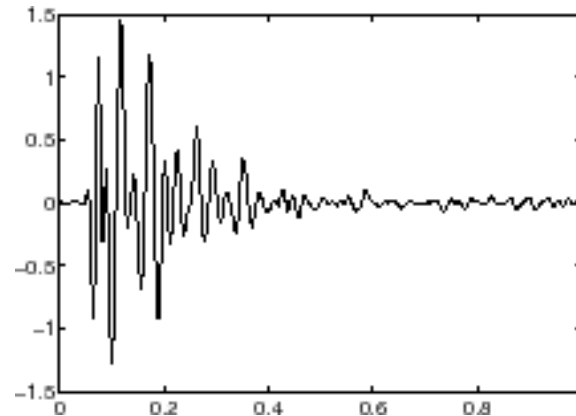




Ambient Noise Levels and Detection Threshold for the Hartebeesthoek and Matjiesfontein Seismic Stations in South Africa



Sharon Qwabe: MTech Geology student at TUT & HartRAO



WHAT IS ON THE MENU



Starter-Childhood

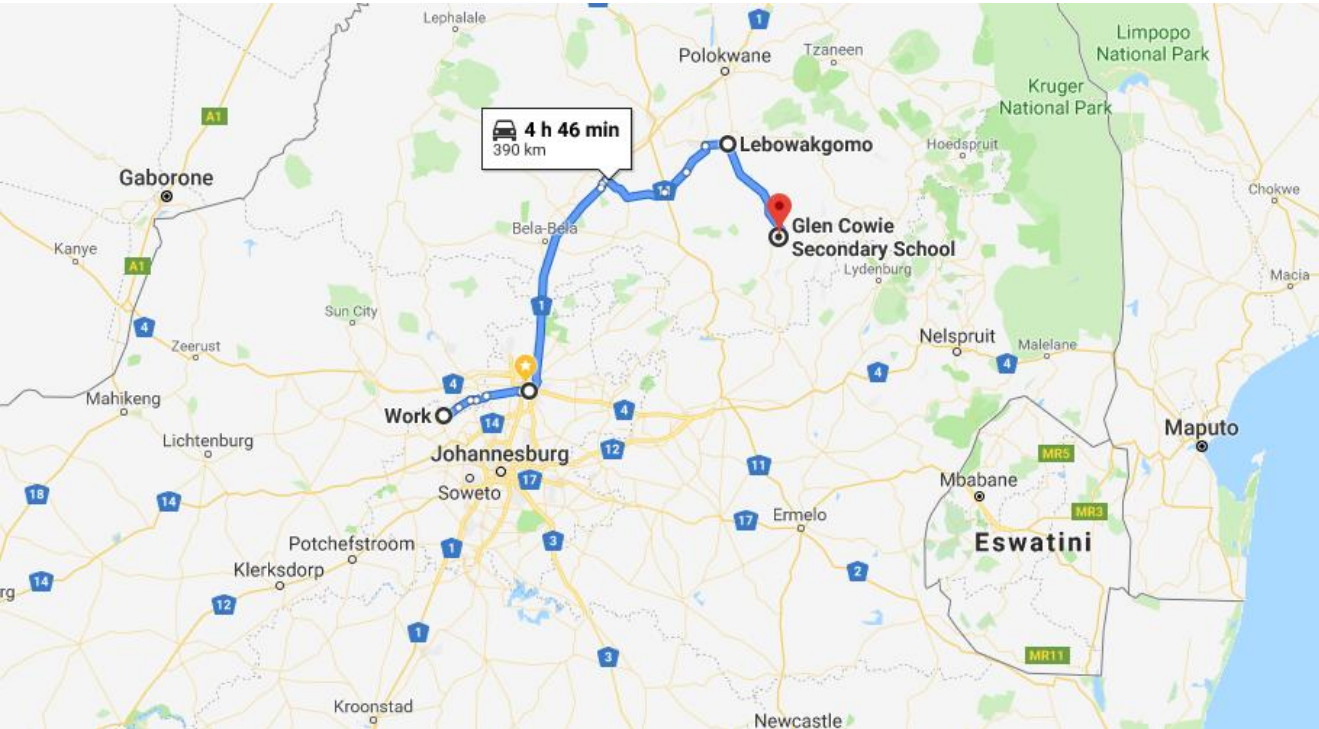
