



The Geological Surveys of Europe

Expert Groups Workshop

ASGMI - Geological Mapping & Regional Geology  
And

EGS - Geological Mapping & Modelling

# The National Geologic Mapping Program of Chile SERNAGEOMIN

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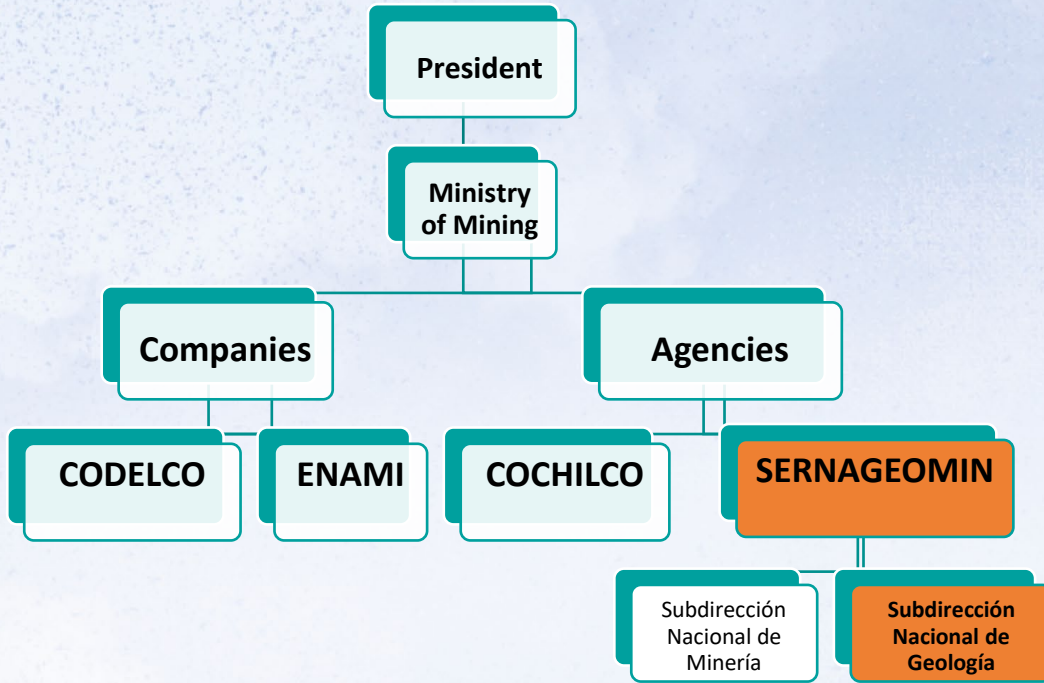
Head of General Geology Department  
Servicio Nacional de Geología y Minería – CHILE  
November 2023

## Overview

1. Sector institutionalty and SERNAGEOMIN
2. The National Mapping Program (*Plan Nacional de Geología*)
  - i. Objectives
  - ii. General information
3. Integrated production process of our “Geological Publications”
4. Technical Programs:
  - i. Basic Geology
  - ii. Geophysics
  - iii. Geochemistry
5. Impact and Advances
6. Web Page for divulgation
7. Conclusions

# 1) OVERVIEW

## Public Institutions related to the Geology and Mining Sector



### Our role:

- Advise the Government, through the Ministry of Mining, on public policies in topics related to our competences, and
- Ensure compliance with the safety and sustainability standards of the sector, through:
  - ✓ Mine site oversight (*fiscalización*)
  - ✓ Technical advice
  - ✓ Training
  - ✓ Investigation
  - ✓ Technical publications
  - ✓ Diffusion

## 2) THE NATIONAL MAPPING PROGRAM (PLAN NACIONAL DE GEOLOGÍA)



The Geological Surveys of Europe

### General objective

Generate and disseminate geoscientific knowledge of the national territory through three technical programs:

- **Basic Geology (inc. Marine Geology)**
- **Geochemistry**
- **Geophysics**

### Specific objectives

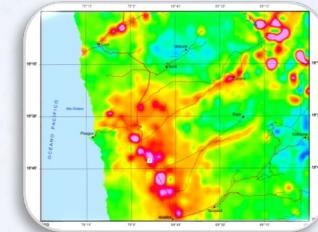
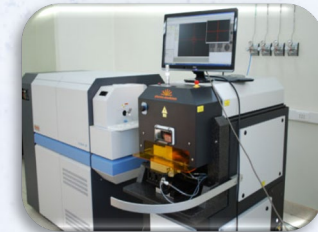
- Increase the coverage of geological cartography of the national territory.
- Support the promotion of the exploration and sustainable management of mineral, energy and water resources in the country.
- Provide basic information necessary to:
  - ✓ development of strategic productive sectors (**welfare**)
  - ✓ improve the quality of life of the population (**security**)



