



# **The failure of the iron-ore tailings dams: the worst environmental disaster in Brazil**



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- Mariana disaster - 2015
- Brumadinho disaster - 2019
- Seismic monitoring
- Infrasound monitoring
- Conclusions

# MARIANA DISASTER

5/11/2015

BEFORE

A satellite image of the Mariana Islands, showing a dense forest of green and brown terrain. A large, irregularly shaped area in the upper left quadrant is highlighted in a bright orange color, indicating a significant area of concern or damage. The rest of the island shows a complex network of roads and natural features.

# MARIANA DISASTER

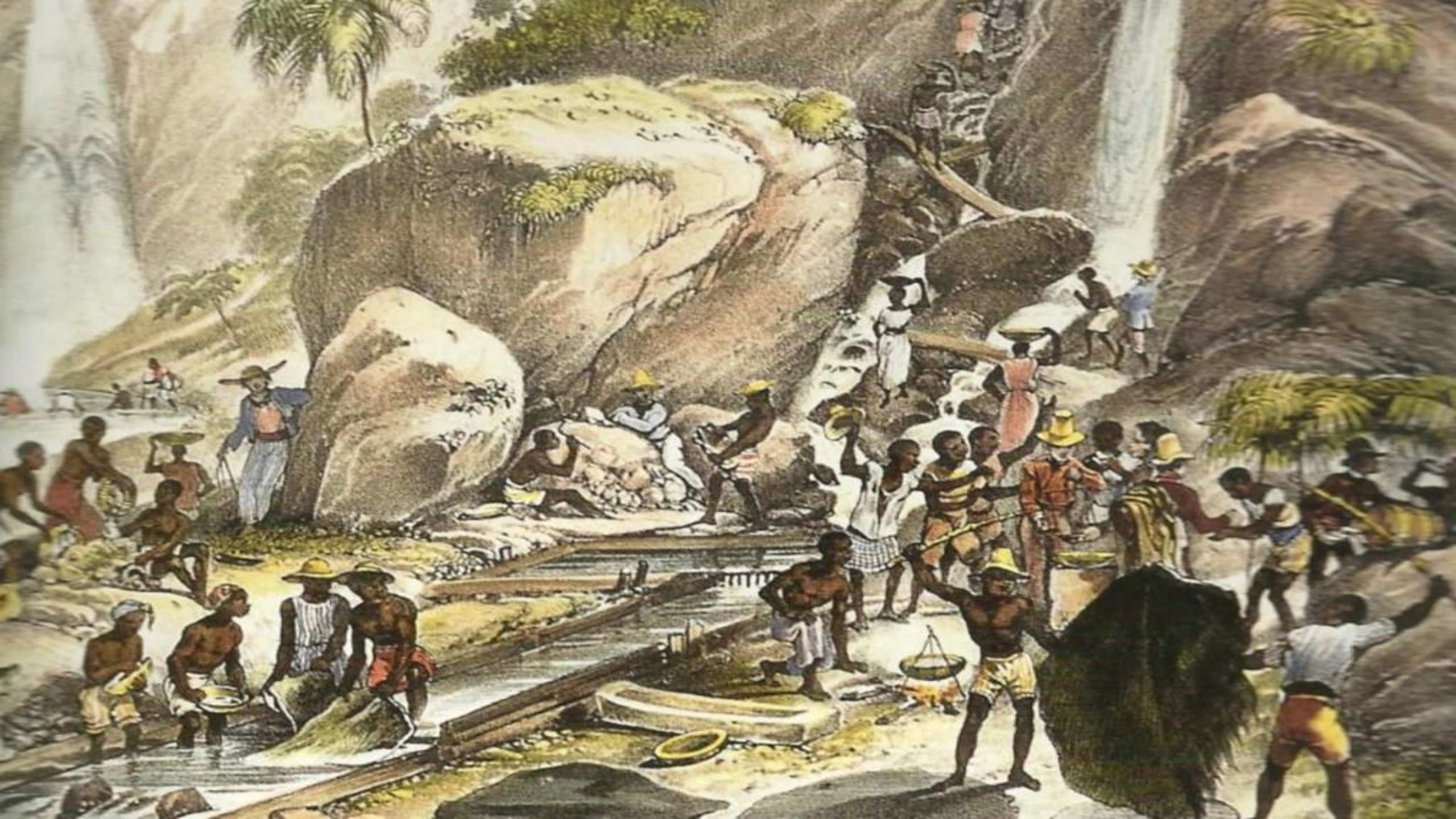
An aerial photograph of the Mariana Islands, showing a large, bright white plume of smoke or ash rising from a central volcano. The surrounding terrain is dark and rugged, with some smaller plumes of smoke visible in the lower left and center. The image has a grainy, high-contrast appearance.

