

Colca Valley (South of Perú):

Study of the seismicity and its link to the active volcanism.

2023 IRD-IGP ARTS PhD Scholarship



Hugo Sánchez-Reyes and ISTerre, IGP colleagues

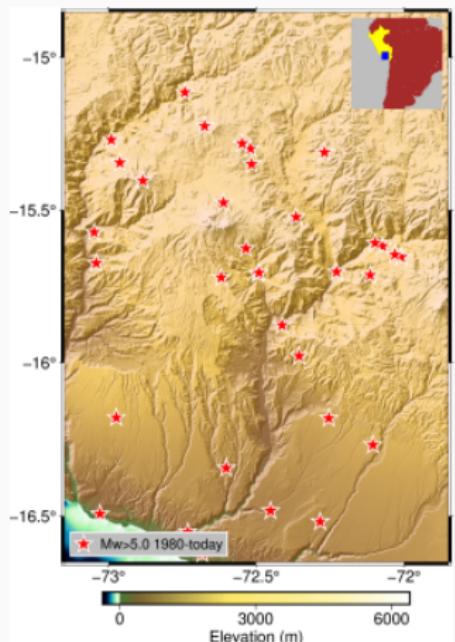
Interdisciplinary Meeting

March 2, 2023

Thanks to IRD and
Instituto Geofísico del Perú (IGP)
for funding and collaborating
through the projects you will see

Introduction: Colca Valley (Peru)

