



**SIPROL ECUADOR S.A.**  
**IN TWO WORDS ...**

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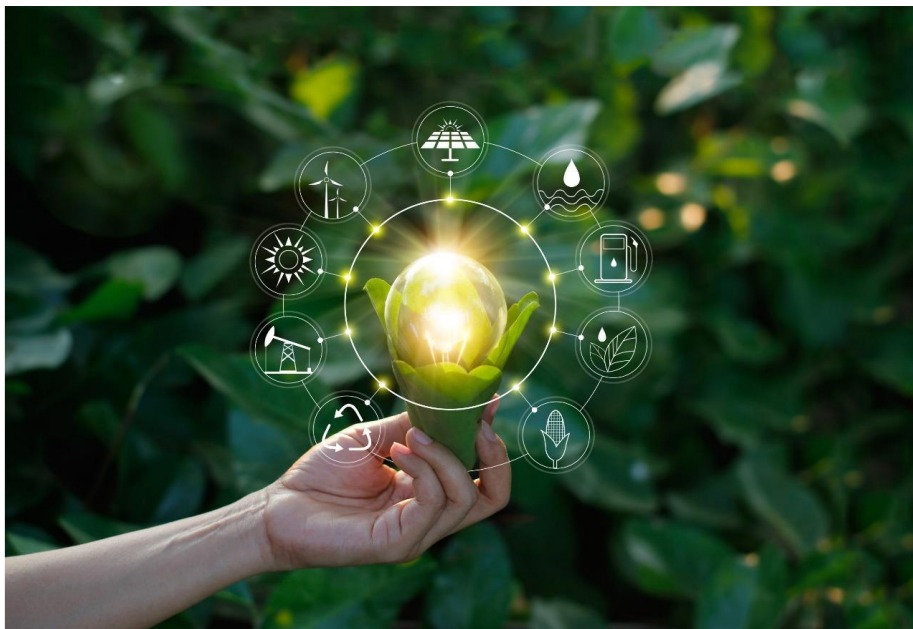
## WHO WE ARE AND WHAT DO WE OFFER?

**SIPROL Ecuador S.A.** is an innovative Ecuadorian engineering company that develops its work in the fields of civil engineering, geophysics, environment, mathematical modeling, high performance computing, research, development, and innovation in science and technology, information and communications technology, and related areas, to promote and market products, services, consultancies, and studies of high added value, which aim to improve: 1) economic performance of the productive sector, 2) caring for communities, 3) environmental protection, 4) infrastructure management, 5) generation of early warnings & alerting of extreme events due to natural hazards, 6) control of the territory, 7) computing and design in engineering, among others.

Through its line of business, **SIPROL Ecuador S.A.** actively participates in the **Digital Transformation** process that society and the productive sector are experiencing, circumscribing in essence nowadays its commercial and research activity under the leitmotif **Green Recovery**, recently proposed by the United Nations (UN) to reinforce actions for Environmental Remediation, mitigation, and adaptation to Climate Change and, recently, Post-pandemic Social and Economic Recovery.

**SIPROL Ecuador S.A.** clients are companies, institutions, organizations, and industries -public or private-, research centers and enterprising people, with innovative DNA, who confront paradigms by integrating in their work cutting-edge technologies, modern processes, and differentiating and excellent information, which allows them to mitigate and adapt to the Climate Change, substantially improving the decision-making process.

**SIPROL Ecuador S.A.** is nowadays a Latin American reference and an excellent ally with a high scientific, technical and information management profile, with a proactive disposition of support and personalized assistance to its clients.








## **SIPROL®: Four-Dimensional Virtual Geophysical Technology.**

**SIPROL®** is a Chilean Four-Dimensional (4D) Virtual Geophysical Technology, based on the conservative treatment of energy, mass, and momentum transfer processes, devoted to describing complex geophysical phenomena in the atmosphere, the ocean, and soil / subsoil / earth's crust in the continent.

Using information on a planetary scale, mathematical modeling, high-performance computing, artificial intelligence, engineering science, earth science, and high-level management, **SIPROL®** generates and puts in the market frontier technological products. Namely 4D VIRTUAL GEOPHYSICAL DEVICES, such as: rain gauges, anemometers, thermometers, barometers, weather stations, thermocouples, tide gauges, current gauges, pressure sensors, displacement sensors, etc. They describe complex dynamics in an extremely precise and timely manner, especially on a local scale anywhere in the world, to provide standard geophysical information, as well as defining specific key management indicators for each business area and customized for each client. This information is designed to be generated in remote data centers and to be hosted in the virtual cloud.

**SIPROL®** service offering consists, among others, in establishing historical records, generating forecasts, projecting weather trends, monitoring and raising early warnings/alerting of extreme events due to natural hazards, developing studies with high added value, to understand, explain or describe complex geophysical phenomena -past, present, or future-, in the fields of thermodynamics, meteorology, hydrology, limnology, operational oceanographic hydrodynamics, environment, hydrogeology, structural geology, geomechanics, geotechnics, prospecting and related areas.

