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INSTITUTO DE INVESTIGACION OBSERVATORIO
VULCANOLOGICO Y SISMOLOGICO DE COSTA RICA



Slow awakening of Turriaba volcano, Costa Rica

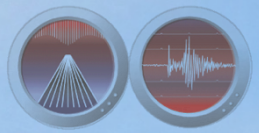
*Dr. Javier Fco. Pacheco
OVSICORI-UNA*

With contributions from Mauricio Mora: RSN-UCR

Santiago, Chile – May 25-29, 2015

**Workshop on
National Geophysical Networks in Latin America
Best Practices, Challenges, and Opportunities for Collaboration**

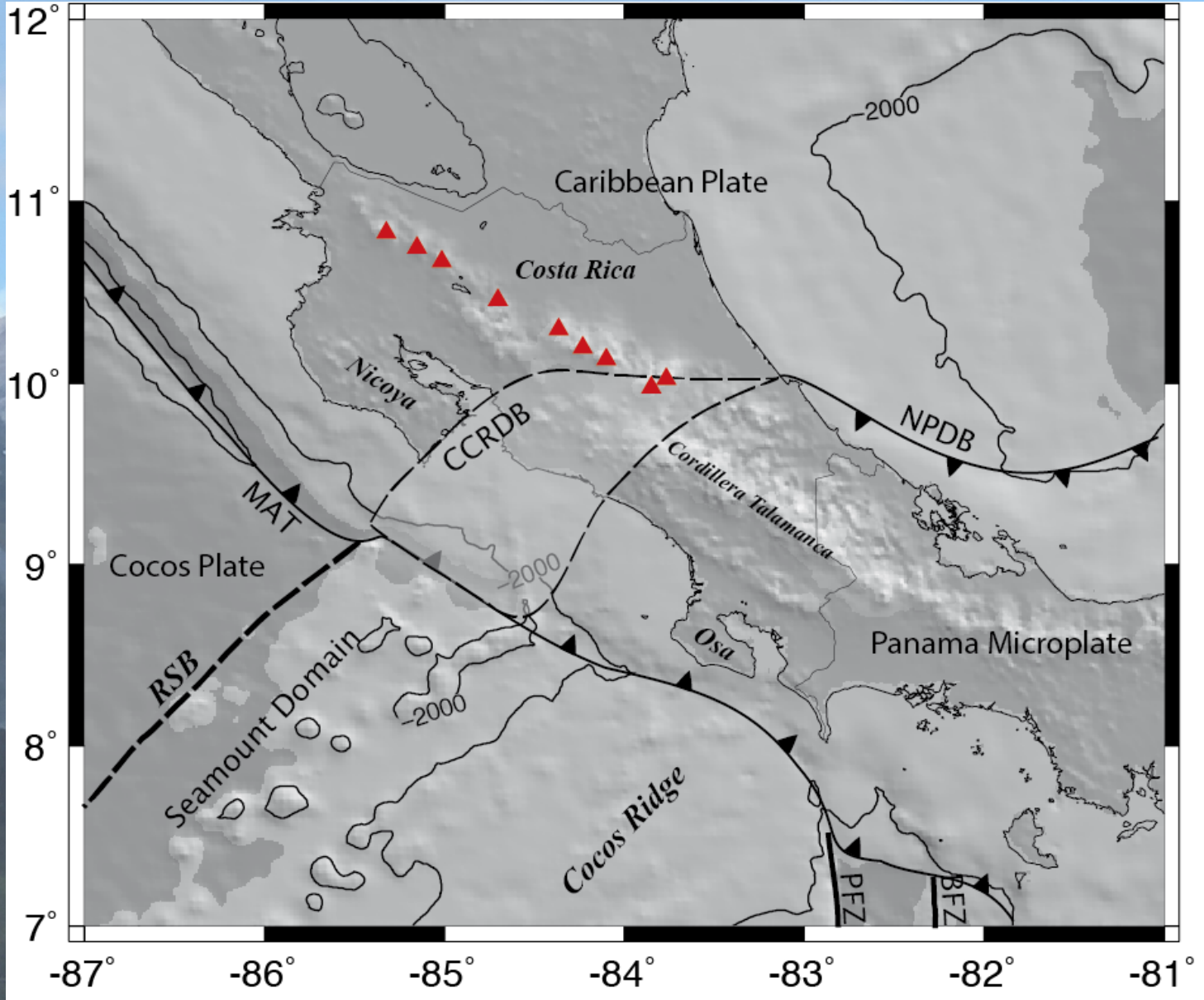


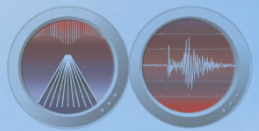


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Tectonic Frame

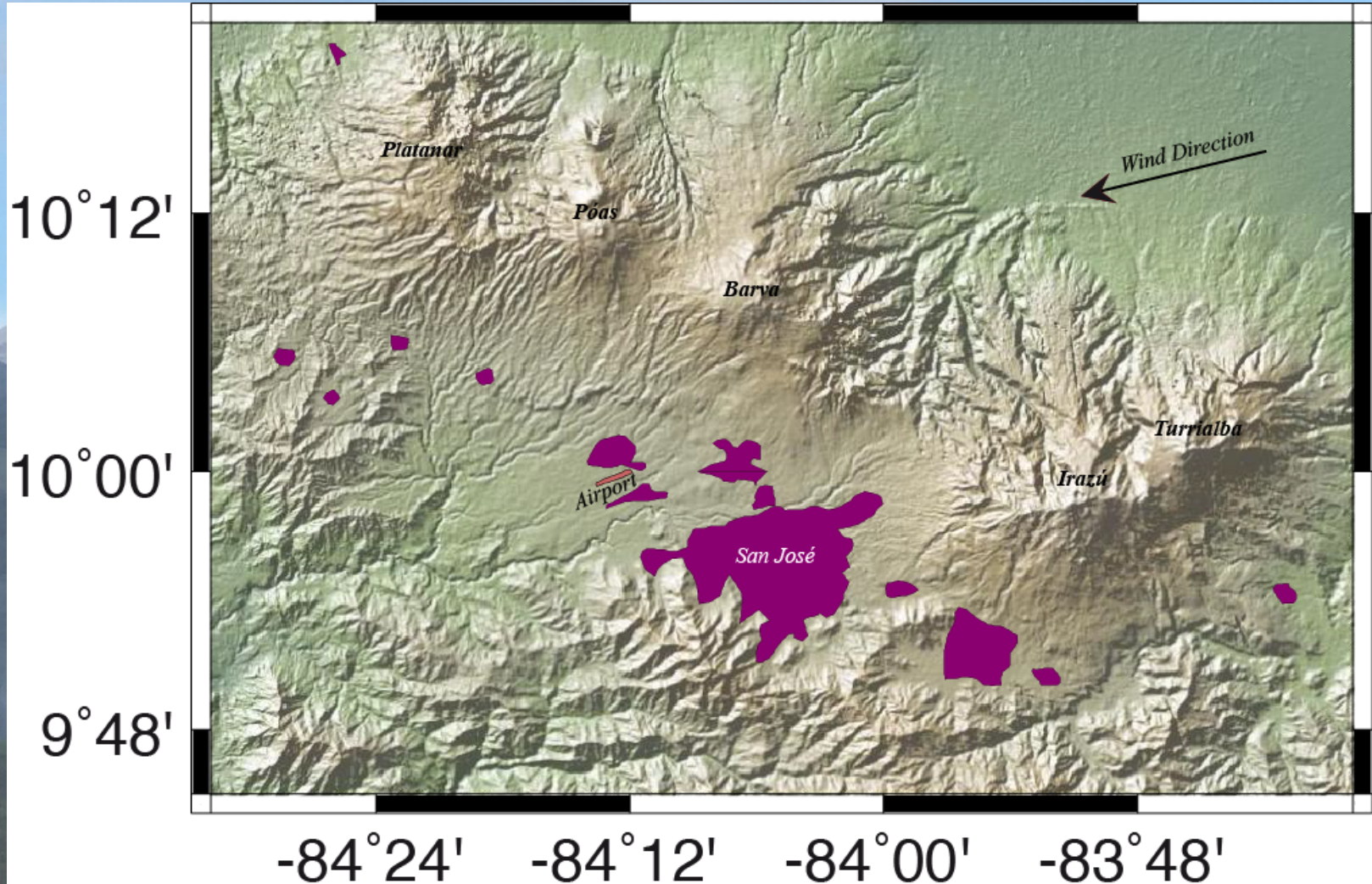




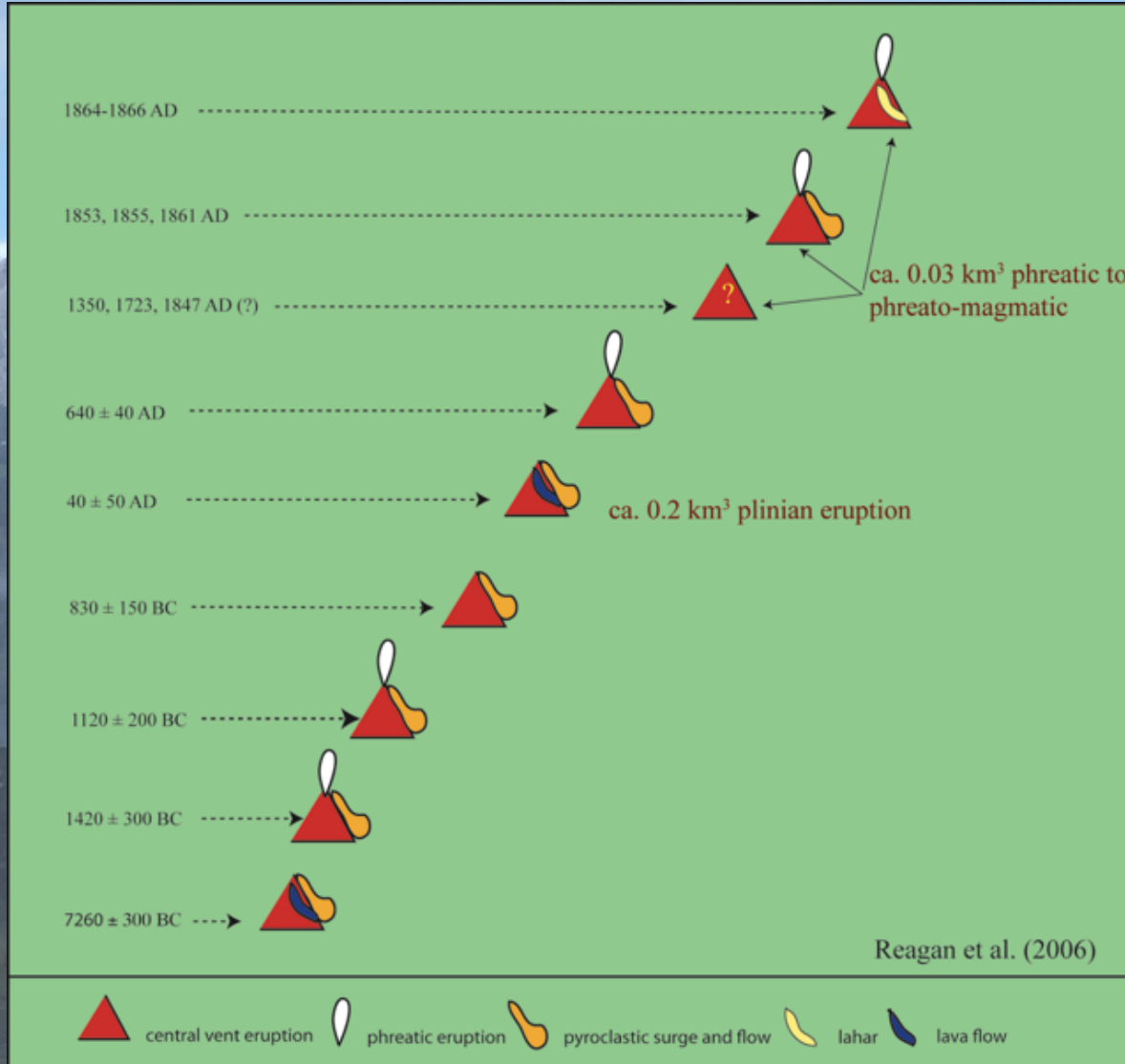
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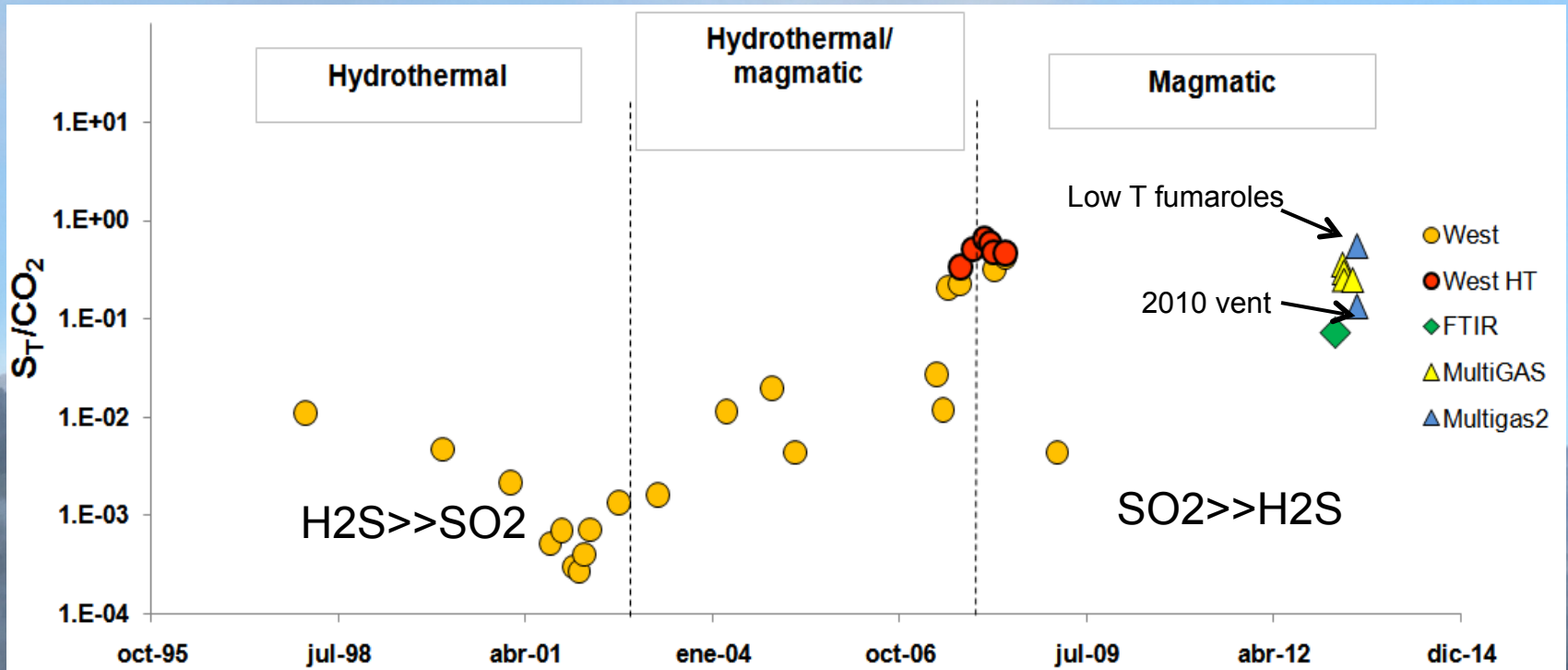
Volcano Hazard



