# SCIENTIFIC PROGRAM

## Thematic Area: Geosciences and Society (GEOS)

## Sessions

**GEOS-1: Geoscience teaching and the social role of geologists**

**Convenors**: Patricio Ahumada, Franco Vera, María Jesús Bravo, Joseline Tapia.

**Description**: This session consider the interest of the Chilean geological community on moving forward in geoscience education and discussing the role of geologist in society. Contributions that present research and/or experiences related to these two topics would be greatly appreciated: (1) Earth Science Education and Community Outreach: education and outreach of Earth sciences in formal educational institutions (i.e. preschool to university level), as well as to the general public, with an emphasis on the review and critical comparison of curricula, innovative educational initiatives and circulation of geoscience in social networks and media, among other related items. (2) Role of Earth Scientists in Society: Social responsibilities of graduated earth scientists; professional diversification of geologists in Chile to non-conventional industries (outside of mining) and participation of the geoscientific community in public policy in Chile, among others.

---

**GEOS-2: IX Symposium The History of Geology**

**Convenors**: Carolina Silva, Reynaldo Charrier, Francisco Hervé, Víctor Ramos.

**Description**: This session will receive abstracts related to the different aspects of the History of Geology, including other Earth Sciences. We expect to receive contributions regarding the life and work of renowned scientists, the evolution of ideas in geology, pioneer research, and the history of geological institutions, the work of important national and international programs, women in geology, geology and travelers, the history of different geological disciplines, current history, and art in the history of geology, among others. We intend to start an archive, which registers all those activities that have contributed to geological knowledge and its relation with culture and social development.

---

**GEOS-3**: **Geodiversity, geological heritage and geoconservation**

**Convenors**: Manuel Schilling, Diego Partarrieu, José Benado, Fracesc Ferraro, Joachim Zora.

This session invites to share national and international experiences related to the identification, characterization and assessment of geodiversity and geological heritage, as well as initiatives dedicated to the geoconservation, understanding this as the protection and sustainable use of geodiversity and geological heritage, including its legal protection and monitoring. Likewise, we invite the presentation of initiatives related to the outreach and awareness of geodiversity and geological heritage, especially through educational and tourism activities as well as the creation and management of UNESCO Geoparks. One of the objectives of this session will be to discuss and agree on an appropriate methodology to develop

a national inventory of geological heritage in a systematic manner, following the guidelines proposed by the Global Geosites project of the International Union of Geological Sciences.

---

**GEOS-4: Gender equality in Earth Sciences: context, present, and future directions**

**Convenors**: Tania Villaseñor, Cindy Mora-Stock, Millarca Valenzuela, Joseline Tapia, Verónica Oliveros.

**Description**: The Earth Science community in Chile has been historically dominated by men, which is more notorious at high academic and professional levels. Stereotypes, lack of sense of belonging, and scarcity of role models are some of the obstacles that women face during their careers, making their success in the field more difficult. There is consensus that scientific and professional communities that value and foster diversity are capable to offer innovative and effective solutions to a wide range of problems. Bridging the gender gap in the Earth Sciences is relevant to confront future global challenges.

This session aims to provide a space to discuss gender gap within the Earth Science community in Chile. We invite presentations that discuss the current participation of women in Earth Sciences, share experiences, strategies, and challenges related to the inclusion and promotion of women in this field.

---

**GEOS-5: Geoethics and professional responsibility in geosciences**

**Convenors**: Millarca Valenzuela, Luis Lara, José Cabello, Sergio Barrientos, Juan Carlos Marquardt.

**Description**: Geo-ethics is a branch of ethics that promotes the discussion about the interaction of human activity and our planet. This critical thinking could led to a necessary consensus about the ethical framework and possible limits of our action in the professional practice. This session is open to contributions that discuss the position of Earth science's professionals and scientists about: the contrast between economic development and sustainable consumption of natural resources; conservation of geological heritage versus its unlimited exploitation; responsibility in the prevention and mitigation of natural risks; communication of our science to the community; adequate protocols of action that foster scientific and professional integrity and good practices at all levels of interaction. A topic of particular interest is the discussion on the professional responsibility in crisis response (natural or environmental disasters) or similar situations in which expert judgment and advice to authorities and/or the media plays an essential role, with eventual ethical and/or legal consequences when confronting political, economic or social practices.

---

# Thematic Area: Natural Hazards and Risks (PRIN)

## Sessions

**PRIN-GS: General Session Natural Hazards and Risks**

**Convenors:** Gabriel González, Ignacia Calisto.

**Description**: This session will receive abstracts related to Natural Hazards and Risks that cannot be included in one of the specific sessions of this thematic area.

---

**PRIN-1: V Symposium on Mass Movements in the Andean Region**

**Convenors**: Sergio Sepúlveda, Stella Moreiras, Reginald Hermanns.

**Description**: This symposium is the fifth edition of previous meetings in national congresses in Argentina (Jujuy, 2008 - Córdoba, 2014), Peru (Lima, 2010) and Chile (Antofagasta, 2012).The main goal is to congregate the international scientific community working on topics related with landslides along the Andes and surroundings, from different perspectives. Several topics will be covered, including: types of landslide processes, hazard and risk, failure and movement mechanisms, geomorphology, sedimentology, modelling, chronology, monitoring and remote sensing. Recent advances in these subjects require a fruitful interaction among academics, specialists and professionals involved in the advisory of decision makers for territorial planning and sustainable development of the potentially affected communities.

---

**PRIN 2: Assesment of volcanic hazard: Experiences and methodological challenges**

**Convenors**: Felipe Flores, Rodrigo Calderón, Luis Lara.

**Description**: During the 1980s, research on volcanic hazards began to be more systematic and progressively the State assumed the responsibility of generating them in parallel with the advancement of the geological knowledge of active volcanoes. At the same time, the emerging environmental regulation demanded a base line of natural risks. The increase of this type of evaluations has provided an important diversification of the derived products (in scale, objectives and methods), which in turn raises the need to discuss regarding the scope and the use of this information. This discussion is also inserted in a worldwide context where the validity of different methods is being debated. These methods range from those absolutely based on probabilities to others based on citizen perception. In this session we will stimulate the methodological discussion from case studies, real experiences or prototypes, that will describe this diversity in Chile.

