

# Crater Rim Collapses Affect the Lava Fountaining Frequency during the Fagradalsfjall Eruption, Iceland 2021

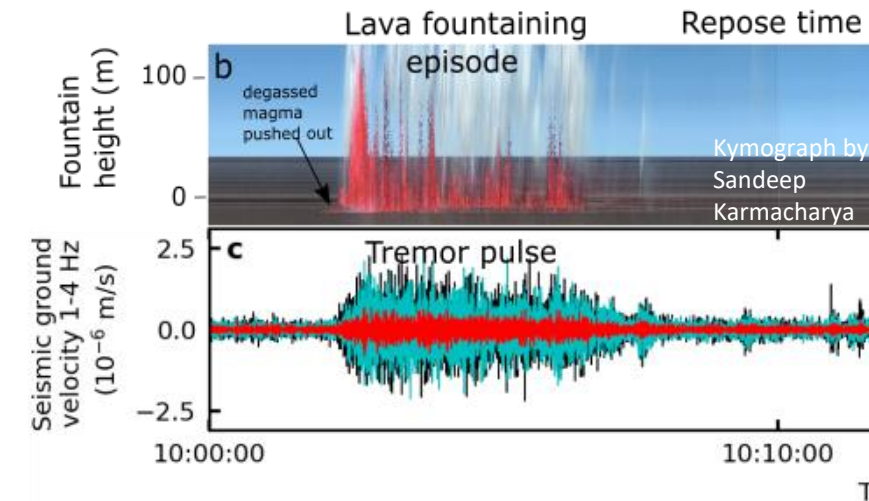
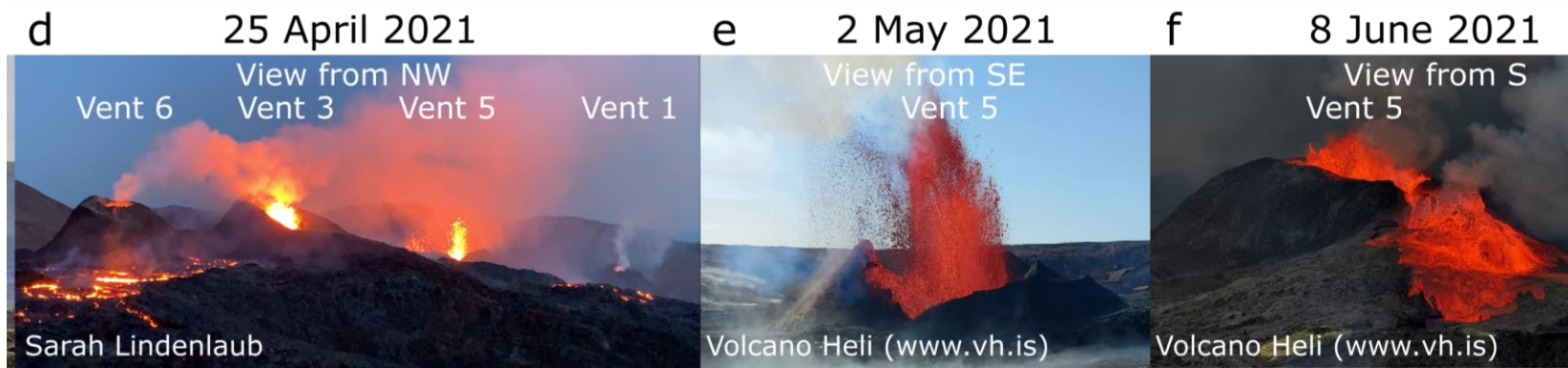
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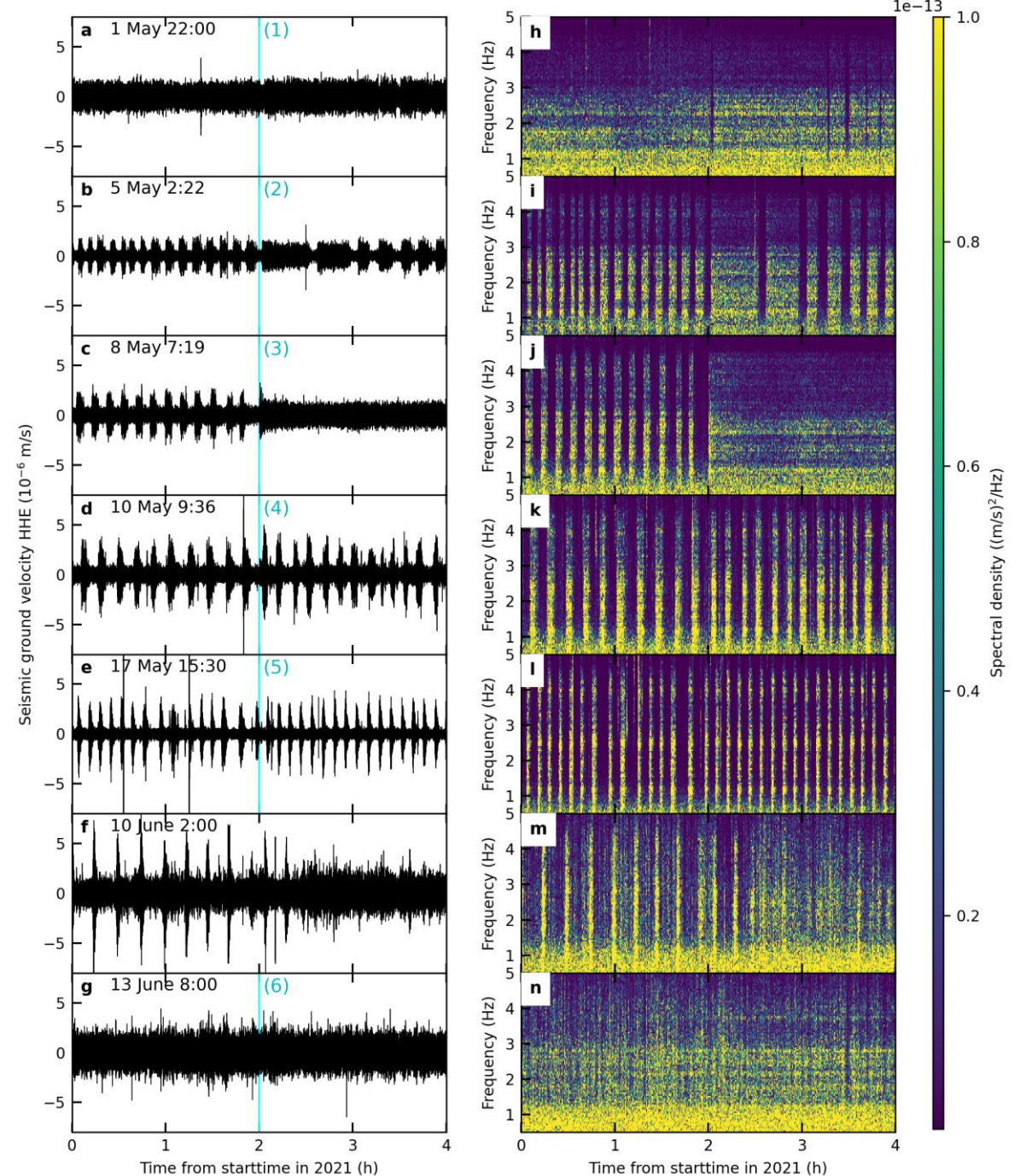


