

## Transferring climate knowledge in the science-policy interface for adaptation to drought in Uruguay

**Project duration:** 30 months

**Funding requested:** U\$S 162.000

**Principal Investigator (PI) y co-Investigators (co-PI):**

Name	Institution	Country
Gabriela Cruz (PI)	Center for Response to Climate Variability and Change (CIRCVC). Interdisciplinary Space (EI), University of the Republic (UdelaR)	Uruguay
Valentín Picasso (co-PI)	Faculty of Agronomy (FA-UdelaR)	Uruguay
Javier Taks (co-PI)	Faculty of Humanities and Education (FHCE-UdelaR)	Uruguay
Guillermo Podestá (co-PI)	University of Miami	United States
Renzo Taddei (co-PI)	Federal University of São Paulo	Brazil
Marta Vinocur (co-PI)	National University of Rio Cuarto (UNRC)	Argentina
Bianca Vienni	Interdisciplinary Space (EI), UdelaR	Uruguay
Hermes Morales (co-PI)	Institute of Agricultural Plan (IPA)	Uruguay
Ignacio Lorenzo (co-PI)	Project for Institutional Strengthening of the National Climate Change Response System (SNRCC)	Uruguay

**Investigators participating in the proposal:** Laura Astigarraga, Rafael Terra, Martín García, Carolina Toranza, Francisco Dieguez, Alberto Gómez (CIRCVC-UdelaR); Clara Villalba, Celmira Saravia (FA-UdelaR); Amílcar Davyt (Faculty of Sciences, UdelaR, Uruguay); Roberto Seyler, Mónica Wehbe (UNRC).

### Executive Summary (250 words max.)

In Uruguay, there is a high degree of institutionalization of the climate change issues at political level through the National System for Response to Climate Change and Variability (SNRCC), a network of government institutions. From the academia the University wide Interdisciplinary Center for Response to Climate Variability and Change (CIRCVC-UdelaR) generates climate change scientific knowledge. These two institutional assets make Uruguay an excellent case study for interdisciplinary science-policy interaction. The aim of this project is to develop a direct interaction at the science-policy interface to enhance the adoption of climate knowledge targeted to the decision-making in terms of public policy. It is conceived as a contribution to identify and overcome barriers to the application of climate knowledge to a specific agricultural Uruguayan situation: the adaptation to agricultural drought. A first team will apply social network analysis to represent the roads that climate knowledge runs and identify "nodes" where it is concentrated, interrupted or weakened, and test designs of different types of networks to explain the flow of information. A second team will study the interdisciplinary process through recording and providing feedback to the work of the first interdisciplinary team studying climate knowledge transfer at the science-policy interface. Both teams together will develop methodological guidelines for future design of interdisciplinary work. The main outcome will be the "bridge" between CIRCVC-UdelaR and relevant government institutions (Ministry of Agriculture and Ministry of Land Planning and Environment), strengthening CIRCVC as border institution to deal with the decision-making process for adaptation to climate change.

## Introduction and Background Information

Much progress has been made in the scientific understanding of climate and in the development of climate services applicable to the agricultural sector. However, the degree of adoption of climate services or the use of the available climate information mismatch the rate at which it is produced or it is expected to be used (Baethgen et al, 2009; Dilling and Lemos, 2011). This mismatch between the scientific knowledge and adoption at the policy level is found in many other areas, and it has multiple causes. Two central issues involved in this problem relate to the disciplinary approach of scientific inquiry and the institutional linkages between scientific and policy institutions. Therefore, any contribution in the direction of adaptation to climate variability and change must consider at the same time the interdisciplinary process in science and the institutional aspects of knowledge flow.

This project proposes a contribution to better understand, explain and overcome barriers to the application of climate knowledge to a specific agricultural Uruguayan situation: the case of adaptation to agricultural drought. Grasslands in Uruguay occupy more than 70% of the soil surface (MGAP, 2002), involve 82% of agricultural producers and employ half of the economically active rural population (Caputi, 2005). The drought of 2008/2009 caused losses equivalent to U\$ 342 million in the livestock sector with a strong impact on the national economy (Paolino et al, 2010). Partly in response to this crisis, the National System for Response to Climate Variability and Change (SNRCC) was created in Uruguay by the Executive Order No. 238/009 on May 20, 2009. This System constitutes a space of coordination and planning of public and private actions for risk prevention, mitigation and adaptation to climate variability and change. We understand that there is agro climatic information available in Uruguay to prevent and mitigate the effects of agronomic drought, but there are persistent problems in the process of transferring climate knowledge: communication, translation, adequacy and possible feedback to the availability of actionable knowledge (Meinke et al, 2006).

