

Wave Chasers: Deep Flows Through the Samoan Passage

Sharing Science: Crush Cam

Narrator: Oceanographers from the Applied Physics Laboratory at the University of Washington prepare to deploy deepwater sensors in the South Pacific. They are here to map the ocean floor – and track the huge volumes of cold Antarctic water shooting northward through the Samoan Passage some three miles beneath the surface.

Matthew Alford: We're actually right above the Samoan Passage right now. This part of the circulation is a really vital part of the Earth's climate system.

Narrator: On this cruise, Matthew Alford and colleague John Mickett took time out to try a more basic oceanography experiment.

Alford: We're always looking for better ways to reach out to the public with our ideas.

Narrator: Alford and Mickett came up with this CrushCam – a way to video objects under extreme pressure. In this case, a styrofoam cup.

Alford: This cup is gonna get crushed! This cup will crush!

Narrator: The cup and the CrushCam were both affixed to this CTD instrument array and then lowered 500 meters into the sea – subjecting the fragile cup to 50 atmospheres of pressure. That's more than 700 pounds per square inch. The CrushCam's light failed. Sunlight faded quickly as the CTD descended. Upon recovery – the expected result.

Alford: The first 'will-it-crush' mission! So that's 500 meters. It's really pretty dramatic. It's one of the reasons why it's so hard to study the deep ocean.

Narrator: Just how tough the deep ocean can be was demonstrated a couple of days later. A second CrushCam mission ran into serious trouble.

Alford: That drop went down to 3800 meters. Now we're talking about 380 atmospheres.

Narrator: Or more than 2 1/2 tons per square inch.

Alford: Unfortunately, the glass sphere that housed the camera developed an imperfection and it imploded. It really is like a bomb going off. And it ended up doing a lot of damage to some of our scientific instruments.

Narrator: Matthew Alford concedes the CrushCam experiment was not seaborne rocket science. But CrushCam was a minor media sensation and put oceanography in the spotlight.

Alford: Dozens of kids sent in ideas for what to crush. We made it on to NPR's national Facebook page. We really got a lot of press. People find that interesting. And perhaps they'll read a little bit more about the project and learn a little bit more about what we're doing.