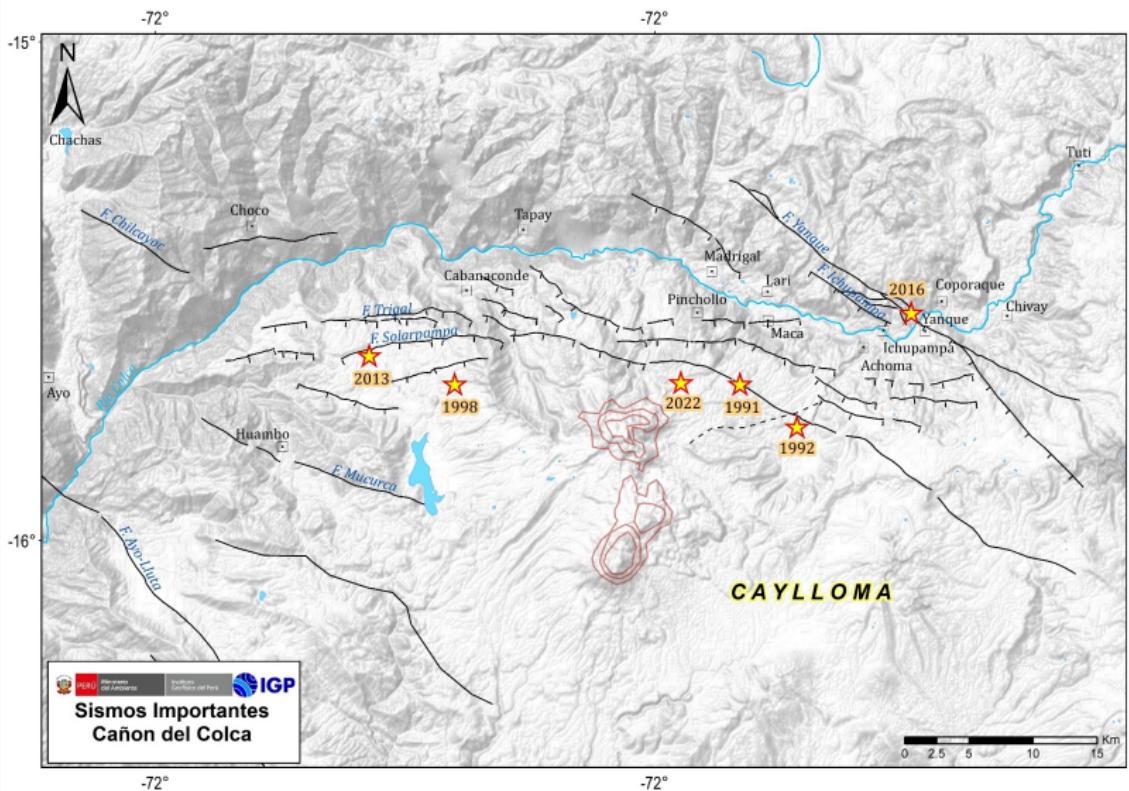
Colca Valley: Mw₅ since 1980



time	latitude	longitude	depth	mag
1999-04-03T06:17:18.360Z	-16.66	-72.662	87.2	6.8
1984-06-18T11:20:17.940Z	-15.705	-72.491	116.8	6.5
2012-06-07T16:03:18.900Z	-15.877	-72.413	110	6.1
2005-07-26T14:11:36.390Z	-15.345	-72.962	110.5	5.9
1980-03-07T08:25:07.800Z	-16.689	-72.952	43	5.9
2001-12-04T05:57:17.920Z	-15.35	-72.516	33	5.8
1994-11-11T08:48:29.970Z	-15.626	-72.535	120.7	5.8
1990-11-04T18:13:43.060Z	-15.721	-72.619	121	5.8
2001-12-08T04:17:21.660Z	-15.114	-72.742	26.1	5.6
1996-09-08T08:08:13.460Z	-15.573	-73.049	98.2	5.6
2019-01-29T23:35:00.470Z	-15.523	-72.3651	111.9	5.5
2016-08-15T02:59:00.840Z	-15.654	-72.0092	20	5.5
1990-04-04T05:47:10.510Z	-16.179	-72.974	93.4	5.5
2002-09-16T22:35:06.740Z	-16.483	-72.452	74.4	5.4
2001-02-22T20:06:22.130Z	-16.687	-72.947	49.3	5.4