# DEPARTAMENTO DE GEOLOGÍA GENERAL - *PLAN NACIONAL DE GEOLOGÍA (2010-today)*



1. Characterization and geological study of the national territory, **basic cartography**
2. Includes first programs for the systematic collection of **geophysical and geochemical data**, on a country scale (in addition to basic geology)
3. **Work team:** 48 geoscientists, 39% postgraduate, women 1:4
4. **“Geological Publications”** as institutional strategic products: databases, cartography (different scales), technical studies, scientific articles, books, atlas
5. Work through **Projects** with annual goals of coverage (km<sup>2</sup>) or number of publications
6. Association with privates through service contracts (cartography, analytics)
7. Investment in analytical equipment and **Laboratory** supplies and support to transversal units of SERNAGEOMIN.



### 3) INTEGRATED PRODUCTION PROCESS OF OUR “GEOLOGICAL PUBLICATIONS”

- Geological Publications as an institutional Strategic Product: Scientific products of high technical complexity in their preparation and quality control (peer review)
- Production through an integrated process that involves all SDNG Units
- Certification under a Quality Management system according to ISO 9001:2015



#### PRE-TERRENO TERRENO



**PLANIFICACIÓN ,ANTECEDENTES,  
LEVANTAMIENTO DATOS, ANÁLISIS Y  
PRODUCCIÓN**



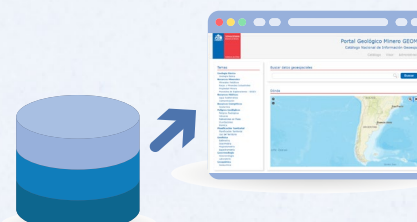
#### POST-TERRENO



**CONTROL DE CALIDAD**  
*Revisión de pares  
Estructura base de datos*



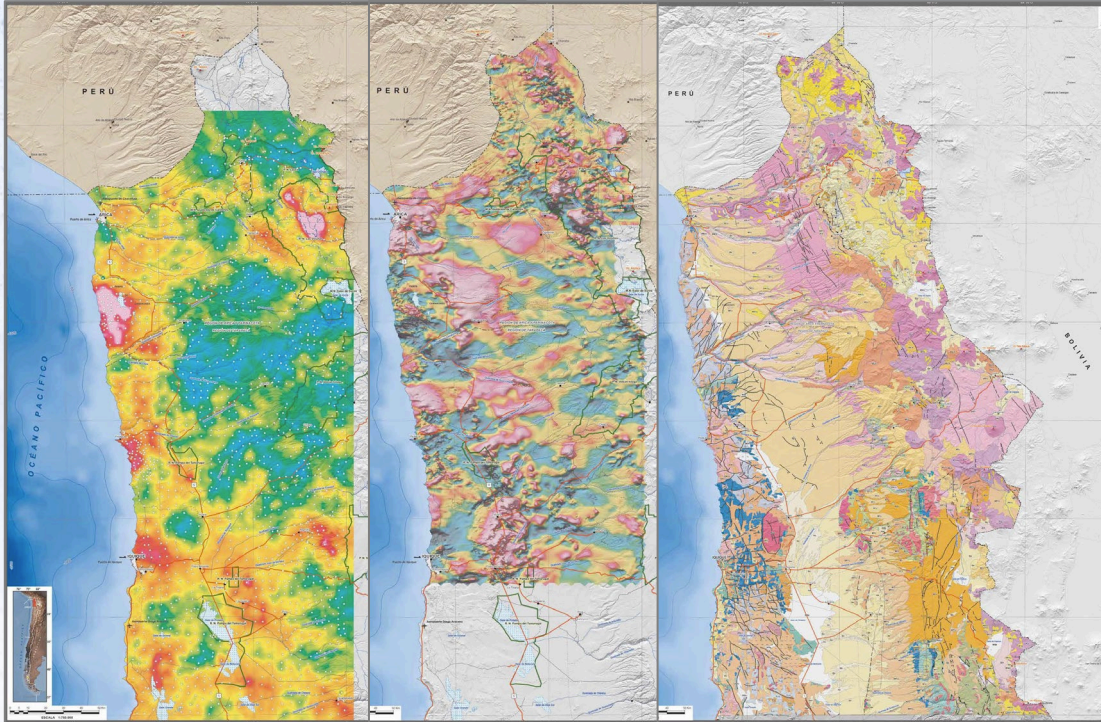
**PUBLIACIÓN DIGITAL**  
*(Portales WEB, biblioteca)*