By climate knowledge we understand the smart use of climate information (Maia and Meinke, 2006). To acquire climate knowledge is necessary to understand climate variability (physical dimension), the system variability (climate impacts, biophysical dimension) and the vulnerability (results of climate variability, economic and social results of it, Maia and Meinke, 2006). Literature indicates the need to strengthen “border institutions” that can act as an interface between science and society to achieve socially beneficial applications of climate knowledge. Border institutions refer to settings (spaces) where issues are addressed in a comprehensive manner, transcending the reductionist analysis which is characteristic of normal science (Funtowicz and Ravetz, 2003). These spaces are conceived as multidisciplinary and with an explicit role of translation and mediation between science and society (Meinke et al, 2006; Cash et al, 2003). The University of the Republic in Uruguay (UdelaR) created the Interdisciplinary Space (EI) in 2009, aimed to gather researchers from different disciplines and other stakeholders to address current and complex problems with high social impact. In this context, one of the interdisciplinary centers developed within the EI was the Interdisciplinary Center for Response to Climate Variability and Change (CIRCVC), with the task of providing academic foundations for the development of a national strategy to respond to climate change in different systems (agriculture, health, energy). The

CIRCVC has recently signed a cooperation agreement with the SNRCC with the aim of strengthening national capacities to mitigate and adapt to climate variability and change in the context of the activities of SNRCC.

The existence of these two institutions dealing with climate change issues (at the policy level the SNRCC, and academic level the CIRCVC-UdelaR) make Uruguay an excellent case study for interdisciplinary science-policy interaction for the adaptation to climate change. Therefore, in this project we focus in the two central issues described earlier: the “interdisciplinary process” of scientific construction (Lattuca, 2001) and the institutional linkages between scientific and policy institutions that are involved in climate knowledge transfer.

## **Objectives**

The overall objective is to develop and improve the dialogue in science-policy interface for the adoption and application of climate knowledge in the case of adaptation to agricultural drought in Uruguay. This general objective will be reached through achieving the following specific objectives: 1) To identify the supply and demand for climate knowledge to support decision-making for adaptation to drought in grasslands systems, 2) To strengthen the channels of communication between climate scientists and public policy makers (SNRCC) 3) To consolidate the Interdisciplinary Center for Response to Climate Change and Variability (CIRCVC, UdelaR) as reference institution in exchanging climate knowledge between science and public policy in both directions, 4) To record and analyze the interdisciplinary process in order to delineate specific methodological guidelines for future interdisciplinary work.

## **Feasibility and Methodology**

Several aspects make this proposal feasible. On one hand, the high degree of institutionalization of the climate change issue: at public policy level the existence of SNRCC and at academic levels the operation of CIRCVC. On the other hand, there is work experience from the proponent team members in successfully developing interdisciplinary and multinational projects. As a concrete example, the project "Assessment of current and future vulnerability of grasslands systems to Variability and Climate Change: Case Uruguay "(IAI, TSIG-P3) had a noticeable effect: the availability of an applicable methodology (Cruz et al, 2007) provided the request from the Ministry of Livestock, Agriculture and Fisheries (MGAP) for CIRCVC develop the second phase of the project "Study of the sensitivity and adaptive capacity of the main agro-ecosystems to the impacts of climate change and variability" (Picasso et al, 2012). Another aspect that contributes to increase the feasibility of this project is the synergy with running CRN3 (PI Cecilia Hidalgo) in the framework of international collaboration networks. Our proposal includes a formulation of objectives that is complementary between the two projects, while the expected results are enhanced by having the study case of Uruguay which was not incorporated into the mentioned CRN3 project.

### Study of relationship between science and policy (objectives 1, 2 and 3)

The study will focus on climate knowledge flow to the specific problem of drought on grassland livestock production systems of Uruguay, understanding that impacts transcend the biophysical dimension of the system. What is proposed in this project is a direct interaction at the science-policy interface to enhance the adoption of climate knowledge in decision-

making, specifically in terms of public policy (Figure 1, represented by the dotted line). The historical repetition of agricultural drought and the different answers that have been given at political level, have allowed collective learning of social and political actors (Figure 1). However, it is understood that the proper management of climate knowledge by stakeholders would be an input to improve the system's ability to actually and effectively respond to climate variability.