**SIPROL®** was conceived, developed, scaled, and validated since 2004 by the Chilean R & D Center, INGMAT ([www.ingmat.com](http://www.ingmat.com)). It has been available on the market since 2014. It is organized into five technological modules:

	<p><b>SIPROL®-Weather:</b> High-resolution technological module, designed to describe, in all their complexity, atmospheric circulation and related phenomena.</p>
	<p><b>SIPROL®-Wave:</b> Technological module designed to describe complex wave propagation phenomena on the surface of oceans, lakes, tailings dams, etc.</p>
	<p><b>SIPROL®-Current:</b> Technological module designed to describe processes of energy transfer and mass transport in oceans, lakes, tailings dams, etc.</p>
	<p><b>SIPROL®-Environment:</b> Technological module intended to describe environmental dynamics that intervene in meteorology, oceanography, and the like.</p>
	<p><b>SIPROL®-Soil / Subsoil &amp; Earth's Crust:</b> Technological module that provides geophysical information for computing, design and monitoring in hydrogeology, structural geology, geomechanics, geotechnics, prospecting, and related areas.</p>

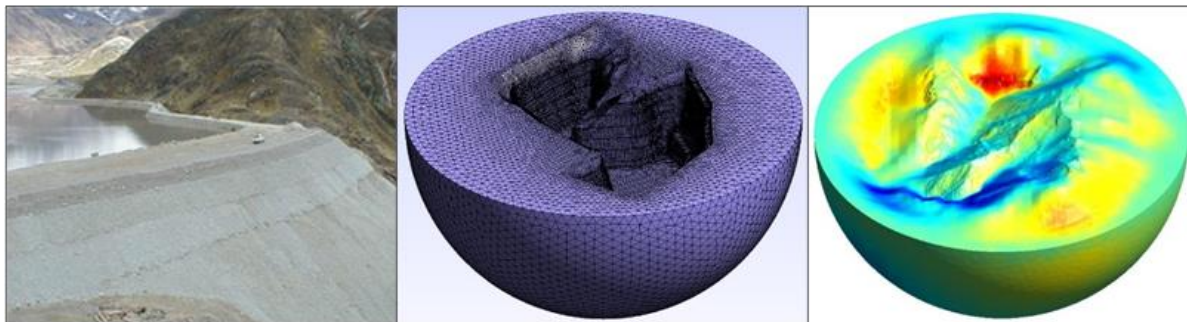
## TIRAM®: 4D Virtual Geomechanical & Geotechnical Technology.

**TIRAM®** is a Chilean Four-dimensional (4D) Virtual Geomechanical & Geotechnical Technology, devoted to frontier scientific and cutting-edge technological treatment of some of the fundamental equations of solid mechanics. Particularly, **TIRAM®** addresses the effective and efficient solving of elastostatic and elastodynamic problems on complex solid media (inhomogeneous, anisotropic, discontinuous, large-sized, etc.).

By means of a virtuous and synergistic combination of theoretical and practical elements, such as operational information from analysis and reanalysis of real productive tasks (mining, civil works, hydrocarbons, geophysical prospecting, etc.), advanced mathematical modeling, high-performance computing, artificial intelligence, engineering sciences and earth sciences, as well as high-level management, **TIRAM®** is capable of generating and marketing sophisticated and unique products, services, consultancies, and studies with high added value in the fields of geomechanics, geotechnics, structural geology, hydrogeology, geophysical prospecting, environment and other related areas.

These elements describe intricate equilibriums and / or dynamics in an extremely precise and timely manner, especially on a local scale anywhere in the world, thus providing standard specialized information, as well as defining specific key management indicators to each business area and customized for each client. This information is designed to be generated in remote data centers and to be hosted in the virtual cloud.

**TIRAM®** can produce complete 4D information at the level of meters and days, reconstruct historical information (detailed prognosis), anticipate risks based on measured data, generate early warnings/alerting of extreme events due to natural hazards, among others.



Stress Determination, Induced Seismicity Analysis and Displacement Monitoring in Tailings Dams.

**TIRAM®** is on the market since 2019, arousing great interest as a reference for technological innovation. It is an excellent ally with a high scientific, technical and management profile, marketed by an expert professional team with a proactive disposition of support and assistance to its clients.

## **SIPROL Ecuador S.A.: High Technology & Business Strength.**

The scientific and technological teams that support our company are made up of academics and research professionals, who for years have developed their main work in strategic areas of social, productive and defense activities. Particularly, **SIPROL Ecuador S.A.** is linked to the Universidad de Concepción in Chile ([www.udec.cl](http://www.udec.cl)), to the École Polytechnique of Paris in France ([www.polytechnique.fr](http://www.polytechnique.fr)), and to the EPN-TECH EP in Ecuador ([www.epntech.com](http://www.epntech.com)), in research, development and innovation (R & D & i).

Through strategic alliances with world-class companies, research centers and universities, our company expands its competencies and services offer to the domain of High Technology, thus covering other strategic areas of the country and the industry, such as: Acoustics and Remote Sensing; Automated Image Analysis and Computational Electrodynamics (CEM).

What is outlined in the previous paragraphs, allows **SIPROL Ecuador S.A.** to enjoy superlative comparative advantages in the engineering and related markets, both from a strategic and structural point of view. The most important to highlight in a context of society and industry are:

- It has been a pioneer company in the Digital Transformation process,
- It has been a pioneer company in the promotion of technological chaining, intensive use of data and Artificial Intelligence in society and industry,
- Its work takes into account the Climate Change: environmental, meteorological, hydrological, maritime climate and other phenomena are considered, which have arisen, or have been accentuated during the last decades, such as: seasonal alterations in atmospheric circulation, unusual extreme thermal events in the lower atmosphere, long waves in coastal areas, increasing of energetic weather events, proliferation of algae and marine toxins, etc.,
- The quality of its work is only comparable to NOAA and ECMWF,
- The provided information is generated by using in-house technology,
- It maintains close ties with the Chilean company **SIPROL SpA**, which owns the technologies (IP) that **SIPROL Ecuador S.A.** markets,
- It has absolute control of the technologies and products that markets,
- It can customize the generated information to its clients' needs,
- It has close dialogue with local authorities,
- It has advanced research and development capabilities and skills,

One of its essential Leitmotivs is a permanent proactive provision of support and personalized advice to its clients.





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