

**CONSEJO NACIONAL DE INVESTIGACIONES CIENTÍFICAS Y TÉCNICAS**  
**( CONICET )**

**IGCP ANNUAL REPORT**



**IGCP ARGENTINE NATIONAL COMMITTEE**

COMITÉ ARGENTINO PROGRAMA INTERNACIONAL DE CORRELACIÓN  
GEOLOGICA (CAPICG)

**2012**

**SCIENTIFIC ADDRESS:**  
**Departamento de Ciencias Geológicas**  
**Universidad de Buenos Aires**  
**Ciudad Universitaria – Pabellón II**  
**1428 Buenos Aires**  
**ARGENTINA**  
**TE-Fax: 0054-11-45763329**

**CONICET (Relaciones Internacionales)**  
**Rivadavia 1917 – 1033 Buenos Aires**  
**ARGENTINA**

## ***IGCP ANNUAL REPORT 2012***

### **IGCP ARGENTINE NATIONAL COMMITTEE**

COMITÉ ARGENTINO PROGRAMA INTERNACIONAL DE CORRELACIÓN GEOLÓGICA (CAPICG)

**1. NATIONAL COMMITTEE:** The Argentine National Committee (CAPICG) was designed by the National Research Council (CONICET), Buenos Aires, by Resolution n.2165 from October 1998 as follow,

Dr. Beatriz **AGUIRRE-URRETA** (University of Buenos Aires)

Dr. Carlos Alberto **CINGOLANI** (University of La Plata)

Dr. Hector **LEANZA** (National Geological Survey)

Dr. Ricardo **MON** (University of Tucumán)

Dr. Silvio **PERALTA** (University of San Juan)

Dr. Luis Antonio **SPALLETTI** (University of La Plata)

**Institutional support:** National Research Council (CONICET), National Secretary of Science and Technology (SECYT) and Permanent Representation of Argentina in UNESCO. The Argentine Geological Association, as a national representation of IUGS supports the Committee.

### **2. CHAIRPERSON OF THE ARGENTINE NATIONAL COMMITTEE:**

Prof. Dr. Beatriz Aguirre-Urreta  
Laboratorio de Bioestratigrafía de Alta Resolución  
Departamento de Ciencias Geológicas  
Universidad de Buenos Aires  
Ciudad Universitaria – Pabellón II  
1428 Buenos Aires  
ARGENTINA  
Telefax 0054-11-4576 3329  
[aguirre@gl.fcen.uba.ar](mailto:aguirre@gl.fcen.uba.ar)

### **3. IGCP PROJECTS IN WHICH ARGENTINA PARTICIPATED:**

#### **3.a. Projects with leaders or co-leaders from Argentina:**

**IGCP 604** project short title:

#### **GROUNDWATER AND WETLANDS IN IBERO-AMERICA**

Period:

2011-2016

Project Leader

Name: Emilia Bocanegra

Address: Centro de Geología de Costas y del Cuaternario. Universidad Nacional de Mar del Plata. CC. 722. 7600 Mar del Plata. Argentina

Tel.: 54 223 4754060 Fax: 54 223 4753150 e-mail: [ebocaneg@mdp.edu.ar](mailto:ebocaneg@mdp.edu.ar)

Project Members

Name: Emilio Custodio

Address: Technical University of Catalonia. Gran Capità, s/n.Mòd. D-2. Off. 007. 08034 Barcelona. Spain

Tel.: 34 93 4016920 / 19 Fax: 34 93 4017251 e-mail: [emilio.custodio@upc.edu](mailto:emilio.custodio@upc.edu)

Name: Marisol Manzano

Address: Technical University of Cartagena. Pº de Alfonso XIII 52. E-30302. Cartagena. Spain

Tel. 34.968.325489 Fax: 34. 968.325443 e-mail: [marisol.manzano@upct.es](mailto:marisol.manzano@upct.es)

Name: Gerson Cardoso

Address: Universidade Federal do Rio de Janeiro. Av. Athos da Silveira Ramos 274. 21941-590 Rio de Janeiro. Brasil

Tel.: 55 21 2598 9464/2590 8091 Fax: 2598-9464/2590-8091 e-mail: [gerson@acd.ufrj.br](mailto:gerson@acd.ufrj.br)

Teresita Betancur

Facultad de Ingenieria. Universidad de Antioquia

Calle 67 No. 53-108. Medellín - Colombia

Tel.: 57 (4) 2195596 x: 57 (4) 2195514 e-mail: [terebetav@udea.edu.co](mailto:terebetav@udea.edu.co)

#### **1. Website address(es) related to the project**

<http://www.mdp.edu.ar/hidrogeologia/IGCP604>

#### **2. Summary of major past achievements of the project**

A main achievement was the design of data sheets in order to standardize basic information for a representative group of wetlands from Ibero-America and the Iberian Peninsula that

include: a) Hydrological characterization of wetlands related to groundwater: geological environment, climate, geomorphological genesis, wetland hydrology, hydrogeology of the related aquifer, chemistry of the wetland and groundwater, wetland knowledge state and management actions, b) Wetland ecosystem services survey: provisioning, regulating and cultural services; assessment of global status and trends of these services and c) Direct drivers of change to wetland ecosystem services: intensive exploitation, land use changes, modulation of the hydrological cycle, contamination, climate change and global change.