Main course- Education

Dessert- Projects





CHILDHOOD





EDUCATION





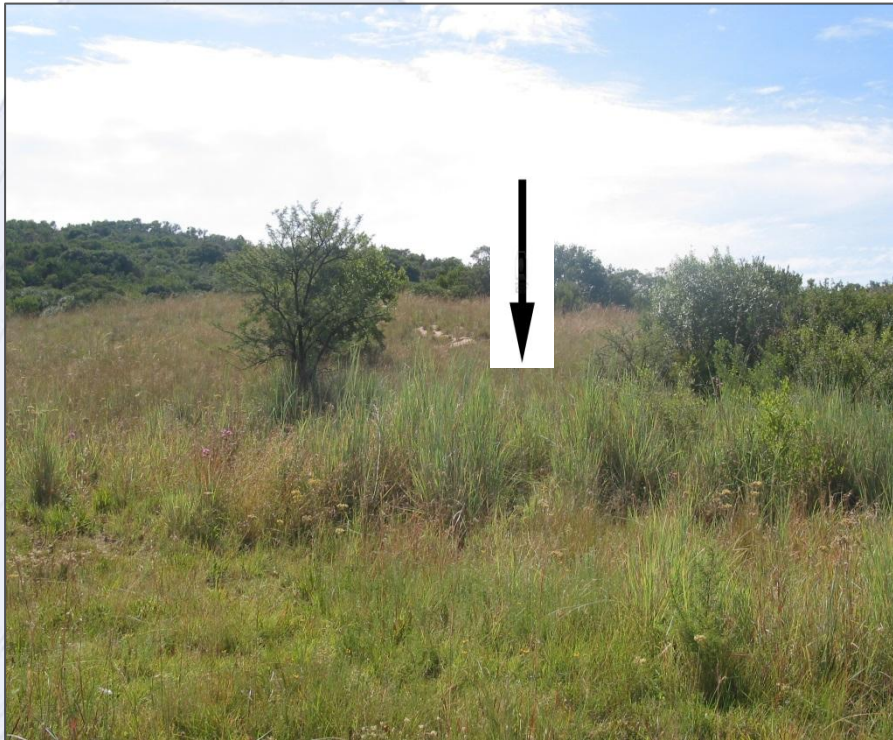
EDUCATION



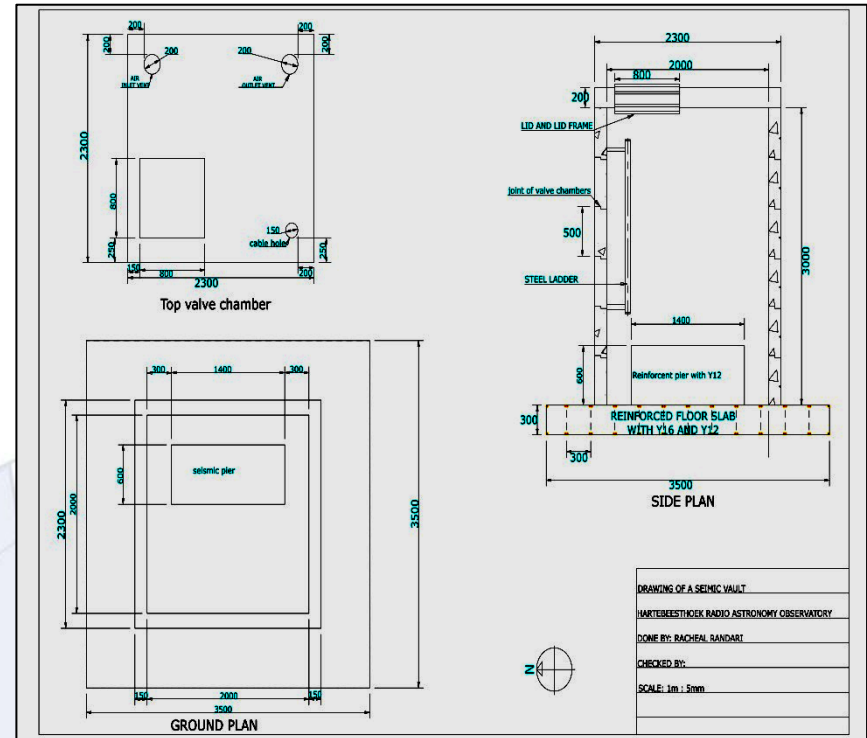


HOW IT ALL BEGAN...

SITE SELECTION



VAULT SELECTION





BEDROCK EVALUATION

GEOLOGY OF THE AREA



ROCK TESTS



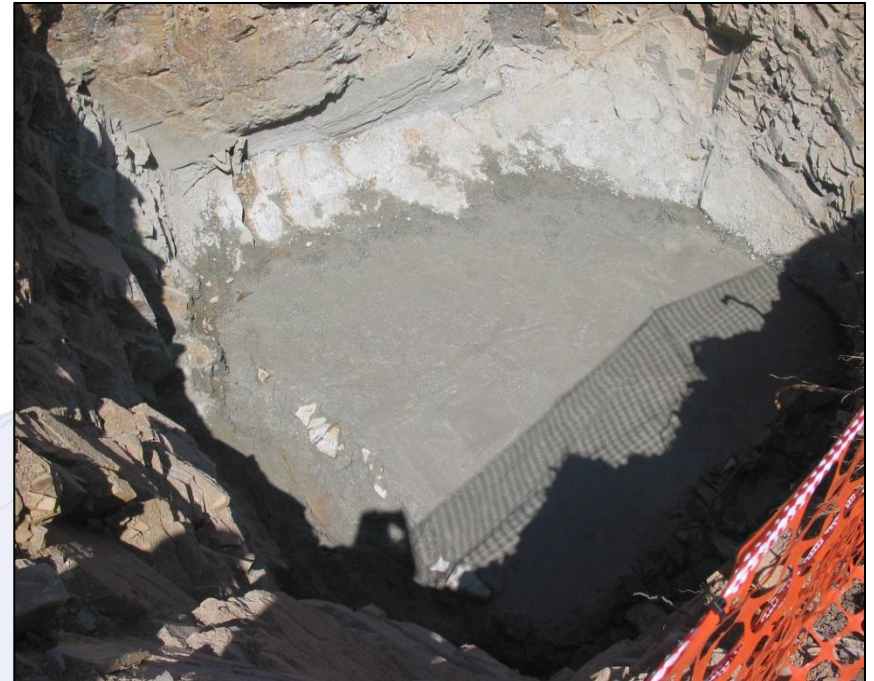


OUR VERY OWN “KIMBERLEY HOLE”

EXCAVATION



FLOOR LEVELING





FLOOR-SLAB CASTING





CONSTRUCTION BEGINS...

PRECAST CONCRETE CHAMBERS



CONSTRUCTION OF PIER





WHY DROWN THE BOTTOM CHAMBERS?





UP, UP AND UP IT GOES...





CONTINUATION...





SO WHY THE BLACK COVER?





CLOSING SHOP...