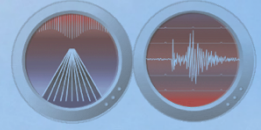
Eruptive History



Change from hydrothermal to magmatic



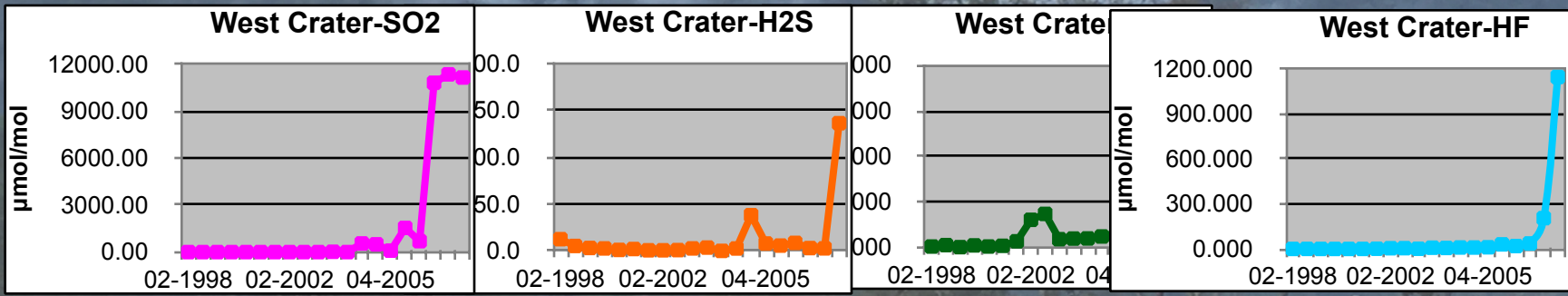
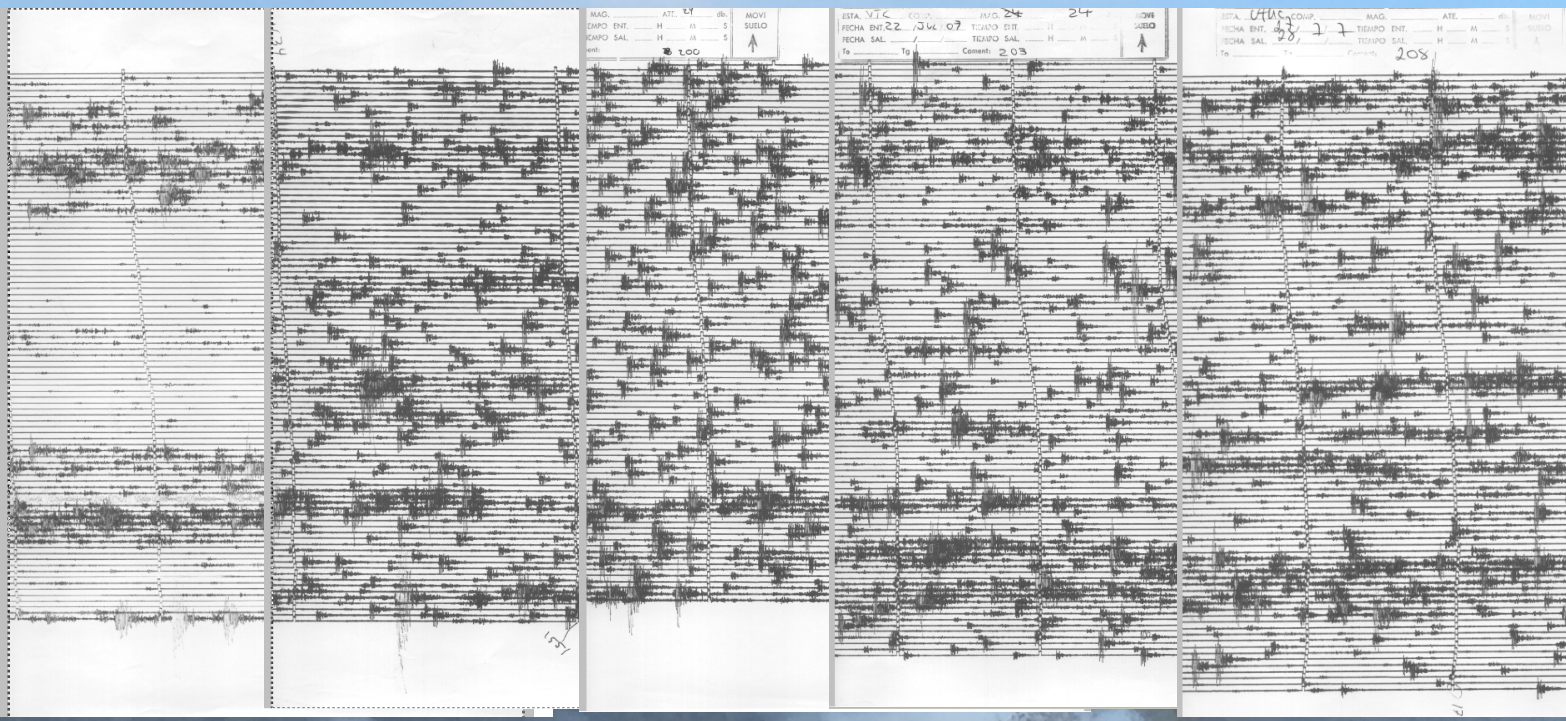
Hydrothermal, hydrothermal/magmatic, and magmatic regions are from Vaselli et al. (2010)

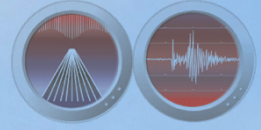


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Increased seismicity

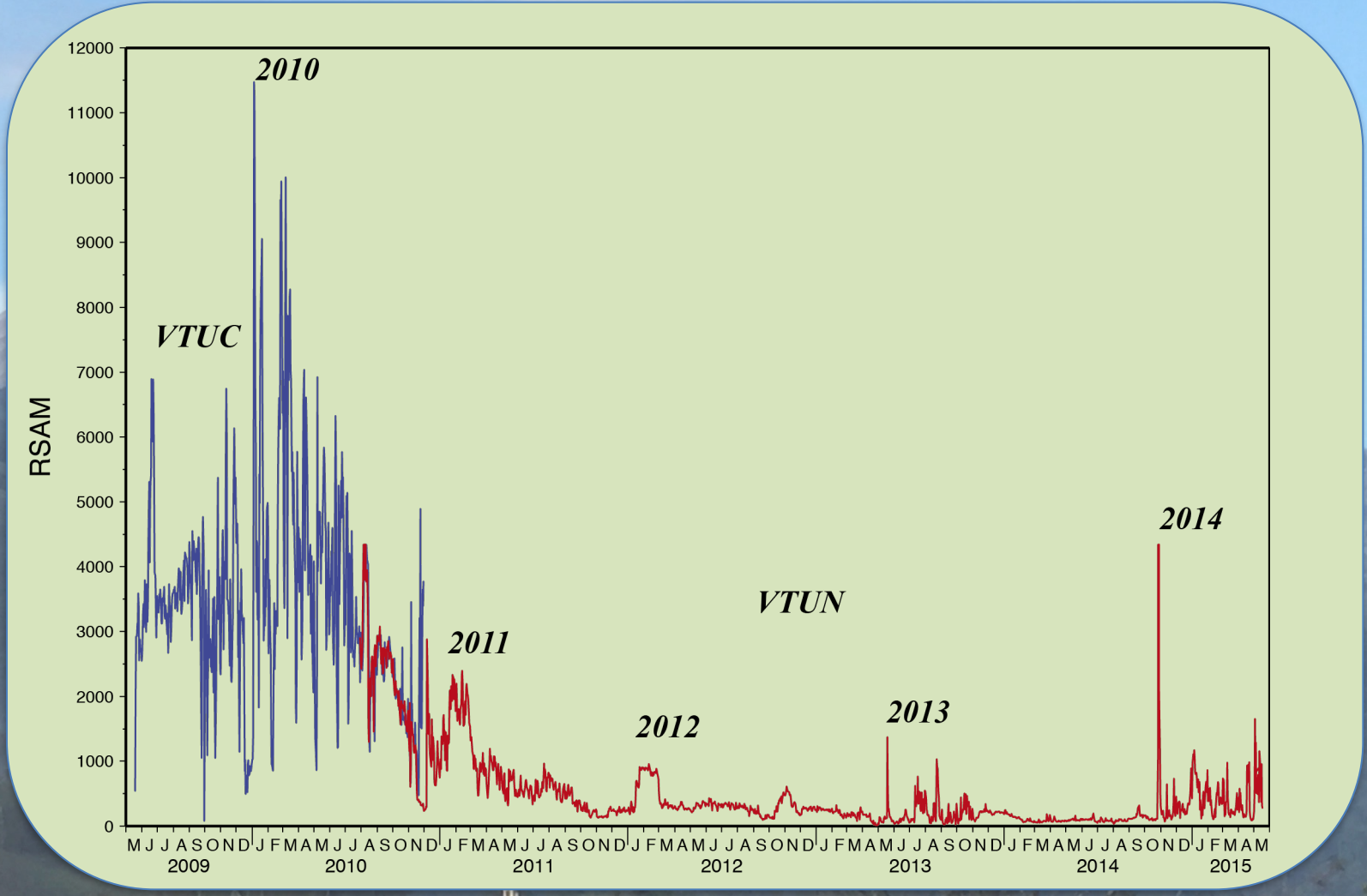




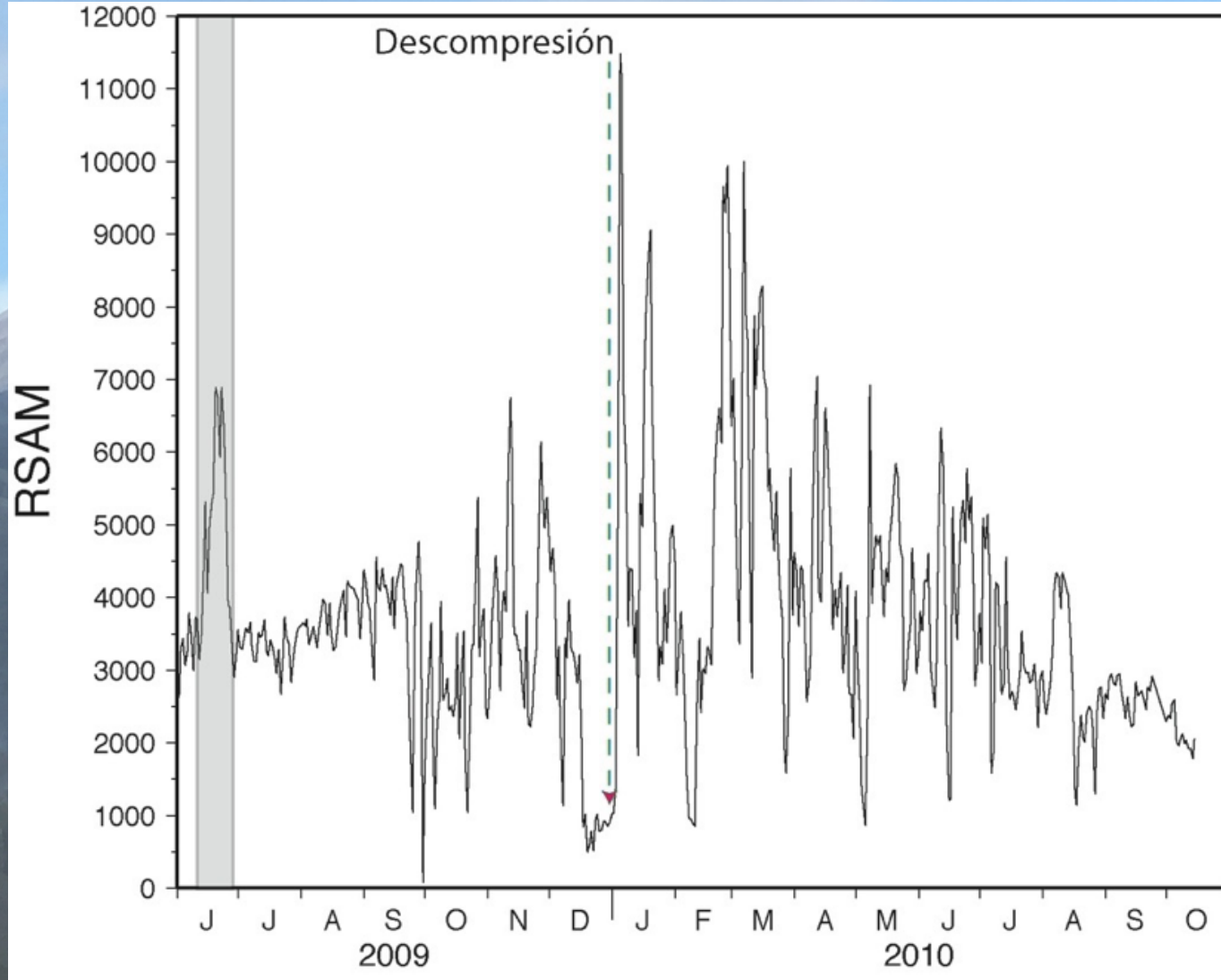
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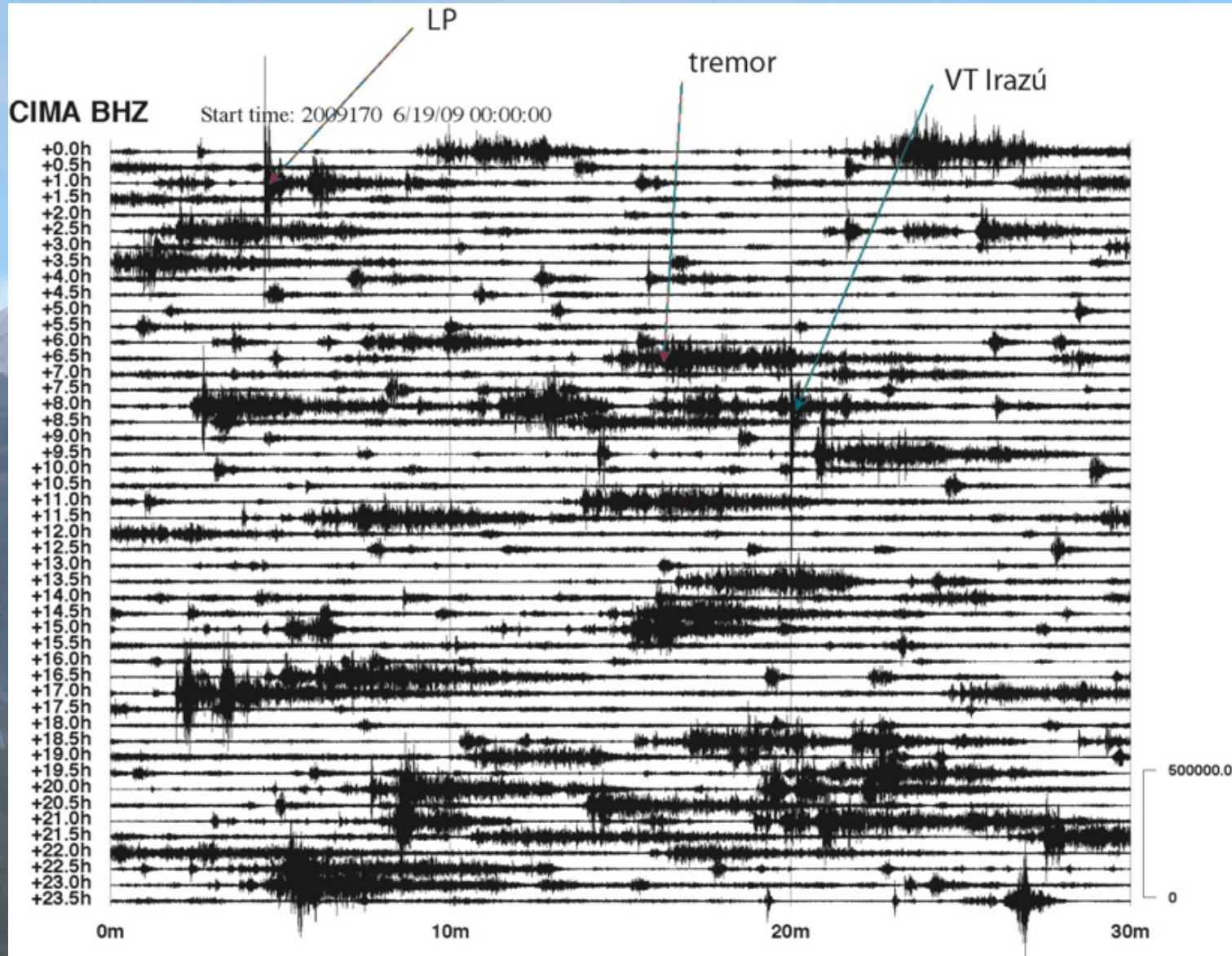
RSAM record



