

Report on AIS Communication Device

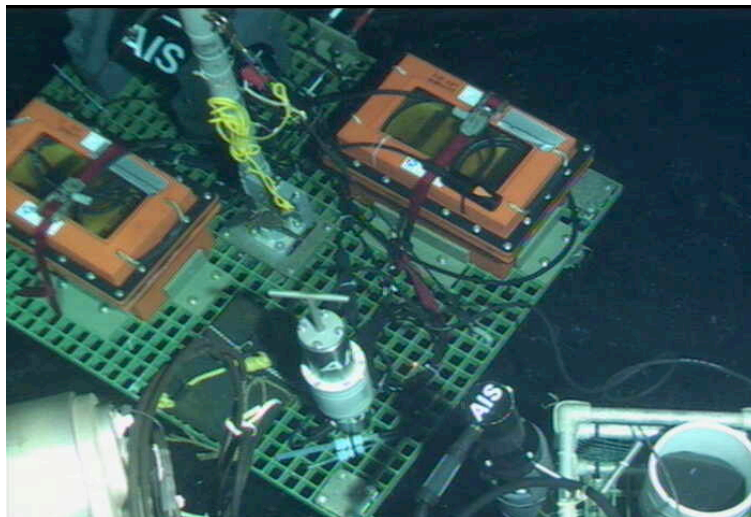
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Although last years' deployment of our underwater communication system was not successful, I still believed that deployment of a high frequency radio system would work. Because of deployment difficulty last year, not being able to release the radio head from its holster, I have developed a new way of coupling high frequency radio signals through water. The development which is patent pending allows for the antennas of the radio system to form a type of wave guide alignment.



Figure showing transceiver size. The white part is the antenna section. The titanium part holds the electronics and could easily hold a battery pack for future instrument data collection.

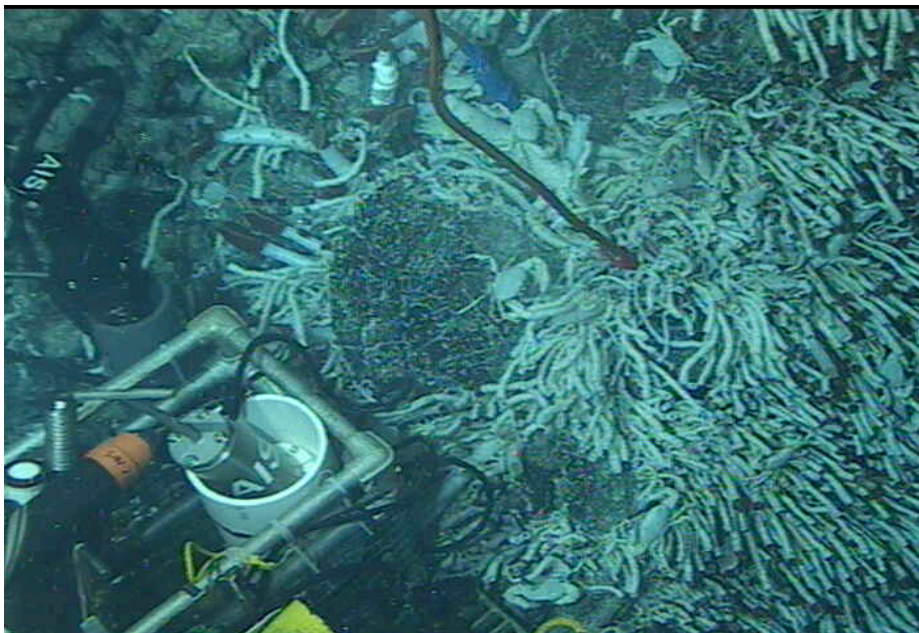
This alignment of the critical elements of the system thus allowing for maximum energy direction and output. The idea was to deploy an elevator with an AIS ISEA II instrument and a transceiver device which the Alvin DSV could mate to at



the bottom.

The problem with this system since it is high frequency difficulty with high frequency signals traveling over surfaces made it difficult to test on land. The full immersion of the system with Alvin was required to fully test this system. A commercial instrument will hopefully be made by AIS allowing for fast data downloads to be performed at the bottom of the ocean autonomously. A data collector would be made and mated with the underwater instrument and be left on site until all data was dumped and a new sequence of experiments downloaded. Once this is done the transceiver/data collector would be retrieve by submersible or released from bottom acoustically.

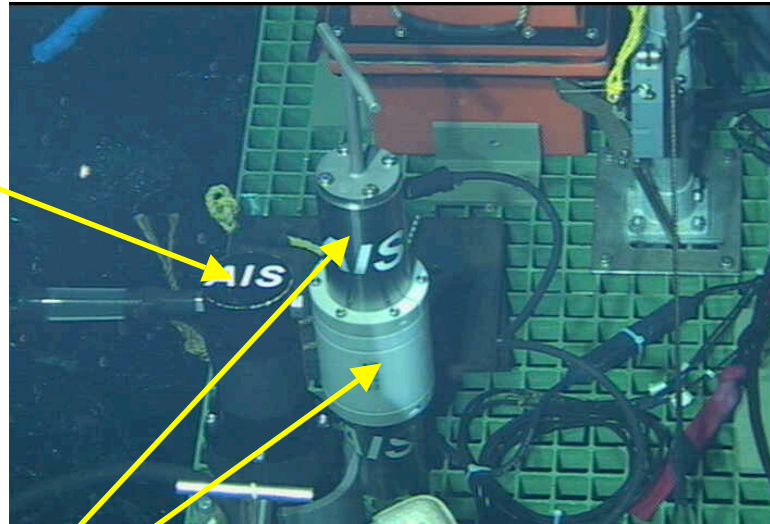
The instrument was first deployed and operated aboard Alvin on 6/6/08, dive 4401. It was successfully communicated with on two other subsequent dives by in-experienced operators without any problems



Alvin Transceiver in place on Alvin prior to deployment

The transceiver is sitting on the scientific basket of Alvin waiting for deployment. Once we got to the bottom at 9N EPR we immediately went over to the elevator containing the AIS ISEA II electrochemical analyzer equipped with the new radio communication system. Below is a picture of the radio system totally mated in place and downloading data and uploading sequences for future data collection.

AIS real time
Data collection
wand
Aboard Alvin



Transceivers in place communicating and downloads
data