---

**PRIN-3: Tsunami hazard estimation**

**Convenors**: Rafael Aranguiz, Patricio Catalán.

**Description**: The tsunami risk assessment is a key topic on tsunami mitigation and development of resilient communities. One of the most important task is the tsunami hazard assessment. This session seeks to

improve understanding on tsunami hazard and analyze the different available techniques to assess the hazard. The session could cover tsunami source characterization, tsunami numerical modeling, deterministic and probabilistic tsunami hazard assessment, maps of tsunami arrival time, tsunami velocities and hydrodynamic forces, tsunami damage estimation by means of fragile curves, analysis of historical events and cases studies

---

**PRIN-4: The evaluation of geological risk as a tool for the sustainable planning of communities**

**Convenors**: Adriana Niz, Erlinda del V. Ortiz, Marcelo E. Savio, Jorge A. Oviedo, Manuel Abad.

**Description**: Geological processes are natural phenomena that shape our planet from its origin. Together with the environmental, climatic and social characteristics, their consequences are more or less drastic according to the region that they impact and the intensity with which they manifest themselves. In Latin America, the innumerable amount of dangerous geological processes that can potentially affect populations and infrastructure, together with the urban growth of its cities and the intensification in magnitude and frequency of these phenomena in recent years, it is essential to reflect and review this situation. The proposed Symposium is an excellent opportunity to highlight the fundamental role of the geologist in society and the contributions made by researchers and academics, from research centers and universities, to the prevention and mitigation of geological risks along all the territory, providing an updated and comprehensive view of this problem.

---

**PRIN-5: Extreme events and natural hazards in the coast: Towards adaptative measures for sustainable development**

**Convenors**: Carolina Martínez, Octavio Rojas, Nelson Rangel.

**Description**: Risks and natural hazards are increasingly affecting more countries in the world, being the coastlines the most impacted areas due to the concentration of population. The effects are adverse, causing loss of lives and significant damage to the economy of these nations. Extreme events, which causes are less known but are associated to changes in global and regional climate patterns, are also registered besides the recurrent natural hazards. This raises a priority need for applied research in risk reduction. An interdisciplinary approach is required to address these studies; this approach must be capable of dealing with the complexity of the phenomena in its spatio-temporal scales, in its different dimensions (natural, social, environmental), using simulation techniques and projecting change scenarios for the implementation of adaptation mechanisms to build safe and sustainable societies. We encourage the submission of abstracts that address these thematics.

---

**PRIN-6: Seismic Site Effect and Microzonation**

**Convenors**: Felipe Leyton, Gonzalo Montalva, Cristian Pastén, Esteban Sáez.

**Description**: Ground shaking during an earthquake is strongly influenced by local site conditions or Site Effects, producing amplification of the recorded seismic signal and usually linked to damage during large earthquakes. Hence, the determination of these characteristics represents a base for today's Seismic Microzonation efforts, usually applied in moderate-to- large urban areas. We invite presentations on recent advances in site/basin effects estimations, seismic site characterization using state-of- the-art geophysical techniques, non-linear soil response, advances in numerical/analytical modeling of low-velocity sites, examples of local microzonation studies, definition of innovative and improvement of existing site proxies, and complexities that arise from the data gathering, analysis, and final synthesis.

---

## Thematic Area: Mineral and Energy Resources for Society (RENE)

## Sessions

**RENE-GS: General Session Mineral and Energy Resources for Society**

**Convenors:** Martin Reich, Osvaldo Rabbia.

**Description**: This session will receive abstracts related to Mineral and Energy Resources for Society that cannot be included in one of the specific sessions of this thematic area.

---

**RENE-1: Geothermal energy in the Andes: A challenge for a sustainable society**

**Convenors**: Diego Morata, Linda Daniele.

**Description**: The Andean mountain range is the main geothermal resource worldwide that has not yet been satisfactorily exploited. This thematic session will address the research, exploration and exploitation advances that have been reached lately at Andean countries; in both high- and medium-enthalpy, and those related to direct use of geothermal energy. The session welcomes regional research work and those presenting the latest advances in relation to the exploitation of active geothermal systems, as well as novel methodologies regarding the direct use of geothermal energy in our Andean countries. It is expected that this session becomes an event to disseminate and discuss the different aspects related to geothermal energy and its impact on society, not only in Chile but in all the Andean countries.

---

**RENE-2: Porphyry Cu (±Mo±Au) systems and IOCG: from petrogenesis to exploration**

**Convenors**: Osvaldo Rabbia, Brian Townley.

**Description**: This session will be dedicated to review and discuss the sequence of relevant geological processes that at different scales lead to the formation of porphyry Cu (Mo-Au) systems and IOCG deposits in Andean subduction environments. The main focus will set on improving our present knowledge on

genesis of these deposits, allowing fine tuning and/or development of new exploration and geological modeling criteria for these hydrothermal systems.

In this session we expect contributions related to topics going from lithospheric scale geodynamic mechanisms that trigger and control metalogenic fertility (Cu-Mo-Au) of the Andean margin, to petrology and geochemistry of intrusives related with mineralization, advances in characterization of hydrothermal alteration and mineralization of the entire system (porphyry to epithermal or IOCG related environments), to practical exploration applications derived from advancements in all topics.

Porphyry Cu (±Mo±Au) systems undoubtedly represent the "star" mineral deposits of the Andean margin, hence we expect a session with much participation, discussion and novelties.