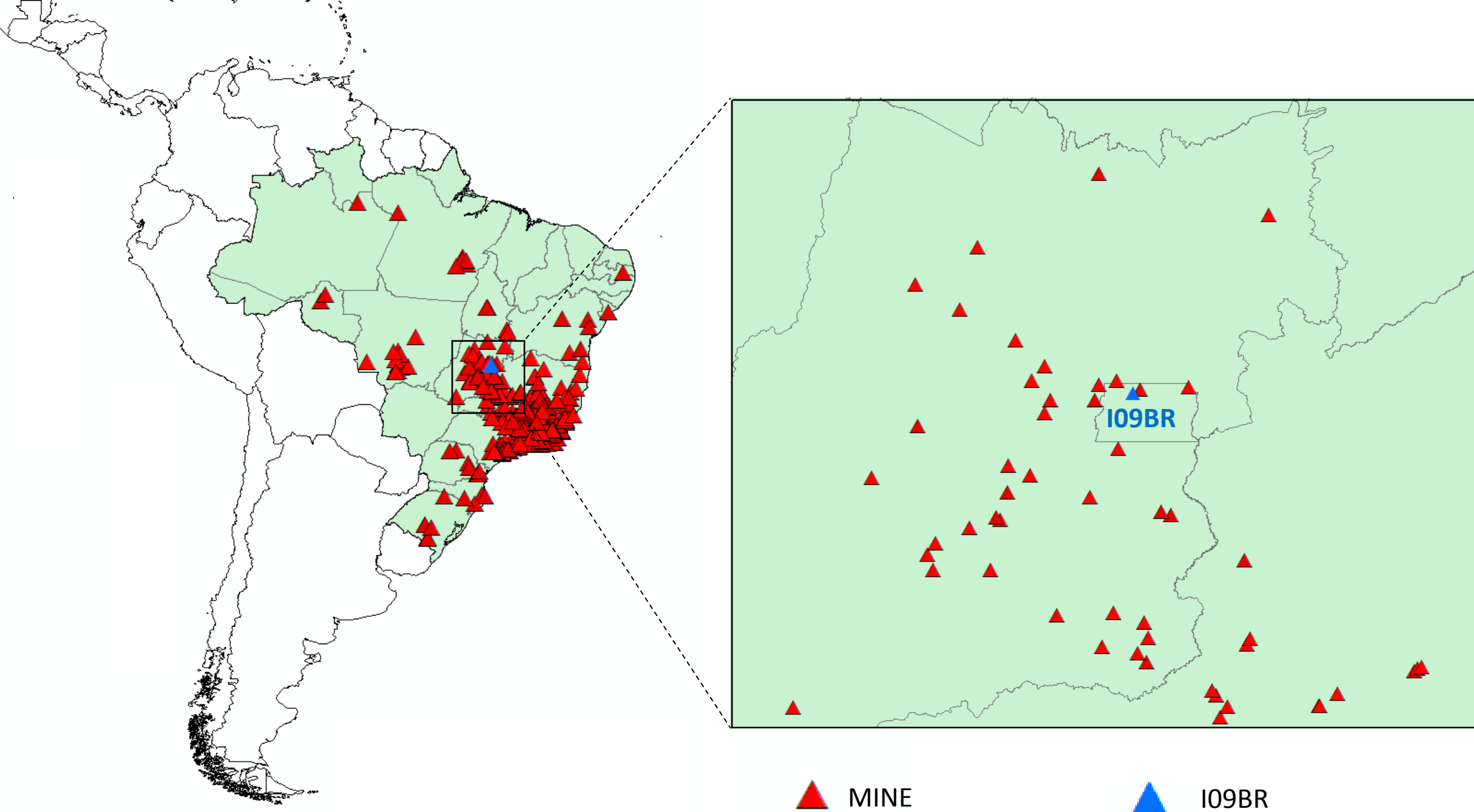
**AFTER**

25/01/2019 12:2

1 - Barragem







▲ MINE

▲ I09BR



Image © 2019 DigitalGlobe

