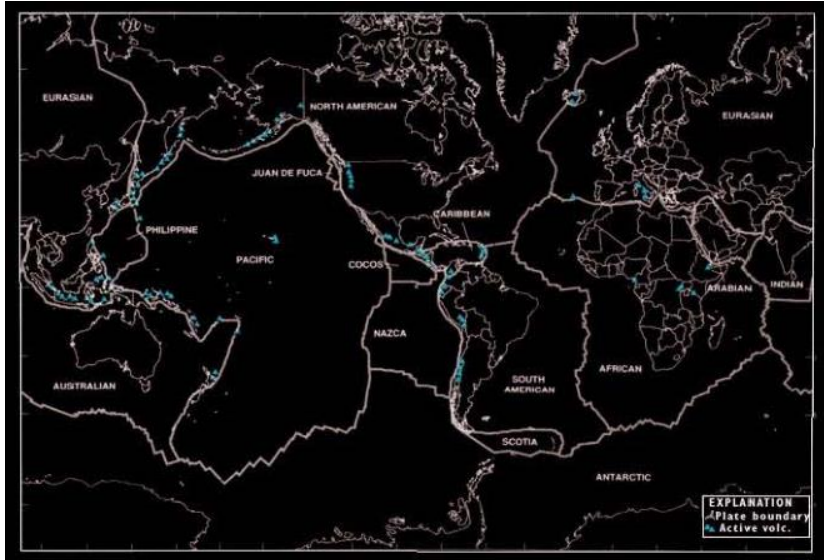
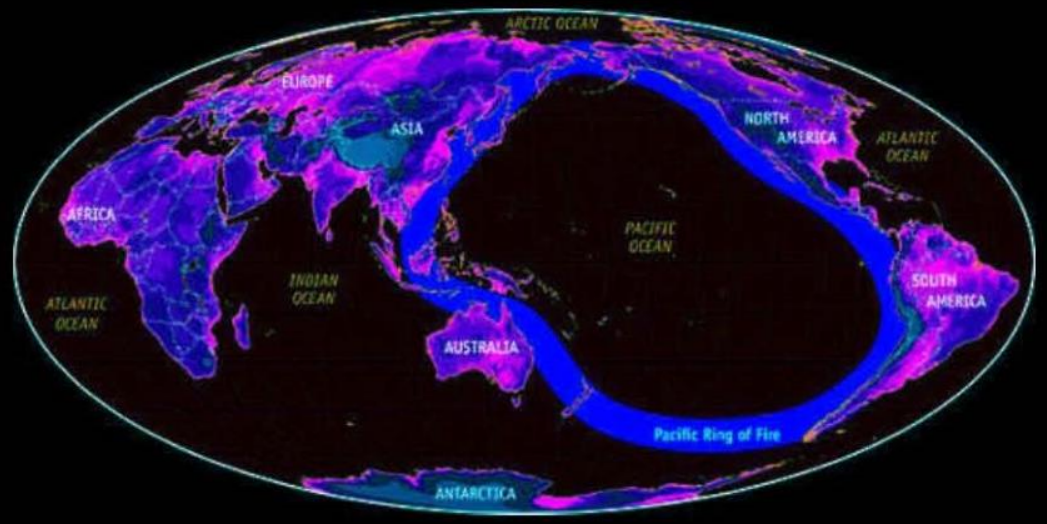
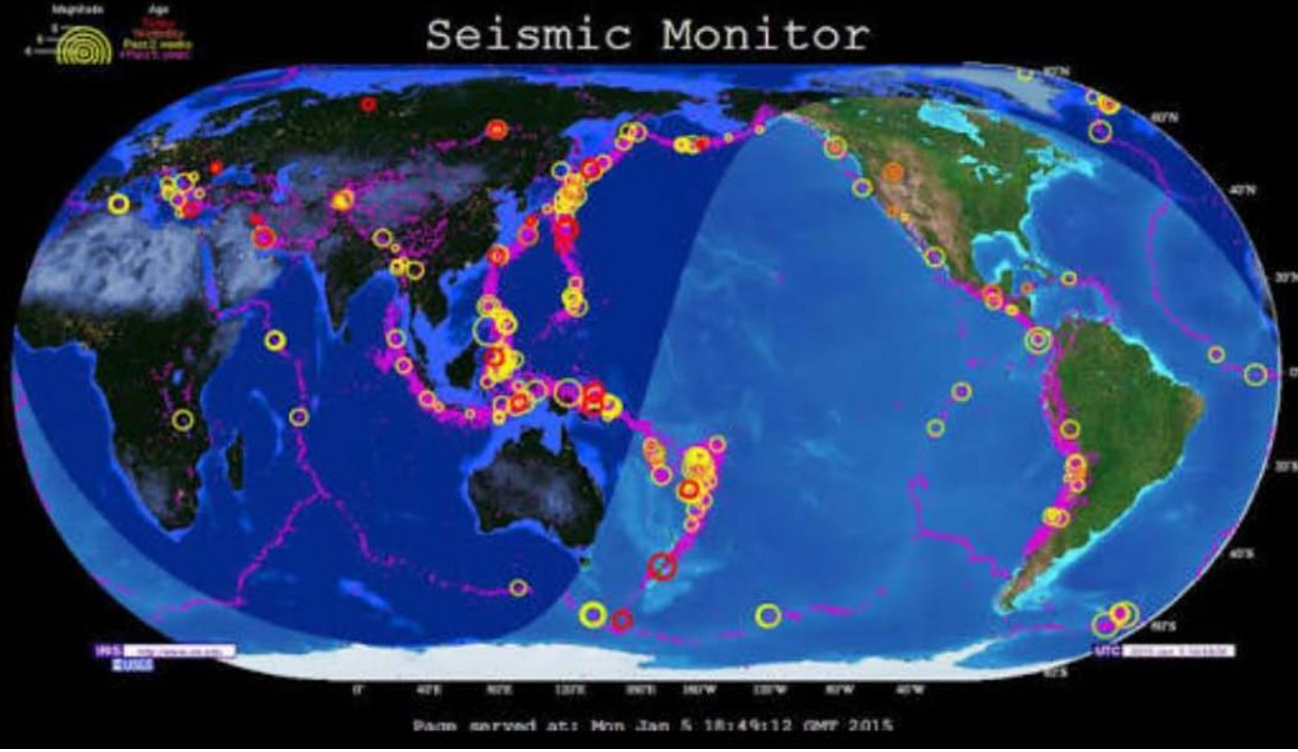