### **3. Achievements of the project this year only**

#### *3.1. List of countries involved in the project*

Argentina, Brazil, Colombia and Spain teams are directly involved as members of the project; Chile, Ecuador, Dominican Republic and Portugal are associated countries to the Project. Other Latin (Ibero) American countries will hopefully be involved in the future.

#### *3.2. General scientific achievements and social benefits*

The IGCP 604 group currently consists of 5 members from 4 countries. Scientists from Argentina, Chile, Dominican Republic, Ecuador, and Portugal have been recruited to help in the project and they have actively participated in the Meetings of IGCP 604.

The contents of the data forms provide useful information on the hydrological characterization of groundwater dependent wetlands, wetland ecosystem services survey, and direct drivers of change to wetland ecosystem services.

Professionals and researchers from 8 countries cooperated filling data forms for 28 study cases have been gathered up to now.

The case studies inventoried have been synthesized in order to get a generalized view of different wetland ecosystems, services, and drivers of change.

Methodological discussion was held on the creation/proposal of environmental quality indicators of wetlands.

Commitments made by each participant, both project members and guests, including the participation of undergraduate and graduate students in conducting literature reviews, practical work in hydrogeology courses and specialized monographs.

Other important outcome was the dissemination of the project during the ALHSUD Congress, and the presentation to the Latin American scientific community of the first approach to an assessment of the human services of groundwater related wetlands.

After the meeting a cooperation activity between the National University of Mar del Plata and the University of Antioquia was carried out. The activity consisted in a conference held in Medellin addressed to professionals from Water Management and Environment institutions and a scientific visit to the Embalse Peñol Guatapé, one of the largest water reservoirs in Latin America (more than 22 km<sup>2</sup> in surface area).

### 3.3. *List of meetings with approximate attendance and number of countries*

**Pre 2<sup>nd</sup> Meeting:** 20<sup>th</sup> June 2012. Buzios, Rio de Janeiro, Brazil. In the framework of the 22<sup>nd</sup> Salt Water Intrusion Meeting (SWIM)

Project members: Dr. Gerson Cardoso da Silva (Brazil), Dr. Teresita Betancur (Colombia), and Dr. Emilio Custodio (Spain). Guest participants: 8 professionals from Brazil, Portugal and Spain.

**2<sup>st</sup> Meeting:** 21<sup>st</sup> August 2012. Cartagena de Indias, Colombia. In the framework of the XI Congreso Latinoamericano de Hidrogeología (ALHSUD)

Project members: Dr. Emilia Bocanegra (Argentina), Dr. Gerson Cardoso da Silva (Brazil), Dr. Teresita Betancur (Colombia), and Dr. Marisol Manzano (Spain). Guest participants: 7 professionals from Argentina, Chile, Dominican Republic and Ecuador.

Two meetings were held to encourage all members of the project team to discuss progress and next steps. The results of the Pre 2<sup>nd</sup> Meeting in Brazil were transferred to the 2<sup>nd</sup> Meeting in Colombia.

#### Scope of Meetings:

- Evaluation of the contents of the three data forms that were designed and implemented to carry out the inventory of cases during the first year of the project: 1) Hydrological characterization of wetlands, 2) Wetland ecosystem services survey, 3) Direct drivers of change to wetland ecosystem services.
- Assessment of mechanisms for the dissemination of the information in the Ibero-American academic and professional fields, Water Management and Environment Institutions and stakeholders.
- Methodological discussion on synthesis and generalization of the inventoried case studies.
- Methodological discussion on the creation/proposal of environmental quality indicators of wetlands
- Comments on IGCP-604 website <http://www.mdp.edu.ar/hidrogeologia/IGCP604>

Pre 2<sup>nd</sup> Meeting, Buzios, Brazil  
Colombia

2<sup>nd</sup> Meeting, Cartagena de Indias,  
Colombia

### 3.4. *Educational, training or capacity building activities*

There are some Bachelor, M.Sc. and Ph.D. students incorporated in the Project in order to prepare their thesis on subjects related to the general topic of the Project: 5 from Colombia, 3 from Argentina, 1 from Brazil, 2 from Ecuador, and 1 from Spain.

### 3.5. *Participation of scientists from developing countries, and in particular young and women scientists*

The amount of scientists from developing countries is very high since the IGCP 604 develops in Iberio-America. Latin American researchers represent the majority of participants in IGCP 604. Women scientists represent 70% of the participants.

### 3.6. List of most important publications (including maps)

BETANCUR, T., BOCANEGRA, E., ROMANELLI, A., SANTA, D. 2012. Métodos para evaluar interacciones entre cuerpos de agua en un humedal y aplicación en dos casos de estudio. [Methods to evaluate interactions in a wetland and application to two study cases] Proc. XI Congreso Latinoamericano de Hidrogeología. Cartagena de Indias. Colombia. CD, 5 pages.

BOCANEGRA, E., MANZANO, M., BETANCUR, T., CUSTODIO, E., CARDOSO, G. 2012. Caracterización preliminar de las interacciones aguas subterráneas-humedales-ser humano en Iberoamérica. [Preliminary characterization of groundwater-wetlands-human being in Ibero-America]. Proc. XI Congreso Latinoamericano de Hidrogeología. Cartagena de Indias. Colombia. CD, 5 pages.