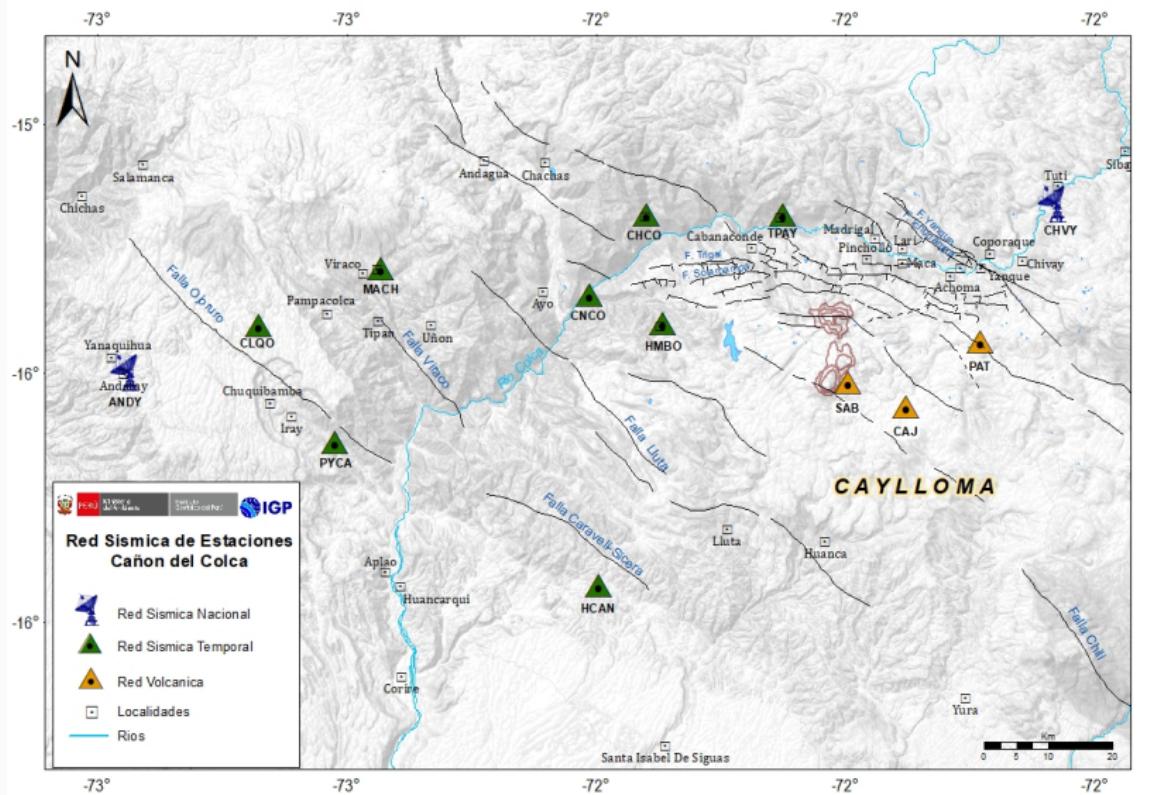
from USGS Catalog

Colca Valley: Large historical EQs



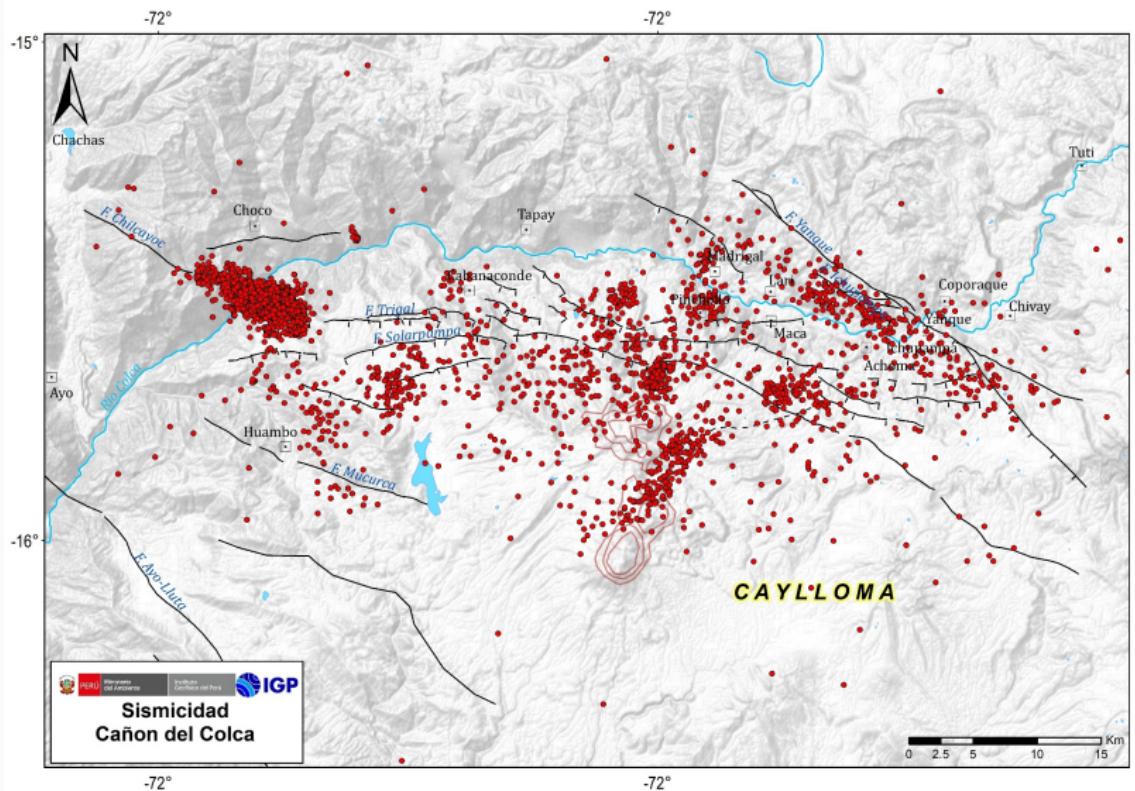
Thanks to IGP Staff

