



# **REPÚBLICA ARGENTINA**

INFORME NACIONAL PRESENTADO A LA  
ASOCIACIÓN INTERNACIONAL DE SISMOLOGÍA Y  
FÍSICA DEL INTERIOR TERRESTRE –IASPEI–

**XXIV ASAMBLEA GENERAL DE LA  
UNIÓN GEODÉSICA Y GEOFÍSICA  
INTERNACIONAL – UGGI –**

Perugia, Italia, 2 – 13 julio de 2007

-----

# **ARGENTINA REPUBLIC**

NATIONAL REPORT PRESENTED TO THE  
INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND  
PHYSICS OF THE EARTH'S INTERIOR –IASPEI–

**XXIV GENERAL ASSEMBLY OF THE  
INTERNATIONAL UNION OF GEODESY AND  
GEOPHYSICS – IUGG –**

Perugia, Italy, 2 – 13 July, 2007

-----

**COMITÉ NACIONAL DE LA UNIÓN GEODÉSICA Y  
GEOFÍSICA INTERNACIONAL**

**NATIONAL COMMITTEE OF THE INTERNATIONAL UNION  
OF GEODESY AND GEOPHYSICS**

-----

BUENOS AIRES. ARGENTINA  
2007



Union Géodésique et Géophysique Internationale  
International Union of Geodesy and Geophysics

## REPÚBLICA ARGENTINA

COMITÉ NACIONAL DE LA UNIÓN GEODÉSICA Y  
GEOFÍSICA INTERNACIONAL  
(CNUGGI)

## ARGENTINA REPUBLIC

NATIONAL COMMITTEE OF THE INTERNATIONAL UNION OF  
GEODESY AND GEOPHYSICS

*The main function of the IUGG National Committee is representing the Union in Argentina.*

*It is chaired by the Military Geographic Institute Director, and assisted by two Vice Presidents, a General Secretary and a Secretary Assistant.*

*The current (2007) head staff is as follows:*

<b>President:</b>	<i>Cnl. VGM Eng. Alfredo Augusto Stahlschmidt</i>
<b>Executive 1<sup>st</sup> Vicepresident:</b>	<i>Dr Corina Risso</i>
<b>2<sup>nd</sup> Vicepresident:</b>	<i>Dr Nora Sabbione</i>
<b>General Secretary:</b>	<i>Surv. Rubén Carlos Ramos</i>
<b>Secretary Assistant:</b>	<i>Surv. Sergio Rubén Cimbaro</i>
<b>Treasurer:</b>	<i>MD Silvia Blanc</i>

### **ADDRESS (Dirección)**

Av. Cabildo 381  
(1426) BUENOS AIRES. Argentina  
PHONE: +54 (11) 4-576-5576 / 79  
E-mail: [dir@igm.gov.ar](mailto:dir@igm.gov.ar)  
[corina@gl.fcen.uba.ar](mailto:corina@gl.fcen.uba.ar)  
[rubencarlosramos@yahoo.com.ar](mailto:rubencarlosramos@yahoo.com.ar)



International Union of Geodesy and Geophysics  
Union Géodésique et Géophysique Internationale



Union Géodésique et Géophysique Internationale  
International Union of Geodesy and Geophysics

**Comité Nacional  
de la Asociación Internacional de Sismología y  
Física del Interior Terrestre**

**Argentinean National Committee  
of the International Association of Seismology and  
Physics of the Earth's Interior**

*Nora Cristina Sabbione*

PRESIDENT

*Patricia Mercedes Gauzellino*

SECRETARY

*Mario Alberto Araujo*

CO-SECRETARY

*Claudia Leonor Ravazzoli*

TREASURER

2004 – 2007



International Union of Geodesy and Geophysics  
Union Géodésique et Géophysique Internationale



- ◆ *Currently, the Argentinean National Committee of IASPEI (CNIASPEI) has 22 Members whose nationality is Argentinean.*
- ◆ *Most of them carried their research work on Seismology, Applied Geophysics and related sciences at different national institutes, centres, laboratories and universities.*
- ◆ *Some of them are temporarily abroad, working at foreign institutes, centres, laboratories and universities.*
- ◆ *The present National Report has been organised in order to include the activities listed according to institute and to some individual researchers.*

## List of Members

<b>Dra. Patricia Mónica ALVARADO</b>	e-mail: <a href="mailto:alvarad@geo.arizona.edu">alvarad@geo.arizona.edu</a>
<b>Lic. Mario Alberto ARAUJO</b>	e-mail: <a href="mailto:maraujo@inpres.gov.ar">maraujo@inpres.gov.ar</a>
<b>Geof. Gabriela Alejandra BADI</b>	e-mail: <a href="mailto:gbadi@fcaglp.unlp.edu.ar">gbadi@fcaglp.unlp.edu.ar</a>
<b>Lic. Silvana Teresa Inés BILBAO</b>	e-mail: <a href="mailto:sbilbao@iinfo.unsj.edu.ar">sbilbao@iinfo.unsj.edu.ar</a>
<b>Ing. Juan S. CARMONA</b>	e-mail: <a href="mailto:jscarmona@interredes.com.ar">jscarmona@interredes.com.ar</a>
<b>Lic. José Miguel FEBRER</b>	e-mail: <a href="mailto:febrer@speedy.com.ar">febrer@speedy.com.ar</a>
<b>Dra. Patricia Mercedes GAUZELLINO</b>	e-mail: <a href="mailto:gauze@fcaglp.unlp.edu.ar">gauze@fcaglp.unlp.edu.ar</a>
<b>Ing. Simón GERSHANIK</b>	e-mail: <a href="mailto:sinai@netverk.com.ar">sinai@netverk.com.ar</a>
<b>Ing. Marcelo Horacio MILLAN</b>	e-mail: <a href="mailto:mmillan@inpres.gov.ar">mmillan@inpres.gov.ar</a>
<b>Geof. Milton Percy PLASENCIA LINARES</b>	e-mail: <a href="mailto:milton@fcaglp.unlp.edu.ar">milton@fcaglp.unlp.edu.ar</a>
<b>Geof. Cecilia Inés RASTELLI</b>	e-mail: <a href="mailto:crastelli2002@yahoo.com.ar">crastelli2002@yahoo.com.ar</a>
<b>Dra. Claudia Leonor RAVAZZOLI</b>	e-mail: <a href="mailto:claudia@fcaglp.unlp.edu.ar">claudia@fcaglp.unlp.edu.ar</a>
<b>Geof. Marcelo Daniel ROIZMAN</b>	e-mail: <a href="mailto:Marcelo_Roizman@veritasdgc.com">Marcelo_Roizman@veritasdgc.com</a>
<b>Geof. María Laura ROSA</b>	e-mail: <a href="mailto:mlrosa@fcaglp.unlp.edu.ar">mlrosa@fcaglp.unlp.edu.ar</a>
<b>Lic. Nora Cristina SABBIONE</b>	e-mail: <a href="mailto:nora@fcaglp.unlp.edu.ar">nora@fcaglp.unlp.edu.ar</a>
<b>Ing. Jorge Alberto SISTERNA</b>	e-mail: <a href="mailto:jsisterna@unsj-cuim.edu.ar">jsisterna@unsj-cuim.edu.ar</a>
<b>Lic. Claudia STAFF,</b>	e-mail: <a href="mailto:turcastaf@hotmail.com">turcastaf@hotmail.com</a>
<b>Dr. Enrique TRIEP,</b>	e-mail: <a href="mailto:trieb@andes.unsj.edu.ar">trieb@andes.unsj.edu.ar</a>
<b>Ing. Juan Carlos USANDIVARAS,</b>	e-mail: <a href="mailto:jcu@fcaglp.unlp.edu.ar">jcu@fcaglp.unlp.edu.ar</a>
<b>Geof. Carlota Gershanik de VACCHINO</b>	e-mail: <a href="mailto:cgershanik@yahoo.com">cgershanik@yahoo.com</a>
<b>Dr. Danilo VELIS,</b>	e-mail: <a href="mailto:velis@fcaglp.unlp.edu.ar">velis@fcaglp.unlp.edu.ar</a>
<b>Sr. Jorge H. VIGIANI</b>	e-mail: <a href="mailto:jorge@fcaglp.unlp.edu.ar">jorge@fcaglp.unlp.edu.ar</a>

## Institutions

**Instituto Sismológico "Fernando Volponi"** (ex "Zonda"),  
Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan,  
Meglioli 1160 Sur, (Av. J. Ignacio de la Roza y Meglioli)  
5400, Rivadavia - San Juan, Argentina  
TE.: +54-0264-4231945/4230940/4234129/4264945/4264940  
FAX: +54-0264-4234980  
e-mail: [trieb@andes.unsj.edu.ar](mailto:trieb@andes.unsj.edu.ar)

**Instituto Nacional de Prevención Sísmica,**

Roger Balet N° 47 - Norte, 5400, San Juan, Argentina

Teléfonos: +54-(0264) 423-9010/9011/9012/9014/9016

Fax: +54-(0264) 423-4463

e-mail: [giuliano@inpres.gov.ar](mailto:giuliano@inpres.gov.ar)

e-mail: [maraujo@inpres.gov.ar](mailto:maraujo@inpres.gov.ar)

**Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata**

**Departamento de Sismología e Información Meteorológica**

**Departamento de Geofísica Aplicada**

Paseo del Bosque s/n,

1900 La Plata, Buenos Aires,

TE.: +54-0221-4236593/4236594

e-mail: [nora@fcaglp.unlp.edu.ar](mailto:nora@fcaglp.unlp.edu.ar)

e-mail: [gauze@fcaglp.unlp.edu.ar](mailto:gauze@fcaglp.unlp.edu.ar)

**Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan**

Meglioli 1160 Sur, (Av. J. Ignacio de la Roza y Meglioli )

5400, Rivadavia - San Juan, Argentina

TE.: +54-0264-4231945/4230940/4234129/4264945/4264940

FAX: +54-0264-4234980

e-mail: [alvarado@geo.arizona.edu](mailto:alvarado@geo.arizona.edu)

**Instituto de Investigaciones Antisísmicas “Ing. Aldo Bruschi” UNSJ**

Facultad de Ingeniería, Universidad Nacional de San Juan,

Avenida del Libertador Gral. San Martín N° 1290 (0),

5400, San Juan, Argentina

TE.: +54-0264 - 422- 8123 / 421- 1700 (Interno 369)

FAX. : +54-0264 - 422- 8123 / 421- 3672

e-mail: [idia@unsj.edu.ar](mailto:idia@unsj.edu.ar)

# ARGENTINEAN NATIONAL REPORT 2003-2007

## XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** INSTITUTO NACIONAL DE PREVENCIÓN SÍSMICA - INPRES –  
SECRETARÍA DE OBRAS PÚBLICAS - MINISTERIO DE PLANIFICACIÓN  
FEDERAL, INVERSION PÚBLICA Y SERVICIOS

**Mission:** The aim of this organisation is to do studies, basic and applied research of Seismology and Seismic Engineering. These investigations are destined for seismic risk prevention by means of the establishment of norms that optimally allow the stability and permanence of the civil structures existent in the seismic zones of Argentina. The studies conducted by INPRES have improved the knowledge of seismic danger in the country as well as the dynamic processes occurring in the upper mantle and crust.