- Transition from multiple effusive vents to one effusive vent
- Transition from continuous effusion to episodic lava fountaining

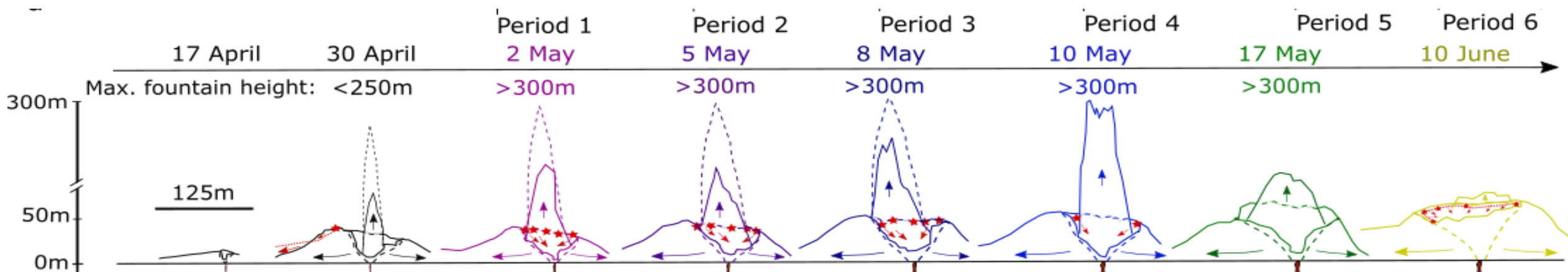
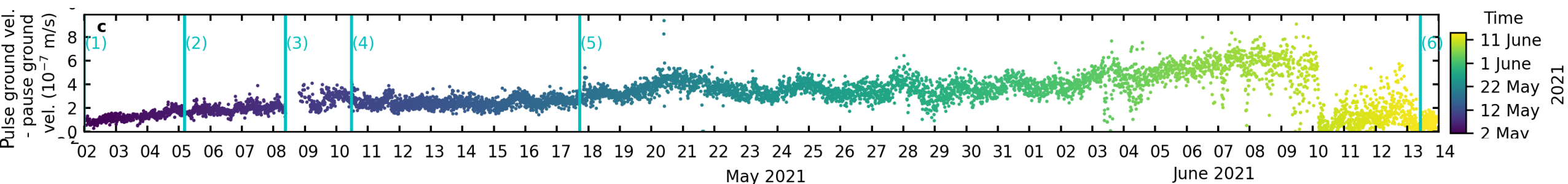
Eibl et al. in review with Bulletin of Volcanology

# Seismograms & spectrograms highlighting changes in the pattern

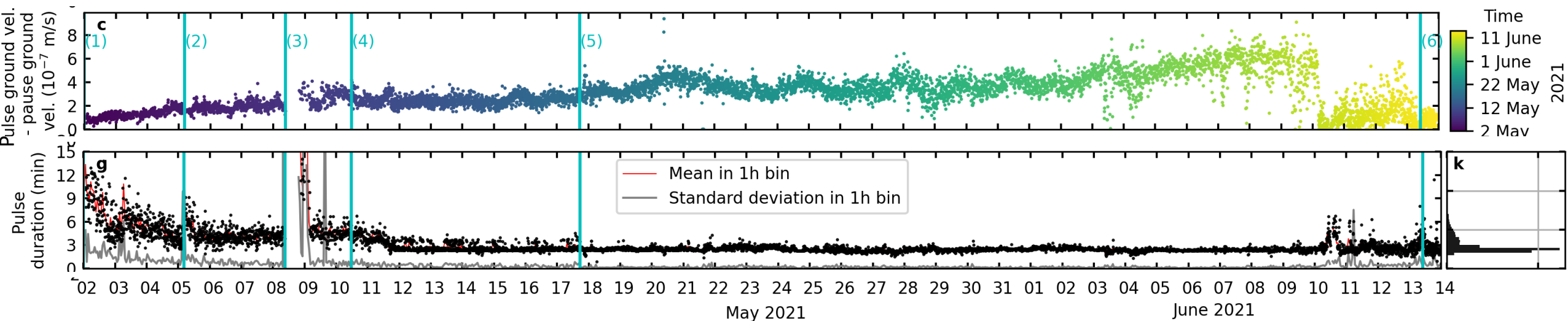
- Why do these changes occur?



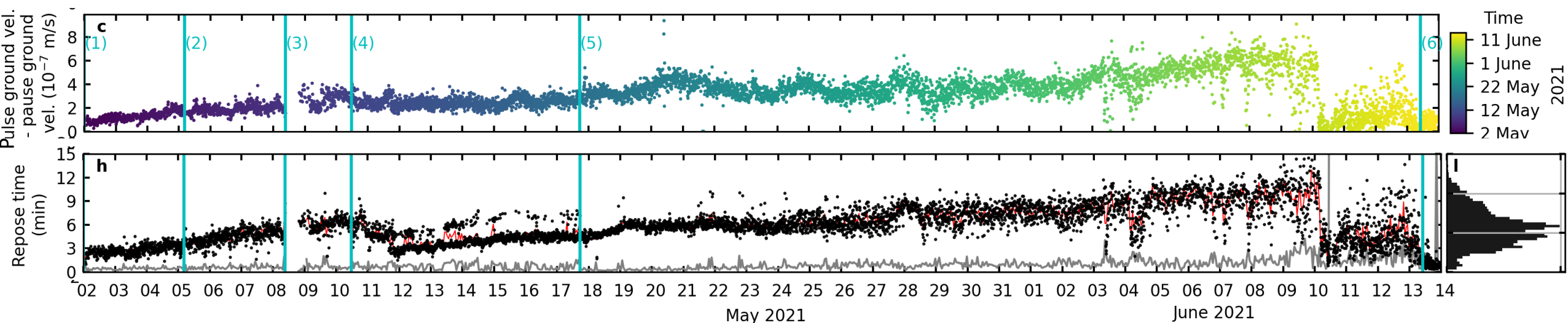
# Seismic amplitude & fountain height decrease linked to mechanical erosion of vent & its size increase