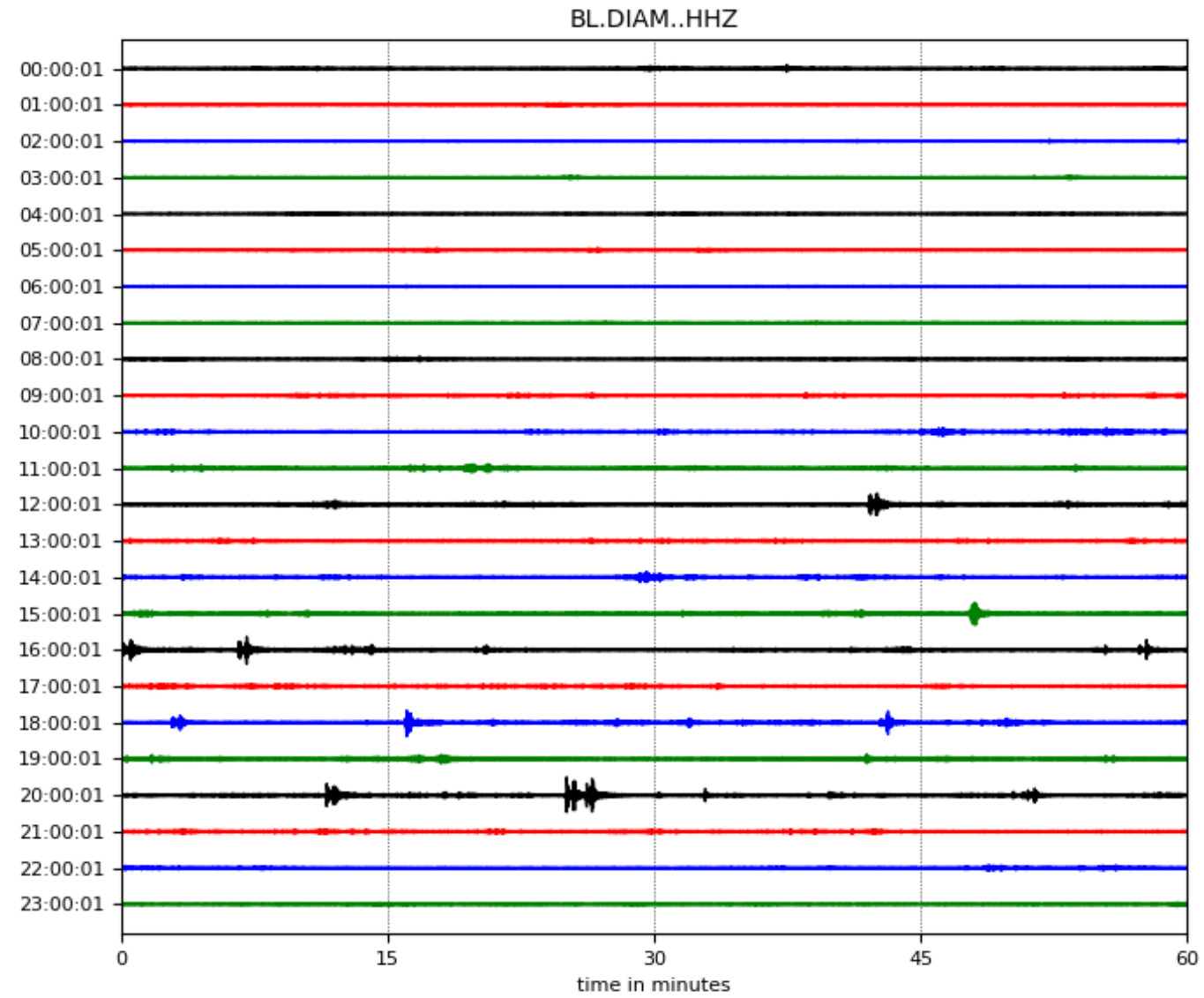
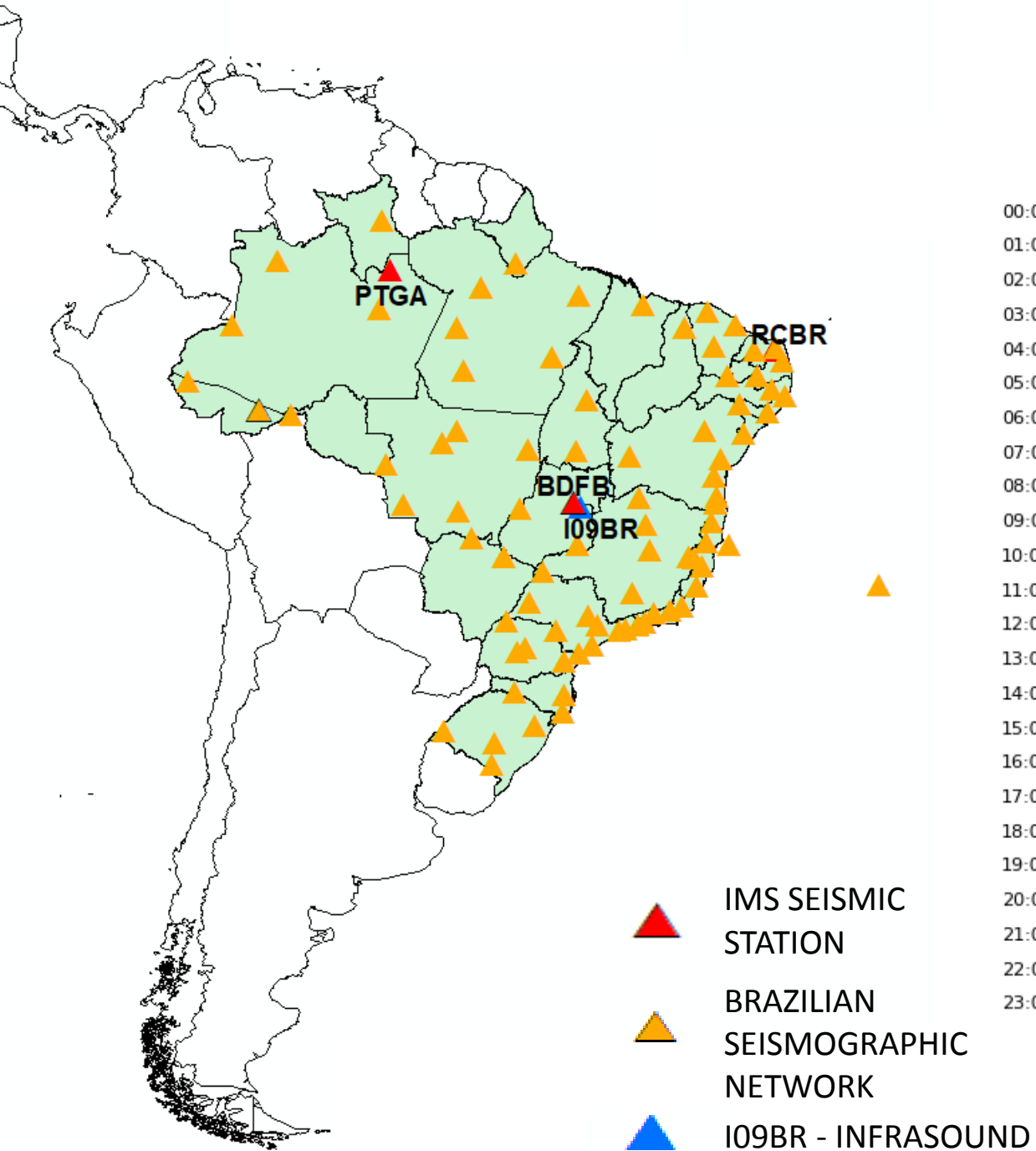
Image © 2019 CNES / Airbus

