

SWIFT Air Drop Deployments

Resource Characterization for Extreme Conditions

Narrator: The challenge: measure extreme ocean conditions.

Jim Thomson: This is a SWIFT buoy. This buoy measures waves and properties of the ocean surface.

Narrator: The place: the Pacific ocean off the Oregon Coast.

Thomson: The goal of the project is to understand when a big winter storm comes through — what are the conditions that a wave energy device, a wave power buoy, would need to be able to withstand to operate there and generate electricity there?

Narrator: On other research projects, SWIFTS are routinely deployed from ships. The trouble is, stormy seas can keep ships in port.

Thomson: So to do this project, we've taken a different approach. We decided to air drop these buoys when the storms come in. And we do that by helicopter. Once we see a forecast we like, we contact the helicopter company. They fly out to the site — it's about 15 miles offshore, they drop the buoys from the helicopter, and the buoys freely drift and they collect the data with the big waves rolling through.

Narrator: Helicopter SWIFT deployment permits a rapid response to targeted storm areas.

Adam Brown: One of the things we're specifically looking for is the presence of big breaking waves. The SWIFT drifter buoys have a GPS unit to measure how fast the buoy's moving in any direction. They also have on board an accelerometer-based inertial measurement unit. At any moment in time we can see exactly the orientation of the buoy and how fast it's accelerating in that direction. That gives us a lot of information and lets us know in these big storms how often the breaking waves are happening and also how intense those events are.

Narrator: Dropped into stormy seas from a boat or from a helicopter so far appears to make no difference to the SWIFT buoys.

Alex de Klerk: The drop itself in this case is not too dissimilar from being deployed from a ship. It's maybe a 10 to 20-foot drop into open water. They can handle that no problem. All the electronics are hard mounted.

Narrator: Once stormy conditions subside, the SWIFTS are recovered by boat. Or they wash up on the beach.

Thomson: The big difference between putting these out with a ship and dropping them from the air is the ship is very limited in where it can go and what it can do during a storm. By doing it from the air, we get the data exactly where and when we want it. So, when the conditions get big and the ships have to stay in port, we can still get out and still get data.

This is APL The Applied Physics Laboratory at the University of Washington in Seattle.