

# Research Diary

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## An application to collect data and provide to local administration constantly for better crisis management during the outbreak of COVID-19

**KID: 20200124**

The idea was to develop an application that gathers the data about the health conditions of the citizens and provide it constantly to the local administration. On the request of Telangana state government, our group has developed an application to monitor quarantining.

IITH's administration and infrastructure have played a major role in actualizing this concept and were of great support in terms of permitting the use of data centre and required facilities.

We have developed and deployed an application to track the distribution of rice and money to the migrant workers. With the help of this application, our team has tracked the distribution of the essentials to more than 3 Lakhs migrant workers. As a part of this project, we have also sent hourly reports to the officials to regulate the distribution of needful and plan future activities.



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## Seismic Noise Changes during COVID-19 pandemic: A case study of Shillong, India

**KID: 20200125**

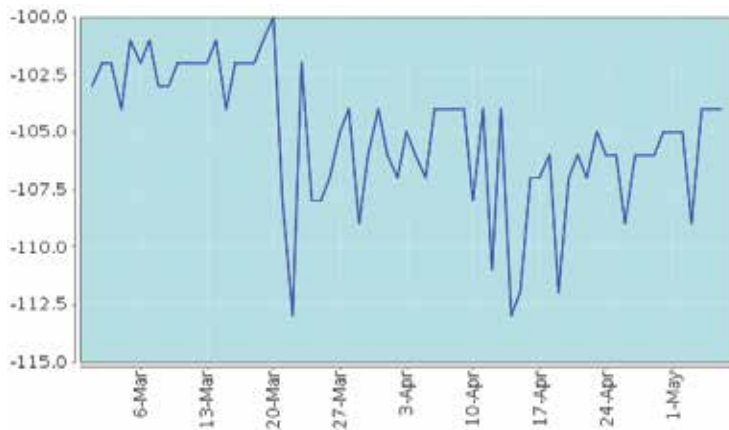
Asking a billion-plus people to remain home, was only possible for Shri Narendra Modi, the honourable Prime Minister of India. It was a few days before the 22nd of March 2020 that he had announced “Janata Curfew” as a first step in mentally preparing everyone for a more prolonged complete lockdown. What this meant for Engineering Seismologists, who have to use seismic instruments typically to capture earthquakes (signal), to shift their attention towards background earth’s vibration (noise).

The complete lockdown of India has given a once in a lifetime opportunity of quantifying the contribution of anthropogenic/cultural seismic noise. It was a unique time period during which trains, buses, heavy operating machinery have all come to a standstill thereby letting us listen to the Earth's hum better.

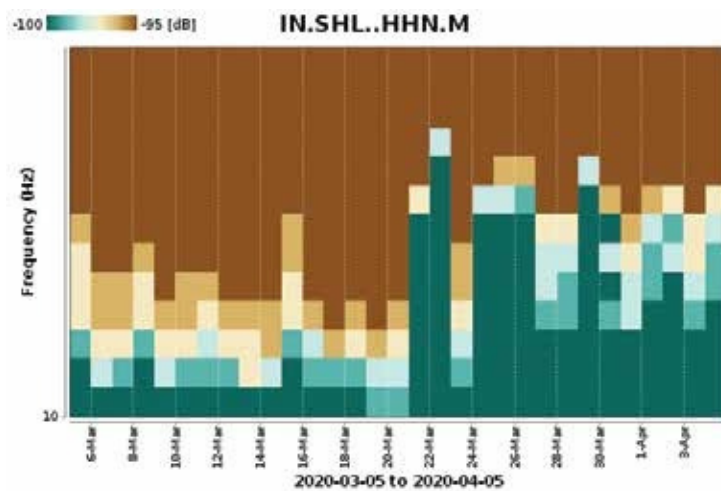
Human-induced vibrations are prominent in higher frequencies, unlike distant earthquakes which are rich in longer periods. The higher frequencies decay rapidly away from the source of vibration. Usually, noise power can throw light on diurnal changes or seasonal variations. I chose to assess the pre- and post-lockdown differences in amplitudes. Examining the power at short periods clearly showed a significant decrease in post-lockdown.

My group here also works on the seismic studies at LIGO-India detector, which is only going to the third in the entire world, when it comes up. The other two LIGO detectors in the US have not had a chance to conduct such seismic studies before their installation. One of the US detectors is facing downtime issues due to Oklahoma earthquakes, work with my collaborators published in Classical and Quantum Gravity.

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**Figure 1. Shillong’s seismic noise take a sharp due to human contribution on the day of ‘Janata Curfew’ which has not yet caught up to the pre-lockdown levels as we progress through lockdown2.0 to lockdown3.0**



**Figure Caption: Spectrogram of Shillong’s seismic recording**



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