END PRODUCT BUT NEW BEGINNING





PROJECT OBJECTIVES

- 1. Evaluate the ambient seismic noise levels at both stations for low and high frequencies.**
- 2. Compare the evaluations of the stations with the Peterson New Low Noise Model.**
- 3. Evaluate the temporal ambient seismic noise levels at each site.**
- 4. Evaluate the detection limit for each station.**
- 5. Evaluate the efficiency of each vault in term of the Peterson New Low Noise Model.**





SEISMIC STATIONS: HRAO & MATJIES



Seismic vaults at HartRAO (*left*) and Matjiesfontein (*right*).





SEISMIC INSTRUMENTATION

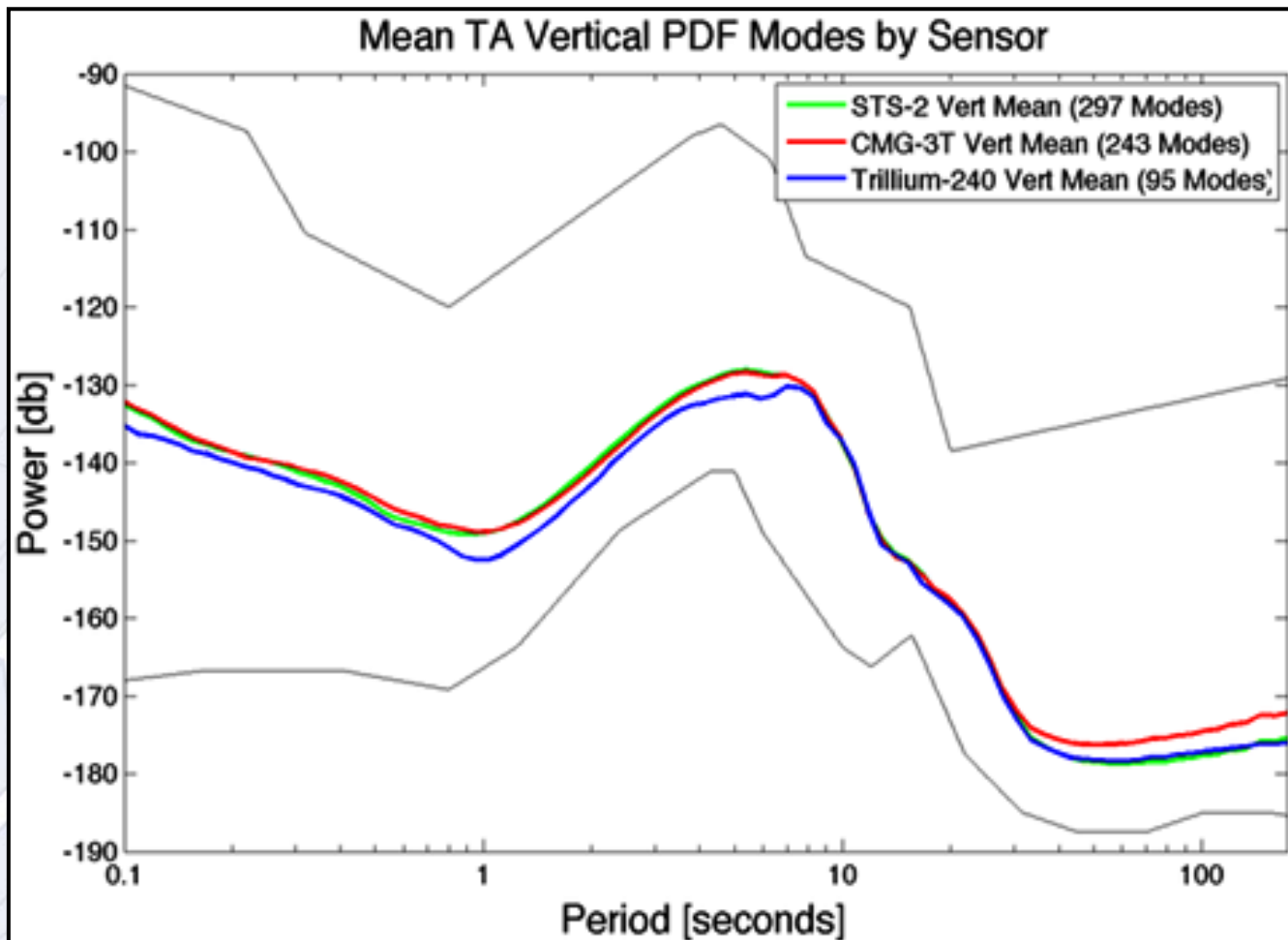


Guralp CMG₃-ESP BB seismometer (left), Guralp CMG-5TC BB accelerometers (center), Guralp CMG-DM₂₄S₆EAM digitizer (right)