## 2.- SPECIFIC ORGANISATION:

The INPRES is a centralised organism that belongs to SECRETARÍA DE OBRAS PÚBLICAS DEL MINISTERIO DE PLANIFICACIÓN FEDERAL, INVERSIÓN PÚBLICA Y SERVICIOS. Its central office is in the city of San Juan in the province with the same name. It is the national organism in charge of the execution of the National Policy for seismic prevention, whose mission was stated above. In order for these studies to be carried out, the INPRES is provided with a national chain of seismological stations and a national chain of accelerographs, and with the structure laboratory.

The personnel are listed below:

### I) SCIENTIST AND TECHNICAL TEAM

College professionals	25
Technicians	20
Support team	3

### II) GENERAL TEAM

College professionals	6
Support team	18

## 3.- MAIN WORK DONE BETWEEN 2003 AND 2007

### 3.1 Work done or in progress

1. Participation in CFAG points remeasurement of the points CFAG (continuously measured over the year), Palo y Mogote, located in Sierra de Pie de Palo in the frame of the CAP project, with high-precision measurements using GPS equipment in order to detect earth's crust movements. INPRES, July 19th to August 1st, 2003.
2. Topographical elevation of the fault area La Laja, which has a proximity of 5000 points, with the aim of obtaining a topographical map to be able to mold the deformations originated by the tectonics in the area where the earthquake of January 15th of 1944 took place. This earthquake had a 7.4 Richter magnitude. INPRES, June-July, 2003.
3. Professionals from INPRES, held lectures in the subject of Seismology, as part of the Seismo-resistant Structure Engineering Master, Engineering Faculty, National University of San Juan. December 2002- April 2003.
4. Production of Seismic Bulletin (2001). Data base taken from the following sources: INPRES, United States Geological Survey (USGS) and the Seismological Service of the University at Chile. INPRES, 2002.
5. Topographical elevation of the fault area Blanquitos, Talacasto and San Juan, framed in the research project of the active fault areas in the province of San Juan, Argentina. INPRES, September 2003.

6. Seismic operation in the province of Catamarca conducted by the INPRES on the occurrence of the 9<sup>th</sup>-July- 2004 earthquake, in order to register the principal event to compare the seismic activities with the local tectonic model, September- December 2004.
7. Elaboration of the Seismology-Seismotectonic and focal parameters chapters for the general report on the 7<sup>th</sup> -September- 2004 Catamarca's earthquake, to be published by INPRES.
8. A professional from INPRES held lectures in the subject of Seismology, as part of the Seismo-resistant Structure Engineering PhD, University of Mendoza, Argentina, May - July 2005.
9. Elaboration of the Seismic Bulletin (2002- 2003). Data base taken from the following sources: INPRES, United States Geological Survey (USGS) and the Seismological Service of the University at Chile. INPRES, 2005
10. Seismic operation in the northwest region of the province of Cordoba, conducted by INPRES, in order to register the seismic activity and micro seismic existent in the area, November 2005 - December 7th, 2005.
11. Seismic operation in the region of Barrancas-Lulunta in the province of Mendoza, conducted by INPRES in order to register the earthquake that occurred in that area on August 5<sup>th</sup>, 2006.
12. Elaboration of the Seismology-Seismotectonic and focal parameters chapters for the general report on the 5<sup>th</sup> -August- 2006 Mendoza's earthquake.
13. Participation of a professional of INPRES in Neotectonics workshop organised and developed within the Andean Multinational Project (PMA). Mendoza, July 1st - July 7th, 2006.
14. Elaboration of the Seismic Bulletin (2004). Data Base taken from the following sources: INPRES, United States Geological Survey (USGS) and the Seismological Service of the University at Chile. INPRES, 2006.
15. During the year 2006 there was an advance in the doctoral thesis "Tectonica Cuaternaria y Sismicidad actual en el Sistema de Precordillera oriental y Bolsón de Matagusanos entre los 31° a 32° de latitud sur y 68° a 69° de longitud oeste (Provincia de San Juan, Argentina)", which is part of a project that is being developed in INPRES. The advancements are:
  - A. Text updating and inclusion of the observations done in the trench profiles by the director of the thesis, Dr. Carlos Costa.
  - B. Preparation of focal mechanism of the 1944 earthquake with epicenter in La Laja area.
  - C. Information obtained by the paleoseismology about the 1944 earthquake from the trench done in the scarp's fault named Fault La Laja N° 2.
  - D. Idealisation of tectonic models that refer to the three areas under study in the thesis, based on the superficial seismic analysis in the map obtained by satellite plus the focal mechanism of the 1944 earthquake and other mechanisms under study.
  - E. Production of the thesis report on Neotectonics and Seismology by the stated index.
16. During the year 2006 there was an advance in the doctoral thesis "Actividad tectónica cuaternaria y sismicidad del Valle del Rodeo, Iglesia, entre los 30°- 30° 30' de latitud sur y 6°- 69° 30' de longitud oeste", which is part of a project done by INPRES according to the following:
  - A. The interpretation of the satellital images and aerial photos was completed and organised for their further processing in a digital map where modern deformations and structural features were represented.
  - B. Campaigns were carried out in the eastern area of the thesis, i.e. the eastern side of Arroyo Colola- Iglesia
    - The piece of work was focused on the observation and analysis of the natural trenches already discovered, and on the search for new ones.
    - Using these field observations, deformational areas were defined acting at quaternary and terciary-quaternary levels.
    - Based on field exploration and detailed pictures taken in natural trenches, profiles were built through a graphic programme. The dispositions of the different levels, the structural characteristics, the deformation areas and the stratigraphical units were defined in this procedure.
    - Lithological identification and description of quaternary sediments were done to compare the different stages of evolution linked to the surface rupture.
  - C. The writing of the observations done during the field visits, the trench interpretations as well as the corrections and suggestions done by the director of the thesis, Dr. Carlo Costa, are still in progress.

### **3.2. National Seismic Network**



It is composed of the National Seismological Stations Network, which has 50 stations and the National Accelerograph Network which has 140 installed accelerographs, both networks with equipment distributed all over the country.

#### **4.- PUBLICATIONS**

- "El terremoto del 28 de mayo de 2002, La Rioja, Argentina". Araujo M., Millán M. y Pérez A. 8<sup>vo</sup> Congreso Internacional de la Sociedad Brasileña de Geofísica y 5<sup>va</sup> Conferencia Latinoamericana de Geofísica, 14 al 18 de septiembre de 2003, Rio de Janeiro, Brasil.

- "Modelling of Andean Backarc (30° -36° S) Crustal Earthquake Waveforms Using a Portable Regional Broadband Seismic Network". Alvarado, P., Araujo M. et al. "Tópicos de Geociencias: Un volumen de estudios sísmológicos, geodésicos y geológicos", 2004, EFU Editorial, 53-93, pp.334, ISBN 950-605-340-5.

- "Deformation Partitioning Flat Subduction Setting: The Case of the Andean Foreland of Western Argentina (28° S-33°S)". Siame L., Araujo M. et al.. "Tectonics" 2005, vol. 24, TC5003.

- "Last Destructive Earthquakes Occurred in La Rioja, 05/28/2002, and in Catamarca, 09/07/2004, Argentina: In the Noroccidental Pampean Ranges". Araujo M., Pérez A. y Millán M., Sexto Simposio de Geodinámica Andina, Barcelona, España, 12 al 14 de septiembre de 2005.

- "Avances del Proyecto CHARGE en el Último Año". Alvarado, P., Beck S., Araujo M. et al. Presentado en la IASPEI General Assembly, Santiago de Chile, 2 al 8 de octubre de 2005. Trabajo realizado dentro del marco del proyecto CHARGE, en donde el INPRES y la Universidad de Arizona, junto con otras instituciones, participan bajo convenios de colaboración.

- "The Lithospheric Structure of the Sierras Pampeanas Region of Argentina". Beck S., Alvarado, P., Araujo M. et al. Reunión de la Sociedad Geofísica Americana, Salt Lake City, Utah, 16 al 19 de octubre de 2005.

- "El sismo del 5 de agosto de 2006, en Mendoza, Argentina". Araujo M. y Pérez A. XII Reunión de Tectónica –San Luis- Argentina, 18 al 20 de octubre de 2006.

- "Análisis del Campo de Esfuerzos Durante el Cuaternario en los Depósitos Lacustres del Área Acequión, San Juan, Argentina. Perucca L.y Pérez A. XII Reunión de Tectónica –San Luis- Argentina, del 18 al 20 de octubre de 2006.

- "El Sistema de Fallamiento El Tigre entre el Río Jáchal y el Cerro Negro de Iglesia (Provincia de San Juan)". Pérez I. y Costa C., XII Reunión de Tectónica –San Luis- Argentina, 18 al 20 de octubre de 2006.

- "Actividad Cuaternaria en el Área de La Laja, Provincia de San Juan y su Relación con el Terremoto de 1944. Pérez I. y Costa C., XII Reunión de Tectónica –San Luis- Argentina, 18 al 20 de octubre de 2006.

#### **5.- CONGRESSES.**

1º) 8<sup>vo</sup> Congreso Internacional de la Sociedad Brasileña de Geofísica y 5<sup>va</sup> Conferencia Latinoamericana de Geofísica, 14 al 18 de septiembre de 2003, Rio de Janeiro, Brasil.

2º) Segundas Jornadas de Ciencias de la Tierra, en la Facultad de Ciencias Exactas Físicas y Naturales de la Universidad Nacional de San Juan, Argentina, 26 -27 de junio de 2003.

3º) 6º ISAG, Sexto Simposio de Geodinámica Andina, a realizarse en Barcelona, España, entre los días 12 al 14 de septiembre de 2005.

4º) IASPEI General Assembly, realizada en Santiago de Chile, Chile, entre los días 2 al 8 de octubre de 2005.