Igneous Tectonics
Sergio Araya, PhD
Design Lab UAI

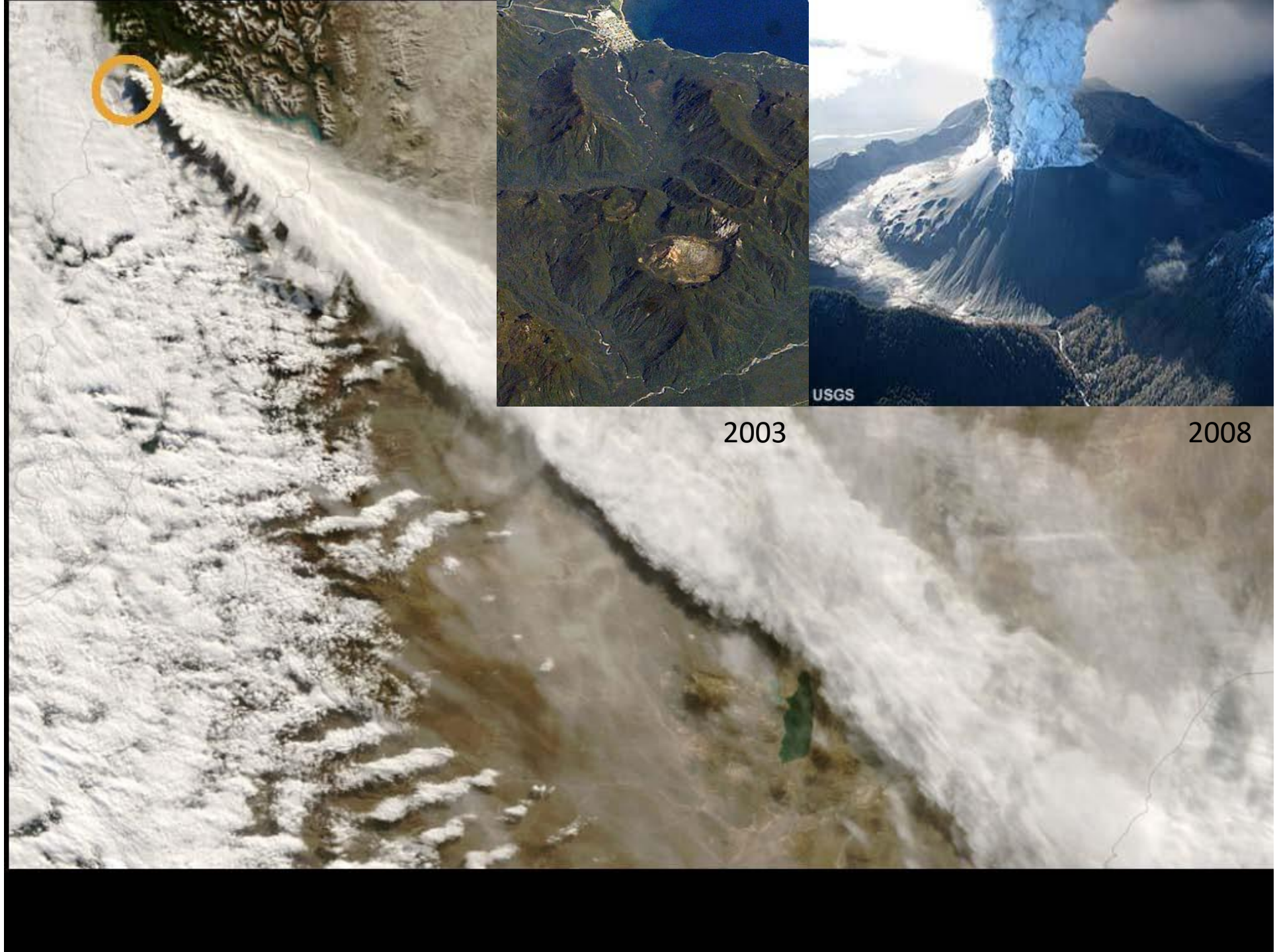


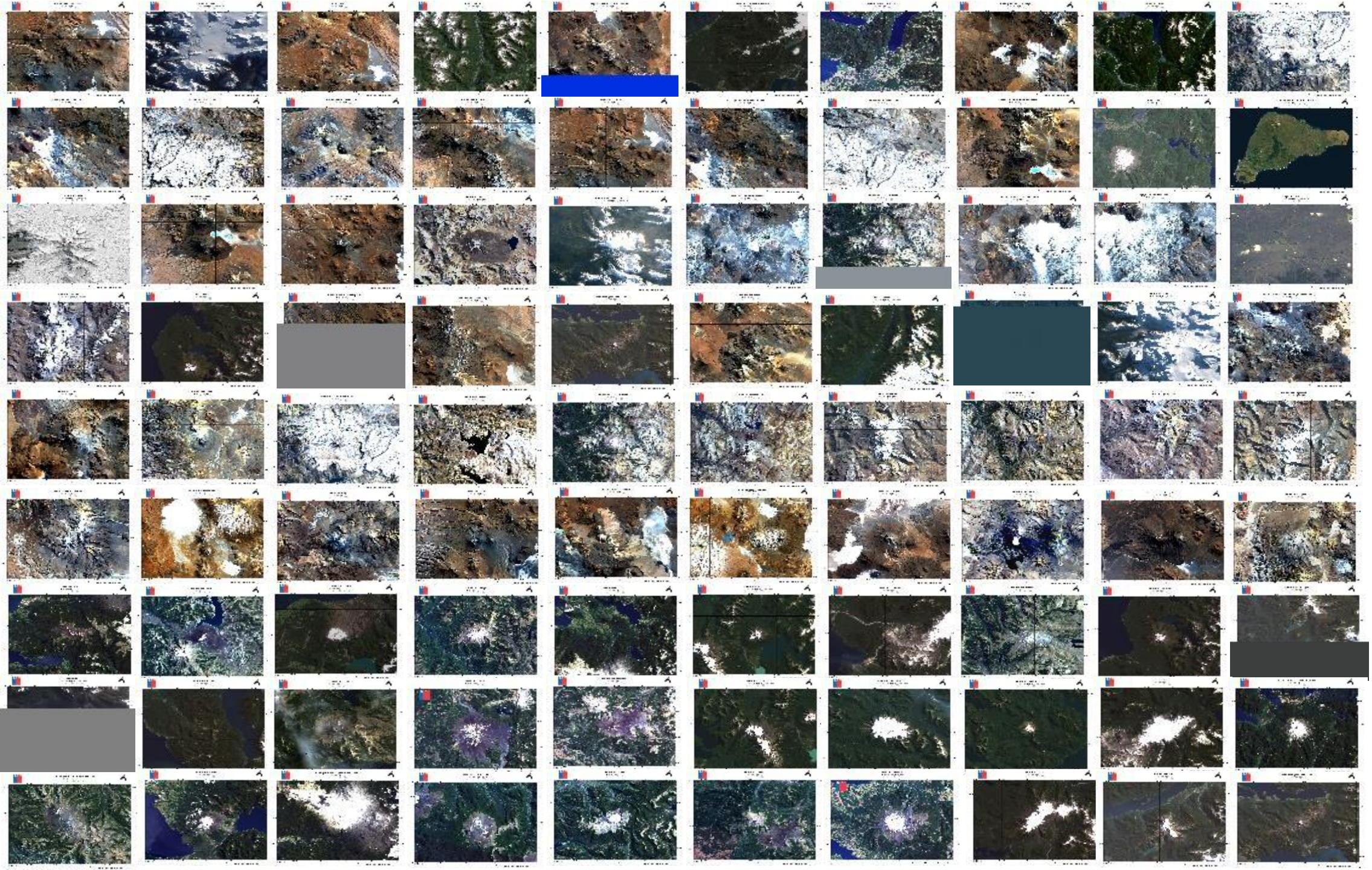


Pacific Ring of Fire

90 % of Tectonic Activity (Earthquakes)
75 % of Volcanic Activity




2003
2008
USGS



Chile

160
Registered Volcanoes

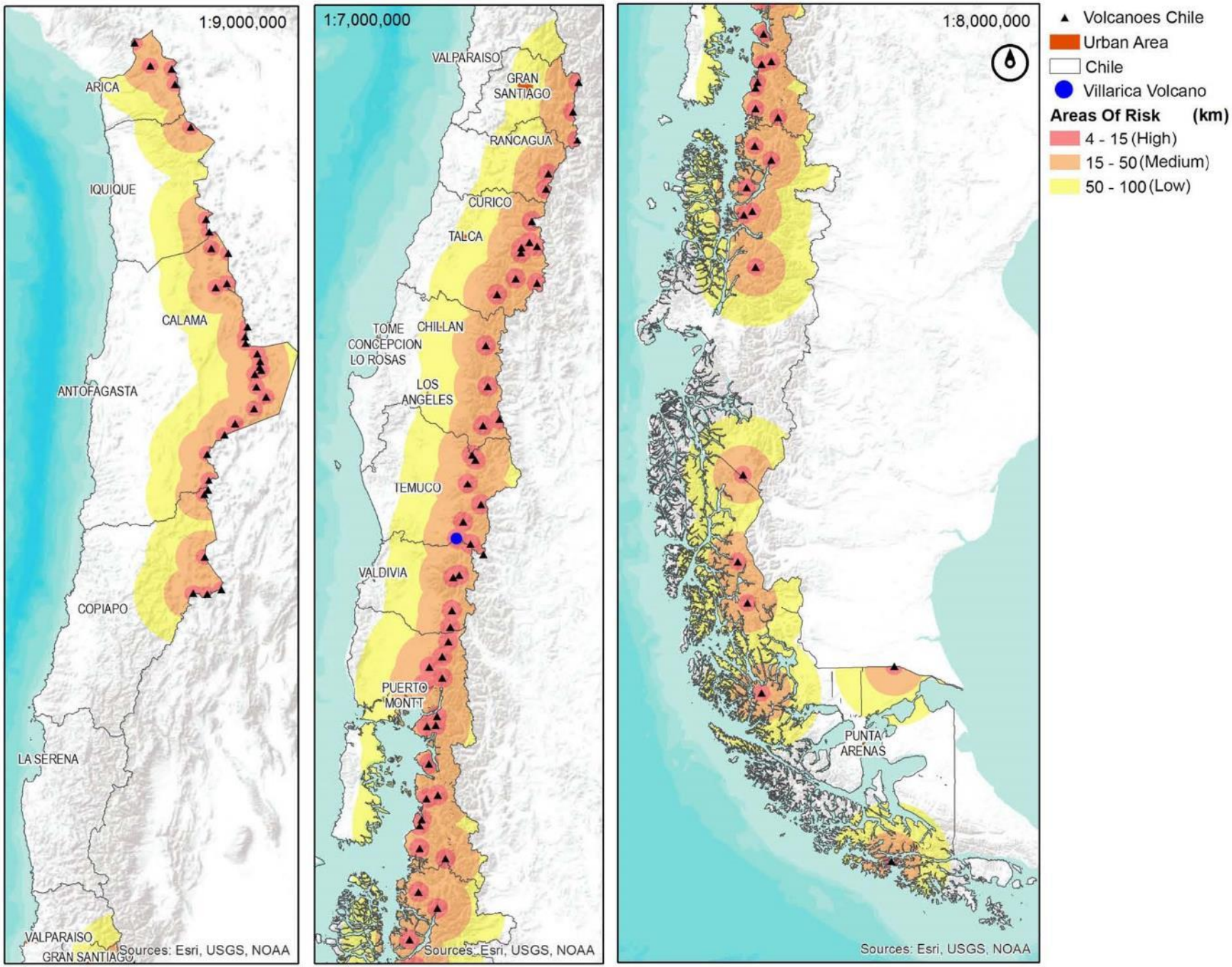
90
Active Volcanoes

60
Intensively Monitored Volcanoes