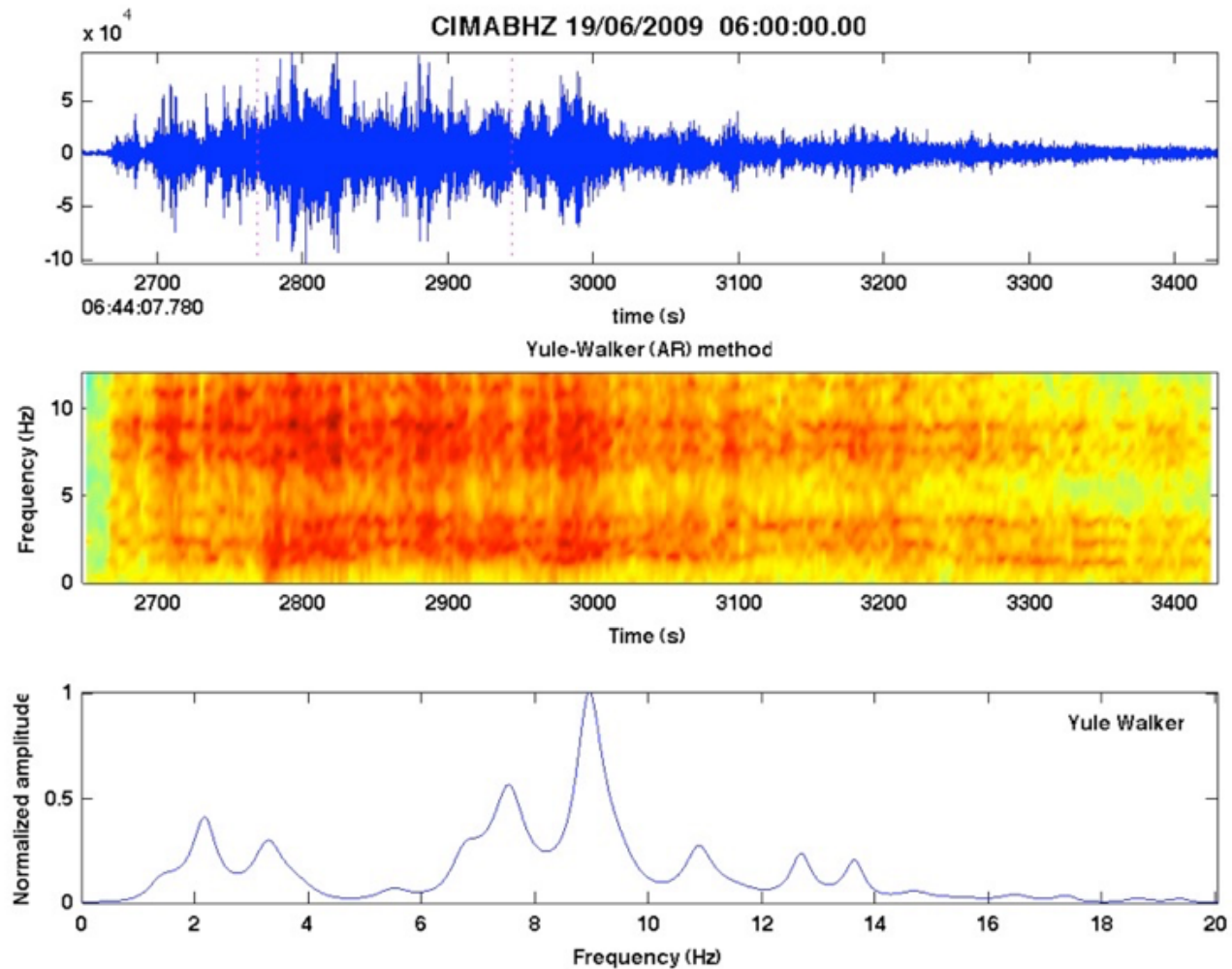
Important changes: June 2009



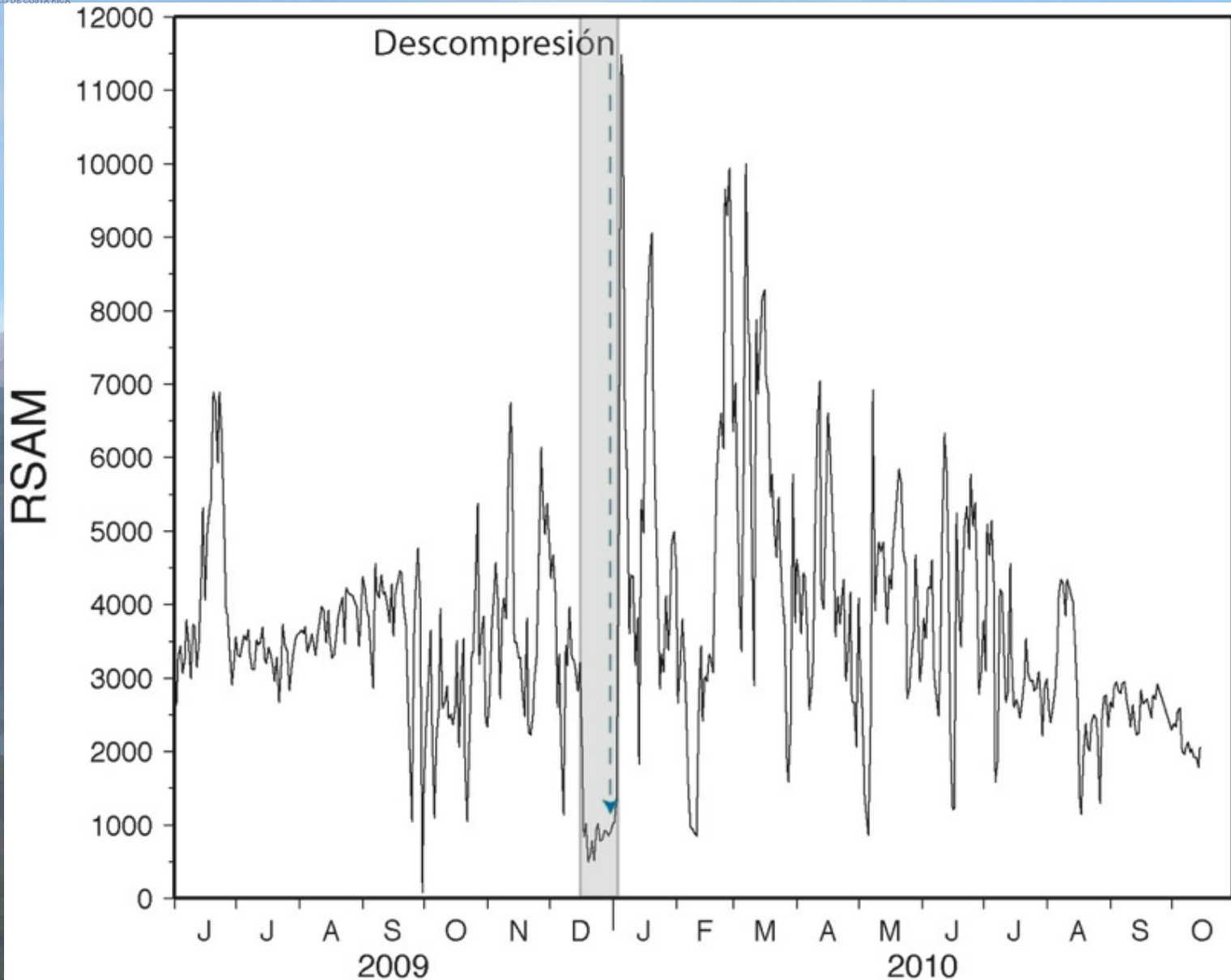
Short duration tremor



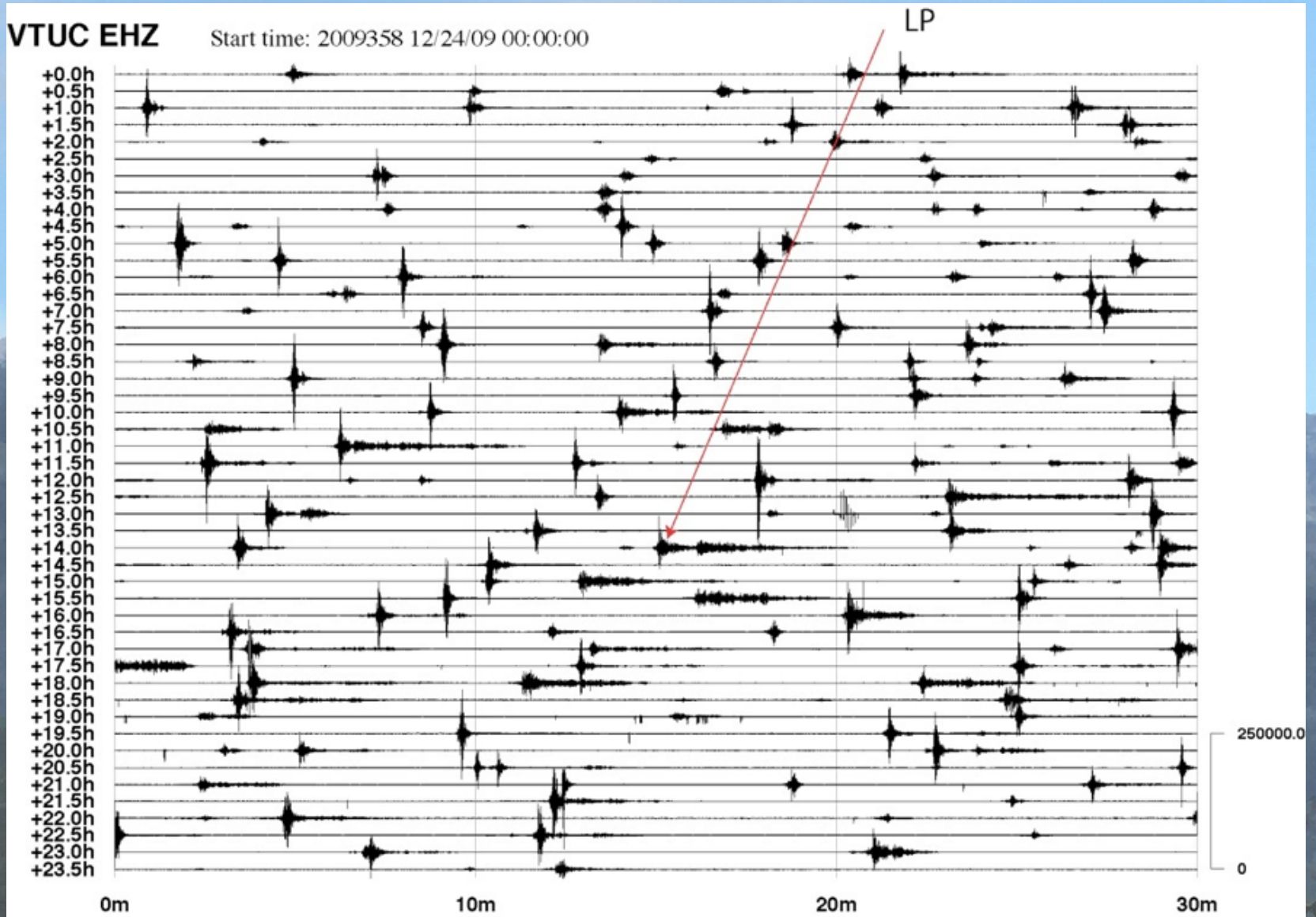
High frequency tremor

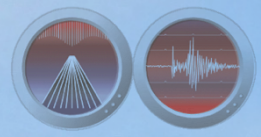


Evolution before phreatic eruption



Evolution before phreatic eruption

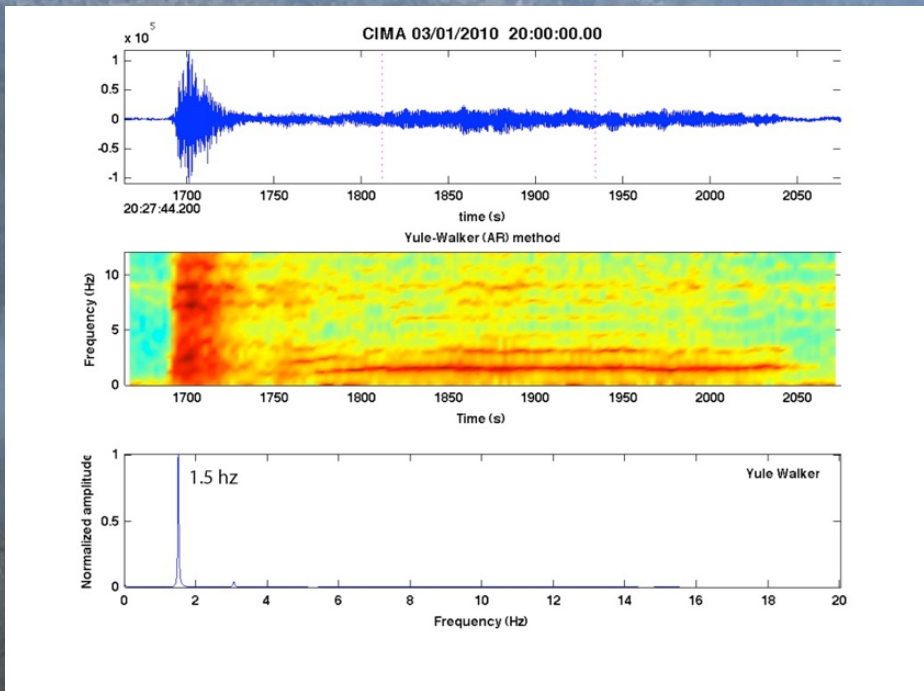
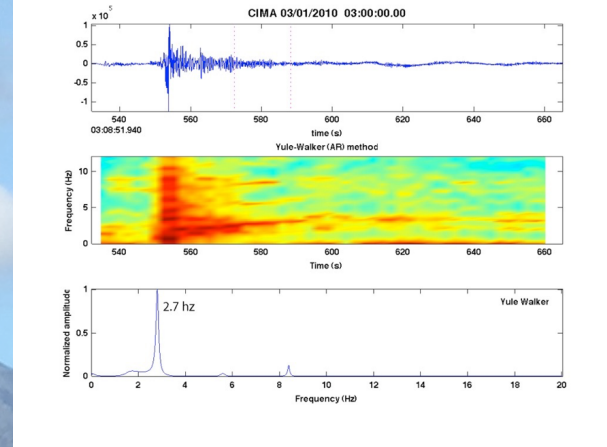
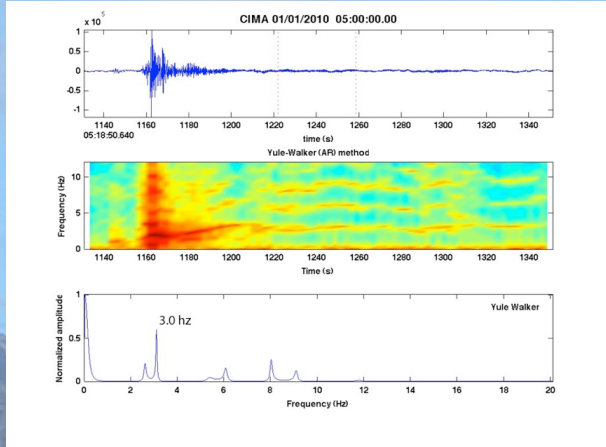
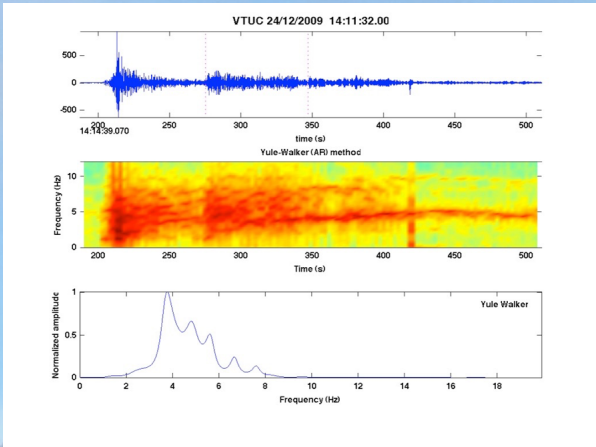




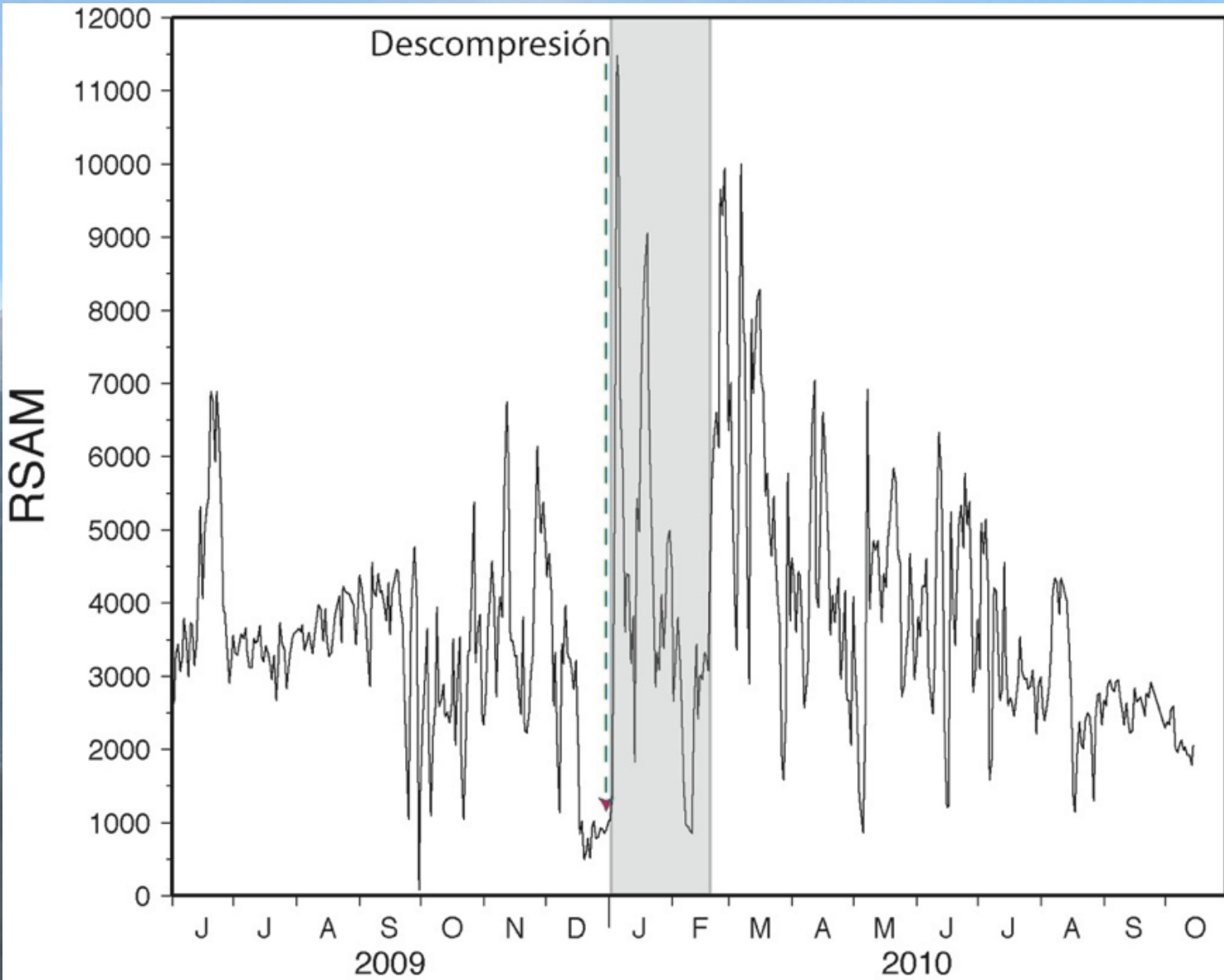
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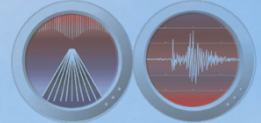
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Evolution before phreatic eruption