5º) Reunión de la Sociedad Geofísica Americana, Salt Lake City, Utah, Estados Unidos, entre los días 16 al 19 de octubre de 2005.

6º) XII Reunión de Tectónica, San Luis, Argentina, del 18 al 20 de octubre de 2006.

7º) Taller de Neotectónica, organizado y desarrollado dentro del Proyecto Multinacional Andino (PMA). Mendoza, Argentina, 1-7 de julio de 2006.

**6.- ADDRESS:**

Roger Balet 47-Norte-  
5400 San Juan-Argentina  
TE.-FAX: +54-264-4234463  
E-mail: [giuliano@inpres.gov.ar](mailto:giuliano@inpres.gov.ar)

# ARGENTINEAN NATIONAL REPORT 2003-2007

## XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** UNIVERSIDAD NACIONAL DE LA PLATA  
FACULTAD DE CIENCIAS ASTRONÓMICAS Y GEOFÍSICAS  
DEPARTMENT OF SEISMOLOGY AND METEOROLOGICAL INFORMATION

**MISSION:** Among the different branches of Astronomy and Geophysics, the principal objectives of the "Facultad de Ciencias Astronómicas y Geofísicas" (FCAG) are: research, teaching, scientific-technical assistance required by other groups, and divulgation. According to this, the activities of the Seismology and Meteorological Information Department are described in this report.

The staff's aim is to obtain, keep and send data from records of seismological stations, and research on several seismological topics as tectonic and volcanic seismicity, surface waves dispersion, and seismic attenuation.

## 2.- SPECIFIC ORGANISATION

### *Facilities*

Pavilion-lodge of seismological station LPA. Enclosure-lodge Mainka seismograph. 5 offices (100 m<sup>2</sup>) located in the central building of this College. 12 personal computers.

### *Instruments*

2 horizontal mechanical components (Mainka 450kg), deactivated in December, 1991  
3 short period seismometers United Electro Dynamics Benioff UED, 2 horizontal component model 1101, and 1 vertical component model 1051.  
3 long period seismometers W.F.Sprengnether, Instruments Inc. Co., 2 horizontal components, and 1 vertical component model 201.  
4 seismic amplifiers (3 for long period and 1 for short period), a motor amplifier, and pen's control, Kinematics Systems.  
2 three simultaneous component drum recorders, with accessory UED, models: 273 and 275.  
1 digitiser controlled by PC with A/D converter of up to 16 channels, amplifiers and filters for three sensors. Designed and constructed in the FCAGLP, in operation as digital broadband seismograph.  
1 portable short period one component seismometer Geotech model 18300 - S13  
1 Helicorder recorder, with built-in amplification of solid state and thermosensitive paper register Geotech model RV-301.  
1 LE-3Dlite three directional 1Hz geophone.  
1 portable A/D converter of 3 channels, 16 bits of continuous register or by triggering, designed and made in the Department of Volcanology, National Museum of Natural Sciences, CSIC, Madrid and the Institut Cartogràfic de Catalunya, Barcelona, Spain.  
1 portable A/D converter of 3 channels, 12 bits of register by triggering designed and made in the Department of Electronics of the College of Astronomical and Geophysical Science, UNLP.  
1 GPS Trimble Navigation for time control.  
1 digital seismograph Teledyne-Geotech, made up of 1 portable data acquisition system PDAS100, 4 broadband accelerometers BB13, and a GPS Trimble Navigation.  
1 CMG-3ESP compact triaxial weak-motion Geotech seismometer with a high-quality digitiser module with full 24-bit resolution DM24 S3 and a GPS.

### *Personnel*

4 researchers.  
5 specialised technicians.

### **3.- MAIN TASKS PERFORMED DURING THE 2003 – 2007 PERIOD**

#### ***Stations***

##### **LPA Seismological Station**

The Seismology and Meteorological Information Department has the LPA Seismological Station that belonged to the international network of standardised stations WWSSN (VELA), 1962-1996. This station at the moment is maintained by FCAGLP, and seismological codified information is sent to United States Geological Survey for its publication in the EDR from 1967. The final interpretation of seismological registers has been sent to the International Seismological Centre, Great Britain, for its publication in the Bulletins of the International Seismological Centre since 1923.

##### **TRWA Seismological Station**

This station has 3 Teledyne-Geotech broadband accelerometers BB13, a GPS Trimble Navigation, and a portable A/D conversor registering since 1998.

##### **DSPA Seismological Station**

This station has a CMG 3T broadband sensor, GPS Trimble Navigation, and an A/D conversor registering since 2002.

##### **TRVA Seismological Station**

This station has a CMG 3T broadband sensor, GPS Trimble Navigation, and an A/D conversor registering since 2005.

#### ***Teaching activities***

The researchers of this Department teach three subjects belonging to the curricula of Geophysics: General Geophysics (1st year), Introduction to Geophysics (3rd year) and Seismology (4th year),

#### ***Projects***

Seismic Modelling with broadband data of earthquakes

Secretariat for the Technology, Science and Productive Innovation - SEYCIP. Joint project of investigation within the framework of cooperation SETCIP-MAE. 2002-2003.

Director: Jose M. Carcione (Istituto Nazionale di Oceanografía e di Geofísica Sperimentale – OGS), Italy.

Director: Dra. Nora C. Sabbione (Facultad de Ciencias Astronómicas y Geofísicas, FCAG), Argentina.

Seismological Signal Analysis in Argentine and Scotia Sea.

La Plata National University. 11/G068. 2002 - 2005.

Director: Nora C. Sabbione

Volcanology Deception.

Argentine Antarctic Institute. DNA. 2001 - 2004.

Director: Dr. Alberto Caselli. Department of Geological Sciences. FCEN. UBA.

Broadband Seismology in Scotia Sea region.

Programma Nazionale di Ricerche in Antartide (PNRA) Italia. 2004-2006

Director: Dr. Marino Russi. Istituto Nazionale di Oceanografía e Geofísica Sperimentale (OGS) Trieste, Italy.

VOLUME, VOLcanoes: Understanding subsurface mass moveMEnt

European triannual Project financed by the European Commission in the 6th Program Frame of Sustainable Development, Global Change and Ecosystems. FP6-2004-Global-3.

Participation of G. Badi as investigator of associated country.

Monitoring, Analysis and Interpretation of Tectonic and Volcanic Seismological Activity. Towards the Prevention of Natural Catastrophes.

La Plata National University. 11/G088. 2005 - 2009.

Director: Dra. N. Sabbione

POLENET, Cortical Structure of the South Shetland Area by the Analysis of Receiving Functions in Permanent Seismic Broadband Stations.

National plan of I+D, BOE 9-Dec-2005 of the Ministry of Education and Science of Spain.

Director: Dr. J. Almendros, Univ. of Granada, Spain.

Participation of G. Badi as investigator of associated country.

Sis-VolteDEC, Seismo-volcanic Monitoring, Surface Structure and Crust Modeling of Deception Island University of Granada, Spain. 2005 - 2008. CGL2005-07589-C03-02.

Main researcher: Jesus Ibáñez Godoy, Univ. of Granada.

Participation of G. Badi as investigator of associated country.

Extension of Seismological Monitoring Network and Determination of Seismic Hazard in Tierra del Fuego.

Secretariat of Science, Technology and Productive Innovation of the Ministry of Education, Science and Technology. Call: "Federal Projects of Productive Innovation", P.F.I.P.. Resolution N° 1888/05.

EXPTE S.C.T.I.P. N° 0839/05. 2006-2007

Director: Dra. N. Sabbione

### ***Technical Assistance***

Copahue (UBA): Copahue Volcano - Province of Neuquén, Argentina.

Technical assistance, analysis and data processing of volcanic seismology

### ***Antarctica Surveys Participation***

Summer 2004 - Base Argentina Orcadas, Orcadas Islands. Seismological instruments actualization

Summer 04/05 - Base Española Gabriel de Castilla, Deception Island, South Shetland Island. Seismic marine experiment with ground and oceanic bottom register for tomography and cortical structure of the island

Summer 2005 - Base Esperanza (ESPZ), Argentina. Seismograph installation with real time link via Internet with IAA and OGS. Installation of SeisComP for data connection and conversion in real time from stations ASAIN with ORFEUS Data Centers (<http://www.orfeus-eu.org>).

Summer 2005 - Base Orcadas (ORCD), Argentina. Beginning of real time link via Internet with IAA and OGS. Installation of SeisComP for data connection and conversion in real time from stations ASAIN with ORFEUS Data Centers (<http://www.orfeus-eu.org>).

Summer 06/07 - Base Española Gabriel de Castilla, Deception Island, South Shetland Island. Seismic experiment with ground registering for tomography and cortical structure studies of the island

Summer 2006/7 - Base San Martín, Argentina. Seismograph Installation of SMAR station ( 68°07' S lat. , 67°06'W long.) that will have, in a near future, a real time link via Internet with IAA and OGS. Installation of SeisComP for data connection and conversion in real time from stations ASAIN with ORFEUS Data Centers (<http://www.orfeus-eu.org>).

### ***Research Activities***

- Noise analysis in LPA seismological station in order to know its level and spectral distribution, using a three components digital broadband accelerometer (0.05 - 16 Hertz.).

- Dispersion curves determination from Rayleigh waves group velocity for earthquakes with centers in Chile, Peru, Ecuador and Bolivia, registered in the LPAdig station.

- Study of characterisation and temporary evolution of the seismicity on Deception Island, Antártida, an active volcano, in order to contribute to the knowledge of the present state of its activity.

- Seismicity characterisation registered in ORCD station. Application of different techniques for the study of surface waves and lithospheric modelling.

- Doctoral Thesis: With digital seismological data provided by the INPRES, a comparative study of seismic attenuation is being done in the center-west region of the country. This study includes the determination of hypocenters and the determination of attenuation parameters for different waves according to different methods in order to know the tectonics of the region and to contribute with studies of seismic risk.

- Seismicity study of Tierra del Fuego Island and adjacent zones, compilation of existing bibliography from geologic and geophysical studies.

#### **4.- PUBLICATIONS**

Guidarelli, M., Russi, M., Plasencia Linares, M.P., Panza, G.F. 2003. The Antarctic Seismographic Argentinean-Italian Network, and the progress in the study of structural properties and stress conditions in the Scotia Sea region. *Terra Antarctica Reports*, vol. 9.