**DIFUSIÓN**  
*(RRSS, WEB,  
presentaciones,  
Territorios)*



## 4) TECHNICAL PROGRAMS



**Basic Geology**

**Stream Sediment  
Geochemistry**

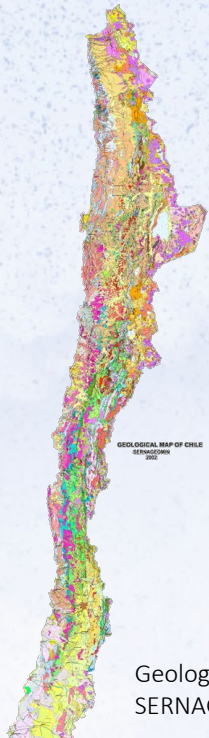
**Geophysics (Airborne\*  
and ground)**

Atlas Geológico y Minero, 17°30'S - 21°S,  
escala 1:750.000. Sernageomin, 2016

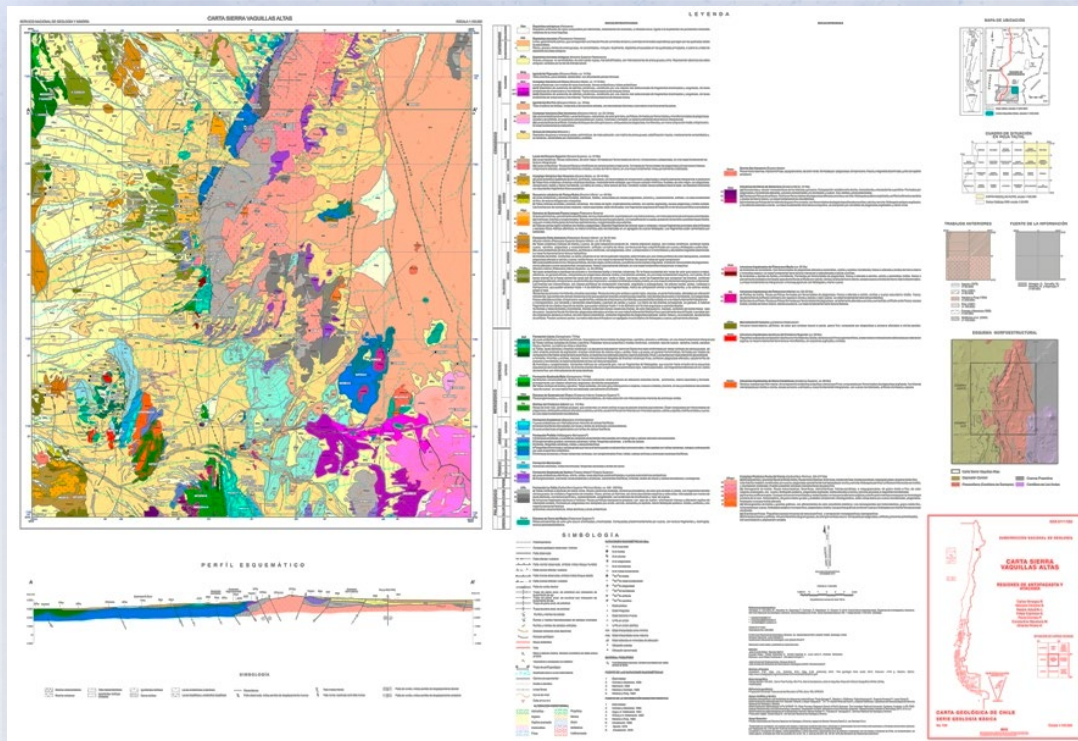
## 4) TECHNICAL PROGRAMS

### BASIC GEOLOGY

- ❑ Charts 1:100.000\*
- ❑ 50x50 km (~ 2.700 km<sup>2</sup>)
- ❑ Digital data collection
- ❑ *GeoDataBase* accessible
- ❑ Peer-reviewed