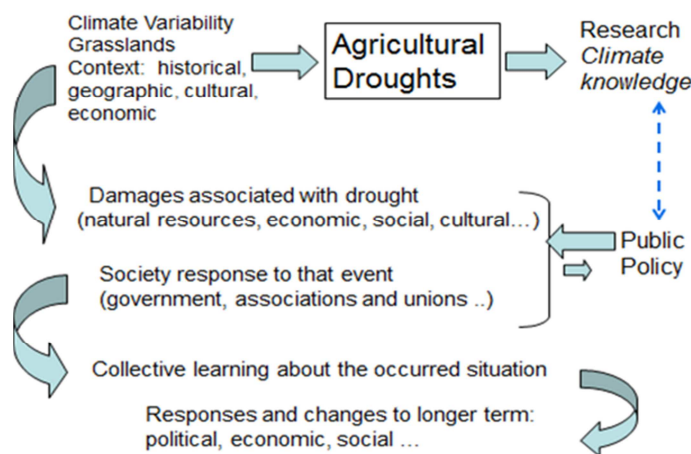


Figure 1. Chain of events after an agricultural drought

The approach to the study of climate knowledge flow can be conceived naively as a study of "supply" and "demand" (Sarewitz and Pielke, 2007). This initial step should lead us to identify the "networks" that are interconnected and which we need to understand; here is where climate knowledge is immersed and circulates. We propose to apply social network analysis (Serrat, 2009) to represent the roads that climate knowledge runs and identify "nodes" where it is concentrated, interrupted or weakened, and testing designs of different types of network that explain this flow of information. The concept and use of networks is shared by various sciences (sociology, ecology, engineering), and thus can in itself become a point of methodological interdisciplinary approach (Borgatti et al, 2009).

The methodology to systematize the "supply" will consist in interviews with qualified informants from institutionally legitimized sources (National Weather Service-DNM, National Institution for Agricultural Research-INIA, Agriculture Plan Institution-IPA, Universities and other institutions) that disseminate agro meteorological information and perform some processing and interpretation of data. Sources that produce climate products using global general circulation models (GCM) will not be covered by this project, this aspect has already being covered in detail by the CRN3 (PI Hidalgo). However, the project will identify which global sources were used by the institutions whose function is to integrate, translate and communicate that GCM information.

The analysis of climate knowledge "demand" starts in the general needs of the SNRCC, which as a whole is the main public policy network for climate adaptation. However to deeply understand the "demand" side, a more profound analysis should be performed by directly engaging Ministries that make decisions based on climate knowledge (for example Agriculture, Energy and Health), local government institutions (such as Departments or Municipalities), the National Emergency System, and also the private sector (for example Agriculture producers), and the local community.

After concluding the “supply” and “demand” analysis a more complex analysis will be performed using the networks approach. Climate knowledge “nodes” will be identified and characterized as supply or demand, and also a characterization of the hierarchy of the nodes in the network will be performed. At last a “link” analysis will be performed using a link characterization based on concentration of knowledge flow.

#### Study of the production of interdisciplinary work (objective 4)

We propose the existence of a group (B) which will observe, record and fed back the work of the group responsible for objectives 1, 2 and 3 (group A) (Figure 2). In this working model we consider the presence of a member in both groups as facilitator (bridge). The expected achievement of group B is the feedback from group A to improve its performance (identify and mediate in conflict resolution, correct directions, etc.) and not just restricted to observation and description of the process. How do you ensure the proper functioning of group B? In principle, this group will have a small number of members, less heterogeneous in terms of their basic training (mostly social sciences) and are circumscribed only to objective 4, so we understand that complexity in their relationship will be less.

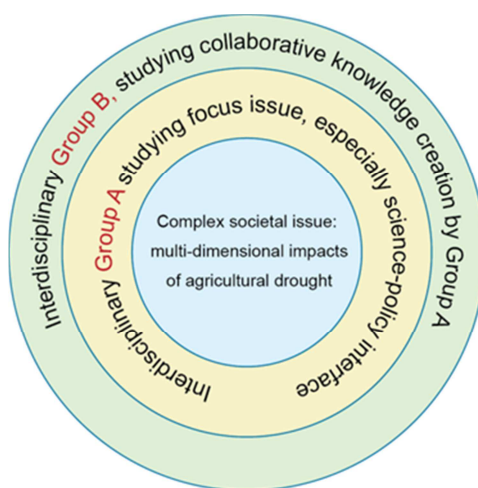


Figure 2. Interdisciplinary model

The monitoring, recording and feedback process from Group B to Group A will increase the likelihood of successfully achieving objectives 1, 2 and 3. On the other hand, the work of group B will also develop an experimental study basis to delineate specific methodological guidelines for futures interdisciplinary work.