Paracatu

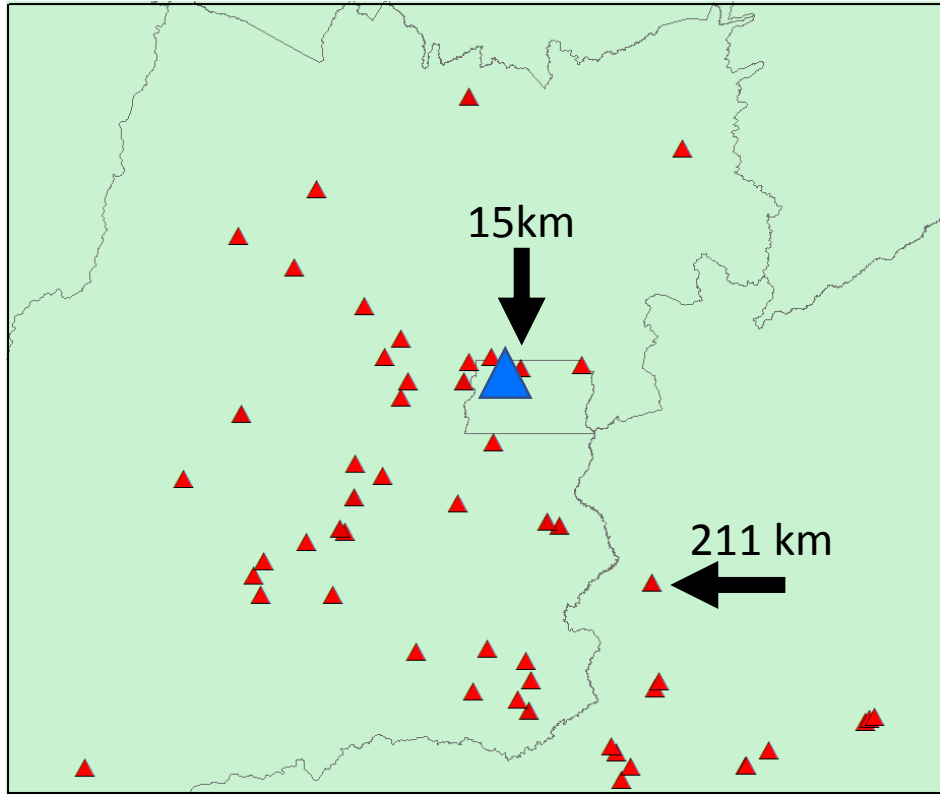
Google Earth

Data das imagens: 1/29/2019 17°11'26.87"S 46°52'37.62"O elev 0 m altitude do ponto de visão 15.80 km