Colca Valley: Temporary-Permanent Network



Thanks to IGP Staff

Colca Valley: Seismicity April 2015 - June 2018

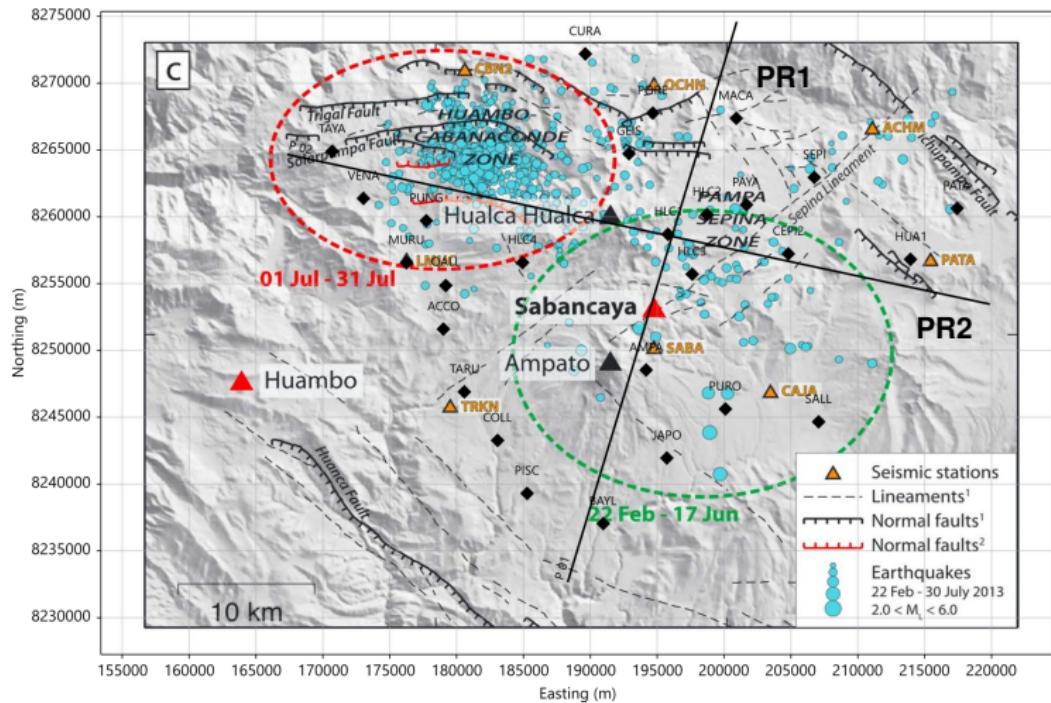


Thanks to IGP Staff