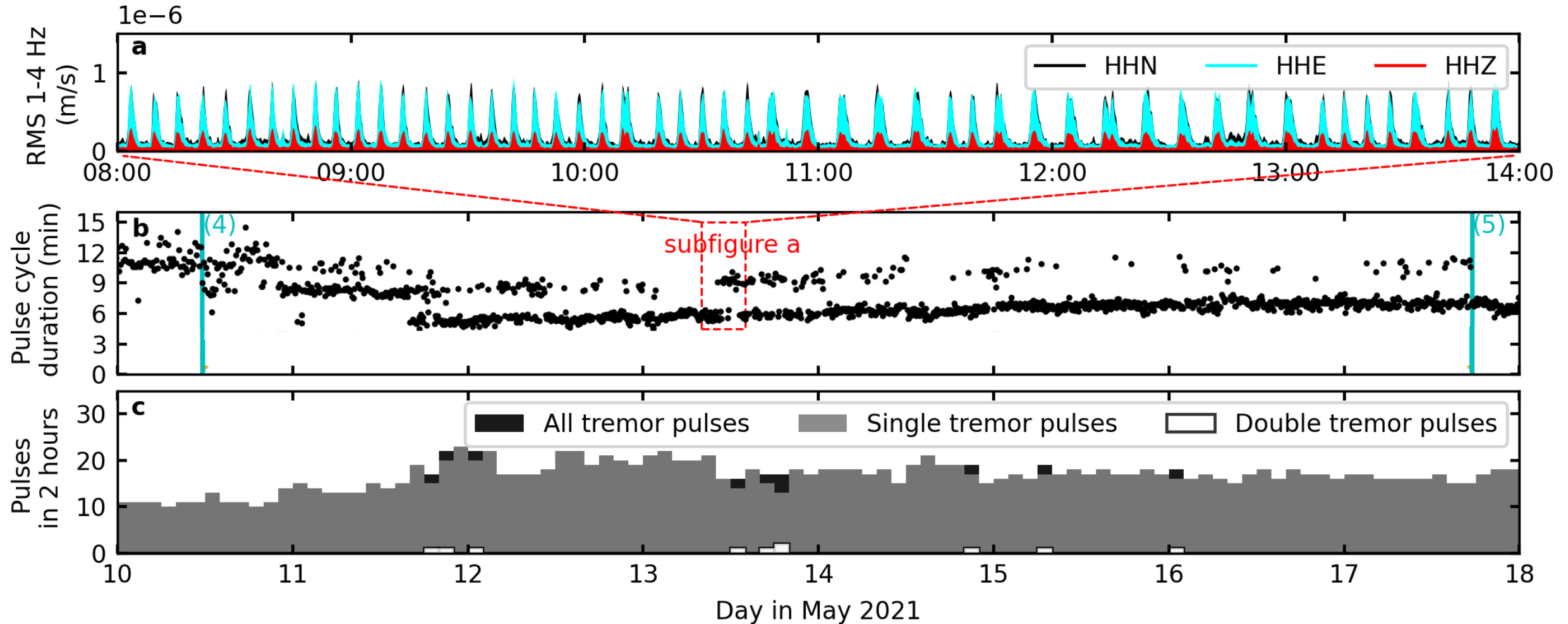
Pulse duration indicates a  
growing, shallow magma compartment from 2 to 11 May