Geological map of Chile, 1:1MM.  
SERNAGEOMIN (2002)



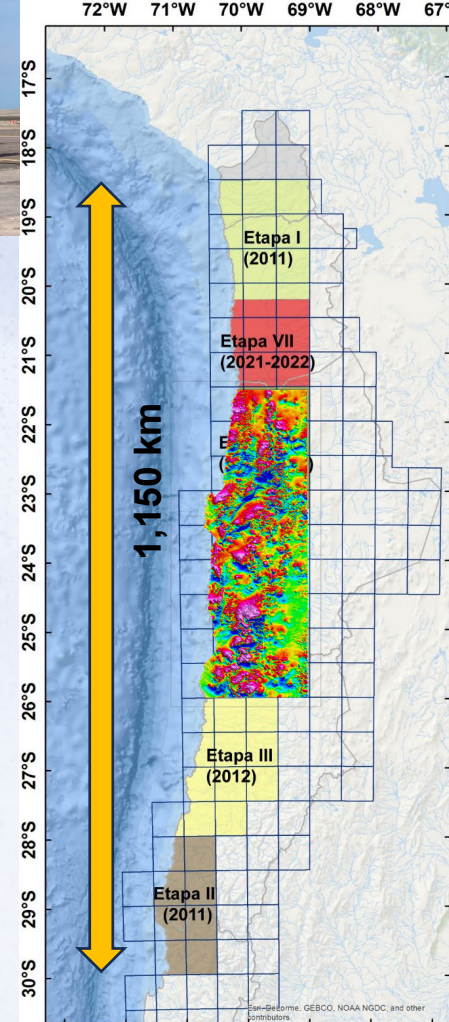


## 4) TECHNICAL PROGRAMS

### AIRBORNE GEOPHYSICS



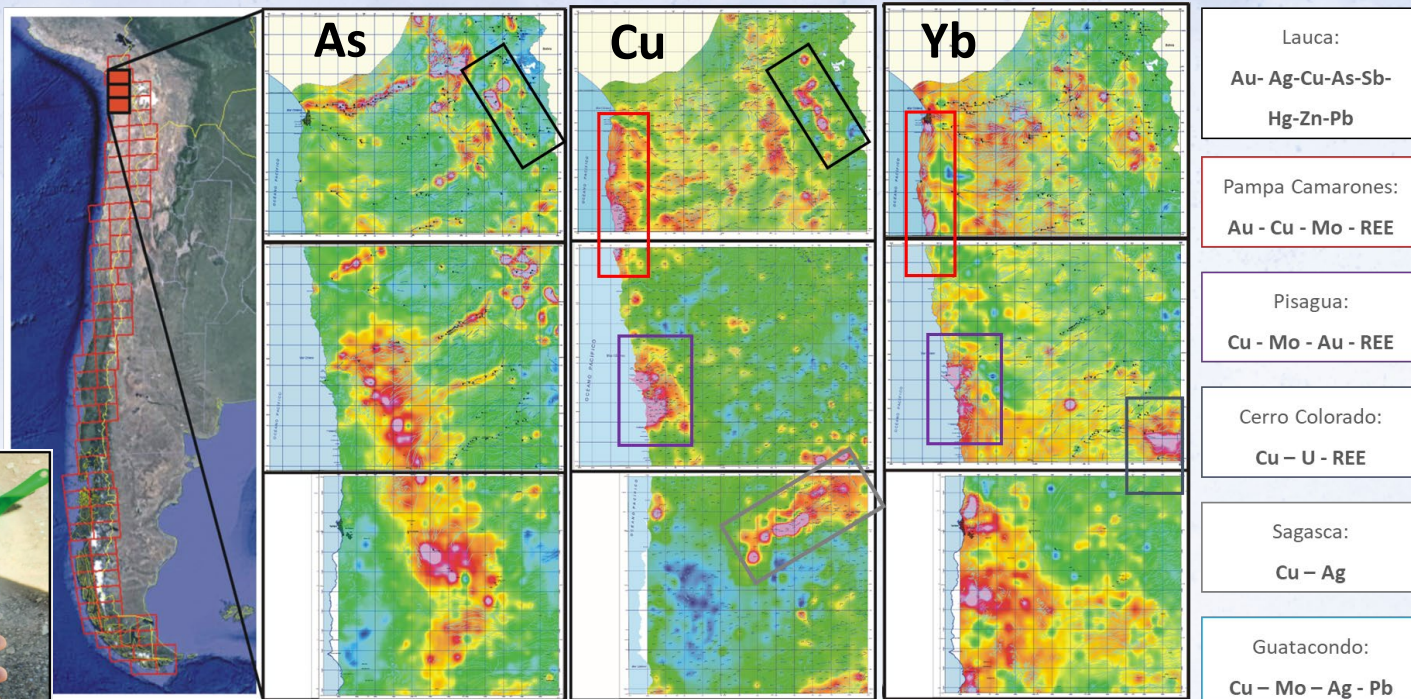
- Collection of magnetic and radiation data in the Northern Chile (18° - 30° S) completed in 2022.
- Seven stages (2011-2022):
  - ✓ 162,000 km<sup>2</sup> (21% Continental Chile)
  - ✓ 383,000 linear km
- 128 new publications (Magnetic and U, Th, K Radiometric charts)
- Full financing by PNG; international public tenders
  - ✓ 4,240,000 USD aprox.



