

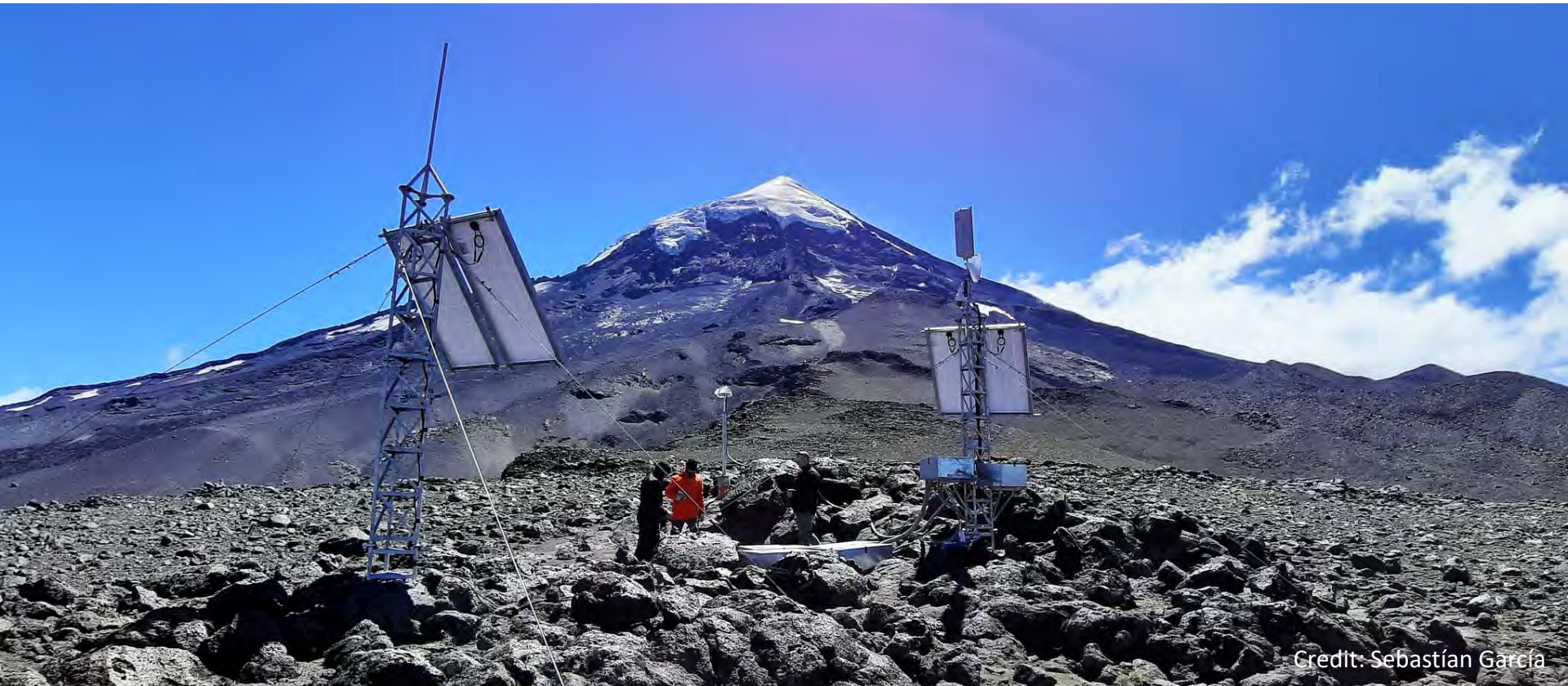


Chilean Scientific Community Workshop

May 9-11, 2022 | Termas El Corazón, Chile

Overview of volcanology in Argentina

Pablo Forte



Credit: Sebastián García





Volcanic hazards in Argentina

Chilean Scientific Community Workshop

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1932 Quizapu eruption



2011 Cordón Caulle eruption



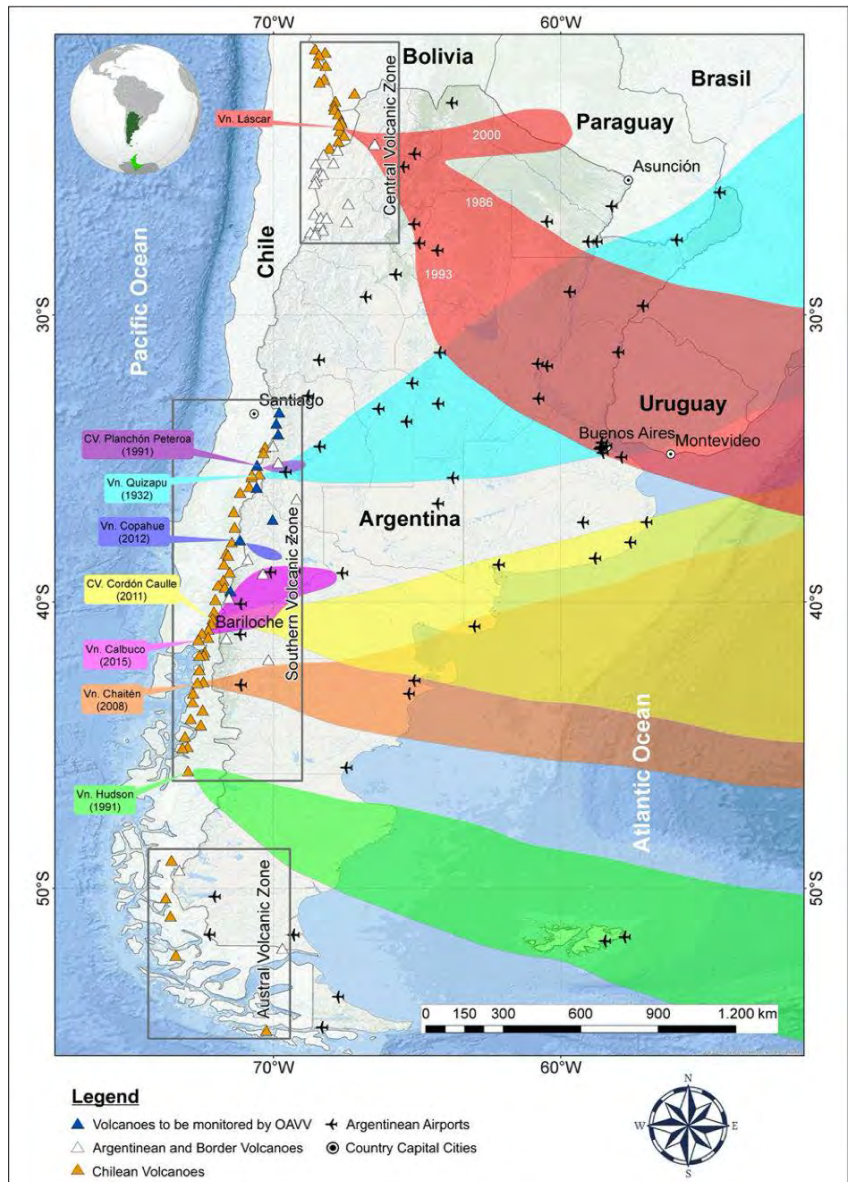
1991 Hudson eruption



2011 Cordón Caulle eruption



- 120 active volcanoes
distributed in 3 VZ
 - 21 entirely in Argentina
 - +
 - 18 shared with Chile
- Last volcanic events
 - Copahue >> 2012-2021 (?), 2000, 1992
 - Peteroa >> 2018-2019, 2010-2011, 1991