Sabbione, N., Rosa, M. L., Osella, A. 2003. Análisis preliminar de ondas superficiales aplicado al modelado cortical en las Sierras Pampeanas, Argentina. *Geoacta* 28. pp. 49-60. ISSN 0326-7237

Sabbione, N. 2004. Implementación de la Red de estaciones sismológicas de la Universidad Nacional de La Plata. Aplicaciones al estudio del riesgo sísmico. Doctoral Thesis, S-11, pp. 1-140. Inv 10781. Biblioteca de FCAG.

Badi, G., Rosa, M. L., Sabbione, N. y Plasencia, M. 2004. Atenuación de Ondas Rayleigh en el extremo sur del Continente Sudamericano. Book's title: *Tópicos de Geociencias*. Editorial EFU Fundación Universidad Nacional de San Juan. ISBN N° 950-605-340-5 pp. 27-52

Sabbione, N. 2004. Red de estaciones sismológicas digitales en la Universidad Nacional de La Plata. Su puesta en funcionamiento. Book's title: *Tópicos de Geociencias*. Editorial: EFU Fundación Universidad Nacional de San Juan. ISBN N° 950-605-340-5 pp. 95-138

Badi, G., J. Ibáñez y N. Sabbione. 2004. Atenuación de Ondas de Corte en la Región de Nuevo Cuyo. *Actas de la XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas*. In CD.

Febrer, J., Russi M., Rodríguez G., Plasencia Linares, M.P. 2004. El Sismo M 7.5 del 4 de Agosto de 2003 al Este de Las Islas Orcadas, Antártida. *Actas de la XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas*. In CD

Sabbione N., J. Carmona, R. Pinciroli, R. Palau. 2004. Espectros de respuesta de la aceleración sísmica registrada en La Plata en ocasión de grandes sismos. *Actas de la XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas*. In CD.

Rastelli, C., Connon, G., Hormaechea, J, Sabbione, N. 2004. Registración sismológica en Isla de los Estados. *Actas de la XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas*. In CD.

Rosa, M. L., Sabbione, N., Osella, A. 2004. Análisis comparativo de la inversión de ondas superficiales en territorio argentino. *Actas de la XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas*. In CD

Plasencia Linares, M.P., Bukchin B.G., Guidarelli G., Russi M., Panza G.F. 2004. The 4-August-2003 Earthquake Recorded by ASAIN Network in Antarctica and Tierra del Fuego. *Bollettino di Geofisica teorica ed Applicata*, vol. 45, n.2 supplement, 3-02.

Guidarelli, M., Plasencia Linares, M.P., Russi, M., and Panza G.F. 2004. Lithospheric Structures and Regional Seismicity in the Scotia Sea Area: a review. *Bollettino di Geofisica Teorica ed Applicata*, vol. 45, n.2 supplement, 3-02.

Russi, M., Plasencia Linares, M.P., Guidarelli, M. 2004. Further Developments of the ASAIN Network in Antarctica and Tierra del Fuego. *Bollettino di Geofisica Teorica ed Applicata*, vol. 45, n.2 supplement, 3-04.

Caselli, A., C. Bengoa, E. Rojas Vera, A. Bidone, G. Badi, D. Zandomenighi, N. Sánchez, F. Fernández-Ibañez and J. Ibañez. 2004. Annual investigations reveal continuing seismicity and fumaroles. Volcanic Activity Reports. Deception Island. Bulletin of the Global Volcanism Network, Smithsonian Institution 12/2004 (BGVN 29:12), <http://www.volcano.si.edu/reports/bulletin/>

Carmona, J., Sabbione, N., Pinciroli, R., Palau, R. 2004. Espectro de aceleración sísmica en Buenos Aires por efecto de sismos con Mg 8,2 del litoral chileno y de magnitud 7,2 del oeste argentino. Actas de la XVIII Jornadas de Asociación de Ingeniería Estructural. In CD.

Carmona, J., Sabbione, N., Pinciroli, R., Palau, R. 2005. Espectro de aceleración sísmica en Buenos Aires por efecto de sismos de gran magnitud del litoral chileno o del oeste argentino. Revista de Ingeniería estructural 33, pp. 8-16

Carcione J. M., Helle H. B., Seriani G., Plasencia Linares M. P. 2005. On the Simulation of Seismograms in a Viscoelastic Earth by Pseudospectral Methods. Geofísica Internacional (2005), 44, 2, pp. 123-142.

Badi, G., J. Ibañez Godoy y N. Sabbione, 2006. Atenuación sísmica de corto período en la región de Nuevo Cuyo: Un estudio comparativo. Accepted for its publication in Geoacta

Sabbione, N., Connon, G., Hormaechea, J., Rosa, M. L. 2006. Estudio de sismicidad en la Provincia de Tierra del Fuego, Argentina. Geoacta (in press).

Caselli, A. T., G. Badi, A. L. Bonatto, C. L. Bengoa, M. R. Agosto, A. Bidone y J. Ibañez, 2007. Actividad sísmica y composición química fumarólica anómala debido a posible efecto sello en el sistema volcánico, Isla Decepción (Antártida). Sent to Revista de la Asociación Geológica Argentina.

### ***Congresses, Symposiums and Scientific Meetings***

V Argentine Symposium and I Latin American Symposium on Antarctic Investigations. Buenos Aires, Argentina, 30<sup>th</sup> August - 3<sup>rd</sup> September, 2004. Two oral expositions.

GeoSur2004. Buenos Aires, Argentina, 22<sup>nd</sup> - 23<sup>rd</sup> November, 2004. One poster and 2 oral expositions.

American Geophysical Union. 2005. AGU Fall Meeting. One oral exposition.

IASPEI General Assembly. Santiago, Chile, October, 2005. Two posters and 3 oral expositions.

X International Meeting, "Volcán de Colima". Colima, México, 16<sup>th</sup> - 20<sup>th</sup> January, 2006. Three posters.

XXIII AAGG Scientific Meeting. Bahía Blanca, Argentina. August, 2006. Two posters and 1 oral exposition.

### ***Courses***

IASPEI Training Course

Professor: Tim Ahern, IRIS DMC; Dmitry Storchak, International Seismological Centre; Johannes Schweitzer, Norsar; Anne Sheehan, University of Colorado, Boulder; Robert Herrmann, Saint Louis University, Kiyoshi Suyehiro, Univ. of Tokyo, Japan

9<sup>th</sup>-13<sup>th</sup> October, 2005

Department of Geophysics, University of Chile. 30 hours.

Física De Volcanes

Professor: Jesús M. Ibañez Godoy, UGR; Javier Almendros, UGR.

17<sup>th</sup> May – 12<sup>th</sup> June, 2006.

Faculty of Sciences, University of Granada, Spain. 60 hours.

Managing Waveform Data and Related Metadata for Seismic Networks

Organised by: IRIS, CERESIS, IASPEI, USP.  
10th-14th July, 2006  
University of San Pablo, Brazil. 45 hours

Análise Sismológica  
Professor: Martín Heinz Salvador Schimmel. Institut of Earth Science Jaume Almera, Barcelona, Spain.  
5<sup>th</sup> - 9<sup>th</sup> February, 2007  
University of San Pablo, Brazil

Função do Receptor e Estrutura Crustal  
Professor: Jordi Julià Casas. University of South Carolina, Columbia SC, USA  
12<sup>th</sup> -16<sup>th</sup> February, 2007  
University of San Pablo, Brazil

#### **5.- ADDRESS :**

Departamento de Sismología e Información Meteorológica  
Facultad de Ciencias Astronómicas y Geofísicas  
Paseo del Bosque S/N – 1900-  
La Plata – Pcia. de Buenos Aires  
República Argentina

Te: +54-221-4236593/94  
Fax: +54-221-4236591

e-mail: [nora@fcaglp.unlp.edu.ar](mailto:nora@fcaglp.unlp.edu.ar)  
[gbadi@fcaglp.unlp.edu.ar](mailto:gbadi@fcaglp.unlp.edu.ar)  
[milton@fcaglp.unlp.edu.ar](mailto:milton@fcaglp.unlp.edu.ar)  
[mlrosa@fcaglp.unlp.edu.ar](mailto:mlrosa@fcaglp.unlp.edu.ar)

#### **WEB PAGE :**

<http://www.fcaglp.unlp.edu.ar/deptoSyM/>



# ARGENTINEAN NATIONAL REPORT 2003-2007

## XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** UNIVERSIDAD NACIONAL DE LA PLATA  
FACULTAD DE CIENCIAS ASTRONÓMICAS Y GEOFÍSICAS  
DEPARTMENT OF APPLIED GEOPHYSICS

**Mission:** The Department of Applied Geophysics supports multidisciplinary research and educational activities in the study of different geophysical exploration problems such as: seismic modelling, processing and inversion, ground water flow, contaminant dispersion, electromagnetic wave propagation and electrical methods. This interdisciplinary group is formed by geophysicists, mathematicians, physicists and geologists.

## 2.- SPECIFIC ORGANISATION:

The Department is housed on the campus of the Facultad de Ciencias Astronómicas y Geofísicas, Universidad Nacional de La Plata, one of the most important Argentine state universities. Financial support for the research activities of the group is provided by several institutions such as CONICET (the national research council of Argentina), the Agencia Nacional de Promoción Científica y Tecnológica, the European Union, and some university funds. It has fourteen personal computers, six printers, two workstations and remote access to high performance IT resources.

The whole research and teaching staff is composed of two Professors, one Associate Professor and nine Assistant Professors, three Doctoral Fellows working also as Teaching Assistants, five more Teaching Assistants, two Undergraduate Students and one Administrative Official. However, this report briefly describes the general activities performed only in topics of interest of the Subcommittee of Seismology and Physics of the Earth's Interior (IASPEI) by the following members:

Dra. Patricia M. Gauzellino (Assistant Professor),

Dr. Danilo R. Velis (Assistant Professor),

Dra. Claudia L. Ravazzoli (Assistant Professor).

## 3.- MAIN WORK DONE BETWEEN 2003 AND 2007

### 3.1 Work done or in progress.

Investigations and developments of advanced techniques for modelling, processing and inversion in geophysics of exploration have been carried out since 2003.

The principal aim has been to analyse the seismic response in isotropic and anisotropic media as the basis for a quantitative estimation of parameters. In addition, mathematical algorithms have been implemented with new concepts for statistical analysis and data segmentation of data, wavelet estimation, deconvolution, geotomography, depth reflexion seismic and groundwater flow. The results of these projects enable us to find specific problem solutions in exploration and extraction of natural resources, including hydrocarbons, minerals, water, etc. This also enhances the interaction between academy and industry.

**4.- FIELD WORK:** Exploration Geophysics, modelling of seismic wave propagation in complex media, inverse problem, theoretical rock physics.