# SEISMOLOGY



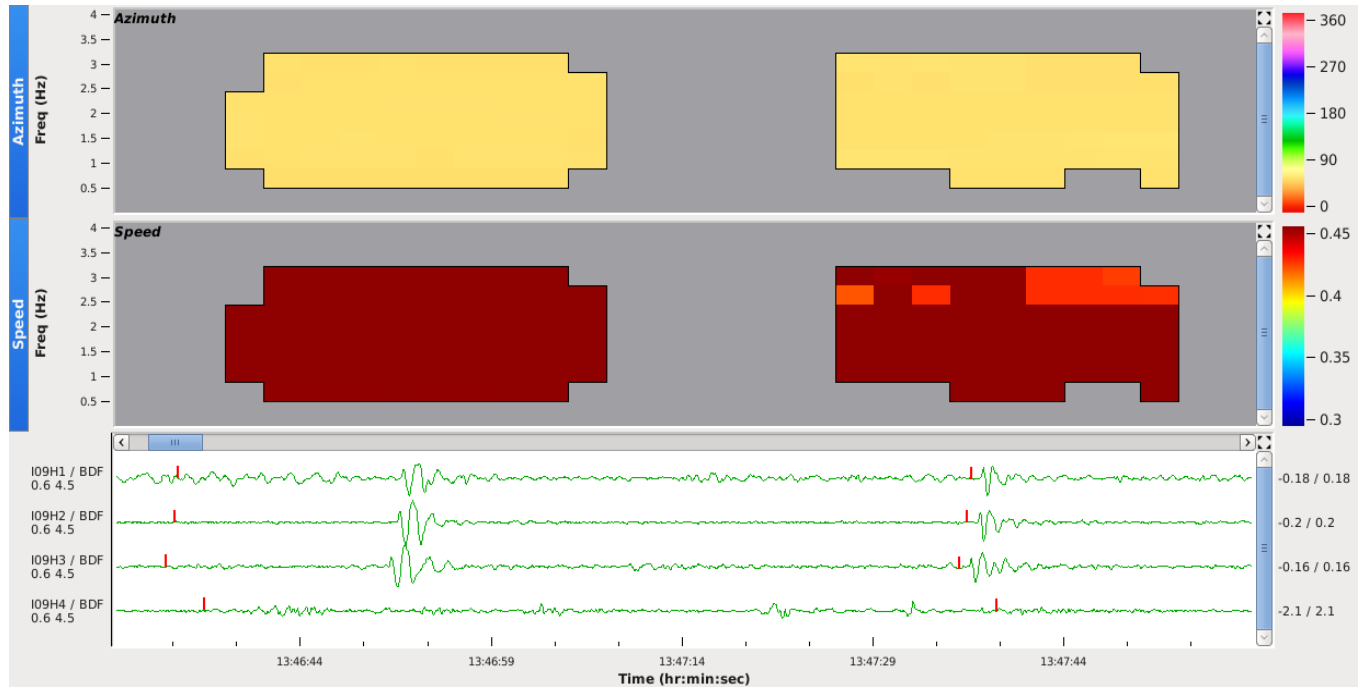
# INFRASOUND



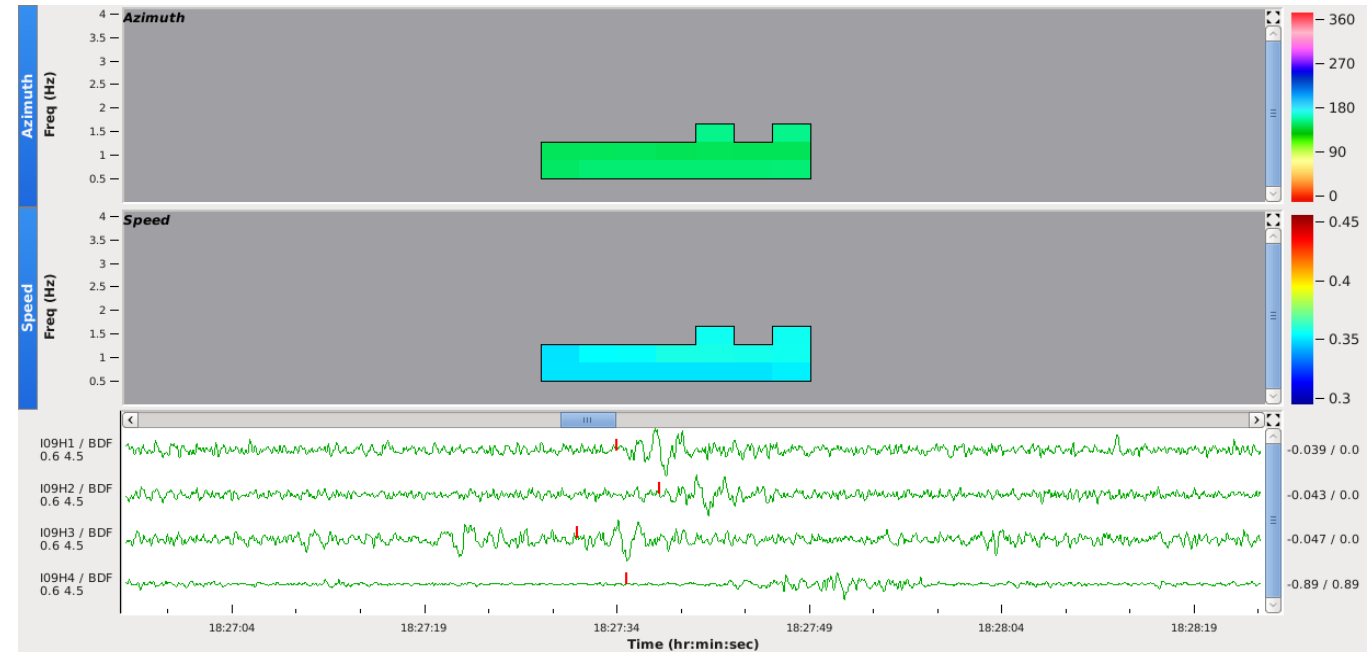