---

**RENE-3: Generation and concentration of critical elements in the mantle, crust and surficial environments**

**Convenors**: Fernanda Álvarez, Martin Reich.

**Description**: The growing demand for commodities necessary for the accelerated technological and energy development has generated an increasing worldwide interest. These elements are known as critical elements and their importance lies in two factors: the degree to which the commodity is essential for development, and the risk of the mineral's supply restriction. Examples of these elements correspond to Au, PGE, Li, REEs, Y, Ta, Co, Ga, Te, Ti, W, among others. Therefore, understanding how the generating and concentrating processes of these elements operate at different spatial and temporal scales, through geological and geochemical proxies, is crucial for the scientific and economic development of the country. In this session, we welcome contributions related to the origin, transport and deposition of these elements in the mantle, crust and surficial environments.

---

**RENE-4: Fluid and melt inclusions as tools to unravel timescale, nature and processes of subduction magmas and formation of ore deposits**

**Convenors:** Daniel Moncada, Claudia Cannatelli, Jamie Buscher.

**Description**: Subduction zones deeply affect our society to our advantage and risk. While violent eruptions and earthquakes associated with subduction zones can lead to unpredictable death and destruction, most of the Earth's ore deposits are formed in this geologic environment. Geological fluids rising from the mantle to the crust acquire, transport, degas and deposit metals. The release of these fluids and silicate melts from the down-going slab is associated with recycling of elements, generation of very hazardous volcanism, and formation of ore deposits. Numerous studies over the past half-century have described fluid and melt inclusions as the best repositories to track the evolution of these fluids. This session aims to bring together researchers that focus their studies on the application of fluid and melt inclusions to understand the nature and timescale of subduction zone magmatism, fluid-rock interaction, metal mobility and ore deposits formation. Multidisciplinary approaches that combine natural observations, laboratory experiments and theoretical and thermodynamic models are particularly encouraged.

---

**RENE-5: Fault systems and geofluid into the upper crust: Active and Fossils Systems**

**Convenors**: Pamela Pérez, Pablo Sánchez, Andrés Veloso, Daniele Tardani, Gerd Sielfeld.

**Description**: This thematic session tackles the dynamic interaction among faulting and migration of magmas and hydrothermal fluids. It is widely accepted that fault activation increases host rock permeability, favoring circulation and storage of magmas and fluids into the upper crust. Tectonic regime and its local stress-field compartmentalization play a key role in magmatic differentiation and hydrothermal fluids migration, controlling the development of geothermal reservoirs and ore deposits. This session will allow us to better understand these dynamic interactions, discussing new insights from natural examples of active (geothermal) and fossil (ore deposits) systems.

---

**RENE-6: Modeling and inversion of geophysical data applied to the exploration of energy and natural resources**

**Convenors**: Cicero Roberto Teixeira Régis, Marcos Welby Correa Silva.

**Description**: This session will cover the challenges involved in the application of geophysical methods to the exploration of natural resources (mineral deposits, hydrocarbon and geothermal reservoirs). Papers will be received that discuss theoretical aspects and particular case studies in which numerical methods are applied to the direct modeling and inversion of geophysical data. These problems have applications in all areas of exploration geophysics, particularly in mineral / oil exploration and environmental research. Of interest is the inversion of geophysical data, specifically electromagnetic, due to the impact that the increase of computational capacity is having in the greater scope of these methods, allowing to study geophysical problems more complex and realistic than in the past. This session will be a great opportunity to bring together the Latin American scientific community working on geophysical problems applied to the exploration of resources, and to promote greater integration and collaboration between different areas of geosciences.

---

## Thematic Area: Engineering and Environmental Geology (GIAM)

## Sessions

**GIAM-GS: General Session Engineering and Environmental Geology**

**Convenors:** Sergio Sepúlveda, Úrsula Kelm.

**Description:** This session will receive abstracts related to Engineering and Environmental Geology that cannot be included in one of the specific sessions of this thematic area.

---

**GIAM-1**: **Geosciences and viticulture**

**Convenors**: Pamela Castillo, Brian Townley, Ignacio Serra, Natalia Brossard, Sofía López.

**Description**: Viticulture is among one of the agricultural activities that bring prestige to our country, given the high position that Chilean wines hold in international markets. Despite this, geo-agricultural studies in Chile are scarce, at incipient stages, having broad perspectives for development. This thematic session expects contributions that link various areas of geosciences (geology, geomorphology, geophysics, geochemistry, mineralogy, soil sciences, hydrogeology, hydrology, climatology, bio-geochemistry, etc.) with the development of national and international viticulture and that influence in aspects such as wine and vineyard quality, terroir concepts, characterization of traditional viticulture valleys and definition of new areas apt for viticulture, viticulture sustainability, standardization of study methodologies and technological solutions, among others.

---

**GIAM-2: Geoquímica Ambiental: contaminación y polución de ambientes superficiales**

**Convenors**: Linda Daniele, Joseline Tapia, Claudia Cannatelli, Javiera Mulet, Jamie Buscher.

**Description**: The progressive contamination and pollution registered in the surficial environments during the last decades has generated an increasing interest in the study of contaminant agents and their relationship to different environmental matrices (soil, sediment, air, and water). The presence, degree of toxicity, and link between these contaminants and human health is concerning and there exists a need to further evaluate and determine their sources (natural and/or anthropogenic) in the distinct environments. Additionally, well-known contaminants (As, Pb, Zn, Hg), oligoelements (Li, REE, PGE), and chemical products such as persistent organic pollutants (POPs) are increasingly exploited, produced, and released into the environment. In this session, all contributions related to the interactions between rock, sediment, soil, water, and air (i.e. matrices controlling the biogeochemical cycles and mobilization processes of highly toxic contaminants) are welcome. Within these proposals, research focused on arsenic is of particular interest.

---

**GIAM-3: Engineering geology, geotechnical engineering and rock mechanics**

**Convenors**: Sofía Rebolledo, Andrés Brzovic.

**Description**: This thematic session aims to bring together professionals and researchers working in engineering geology, geotechnical engineering and rock mechanics, and serve as a presentation and discussion platform for researchers and experts related to the aforementioned topics. We extend an invitation to present works associated with rock mass (structures, characterization, classifications, etc.), soil mechanics (geotechnics), characterization of soils and rocks (tests), slope stability in soils and rocks, liquefaction, site response, etc.