## 4) TECHNICAL PROGRAMS

### STREAM SEDIMENT GEOCHEMISTRY

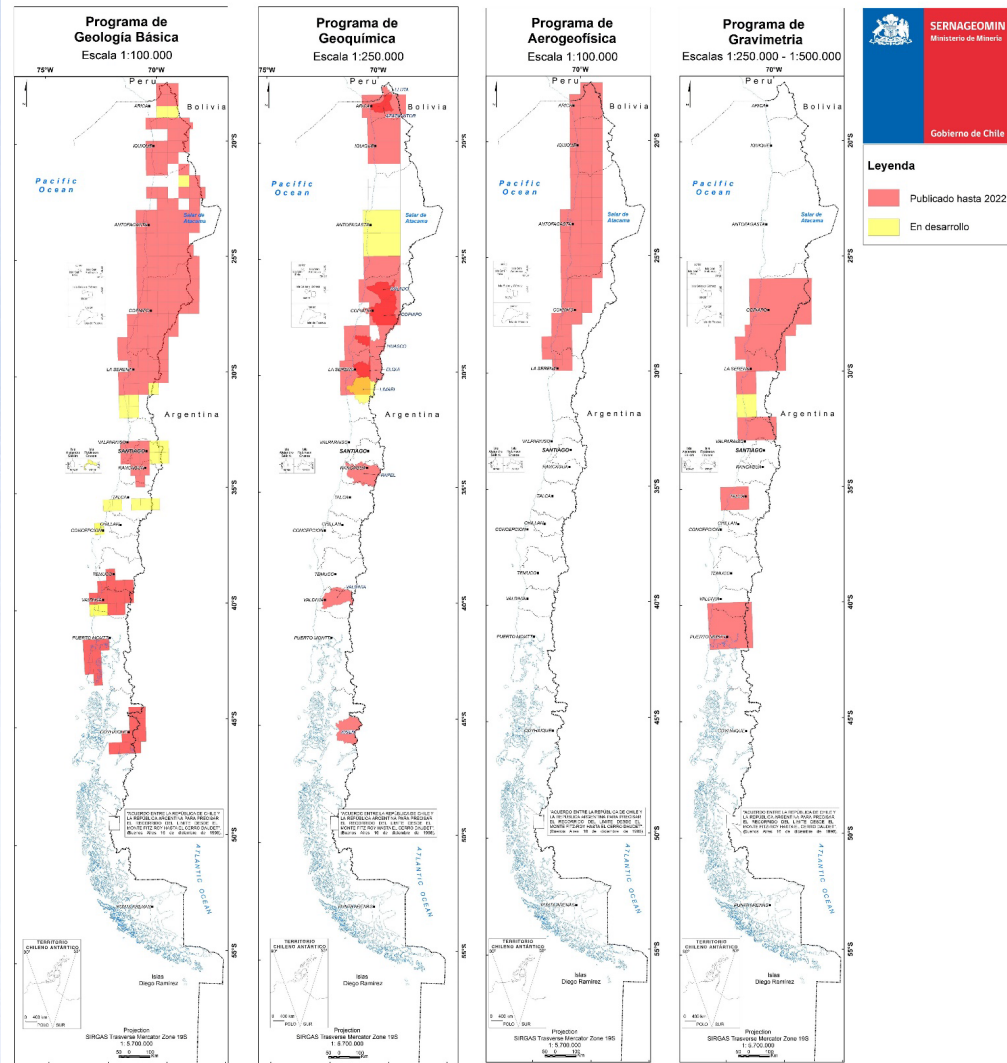
- Digital data collection (GdB, smartphones)
- Real time on-line storage and cloud update
- Interactive WEBMAPS
- Exploration and environmental applications