# Repose time linked to viscosity & amount of degassed magma at the bottom of the crater

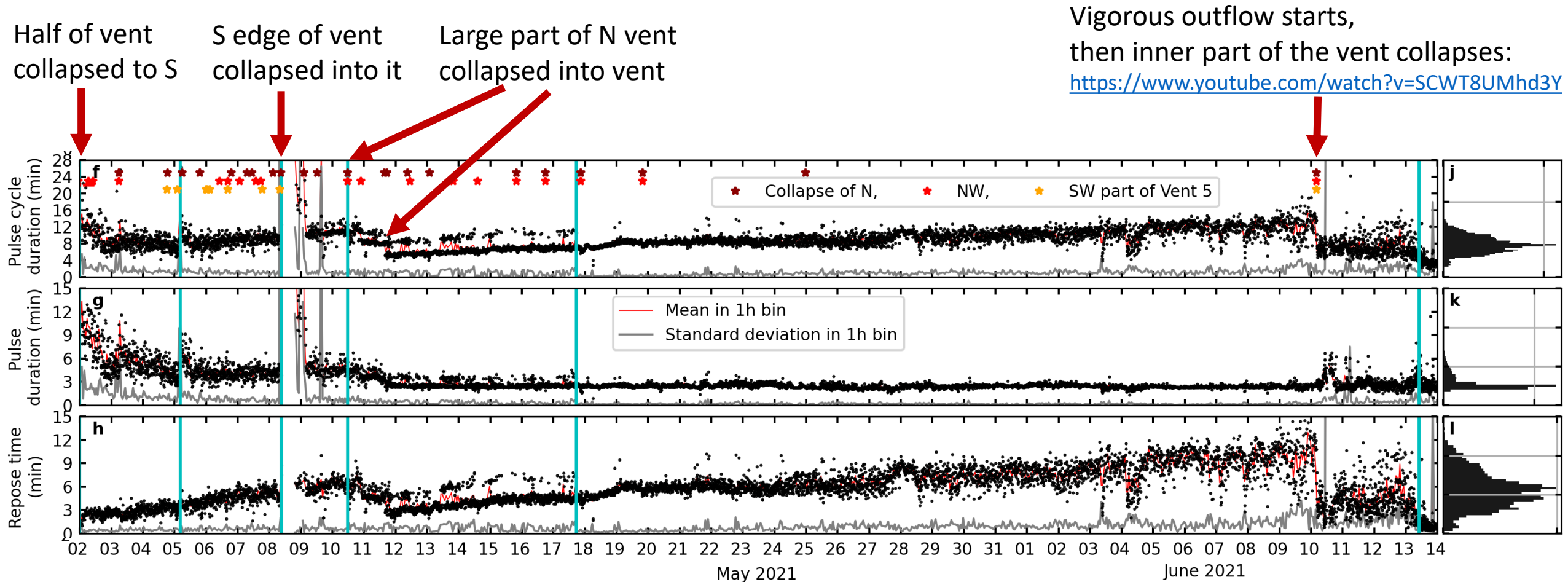


## Phase 4: Short and long pulses coexist

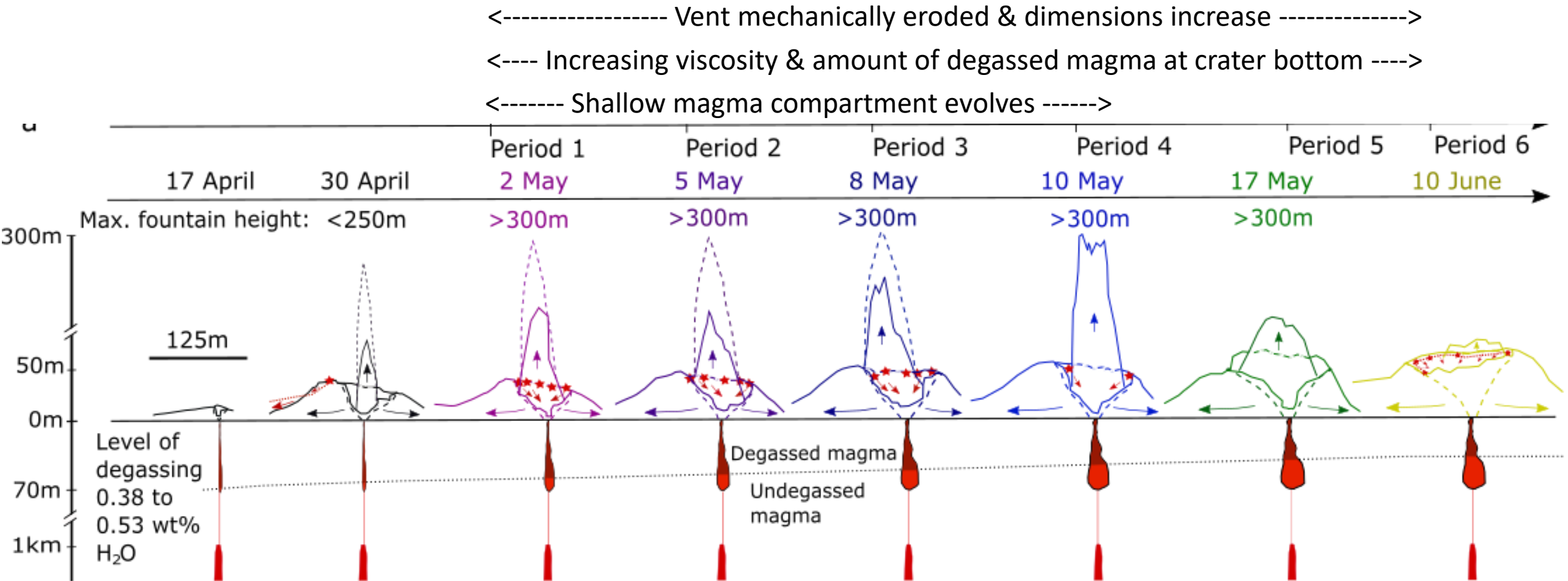


- Of all pulses: 76% short, 24% long
- Repose times are longer after longer pulses
- Some longer pulses are composed of two peaks

