Motivation
What motivated the study of a laser's propagation through water was the Navy's emerging interest in maintaining sustainable and secure communications while at sea. Lasers offer a possible alternative to radio communication while at sea. However, the maritime environment poses new and unexplored problems with conveying laser communications between vessels, both surface and submarine.

Background
An Alternative Communication:
Laser:
- Blue-green laser allows for low ocean absorption
- Interception attempts result in immediate interruption of signal
Acoustic Signal:
- Slow, unreliable signal
- Low bandwidth
- Not energy efficient

Acknowledgements: Stephen Guth

Experiment

Conclusions
Effects of Temperature Change: It can be seen from the results that as the temperature increases, so does the intensity. The light propagation from the beam also becomes more concentrated as the temperature increases.

Effects of Salinity Change: We tested the effectiveness of a laser in salinities that model the Pacific Ocean (35ppt) and Mediterranean Sea (44 ppt). As the salinity increases, the intensity of the laser decreased as it tried to get through more salt particles.

Results

Effects of Temperature Change at 16.6°C

Effects of Salinity Change at 16.6°C

Low Intensity
High Intensity