### **Collaboration with other institutions**

Our Department is related to the following renowned institutions through different joint research activities:

- Department of Mathematics, Purdue University, Indiana, USA.
- Department of Earth and Ocean Sciences, University of British Columbia, Vancouver, Canada.
- Osservatorio Geofisico Sperimentale, Trieste, Italy.
- Department of Mathematics, Seoul National University, Seoul, South Korea.
- Instituto de Cálculo, Universidad de Buenos Aires, Argentina.
- Centro de Transferencia Tecnológica, Repsol Y.P.F., Argentina.
- Universidad Federal de Río de Janeiro, Brazil.
- Universidad Tecnológica Nacional, Argentina.
- Department of Physics, University of Alberta, Edmonton, Canada.

### **5.- PUBLICATIONS (2003 – 2007)**

C.L. Ravazzoli, J.E. Santos, J. M. Carcione, Acoustic and mechanical response of reservoir rocks under variable saturation and effective pressure. *Journal of Acoustical Society of America (JASA)*, Vol.113, p. 1801-1811, (2003). DOI: 0.1121/1.1554696.

J.E. Santos, P.M. Gauzellino, C.L. Ravazzoli, Numerical simulation of waves in poroviscoelastic rocks saturated by immiscible fluids. *Mecánica Computacional*, Vol. 21, pp. 652-669, S.R. Idelsohn, V.E. Sonzogni and A. Cardona (Eds.), MECOM 2002, Paraná, Santa Fé, Argentina, octubre de 2002.

J. E. Santos, C. L. Ravazzoli, P. M. Gauzellino, J. M. Carcione, F. Cavallini, Simulation of waves in poro-viscoelastic rocks saturated by immiscible fluids. Numerical evidence of a second slow wave. *Journal of Computational Acoustics*, Vol. 12#1, p. 1-21, (2004). ISSN 0218/396x.

J.M. Carcione, J.E. Santos, C.L. Ravazzoli, H.B. Helle, Wave simulation in partially frozen porous media with fractal freezing conditions. *Journal of Applied Physics*, vol. 94, p. 7839-7847, (2003) .DOI: 10.1063/1.1606861.

J. M. Carcione, F. Cavallini, J. E. Santos, C. L. Ravazzoli, P. M. Gauzellino, Wave propagation in partially saturated porous media: Simulation of a second slow wave. *Wave Motion*, vol. 39, p. 227-240, (2004). DOI:0.1016/j.wavemoti.2003.10.001

J.E. Santos, C.L. Ravazzoli, J.M. Carcione, A model for wave propagation in a composite solid matrix saturated by a single phase fluid. *Journal of Acoustical Society of America*, 115(6), p. 2749-2760, (2004).

C.L. Ravazzoli and J. E. Santos, A domain decomposition procedure for the simulation of waves in fluid saturated composite poroviscoelastic media. *Mecánica Computacional*, Vol. 23, pp. 652-669, G. Buscaglia, E. Dari and O. Zamonsky (Eds.), ENIEF 2004, Bariloche, (2004). 8 - 11 de Noviembre de 2004.

J.M. Carcione, H.B. Helle, J.E. Santos, C.L. Ravazzoli, A constitutive equation and generalised Gassmann modulus for multi-mineral porous media. *Geophysics*, vol. 70 (2), p. 17-26, 2005. ISSN 0016-8033, doi:10.1190/1.1897035

J.E. Santos, C.L. Ravazzoli, P.M. Gauzellino, and J.M.Carcione, Numerical simulation of ultrasonic waves in reservoir rocks with patchy saturation and fractal petrophysical properties. *Computational Geosciences*, vol. 9, 1-27, 2005. ISSN 1420-0597. doi: 10.1007/s10596-005-2848-9. Published in: Technical Report Series ISC-04-02-MATH, Institute for Scientific Computation, Texas A&M University, March 2004. ([www.isc.tamu.edu/iscpubs/iscreports.html](http://www.isc.tamu.edu/iscpubs/iscreports.html)).

C. L. Ravazzoli and J.E. Santos, A theory for wave propagation in porous rocks saturated by two-phase fluids under variable pressure conditions. *Bolletino di Geofisica Teorica ed Applicata*, vol. 46/4 (2005). ISSN 0006-6729 Published in: Technical Report Series ISC-04-05-MATH, Institute for Scientific Computation, Texas A&M University, April 2004. ([www.isc.tamu.edu/iscpubs/iscreports.html](http://www.isc.tamu.edu/iscpubs/iscreports.html)).

J. E. Santos, C. L. Ravazzoli and J. Geiser, On the static and dynamic behavior of fluid saturated composite porous solids; a homogenization approach. *International Journal of Solids and Structures*, vol 43, 1224-1238, 2006. doi:10.1016/j.ijsolstr.2005.04.018. ISSN 0020-7683. Published in: Technical Report Series ISC-04-11-MATH, Institute for Scientific Computation, Texas A&M University, October 2004.

D. S. Cersósimo, C. L. Ravazzoli, R. García Martínez, Inversión sísmica de un modelo teórico calculado sobre un horizonte sísmico utilizando redes neuronales. *Boletín de Informaciones Petroleras A.A.G.G.P.*, vol. 1, pp. 44 - 51, agosto de 2005.

C.L. Ravazzoli, J.G. Rubino and J. E. Santos, Numerical analysis of wavefields in composite frozen porous media. *Mecánica Computacional*, Vol. 24, pp. 2413-2427 (Ed. Axel Larrateguy), MECOM 2005, Buenos Aires, (2005). ISSN 1666-6070

N. Maltagliatti y C.L. Ravazzoli, Análisis comparativo de métodos de estimación espectral para la determinación de profundidad al basamento magnético en exploración geofísica. *Mecánica Computacional*, Vol. 24, pp. 3131-3147, (Ed. Axel Larrateguy), MECOM 2005, Buenos Aires, (2005). ISSN 1666-6070.

D. S. Cersósimo, C. L. Ravazzoli, R. García Martínez, Identification of velocity variations in a seismic cube using neural networks. *Professional Practice in Artificial Intelligence*, IFIP 19th. World Computer Congreso 2006, J. Debenham (Ed.), Springer, Boston, p. 11-19. ISSN 1571-5736.

J. Germán Rubino, Claudia Ravazzoli, Juan Santos, Reflection and transmission of waves in composite porous media: A quantification of slow waves conversions. *Journal of Acoustical Society of America*, 120(5), 2425-2436, (2006).

F. I. Zyserman, P. M. Gauzellino and J. E. Santos, Dispersion analysis of a nonconforming finite element method for the Helmholtz and elastodynamic equations. *International Journal for Numerical Methods in Engineering*, Vol. 58, #8, pp. 1381-1395, (2003).

F. I. Zyserman and P. M. Gauzellino, Calculating numeric dispersive properties of FEM's for 2D and 3D elastic wave equation. *Mecánica Computacional*, Vol. 22, pp. 1554-1568, (2003).

F. I. Zyserman and P. M. Gauzellino, Study of the numerical dispersion of FEMs for the viscoacoustic equation. *Journal of Applied Geophysics*, Vol. 55, p. 279—289, (2004).

F. I. Zyserman and P. M. Gauzellino, Dispersion analysis of a nonconforming finite element method for the three dimensional scalar and elastic wave equations. *Finite Element in Analysis and Design*, Vol. 41#13, p. 1309-1326, (2005).

P. M. Gauzellino and Angel Queizán, Mínimos cuadrados empleando conceptos del álgebra lineal, *EMCI 2005, AM11*, (2005).

P. M. Gauzellino and F. I. Zyserman, Elementos finitos no conformes para la ecuación de Hemholtz: ¿descomposición de dominio iterativa o solución global? *Mecánica Computacional* - ISSN: 1666-6070, Vol. 24, pp. 1203-1209, (2005).

M. A. Jamilis Ricaldoni, F. Wasylyszyn, P. M. Gauzellino and A. F. Queizán, Implementación computacional de un algoritmo de optimización para el cálculo de superficies de revolución, *Mecánica Computacional* - ISSN: 1666-6070, Vol. 24, pp. 3119-3130, (2005).

P. M. Gauzellino, J. E. Santos and F. I. Zyserman, Propagación de ondas ultrasónicas en hueso cortical y trabecular. *Mecánica Computacional* - ISSN: 1666-6070, Vol. 25, pp. 747-758, (2006).

P. M. Gauzellino, A. Queizán, J. Herskovits, F. Spath, Determinación de los parámetros de campo para la adquisición 3D de datos sísmicos. Approved to be published in *Geoacta*.

Velis, D.R., 2006, Statistical segmentation of geophysical log data: *Mathematical Geology* (approved).

Velis, D.R. and Sacchi, M.D., 2006, Comment on "Non-minimum phase wavelet estimation using second- and third-order moments," by Wenkai Lu: *Geophysical Prospecting*, **54**, 4, 487-488.

Velis, D.R., 2005, Constrained inversion of reflection data using Gibbs' sampling: *Journal of Seismic Exploration*. **14**, 31-49.

Velis, D.R., 2003, Estimating the distribution of primary reflection coefficients: *Geophysics*, **68**, 1417-1422.

### **Book Chapters**

C.L.Ravazzoli, Analysis of reflection and transmission coefficients in three-phase sandstone reservoirs. *Journal of Computational Acoustics*, vol. 9(4) 2001, 1437-1454, in chapter "Wave Propagation Theory" of *Theoretical and Computational Acoustics '99* (CD-ROM), World Sci. Publ. Singapur (2004). ISBN 981-238-447-2.

### **6.- CONGRESSES**

D. S. Cersósimo, C. L. Ravazzoli, R. García Martínez, Inversión sísmica de un modelo teórico calculado sobre un horizonte sísmico utilizando redes neuronales. 3er. Convención Técnica de la ACGGP, "La inversión en el conocimiento geológico", Bogotá, 29/09 al 02/10/04.

J. G. Rubino, C. L. Ravazzoli and J. E. Santos, Modeling and Inversion of Sonic P and S Wave Velocities at the Mallik 5L-38 Gas Hydrate Research Well. Expanded Abstract (4 pages) approved for oral exposition in EAGE/EAGO/SEG International Conference and Exhibition, Saint Petersburg 2006, Russia, 16 - 19 October, 2006.

J. E. Santos, J. G. Rubino and C. L. Ravazzoli, Modelling the Reflection Coefficients and Slow Wave Mode Conversions at the Top and Bottom of a Gas-hydrate Bearing Interval. Expanded Abstract (4 pages) Society of Exploration Geophysicists, International Exposition and 76th Annual Meeting, New Orleans, 1 - 6 October, 2006.