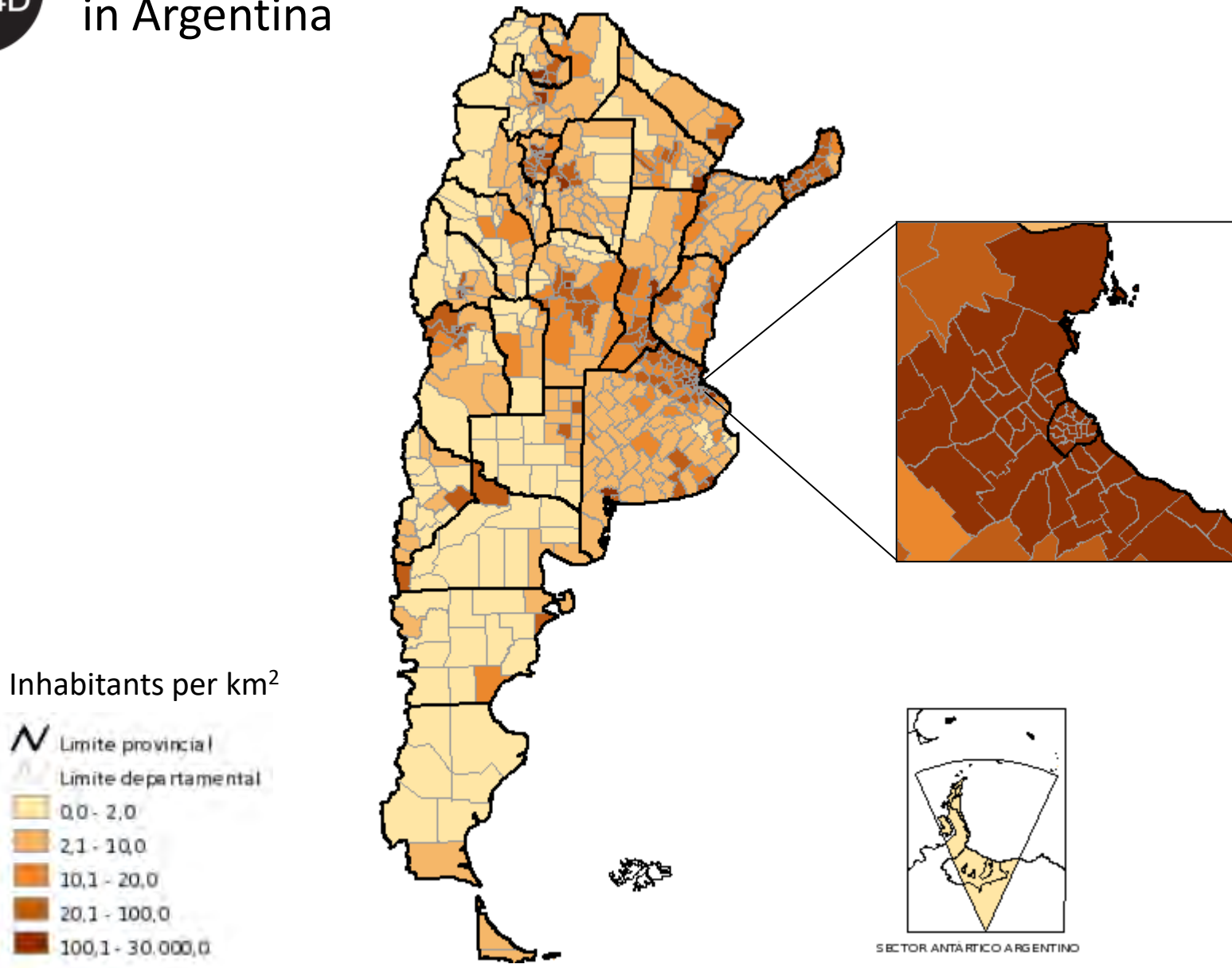




Population distribution in Argentina

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Inhabitants per km²



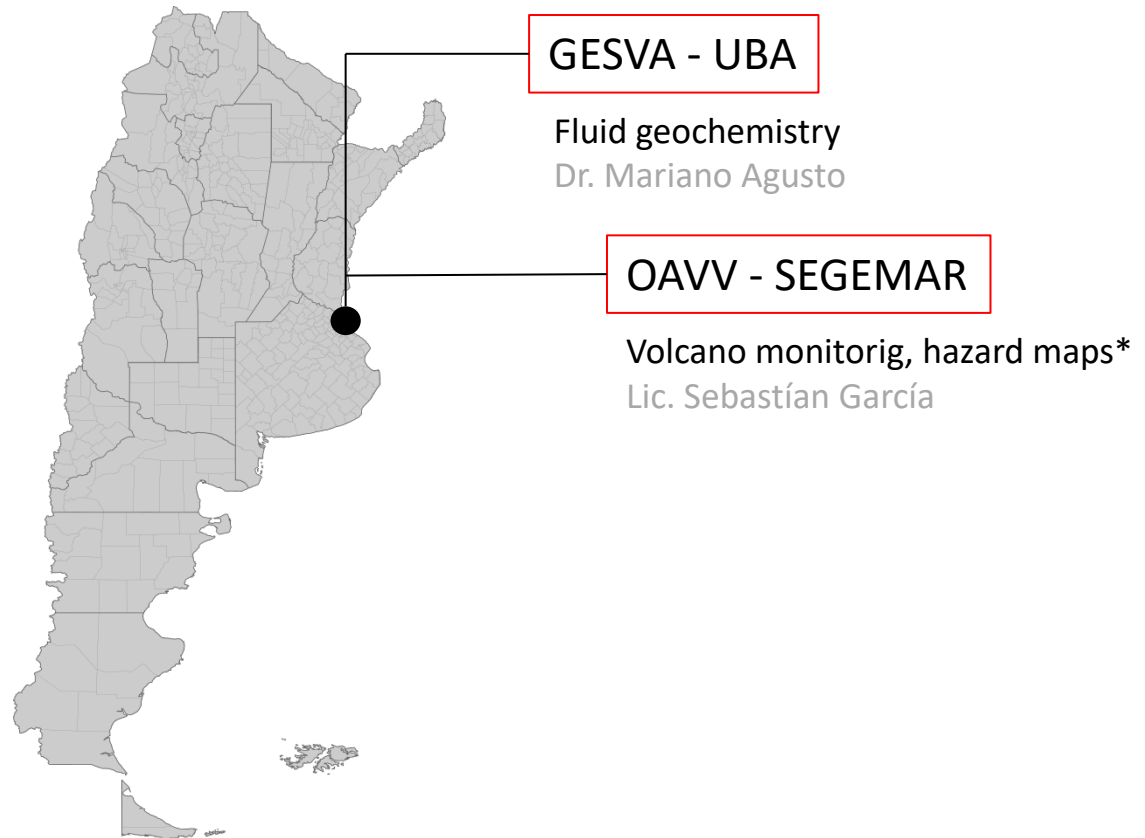
INDEC (2010)



