More Big Waves Under the Pacific

Narrator: Summer, 2010, the Luzon Strait between Taiwan and the Philippines.

Matthew Alford: One of the most energetic places in the world…

Narrator: Here, APL's Matthew Alford and colleagues continue to track deep internal ocean waves — among the world's biggest.

Alford: They can go three hundred or four hundred meters high. That's several Space Needles high. So these are just incredibly dramatic motions.

Narrator: Fueled by surging tides and powerful currents, deep waves shift, mix, and exchange layers of cold water and warm water.

Alford: They're sort of like one form of the ocean's bloodstream because it absolutely relies on internal waves to transport energy and heat all over the world's oceans.

And it's the way that energy gets redistributed by the waves and the way that heat and momentum get carried around by the waves that actually sets the way the ocean will respond to climate change as we put more CO_2 into the atmosphere.

Narrator: What Alford calls 'super-sized' deep waves roll west from the Luzon Strait toward China's continental shelf.

Alford: There they become incredibly non-linear — incredibly energetic. And those are the waves that can do things like disrupt submarines as they try to transit across the sea there.

Narrator: Scientists know deep breaking waves form a vital part of the ocean climate. But better numerical models are needed to predict wave behavior.

Alford: We have to get this right. We have to know when, why, and where the internal waves break.