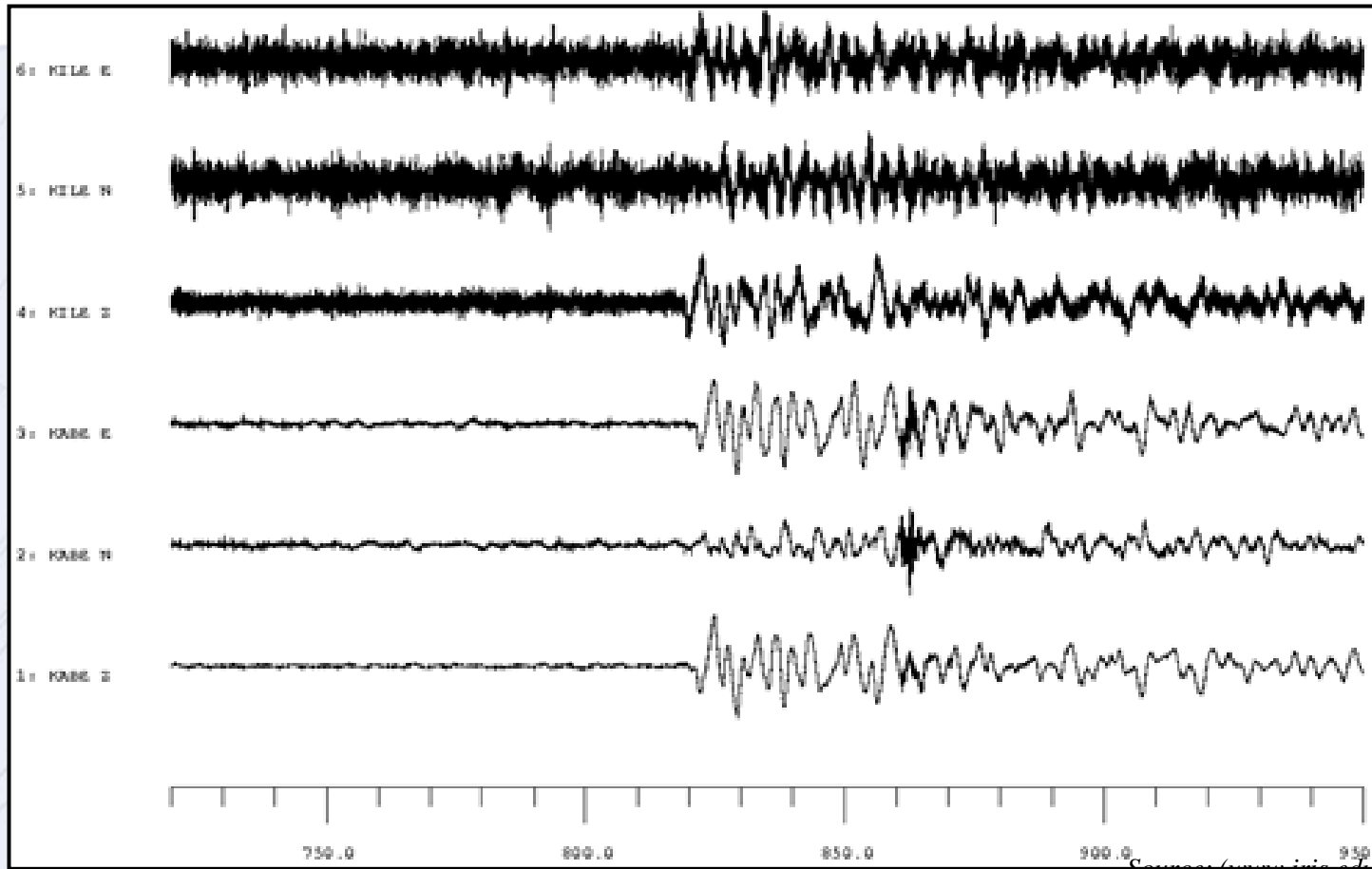


PETERSON NEW NOISE MODEL





SEISMIC TRACES WITH AND WITHOUT NOISE