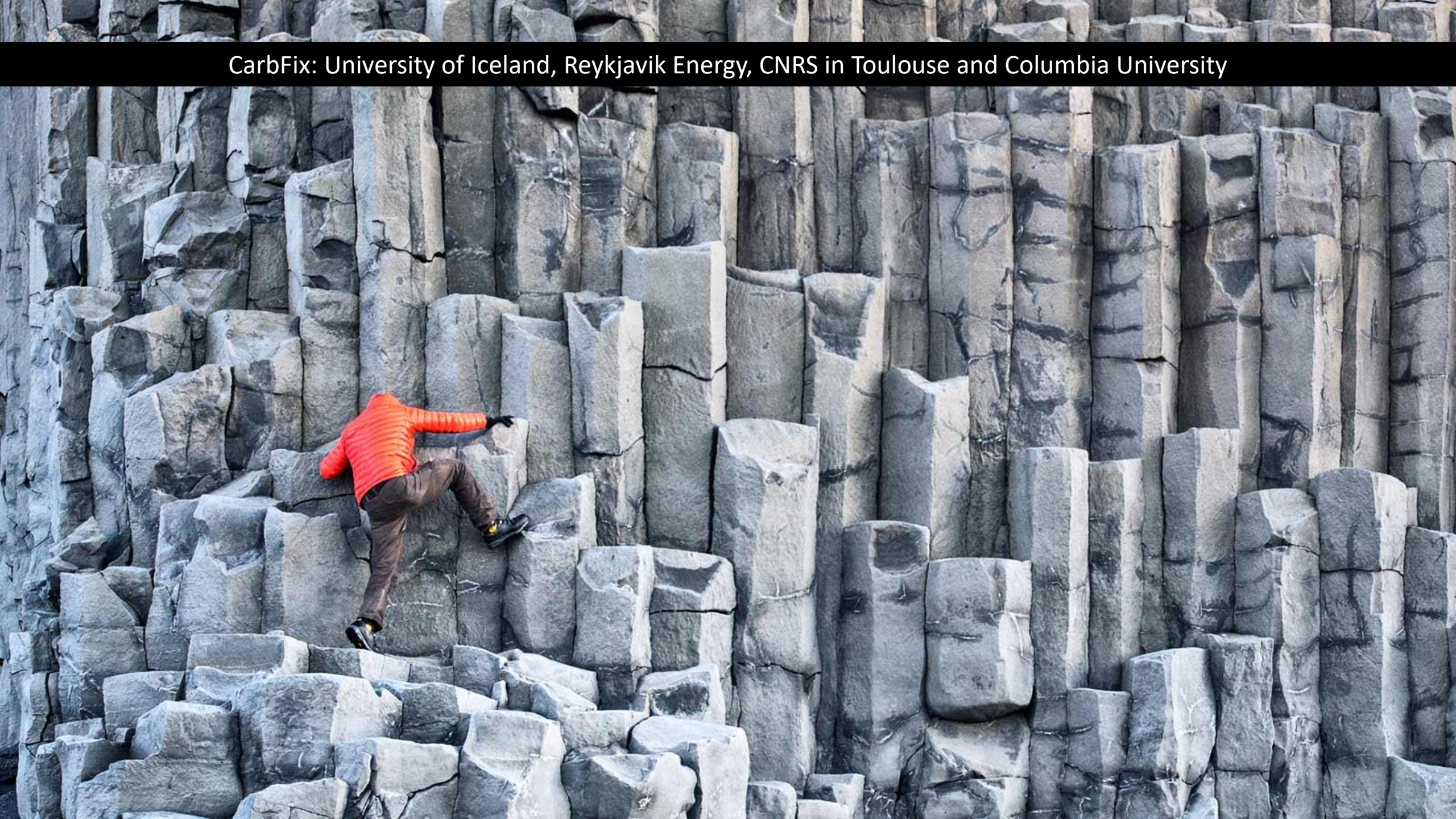


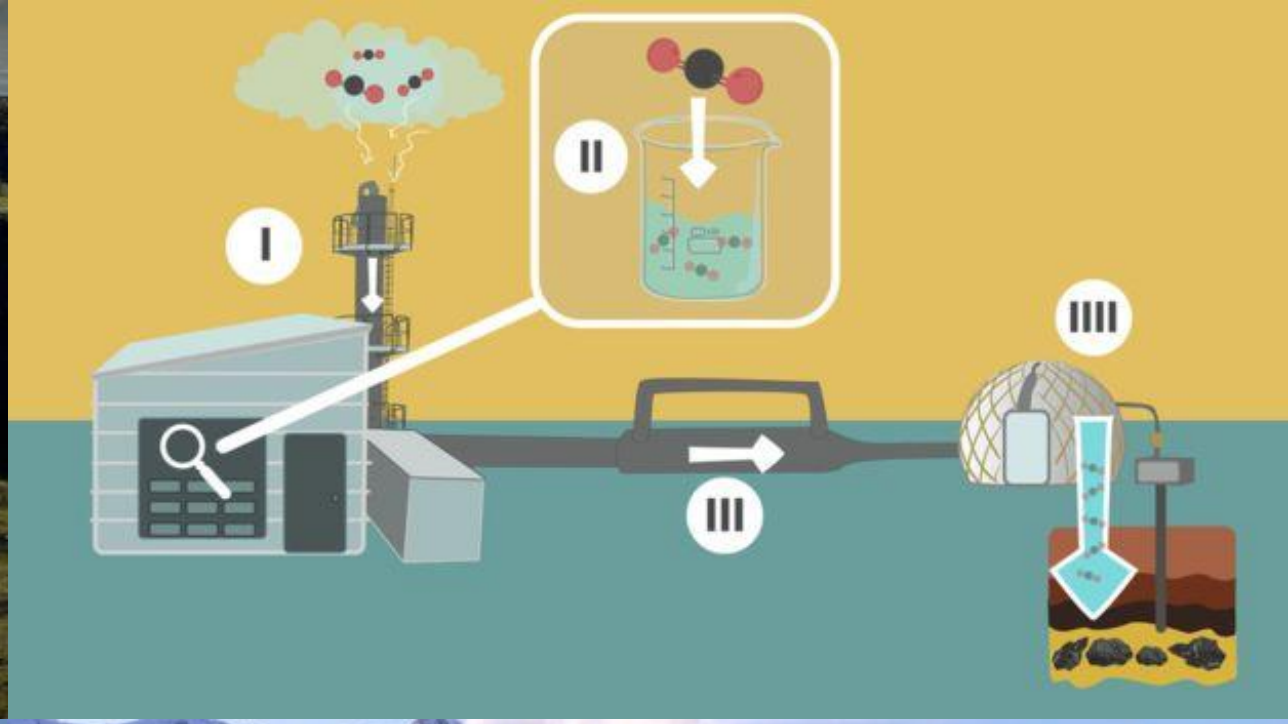




1:9,000,000
ARICA
IQUIQUE
CALAMA
ANTOFAGASTA
COPIAPO
LA SERENA
VALPARAISO
GRAN SANTIAGO
Sources: Esri, USGS, NOAA
1:7,000,000
VALPARAISO
GRAN SANTIAGO
RANCAGUA
CURICO
TALCA
TOME
CHILLAN
CONCEPCION
LO ROSAS
LOS ANGELES
TEMUCO
VALDIVIA
PUERTO MONTT
Sources: Esri, USGS, NOAA
1:8,000,000
PUNTA ARENAS
Sources: Esri, USGS, NOAA
Volcanoes Chile