---

**GIAM-4: Valorization and stabilization of mining tailings**

**Convenors**: Brian Townley, Manuel Caraballo, Úrsula Kelm.

**Description**: Chile, as a mining country by excellence, and with a long mining production tradition, must face different problems related with the sustainability of the mining business. In this context and given the fact that the mining activity generates enormous volumes of waste such as tailings, and that there are over 700 tailings in Chile (actives, passives and abandoned), new research and development must be carried out in order to deal with problems such as the administration, mitigation and environmental impact control of these deposits. Furthermore, the assessment of the potential for the re-use of these tailings aimed at the recovery of elements/valuable metals and the stable re-deposit of them. Another relevant concern of these environmental passives is their physical and chemical stability in the short and long term, and the risks and hazards that they represent.

---

**GIAM-5: Hydrogeology and Georesources in Fractured Media**

**Convenors**: Sarah Leray, Fernando Poblete.

**Description**: Fractured media have been traditionally poorly explored and exploited. They have been however gaining in importance over the last few decades, because of increasing anthropic pressure over poorly heterogeneous media. Still, their inherent complexity makes them challenging for characterization, resources quantification and prediction.

The session aims at broaching up the subject of characterization methods and data integration into modelling frameworks. It covers various themes from resources exploitation (groundwater, geothermal, hydrocarbon and mining) to underground storage (CO2, energy).

Investigations related to structural geology, tectonics, geophysics, geochemistry, hydrogeology are welcome to generate inter-disciplinary and synergistic discussions. Presentations may include:

- Field–scale and laboratory studies
- Characterization methods: lessons learned and perspectives
- Upscaling techniques and equivalent mean models
- Challenges in fundamental understanding
- Development and review of modelling methods/tools
- Informational content of data and its integration into numerical models
- Use of modelling for site characterization and laboratory design

---

**GIAM-6: Aquifers: urban basins and artificial recharge**

**Convenors**: Claudia Oliva, Ricardo Hirata, Christian Cintolesi, Oscar Escolero.

**Description**: The continuing strain on water resources available to humanity for our survival and future development, in an uncertain scenario of global climatic change, imposes an urgent need to improve the identification, quantification, and characterization of groundwater supplies. This session will consist of presentations that address these aspects and will include studies relating to the dynamics, exploitation, and management of aquifers. As part of these general themes, specific work dedicated to two issues of particular interest will be presented: urban hydrogeology focused on (i) the contamination and overexploitation of aquifers; (ii) the strategies and technologies used for artificial recharge of aquifers

(ARS), which aims to store surplus basin water in such a way that it is possible to exploit it in periods of high demand or reduced natural resource availability; and (iii) the integrated water resources management (IWRM).

---

## Thematic Area: Geomorphology and Exogenic Processes (GMPE)

## Sessions

**GMPE-GS: General Session Geomorphology and Exogenic Processes**

**Convenors:** Rodrigo Riquelme, María Mardones. .

**Description:** This session will receive abstracts related to Geomorphology and Exogenic Processes that cannot be included in one of the specific sessions of this thematic area.

---

**GMPE-1: Paleoclimate and paleoenvironmental reconstructions**

**Convenors**: Valentina Flores, Cristina Ortega.

**Description**: This session includes works that present all types of climatic reconstructions based on geological records or other climate-dependent records, which allow understanding the past climate at different spatio-temporal resolutions.

It may also incorporate works consisting of paleoceanographic or paleoecological reconstructions, or other types of paleoclimatic tools, such as global circulation models or statistical analysis, that provide information on climate dynamics and its variability.

---

**GMPE-2: The fate of sediment: geomorphic dynamics and basin evolution at multiple time scales.**

**Convenors**: Tania Villaseñor, Violeta Tolorza.

**Description**: The detachment, mobilization and deposition of sediment on Earth's surface involve a series of processes that work at various timescales. The study of mass transfer, from source to sink, including its transient accumulation in the sediment-routing system, offers the opportunity to analyze processes of denudation, transfer and storage of sediment and its deposition in different depocenters within a basin, which are related to tectonics, climate and anthropogenic forcing. This type of analysis is also fundamental towards the quantification of transfer of solutes and distribution and accumulation of organic matter and metals.

We invite presentations that investigate processes of production, transfer and accumulation of sediment in different geographic areas and at various timescales, with the aim to reconstruct Earth surface dynamics and the mechanisms involved in its evolution over time.

---

**GMPE-3: Exogenous processes in territorial planning**

**Convenors**: Fernando Peña-Cortés, Eduardo Fernández.

**Description**: The natural dynamics of our country implies the need to have territorial planning instruments that address the whole geographical space. These instruments should take into account this component in the territorial diagnosis, as well as in the definition of preferred uses, environmentally sensitive or fragile areas, and spaces of high natural hazard. Currently, an amendment to the Constitutional Organic Law of Governments and Regional Administration (LOCGAR) is being discussed the parliament, which grants Regional Governments new powers through the Regional Plans of Territorial Planning (PROT). In parallel, the Interministerial Commission of City, Housing and Territory (COMICIVYT), is developing the National Policy of Territorial Planning. These advances, both in the normative and policy matter, make it necessary to discuss the scope, contributions and projections of the geomorphological studies and exogenous processes in the elaboration of the PROT. We invite to the research community to submit works that address this issue.