Steam eruption and decompression

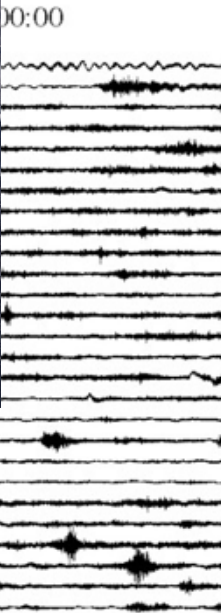
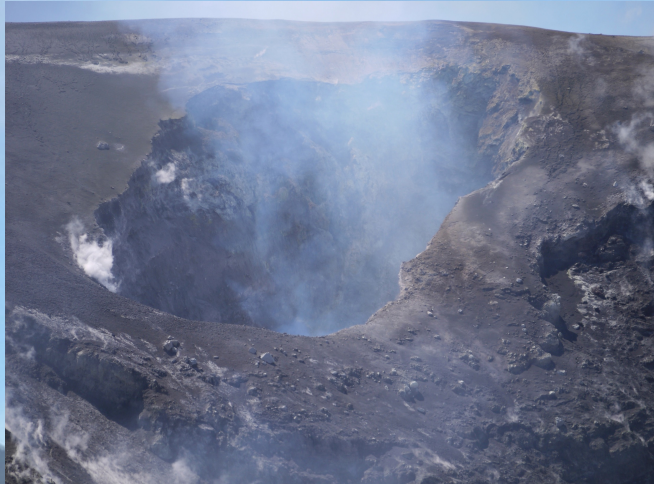




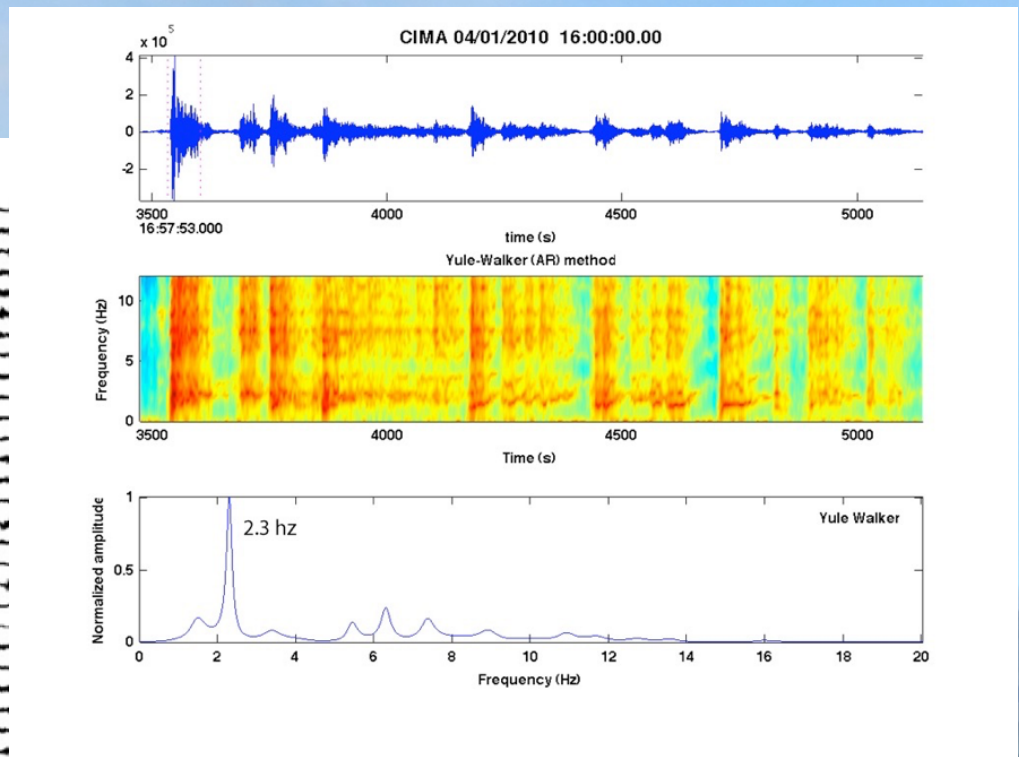
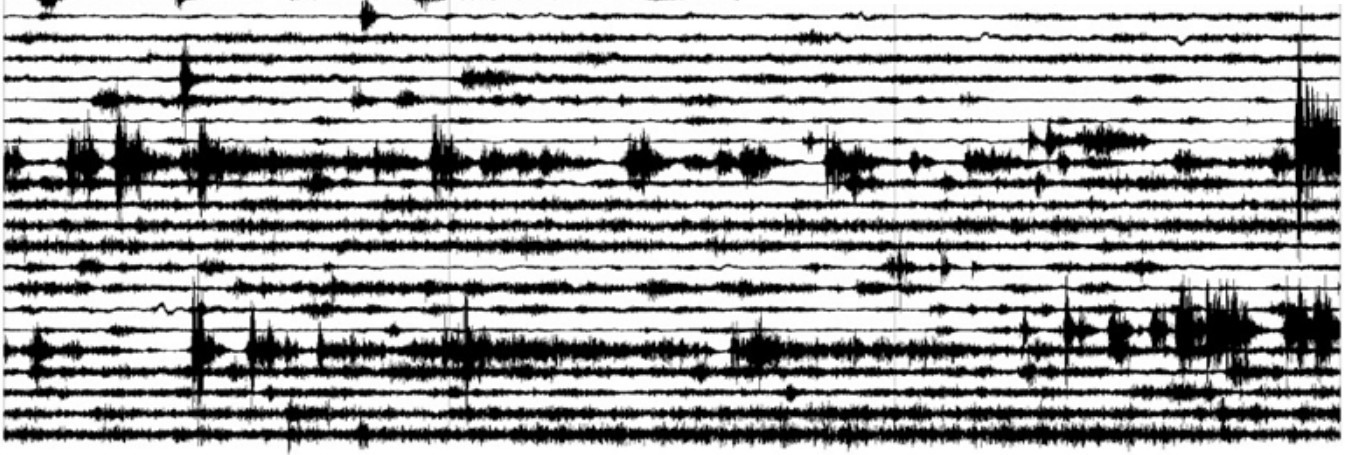
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Vent opening



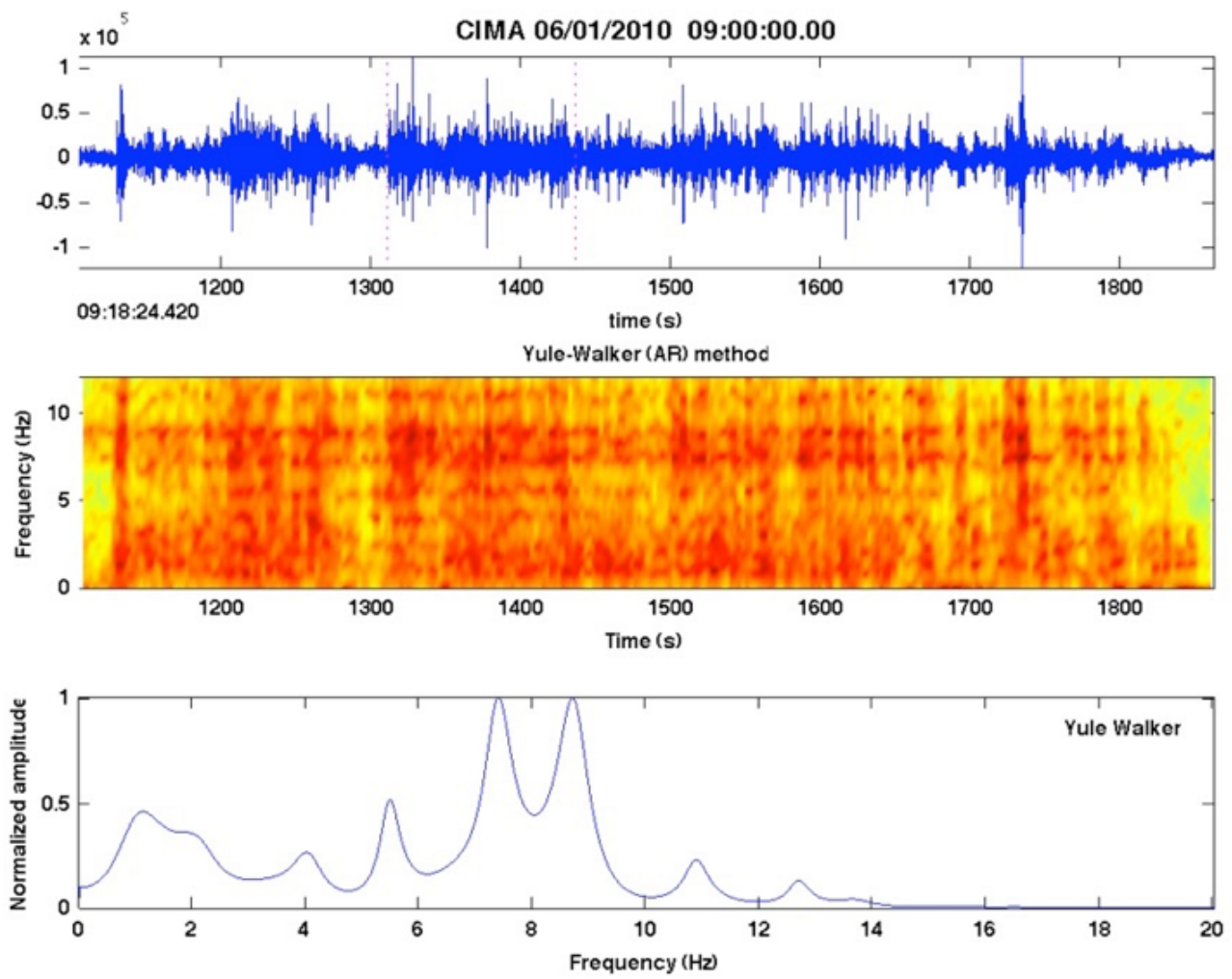
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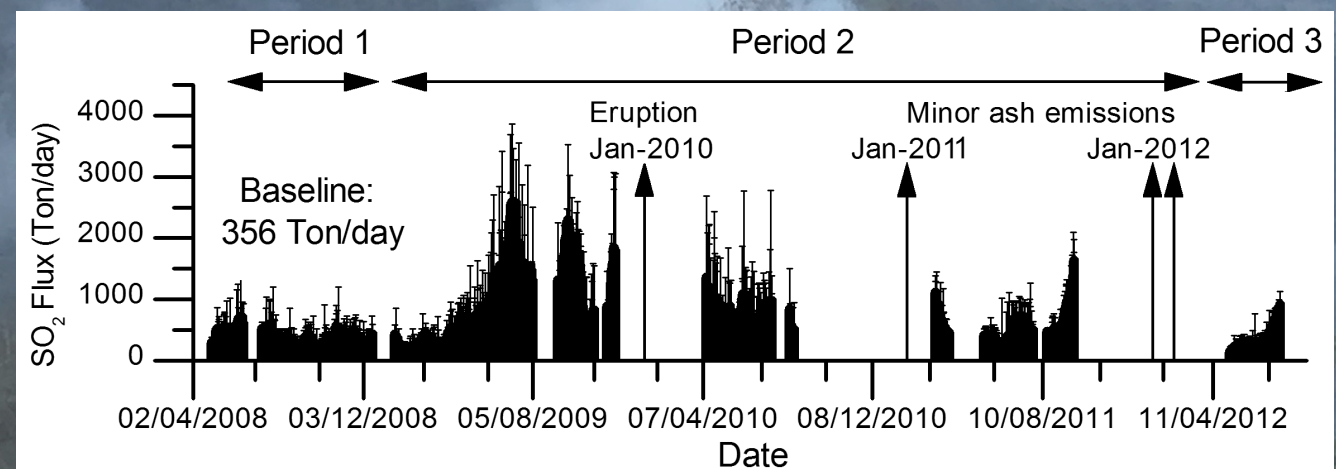
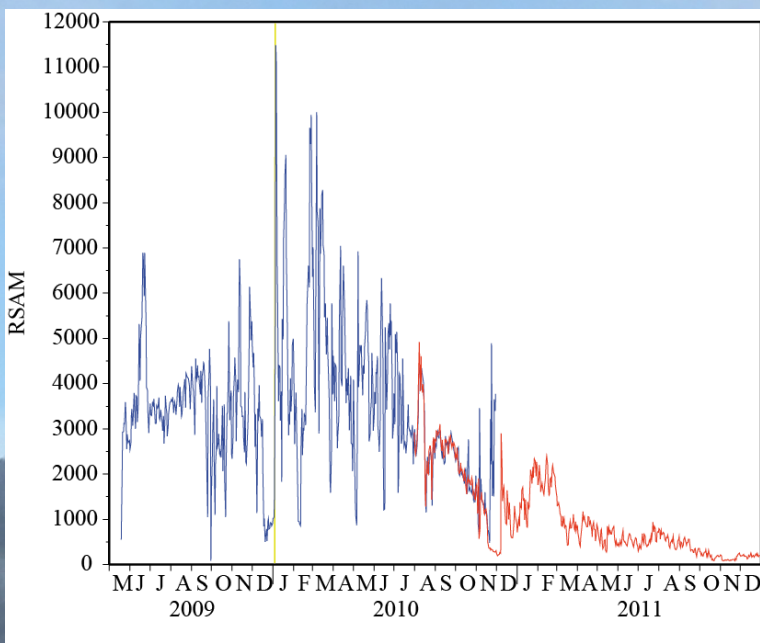
Inicio de actividad