BOCANEGRA, E., QUIROZ LONDOÑO O. M., MARTÍNEZ, D., ROMANELLI, A. 2012. Quantification of the water balance and hydrogeological processes of groundwater-lake interactions in the Pampa plain, Argentina. Environmental Earth Sciences. DOI 10.1007/s12665-012-1916-4.

CUSTODIO, E. 2012. Low Llobregat aquifers: Intensive development, salinization, contamination and management. Sabater et al, eds. The Llobregat: The Story of a Polluted Mediterranean River. Hdb Env Chem 21: 27-50. DOI 10.1007/698\_2011\_138. Springer Verlag.

CUSTODIO, E., GARRIDO, A., COLETO, C, SALMORAL, G. 2012. The challenges of agricultural diffuse pollution. In: Water, agriculture and environment in Spain: can we square the circle?. Eds: De Stefano and Llamas. Balkema Book. 153-163.

JUAREZ, I.; CUSTODIO, E.; MANZANO, M.; HIGUERAS, H. 2012. Relación aguas superficiales-aguas subterráneas y recarga del acuífero de Los Sotos, Doñana, España. [Surface water-groundwater relationships in the Los Sotos aquifer, Doñana, Spain]. VIII Simposio del Agua en Andalucía (SIAGA). Cádiz. Instituto Geológico y Minero de España, Madrid, Vol. II: 1479-1489. ISBN: 978-84-7840-863-4

MANZANO, M.; CUSTODIO, E.; MEDIAVILLA, C. 2012. Las redes de observación dedicadas y la generación de información confiable para la gestión: el caso de la red de Doñana. Congreso Ibérico sobre las Aguas Subterráneas: desafíos de la gestión para el siglo XXI. International Association of Hydrogeologists, Spanish Group. Zaragoza, Spain, 10 pages.

MANZANO, M.; LAMBÁN, J. 2012. Una aproximación a los servicios de las aguas subterráneas al ser humano en España. *AMBIENTA*, 98: 281-295. [http://www.ecomilenio.es/wp-content/uploads/2012/04/AMBIENTA\\_98web.pdf](http://www.ecomilenio.es/wp-content/uploads/2012/04/AMBIENTA_98web.pdf)

MANZANO, M.; GUIMARAENS, M. 2012. Hidroquímica del Sistema Acuífero Guaraní e implicaciones para la gestión. *Boletín Geológico Minero* 123 (3): 281-295.

### 3.7. *Activities involving other IGCP projects, UNESCO, IUGS or others*

## 4. **Activities planned**

### 4.1. *General goals*

The work plan for 2013 includes:

- ✓ Application of the data forms to case further studies in the countries involved in the Project: Argentina, Brazil, Colombia, Chile, Dominican Republic, Ecuador, Portugal and Spain.
- ✓ Inclusion of new Ibero-American countries to the Project in order to increase the number of case studies.
- ✓ Synthesizing the work performed in the ecosystem assessment of Spain (<http://www.ecomilenio.es>) to define methodological issues useful to support the possible correlation between services and hydrological or hydrogeological types.
- ✓ Synthesizing methodological aspects related to the issue of environmental indicators.
- ✓ Inclusion of students looking to contribute to the project activities and add case studies from literature review, from Brazil, Colombia and Argentina.
- ✓ Presentation of the paper “First approach to characterize the hydrology and services from groundwater dependent wetlands in Iberia and Ibero–America” during the 4<sup>th</sup> Multidisciplinary Conference on Hydrology and Ecology, Rennes, France, 13-16 May 2013.
- ✓ Dissemination of the IGCP 604 Project in the Argentine Hydrogeological Congress in La Plata, Argentina, September 2013.
- ✓ Preparation of papers for international journals.

### 4.2. *Tentative list of specific meetings and field trips (please list the participating countries)*

#### 3<sup>rd</sup> Meeting of the IGCP 604

Date: September 17-2113. Venue: La Plata, Argentina

The date of the 3<sup>rd</sup> IGCP-604 Meeting was chosen in order to foster the attendance of the project partners to the Congreso Argentino de Hidrogeología and Seminario Hispano Latinoamericano de Temas Actuales de Hidrología Subterránea, to be held in La Plata, Argentina, on September 17-20, 2013. Forecasted participant countries: Argentina, Brazil, Colombia, Chile, Dominican Republic, Ecuador, Spain.

## 5. **Project funding requested**

Delegates from two countries, Dominican Republic and Ecuador, were invited this year by the project leaders to attend the 2<sup>nd</sup> IGCP 604 Meeting in Cartagena de Indias.

Full funds (USD 10000) are requested to promote the attendance of more Latin American participants and keep up a good performance of the Project.

**6. Request for extension, on-extended-term-status, or intention to propose successor project**

N/A

**7. Financial statement (\$ USD only)**

<b>Transportation (Long distance)</b>	<i>Received by (list names)</i>	<i>Country of origin</i>	<i>Allocation (in USD)</i>
	Teresita Betancur	Colombia	1483
	Gerson Cardoso	Brazil	894
	Emilia Bocanegra	Argentina	794
	Samantha Jiménez	Ecuador	842
	Xiomara Llubes	Dominican Republic	787
<b>Subtotal Transportation Expenses</b>			<b>4800 USD</b>
<b>Accommodation</b>	Teresita Betancur	Colombia	500
	Emilia Bocanegra	Argentina	750
	Xiomara Llubes	Dominican Republic	750
<b>Subtotal Accommodation Expenses</b>			<b>2000 USD</b>
<b>Organizing Expenses</b> (should be less than 10% of the allocation)			
Bank fees, web page design cost, working lunch			
<b>Subtotal Organizational Expenses</b>			<b>700 USD</b>
<b>Enter GRAND Total of Above</b>			<b>7500 USD</b>

Federal University of Rio de Janeiro, Brazil and University of Antioquia, Colombia partially supported the attendance of members to the meeting. Dr. Emilio Custodio was supported by the Salt Water Intrusion Meeting (SWIM) Organizing Committee.