Urban Area
Chile
Villarica Volcano
Areas Of Risk (km)
4 - 15 (High)
15 - 50 (Medium)
50 - 100 (Low)


Villarrica 2015

CarbFix: University of Iceland, Reykjavik Energy, CNRS in Toulouse and Columbia University




I
II
III
IIII

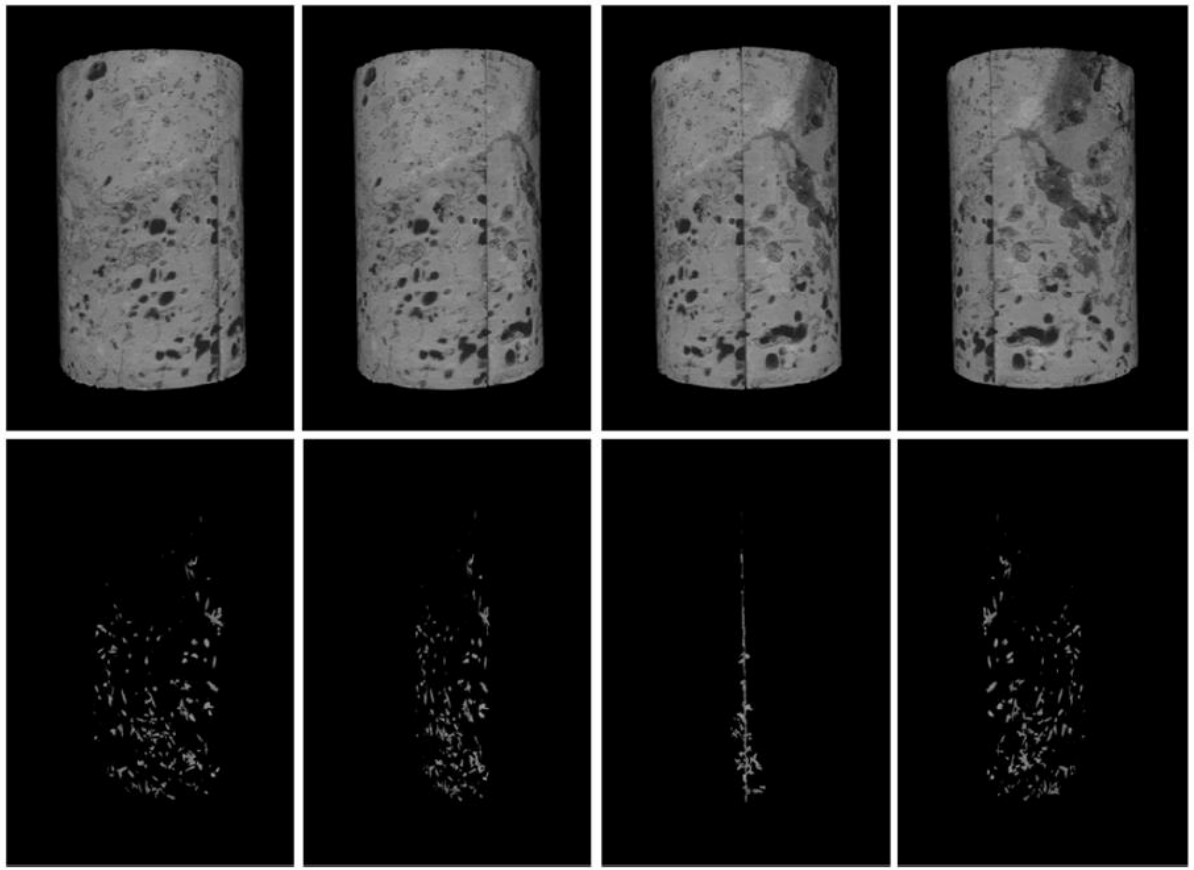


Figure S10. Screenshots of the 3D segmentation Movie S2 of core and precipitates in the basalt core reacted for 20 weeks.