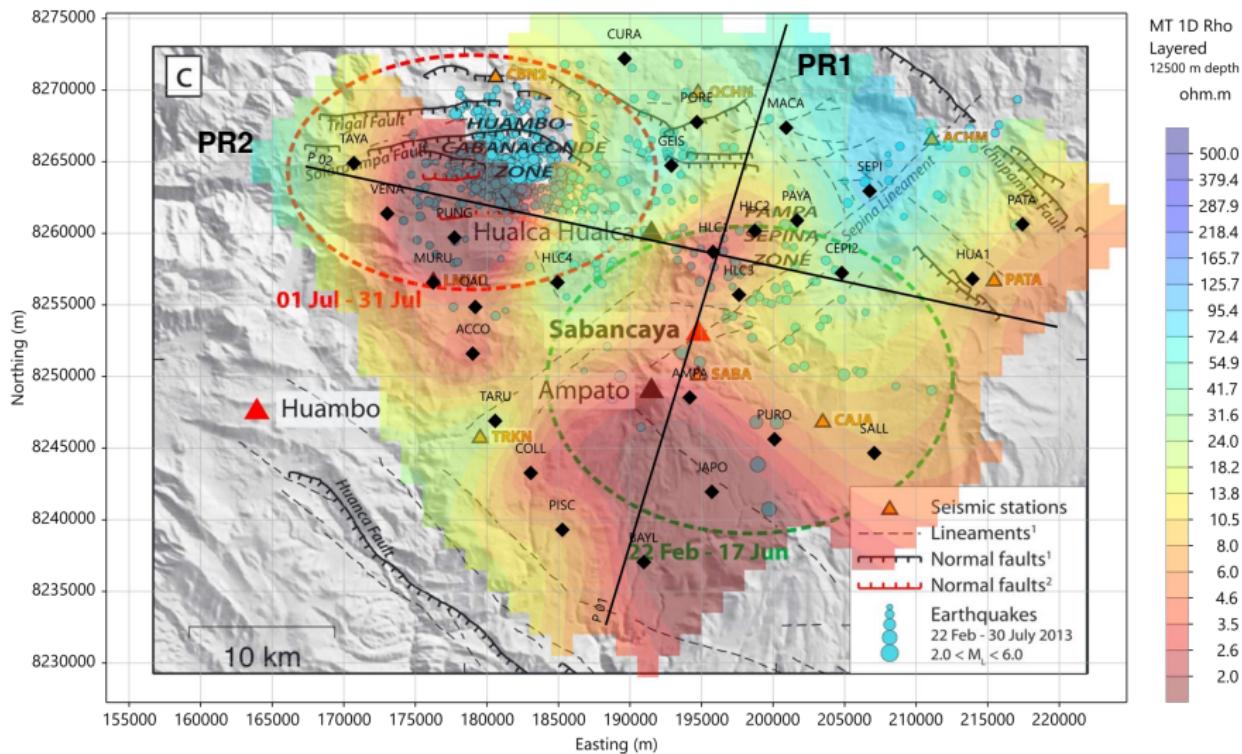
**What's the existing link
between the crustal tectonic
seismicity and the active
volcanism?**

MT Survey by Svetlana Byrdina (Volcanology Team)