Research groups

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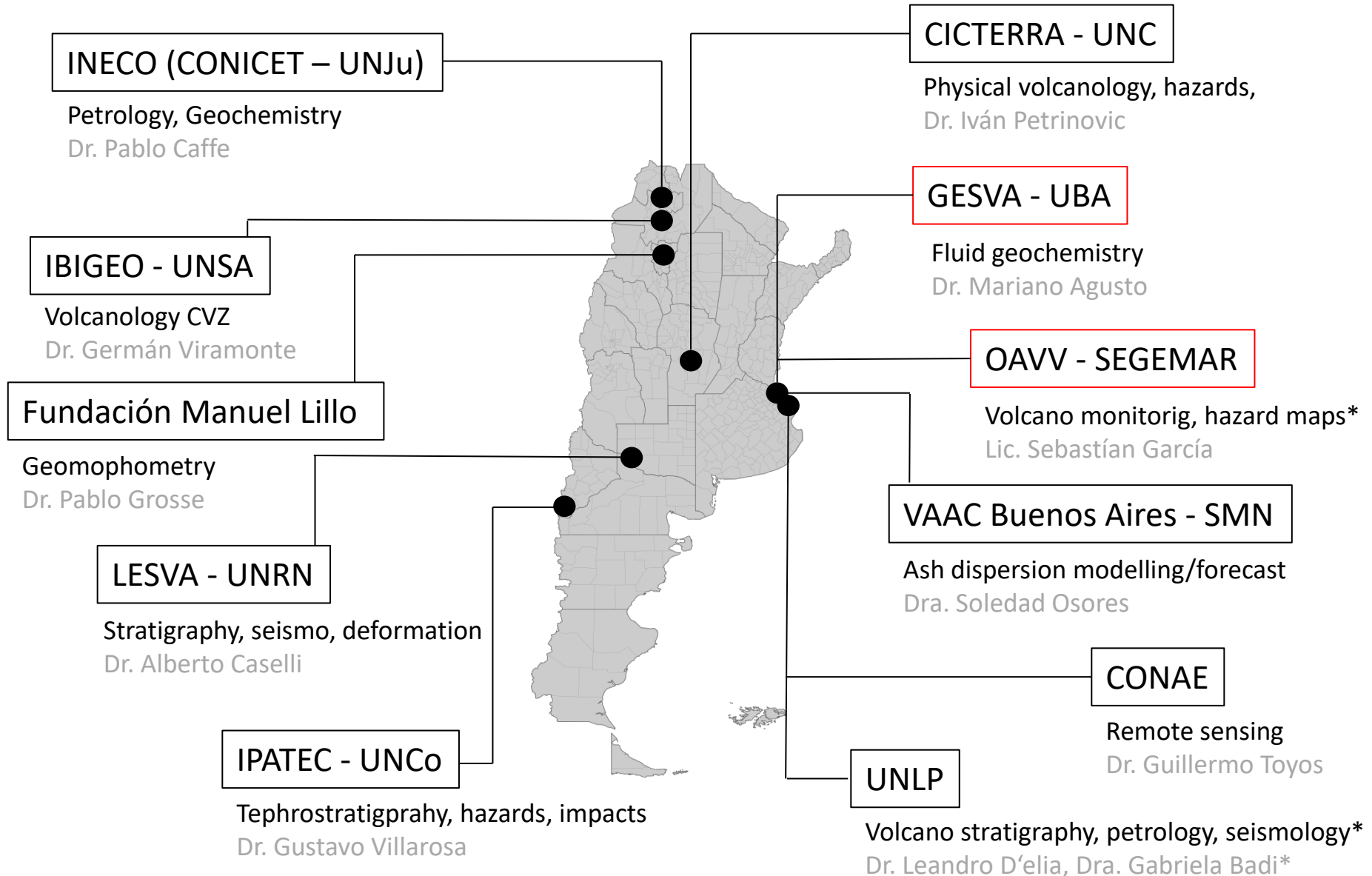




Research groups

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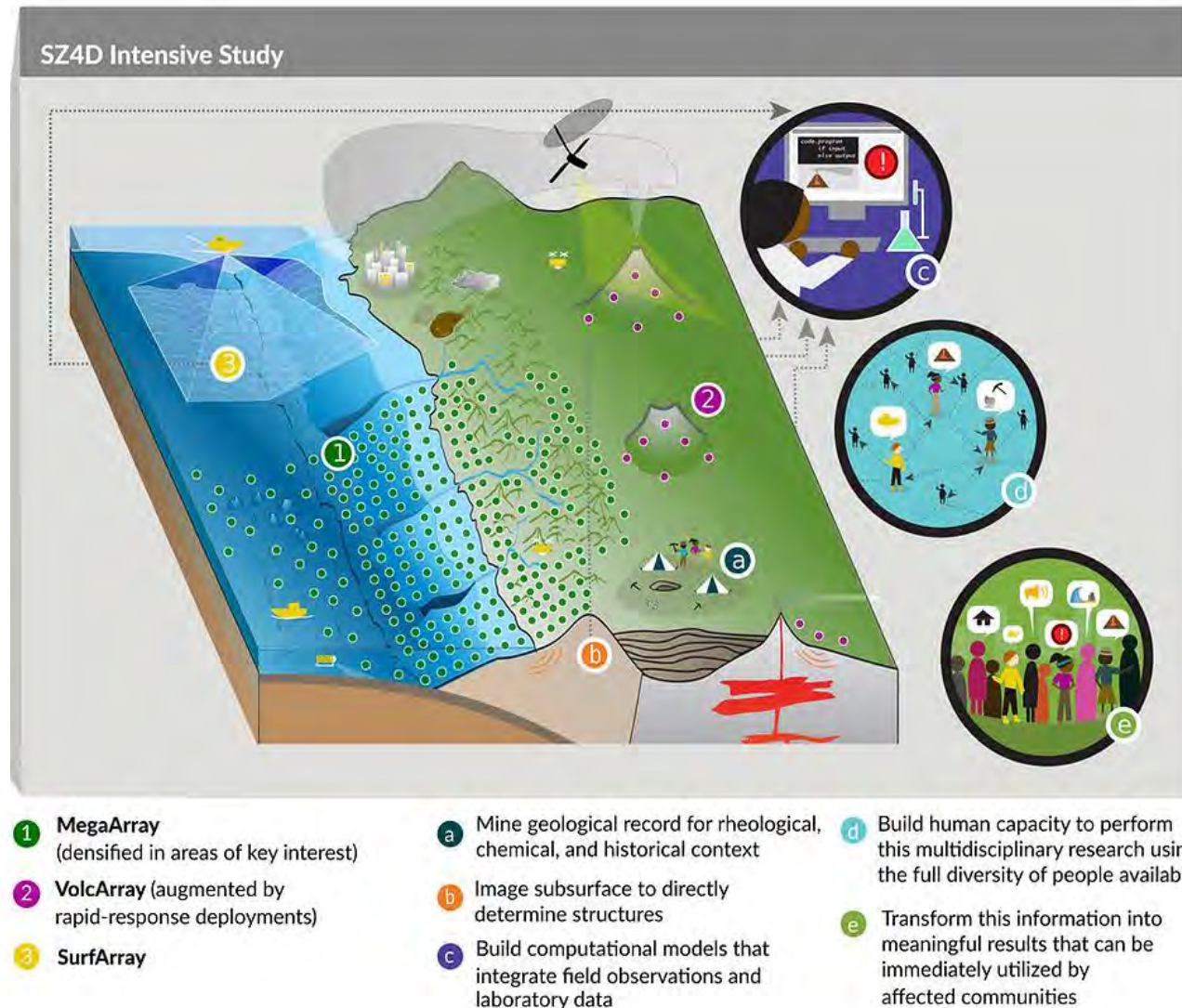