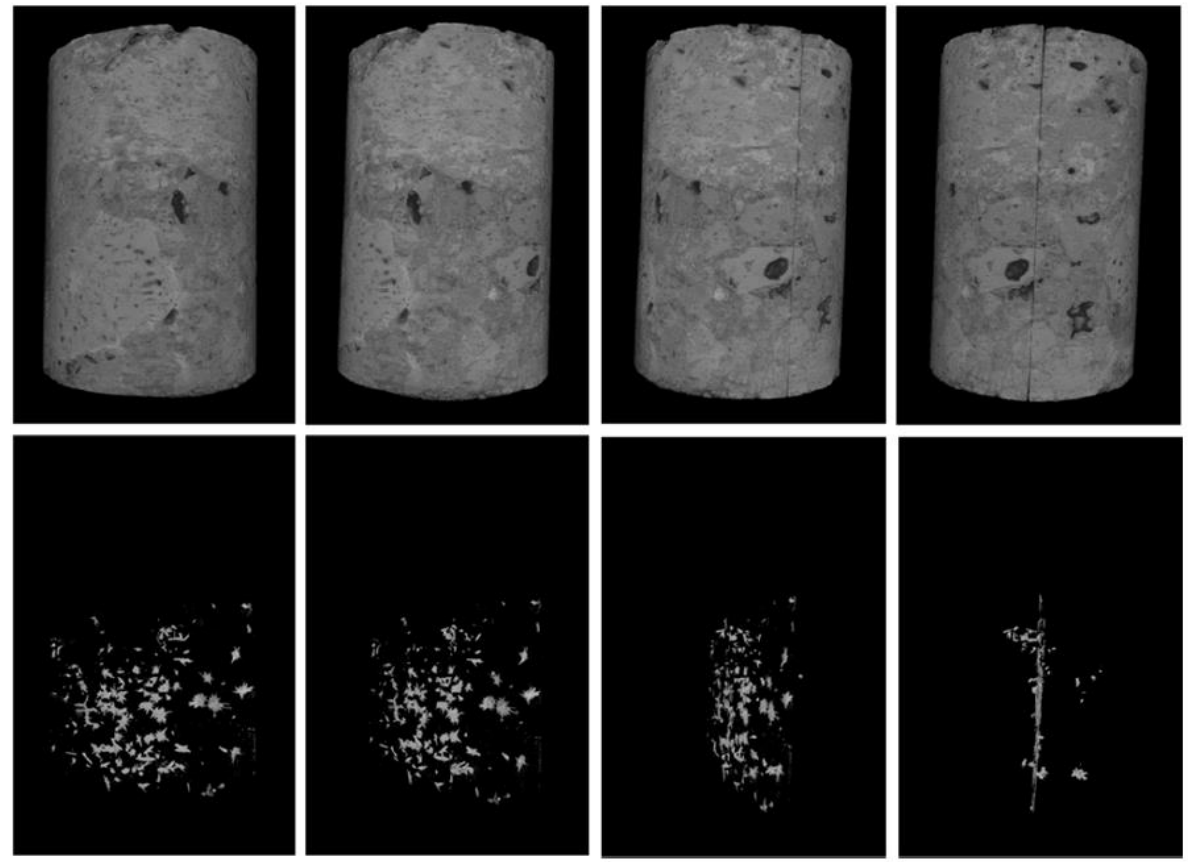
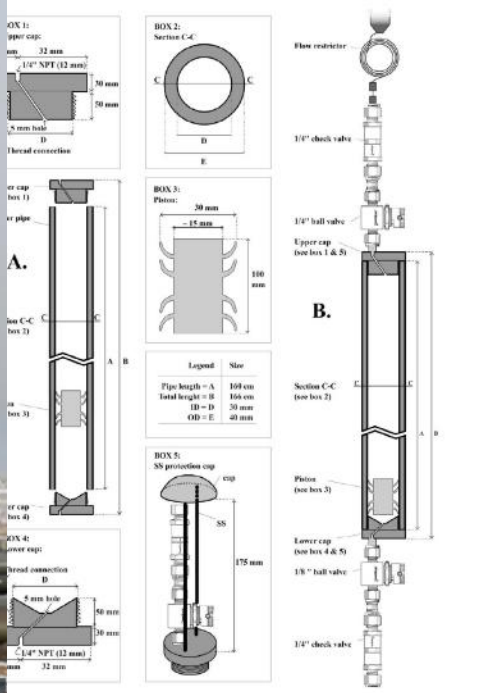
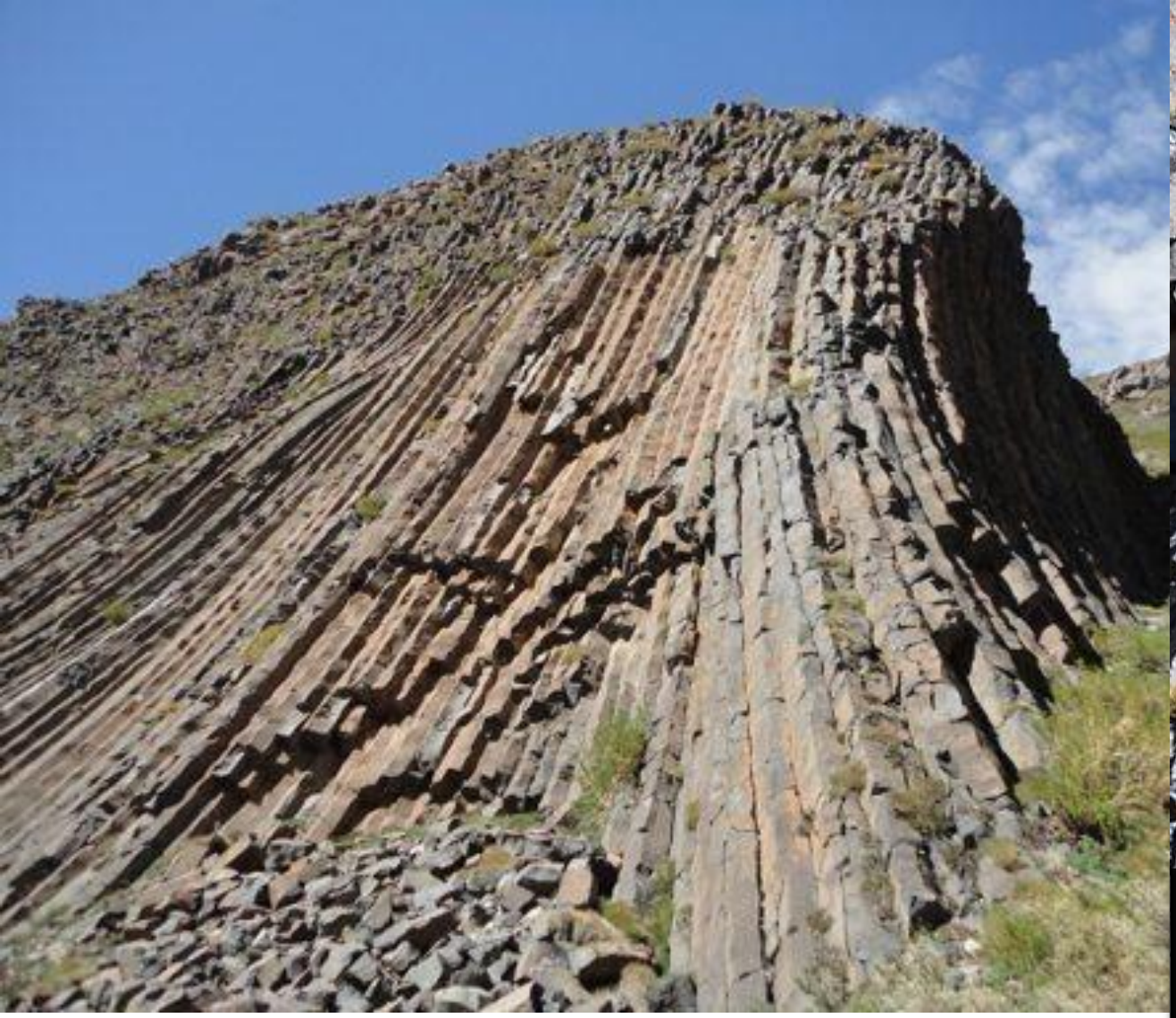
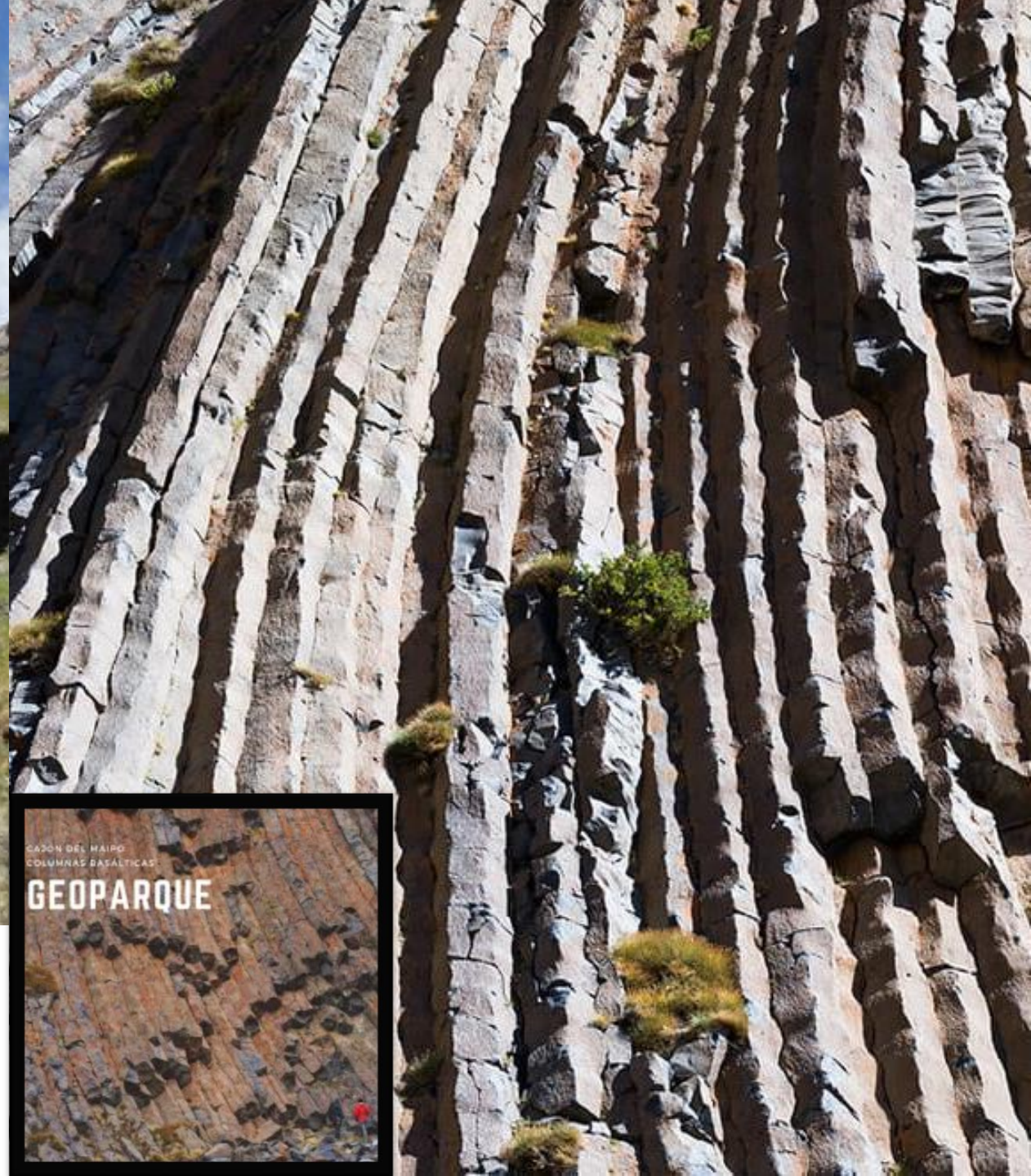