High frequency tremor

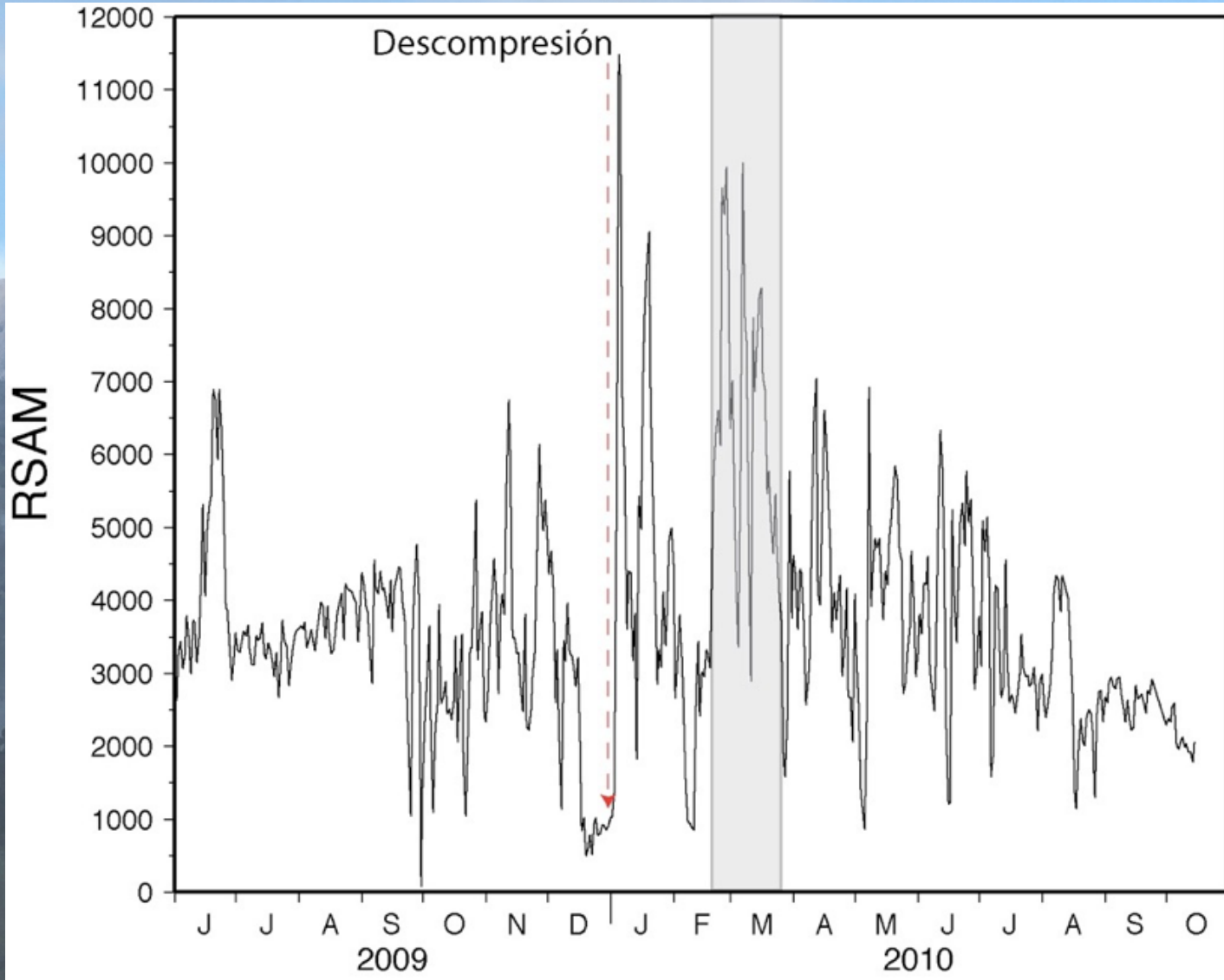


Seismicity and degassing

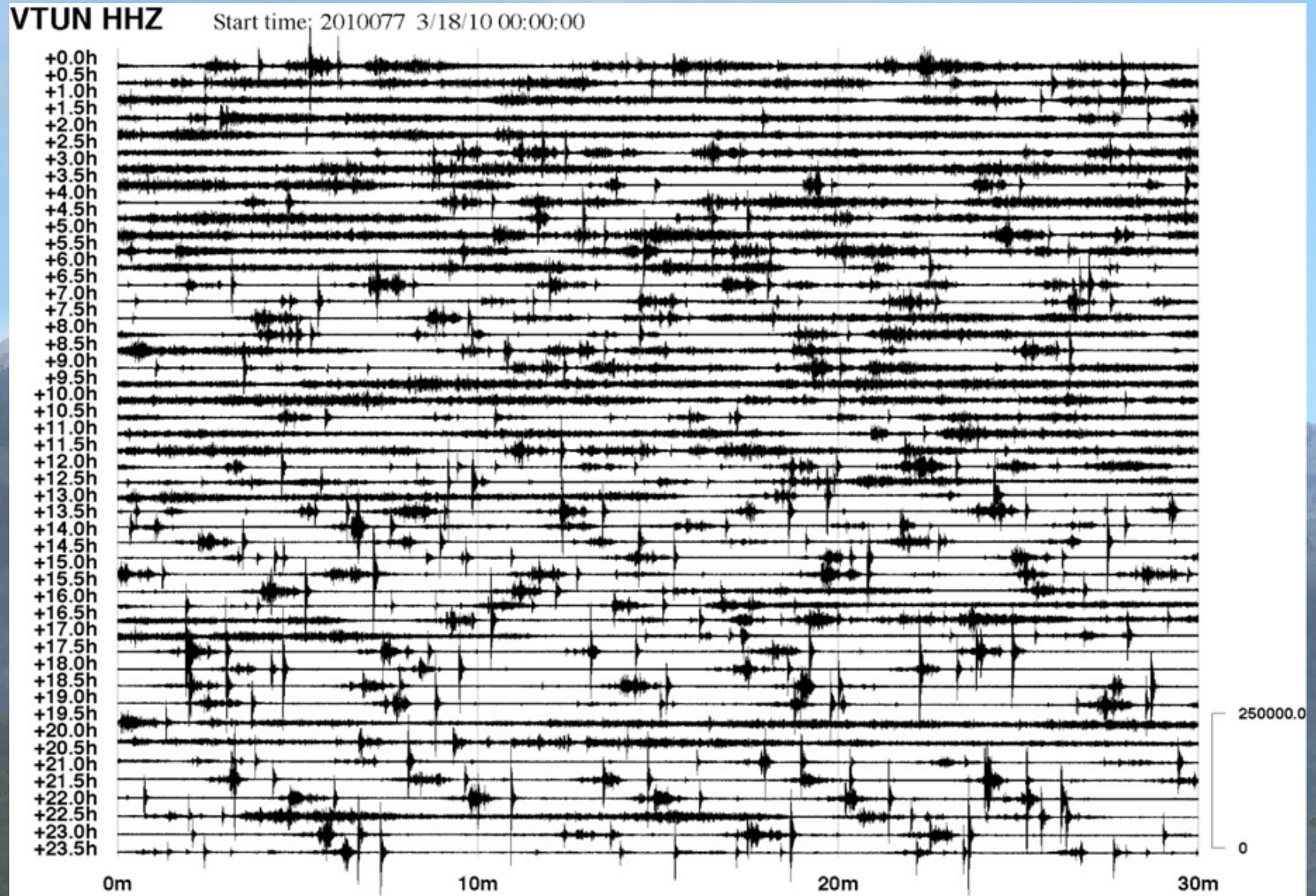


From Conde et al. (2012)

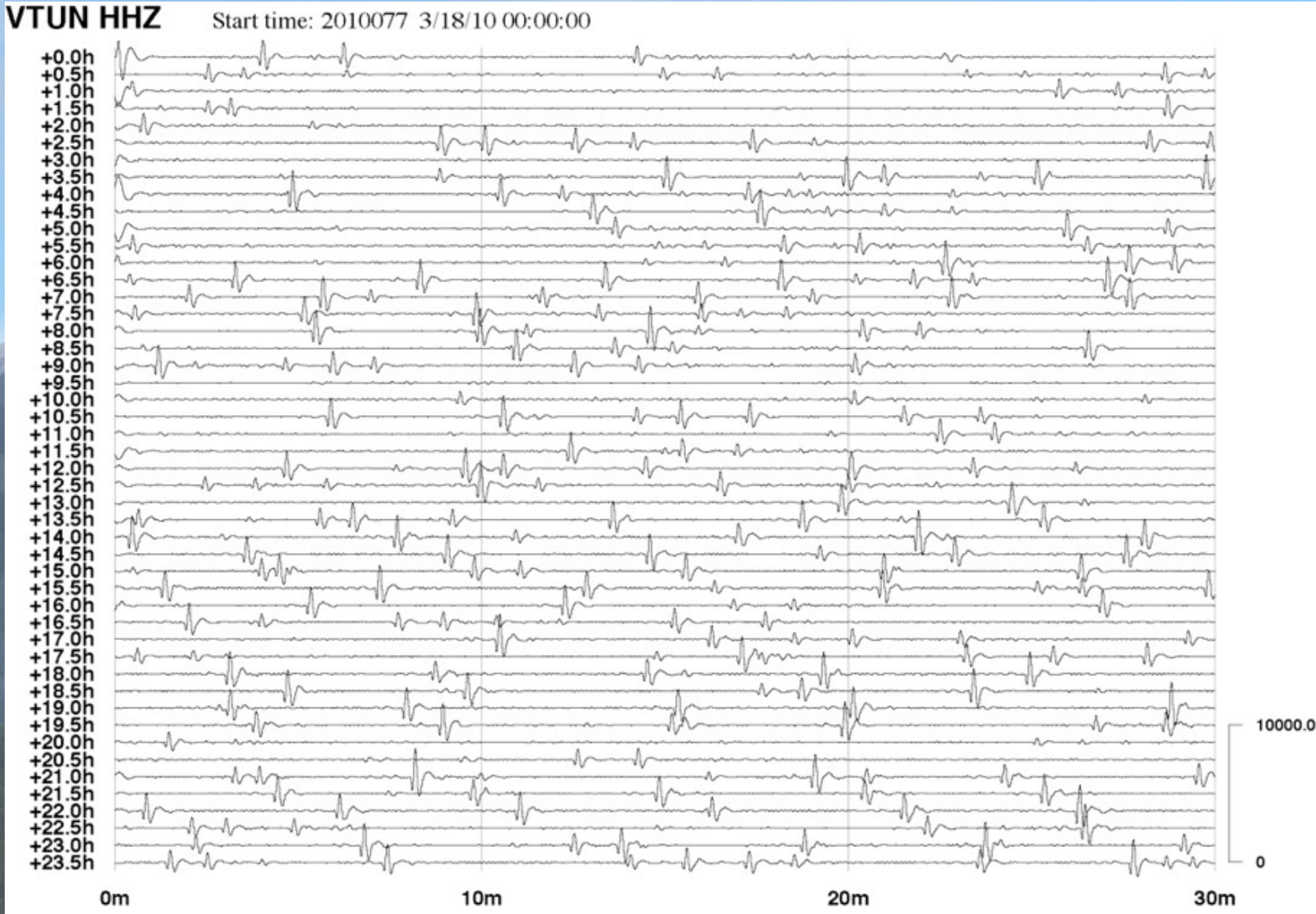
VLP activity and banded tremor



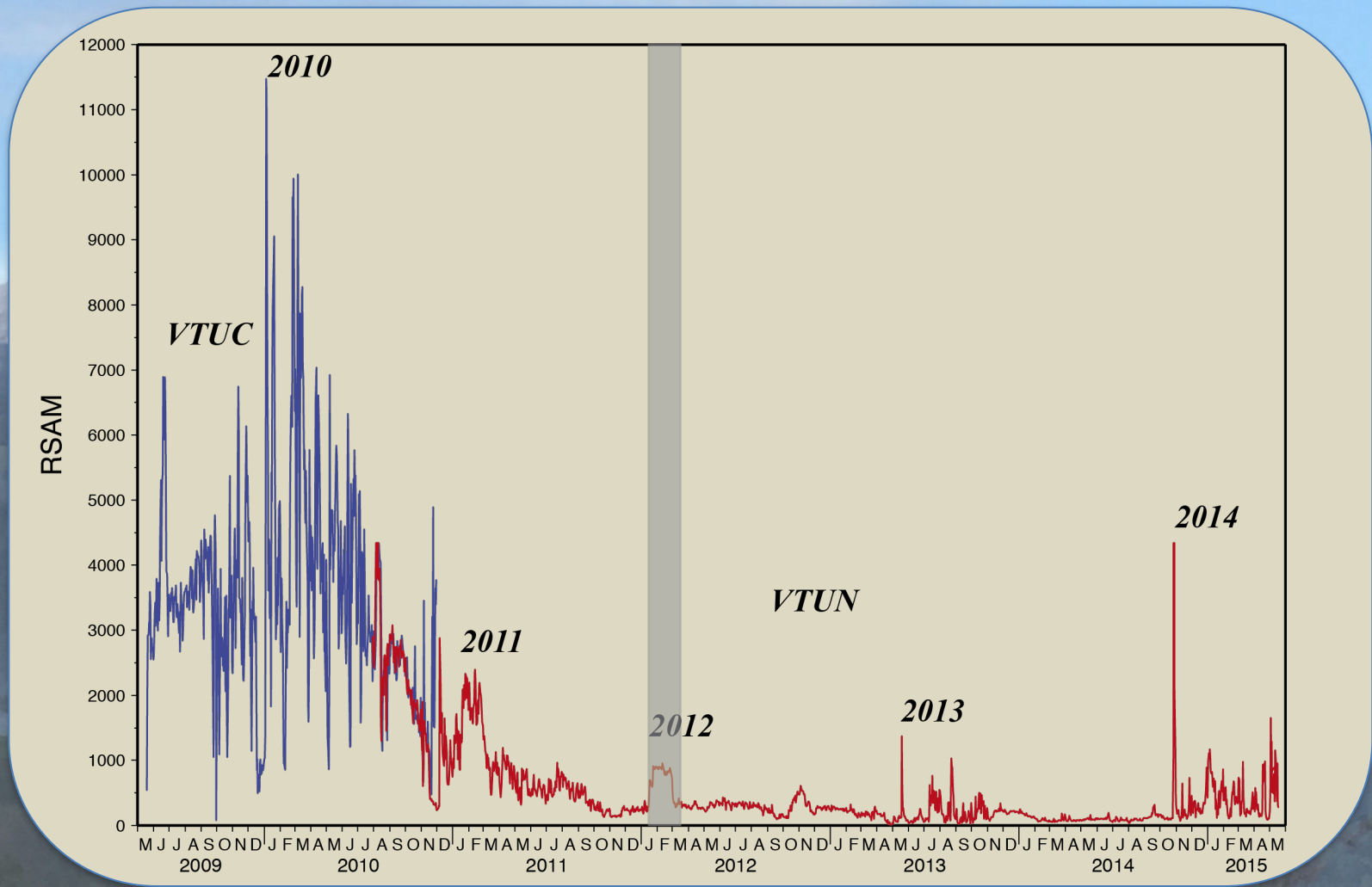
VLP activity and banded tremor

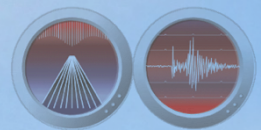


VLP activity and banded tremor



2012: New vent opening

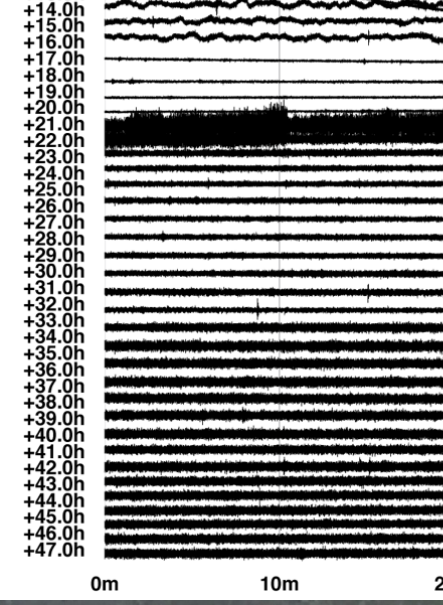
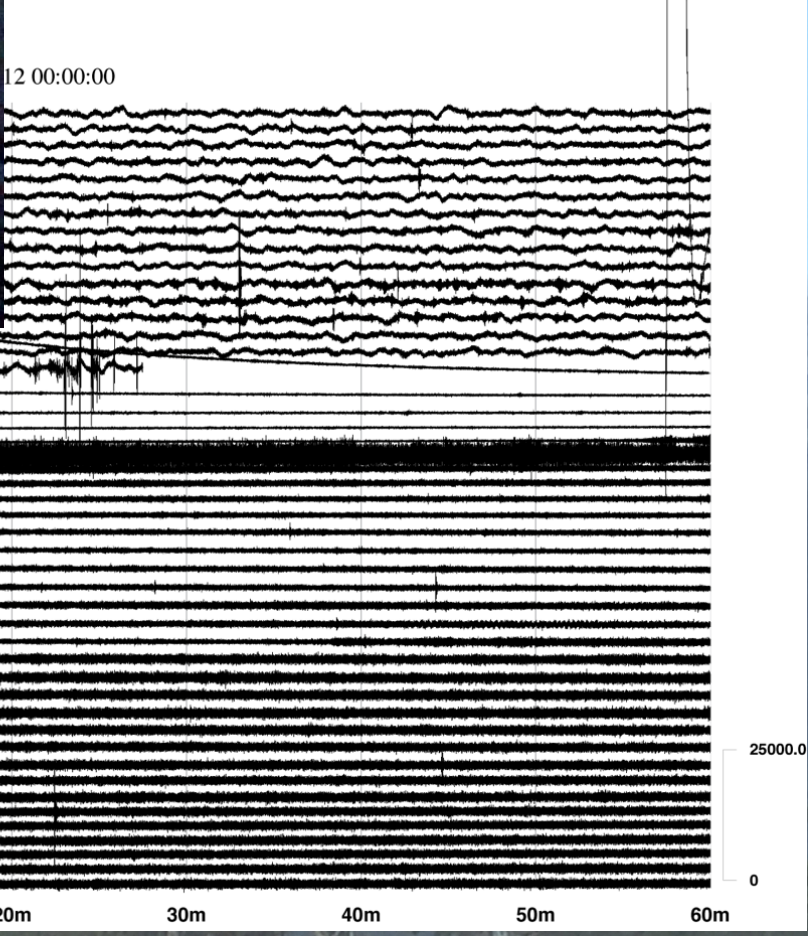
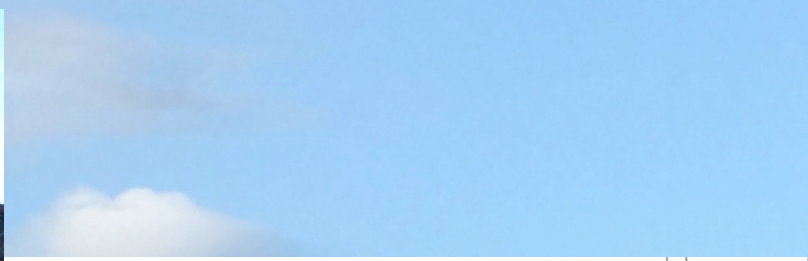