IGCP **586 Y** project short title:

**GEODYNAMIC PROCESSES IN THE ANDES 32°-34°S**

Duration: 2010-2012



**Project leader(s):**

Luisa Pinto, Ph. D.  
Departamento de Geología,  
Universidad de Chile  
Plaza Ercilla 803.  
Santiago. Chile  
Telephone: (56) 2 – 9784106  
Fax: (56) 2 – 6963050  
Email: lpinto@ing.uchile.cl

Laura Giambiagi, Ph. D.  
IANIGLA CCT Mendoza  
Adrián Leal s/n  
Parque San Martín  
5500 Mendoza  
Argentina  
Telephone: (54) 261-5244229  
Fax: (54) 261 5244200  
Email: lgiambia@lab.cricyt.edu.ar

Maisa Tunik, Ph. D.  
CONICET  
Universidad Nacional de Río Negro  
Isidro Lobo y Belgrano 8332 General Roca  
Río Negro  
Argentina Telephone: (54)2941-427399 Email: mtunik@conicet.gov.ar

Sergio Sepúlveda, Ph. D.  
Departamento de Geología, Universidad de Chile  
Plaza Ercilla 803  
Santiago. Chile  
Telephone: (56) 2 – 9784102  
Fax: (56) 2 – 6963050  
Email: sesepulv@ing.uchile.cl

Stella Maris Moreiras, Ph. D.  
IANIGLA CCT Mendoza  
Adrián Leal s/n  
Parque San Martín  
5500 Mendoza  
Argentina  
Telephone: (54) 261-5244256  
Fax: (54) 261 5244200  
Email: moreiras@lab.cricyt.edu.ar

Marcelo Farías, Ph. D.  
Departamento de Geología, Universidad de Chile  
Plaza Ercilla 803  
Santiago  
Chile  
Telephone: (56) 2 – 9780725  
Email: mfarías@dgf.uchile.cl

Greg Hoke, Ph. D.  
Department of Earth Sciences  
Syracuse University  
204 Heroy Geology Laboratory  
Syracuse, NY 13244 USA  
Telephone: (1) 315-443-1903  
Email: gdhoke@syr.edu

Sebastien Carretier, Ph. D  
Institut de Recherche pour le Developpement (IRD)  
Université de Toulouse  
Toulouse (ex-LMTG)  
14 avenue Edouard Belin  
31400 Toulouse  
France  
Telephone: (05) 61 33 26 50  
Email:sebastien.carretier@lmtg.obs-mip.fr

Julieta Suriano, Ph.D.  
Universidad de Buenos Aires  
Pabellón 2, Ciudad Universitaria, Buenos Aires, Argentina C1428EHA  
Phone: (54-11) 4576-3300 /09  
Email: jsuriano@gl.fcen.uba.ar

Maximiliano Naipauer, Ph.D.  
Departamento de Ciencias Geológicas - FCEN - Universidad de Buenos Aires  
Pabellón 2, Ciudad Universitaria, Buenos Aires, Argentina C1428EHA  
Laboratorio de Tectónica Andina  
Phone: (54-11) 4576-3300 /09  
E-Mail: maxinaipauer@gl.fcen.uba.ar

Florencia Bechis, Ph.D.  
Universidad Nacional de Río Negro  
Sarmiento Inferior 3974,  
San Carlos de Bariloche 8400, Río Negro, Argentina  
Telephone: (54)-2944-441809  
Email: florbechis@gmail.com

Victor García, Ph.D.  
Universidad Nacional de Río Negro Isidro Lobo y Belgrano 8332  
General Roca, Río Negro, Argentina  
Telephone: (54) 2941-427399  
Email: victorg76@gmail.com

Daniel Yagupsky, Ph.D.  
CONICET  
Universidad de Buenos Aires  
Pabellón 2, Ciudad Universitaria, Buenos Aires, Argentina C1428EHA  
Phone: (54-11) 4576-3300 /09  
Email: daniely@gl.fcen.uba.ar

Andrés Tassara, Ph.D.  
Departamento de Ciencias de la Tierra  
Facultad de Ciencias Químicas  
Universidad de Concepción  
Campus Concepción  
Edmundo Larenas 129  
Casilla 160-C  
Phone: (56 - 41) - 2204316 - 2204109  
Email: andrestassara@udec.cl

### **1. Website address(es) related to the project**

[http://igcp586y.syr.edu/IGCP\\_586Y](http://igcp586y.syr.edu/IGCP_586Y)

The IGCP 586Y website is hosted through the College of Arts and Sciences at Syracuse University. Hoke maintains the website, as specially requested the domain name igcp586y.syr.edu for the site.