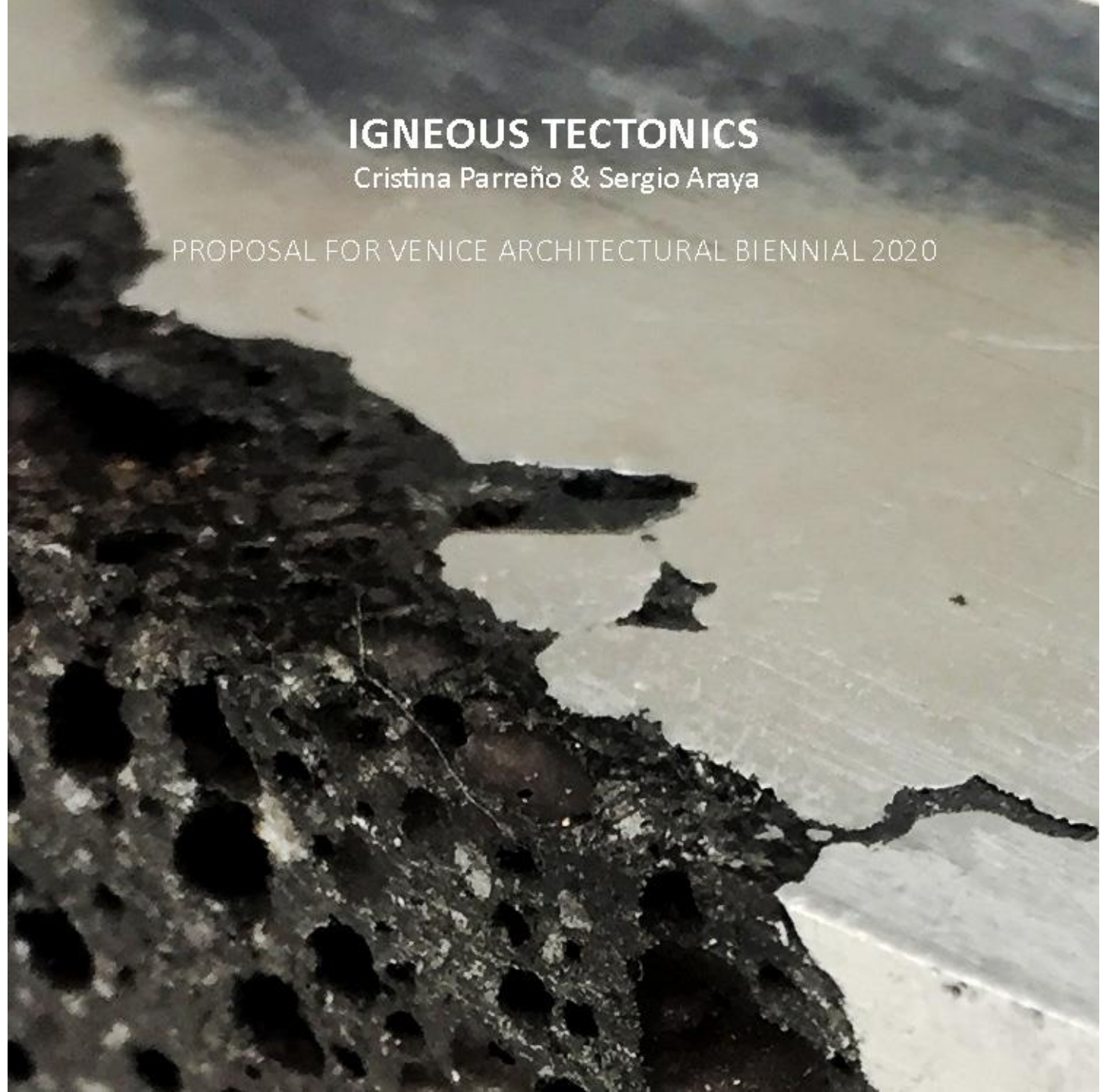
Figure S9. Screenshots of the 3D segmentation Movie S1 of core and precipitates in the basalt core reacted for 40 weeks.