# Changes in behaviour triggered by vent collapses?

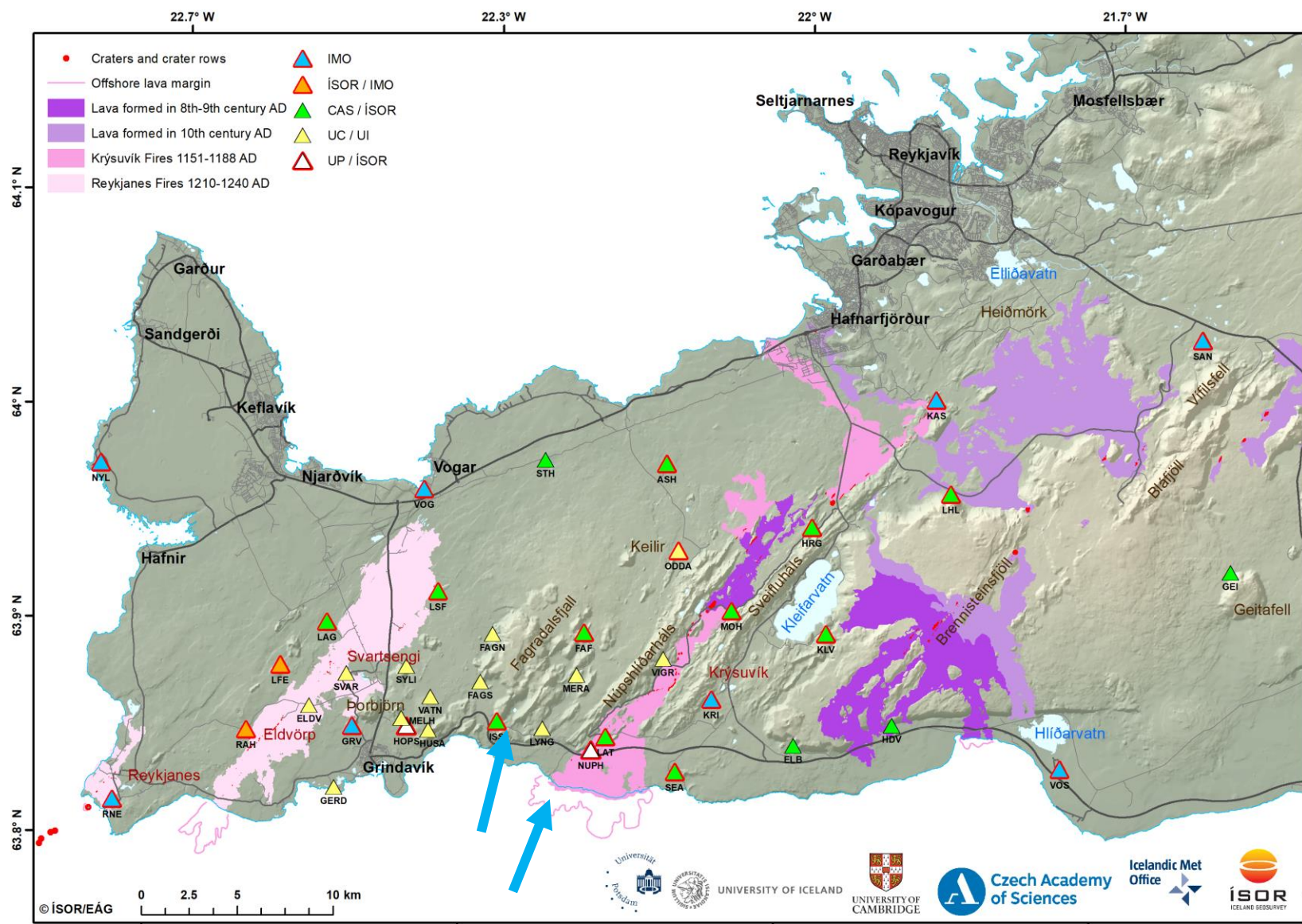


# Changes in magma compartment, crater geometry, magma viscosity & vent dimension affect the fountaining



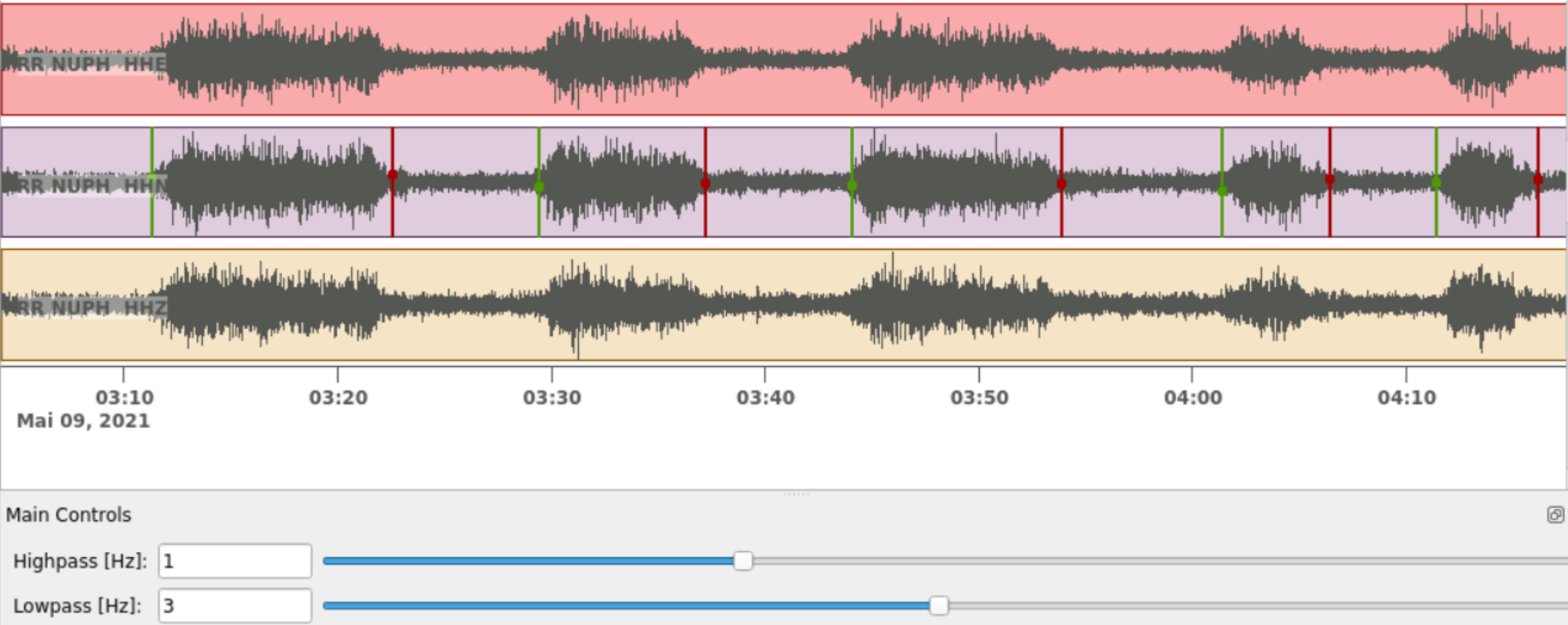
Eibl et al. in review, <https://www.researchsquare.com/article/rs-1453738/v1>