Magmatic Drivers of Eruptions

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Volcano monitoring

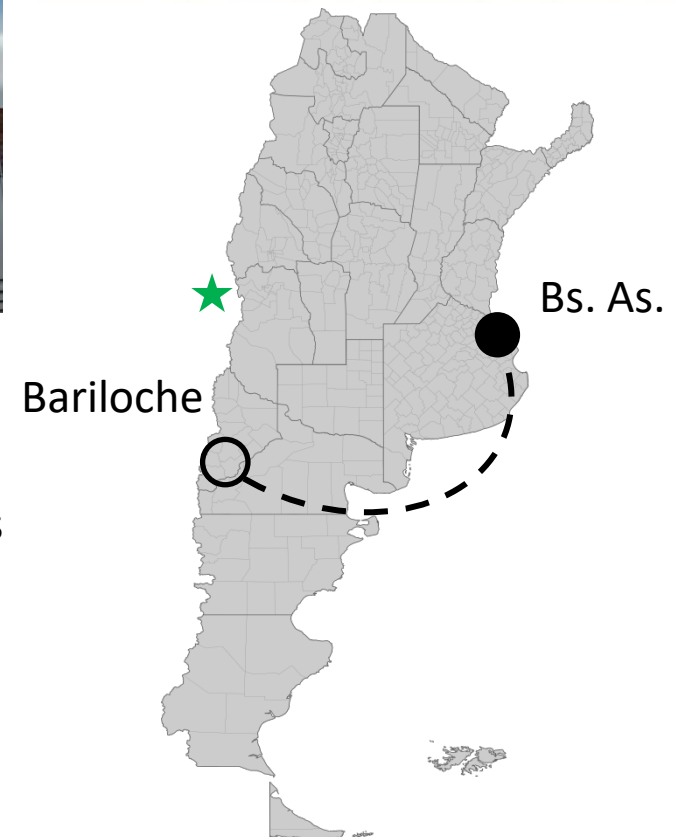
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- Created in 2013 / Operative since 2017
- Working group
 - 3 seismologists
 - 1 geochemist
 - 1 geodesist
 - 3 technicians
 - 3 geologists

Sitio Web: OAVV.SEGEMAR.GOV.AR





Volcano monitoring

RR= Hazard x Exposure

N°	NOMBRE	UBICACIÓN	RR	P	E
1	Copahue	Arg-Chile	171	13	13.15
2	Planchón-Peteroa	Arg-Chile	155	15	10.33
3	Laguna del Maule	Arg-Chile	134	14	9.55
4	Lanin	Arg-Chile	131	11	11.67
5	Tupungatito	Chile	119	12	9.93
6	Maipo	Arg-Chile	116	10	11.60
7	CV Cerro Blanco	Argentina	101	10	8.42
8	San José	Arg-Chile	86	12	8.55
9	Lastarria	Arg-Chile	66	10	6.58
10	Viedma	Argentina	64	6	10.71
11	Tuzgle	Argentina	63	5	12.59
12	Tromen	Argentina	62	5	12.41
13	Socompa	Arg-Chile	56	7	8.05
14	Ojos del Salado	Arg-Chile	52	9	5.74
15	Overo	Argentina	48	5	9.63
16	Domuyo	Argentina	44	5	8.86
17	Llullaillaco	Arg-Chile	36	6	5.97
18	Aracar	Argentina	28	4	7.09
19	CV Palei-Aike	Arg-Chile	15	3	5.05
20	G Huanquihue	Argentina	14	2	6.89
21	Tipas	Argentina	14	2	6.88
22	Cordón del Azufre	Arg-Chile	11	2	5.74
23	Cerro Bayo	Arg-Chile	11	2	5.73
24	Infiernillo	Argentina	11	2	5.70
25	Payún Matru	Argentina	9	2	4.26
26	Cerro Volcánico	Argentina	9	1	8.51
27	Laguna Blanca	Argentina	8	1	8.31
28	Nevado de Incahuasi	Arg-Chile	8	1	8.22
29	Cerro Escorial	Arg-Chile	8	1	7.55
30	Peinado	Argentina	6	1	6.45
31	Cerro El Cóndor	Argentina	6	1	5.89
32	Sierra Nevada	Arg-Chile	6	1	5.74
33	Falso Azufre	Arg-Chile	6	1	5.72
34	El Solo	Arg-Chile	6	1	5.68
35	Campo Volcánico Antofagasta	Argentina	5	1	4.91
36	Cerro Negro (C V Basalto Cráter)	Argentina	4	1	4.37
37	Tralihue	Argentina	4	1	3.85
38	Salar de Arizaro	Argentina	2	1	2.30
39	Sin Nombre	Argentina	2	1	1.60

Elissondo & Farías (2020, Internal report)

Based on methodology developed by Ewert et al., (2005-2007)