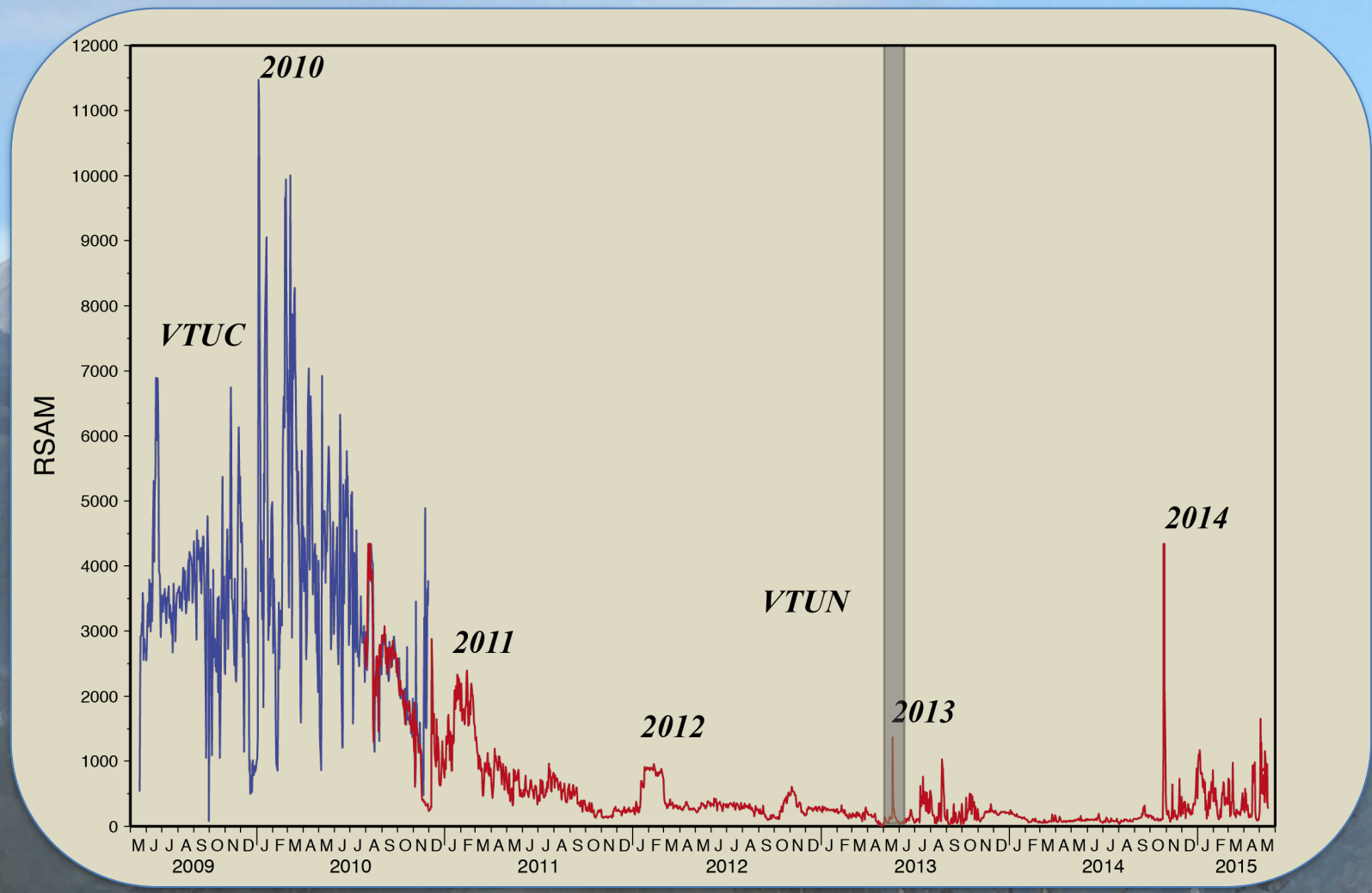
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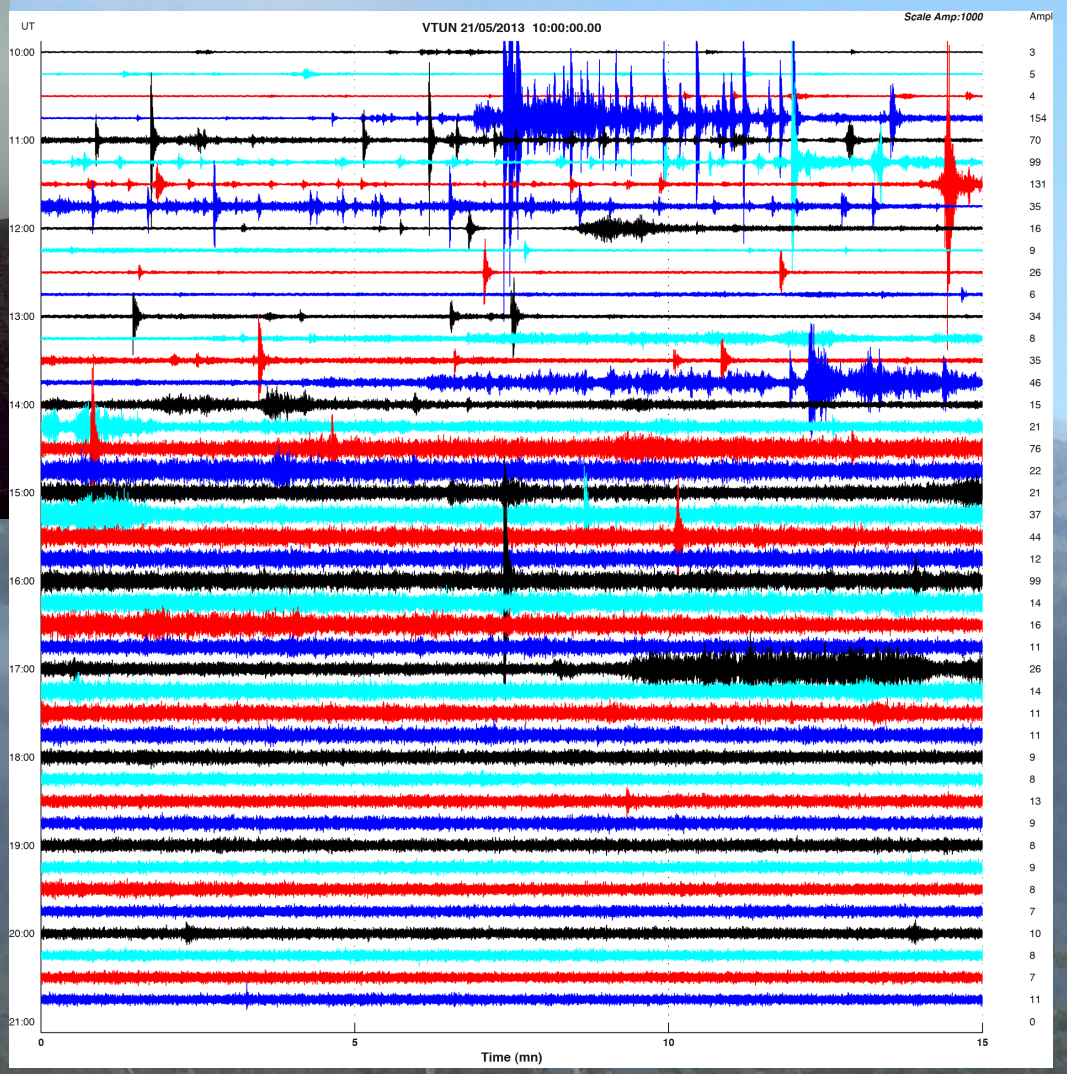
2012: phreatic eruption



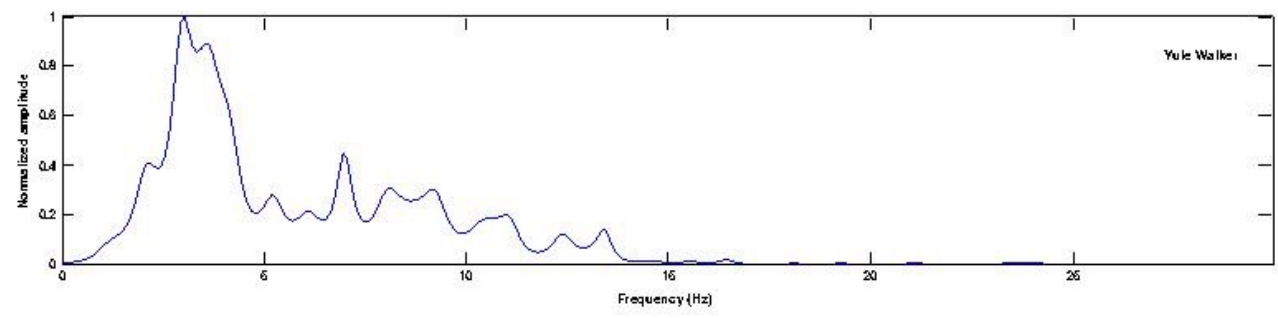
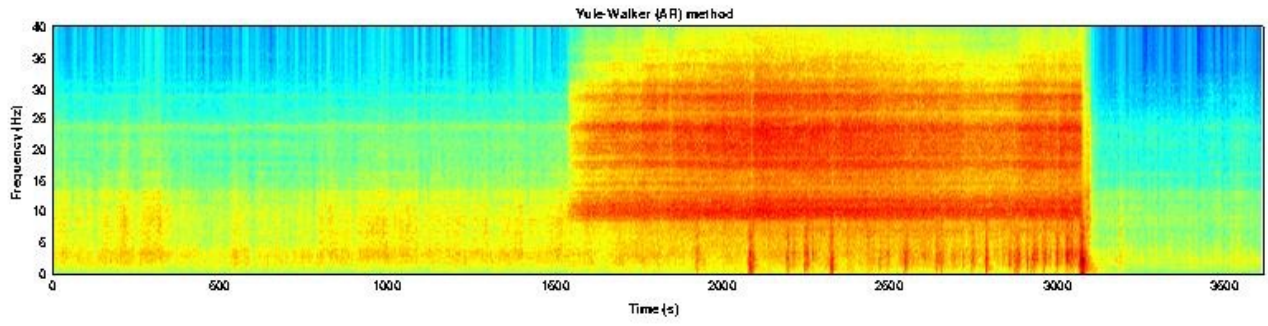
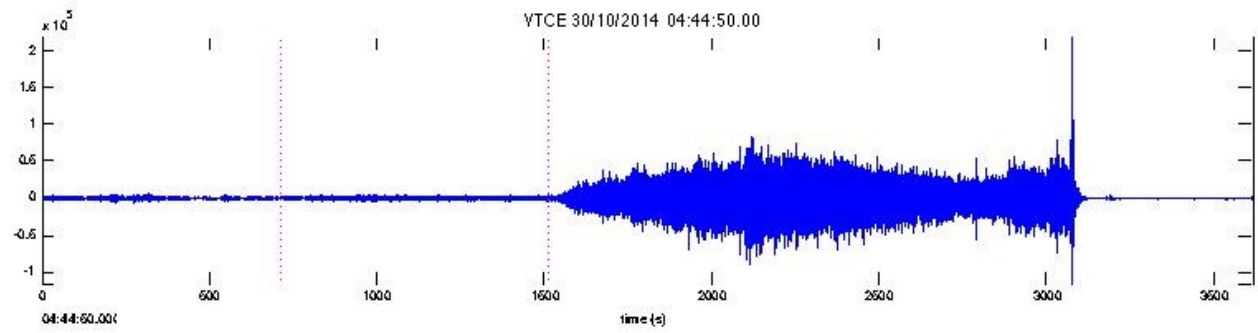
2013: another ash venting event