## 5) IMPACT AND ADVANCES

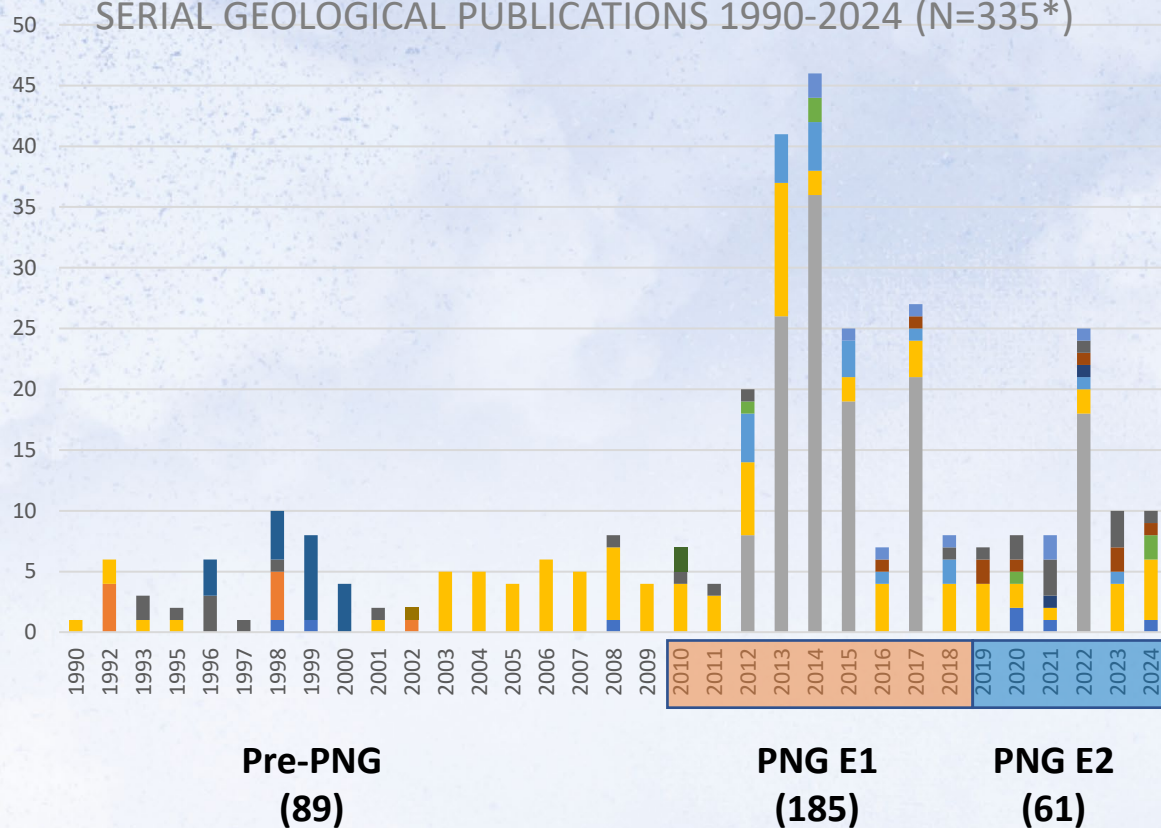
PNG results 2011\*- 2022 (chartography)

Program	Scale	Coverage Chile cont. [%]
<b>Basic Geology</b>	1 : 1 MM	100 %
	1 : 250 M	87 %
	1 : 100 M	41 %
	1 : 50 M	4 %
<b>Geochemistry</b> (mapa & BD)	1 : 250 M	16 %
<b>Airborne-geophysics</b> (mag., espect.)	1 : 100 M	21 %
<b>Gravimetry</b>	1 : 250 M	
	1 : 500 M	

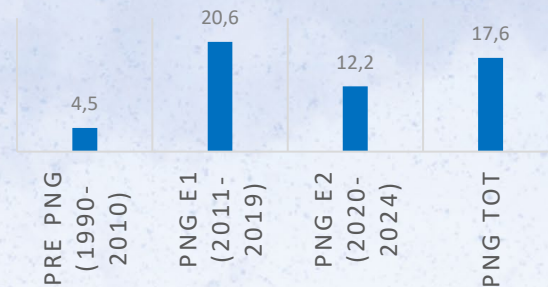


## 5) IMPACT AND ADVANCES

SERIAL GEOLOGICAL PUBLICATIONS 1990-2024 (N=335\*)