#### **Contribution to Science Integration / Expected Results / Outcomes**

The most important outcome will be the establishment of a "bridge" between the EI and Uruguayan relevant government institutions for this study (Ministries of Agriculture and Environment). Although intangible, this result will enable genuine dialogue and mutual recognition around the decision-making process for adaptation to CC. Strengthening CIRCVC as border institution involves adjusting the ways and levels of engagement with political actors, developing a "semipermeable membrane" which will safeguard what the literature emphasize: salience, legitimacy and credibility (Meinke et al, 2006). The study will highlight network places, institutions or individuals where climate knowledge flow is slowed, eased or interrupted, which will enable the team to detect which actors and/or processes contribute to strengthen the system so that

others can learn and imitate. Indicators for assessing the achievement of objectives 1, 2 and 3 are: graduate students enrolled and developing its program according to the framework of the project; publishing a book with the mapping of actors and study of networks along with other partial results of the project; number of workshops and representation within the sector of interest, jointly developed short publications (research and policy) on individual cases of successful collaboration.

The group B will develop methodological guidelines for future design of interdisciplinary work. At least one postgraduate student will be fully dedicated to the interdisciplinary study. Other indicators are the number of "plenary" meetings; feedback to Group A, and develop of specific publications of work progress.

### Work Plan/Activities/Timeline, including deliverables


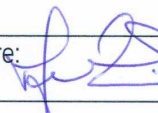
	Year 1	Year 2	Year 3	Total
Postgraduate students	3	5	2	5
Workshops	1	2	1	4
Local seminars	4	4	2	10
Virtual communication	sustained	sustained	sustained	-
Deliverables	Annual report Web page	Annual report Publications	Final report, Book Publication	3 Reports, web page, 1 Book, Publications

### Contribution of Project Team / Institutional & Multidisciplinary collaboration

In the context of multidisciplinary collaboration, the main contribution of the team is training five postgraduate students (3 of Uruguay, 1 of Argentina, and of 1 Brazil). Such training will be inserted into postgraduate programs that include specialization of some students within objectives 1, 2 and 3 of this project. Other students will specialize in the area of interdisciplinary research.

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- Picasso, V; Astigarraga, L; Cruz, G. 2012. Clima de cambios: sensibilidad y capacidad adaptativa de sistemas agropecuarios frente a los efectos del cambio y la variabilidad climática. Vol I, II, III and IV. FAO – MGAP (in press).
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SCIENCE INTEGRATION PROGRAM PROPOSED BUDGET AND TIMETABLE				
Project Title: Transferring climate knowledge in the science-policy interface for adaptation to drought in Uruguay				
Duration of research project (in months): 30				
BUDGET SUMMARY (US dollars)				
Budget category	Year 1	Year 2	Year 3	Total
Scholarships	37500	62500	25000	125000
Travel / Workshops	7000	7000	6000	20000
Research Expenses / Materials & Supplies	2000	2000		4000
Publication / Documentation / Dissemination Costs		2000	6000	8000
Administrative Support (accountable)	2000	2000	1000	5000
Total in US dollars				162000
OFFICIAL REQUEST				
We hereby certify that this budget proposal, and all its accompanying detailed budget submission forms, correctly and fairly reflect the financial plan of the proposed activity, and more specifically the portion proposed for IAI support.				
Name of Principal Investigator: Gabriela Cruz Brasesco	Job title: Profesora Adjunta CIRCVC – EI (UdelaR)	Signature: 		
Name of Authorized Institutional Representative:	Job title: <i>Prof. Adj. MONICA LLADO</i> <i>POR LA COMISION DIRECTIVA del ESPACIO INTERDISCIPLINARIO</i>	Signature: 		
Date: October 29, 2013				

Project Title: Transferring climate knowledge in the science-policy interface for adaptation to drought in Uruguay		
DETAILS OF BUDGET SUBMISSION (in US dollars)		
Budget category		Budget notes and explanations
Scholarships	125000	5 Master's thesis
Travel / Workshops	20000	4 Workshops in Uruguay (travel and accommodations from USA, Argentina and Brazil)
Research Expenses / Materials & Supplies	4000	Laptops for Master's students
Publication / Documentation / Dissemination Costs	8000	1 Book, intermediate publications and web page
Administrative Support (accountable)	5000	



Gabriela Cruz Brasesco. Profesora Adjunta (Senior Lecturer).

Universidad de la República, Espacio Interdisciplinario- CIRCVC and Facultad de Agronomía.

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Gabriela Cruz is a lecturer and research professor at Center for Response to Climate Variability and Change (CIRCVC) of the Interdisciplinary Space (EI) and at the Agronomy Faculty (FA), both from the University of the Republic (Uruguay). Firstly trained in agro climatic research, MSc (Ing. Agr.) Cruz has led multidisciplinary projects related to vulnerability of Uruguayan agro ecosystem to climate change and variability. She also developed studies for assessing agricultural vulnerability to climate variability in request of Ministry of Livestock Agriculture and Fisheries from Uruguay. She is active in tutoring graduate and postgraduate students in topics related to climate change and interdisciplinary.

