

Sound of the Southern Ocean 2005 – video clip annotation (hydrophone_g320.mov)

This movie demonstrates the processes involved in detecting a seafloor volcanic eruption using a hydrophone, or underwater microphone. The first image shows a typical mid-ocean ridge valley. The faults bordering the valley then slide past one another, producing the acoustic waves (red circle) of an earthquake. During the fault movement a red lava-flow pours from the base of the fault. The earthquake sound waves propagate through the water and into the ocean sound channel, as well as through the ocean crust until the signals are recorded at the hydrophone. The ocean sound-channel is a low acoustic velocity zone in the ocean caused by variations in temperature, salinity, and pressure. The sound channel acts like a fiber-optic cable in the ocean, allowing very weak sounds to travel long distances with little loss in signal strength. The hydrophone is also shown as a small instrument package that is attached to a mooring line and anchored to the seafloor. The entire package is kept aloft in the water by the yellow floats at the top. A whale enters the picture and vocalizes into the sound channel (blue circles) where the signals are also recorded by the hydrophone. A research ship then enters and "pings" to the acoustic release holding the hydrophone package anchored to the seafloor. The acoustic release then lets go of the package where it floats to the surface and can be retrieved by personnel on the vessel. *Animation courtesy of NOAA/Vents, Korea Polar Research Institute (KOPRI)*