---

**GMPE-4: Cryosphere sciences and related hydrological resources**

**Convenors**: Juan Pablo Milana, Christopher Ulloa, Ayón García Piña.

**Description**: This session aims to bring together new works and local advances in the field of the cryospheric sciences, that is any work dealing with natural ice and snow, spanning disciplines as glaciology, nivology and geocryology. The session also targets contributions dealing with the interactions between frozen and liquid water, as the hydrological productivity of glaciers, snowpacks, or geocryologic bodies as rock glaciers, and other types of ice-bearing permafrost bodies. One of the main goal of this session is to join together contributors and attendees interested in the strategic role of frozen water reserves, due to the strategic importance of some natural ice bodies as for instance those present in arid, semiarid and hyperarid areas of Chile and neighbouring countries. Therefore, while the session targets all types office bodies, a particular interest will be paid to those studies coming from places with shortage of hydrologic resources as arid to hyperarid regions, in order to expand the knowledge of this poorly studied ice-water system.

---

**GMPE-5: Marine Geology and Geophysics**

**Convenors**: Ximena Contardo, Cristian Rodrigo, Iván Vargas, Rodrigo A. Fernández-Vásquez

**Description**: In the ocean depths and continental margins, geological processes that interact directly with the emerged lands, the global climate and the major circulation systems of the planet, occur. There is a wealth of valuable information preserved in the marine sedimentary record, and the major structures, morphologies and lithologies in both continental margins and abyssal areas.

Although substantial advancements have been made in the last decades, there is still large unexplored submerged areas, and a significant level of uncertainty about the forcings and mechanisms that drive the marine geology processes. This session proposes an invitation to expose the latest methodologies, research and advances in marine geology and geophysics, and has the goal of encouraging the geosciences

community to look towards the still unanswered questions about the geological processes that occurs in the oceans.

---

## Thematic Area: Magmatism and Metamorphism (MAGM)

## Sessions

**MAGM-GS: General Session Magmatism and Metamorphism**

**Convenors:** Oscar Figueroa, Mauricio Calderón, Verónica Oliveros.

**Description:** This session will receive abstracts related to Magmatism and Metamorphism that cannot be included in one of the specific sessions of this thematic area.

---

**MAGM-1: Phanerozoic Magmatic Arcs**

**Convenors**: Christian Creixell, Juan Otamendi, Vanesa Litvak, Paulina Vásquez, Verónica Oliveros.

**Description**: Since the Neoproterozoic, the interaction between the Pacific (paleo and modern) and Sudamerican plates has shaped one of the longest-lived and largest magmatic-orogenic belts known in Earth's history. This session promotes a multidisciplinary approach aimed to characterize the phanerozoic magmatic arcs that formed and evolved along the acific destructive margin of the South America.

The big challenge is to understand what causal geodynamic variables exert a major control on the crustal architecture, the chemistry of plutonic to volcanic suites and the ore-forming events in the phanerozoic Sudamerican magmatic arcs.

The following aspects will receive particular emphasis:

- Arc magmatic tempos from inception to maturation.

- Migration and expansion of magmatic arcs and their link to changes of the geodynamic setting.

- Geodynamic factors controlling the compositional gradient across and along arc sections from micro- to macro-scale.

- The influence of far-field tectonic stress and magmatic inputs on the position of ore-bearing fields.

---

**MAGM-2: Magmatic differentiation processes in subduction zone settings**

**Convenors**: Cristóbal Ramírez de Arellano, Daniela Bustamante, Francisco Fuentes.

**Description**: Differentiation processes of magmas from subduction zones have very particular characteristics. These processes lead to the generation of intermediate "andesitic" magmas with high magnesium number, relative to tholeiitic series. These magmas are responsible of most of igneous rocks

in the Andes and other arc settings. Despite the characterization of these products, the magma differentiation mechanisms and the role of mineral phases on it are not fully understood. The composition of primary magmas and the degree of differentiation determine the type of magmatism at different tectonic scenarios as suggested in the different segments of the western margin of South America. In this session, we invite anyone who want to present preliminary or final results regarding on this intriguing topic.

---

**MAGM-3: Analytical techniques in geosciences**

**Convenors**: Marco Suárez, Adán Ramírez, Fernando Barra, Brad Singer.

**Description**: Session devoted to the analytical techniques associated with studies in geology. The objective of this space is to share with people related to the different laboratories work and other interested. This session allows to stimulate the transfer of technology to the geological community, in order to divulge the different facilities available with their technological advances and experimental techniques applied to solutions of Earth Sciences.

---

**MAGM-4: Cenozoic Fertile and Barren Magmatism along the Andes: Recent Discoveries**

**Convenors**: Katja Deckhart, Marcia Muñoz.

**Description**: Cenozoic magmatism along the Andes hosts and is directly associated with world class mineral deposits. In a general sense, this magmatism is well studied but economic necessities are on a daily basis challenging researchers in widening their horizon to understand in more detail and through new analytical methods such systems. This involves numerous different aspects as the volcano-plutonic characteristics and their link, magma chamber processes and emplacement conditions, and distribution of fertile and barren igneous rock occurrences along the Andean Cordillera, among others.

This special session invites to present new research on Cenozoic magmatism distributed on the Chilean and entire Andean margin related to chemical and isotopic studies, magma modeling and evolution, characteristics of fertile and barren magmatism and other recent related discoveries.

---

**MAGM-5: Crustal Metamorphism**

**Convenors**: Mauricio Calderón, Francisco Hervé

**Description**: This session invites contributions that seek progress in understanding crustal evolution and geodynamics in accretionary and collisional settings, through innovative approaches in metamorphic petrology. Those contributions focused in the construction of Pressure-Temperature (P-T) paths of metamorphism through quantification of P-T conditions using phase equilibria modeling combined with microstructural analyses, geochronology and trace element data of mineral phases, will be of main interest.