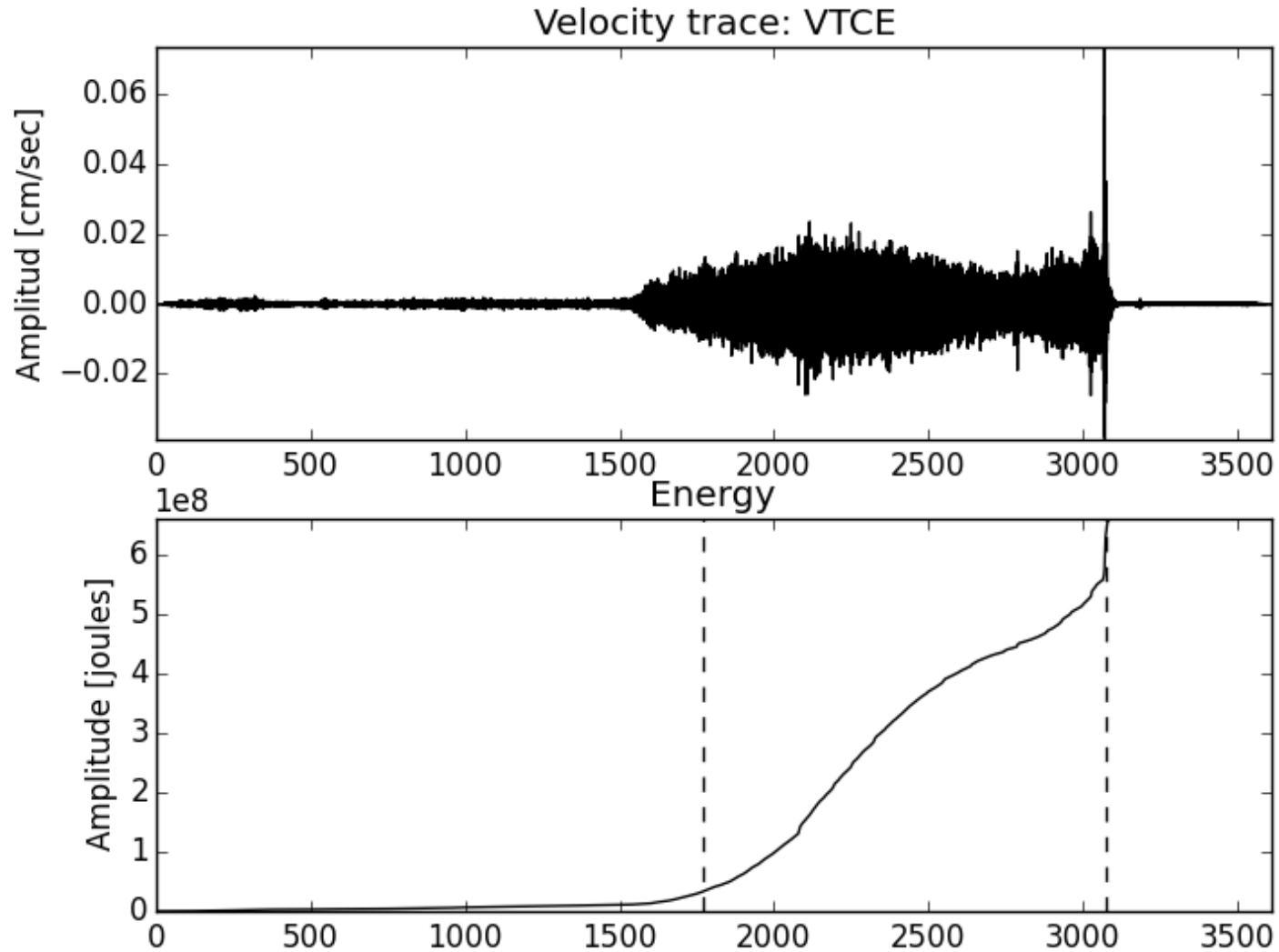
2013: another ash venting



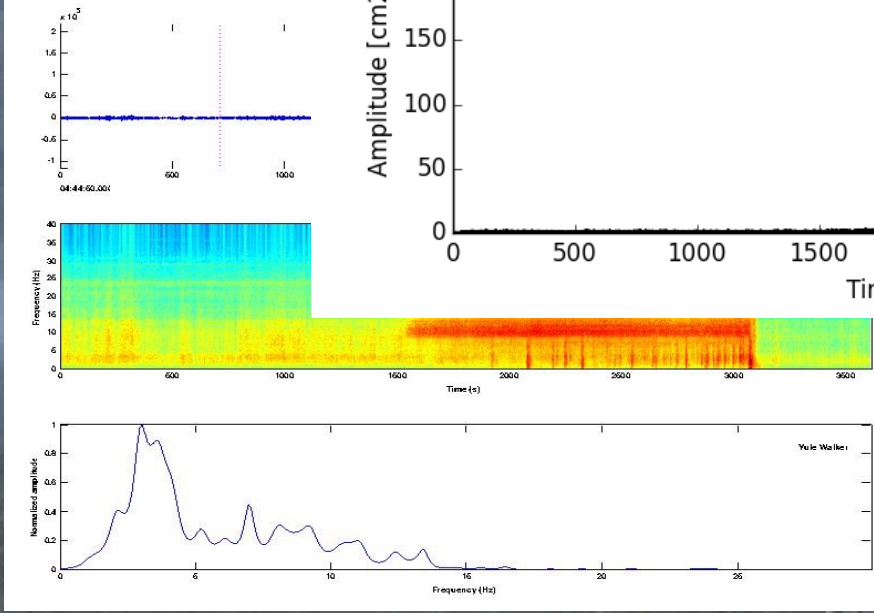
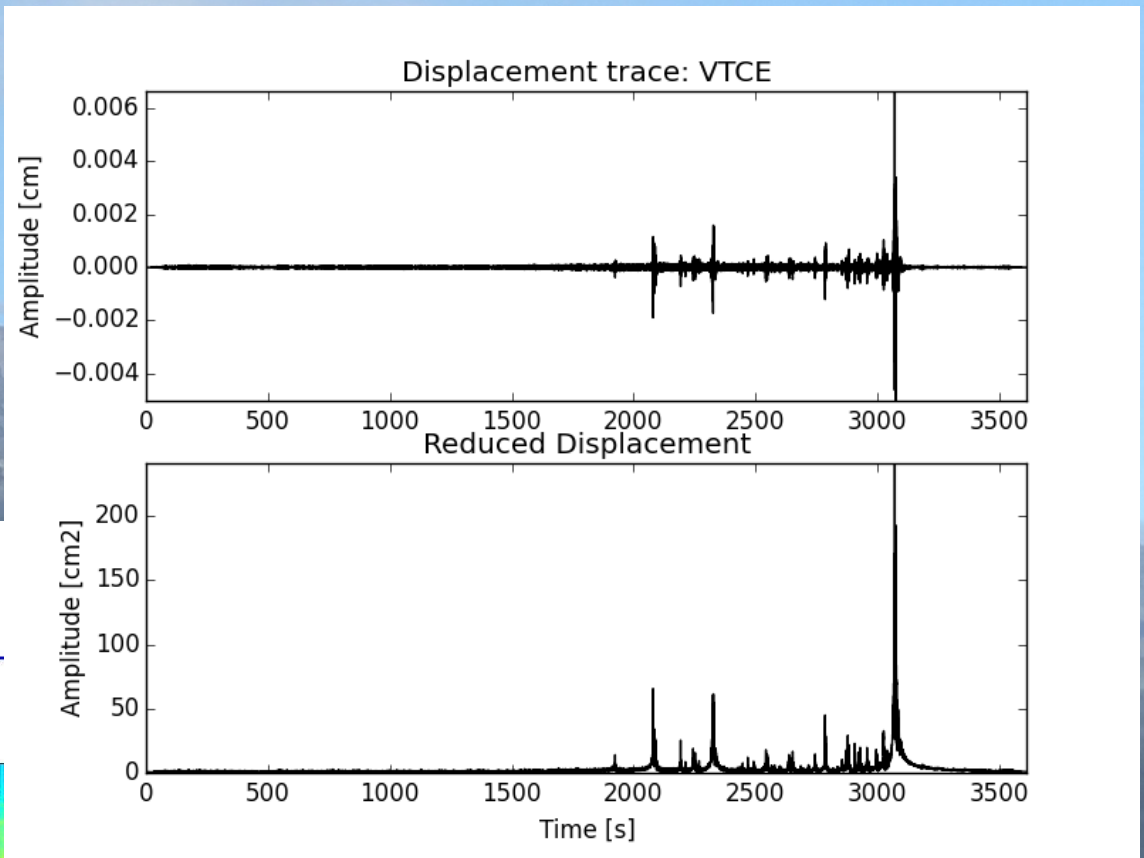
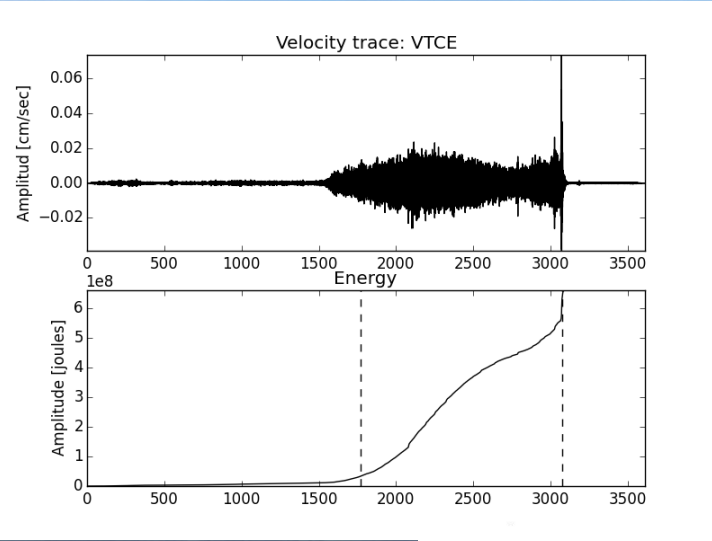
2014: extended unrest

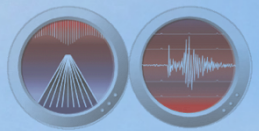


2014: extended unrest



2014: extended unrest



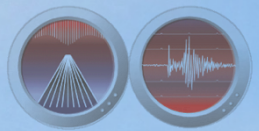


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2014 ash venting eruptions





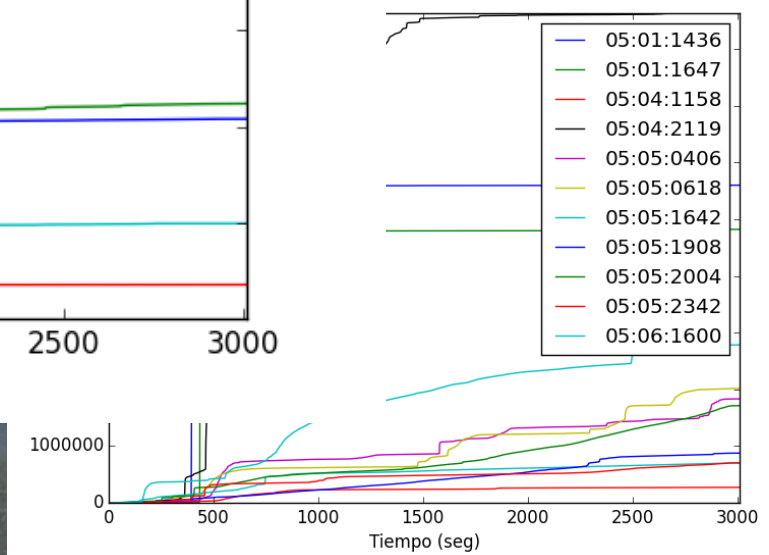
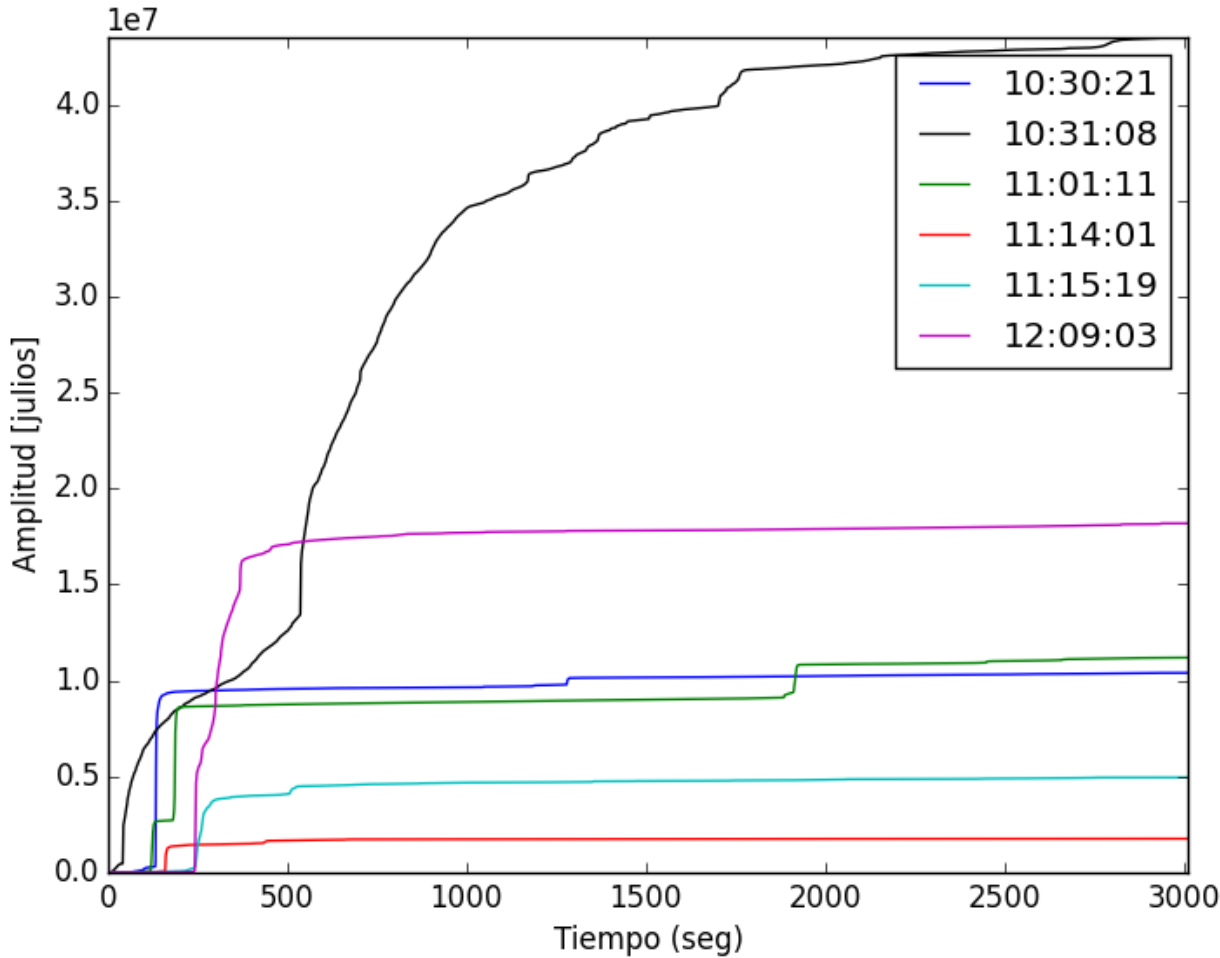
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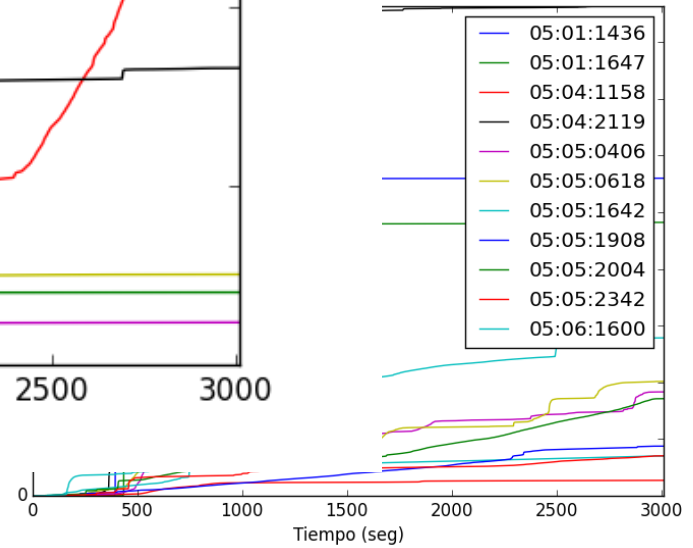
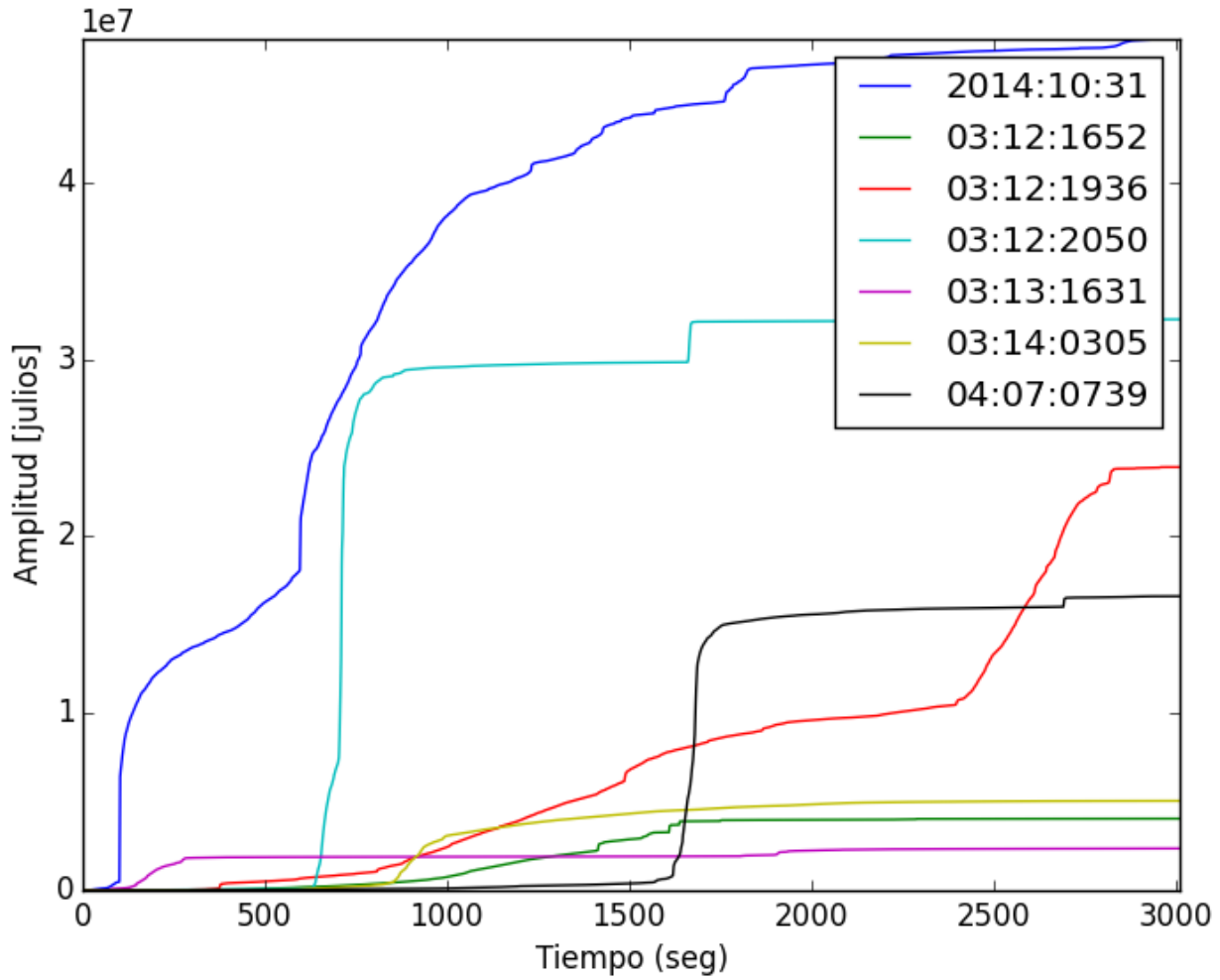
2015 ash venting eruptions