Maisa Tunik is in charge of the maintenance of the web page [www.geologica.org.ar](http://www.geologica.org.ar) of the Asociación Geológica Argentina, where all the data from the IGCP project is published.

### **2. Summary of major past achievements of the project**

During 2012, the third year of the project, the IGCP 586-Y group has successfully integrated published and unpublished geological and geophysical data from the 32°00' and 33°50'S transects. IGCP 586-Y is now integrated by five countries (three countries integrated the project during the first year). The results of the integrated work will be published in the Special Publication of the Geological Society of London entitled "Geodynamic Processes in the Andes of Central Chile and Argentina" during 2013.

### **3. Achievements of the project this year only**

*3.1. List of countries involved in the project:*

Chile, Argentina, USA, France and Costa Rica.

### *3.2. General scientific achievements and social benefits*

The IGCP 586-Y group currently consists of 114 members from 5 countries. The most important social aspect of the project has been the incorporation of several doctoral and post-doctoral students into the group. In 2012 IGCP 586-Y reached the number of 18 postgraduate students involved in the project, based at 6 universities in 4 countries: José Mescua (Argentina), Pamela Jara (Chile), Sergio Calderón (Chile), María Pía Rodríguez (Chile), Alina Walcek (USA), Lucía Sagripanti (Argentina), Ana Lossada (Argentina), Lucas Fennell (Argentina), Silvana Spagnotto (Argentina), Jessica Paz Fuentes (Chile), Pablo Alarcón (Chile), Pablo Escares (Chile), Monserrat Cascante (Costa Rica), Hernán Porras (Costa Rica), Patrick Durán Leiva (Costa Rica), Jeremías Likerman (Argentina), Solange Páez (Argentina) and Felipe Tapia (Chile). All except one of these students come from developing countries.

In addition to technical sessions, we continued having an active participation in free public lectures open to the communities to advise society about potential geohazards in the region. The project supports the students in different ways, including financial assistance to participate in meetings and fieldworks, and availability of data gathered by IGCP 586Y. Doctoral and post-doctoral students from Argentina, Chile and Costa Rica have been actively involved in both meetings and field workshop. 13 PhD and MSc students have been sponsored by IGCP 586Y activities during 2012.

### *3.3. List of meetings with approximate attendance and number of countries*

In 2012, two meetings with one field workshop were developed within the activities of IGCP 586Y.

#### **i. Fifth IGCP 586Y Meeting: Antofagasta, Chile**

The meeting brought together the participating scientists with invited scientists and doctoral and postdoctoral students from Chile, Argentina, Costa Rica, United States and France, and it was open to the congress assistants. Twelve IGCP 586Y members, 6 invited researchers and 13 invited doctoral and postdoctoral students with financial support assisted the meeting. The special session during the meeting has a strong technical programme that include 15 oral presentations and 2 posters covering the IGCP 586Y topics.

#### **Participants:**

##### *Members of the IGCP project*

Luisa Pinto - Universidad de Chile (CHILE)

Sergio Sepúlveda - Universidad de Chile (CHILE)

Marcelo Farías - Universidad de Chile (CHILE)

Andrés Tassara - Universidad de Concepción (CHILE)

Sebastien Carretier - IRD (FRANCE) Laura Giambiagi - IANIGLA-CCT Mendoza (ARGENTINA)

Stella Maris Moreiras - IANIGLA-CCT Mendoza (ARGENTINA)  
Maisa Tunik - Universidad Nacional de Río Negro (ARGENTINA)  
Florencia Bechis - Universidad Nacional de Río Negro (ARGENTINA)  
Victor García - Universidad Nacional de Río Negro (ARGENTINA) Julieta Suriano –  
Universidad de Buenos Aires (ARGENTINA)  
Daniel Yagupsky - Universidad de Buenos Aires (ARGENTINA)

*Invited researchers*

Estanislado Godoy – consultant (CHILE)  
Sofía Rebolledo - Universidad de Chile (CHILE)  
Gabriel Vargas - Universidad de Chile (CHILE)  
Reynaldo Charrier - Universidad Andrés Bello (CHILE)  
Pamela Alvarez – consultant (CHILE)  
Maximiliano Naipauer – Universidad de La Plata (ARGENTINA)

*Invited students with financial support*

José Mescua - IANIGLA-CCT Mendoza (ARGENTINA)  
Víctor García – Universidad Nacional de Río Negro (ARGENTINA)  
Solange Páez - IANIGLA-CCT Mendoza (ARGENTINA)  
María Pía Rodríguez – Universidad de Chile (CHILE)  
Pamela Jara - Universidad de Chile (CHILE)  
Felipe Tapia – Univesidad de Chile (CHILE)  
Ana Lossada - University of Buenos Aires (ARGENTINA)  
Jeremías Likerman - University of Buenos Aires (ARGENTINA)  
Lucía Sabripanti – University of Buenos Aires (ARGENTINA)  
Hernán Porras – Universidad de Chile (COSTA RICA)  
Concepción Cascante - Universidad de Chile (COSTA RICA)  
Silvina Nacif – Universidad Nacional de San Juan (ARGENTINA)  
Silvana Spagnotto – Universidad Nacional de San Luis (ARGENTINA)

*Outcome of Meeting*

The special session during the meeting has a strong technical programme that include 15 oral presentations and 2 posters covering the IGCP 568 topics:

***Oral presentations:***

*Tassara et al. “Caracterizando la estructura friccional de la mega-falla de subducción chilena mediante la integración de modelos gravimétricos, sismológicos, geodéticos y termales.*

*Albert and Tassara “Canal de subducción en márgenes afectados por erosión tectónica: método combinado de modelos análogos y PIV”*

*Sagripanti et al. “Transtensive to transpressive neotectonic reactivation of a fold and thrust belt: the Tromen volcanic plateau in the southern central Andes”*

*Giambiagi and IGCP 586Y Group “Modelo de deformación cortical profunda a través de la transecta Maipo-Tunuyán, Andes Centrales Sur, 33,6°”*

*Farías et al. “Contribución de largo-plazo de la segmentación climática en Chile Central a la construcción Andina”*

*Likerman et al. “Structure and evolution of the Austral basin fold-thrust belt, Southern Patagonian Andes”*

*Tapia et al. “Deformación cretácica-paleocena y sus evidencias en la Cordillera de los Andes Centrales (33.7 – 36°S)”*

*García et al. “Morphostructural evolution of the Medeiros hills, Cordillera Oriental, Argentina”*

*Fernández et al. “Geology of the Morteritos region, eastern sector of the Cordón del Plata, Frontal Cordillera, 33°05'S”*

*Porras et al. “Análisis de proveniencia de minerales pesados detríticos en la cuenca de antepaís del Alto Tunuyán y sus implicancias en el alzamiento de la Cordillera Frontal”*

*Carretier et al. “Slope and climate variability control of erosion in the Andes of Central Chile”*

*Moreiras et al. “Nuevos estudios en los grandes movimientos en masa en la alta cordillera de la Cuenca del río Maipo, Chile Central”*

*Sepúlveda et al. “Evaluación del peligro de remoción en masa en el deslizamiento de San José de Maipo, Chile Central”.*

*Godoy “La Angostura de Puntilla del Viento, valle del Aconcagua, Chile: un deslizamiento cohesivo antiguo”*

*Morales y Tassara “ Avances hacia un modelo termal 3D del margen Andino”*

### **Posters**

*Bechis et al “New Age constraints for the Cenozoic Marine ingresions of northwestern Patagonia, San Carlos de Bariloche area, Argentina”*

*Alarcón and Pinto “Características geoquímicas de las rocas sedimentarias de la Cuenca Manantiales y sus implicancias en el alzamiento andino en la región de La Ramada”*

*Giambiagi et al “Relationship between tectonics shortening, topographic elevation, crustal geometry and denudation in the Southern Central Andes, 33°-36°S”*

*Mescua and Giambiagi “Modelos estructurales para la relación basamento-cobertura a los 34°20’S, Andes Centrales del Sur.”*

*Jara et al. “Analogue models of basins affected by differential deformation in extensional and compressional regimes”*

## **ii. Sixth IGCP 586Y Meeting: San Juan, Argentina**

The sixth IGCP 586Y meeting was held in conjunction with the Tectonic Symposium of Argentina, in the city of San Juan, Argentina. The 14 oral presentations addressed the key themes of the project: geohazard risks and deep and shallow tectonic processes.

### *Scope of Meeting*

The aim of this workshop was to establish an integration of all the geophysical data (potential methods, seismology, reflexion seismic, magnetotelluric) and geologic data (structural, geomorphological, sedimentological, petrological) along the Southern Central Andes, between 32°-34°S. This meeting brought together geophysics and geologists from Chile, Costa Rica and Argentina working in geodynamics of deep processes in the Andes at these latitudes and it was open to the XV Tectonic Symposium assistants.

### *Achievements of Meeting*

During the meeting, the IGCP 586Y group has successfully integrated published and unpublished geological and geophysical data from the 32°-32°40’S transects.

### *Outcome of Meeting*

The special session during the meeting has a strong technical programme that include 14 oral presentations covering the IGCP 586 topics:

*Duran, P. “Estudio structural del promontorio de Quepos, Costa Rica: Análisis de la deformación de un monte submarino acrecionado al talud de la trinchera mesoamericana”*

*Fennell, L., Fabiano, J., Molnar, N., Sagripanti, L., Rojas Vera, E., Ruiz, F., Giménez, M. and Folguera, A. “El rol de la inversión tectónica en el levantamiento de grandes bloques cordilleranos: el caso de la Cordillera del Viento en la faja de Chos Malal, Provincia de Neuquén”*

*Folguera A., Zárate, M. “La Reactivación neógena del sector extrandino de Argentina Central, Llanura Pampeana (34-37°S)”*

Giambiagi, L., Tassara, A., Mescua, J., Tunik, M., Pinto, L., Tapia, F., Jara, P., Bechis, F., Hoke, G., Moreiras, M., Spagnotto, S., Porras, H. Suriano, J. “Relación entre deformación cortical profunda y somera en los Andes de Argentina y Chile Central”

Likerman, J., Cristallini, E. “Predicción de la probabilidad de fracturamiento utilizando métodos estáticos sobre superficies geológicas irregulares”

Likerman, J., Ghiglione, M., Cristallini, E. “Análisis de las variaciones estructurales a lo largo del rumbo en los Andes Patagónicos Australes: aproximación desde modelos análogos”

Mescua, J., Giambiagi, L., Ramos, V. “Estructura de la faja plegada y corrida de Malargüe a los 35°10'S, Mendoza, Argentina”