Source: (www.iris.edu)



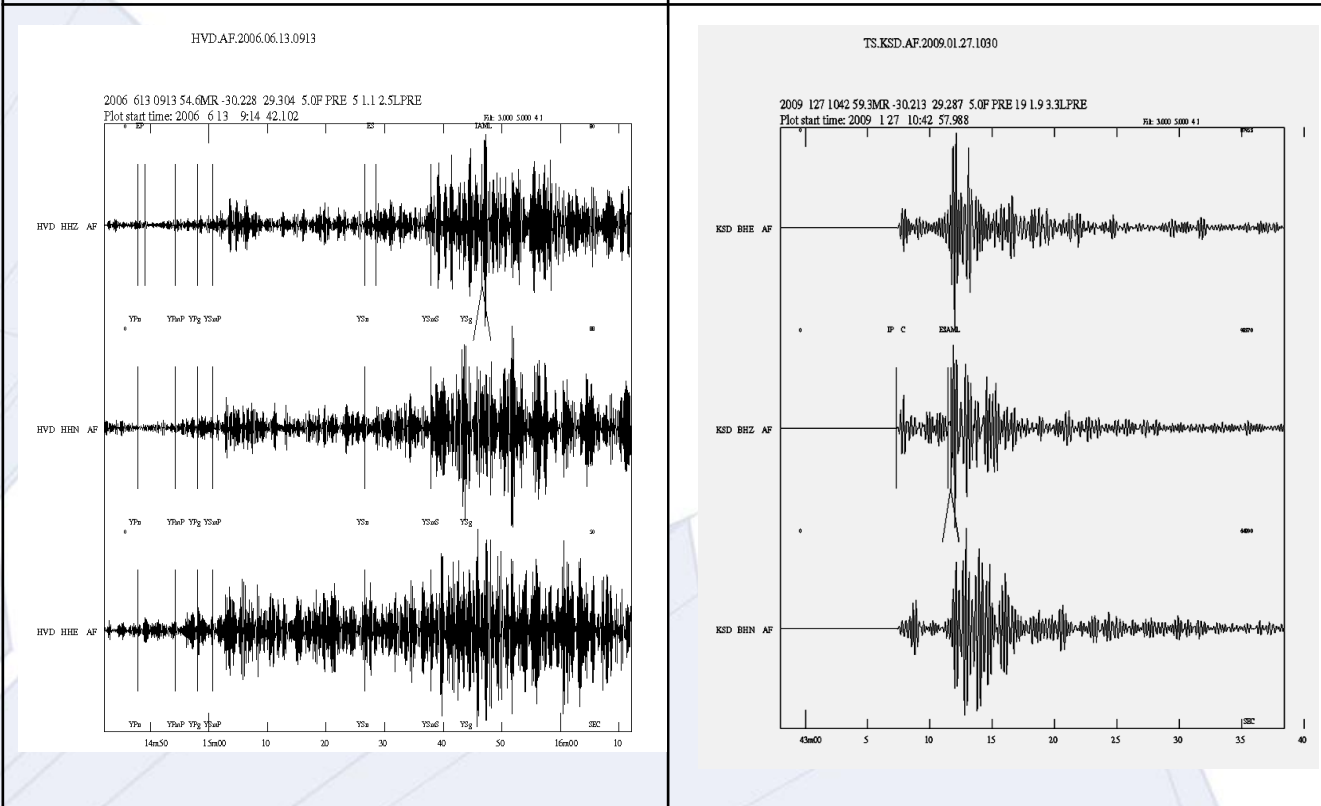
FACTORS AFFECTING NOISE LEVELS AT SEISMIC STATIONS