Velis\*, D.R., 2006, Parametric Sparse-spike Deconvolution and Acoustic Impedance Recovery, 76th Ann. Mtg.: Soc. Expl. Geophysics, 2141-2144, New Orleans, USA.

Velis, D.R. and Badi, Gabriela and Gianibelli, Julio César and Cesanelli, Andrés, 2006, El nuevo plan de la carrera de Geofísica de la FCAyG-UNLP, Comisión permanente de planes de estudio de Geofísica: XXIII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas, Bahía Blanca, Argentina.

Velis\*, D.R., 2005, Segmentation of Well Log Data, 9<sup>th</sup> International Congress: Brazilian Geophys. Soc., P298, Salvador, Brazil.

Rubino\*, J.G. and Velis, D.R., 2004, Simulated Annealing para la localización de terremotos, *Mecánica Computacional*, **23**, 3091-3102, XIV Congreso sobre Métodos Numéricos y sus Aplicaciones (ENIEF'04), San Carlos de Bariloche, Argentina.

Zanca\*, G. and Velis, D.R., 2004, Tomografía de refracción 2-D para la determinación de capas someras, XXII Reunion Científica de la Asociación Argentina de Geofísicos y Geodestas, Buenos Aires, Argentina.

Rubino\*, J.G. and Velis, D.R., 2004, Localización de eventos sísmicos: un problema de optimización no-lineal: XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas, Buenos Aires, Argentina.

Velis\*, D.R., 2003, Segmentación estadística de series de tiempo, *Mecánica Computacional*, **22**, 1518-1526, XIII Congreso sobre Métodos Numéricos y sus Aplicaciones (ENIEF'03), Bahía Blanca, Argentina.

XIII Congreso sobre Métodos Numéricos y sus Aplicaciones, ENIEF 2003. Bahía Blanca, 4-7 November, 2003.

XXII Reunión Científica de Geofísica y Geodesia, Buenos Aires, Argentina, 6-10 September, 2004.

3a. Jornada de Informática y Educación, P. Gauzellino, D. F. Amiconi, A. F. Queizán, Resolución de un sistema de ecuaciones no lineales convirtiéndolo a un sistema de ecuaciones diferenciales ordinaria, Villa María, Córdoba, 11-12 November, 2004.

XII EMCI Nacional y IV EMCI Internacional, Educación matemática en carreras de ingeniería, Mínimos cuadrados empleando conceptos del álgebra lineal. P. M. Gauzellino y A. Queizán, San Juan, Argentina, 19-22 April, 2005.

VIII Congreso Argentino de Mecánica Computacional, MECOM 2005, Buenos Aires, Argentina, November 2005.

International Association of Seismology and Physics of the Earth Interior (IASPEI) General Assembly, M. L. Rosa, N. C. Sabbione, P. M. Gauzellino, Rayleigh Wave Velocity Inversion in Sierras Pampeanas, Argentina, International Association of Seismology and Physics of the Earth Interior, Santiago, Chile, 2-8 October, 2005.

Encuentro Científico del International Center for Earth Sciences, ICES, Malargue, Argentina, 21-25 November, 2006.

XXIII Reunión Científica de Geofísica y Geodesia, Bahía Blanca, 14-18 August, 2006

V Congreso Argentino de Enseñanza de la Ingeniería, V CAEDI, L. Beltrachini, A. F. Queizán, P. Gauzellino, Integración de Romberg. Aplicación en el control de un sistema. Vol. I, pp. 319-325. Mendoza, Argentina, 6-8 September, 2006.

XIV Congreso sobre Métodos Numéricos y sus Aplicaciones, ENIEF 2003, Santa Fé, Argentina, 7-10 November, 2006.

## **7.- COURSES :**

“Introducción a la Programación”. Postgraduate program in Computational Mechanics (Dra. Patricia M. Gauzellino), Facultad de Ingeniería, UNLP.

## **8.- ADDRESS :**

Contact us via e-mail:

\* Patricia M. Gauzellino: [gauze@fcaglp.fcaglp.unlp.edu.ar](mailto:gauze@fcaglp.fcaglp.unlp.edu.ar)

\* Danilo R. Velis: [velis@fcaglp.fcaglp.unlp.edu.ar](mailto:velis@fcaglp.fcaglp.unlp.edu.ar)

\* Claudia L. Ravazzoli: [claudia@fcaglp.fcaglp.unlp.edu.ar](mailto:claudia@fcaglp.fcaglp.unlp.edu.ar)

or write to the following addresses:

Departamento de Geofísica Aplicada  
Facultad de Ciencias Astronómicas y Geofísicas,  
Universidad Nacional de La Plata  
Paseo del Bosque s/n, (1900) La Plata  
ARGENTINA  
TE.: +54-221-4236593/ 4236594.  
FAX: +54-221-4236591

# ARGENTINEAN NATIONAL REPORT 2003-2007

## XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** UNIVERSIDAD NACIONAL DE SAN JUAN  
FACULTAD DE CIENCIAS EXACTAS, FÍSICAS Y NATURALES

**NAME:** Patricia Alvarado

**4.- FIELD WORK :** Seismology, Tectonics, Geophysics

### 5.- PUBLICATIONS :

**Alvarado, P.** and Beck, S., (2006). Source Characterisation of San Juan (Argentina) Crustal Earthquakes of 15 January 1944 (Mw 7.0) and 11 June 1952 (Mw 6.8). *Earth and Planetary Science Letters* 243, 615 – 631, doi:10.1016/j.epsl.2006.01.015.

Fromm, R., **Alvarado, P.**, Beck, S., and Zandt, G., (2006). The April 9, 2001 Juan Fernandez Ridge (Mw 6.7) Tensional Outer-rise Earthquake and its Aftershock Sequence. *Journal of Seismology*, doi: 10.1007/s10950-006-9013-3.

**Alvarado, P.**, Beck, S., Zandt, G., Araujo, M., and Triep, E., (2005). Crustal Deformation in the South-central Andes Backarc Terranes as Viewed from Regional Broadband Seismic Waveform Modelling. *Geophysical Journal International* 163 (2), 580-598, doi: 10.1111/j.1365-246X.2005.02759.x

**Alvarado, P.**, Castro de Machuca, B., and Beck, S., (2005). Comparative Crustal Seismic Study of the Western and Eastern Sierras Pampeanas Region, Argentina, (31°S). *Revista de la Asociación Geológica Argentina* 60 (4), 787-796.

Barrientos, S., Vera, E., **Alvarado, P.** and Monfret, T., (2004). Intraplate Seismicity in Central Chile. *Journal of South American Earth Sciences* 16, 759-768.

**Alvarado, P.**, Beck, S., Zandt, G., Araujo, M., and Triep, E., (2004). Modelling of Andean Backarc (30°-36°S) Crustal Earthquake Waveforms Using a Portable Regional Broadband Seismic Network, in: *Tópicos de Geociencias: un Volumen de estudios sismológicos, geodésicos y geológicos en Homenaje al Ing. Fernando Séptimo Volponi*, Miranda S., Herrada A., Sisterna J. (Eds.), EFU. Editorial Universidad Nacional de San Juan, 53-93, 334 pp. ISBN 950-605-340-5.

Valenzuela, A., **Alvarado, P.** y Malberti, A., (2003). Una propuesta didáctica para conocer la estructura interna de la Tierra. *Revista de la Asociación Española para el Estudio de las Ciencias de la Tierra*, AEPECT 11 (1), 54-59.

### 6.- CONGRESSES :

Fromm, R., Zandt, G., Beck, S., and **Alvarado, P.**, (2003). Crustal Thickness beneath the South-Central Andes and Sierras Pampeanas at 30°S Inferred from Pn Apparent Phase Velocities. *EOS Transactions - American Geophysical Union, Fall Meet. Suppl.* 84(46) p.1.

**Alvarado, P.**, Beck, S.L., Zandt, G., Fromm, R., Araujo, M., Bufaliza, M., and Triep, E., (2003). Deep Crustal earthquakes in the Sierras Pampeanas Region of the South Central Andean Backarc. *EOS Transactions - American Geophysical Union, Fall Meet. Suppl.* 84(46) p.1.

**Alvarado, P.**, Beck, S., Zandt, G., Araujo, M., and Triep, E., (2005). Study of the Crustal Andean Backarc Seismicity Using the CHARGE Broadband Data. Actas del XVI Congreso Geológico Argentino CD-ROM. Artículo N° 715 . 8pp.

**Alvarado, P.**, and Beck, S., (2005). The Magnitude 6.2 Catamarca, Argentina, Earthquake on 7 September 2004. Actas del XVI Congreso Geológico Argentino CD-ROM. Artículo N° 717 . 8pp.

**Alvarado, P.**, and Beck, S., (2005). Seismic Study of the 1944 San Juan, Argentina, Earthquake. Actas del XVI Congreso Geológico Argentino CD-ROM. Artículo N° 716 . 8pp.

**Alvarado, P.**, Beck, S., Zandt, G., Araujo, M., Triep, E., and CHARGE Group (2005), Lithospheric Structure of Sierras Pampeanas Region of Argentina. Actas del XVI Congreso Geológico Argentino CD-ROM. Artículo N° 718 . 8pp.

**Alvarado, P.**, Beck, S., Zandt, G., and CHARGE Group (2005). Characterisation of the Historic and Modern Crustal Seismicity in the Andean Back-arc Region (30°S to 36°S). Abstract submitted to the III IASPEI Assembly, Chile, October 2005.

**Alvarado, P.** and Beck, S. Historical 1944 and 1952 San Juan (Argentina) Crustal Earthquakes in the Andean Back-arc. Abstract submitted to the III IASPEI Assembly, Chile, October 2005.

Anderson, M., Wagner, L., Gilbert, H., **Alvarado, P.**, Zandt, G., Beck, S., and Triep, E. Constraints on Mantle Kinematics Influenced by a Changing Slab Geometry: Results from the CHARGE Project, South America. Abstract submitted to the III IASPEI Assembly, Chile, October 2005.

Beck, S., Anderson, M., Wagner, L., **Alvarado, P.**, Gilbert, H., and Zand, G. The Lithospheric Structure of Sierras Pampeanas Region of Argentina. Vol. 37, Nr. 7. Meeteng GSA 2005.

**Alvarado, P.**, Beck, S., Zandt, G., Araujo, M., and Triep, E. Inversión del Tensor Momento Sísmico para sismos de la corteza andina de Tras-arco: el sismo del 27 de abril de 2002, XXII Reunión de la AAGG, Buenos Aires, 2004.