---

# Thematic Area: Volcanology (VOLC)

## Sessions

**VOLC-GS: General Session Volcanology**

**Convenors:** Luis Lara, José L. Palma.

**Description:** This session will receive abstracts related to Volcanology that cannot be included in one of the specific sessions of this thematic area

---

**VOLC-1: Volcanism of the Central Andean Volcanic Zone (CAVZ)**

**Convenors**: Felipe Aguilera, Philippe Robidoux.

**Description**: The Central Andean Volcanic Zone (CAVZ) is an extensive active volcanic chain that covers southern Peru, western Bolivia, northwestern Argentina and northern Chile. In the CAVZ exists a wide range of eruptive products, various types of volcanic edifices and a complex historical evolution. Additionally, several eruptions have been recorded in the last 30 years, especially in southern Peru volcanoes in the past 10 years. The objective of this scientific session is receive works related to the all topics associated to the study of the CAVZ volcanism, including physical volcanology, petrology, fluid geochemistry, geodesy, volcanic hazards and risks, volcanic monitoring, among others, considering volcanoes from all countries (Argentina, Bolivia, Chile and Peru).

---

**VOLC-2: Quaternary Volcanism and Tectonics of the Southern Andes**

**Convenors**: José Cembrano, Luis Lara

**Description**: Almost 10 years ago, the conveners of this session published an article (Cembrano and Lara, 2009. Tectonophysics) aimed to, building on previous pioneer contributions, to summarize what we understand about the relationship between Quaternary tectonics and volcanism in Southern Andes. More recently, a number of studies have addressed this topic moving the frontier much beyond our modest interpretations with new ideas and research questions. In this session we welcome contributions that address the causal connections between tectonics and active volcanism, with emphasis on the processes and from a wide range of perspectives and geodynamic settings, from those based on instrumental data to geological, petrological or structural studies, including numerical modeling.

---

**VOLC-3: Submarine volcanism and geology of oceanic islands**

**Convenors**: Luis Lara, Javier Reyes, Juan Díaz Naveas, Cristian Rodrigo.

**Description**: Globally, less than 10% of the seafloor has been mapped and less than 5% of the already known seamounts have high resolution bathymetry. Thus, there is scarce or imprecise information about the seamounts and oceanic islands, which make difficult to understand primary processes and even to promote the environmental protection of these unique habitats. But this situation is changing because of new research efforts and the availability of a modern oceanographic vessel in Chile. In this session we welcome contributions on geological (petrology, geochronology, etc.) and geophysical (bathymetry, etc.) studies recently performed at seamounts and islands of the Nazca Plate, or nearby the Antarctic Plate, especially those aimed to understand the processes involved in the genesis of this style of volcanism.

---

**VOLC-4: Monogenetic volcanism: Origins and related processes**

**Convenors**: Lucy E. McGee, Luis Lara

**Description**: Volcanism at convergent margins is represented essentially by stratovolcanoes, while monogenetic volcanism in these settings appears subordinate. The style of monogenetic volcanism in intraplate regions is quite distinct to convergent margins, in addition to the dominant processes of petrogenesis of the magmas. In the last few years there has been a notable increase in the production of information regarding monogenetic volcanism in South America, despite it being a less frequent eruption style. Various studies have noted the spatial and temporal co-existence of such volcanoes with stratovolcanoes, although the latter are associated with different geological processes (from their genesis in the mantle to the mechanism of their ascent through the crust). We seek contributions for this session which document monogenetic volcanism in different environments and from different perspectives. We encourage studies related to petrology, reconstructions of physical volcanology, studies based on instrumental data and/or numerical modelling of magma ascent and its conditions.

---

**VOLC-5**: **Characterization, assessment and communication of volcanic hazard and risk**

**Convenors**: Álvaro Amigo, José L. Palma.

**Description**: Volcanic eruptions can trigger a wide variety of natural phenomena that significantly affect human population and infrastructure: lahars, pyroclastic density currents, lava flows, tephra falls and detritus avalanches, among others. This session aims to assess the volcanic hazard through different methodological approaches focused on volcanic deposit characterization, field observations, numerical modeling of volcanic material dispersion, as well as probabilistic evaluation of hazards.

Las erupciones volcánicas son capaces de generar una variedad importante de fenómenos que afectan la población e infraestructura que los rodea: lahares, corrientes de densidad piroclásticas, flujos de lava, caída de tefra, avalanchas de detritos, entre otros. Esta sesión abordará análisis de peligrosidad volcánica a través de diferentes metodologías, enfocados a la caracterización de depósitos volcánicos, observaciones de campo, modelado numérico de inundación o dispersión de material volcánico, así como evaluaciones probabilísticas.

---

**VOLC-6**: **Dynamic of volcanic activity: observations, monitoring and modeling**

**Convenor**s: Luis E. Franco, Cindy Mora-Stock, José L. Palma.

**Description**: Volcanic monitoring, modeling and observations collected during eruptions allow us to infer characteristics of the volcanic processes generated by the different activity styles. This knowledge is fundamental to improve and complement our monitoring capacity and determine the most probable development of volcanic activity allowing to improve forecast times. This session will focus on studies that describe and characterize the evolution of volcanic eruptions, investigations that identify the distribution and characteristics of reservoirs and magmatic conduits, as well as the description of premonitory aspects. We invite contributions that include instrumental observations of seismicity, emissions of volcanic gases, infrasound, and deformation -among others-; studies that show changes in degassing and petrological analyzes that indicate a dynamics in magmas; and studies that describe advances in the monitoring of specific volcanic phenomena.

---

## Thematic Area: Structure and Geodynamic Evolution (ESEG)

## Sessions

**ESEG-GS: General Session Structure and Geodynamic Evolution**

**Convenors:** Marcelo Farías, Andrés Tassara.

**Description:** This session will receive abstracts related to Structure and Geodynamic Evolution that cannot be included in one of the specific sessions of this thematic area.

---

**ESEG-1: Andean Tectonics**

**Convenors**: Andrés Folguera, César Arriagada, Andrés Tassara, Marcelo Farías.

**Description**: This session postdates similar meetings at recent Symposia and Congresses in both Chile and Argentina and in the first ATECSUD meeting held in Santiago de Chile in 2016. This session will gather works that present scientific results related to the tectonic and geodynamic evolution of the Andean margin through the Andean cycle (Jurassic-Present) and previous tectonic cycles (Paleozoic-Triassic). This session will allow integrating information from both Andean slopes associated with the mechanics of deformation, timing, relation to magmatism, development and closure of sedimentary basins, orogenic development, etc.