MT measurements at Volcanic complex Sabancaya

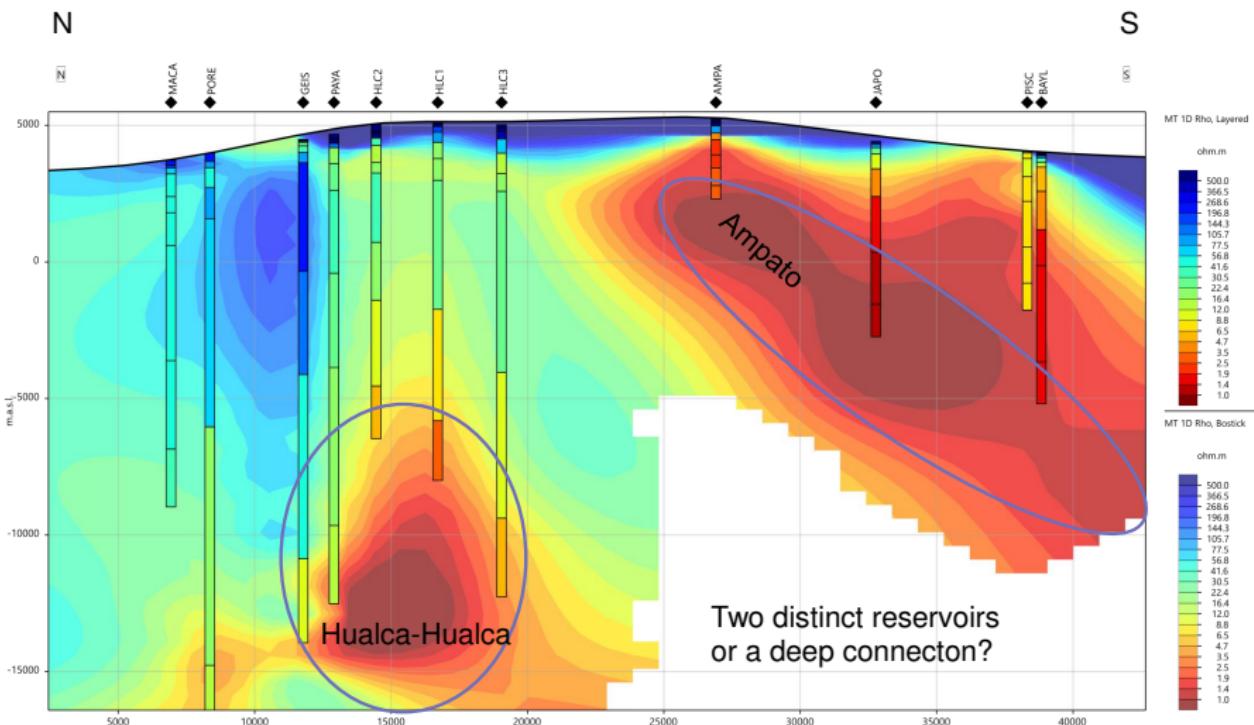


1D modelling MT at Volcanic complex Sabancaya PR1

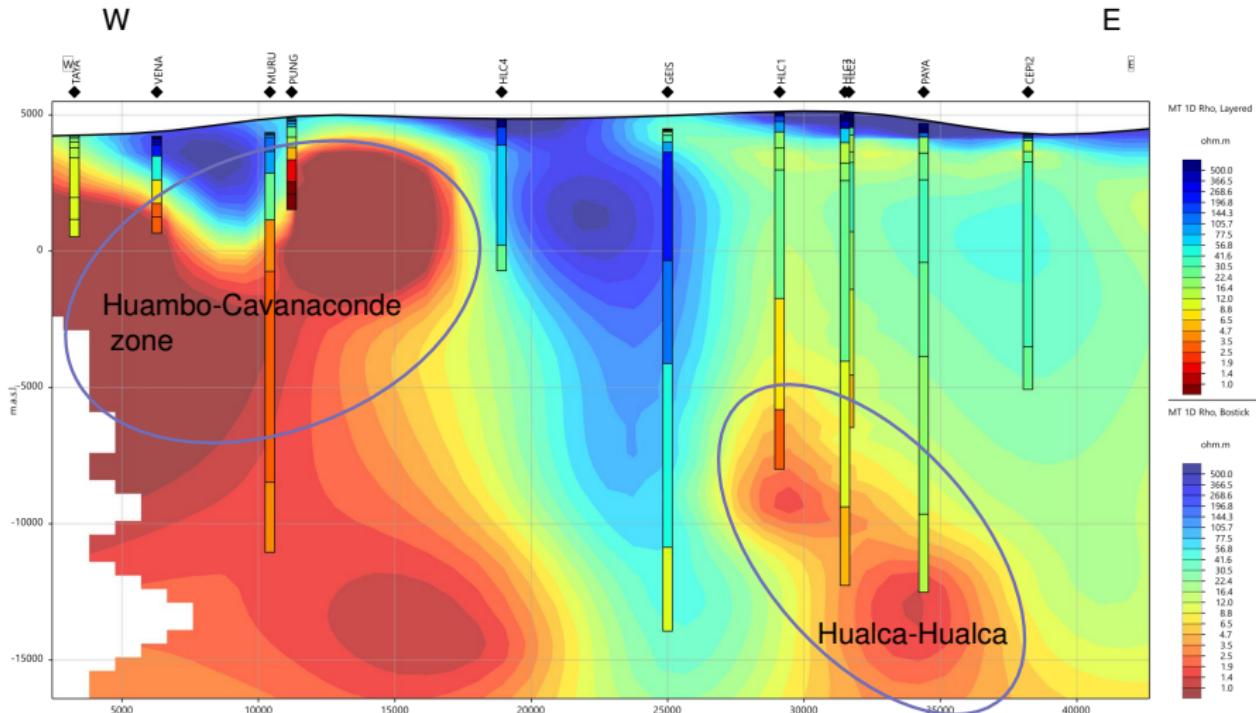




1D modelling MT at Volcanic complex Sabancaya PR1

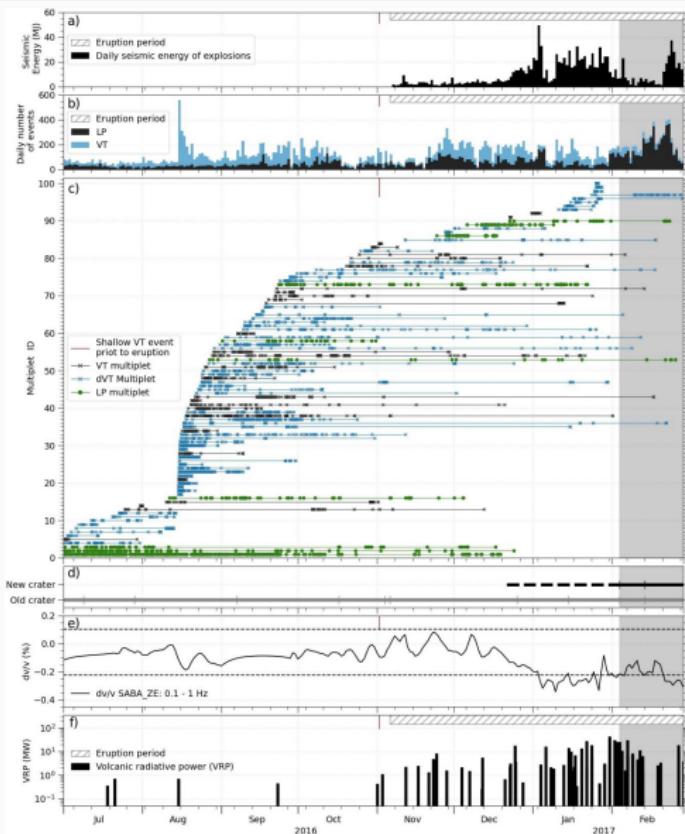


1D modelling MT at Volcanic complex Sabancaya PR2



**Work by R. Machacca & P. Lesage
(Volcanology Team)**

