

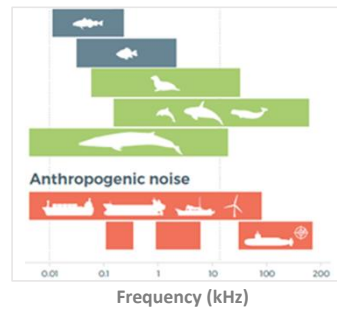
Silence of Global Oceans: Acoustic Impact of COVID-19 Lockdown

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Research Question:

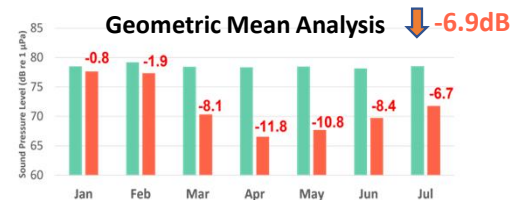
Underwater noise from growing shipping traffic overlaps with frequencies used by marine mammals to communicate and navigate.

- How to measure the contribution of anthropogenic activities on underwater noise levels in global oceans?
- Did the economic slowdown because of COVID-19 have an impact on underwater noise levels?
- Could moratoria on anthropogenic activities during the marine mammals' breeding season be effective in decreasing underwater noise?



Data Analysis and Results

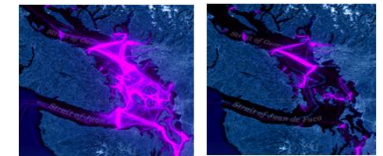
- Mean and 25% exceedance sound level values decreased during the lockdown.
- Validated by the decrease in shipping traffic using data from satellite-based ship monitoring system (AIS).



Georgia Strait (Pacific) ↓ -6.5dB

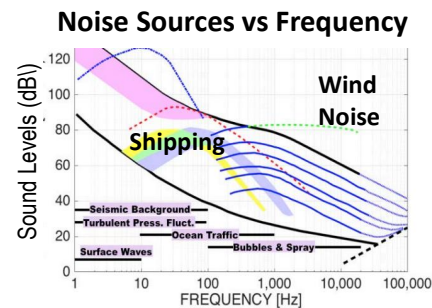


Decrease in Shipping Traffic before and during lockdown



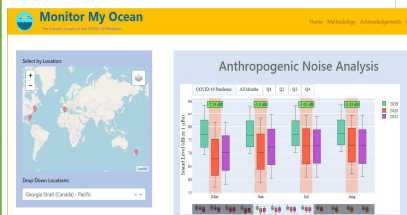
Methodology:

1. Downloaded audio files from hydrophones and resampled to 2 kHz.
2. Split data into 1-min segments. Applied Fast Fourier Transformation to obtain acoustic power at different frequencies at 1 Hz resolution.
3. Aggregated the 'Power Spectral Densities' to get monthly Long Term Spectral Averages. Compared the mean and quantiles of sound levels centered at 63 Hz band (shipping noise) with previous years.
4. Eliminated wind effects to find changes in ambient anthropogenic noise

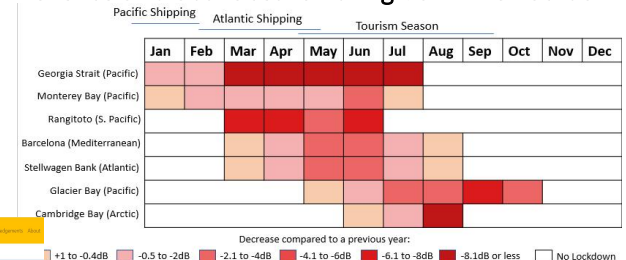


Interpretations and Conclusions

Global oceans quietened during the lockdown period by an average of 4.5 dB, or 2.8 times decrease in peak sound intensity levels compared to previous years.



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MonitorMyOcean.com Web App allows policymakers to get updated information on ocean noise and monitor the effectiveness of their "Quiet Oceans" policies.