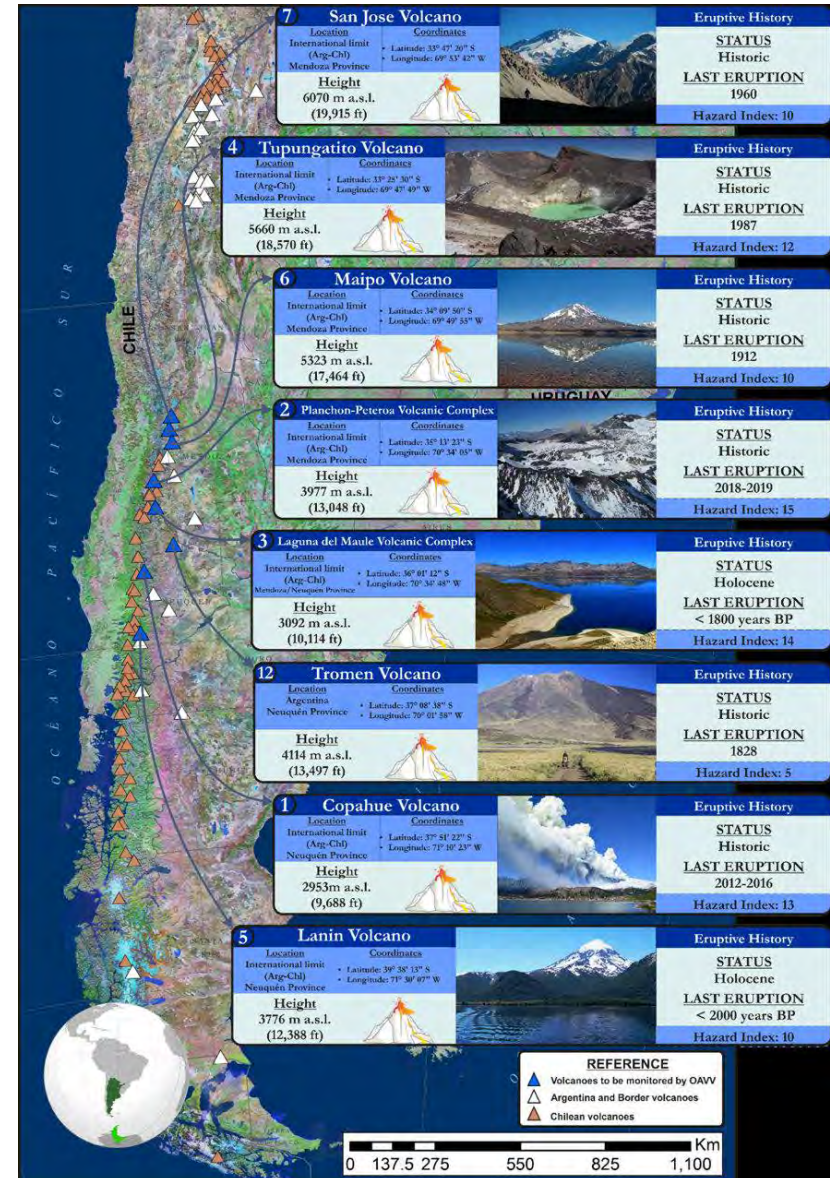
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Elissondo & Farías (2020, Internal report)

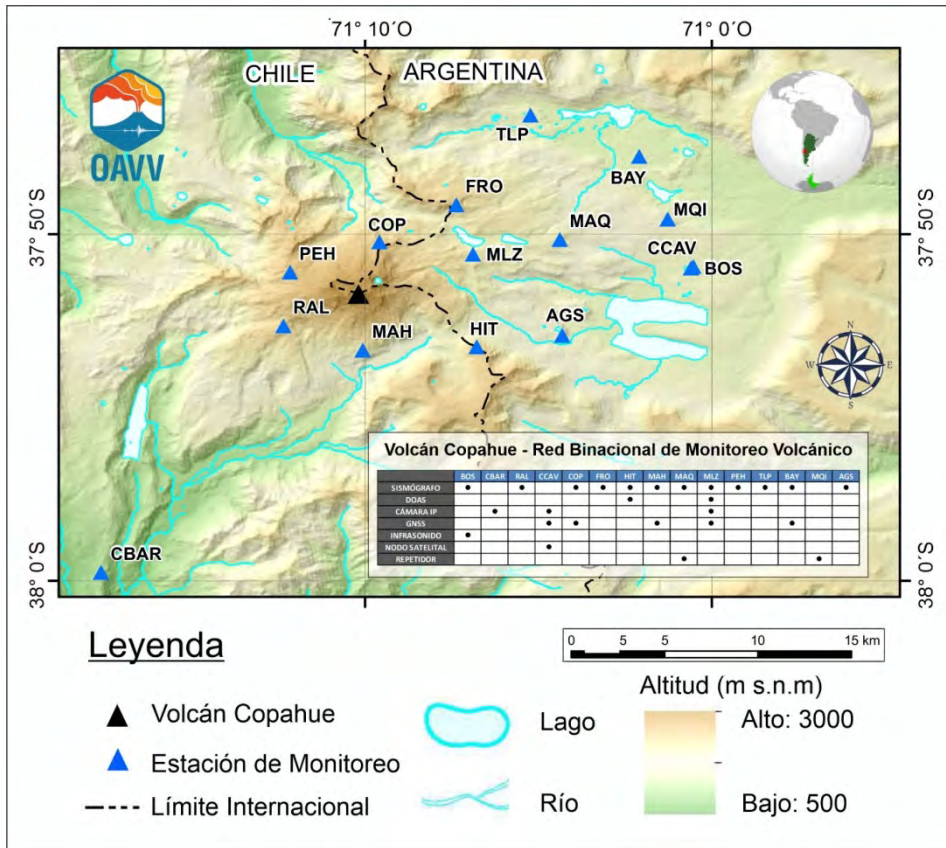
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Volcano monitoring

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2019





Volcano monitoring

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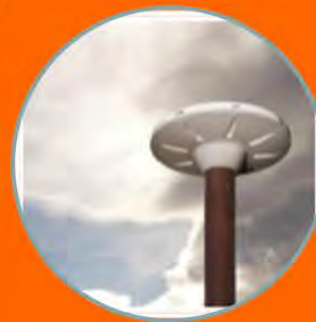
MONITOREO VISUAL

- 12 cámaras IP.
- Sobrevuelos.
- 3 Cámaras Térmicas



MONITOREO SISMOLÓGICO

- 10 Broadband 120".
- 43 Broadband 30".
- 7 Acelerógrafos.
- 7 Infrasonido.



MONITOREO GEODÉSICO

- 32 GNSS Cors.
- 17 Inclínómetros.
- In-Sar.



MONITOREO GEOQUÍMICO

- Muestras de Gases y Agua.
- 13 DOAS.
- 1 Multi-Gas.
- 1 cámara UV.