---

**ESEG-2: Tectonoestratigraphy of the Mesozoic Andean basins**

**Convenors**: Pablo Rossel, Esteban Salazar, Maximiliano Naipauer, Verónica Oliveros.

**Description**: The Andean paleogeographic evolution during Mesozoic was characterized by a bimodal hypsometry with large basins located both in the margin and in the interior of the continent. Diverse tectonic environments have been proposed for those basins, so all of them as a whole, represent a unique

record of the tectonic, paleogeographic and paleontologic evolution of the Andes during Mesozoic. These basins are major structural features of the early Andes, host large hydrocarbons reservoirs and a unique paleontological record for the southern cone, and show variations throughout the margin that have not completely understood yet, as well as the control of these variations on the segmentation of the response to deformation. In this session, it is expected to receive works that contribute to the understanding of the origin and evolution of these Mesozoic basins, integrating stratigraphical, sedimentological, structural, geophysical and sediment provenance data.

---

**ESEG-3: Crustal architecture of the Andean margin combining structural data and geophysical models**

**Convenors**: Andrés Tassara, Laura Giambiagi, Lolita Campos.

**Description**: Knowledge about the internal structure of the Andean Cordillera is fundamental for understanding the relationship between surface geological units and deep processes building the orogen, and its extrapolation to other subduction zones. The integration of structural works with high-resolution geophysical images has allowed over the last decade the proposition of a wide range of conceptual models about the orogenic structure at different latitudes of the Andes, some of them contradictory one to each other. This session welcomes contributions that present and discuss 2D and 3D models of the internal architecture of the current Andean crust as derived from the analysis of structural sections at regional to continental scales, geophysical images and models (seismic, gravimetric, magnetotelurics, thermomechanic, etc) and the integration of these datasets into numerical models explaining the construction of the Andean orogen. Also welcomed will be abstracts comparing the Andean structure with other convergent margins, particularly with the Central America subduction zone.

---

**ESEG-4: Tectonic evolution of the Scotia arc in Southamerica and Antarctic Peninsula**

**Convenors**: Mauricio Calderón, Julie Fosdick, Matias Ghiglione.

**Description**: The idea of the symposium is the analysis of the tectonic evolution of the Southernmost Andes and the Scotia Sea. The Southernmost Andes comprise the southern bent of the Andean mountains, where they progressively change their strike from the N-S–oriented Southern Patagonian Andes to the E-W–trending Fuegian Andes. These Andean segments and their corresponding basement, sedimentary basins, magmatic rocks and batholithic belts are linked, even if sometimes elusively, to the evolution of the islands spread in the southern ocean. There is a joint history of Antarctica and South America that was shattered by the opening of the Scotia Sea. The remaining pieces of the puzzle, how can they fit together, and how were they separated from each other will be one of the main discussion topics of the symposium.

The organizers are Earth Sciences researchers that have worked on the geological and geophysical exploration of the region for over the last two decades, on a number of multidisciplinary subjects in the region. Multiple points of views and methods are therefore presented to address update summaries of new and long lasting debates, including the complex evolution of the Rocas Verdes marginal basin and the Patagonian Batholith, and the Magallanes-Austral foreland basin.

---

# Thematic Area: Seismotectonics, Neotectonics and recent Earthquakes (SINT)

## Sessions

**SINT-GS: General Session Seismotectonics, Neotectonics and recent Earthquakes.**

**Convenors:** Daniel Melnick, Joaquín Cortés-Aranda.

**Description:** This session will receive abstracts related to Seismotectonics, Neotectonics and recent Earthquakes that cannot be included in one of the specific sessions of this thematic area.

---

**SINT-1: Deformation processes in active margins: Earthquakes and Tectonics**

**Convenors**: Sergio Ruiz, Andrei Maksymowicz, Eduardo Contreras, Juan Carlos Báez.

**Description**: This session is focused on the instrumental study of recent earthquakes occurred in the South America margin, especially in the characterization of pre-, co- and post-seismic phases. The recent Chilean earthquakes of Maule 2010, Iquique 2014, Illapel 2015, Chiloé 2016 and Valparaíso 2017, shed light on how the earthquake rupture dynamic processes are controlled by the tectonic characteristics and the slow deformation of the Nazca and South America plates. In this session, we hope to receive works that allow us to discuss and to understand these processes.

---

**SINT-2: Seismotectonics, the earthquake cycle, and paleoseismology along the Chile margin**

**Convenors**: Daniel Melnick, Andrés Tassara, Marco Cisternas, Bruno Mazzorana.

**Description**: The Chilean subduction zone displays a wide variety of tectonic and earthquake behaviors across a range of timescales. Recent and past great earthquakes both on the megathrust and crustal faults illuminate deformation processes and their potential feedbacks. However, many aspects of short-term subduction dynamics remain unclear, and fundamental data sets necessary to assess seismic hazards are needed. We welcome contributions focused on neotectonics including field geology, modeling of geodetic data, geophysics, and paleoseismology, aiming at exploring the relationship between seismotectonic segmentation, upper-plate faulting and the megathrust seismic cycle.

---

**SINT-3: Seismogenic potential of crustal faults in South America**

**Convenors**: Joaquín Cortés Aranda, Carlos Costa, Daniel Melnick.

**Description**: In the Andes, numerous crustal faults control the recent landscape evolution in areas of the Forearc, Intra-arc and Back-arc regions. In some cases, this kind of faults has been able to nucleate M>7 earthquakes during historical times. Nevertheless, crustal faults have been barely considered in seismic hazard models, mostly because the parameters that define their past activity are unknown. We call for contributions addressing the characterization of parameters like slip rates, recurrence intervals, maximum

moment magnitude, etc., using multidisciplinary approaches. The main goal of this session is contributing to the understanding of these crustal seismogenic sources to acquire a better assessment of the seismic hazard in the continent.