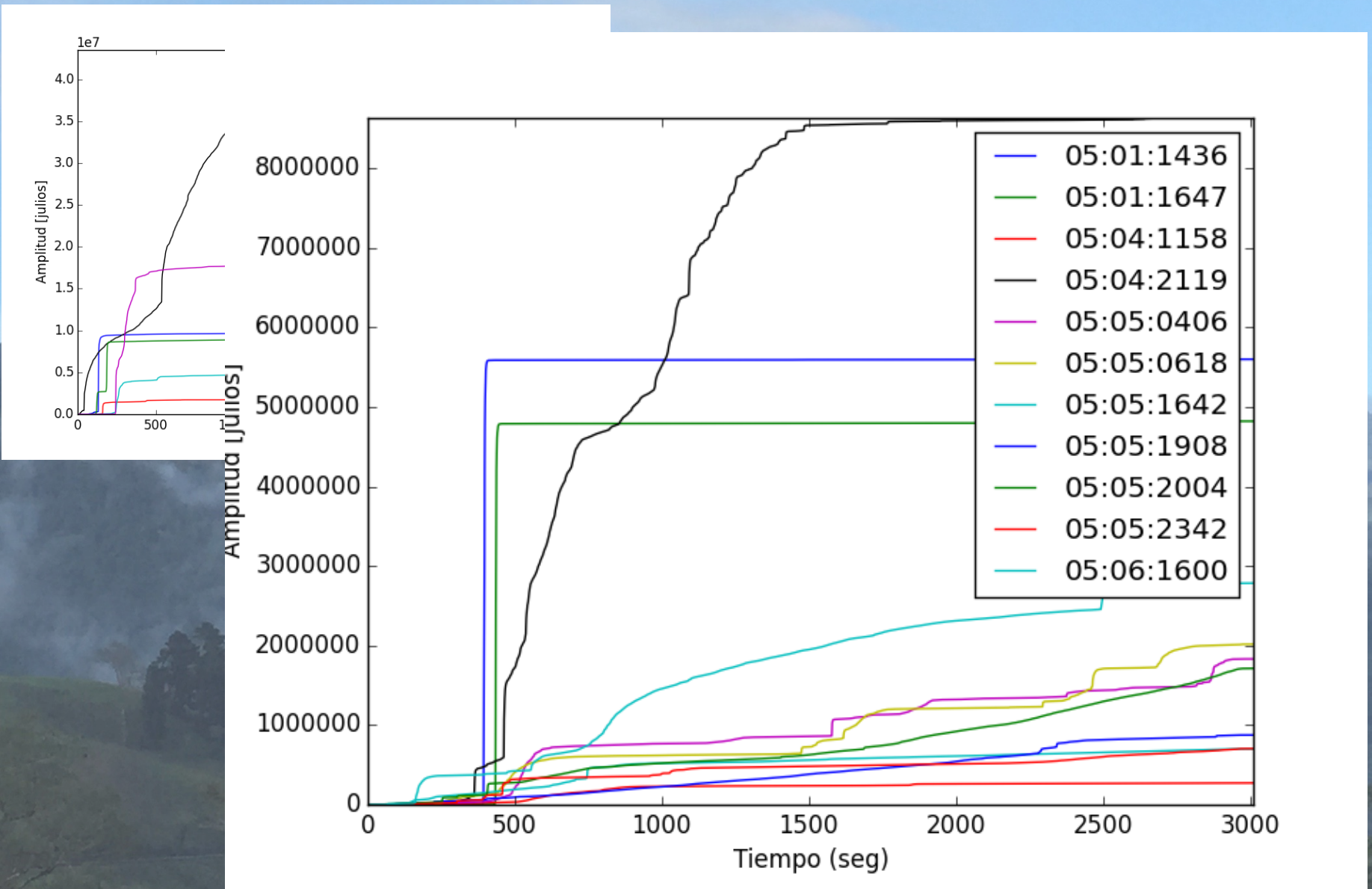
2014: extended unrest



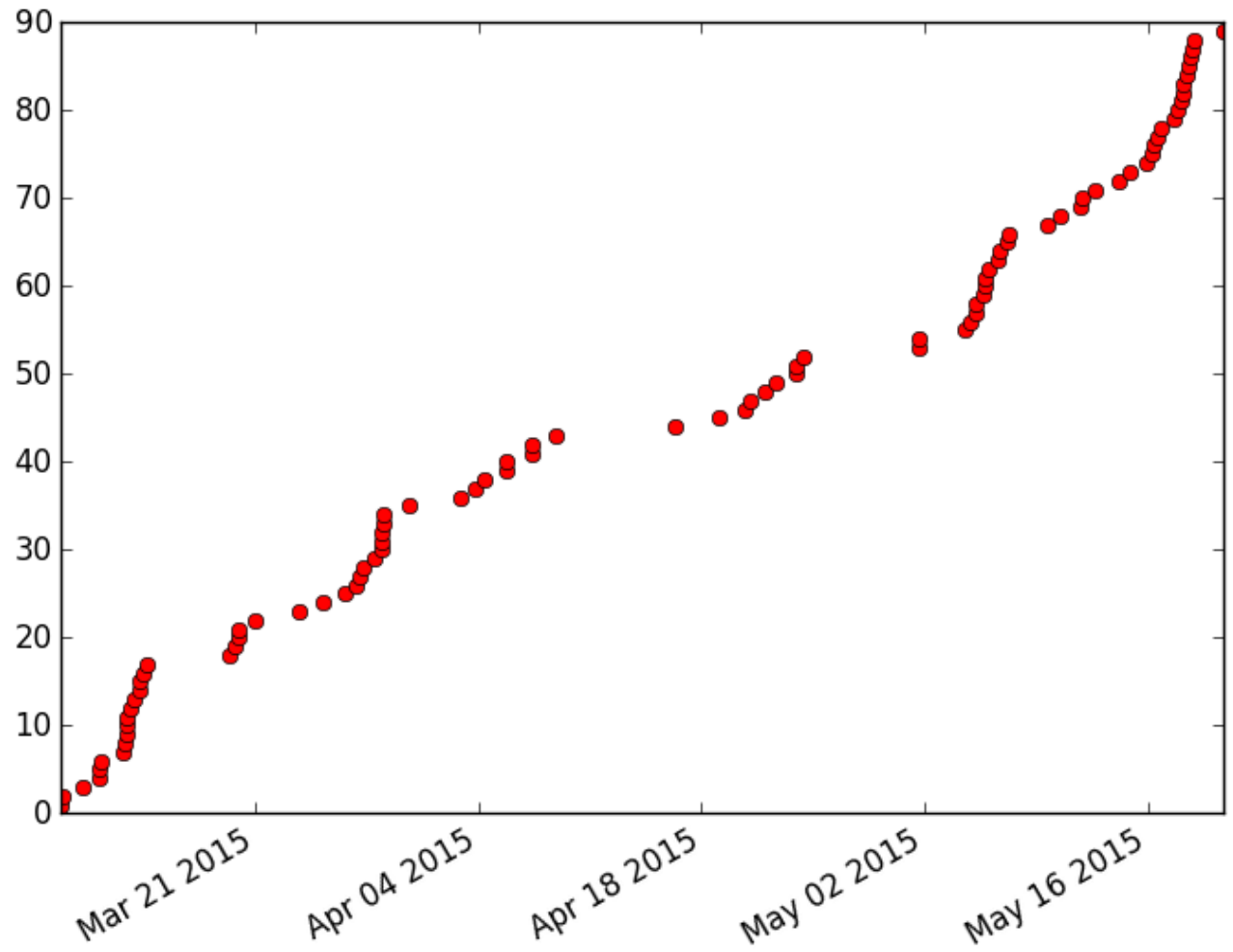
2014: extended unrest



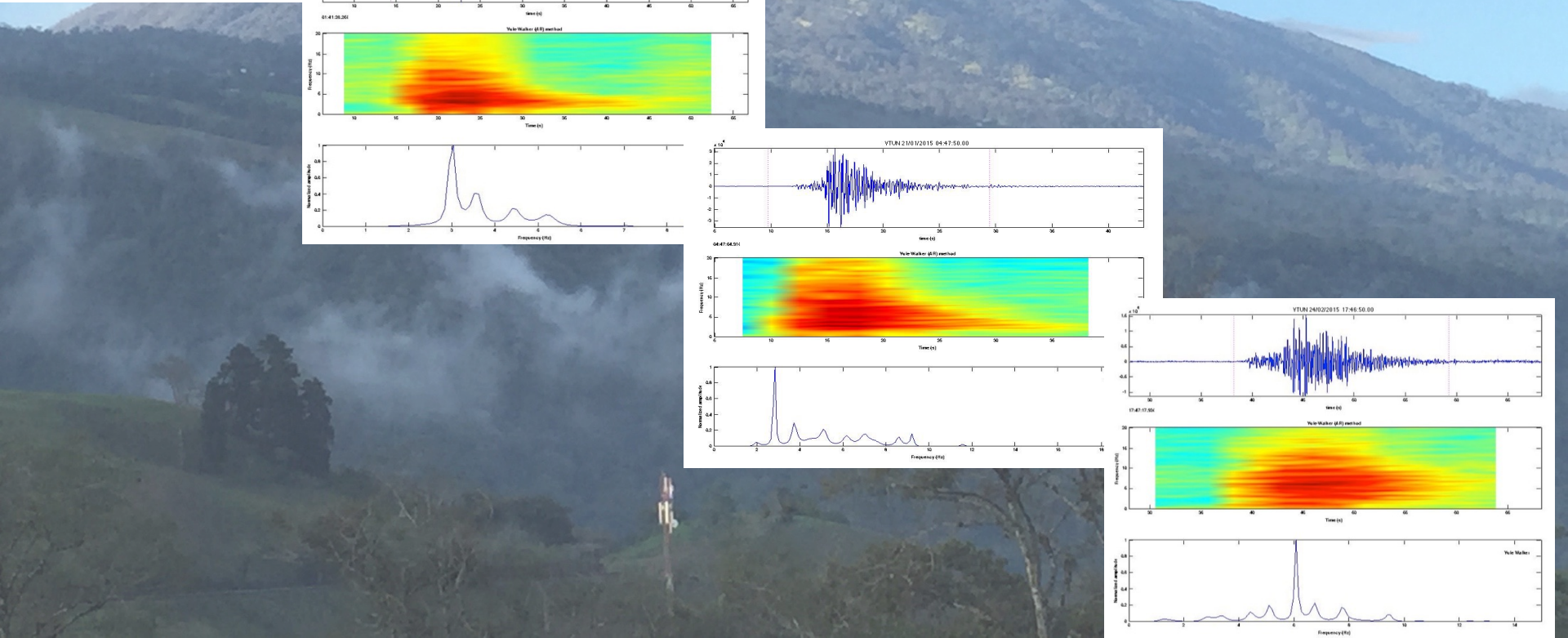
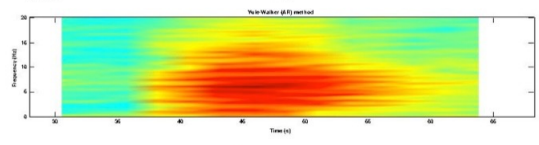
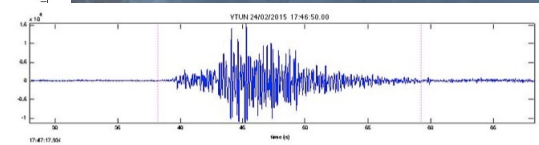
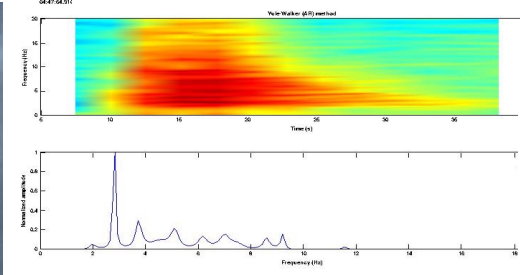
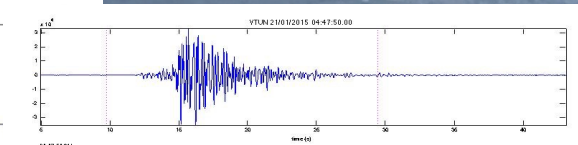
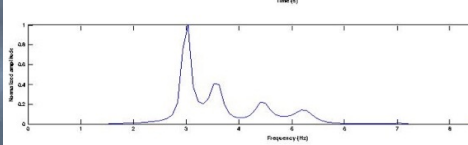
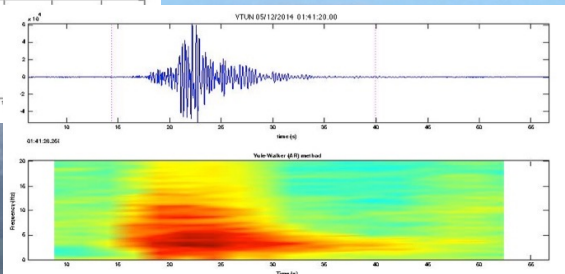
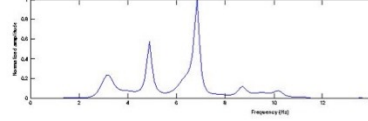
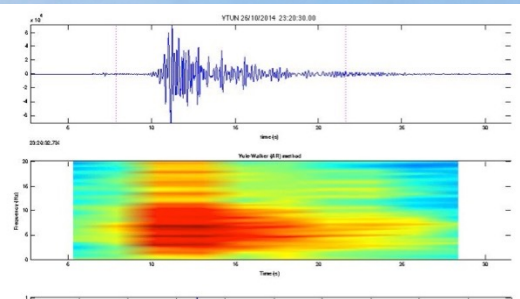
2014: extended unrest

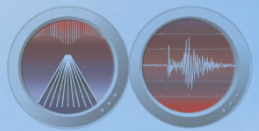


Acumulated number of eruptions



Internal explosions

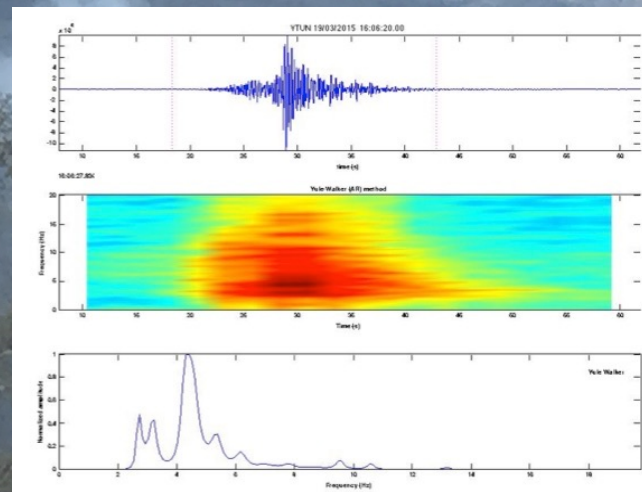
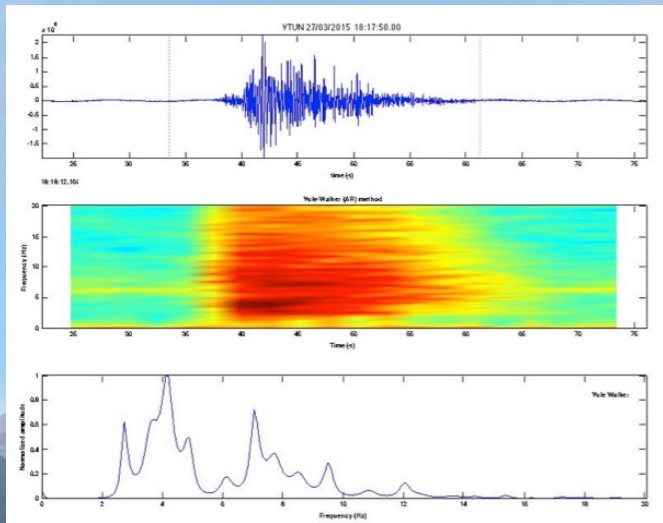


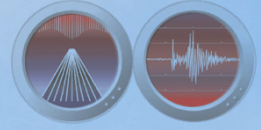


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Internal explosions

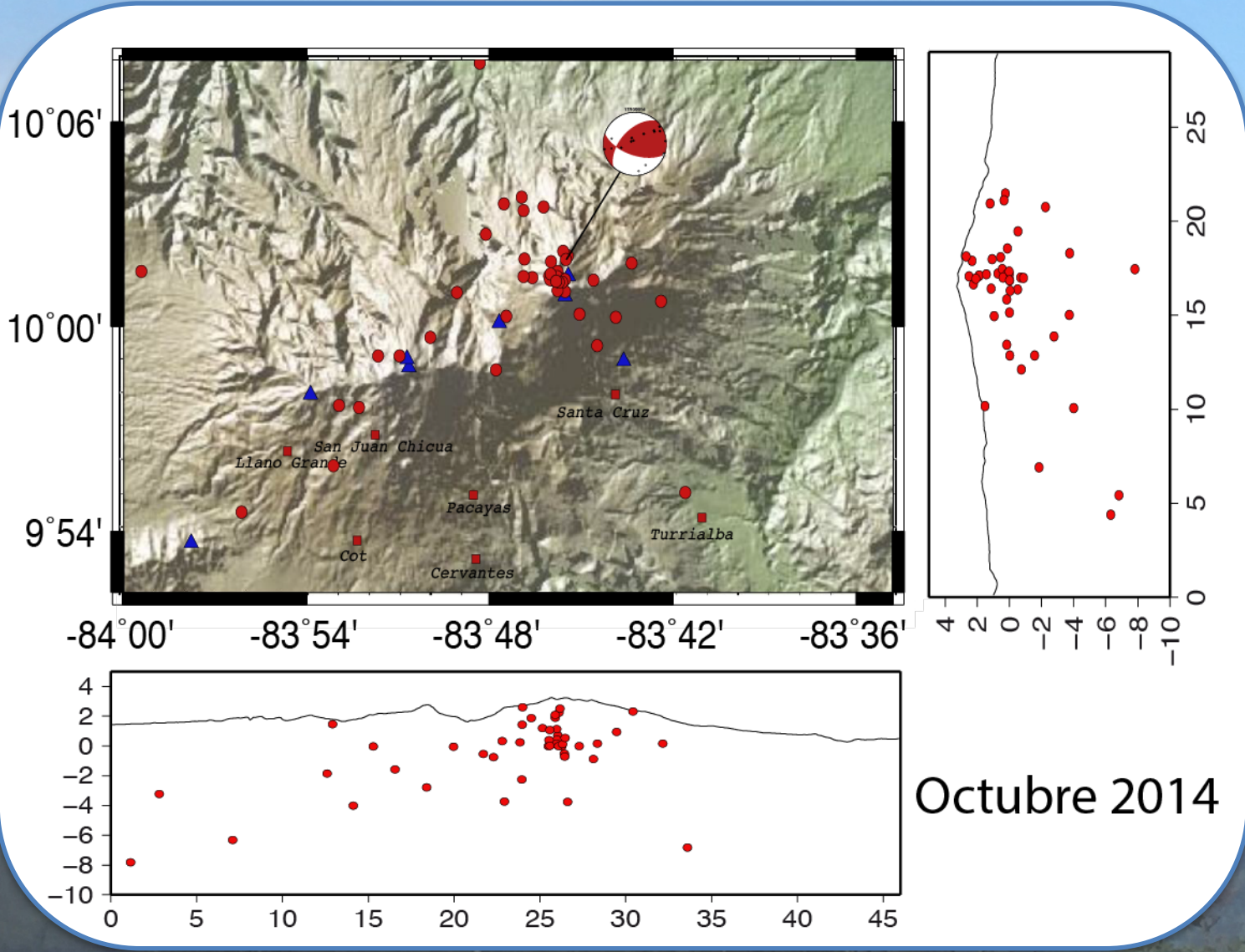


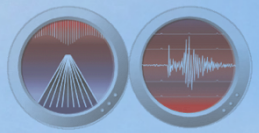


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Shallow seismicity





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Thank you for your time!