Publications most relevant to this proposal

Picasso, V; Cruz, G; Astigarraga, L; Terra, R. 2012. Cambio y Variabilidad Climática: Respuestas Interdisciplinarias. Espacio Interdisciplinario, Universidad de la República. Book of the *Interdisciplinary Collection*. 167 p.

Picasso, V; Astigarraga, L; Cruz, G. 2012. Clima de cambios: sensibilidad y capacidad adaptativa de sistemas agropecuarios frente a los efectos del cambio y la variabilidad climática. Vol I, II, III and IV. FAO – MGAP (in press).

Bettolli, M.L.; Altamirano, M.A.; Cruz, G.; Rudorff, F.; Martinez, A.; Arroyo, J.; Armoa, J. 2010. Natural pasture in Salto (Uruguay): relationship with climate variability and analysis in the context of future climate change. *Revista Brasileira de Meteorologia (RBMET)*, v.: 25 2, p.: 248 - 259.

Stewar, J.; Quétier, F.; Cruz, G.; Hammel, C.; Morales, H.; Tapella, E. 2008. Making ecological knowledge relevant for land - use decision makers. *In* Applying ecological knowledge to landuse decisions (Book). p. 1 - 13, Holm Tiessen y John W Stewart Ed. SCOPE - IAI – IICA.

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Relevant experience and achievements:

- PI in IAI-funded TSIG-P3 focused on design a methodology to assess the vulnerability of grassland systems from Uruguay to climate change (2006).
- CoPI in the institutional strengthening project of the Agronomy Faculty “Sustainability of Farming Systems” (2012–2017).
- Co-organizer of international workshops on issues related to climate change and variability (IAI-CIRCVC-IRI, 2011; CIRCVC - FA, 2011 and 2012; FA, 2007).



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Ph.D. in Sustainable Agriculture, Iowa State University. 2008. Ingeniero Agrónomo (BS/MS in Agriculture), Univ. of the Republic, Uruguay. 2001

#### Recent academic positions

2013- current – Director, Environmental Systems Dept., Col. Ag. UDELAR-UY

2009-current – Coordinator, Interdisciplinary Center in Response to Climate Variability and Change, Interdisciplinary Space, Univ. of the Republic, Uruguay (UDELAR-UY)

2012 – Visiting Scientist with E. Kebreab, Anim. Sci. Dept., UC Davis, USA, 3 months.

2012-current – Adj. Prof. and Coord., Environ. Systems Unit, Col. Ag., UDELAR-UY

2010 – Visiting Scientist with H. Meinke, Wageningen Univ., Netherlands, 5 months.

2008-current – Adj. Professor, Dept. Anim. & Pasture Prod., Col. Ag., UDELAR-UY

2008-12 - Director of Graduate Studies, College of Agriculture, UDELAR-UY

#### Recent Scientific Peer Reviewed Publications

Llanos, E., L. Astigarraga, R. Jacques, & V. PICASSO. 2013. Eficiencia energética de sistemas lecheros del Uruguay. *Agrociencia Uruguay* (in press).

Modernell, P., L. Astigarraga, & V. PICASSO. 2013. Global versus local environmental impacts of grazing and confined beef production systems. *Env. Res. Lett.* 8:035052

Connolly, J.; Bell, (...); V. PICASSO; et al. 2013. An improved model to predict the effects of changing biodiversity levels on ecosystem function. *J. Ecology* 101:344-55

Dini, Y.; J.Gere; C.Briano; M.Manetti; P.Juliarena; V. PICASSO; R.Gratton; L. Astigarraga. 2012. Methane Emission and Milk Production of Dairy Cows Grazing Pastures Rich in Legumes or Rich in Grasses in Uruguay. *Animals* 2, 288-300.

PICASSO, V., et al. 2011. Robustness of livestock farmers to climate variability: a case study in Uruguay. *Proceedings of the V WCCA & III FSDC*, Brisbane, Australia.

Delaplane, K. & V. PICASSO. 2011. The Biodiversity–Ecosystem Function Debate in Ecology. In: *HPS(11):Phil. of Ecology*. Eds: Gabbay, Thagard & Woods. Elsevier.

#### Awards and Fellowships

National Researchers System, SNI- ANII, Uruguay (2009 & 2011) ISU Excellence in Graduate Research Award (2005), ISU Teaching Excellence Award (2006), Fulbright Fellowship (2002-04), IIE and Fulbright Commission, USA

+40 Abstracts in Conferences. 8 graduate students. 12 University courses taught.