# Seismic Instrument Network in Reykjanes



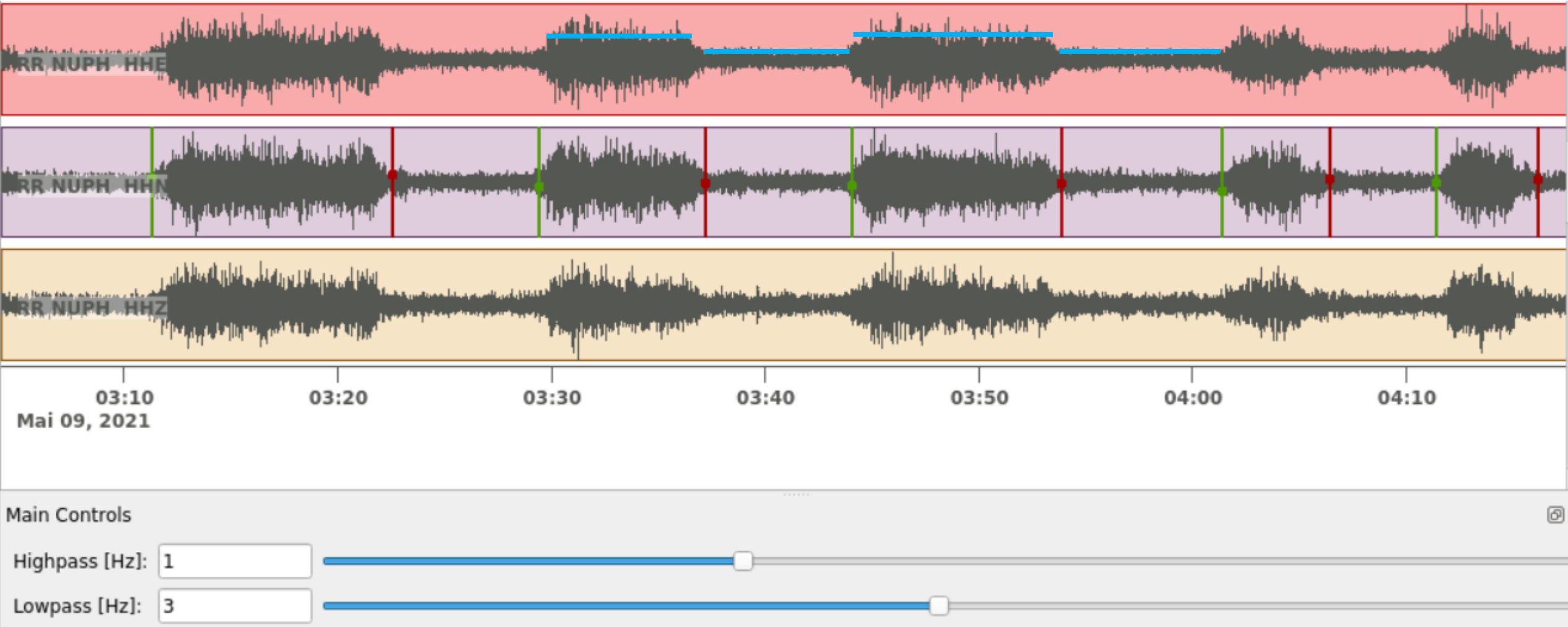
Source: ISOR

# We Mark the Start and End of all Tremor Pulses

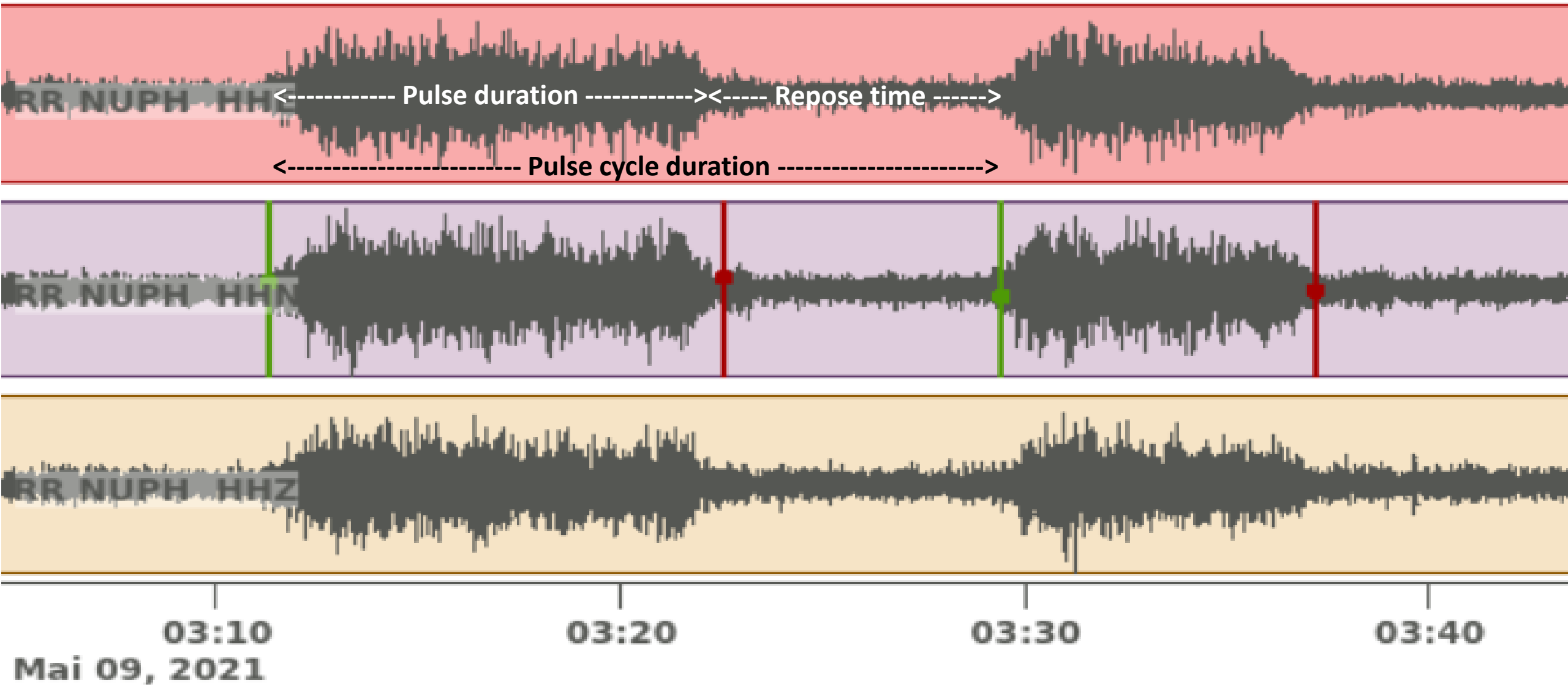


Marked by Eva Eibl, Alea Joachim, Undine Gnauck, Shaig Hamzaliyev @ UP

# We Calculate the Tremor Amplitude Between the Markers



# Definition of Pulse Duration, Cycle Duration & Repose Time



# Flank collapse of Crater 5 on 30 April

a 13:31:28 30 April 2021



b 20:27:27 30 April 2021



c 15:50:26 1 May 2021

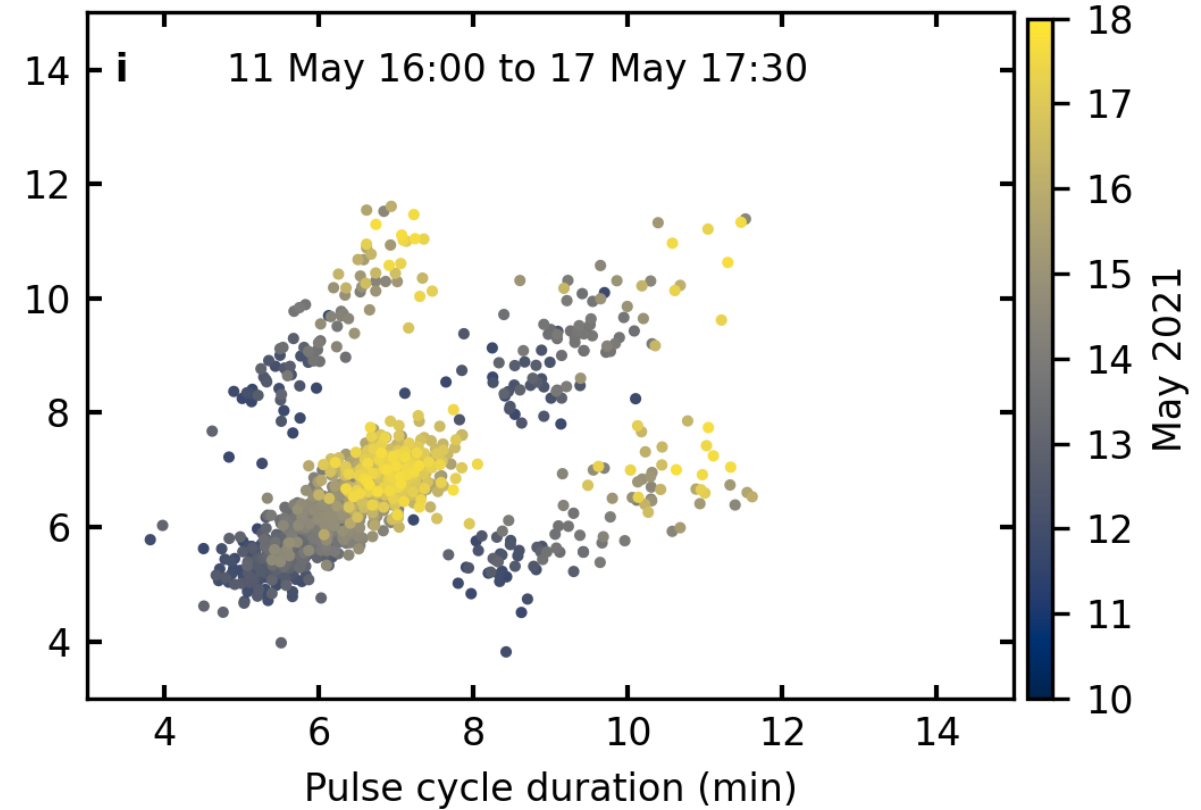
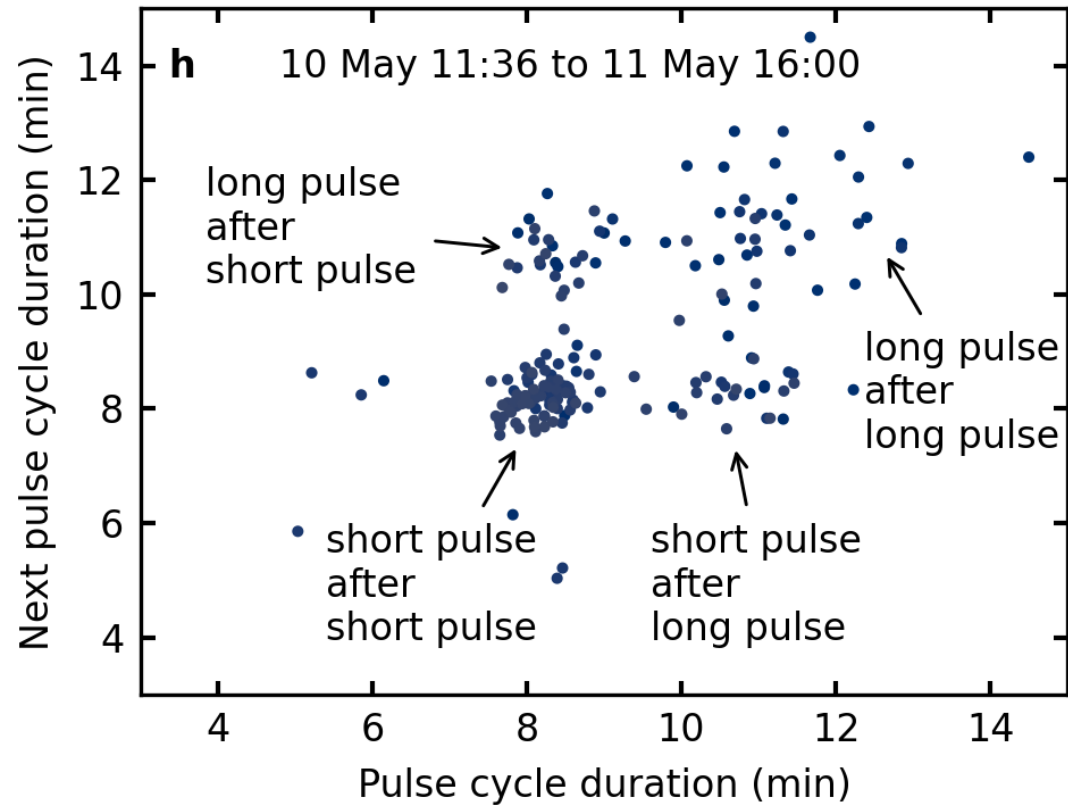


d 9:38:00 2 May 2021



Eibl et al. submitted to Bull. Volc.

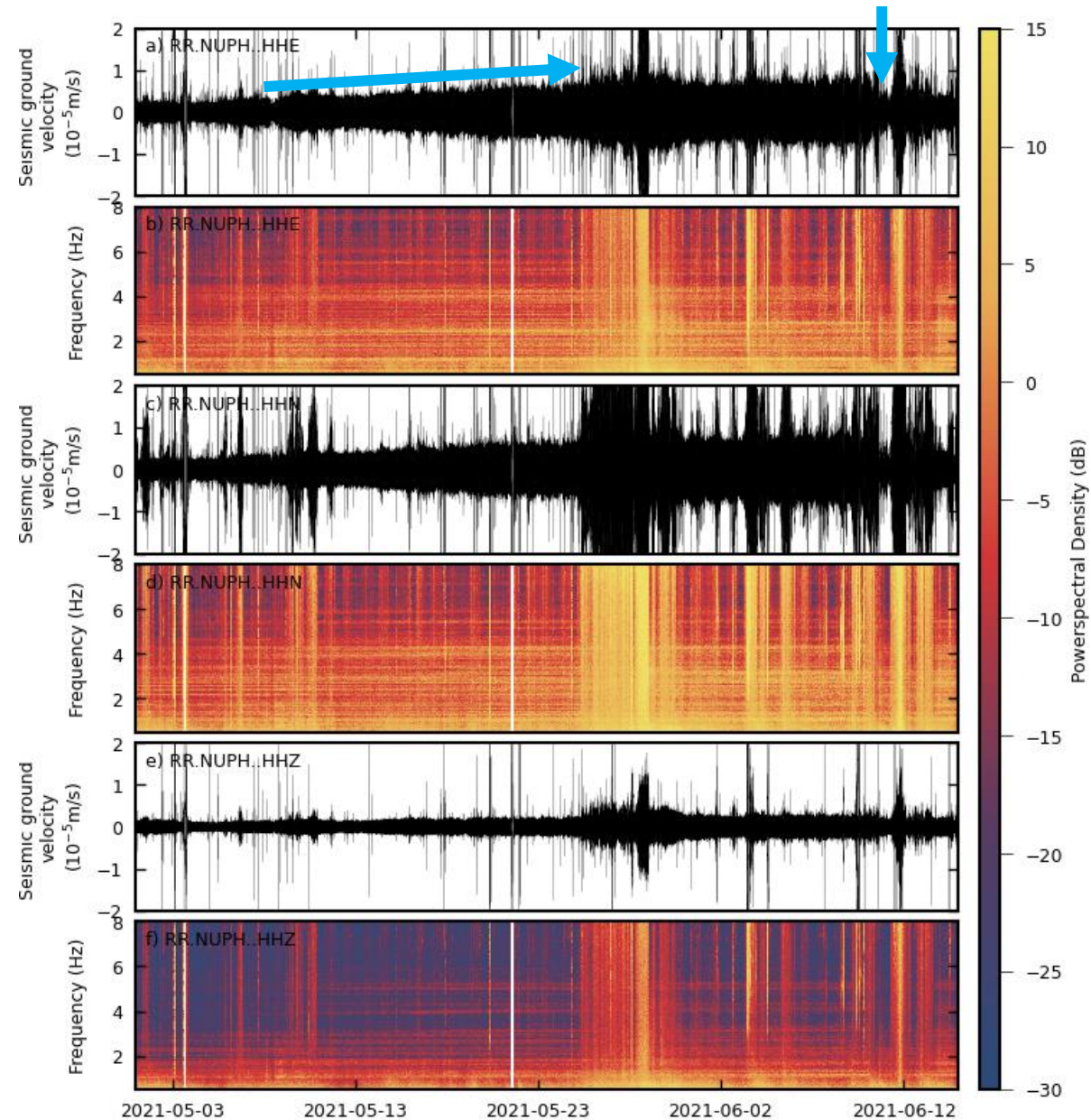
## Phase 4: Sequence of Short and Long Pulses