Moreiras, S., Giambiagi, L., Spagnotto, S., Nacif, S., Mescua, J. “Caracterización de las fallas activas del piedemonte de Mendoza (32°50'-33°S)”

Naipauer, M., Cingolani, C., Vujovich, G., McClelland, W. “Edades U-Pb en circones detríticos de los cerros Salinas y Valdivia (San Juan): áreas de aporte y correlaciones dentro del terreno Cuyania”

Páez, S., Moreiras, S. “Disparadores sísmicos de caídas en el sector de Potrerillos, Mendoza”

Rodríguez M.P., Charrier, R., Carretier, S., Brichau, S., Farías M. “Alzamiento y exhumación cenozoicos en el norte Chico de Chile (30-33°S)”

Sagripanti, L., Rojas Vera, E., Gianni, G., Rusconi, F., Ruiz, F., Folguera, A., Ramos, V. “Reactivación neotectónica de la faja plegada y corrida de Chos Malal, evidencias en la vertiente occidental del volcán Tromen, Andes Centrales del Sur”

Tapia, F., Farías, M., Naipauer, M. “Deformación fuera de secuencia en el sector interno de la faja plegada y corrida de Malargüe durante el Mioceno superior – Pleistoceno, Cordillera Principal, Chile (35°30'S)”

Yagupsky, D., Brooks, B., Duncan, C. “Crecimiento y evolución de cuñas orogénicas: simulaciones numéricas”

### **iii. Forth IGCP 586Y Field workshop: The 32°S transect**

The IGCP 586Y project members and invited doctoral students met for a field workshop across the Precordillera (32°S), San Juan, Argentina, where key neotectonic structures were observed. The goal of the field trip was to complete the northernmost transect of the project and discuss relationships between tectonic, climate and surface processes along the transect. Four IGCP 586Y members and 8 doctoral and postdoctoral invited students from Chile, Argentina and Costa Rica assisted the field workshop.



### 3.4. Educational, training or capacity building activities

### 3.5. Participation of scientists from developing countries, and in particular young and women scientists

86 % of leader scientists involved in IGCP 586Y are based in developing countries in South America and 57% of them are women. The two leaders of the project, Luisa Pinto from Chile and Laura Giambiagi from Argentina) are women.

### 3.6. List of most important publications (including maps)

**Carretier, S., V. Regard, R. Vassallo, G. Aguilar, J. Martinod, R. Riquelme, E. Pepin, R. Charrier, G. Herail, M. Farias, J-L Guyot, G. Vargas and C. Lagane., 2012.** Slope and climate variability control of erosion in the Andes of Central Chile. *In press in Geology*.

**Giambiagi, L., Mescua, J., Bechis, F., Tassara, A., Hoke, G., 2012.** Thrust belts of the southern Central Andes: Along-strike variations in shortening, topography, crustal geometry and denudation. *GSA Bulletin* 124 (7/8): 1339-1351.

**Giambiagi, L., Tassara, A., and Grupo IGCP 586Y.** Modelo de deformación cortical profunda a través de la transecta Maipo-Tunuyán, Andes Centrales Sur, 33°40'S. XIII Congreso Geológico Chileno, Antofagasta. T2: 144-146.

González, D., **Pinto, L., Peña, M., Arriagada, C., 2012.** 3D deformation in strike-slip systems: analogue modelling and numerical restoration. *Andean Geology*, 39 (2), 295-316.

Heredia, N., Farías, P., García Sansegundo, J., **Giambiagi, L., 2012.** The basement of the Andean Frontal Cordillera in the Cordón del Plata (Mendoza, Argentina): Geodynamic Evolution. *Andean Geology* 39(2): 242-257.

**Mescua, J., Giambiagi, L. and Ramos, V.** Late Cretaceous uplift in the Malargüe fold-and-thrust belt (35°S), Southern Central Andes of Argentina and Chile. In press at *Andean Geology*

Mergili M., Fellin W., Moreiras S.M. and Stötter J. 2012. Simulation of debris flows in the Central Andes based on Open Source GIS: Possibilities, limitations, and parameter sensitivity. *Natural Hazards* 61:1051–1081.

**Mescua, J. and Giambiagi, L., 2012.** Fault inversión vs. new thrust generation: a case study in the Malargüe fold-and-thrust belt, Andes of Argentina. *Journal of Structural Geology* 35: 51-63.

**Moreiras S.M., Lauro C. and Mastrantonio L. 2012.** Stability analysis and morphometric characterization of palaeo-lakes of the Benjamin Matienzo Basin- Las Cuevas River, Argentina. *Natural Hazards* 62 (2): 593-611.

**Moreiras** S.M., Lisboa S. and Mastrantonio L. 2012. The role of snow melting upon landslides in the central Argentinean Andes. *Earth Surface and Processes Landforms*. Special issue on Historical Range of Variability. Guest editors: Ellen Wohl and Sara Rathburn DOI 10.1002/esp.3239.

**Naipauer**, M., García Morabito, E., Marques, J., **Tunik**, M., Rojas Vera, E., Vujovich, G., Pimentel, M., and Ramos, V.A. 2012. Intraplate Late Jurassic deformation and exhumation in western central Argentina: constraints from surface data and U-Pb detrital zircon ages. *Tectonophysics* 524–525 (2012) 59–75.