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## EDUCATION

PhD University of Manchester, UK (1996-2001)

Institute of Housing and Urban Studies, Rotterdam, NL (1995)

BA Anthropological Sciences (1987-1993)

▮ Relevant modules: Social Anthropology

Secondary School IAHU Uruguay 1979 - 1984

## EXPERIENCE

1993 – 2013 Universidad de la República – Profesor Adjunto (Senior lecturer)

Research and lecture in General ethnology, Economic anthropology and Development Theory.

Research Methodology. Faculty of Humanities and Faculty of Social Sciences.

2010 – 2013 Ministry of Housing, Land Planning and Environment - Consultant

Elaboration of Land Planning programmes and legal instruments. Advice on social participatory processes.

## ACTIVITIES

▮ Principal Investigator projects on Climate and Culture; Energy Policy and households consumption; Environmental perception; International Migration. Engaged anthropology.

▮ Chief Unesco's Chair on Water and Culture. Universidad de la República, UY.

▮ Staff Member of Interdisciplinary Center on Climate and Variability Change, Universidad de la República, UY. (CIRCVC)

▮ University representative at Environmental Committee AUGM (Public Universities Southern Cone Network) and Science Commission (CONICYT)

▮ Postdoctoral scholarship – Universidad Autónoma de Zacatecas, MX (2006-2007)

▮ Co-author book "National Energy Matrix", Udelar, CSIC, 2010

## Personal/Skills

▮ Languages: English, Portuguese, Hebrew, Spanish (native)

▮ Coordinator operative groups (Social Psychology)

Full CV: [http://www.anii.org.uy/buscador\\_sni/exportador/ExportarPdf?hash=d30ac8f28743edb5e6e57da88dfdd107](http://www.anii.org.uy/buscador_sni/exportador/ExportarPdf?hash=d30ac8f28743edb5e6e57da88dfdd107)

References are available upon request

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Guillermo Podestá is a Research Professor at the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences. Because of his earlier training in Agronomy, Dr. Podestá has become involved in studies of ENSO-related climate variability and agriculture. He has led various projects exploring end-to-end applications of climate forecasts to improve decision-making in the agricultural sectors of Argentina and the southeastern United States. He is also active in the development and testing of algorithms to estimate sea surface temperature (SST) from satellite-based infrared radiometers.

Publications most relevant to this proposal

Podestá, G. P., C. E. Natenzon, C. Hidalgo and Fernando Ruiz Toranzo. 2012. Interdisciplinary Production of Knowledge with Participation of Stakeholders: A Case Study of a Collaborative Project on Climate Variability, Human Decisions and Agricultural Ecosystems in the Argentine Pampas. *Environmental Science and Policy* 6: 40-48, doi: <http://dx.doi.org/10.1016/j.envsci.2012.07.008>.

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Letson, D., G.P. Podestá, C. Messina and R.A. Ferreyra. 2005. The uncertain value of perfect ENSO phase forecasts: stochastic agricultural prices and intra-phase climatic variations. *Climatic Change* 69(2-3): 163-196. DOI: 10.1007/s10584-005-1814-9.

Podestá, G.P., D. Letson, C. Messina, F. Royce, R.A. Ferreyra, J. Jones, J. Hansen, I. Llovet, M. Grondona, J.J. O'Brien. Use of ENSO-related climate information in agricultural decision making in Argentina: a pilot experience. *Agricultural Systems* 74: 371-392.

Relevant experience and achievements: 1) Investigator in IAI-funded CRN-3035 focused on design and implementation of operational climate services in southern South America. 2) Organized three instances (1999-2001) of the IAI/University of Miami Summer Institute on Interdisciplinary Science in the Americas to bring together researchers from the natural and social sciences in order to address complex, multi-faceted global change issues. 3) Investigator at the Center for Research on Environmental Decisions (CRED) based at Columbia University. CRED seeks to understand decision-making under risk and uncertainty.

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Renzo Taddei is Assistant Professor of Anthropology and Environmental Studies at the Federal University of São Paulo, Brazil. He is also an affiliated researcher at the Comitas Institute for Anthropological Study (CIFAS), and at the Center for Research on Environmental Decisions (CRED), at Columbia University. He has previously taught at Yale, Columbia, and the City University of New York, and conducted anthropological research at the Research Institute for the Study of Man, in New York. He has published mostly about environmental conflicts in Latin America, in journals like Latin American Research Review; Ethics, Policy and Environment; Climatic Change; Climate and Development; Social Semiotics; and Agriculture and Human Values.