▲ MINE

▲ I09BR

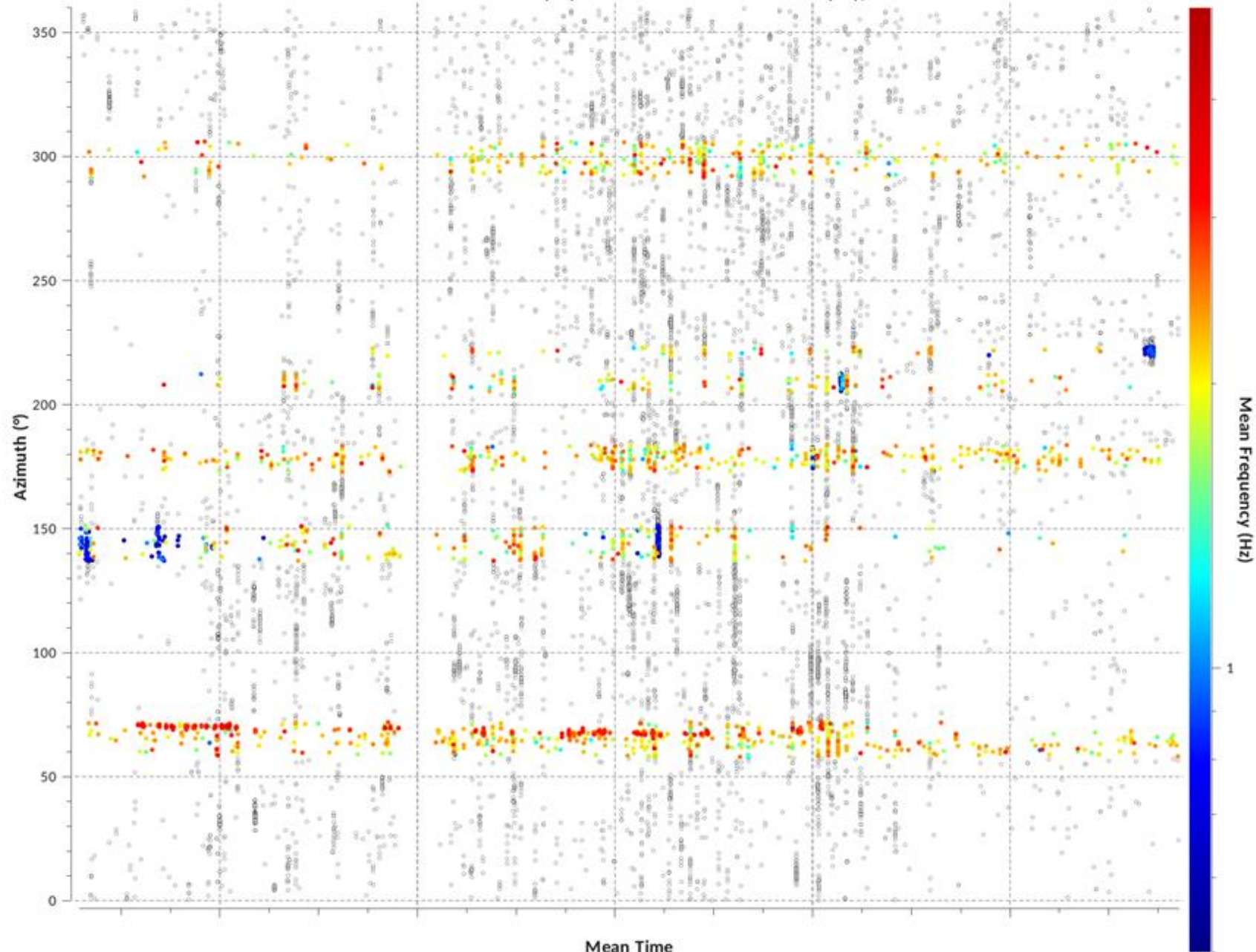
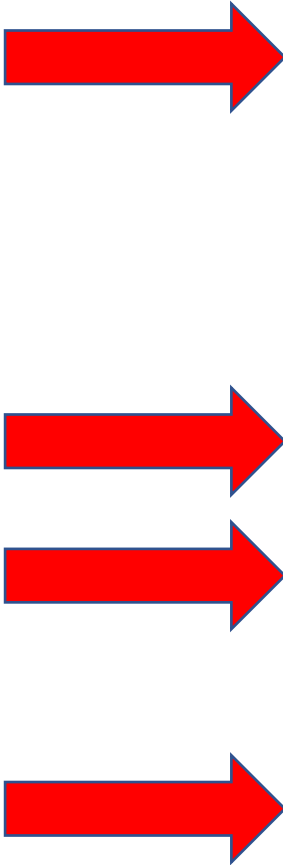
## LOCAL - 15km