Pazos, P.J., Lazo, D.G., Marsicano, C.A., **Tunik**, M.A. and Aguirre-Urreta, M.B. Ichnology of mixed siliciclastic-carbonate marginal marine facies in the Lower Cretaceous of the Neuquen Basin, Argentina. Article in press at *Gondwana Research*.

**Pinto**, L., **Giambiagi**, L., **Tunik**, M., **Sepúlveda**, S., **Moreiras**, S.M., **Farías**, M. and **Hoke**, G. IGCP 586Y: Geodynamic Processes in the Andes 32° to 34°S – Interplay between short-term and long-term processes. En Unesco-IGP-IUGS (Ed.): *Tales set in stone*: 40 years of the International Geoscience Programme (IGCP), pp. 121-128.

**Rodríguez**, M. P. S. **Carretier**, M. Saillard, V. Regard, G. Hérial, S. Hall, D. Farber, L. Audin, 2012. Geochronology of pediments and marine terraces in north-central Chile and their implications for Quaternary uplift in the Western Andes. *In press in Geomorphology*.

**Rodríguez**, M.P., **Pinto**, L., Encinas, A., 2012. Neogene erosion and relief evolution in Central Chile forearc (33-34°S) as determined by detrital heavy mineral analysis. In: « Mineralogical and Geochemical Approaches to Provenance », E. Troy Rasbury, Sidney R. Hemming y Nancy R. Riggs (Editoras). *\*Geological Society of America Special Papers\**, 487, 141-162.

**Sagripani**, L., Bottesi, G., Kietzmann, D., Folguera, A. and Ramos V. A., 2012. Mountain building processes at the orogenic front. A study of the unroofing Neogene foreland sequences (37° S). *Andean geology* 39 (2): 201 - 219.

**Sepúlveda**, S.A., Fuentes, J.P., Oppikofer, T., Hermanns, R.L., **Moreiras**, S.M., 2012. Analysis of a large-scale, stepped planar failure in the Central Andes uplands, Chile, using roughness profiles from terrestrial scanning. In: Eberhardt, E., Froese, C., Turner, A.K., Leroueil, S.(eds.), *Landslides and Engineered Slopes*: Protecting Society through Improved Understanding. Taylor & Francis Group, London. Vol. 2, pp 1243-1247.

**Tassara**, A., and Echaurren, A., 2012. Anatomy of the Andean subduction zone: three-dimensional density model upgraded and compared against global-scale models. *Geophysical Journal International* 189: 161-168.

Vargas, G., Rebolledo, S., **Sepúlveda**, S.A., Thiele, R., Townley, B., Padilla, C., Rauld, R., Herrera, M., Lahsen, A., Lara, M. Submarine earthquake rupture, active faulting and Holocene volcanism along the Liquiñe-Ofqui Fault Zone: Implications for seismic hazard assessment in the Patagonian Andes. In press at *Andean Geology*.

## **Proposal for a Geological Society of London Special Publication from the IGCP-586Y project**

*Title: "Geodynamic Processes in the Andes of Central Chile and Argentina"*

The proposal has been accepted by the Geological Society and the authors are now submitting their articles (Deadline: 30th November 2012)

*Editors: Sepúlveda, S., Giambiagi, L., Moreiras, S., Pinto, L., Tunik, M., Hoke, G. and Farías, M.*

### *Aims of the book*

The book aims to combine review and original articles on the tectonic and surface processes that affect the evolution of the Andes of central Chile and Argentina, with emphasis between 32°-34°S, addressing the interplay between processes resulting on the building and uplifting the Andes and erosive processes that shape the landscape. At these latitudes there is a number of singular characteristics that are relevant and distinguish from other sections of the Central Andes, such as a transitional change of the subduction angle resulting in changes in volcanic activity and the morphostructure, the presence of very strong relief with very high peaks including the Aconcagua mount (near 7 km-high), a great number of large volume landslides and glaciers, a highly dense population in the valleys of Santiago and Mendoza vulnerable to geological hazards related to both tectonic and surface processes.

*Estimated book publication date: Late 2013*

*3.7. Activities involving other IGCP projects, UNESCO, IUGS or others*

N/A

### **4. Activities planned**

N/A - 2012 is the last year of the project

### **5. Project funding requested**

N/A

### **6. Request for extension, on-extended-term-status, or intention to propose successor project**

N/A

### **7. Financial statement (\$ USD only)**

The IGCP 568Y provided funding supports for two conferences in Chile and Argentina, and one field trip across the northernmost transect of the project.

**8. Attach any information you may consider relevant**

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**3.b. Projects with active working groups in Argentina:**

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**3.c. Other IGCP Projects in which scientists from Argentina participated during the year:**

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**3.d. IGCP Project submitted during 2010 with Argentine leaders/co-leaders:**

**4. IGCP MEETINGS HELD DURING THE YEAR:**

**5. CONCRETE EXAMPLES OF CO-OPERATION AT THE NATIONAL LEVEL BETWEEN IGCP AND SOME OF THE OTHER SCIENTIFIC PROGRAMMES OF UNESCO.**

**6. NATIONAL COMMITTEE ACTIVITIES**

The National Committee considered the **Annual Report**, to be send at the IGCP Board, Paris, France.

Buenos Aires, 30th. January 2013.



Dr. María Beatriz Aguirre-Urreta