Acoustic Particle Velocity Measurements near a Rocky Shore off Cabo Frio Is.

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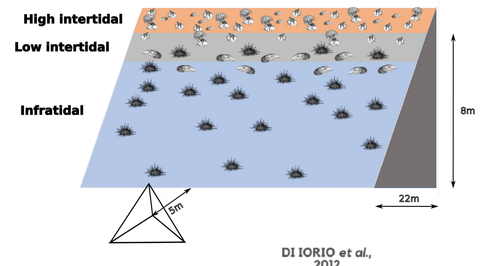
Introduction & motivation

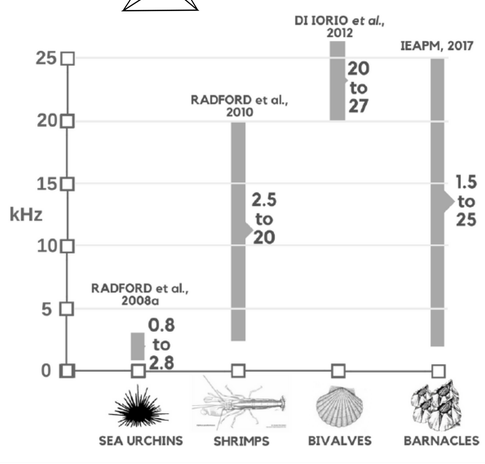
To perform measurements with a vector sensor device to

- infer rock shore invertebrates' community sound pattern
- evaluate and compare levels of sound pressure and particle motion nearby a tropical rock shore population
- determine and correlate diary patterns
- determine anthropogenic noise particle motion impact

Scenario

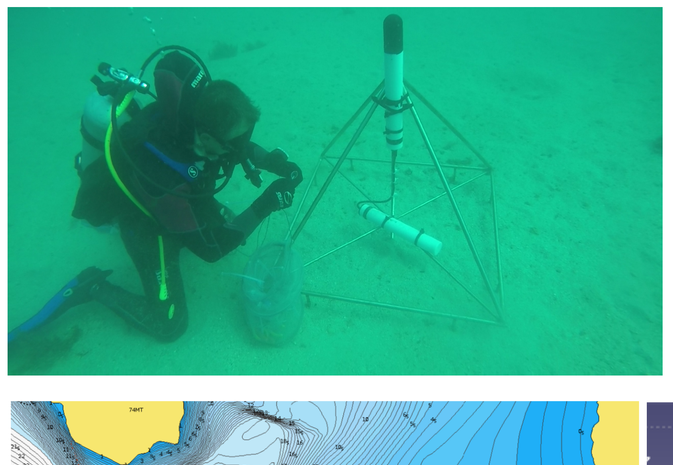


- **high intertidal**: 2600 bivalves, 2700 barnacles / m^2
- **low intertidal**: 2.8 sea urchin, 10 bivalves and 4500 barnacles / m^2
- **infratidal** 5 sea urchin and 2(?) snapping shrimp / m^2

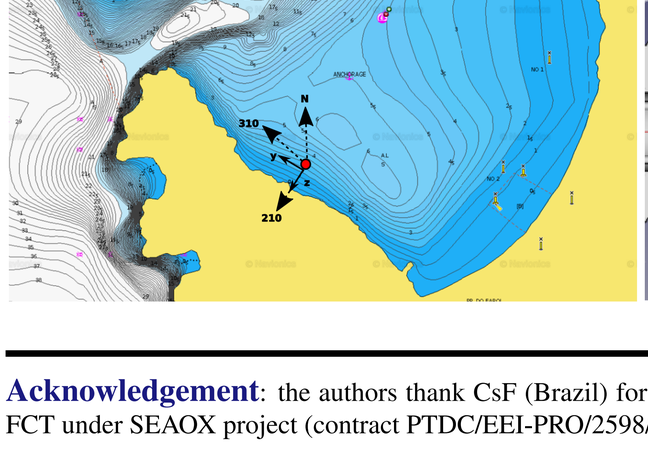


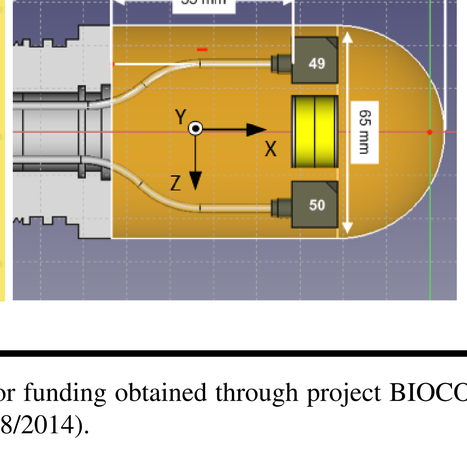
Chorus: intensity x frequency band x population, forms the rich biological chorus, characteristic of the area.