## ANNUAL PUBLICATION RATE



The implementation of the National Mapping Program in 2011 has meant, to date, **quadrupling the generation rate of Geological Publications** (in its three technical programs)

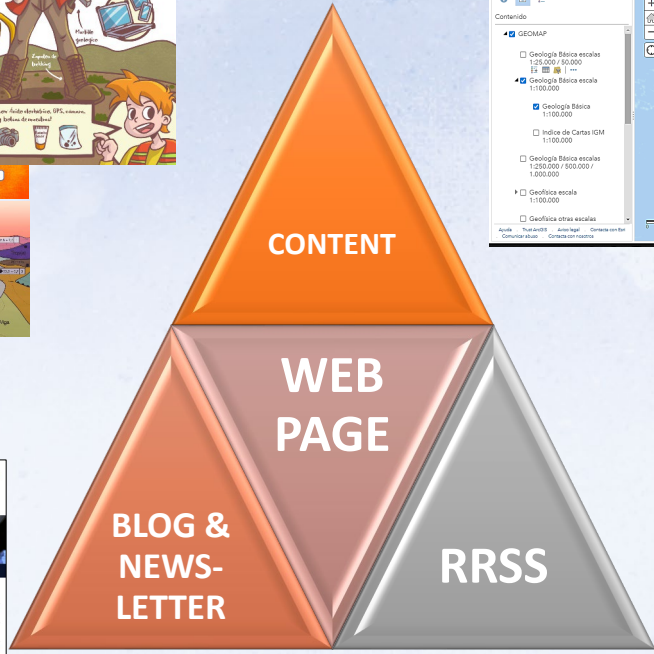
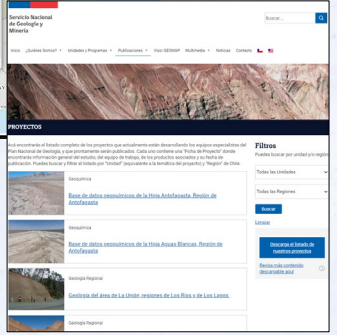
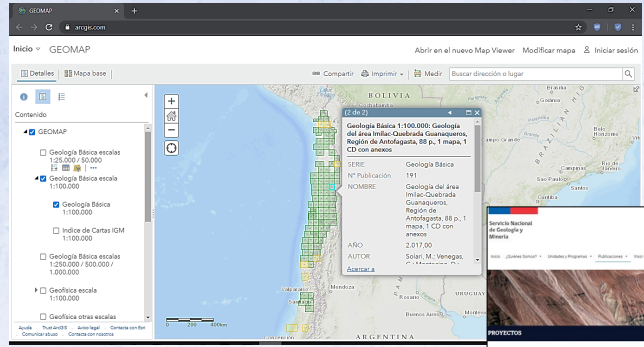
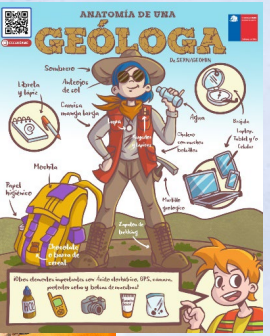
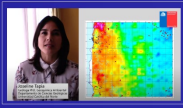
*\* does not consider other non-serial publications or scientific articles*

<https://PlanNacionalGeologia.sernageomin.cl>



**Cápsulas**

Entrevistas a usuarios profesionales de los productos del Plan Nacional de Geología



**Newsletter #10**

Hola, retomamos el envío de noticias luego del intenso periodo de verano durante el que completamos numerosas campañas de terreno a muy interesantes datos con los que estamos trabajando en varios nuevos y muy interesantes proyectos!

Hoy les enviamos el décimo boletín informativo con noticias relativas al Plan Nacional de Geología (PNG) de Sernageomin. Gracias por suscribirse a nuestro newsletter, mantente atento@ a los próximos envíos y sigamos también en nuestras RRSS!



**FIN**  
**GRACIAS!**

[www.sernageomin.cl](http://www.sernageomin.cl)

<https://plannacionalgeologia.sernageomin.cl>

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