Geog 3A: Ocean and Atmosphere

Lab 4: Waves and Mixing-part B

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Waves

*Surface gravity waves*
Water wave reflection (Station 1)
Water wave refraction (Station 2)
Water wave diffraction (Station 3)

*Internal gravity waves and mixing (Station 4)*
Station 1: Wave Reflection

Wave reflection is just like light reflection on know surfaces:
Station 1: Wave Reflection
Station 2: Wave Refraction

Light refraction:
Velocities are different → the angles are different

Wave refraction:
Depths are different → Wave speed changed → waves bends (angles are different)

Shallow water wave approximation formula:
\[ c = (g \cdot h)^{1/2} \]
Station 2: Wave Refraction
Station 2: Wave Refraction

Wave refraction is like light refraction as well:
Station 3: Wave Diffraction

Diffraction: refers to various phenomena which occur when a wave encounters an obstacle or a slit.

Station 3: Wave Diffraction

Diffraction occurs when the size of the opening between barriers is similar to that of the wavelength of the impinging wave.

Only the wave direction changes. The wavelength, frequency, period and speed are same to the original wave.
Station 3: Wave Diffraction

- The water in the slit vibrate like a point source
- Amount of diffraction depends on gap size and wavelength
Then, we will do the experiment and then watch two videos related to this.

https://www.youtube.com/watch?v=kKne0XydXVU

https://www.youtube.com/watch?v=DfPeprQ7oGc
Next week

Lab 5 Tsunami! Preview the lab manual!

No cheating and plagiarism!

Due for Lab 4 is NEXT WEEK!