.; Vammen, K.; González, E.J.; Campuzano, C.; Hidalgo, H. & de la Cruz Molina, A.; (eds). **IANA- UNESCO**, México. pp: 544-573.

Capandeguy, A.; Piperno, A.; Quintans, F.; Sierra, P.; Alonso, J.; Chreties, Ch.; Cuadrado, A.; Gamarra, G.; Guido, P.; Martínez, J.P.; Mazzeo, N.; Mena, M.; Rezzano, N.; Sanguinet, G.; Taks, J.; Goyenola, G.; González, E.; López, J.; Matos, A.; Sabaño, O.; Santos, C.; Saravia, M.; Silveira, L.; Arocena, R. & Aubriot, L.

Book chapter: **"Navegando una transición múltiple"** (Navigating a multiple transition), in Recursos hídricos: usos, tecnologías y participación social (Aquatic resources: uses, technologies and social participation). Café Tertulia, Colección 2/3. Espacio Interdisciplinario. pp: 29-36  
Mazzeo, N.; Steffen, M.; Inda, H.; Goyenola, G.; Clemente, J.; Teixeira de Mello, F.; Iglesias, C.; Pacheco, J.P.; & Sciandro, J.

**2014**

Book: **"Ambiente"**. (Environment) Serie Nuestro Tiempo, MEC.

Meerhoff, M. and Oyhantcabal, W.

**2013**

Book chapter: **"Capacidad de adaptación y transformación en un clima de cambios"** (Adaptation and transformation capacity under a climate of change), in Clima de Cambios: Nuevos Desafíos de Adaptación en Uruguay (Climate of change: new challenges for adaptation in Uruguay), Oyhantcabal, W.; Sancho, D.; and Galván, M. (eds.). Chapter 6: 273-284, FAO.

Mazzeo, N.; Inda, H.; Taks, J.; Terra, R.; Bidegain, M. and Crisci, C.

Book chapter: **"Variabilidad climática de importancia para el sector productivo"** (Climatic variability relevant for the productive sector), in: Clima de cambios, nuevos desafíos de adaptación en Uruguay, Oyhantcabal, W.; Sancho, D. and Galván, M. (eds.). Chapter 2: 43-99, FAO.

Bidegain, M.; Crisci, C.; del Puerto, L.; Inda, H.; Mazzeo, N.; Taks, J. & Terra, R.

**2010**

Book: **"Bases técnicas para el manejo integrado de Laguna del Sauce y cuenca asociada"**. (Technical basis for the integrated management of Sauce Lake and its catchment)

Acuña, C.; Alcorta, R.; Caffera, M.; Carballo, C.; Clemente, J.; Crisci, C.; del Puerto, L.; García-Rodríguez, F.; Fort, H.; Fosalba, C.; García, S.; González-Bergonzoni, I.; Goyenola, G.; Hourcade, J.; Iglesias, C.; Inda, H.; Jeppesen, E.; Kausas, S.; Kröger, A.; Lagomarsino, J.J.; Larrea, D.; Leicht, E.; Mazzeo, N.; Marchand, N.; Marroni, S.; Masdeu, M.; Meerhoff, M.; Méndez, G.; Pacheco, J.P.; Pérez Güida, V.; Scheffer, M.; Sciandro, J.; Steffen, M.; Rodríguez, A.; Teixeira- de Mello, F.; Vianna, M. and Vidal, N.



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