- **Location**
- **Engineering design**
- **Diurnal variation**
- **Seasonal variation**



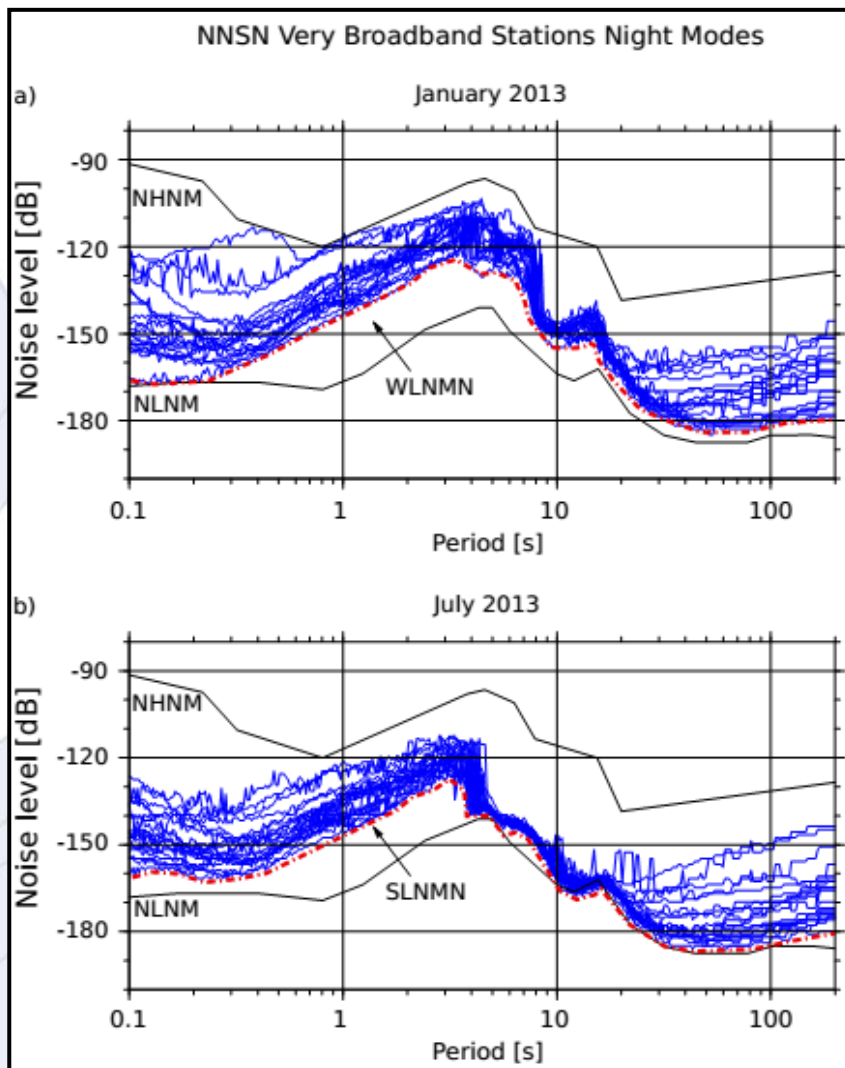
HIGH AMBIENT SEISMIC NOISE

LOW AMBIENT SEISMIC NOISE





SEASONAL VARIATIONS



PICTURE WORTH A THOUSAND WORDS...