Eibl et al. submitted to Bull. Volc.

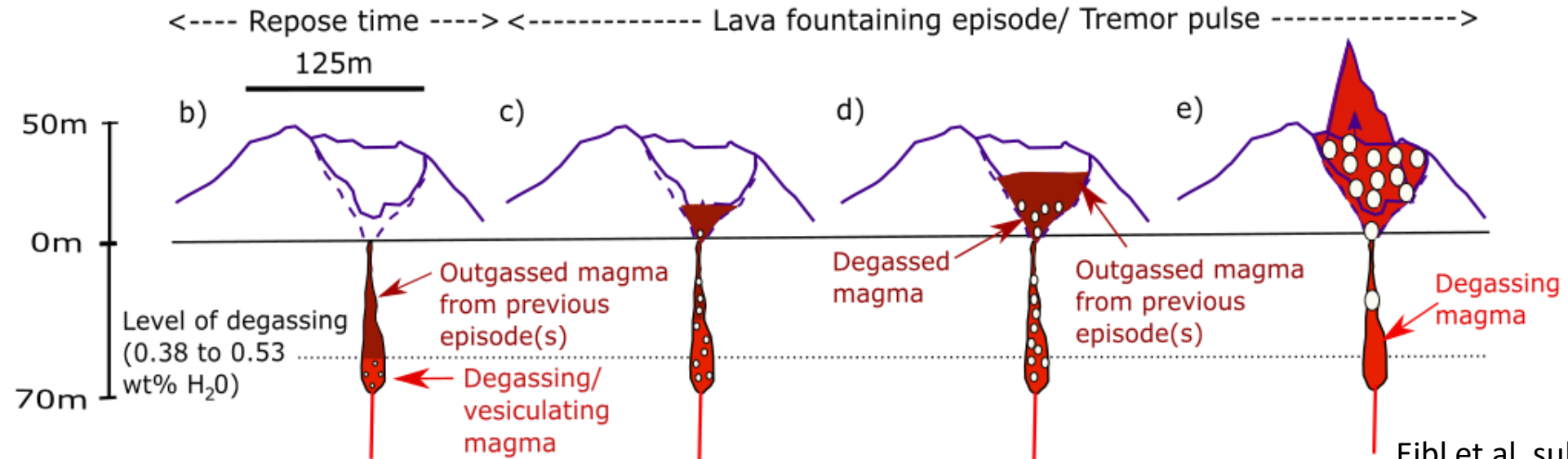
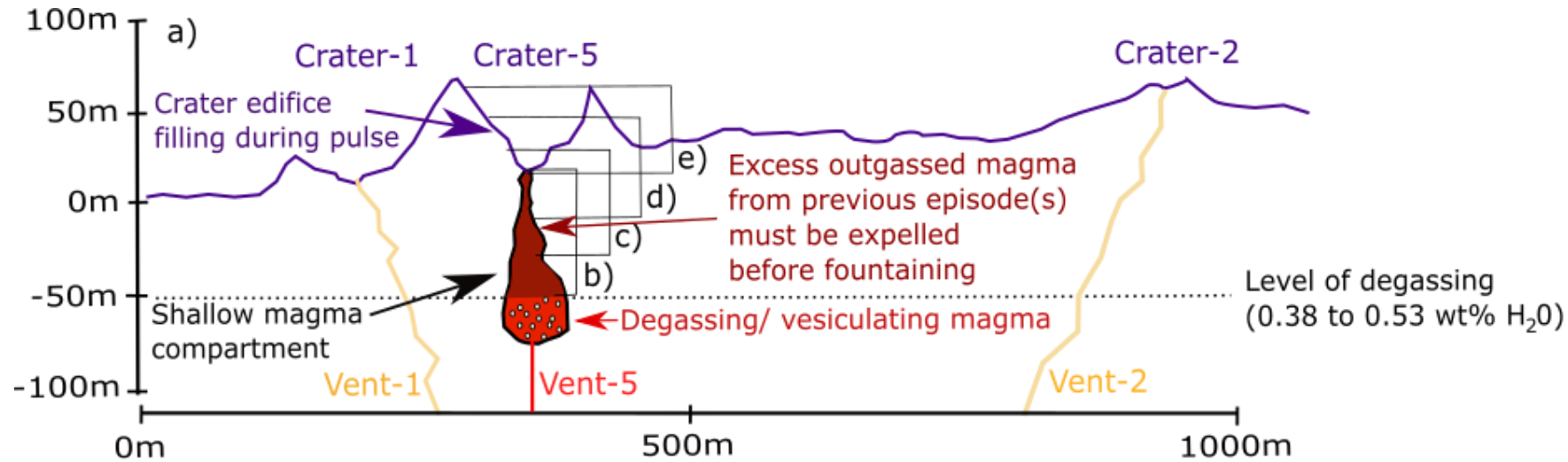
- 76% of the short pulses are followed by a short pulse
- 61% of the long pulses are followed by a long pulse

# The Eruptive Tremor is Increasing, then Rapidly Dropping



Code by Sebastian Heimann

# Effusion Processes



Eibl et al. submitted to Bull. Volc.