New Scientist


BOX 1:
Upper cap:
32 mm
1/4" NPT (12 mm)
50 mm
50 mm
5 mm hole
D
Thread connection
BOX 2:
Section C-C
C
C
D
E
Flow restrictor
1/4" check valve
1/4" ball valve
Upper cap
(see box 1 & 5)
B.
Section C-C
(see box 2)
Piston
(see box 3)
Lower cap
(see box 4 & 5)
1/8 " ball valve
1/4" check valve
A.
C
C
A
B
BOX 3:
Piston:
30 mm
15 mm
100
mm
Legend
Size
Pipe length = A
169 cm
Total height = B
166 cm
ID = D
30 mm
OD = E
40 mm
BOX 4:
Lower cap:
Thread connection
D
5 mm hole
50 mm
30 mm
1/4" NPT (12 mm)
32 mm
BOX 5:
SS protection cap
cap
SS
175 mm



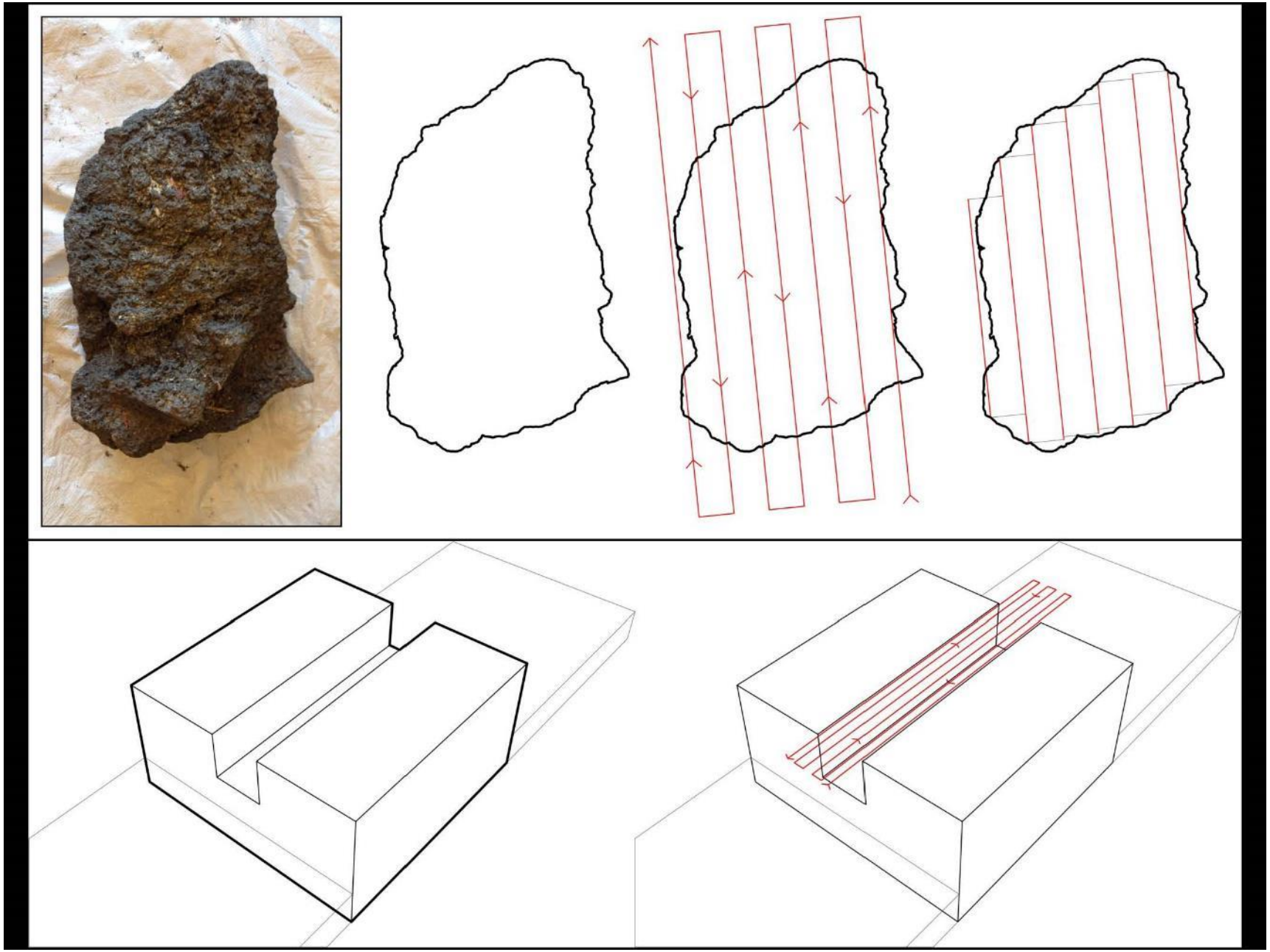

CAJÓN DEL MAIPO
COLUMNAS BASÁLTICAS
GEOPARQUE

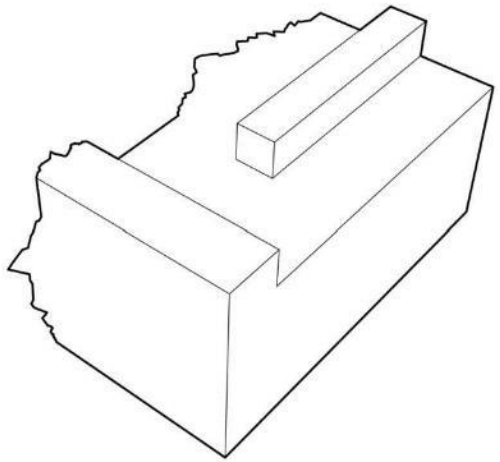


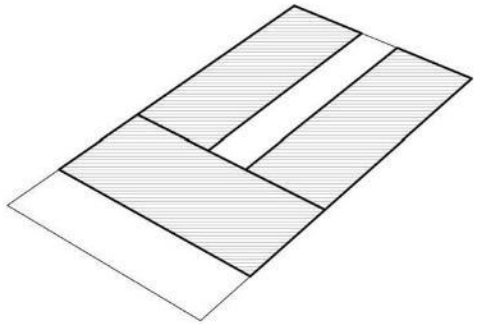
IGNEOUS TECTONICS

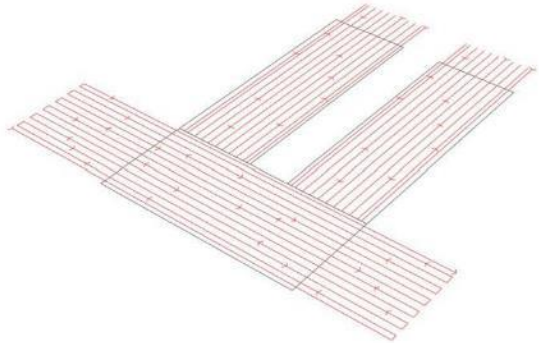
Cristina Parreño & Sergio Araya

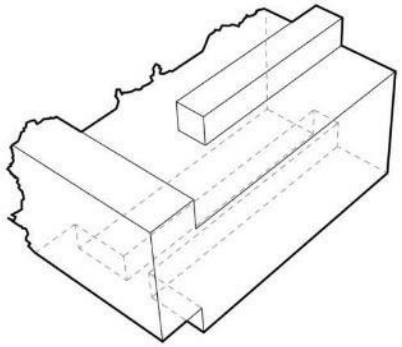
PROPOSAL FOR VENICE ARCHITECTURAL BIENNIAL 2020