Marta Graciela Vinocur. Profesora Adjunta (Senior Lecturer)

Universidad Nacional de Río Cuarto, Facultad de Agronomía y Veterinaria, Dpto. de Ecología Agraria, Agrometeorología

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Marta Vinocur is a lecturer and research professor at the Agricultural Ecology Department, School of Agriculture and Veterinary Sciences, University of Río Cuarto (Córdoba, Argentina). Firstly trained in agricultural meteorology, she studied climate and weather effects and interactions on natural resources, crops, natural vegetation, crop pests, etc and applications of crop models to evaluate the possible effects of climate variability and climatic change on crop production. She also developed studies on the use of climate information in agricultural decision making and in agricultural sector vulnerability and adaptation to climate variability and climate change. At present she is studying the resilience of socio-ecological systems and is involved in a multidisciplinary project to develop indicators for assessing productive systems sustainability for central and west provinces of Argentina (five provinces).

## Education

Dr (Ph.D.), 2008, in Agricultural Sciences, University of Córdoba, Córdoba, Argentina.

M. Sc., 1997, in Crop and Soil Sciences, Michigan State University, College of Agriculture and Natural Resources, East Lansing, MI, USA. Advisor: Joe T. Ritchie, Homer Nowlin Chair Professor. B. S (Agricultural Engineer), 1986, University of Buenos Aires, School of Agronomy, Buenos Aires, Argentina.

## Publications most relevant to this proposal

Rivarola, A. del V., M. G. Vinocur, y R. A. Seiler. 2002/03. Uso y demanda de información agrometeorológica en el sector agropecuario del centro de Argentina. *Revista Argentina de Agrometeorología (RADA)*, 2 (2): 143-149. ISSN 1666-017X

Wehbe, M., H. Eakin, R.A. Seiler, M.G. Vinocur, C. Santos and H.M. Civitaresi. 2005. Social Methods for Assessing Agricultural Producers' Vulnerability to Climate Variability and Change based on the Notion of Sustainability. AIACC Working Paper N°19. <http://www.aiaccproject.org>. 22 pp.

Conde C., Vinocur M., Gay C., Seiler R. and Estrada F. 2007. Climate threat spaces in Mexico and Argentina. In: *Climate Change and Vulnerability*. Chapter 14, Leary, N., Conde, C., Kulkarni, J., Nyong, A. and Pulhin, J., (eds.). Earthscan, London-Sterling (VA), US, pp. 279-306. 544 pp. (Book)

Wehbe, M., H. Eakin, R.A. Seiler, M. G. Vinocur, C. Avila and C. Maurutto. 2007. Local Perspectives on Adaptation to climate change. Lessons from Mexico and Argentina. In: *Climate change and adaptation*, Chapter 18. Leary, N., J. Adejuwon, V. Barros, I. Burton, J. Kulkarni and R. Lasco (eds.). EarthScan-London-Sterling, (VA), US, pp. 315-331. 448 pp. (Book)

Vinocur, M.G. 2011. Cambio climático y variabilidad climática en Córdoba, Argentina: Valoración de sus efectos sobre la producción de maíz y maní y evaluación de estrategias de adaptación. Editorial Académica Española, 172 páginas. ISBN 978-3-8465-6086-0. (Book)

Relevant experience and achievements: 1) Co-PI and Coordinator of the Argentinean Team of an international and multidisciplinary Project Integrated Assessment of Social Vulnerability and Adaptation to Climate Variability and Change Among Farmers in Mexico and Argentina (AIACC LA29 project, GEF, UNEP, TWAS). 2) PI Project Assessment of the interactions between climate variability and climatic change and the agricultural systems of Córdoba, Argentina. SECYT- UNRC. 3) Main researcher Project Indicators to evaluate sustainability of production systems of central and west Argentina (Picto-CIN, ANPCYT, Argentina).

Bianca Vienni Baptista

Graduate Degree: 1999 - 2006: Degree in Archaeology. Faculty of Humanities and Educational Sciences, University of the Republic (Uruguay). Thesis title "Whaling in the waters of the South: Maritime Archaeology Whalers and sealers in the nineteenth century." Career Average: 9.04 / 12. PosGraduate degree: 2008 - 2009: Diploma of Advanced Studies - PhD in Conservation and Management of Cultural Heritage (University of Granada – Asociación Universitaria Iberoamericana de Posgrado). Thesis title "The construction of the concept of archaeological heritage in Uruguay", Thesis Director: Dr. Margarita Sánchez Romero (University of Granada). Rating: 10/10.