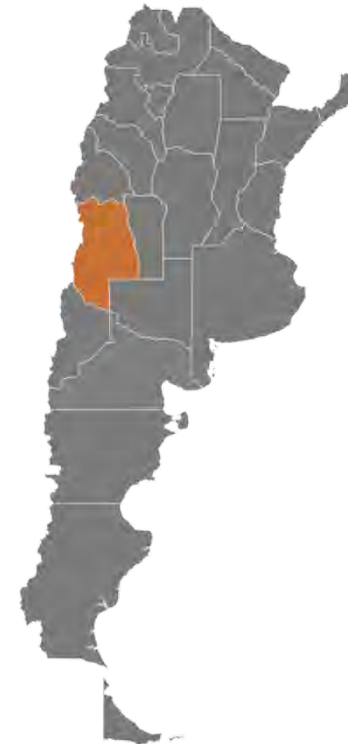
USD 4,000,000 de inversión en equipamiento en 3 años



Volcanic risk assessment and reduction in Mendoza province

Chilean Scientific Community Workshop

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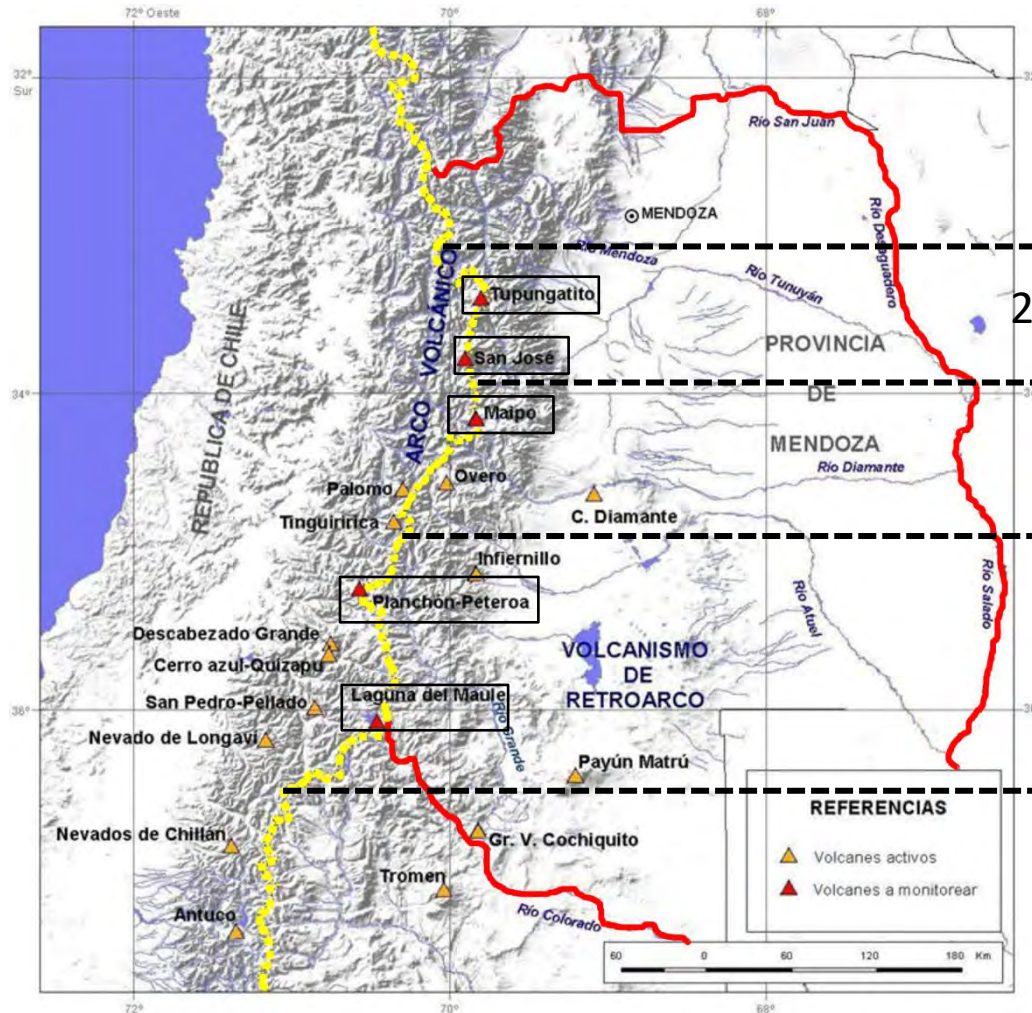




Volcanic risk assessment and reduction in Mendoza province

Chilean Scientific Community Workshop
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Duration: 4 years



Instrumentation

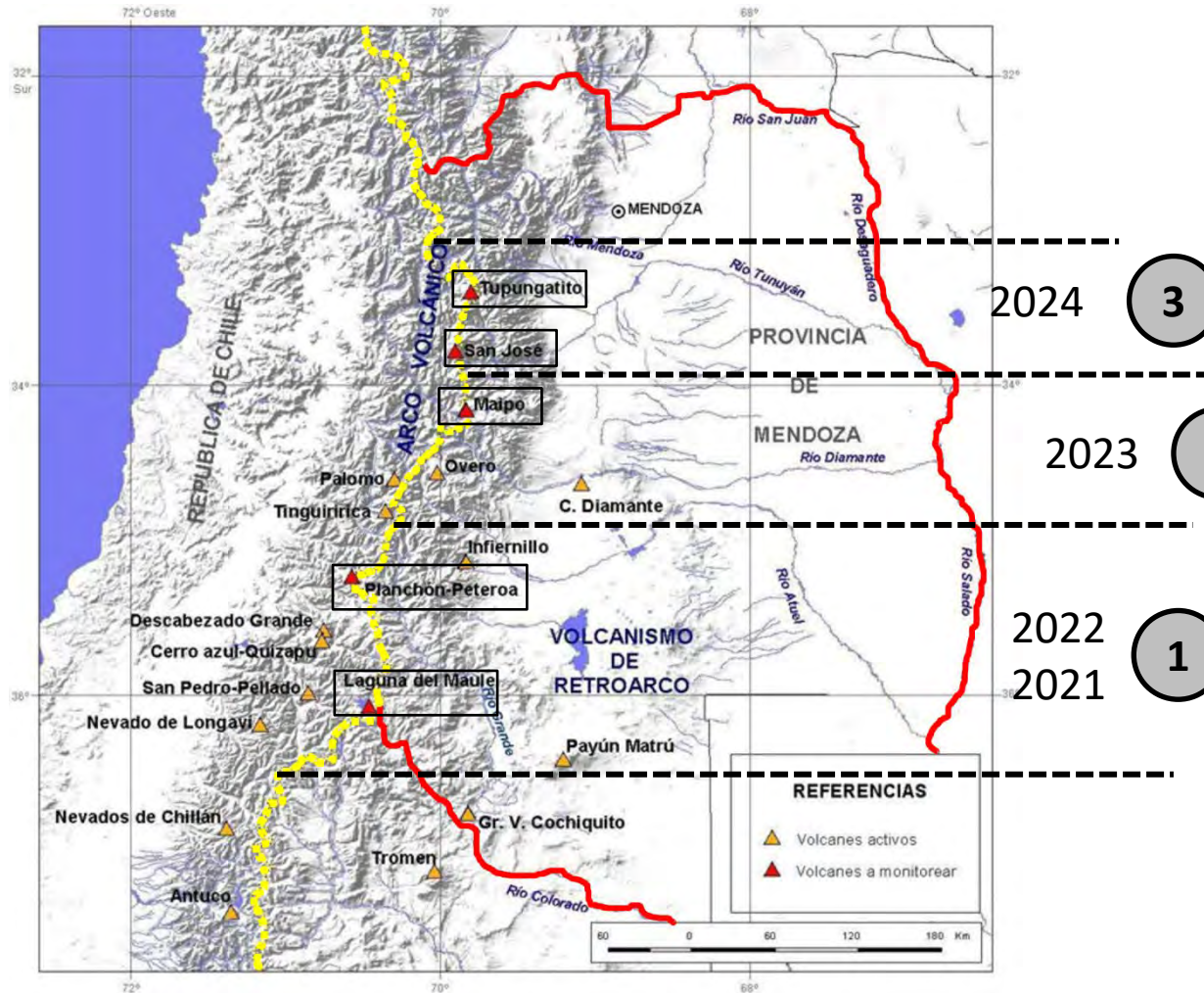
- | | | |
|--------------|---|-------------------------|
| 2024 | 3 | Tupungatito
San José |
| 2023 | 2 | Maipo |
| 2022
2021 | 1 | LdM
Planchón-Peteroa |