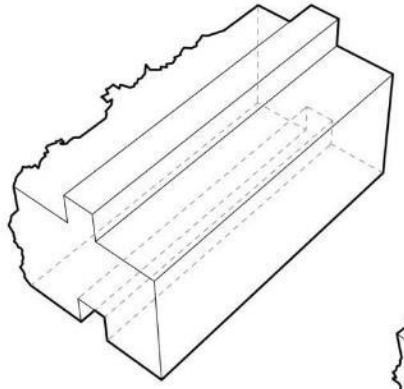


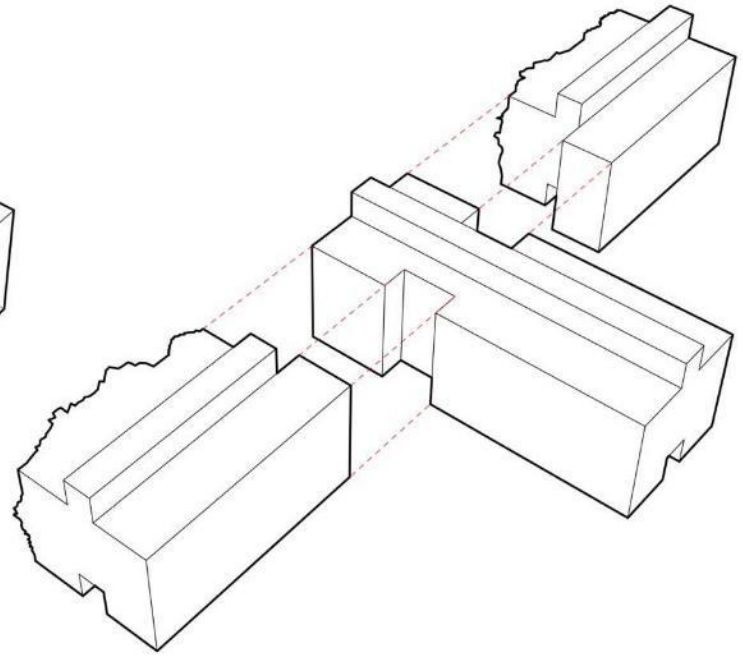




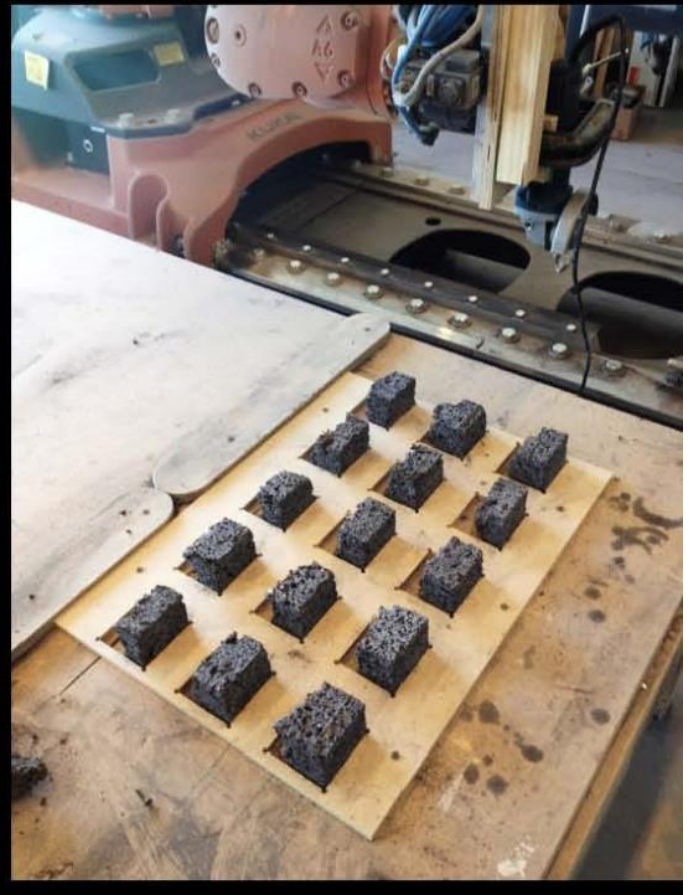






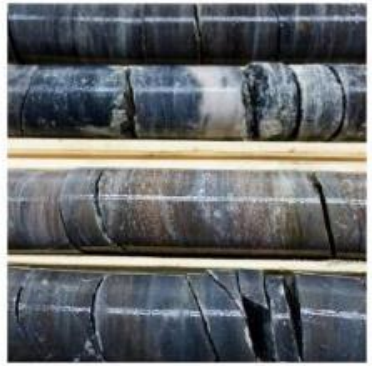
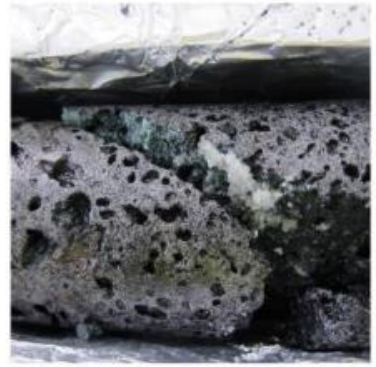



KUKA



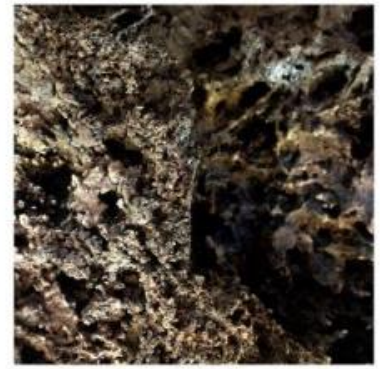











RockCO2 materials, textures and finishes.

310 m3 of Basaltic Rock = 1 residential unit 150 mt2 2 storeys

Greenhouse gas emissions from

4.7	54,322
Passenger vehicles driven for one year	Miles driven by an average passenger vehicle

CO_2 emissions from

2,500	2,182	24,289	0.294
gallons of gasoline consumed	gallons of diesel consumed	Pounds of coal burned	tanker trucks' worth of gasoline
2.7	3.9	0.121	51.4
homes' energy use for one year	homes' electricity use for one year	railcars' worth of coal burned	barrels of oil consumed
908	0	2,833,005	
propane cylinders used for home barbeques	coal-fired power plants in one year	number of smartphones charged	

Greenhouse gas emissions avoided by

7.7	1.1	969	0.005
Tons of waste recycled instead of landfilled	Garbage trucks of waste recycled instead of landfilled	trash bags of waste recycled instead of landfilled	Wind turbines running for a year
844			
Incandescent lamps switched to LEDs			

Carbon sequestered by

367	26.1	0.18
tree seedlings grown for 10 years	acres of U.S. forests in one year	acres of U.S. forests preserved from conversion to cropland in one year

240 residential units = 1 residential building 40 storeys

Greenhouse gas emissions from

1,132	13,038,294
Passenger vehicles driven for one year	Miles driven by an average passenger vehicle

CO_2 emissions from

600,652	523,837	5,829,805	70.6
gallons of gasoline consumed	gallons of diesel consumed	Pounds of coal burned	tanker trucks' worth of gasoline
639	930	29.1	12,346
homes' energy use for one year	homes' electricity use for one year	railcars' worth of coal burned	barrels of oil consumed
217,998	0.001	679,980,110	
propane cylinders used for home barbeques	coal-fired power plants in one year	number of smartphones charged	

Greenhouse gas emissions avoided by

1,860	266	232,674	1.1
Tons of waste recycled instead of landfilled	Garbage trucks of waste recycled instead of landfilled	trash bags of waste recycled instead of landfilled	Wind turbines running for a year
202,555			
Incandescent lamps switched to LEDs			

Carbon sequestered by

88,177	6,276	43.3
tree seedlings grown for 10 years	acres of U.S. forests in one year	acres of U.S. forests preserved from conversion to cropland in one year

733 residential building 40 storeys built = 1 coal-fired powerplants per year

Greenhouse gas emissions from

830,208	9,560,586,797
Passenger vehicles driven for one year	Miles driven by an average passenger vehicle

CO_2 emissions from

440,000,000	384,113,949	4,274,819,508	51,765
gallons of gasoline consumed	gallons of diesel consumed	Pounds of coal burned	tanker trucks' worth of gasoline
468,241	681,900	21,334	9,053,125
homes' energy use for one year	homes' electricity use for one year	railcars' worth of coal burned	barrels of oil consumed
159,851,113	1	498,608,868,0	
propane cylinders used for home barbeques	coal-fired power plants in one year	number of smartphones charged	

Greenhouse gas emissions avoided by

1,363,889	194,832	170,613,028	829
Tons of waste recycled instead of landfilled	Garbage trucks of waste recycled instead of landfilled	trash bags of waste recycled instead of landfilled	Wind turbines running for a year
148,527,367			
Incandescent lamps switched to LEDs			

Carbon sequestered by

64,657,308	4,602,094	31,734
tree seedlings grown for 10 years	acres of U.S. forests in one year	acres of U.S. forests preserved from conversion to cropland in one year