2016-2017 Seismicity & Volcanism



Energy
of explosions

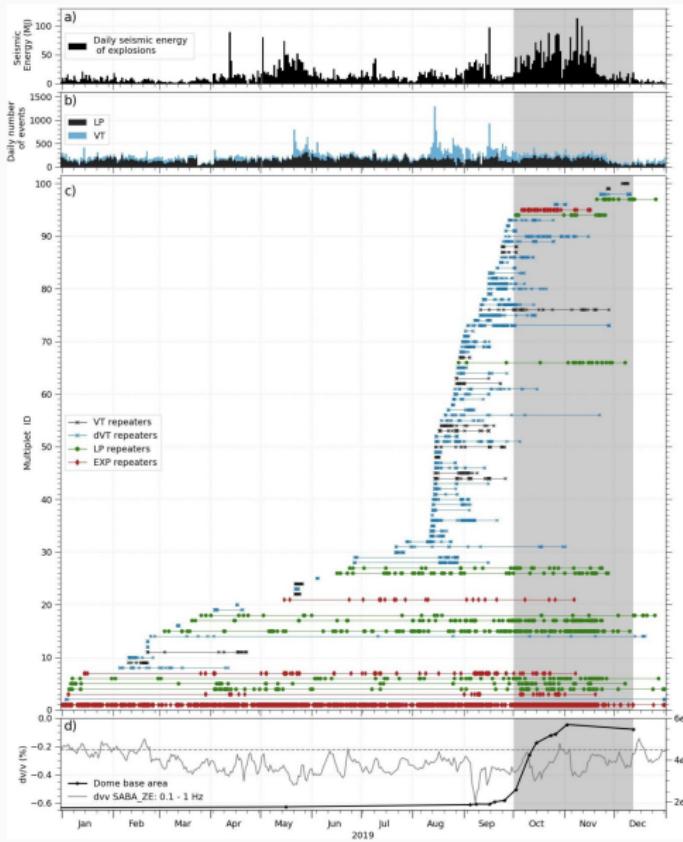
Seismic
events per day

Occurrence of
repeaters at
SABA Z comp

Apparent velocity
variation

Stellite thermal
anomaly

2019 Seismicity & Volcanism



Energy
of explosions
Seismic
events per day

Occurrence of
repeaters at
SABA Z comp

Apparent velocity
variation
& dome area

Thanks for listening