Fromm, R, **Alvarado, P.**, Beck, S., and Zandt, G. Regional Broadband Networks: Case Studies for the Imaging of Crustal Structure and Earthquake Source Processes in Central Chile and Argentina. XVI Annual IRIS Workshop. Tucson AZ., 2004.

Fromm, R., **Alvarado, P.**, Beck, S., and Zandt, G. The April 9, 2001 Juan Fernandez Ridge Outer Rise Earthquake (Mw6.7) and its Seismotectonic Implications. Actas del X Congreso Geológico Chileno, 2003.

**Alvarado, P.**, Beck, S., and Zandt, G. Regional Seismic Moment Tensor Inversion for Andean Crustal Earthquakes using Broadband Waveforms of the Passive CHARGE Array, IRIS Workshop 2004, 10-12 June, 2004 Westward Look, Tucson AZ.

**Alvarado, P.**, Beck, S., Zandt, G., Fromm, R., Araujo, M., Bufaliza, M., and Triep, E. Deep Crustal Earthquakes in the Sierras Pampeanas Region of the South Central Andean Backarc. Spring Meeting of American Geophysical Union (AGU), 2003.

Tassone, A., Cominguez, H.A., Yagupsky, D., **Alvarado, P.**, Lodolo, E., and Menichetti, M., Seismic Study of the Southernmost Andes. The Contact between Scotia and South American Plates. Spring Meeting of American Geophysical Union (AGU), 2003.

Gilbert, H., Beck, S., Zandt, G., **Alvarado, P.**, Anderson, M., Fromm, R., Wagner, L., and Owens, T. Imaging the South Central Andean Lithosphere Using Passive Broadband Seismology: Chile-Argentina Geophysics Experiment IRIS UNAVCO Workshop 2003, June 18-22 Tenaya Lodge, Yosemite, California.

Beck, S., Zandt, G., **Alvarado, P.**, Anderson, M., Fromm, R., Gilbert, H., Wagner, L. and Owens, T. Imaging the South Central Andean Lithosphere using Passive Broadband Seismology: Chile-Argentina Geophysics. X Congreso Geológico Chileno, 2003.



**Alvarado, P.** y miembros del CHARGE, Utilización de una red sismológica de banda ancha para la inversión del tensor momento sísmico de sismos corticales de tras-arco en Los Andes (30-36°S). Segundas Jornadas Regionales de Ciencias de la Tierra. San Juan, Argentina. Junio 2003.

**Alvarado, P.** Evidences of Deep Crustal Seismicity in the Andes Back-arc: Is 33 km Depth a Believable Depth for Crustal Seismicity? GEODAZE, Universidad de Arizona, 2003, [www.geo.arizona/geodaze/2003](http://www.geo.arizona/geodaze/2003).

**Alvarado, P.**, Barbeau, D.L., Cecil, M.R., Ducea, M.N., Gehrels, G.G., Gynn, J.H., Hagbo, C.L., He, S., Hennes, A.M., Krawciw, O.A., McCarthy, A.C., Porter, J.P., Pullen, A., Stavast, W., Uchida, H., Valencia-Gomez, V., Vervoort, J., and Volkmer, J.E. Detrital Zircon Geochronology Of Basement And Cover Rocks From The Santa Lucia Mountains, California; New Evidence For Limited Transport Of Salinia. Geological Society of America (GSA) THEME SESSIONS for the Cordilleran Section - 99th Annual (April, 2003).

#### **7.- COURSES :**

- Global Sismology, held by Ph.D. Terry Wallace (University of Arizona, USA).
- Advanced Seismology, held by PhD. George Zandt (University of Arizona, USA).
- Subduction Zones: An Integrated View, held by PhD. George Zandt (University of Arizona, USA).
- Orogenic Systems, held by PhD. George Zandt (University of Arizona, USA).
- Trust Belt and Synorogenic Sediments, held by PhD. Peter De Celles (University of Arizona, USA).
- Regional tectonics, held by PhD. Mihai Ducea and PhD. George Gehrels, (University of Arizona, USA).
- Active Tectonics, held by PhD. Susan Beck, (University of Arizona, USA).
- Physics of the Earth, held by PhD. Clement Chase (University of Arizona, USA).
- Inverse Problems, held by PhD. Randall Richardson (University of Arizona, USA).

#### **8.- ADDRESS :**

Meglioli 1160 S. (5400) Rivadavia, San Juan, Argentina

[alvarado@unsj.edu.ar](mailto:alvarado@unsj.edu.ar)

# ARGENTINEAN NATIONAL REPORT 2003-2007

XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** UNIVERSIDAD NACIONAL DE SAN JUAN  
FACULTAD DE CIENCIAS EXACTAS, FÍSICAS Y NATURALES  
INSTITUTO SISMOLÓGICO "F. VOLPONI"

**NAME:** Enrique Gaudencio Triep

**4.- FIELD WORK : Seismology, Tectonics, Geophysics**

**5.- PUBLICATIONS :**

**Triep, E. G.**, Subducción subhorizontal: El "Ridge" de Juan Fernández y su correlación con la sismicidad a profundidades intermedias, Segundas Jornadas Regionales en Ciencias de la Tierra, Resúmenes, Edición Digital, Universidad Nacional de San Juan, junio de 2003.

**Triep, E. G. y R. Furlani**, Subducción plana a normal de la Placa de Nazca (latitudes 30-36° Sur): Flujo del Manto Superior mediante observaciones telesísmicas, Segundas Jornadas Regionales en Ciencias de la Tierra, Resúmenes, Edición Digital, FCFN, Universidad Nacional de San Juan, junio de 2003.

**Anderson, M. L., Zandt, G., Triep, E., Fouch, M., and Beck, S.**, Anisotropy and Mantle Flow in the Chile-Argentine Subduction Zone from Shear Wave Splitting Analysis, *Geophysical Research Letters*, Vol., L23608, doi:10.1029/2004GL020906, 2004.

**Folguera, A., Triep, E., Gonzales Díaz, E. M., and Ramos, V.**, El terremoto del último 7 de setiembre y el levantamiento de las Sierras Pampeanas orientales de Catamarca y La Rioja, *Revista Encrucijadas, Geología*, UBA, 2005.

**Alvarado, P., Beck S., Zandt G., Araujo M., and Triep, E.**, Modeling of Andean Backarc (30°-36°S) Crustal Earthquake Waveforms Using a Portable Regional Broadband Seismic Network, in: *Tópicos de Geociencias: un Volumen de estudios sismológicos, geodésicos y geológicos en Homenaje al Ing. Fernando Séptimo Volponi*, Miranda S., Herrada A., Sisterna J. (Eds.), EFU. Editorial Universidad Nacional de San Juan, 53-93, 334 pp. ISBN 950-605-340-5.

**Alvarado, P., S. Beck, G. Zandt, M. Araujo, and E. Triep**, Crustal Deformation in the South-central Andes Backarc Terranes as Viewed from Regional Broadband Seismic Waveform Modelling, *Geophysical Journal International* 163 (2), 580-598, Int., doi: 10.1111/j.1365-246X.2005.02759.x, 2005.

**Nacif V. S.**, Sismicidad cortical de pequeñas magnitudes ( $M < 3.5$ ) en el terreno de Cuyania y zona de borde con Chileña obtenidos de una red temporal de banda ancha. Tesina de grado, Licenciatura de Geofísica, Facultad de Ciencias Exactas, Físicas y Naturales, 150 pág., Universidad Nacional de San Juan, Diciembre d 2006.

**6.- CONGRESSES :**

**Triep, E.G.**, Subducción subhorizontal: El "Ridge" de Juan Fernández y su correlación con la sismicidad a profundidades intermedias, Segundas Jornadas Regionales en Ciencias de la Tierra, Universidad Nacional de San Juan, 26 y 27 de junio de 2003.

**Triep, E.G. y R. Furlani**, Subducción plana a normal de la Placa de Nazca (latitudes 30-36° Sur): Flujo del Manto Superior mediante observaciones telesísmicas, Segundas Jornadas Regionales en

Ciencias de la Tierra, Resúmenes, Edición Digital, FCFN, Universidad Nacional de San Juan, junio de 2003.

**Nacif V. S., Triep E. G., y Furlani R.,** Régimen tensional en la zona de borde entre los terrenos de Chilenia y Cuyania, XXIII Reunión Científica de Geofísicos Triep E.G., Subducción subhorizontal: El "Ridge" de Juan Fernández y su correlación con la sismicidad a profundidades intermedias, Segundas Jornadas Regionales en Ciencias de la Tierra, Universidad Nacional de San Juan, 26 y 27 de Junio de 2003.

**Pardo, M., T. Monfret, E. Vera, A. Eisemberg, G. Yañez, y E. Triep,** Cambio en la subducción de la placa de Nazca, de plana a inclinada, bajo Chile central y Argentina: Datos sismológicos preliminares, 10° Congreso Geológico Chileno, Concepción, Chile, 6-10 de octubre, Electronic Proc., 10pp, 2003.

**Vera, E., G. Yañez, M. Pardo, S. Bonvalot, G. Gabalda, T. Monfret, y E. Triep,** Transición de subducción plana a normal bajo los andes centrales de Chile y Argentina: Resultados preliminares de estudio gravimétrico, 10° Congreso Geológico Chileno, Concepción, Chile, 6-10 de octubre, Electronic Proc., 10pp, 2003.

**Anderson, M., H. Gilbert, G. Zandt, L. Wagner, P. Alvarado, S. Beck, and E. Triep,** Constraints on Mantle Kinematics Influenced by a Changing Slab Geometry: Results from the CHARGE Project, South America, International Association of Seismology and Physics of the Earth's Interior, General Assembly, Santiago-Chile, 2005.

**Triep, E. G. and R. Furlani,** Upper Mantle Flow Below the Subducted Nazca Plate Between Latitudes 30-36° South, International Association of Seismology and Physics of the Earth's Interior, General Assembly, Santiago-Chile, 2005.

**Furlani, R., y Triep, E. G.,** Sismicidad superficial y profunda del retroarco andino argentino en correspondencia con el borde sur de placa plana subductada y su transición a normal, XXIII Reunión Científica de Geofísicos y Geodestas (AAGG2006), Bahía Blanca (CRIBABB), 14-18 de agosto 2006.

**Triep E. G. y Furlani R.,** Origen Profundo de la sismicidad cortical por encima del cambio de subducción plana a normal, XIII Reunión de Tectónica, Asociación Geológica Argentina, UNSL, San Luis, 17-21 de Octubre de 2006.