BIOCOM'19 experiment
(January 14-18, 2019)



- 7 m depth, 5 m from wall
- 24 bits, [50 Hz, 5 kHz]
- 2 triaxial accelerometers + 1 hydrophone
- z points to wall (A#50)
- x points to the surface
- 2 days recording

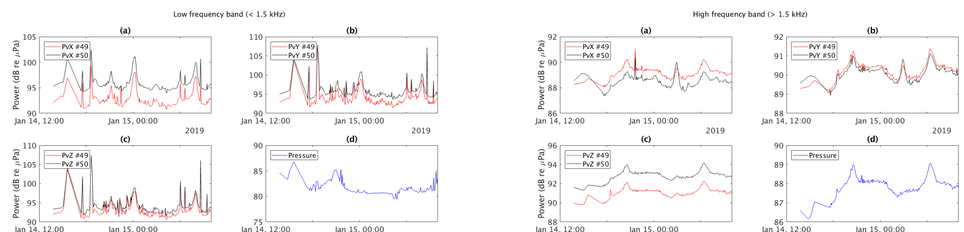




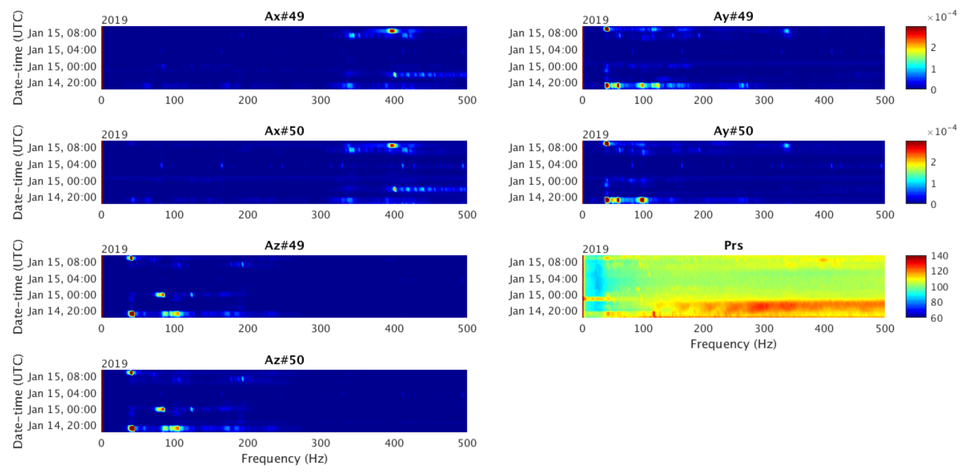
Experimental results

January 14 - 15, 2019

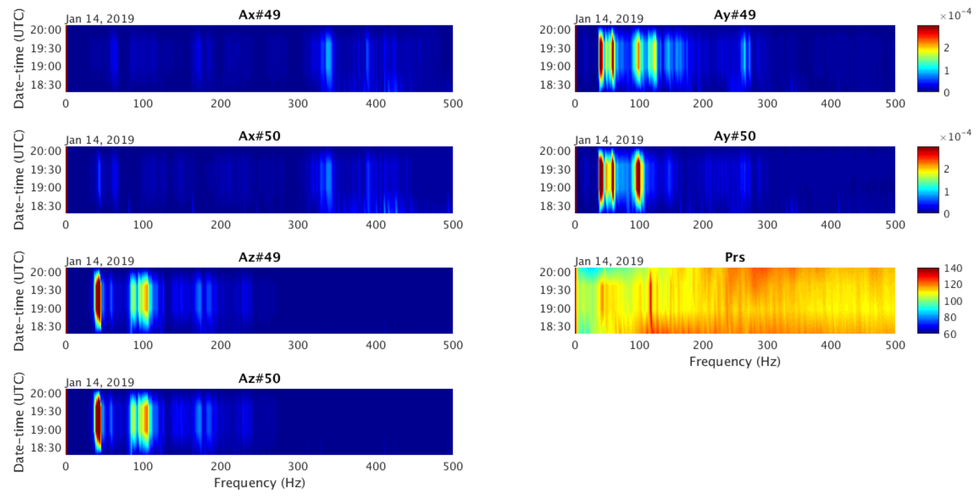
(a)



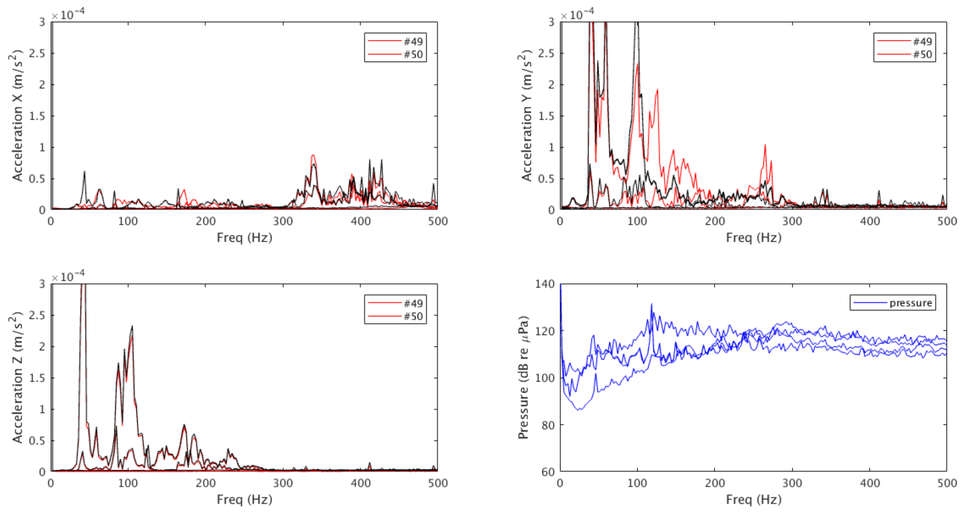
(b)



(c)



(d)



Discussion and work ahead

(a) biological pattern present in HF; high peaks in LF (?).

(b) Y and Z components with acceleration $\leq$ 100 Hz time consistent with biological peak, not present on X component.

(c-d) zoom on dawn chorus time: different components in acceleration and pressure; Z-axis different from Y-axis, itself different between accelerometers.

Work ahead

- explore differences between acceleration and pressure
- directional information to identify species & count

References

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