Volcanic risk assessment and reduction in Mendoza province

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Geological records
Tephrostratigraphy
Hazards

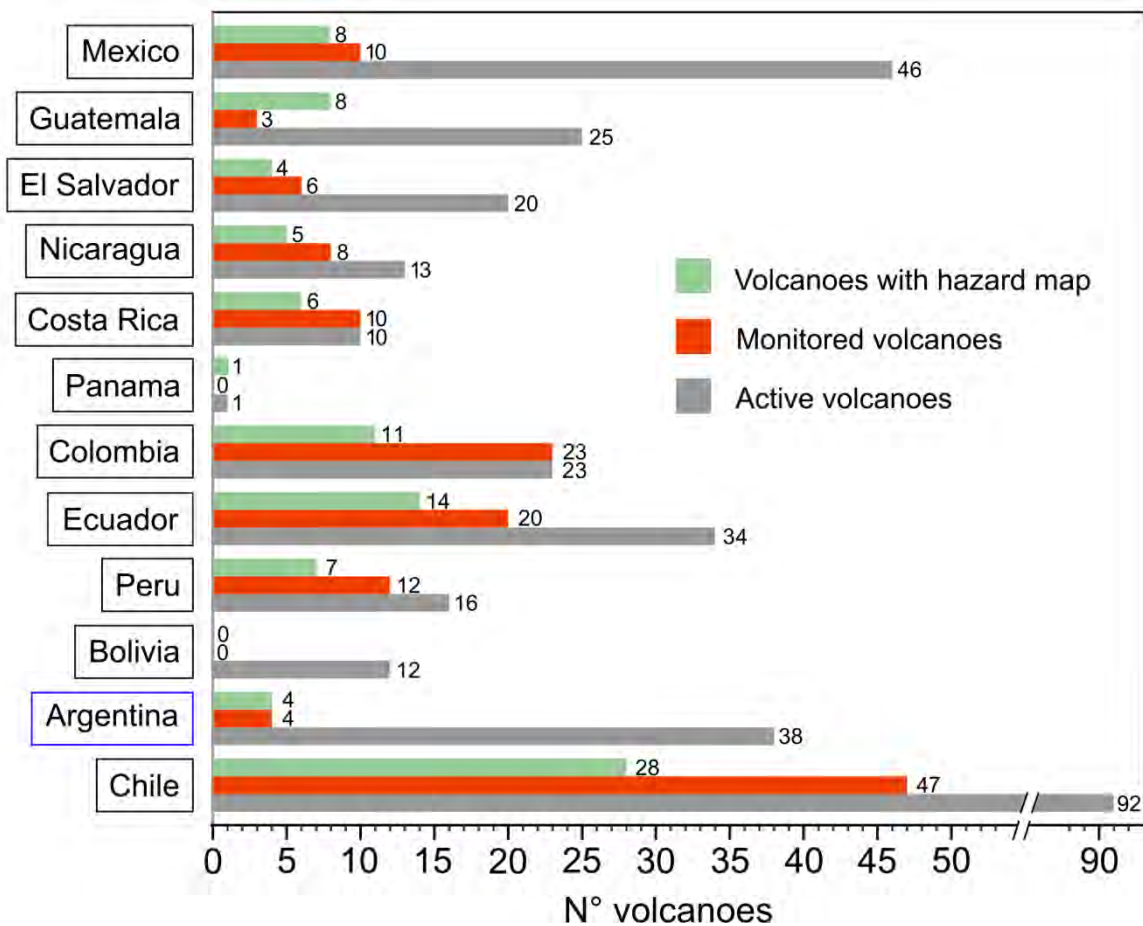




Volcanic hazard maps

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Modified from Forte et al. (2021)