**Triep E. G., Furlani R.,** Spatial pattern similarities between small magnitude seismicity in the argentinian backarc continental crust ( $m < 3.5$ ) and in the nazca plate ( $m < 4.5$ ) at its transition from flat to normal subduction, International Union of Geodesy and Geophysics, IUGG, XXIV General Assembly, Perugia, Italy, July 2-13, 2007.

**Furlani R., y Triep E.,** Flat to normal subduction nazca plate transition between latitudes 31.5-33.5°s as seen from small earthquakes ( $m < 4.5$ ), International Union of Geodesy and Geophysics, IUGG, XXIV General Assembly, Perugia, Italy, July 2-13, 2007.

## **7.- COURSES :**

**Triep, E.G.,** Geofísica Teórica II, curso de carácter obligatorio en el Doctorado en Ciencias de la Tierra, Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan, mayo-agosto de 2005.

## **CONFERENCES**

**Triep, E.G.,** El sismo en las islas de Sumatra y Andaman del 26 de diciembre de 2004, magnitud 9.3, y su relación con la generación del Tsunami. Asamblea General de la Asociación Argentina de Geodestas y Geofísicos (AAGG), Buenos Aires, octubre de 2005.

**Triep, E.G.,** El sismo de Sumatra y Andaman, magnitud 9.3, del 26 de diciembre de 2004: ¿Cómo se generó el Tsunami?, Conferencia dentro del marco de los festejos del 30 aniversario de la creación de

la Facultad de Ciencias Exactas, Físicas y Naturales, Universidad Nacional de San Juan, 27 de octubre, San Juan.

**8.- ADDRESS :**

Instituto Sismológico "F. Volponi", Facultad de Ciencias Exactas, Físicas y Naturales

Ruta 12, km 17, Parque Rivadavia, San Juan, Argentina.

TE.: +54 264 4945015

E-mail: [trieb@unsj.edu.ar](mailto:trieb@unsj.edu.ar)

# ARGENTINEAN NATIONAL REPORT 2003-2007

## XXIV IUGG GENERAL ASSEMBLY

Perugia (Italy), July 2 - July 13, 2007

**1.- INSTITUTION:** UNIVERSIDAD NACIONAL DE SAN JUAN  
EARTHQUAKE ENGINEERING RESEARCH INSTITUTE of  
NATIONAL UNIVERSITY OF SAN JUAN

**NAMES:**

**Juan S. CARMONA ; Raquel L. PALAU ; Luisa B. GARCIA**

**4.- FIELD WORK :** EARTHQUAKE ENGINEERING

**5.- PUBLICATIONS :**

“ESPECTRO DE ACELERACIÓN SÍSMICA EN BUENOS AIRES POR EFECTO DE SISMOS DE GRAN MAGNITUD DEL LITORAL CHILENO O DEL OESTE ARGENTINO” - Juan S. CARMONA, Nora C. SABBIONE, Roberto M. PINCIROLI, Raquel L. PALAU – INGENIERIA ESTRUCTURAL – Year 13, Nr. 33, December 2005- ISSN-1667-1511- Buenos Aires, Argentina.

**6.- CONGRESSES :**

“ASSESSMENT OF THE EARTHQUAKE HAZARD FOR DAMS LOCATED IN THE PRECORDILLERA OF SAN JUAN AND MENDOZA IN ARGENTINA” - Juan S. Carmona y Raquel L. Palau - Seismological Society of America 68th Annual Meeting, SSA2003 – San Juan, Puerto Rico – April 30 - May 2, 2003.

“TRIDIMENSIONAL LIMIT STATE ANALYSIS FOR THE SEISMIC BEHAVIOR EVALUATION OF THE CFGD POTRERILLOS DAM” – Juan S. Carmona - 21st Congress of International Commission on Large Dams, ICOLD, MONTREAL 2003 – Montreal – Canada – June 16-20, 2003.

“ACCELERATION RESPONSE SPECTRUM OF BUENOS AIRES CITY, ARGENTINA, CAUSED BY DISTANT AND LARGE MAGNITUDE EARTHQUAKES” - Juan S. Carmona, Nora C. Sabbione, Roberto Pincirolí, Raquel L. Palau- 2004 EERI Annual Meeting - Earthquake Engineering Research Institute – Los Angeles, California, USA – February 4-8, 2004.

“THE EVALUATION OF THE PERMANENT SEISMIC CREST DISPLACEMENT OF THE CFGD POTRERILLOS DAM IN ARGENTINE BY MEANS OF A TRIDIMENSIONAL LIMIT STATE ANALYSIS” – Juan S. Carmona , Juan M. Carmona, Raquel L. Palau - 13th World Conference on Earthquake Engineering - Vancouver, B.C., Canada - August 1-6, 2004.

“ASPECTOS DEL TERREMOTO DE BAM, IRÁN, DEL 26 DE DICIEMBRE DE 2003 Y SUS SEMEJANZAS CON EL DE MENDOZA, ARGENTINA, DEL 20 DE MARZO DE 1861” - Juan S. Carmona, Raquel L. Palau, L. Beatriz García – XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas – Buenos Aires – September 6-10, 2004.

“ESPECTROS DE RESPUESTA DE LA ACELERACIÓN SÍSMICA REGISTRADA EN LA PLATA EN OCASIÓN DE GRANDES SISMOS” - Nora Sabbione, Juan S. Carmona, Roberto Pincirolí, Raquel Palau – XXII Reunión Científica de la Asociación Argentina de Geofísicos y Geodestas – Buenos Aires, Argentina – September 6-10, 2004.

“ESPECTRO DE ACELERACIÓN SÍSMICA EN BUENOS AIRES POR EFECTO DE SISMOS CON MAGNITUD 8,2 DEL LITORAL CHILENO Y DE MAGNITUD 7,2 DEL OESTE ARGENTINO” - Juan S. Carmona, Nora C. Sabbione, Roberto M. Pincioli, Raquel L. Palau – XVIII Jornadas Argentinas de Ingeniería Estructural – Buenos Aires, Argentina – September 15-17, 2004.

“HORIZONTAL ACCELERATION RESPONSE SPECTRUM ESTIMATED FOR BUENOS AIRES CITY, ARGENTINE, CAUSED BY A CHILEAN  $M_w=8.2$  PROBABLE SEISMIC EVENT” - Nora C. Sabbione, Juan S. Carmona, Raquel L. Palau, Luisa B. Garcia – IASPEI General Assembly 2005 – Santiago, Chile – October 2-8, 2005

“HORIZONTAL ACCELERATION RESPONSE SPECTRUM ESTIMATED FOR TALL BUILDING IN THE CITY OF BUENOS AIRES, ARGENTINA, IN CASE OF OCCURRENCE OF AN EARTHQUAKE SIMILAR TO THE  $M_w=8.2$  AUGUST 17,1906 CHILEAN EVENT.” – Juan S.Carmona, Nora C. Sabbione, Raquel L. Palau - Seismological Society of America SSA, 2006 Annual Meeting, 100th Anniversary Earthquake Conference - San Francisco, California, USA – April 18-22, 2006.

“EL GRAN SISMO DE VALPARAÍSO DE 1906 EN LA CIUDAD DE BUENOS AIRES, ARGENTINA. SU PROBABLE ESPECTRO DE ACELERACIÓN SÍSMICA HORIZONTAL Y SU EVENTUAL EFECTO EN LOS ACTUALES EDIFICIOS DE MAYOR ALTURA” – Juan S. Carmona, Nora C. Sabbione, Raquel L. Palau , Luisa B. García – International Conference Montessus de Ballore 2006, Valparaiso Earthquake Centennial, An Earthquake Engineering Restrospective 100 Years Later – Santiago, Chile – November 6-8, 2006.

## **7.- COURSES : CONFERENCES AND REPORTS**

Conference “EL COMPORTAMIENTO TRIDIMENSIONAL DE LA PRESA POTRERILLOS”, Academia Nacional de Ingeniería, Buenos Aires, Argentina, July 7, 2003.

Conference “UNA VISIÓN ACERCA DE LOS INFORMES EXPUESTOS EN LA SESIÓN "Q83- ASPECTOS SÍSMICOS EN PRESAS" DEL 21º CONGRESO DE ICOLD MONTREAL 2003, 6as JORNADAS DEL COMITÉ DE PRESAS REGIONAL NORTE, Tucumán, Argentina, October 3, 2003.

Report Translation “EL SISMO DE TOKACHI-OKI, JAPON, DEL 26 de SETIEMBRE DE 2003 - EFECTOS EN PRESAS DE EMBALSE” de Norihisa Matsumoto del Japan Dam Engineering Center, Comité de Aspectos Sísmicos de ICOLD – prepared in Spanish for COMITÉ ARGENTINO DE PRESAS, REGIONAL CUYO, November 2003.

Conference “EL TERREMOTO DE BAM, IRÁN , DEL 26 DE DICIEMBRE DE 2003, SUS SEMEJANZAS CON EL DE MENDOZA DEL 20 DE MARZO DE 1861. LA INTENSIDAD DEL MOVIMIENTO Y SU PODER DESTRUCTIVO”, CENTRO DE INGENIEROS DE MENDOZA, SEMANA DE LA INGENIERÍA 2004, Mendoza, Argentina, June 2, 2004.

Report “EFECTOS DEL SISMO DE NIIGATA, JAPON, DEL 23-OCT-2004, LOS DESLIZAMIENTOS DE LADERAS Y LAS PRESAS” – prepared for COMITÉ ARGENTINO DE PRESAS, REGIONAL CUYO, December 2004

Conference “ASPECTOS DE LAS NORMAS SISMORRESISTENTES ARGENTINAS EN RELACIÓN CON LAS CONSTRUCCIONES ECONÓMICAS” – Juan S. Carmona - 1º Congreso Trasandino de Estudiantes de Ingeniería Civil - Tacna- Peru – June 8-11, 2005.

Conference “ASPECTOS DEL DISEÑO SÍSMICO EN PRESAS” –Juan S. Carmona – Seminario Conjunto de la International Commission on Large Dams, ICOLD,- Comité Costarricense de Grandes Presas - San José, Costa Rica – December 14-16, 2005.

**8.- ADDRESS :**

Juan S. Carmona  
Instituto de Investigaciones Antisísmicas  
Avda. Libertador oeste 1290  
5400- San Juan  
Argentina

[jcarmona@unsj.edu.ar](mailto:jcarmona@unsj.edu.ar)

**9.- WEB PAGE :** [www.idia.unsj.edu.ar](http://www.idia.unsj.edu.ar)