---

## Thematic Area: Stratigraphy, Sedimentology and Paleontology (ESSP)

## Sessions

**ESSP-GS1: General Session Stratigraphy and Sedimentology.**

**Convenors:** Alfonso Encinas, Patricio Zambrano.

**Description:** This session will receive abstracts on Stratigraphy and related disciplines, such as: Basin analysis, stratigraphic nomenclature, sequence stratigraphy, sedimentology and sedimentary petrology.

---

**ESSP-GS2: General Session Paleontology**

**Convenors:** Sven Nielsen.

**Description:** This session will receive abstracts related to Paleontology that cannot be included in one of the specific sessions of this thematic area.

---

**ESSP-1: The Cretaceous in Chile and South America**

**Convenors**: Christian Salazar, Nathalia Fouquet.

**Description**: This session hopes to bring together specialists working with the problems and dynamics of the Cretaceous System, in Chile and in South America, including Antarctica. The Cretaceous is a very controversial system, beginning with the definition of its J / K limit, which for more than a century still does not exist an international consensus, and where in the last years South America has begun to take an important development. In addition, this system in South America has important locations with very complete and continuous records, evidencing the great events that mark and characterize the Cretaceous, such as the mass extinction at the end of the period. In this and other points of great current discussion, our continent still has much to contribute.

---

**ESSP-2: The Late Paleozoic basins in the western margin of South America**

**Convenors**: Gabriela A. Cisterna, Andrea F. Sterren, Reynaldo Charrier, Hans Niemeyer.

**Description**: The western margin of South America records a complex and heterogeneous Late Paleozoic history strongly related to the climatic event of the Late Paleozoic Ice Age (LPIA). The southern basins of the continent enclose important Carboniferous glacial-postglacial deposits, while those from lower

latitudes are characterized by thick, mainly Permian carbonate successions, belonging to the extensive platform developed from Venezuela to central Chile. Although the sedimentologic, stratigraphic and paleontologic aspects of these basins are rather well known, this session, organized in the frame of the XV Chilean Geological Congress and particularly focused on these subjects, will represent an ideal opportunity to bring together most of the Southamerican specialists on the Late Paleozoic to discuss about the recent progress on this matter and the lines on which future research should be oriented.

---

## Thematic Area: Emergent Fields in Geosciences (AEGS)

## Sessions

**AEGS-GS: General Session Emergent Fields in Geosciences.**

**Convenors**: Millarca Valenzuela, Fernanda Álvarez.

**Description**: This session will receive abstracts related to Emergent Fields in Geosciences that cannot be included in one of the specific sessions of this thematic area.

---

**AEGS-1: Planetary sciences, meteorites and impact processes**

**Convenors**: Millarca Valenzuela, Laura Flores, Mario Pino, Daniel Moncada, Sebastián Perroud.

**Description**: Planetary sciences in Chile start to consolidate among multidisciplinary studies that recognize our territory as one that poses many different environments that can work as analogous of other Solar System's planetary bodies. Additionally, in the last years Chile has become the South American country with more official meteorites, thanks to the excellent preservation conditions at the Atacama Desert. This collection allows the study of these primitive rocks to researchers and students in Chile and around the world, to advance in the understanding of the origin of the Solar System and its subsequent evolution. This session will cover key aspects that includes: 1) study of meteorites, specially specimens found in North, Central and/or South America; 2) studies of geological processes - including geochemical, geophysical, mineralogical, petrological and/or remote sensors data - applied to the understanding of other planets; 3) geological, geophysical, physical models, etc. studies of craters, their impact materials, airbursts, as well as their effects, in Chile or the rest of the world. We are looking forward for your contributions.

---

**AEGS-2: Geoarchaeology: advances and perspectives for the new millennium**

**Convenors**: Pía Sapiains, Andrew Menzies, Valentina Figueroa, Ariadna Cifuentes, Camila Riera.

**Description**: Interdisciplinary research is essential for the development and scientific work of a diverse range of existing disciplines. Over the last couple of decades, interdisciplinary collaborations have performed a relevant role in obtaining detailed and rigorous information. In this context, the techniques used in geosciences have made a contribution in archaeological research and have become a tool for the

study of archaeological sites and objects. This session is open as a space for the national promotion and dissemination of geo-archeology as an interdiscipline, where geology collaborates in archaeological studies as a strategic tool for obtaining important data, such as the analysis of soils and stratigraphy at archaeological sites, the use of geophysical equipment in excavations, the mineralogy and petrography of archaeological materials, and the geomorphology and paleoenvironment evolution, among other important contributions.

---

**AEGS-3: Geoscientific data processing**

**Convenors**: Natalia Astudillo, Alejandro Cáceres, Silvia Arce.

**Description**: Processing of geoscientific data and information is a relevant aspect of the professional and academic workload, given the continuous increase in the amount and variety of geological data collected. The availability of large databases requires the correlation and integration of geological information of diverse nature, which can be achieved thanks to the growing capacity of computational methods and algorithms, contributing thus to enlarge the geological knowledge and to build or refine predictive models of natural phenomena. In this context, the session aims to approach the geoscientific community to the future of the geological practice by integrating themes such as numerical modeling, GIS analysis, database and structures, sampling methods, geostatistics, resources estimation, artificial intelligence applied to geological problems, etc. All these subjects go beyond the mere geological interpretation and are becoming fundamental tools that support our work.

---

**AEGS-4: Innovation and Technology**

**Convenors**: Manuel Reyes, Jaime Villanueva, Jorge Brantt.

**Description**: During the last years many computer techniques have been developed that are allowing the treatment of a large amount of data, such as the use of Artificial Intelligence, which will involve knowing in a timely manner relationships between different elements, relationships between geological events, among other.

New technological applications have allowed, for example, the design of machines capable of condensing water from the air in quantities of 200 liters per day.

These and other applications will allow the dissemination of new technologies that will support geological knowledge and others that will help field campaigns.

This session will receive abstracts describing technological innovations applied to geosciences.