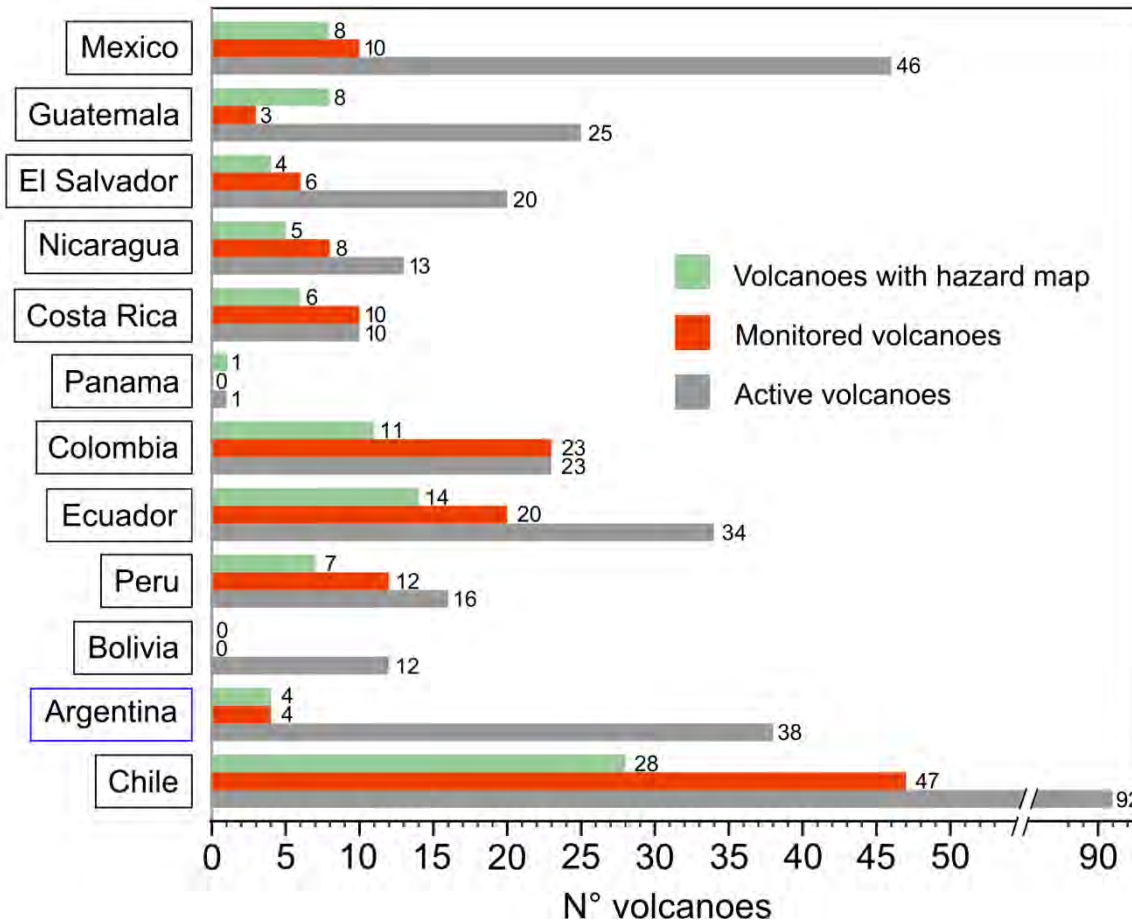


Volcanic hazard maps

Chilean Scientific Community Workshop

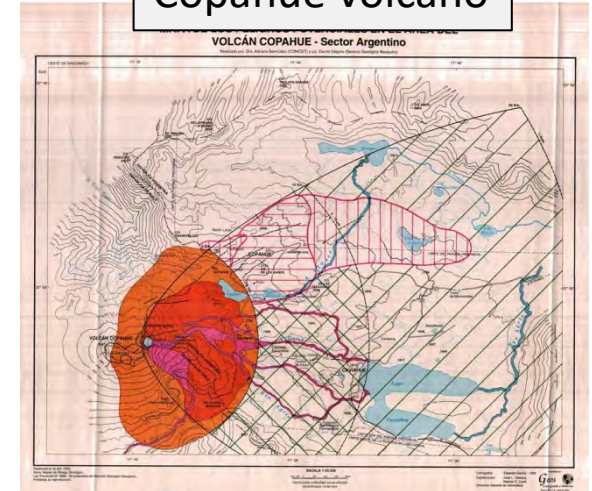
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Updating...



Modified from Forte et al. (2021)

Copahue volcano



Bermudez & Delpino (1995)

Peteroa volcano



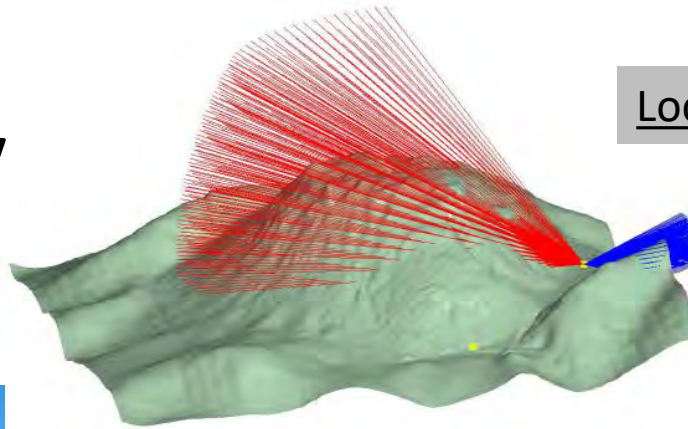


Subsurface imaging

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- **Moun tomography**



Location: Copahue volcano

Duration: 2 years



Moun detector



Institutions: France (IPGP, IP2I, CNRS) - Argentina (UNLP, OAVV)



Future challenges

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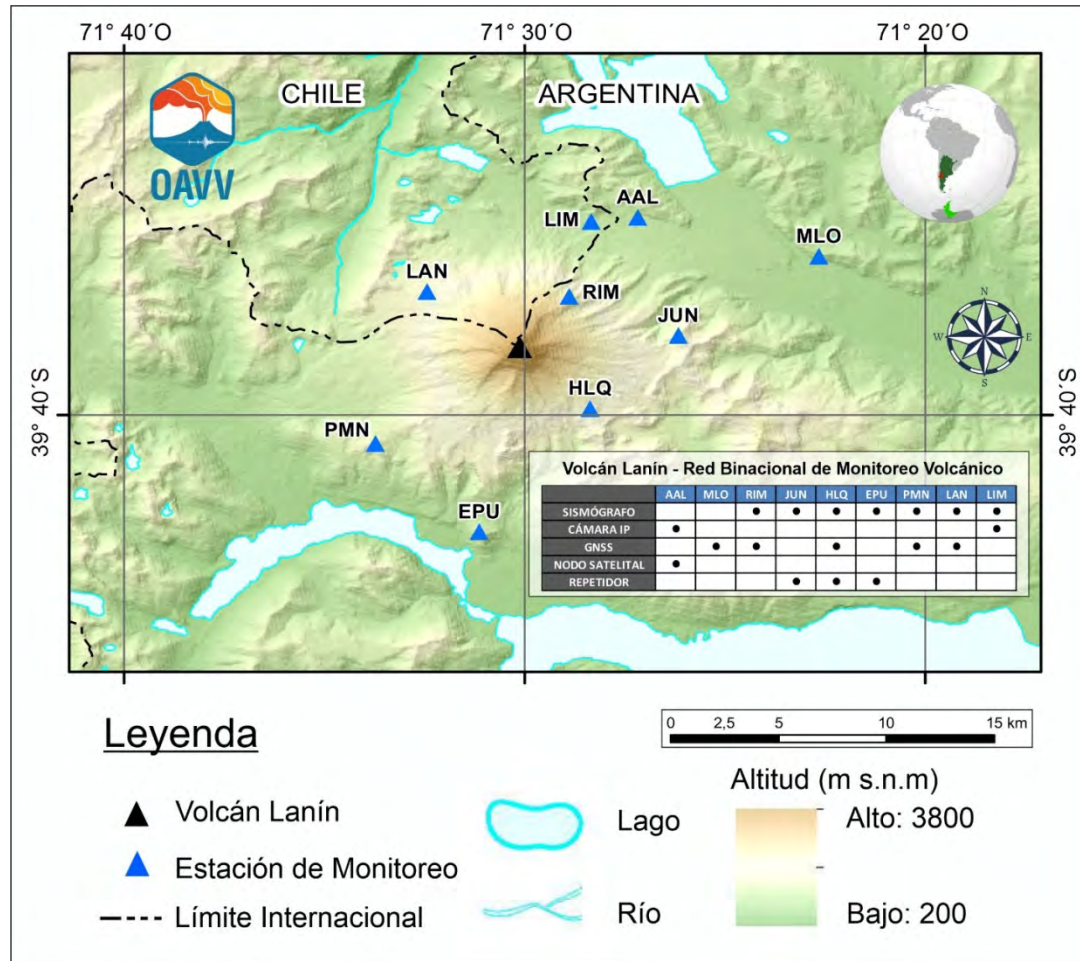
- Increase number of monitored volcanoes
- Improve knowledge of our volcanic systems
- Hazard maps
- Analytical and experimental facilities
- Human resources
- Binational cooperation
- Strengthen cooperation with civil protection agencies



¡Muchas gracias!

Contact: fortepablo.gl@gmail.com

Volcán Lanín



CV. Laguna del Maule



Vn. Planchón - Peteroa