## REGIONAL - 211 km



# GENERAL DETECTIONS



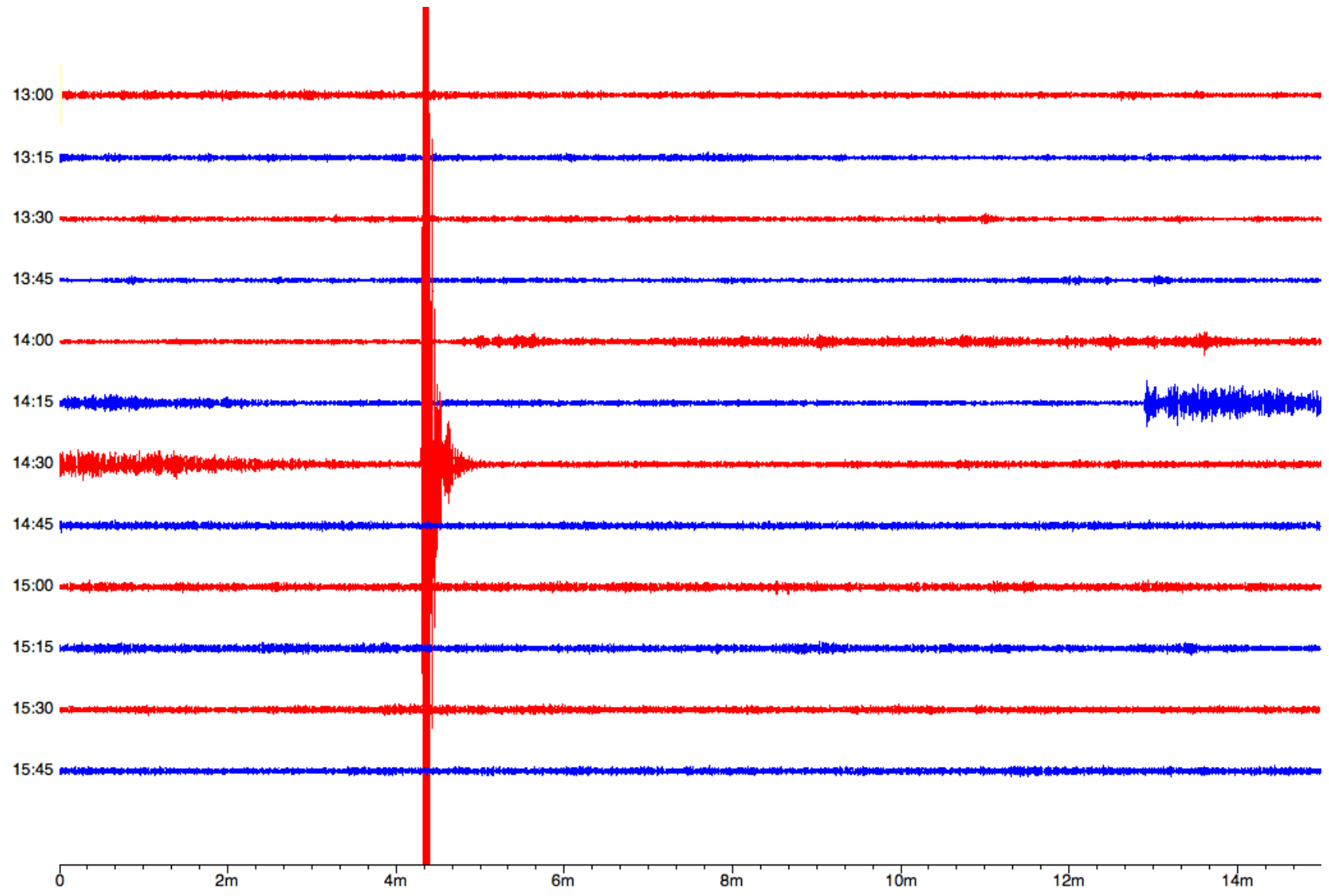
**BEFORE**

**CAFETERIA**



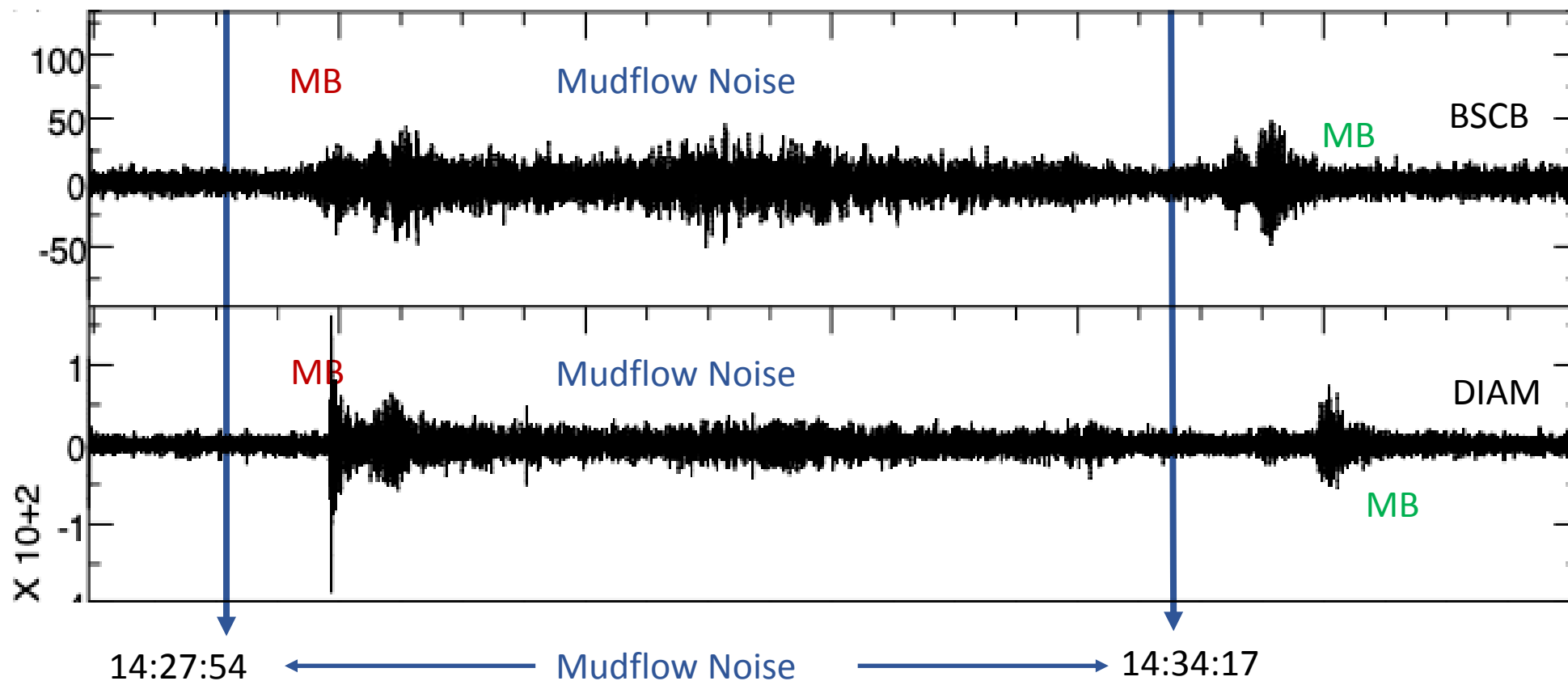
**AFTER**





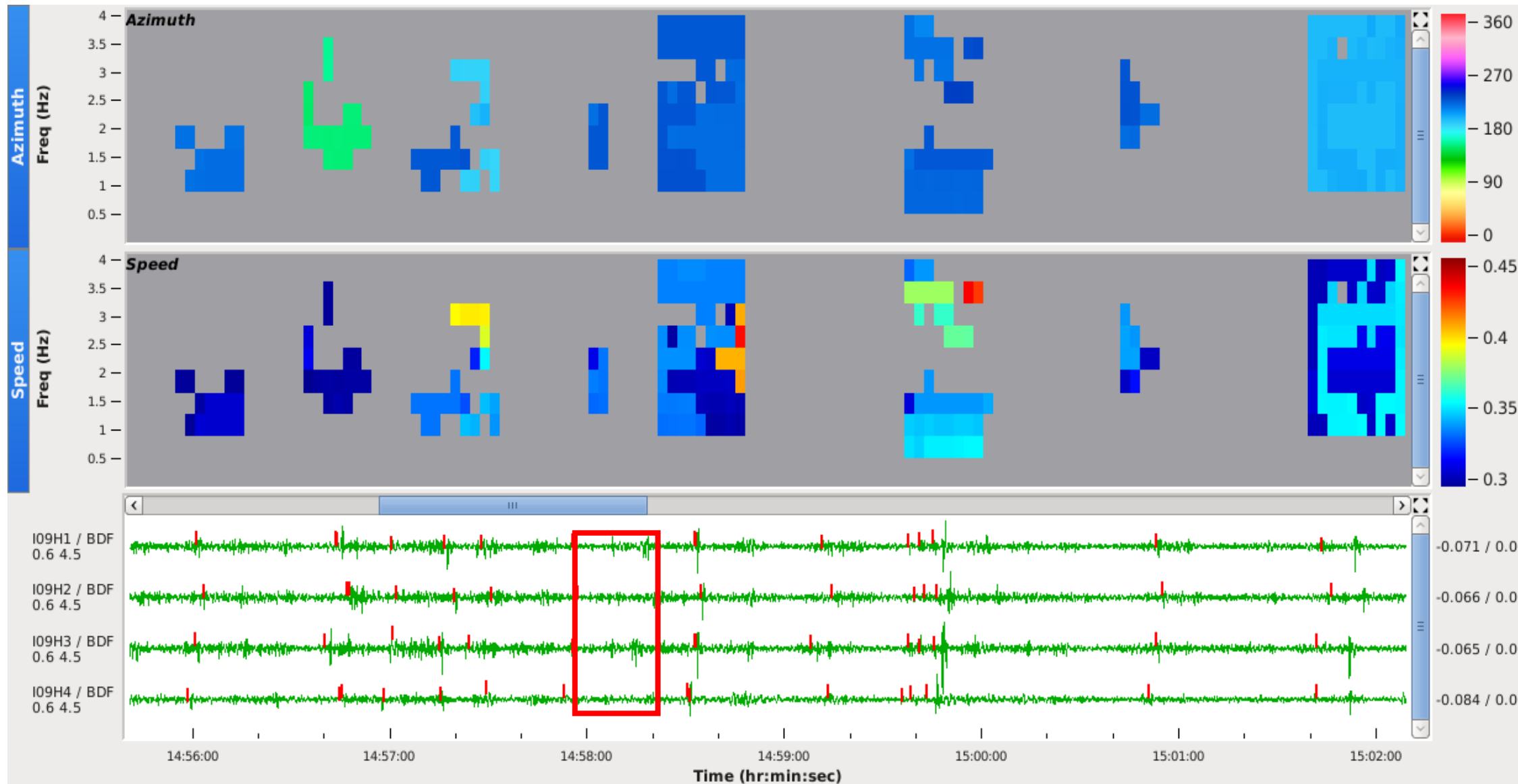
Mine Blast: event  
near AGLP 14:28:04

Mine Blast: event  
near 12:34:17



Mudflow noise duration last at least 5min

(Bruno Collaço, USP)



# CONCLUSION



- The mining activity is important for Brazilian economy
- Tailing dam risk



I09BR

# CONCLUSION



- The mining activity is important for Brazilian economy
- Tailing dam risk
- Seismology and Infrasound technology are able to monitor mining activity
- If we had installed more infrasound stations, probably we could have detect the signal generate by failure tailing dam



# Thank you



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