#### Posgraduate

June 2009 - present: Professor (Grade 2) Academic Department Espacio Interdisciplinario (University of the Republic). Responsible for the academic management of the Unit. Coordinator of the research "Actual Situation of the Interdisciplinary work at the University of the Republic".

November 2011 - Present: Professor (Grade 2) Career: Museology (Faculty of Humanities and Education, University of the Republic). Professor Assistant in the following courses: Museology I and Museography I.

#### Research Activities (last three years)

2012 – 2014: . Title: "The Socialization of scientific knowledge as an interdisciplinary problem: the case of the archaeological heritage of Uruguay." Comisión Sectorial de Investigación Científica (Universidad de la República)

June 2010 - 2012: Associate Researcher at the Laboratory of Landscape Archaeology and Heritage of Uruguay (LAPPU - Faculty of Humanities and Educational Sciences - University of the Republic)

March 2011 - 2012: Associate Researcher of the Group "Material culture and identity in the societies of the South Prehistory of the Iberian Peninsula." Directed by Margarita and Gonzalo Sanchez Romero Jiménez Aranda (Universidad de Granada).

#### Educational experience (last three years)

2011 – 2012: Professor Assistant in the following courses: Museology I and Museography I. Career: Museology (University of the Republic).

September 2011.: Responsible Professor in the training course "Interdisciplinarity and Innovation. Regional Perspectives about Cultural Heritage ". Faculty of Arts, Design and Culture Sciences, National University of the Northeast (Corrientes, Argentina). AUGM Fellowship.

#### Publications

- "The archaeological heritage of Uruguay". Editorial Académica Española. 2011. Book. ISBN 978-3-8465-7729-5

- Author of "The archaeological heritage of Uruguay: analysis of the construction of a concept." In Revista Arqueología y Territorio (University of Granada, Spain), 2010, N°7. ISSN: 1698-5664.

- Author of "The archaeological heritage and its legislation in Uruguay." Journal of Historical Archaeology in Argentina and Latin America - Sociedad Argentina de Antropología. March 2010. ISBN: 1851-3190.

- "En\_Clave Inter 2010: Reflections on interdiscipline at the University of the Republic". Compiled and coordinated with P. M. Cruz González. In press. University of the Republic.

- "Catalogue 2010: Thematic Networks, Interdisciplinary careers and Projects". Publication of the Espacio Interdisciplinario University of the Republic, compiled and coordinated with P. Cruz, M. González, C. Panizza, F. Pritsche. March 2010. ISBN 978-9974-0-0615-7.

Hermes Morales.

Dr. Hermes Morales has been working in pastoral production systems since 1981. In 1994 and 1995 he researched the development of livestock production systems in the French National Agronomic Research Institution (INRA) and since 1996 he has been working in the Plan Agropecuario, where he has been the Regional Director, Extension Officer, Director of Farm Management and Extension then National Director in two areas: Capacity Building and Institutional Relationships.

He obtained his PhD degree at the INA\_PG Abies Institute in Paris with a thesis about Livestock development and simulation of complex systems.

He has participated in many international projects funded by the Inter American Institute of Global Change (IAI), the National Institute of Agronomic Research (INIA), the French National Research Agency (ANR), AgResearch (NZ) and other institutions, and have lectured in many congresses and published many articles including refereed journals.



Ignacio LORENZO ARANA

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Uruguayan and Spanish national, born in Montevideo, Uruguay, May 20th, 1984.

Ignacio acts as Project Coordinator for Institutional Strengthening of the National Climate Change Response System, where he also acts as interim Technical Executive Secretary. He also advises the Under-Secretary of the Ministry of Housing, Territorial Planning and Environment on issues regarding Climate Change, Environment and Sustainable Development.

Ignacio works as Auxiliary Professor in Urban Economics at the Universidad de la República and as lead researcher in urban and land taxation at the Institute for Urban Theory.

He has served as Adaptation Advisor in the UNDP Territorial Approach to Climate Change Project for the Metropolitan Region of Uruguay where he technically assisted the preparation of the Metropolitan Climate Plan. He has also been appointed as Adaptation Expert Consultant for CAF's Valle del Lunarejo Protected Area Climate Adaptation Project, he has also served as IADB Expert Consultant for the drafting of IADB Group first National Climate Change Action Plan.

Ignacio is currently concluding his Professional Architecture Degree in Universidad de la República, and has also performed visiting studies in sustainable urban planning and urban landscape in Universidad Federal de Paraná in Curitiba, and Urban Planning for Asia-Pacific Metropolis at Master's degree level at the Ecole d'Architecture de Paris-La Villette. Ignacio has been appointed Climate Champion 2010 and Green Ambassador 2012 by the British Council.