

---

# ARIS Aboard the Aquarius

---

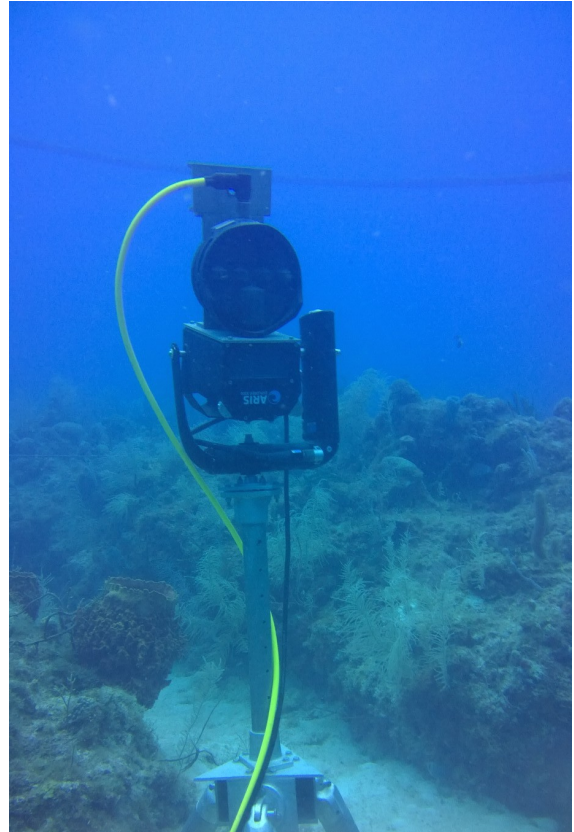
## Fabien Cousteau's Mission 31 Selects ARIS for Cutting Edge Ocean Research



Sound Metrics recently received the exciting opportunity to join Fabien Cousteau's Mission 31 by providing ARIS and DIDSON sonars for a pioneering ocean research expedition aboard Aquarius, the underwater research lab operated by Florida International University.

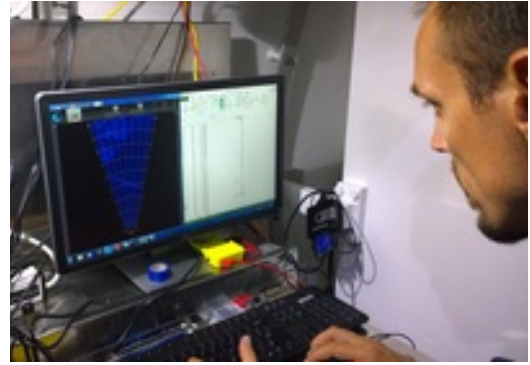
Mission 31 was a groundbreaking underwater study led by Fabien Cousteau, grandson of Jacques Yves Cousteau, the famous French explorer who created the first marine living environments for humans and led the first successful study on the ocean floor. Mission 31 celebrated the 50th anniversary of Jacques Yves Cousteau's study while taking underwater research to the next level. For 31 days, Fabien and his team of students successfully undertook the longest underwater study ever recorded at 60 feet below the surface, one day longer and at twice the depth of Jacques Yves Cousteau's original mission, all the while broadcasting the mission's daily activities 24/7 over multiple new media platforms to make their studies readily accessible to the public.

The mission began on June 1, 2014, as Fabien Cousteau and his team



**Pictured above: An outside view of Aquarius, and the ARIS Explorer 3000 employed on the ocean floor**

---



submerged for their month-long period of ocean research aboard Aquarius, the world's only currently existing underwater laboratory. Located near the coral reefs in the Florida Keys National Marine Sanctuary and operated by Florida International University, the Aquarius allows for unparalleled up-close marine observation. Fully equipped with computers, bunk beds, a mini-kitchen, air-conditioning, and wireless communication with a topside crew, Aquarius allows researchers to employ a technique known as saturation diving in order to stay for days to weeks below the surface, collecting months worth of information in a much shorter period of time. Even then, past Aquarius missions typically lasted about 10 days, making Mission 31 the first mission of this length to take place aboard Aquarius.

**Pictured above:  
Student aquanauts,  
Adam Zenone and  
colleague, using the  
DIDSON DH sonar  
and software during  
Mission 31**

**“We were very fortunate to have the ARIS and DIDSON on this mission in order to do things with acoustic technology that most of our peers don’t.”**

**- Dr. Kevin Boswell**

Earlier in May, Dr. Kevin Boswell, Science Advisor at Florida International University, contacted Sound Metrics Corp on behalf of the Mission 31 team with the invitation to join the mission by providing sonars to aid their research. Sound Metrics provided both a DIDSON DH (Diver-held Sonar) as well as an ARIS Explorer 3000 to be employed on site to collect data on habitat dynamics, specifically the predator-prey dynamic among herbivorous fish and other species important to maintaining the health of coral reefs.

The sonars contributed significantly to FIU's research during

Mission 31, as the ARIS Explorer 3000 was employed for the entirety of the mission, while the student aquanauts aboard Aquarius intermittently used the DIDSON DH for daily diving expeditions. Boswell, an experienced DIDSON user currently working with FIU's underwater acoustic program, explained how the sonars were employed during Mission 31. Both an optical camera and Sound Metrics' ARIS were positioned near a site where the team had placed artificial predator fish in order to observe changes in the feeding behavior of parrot fish when in the presence of seeming predators. Fish species such as parrot fish are critical to the health of coral reefs, since they feed on algae that would otherwise smother the coral.

Despite the high visibility of the ocean water surrounding Aquarius, Boswell remarked on the significance of having Sound Metrics acoustic technology alongside their optic cameras. "While you may be able to see things visually underwater, you can't necessarily quantify them. You can tell that there's a fish in front of you, for example, but how many fish are behind that fish? The acoustic sonars were able to measure this," he explained. In addition to this depth perception, employing ARIS for the duration of the mission allowed the scientists to observe and collect continuous data on the large sample of fish both day and night.

"We were very fortunate to have the ARIS and the DIDSON on this mission in order to do things with acoustic technology that most of our peers probably don't," Boswell commented. "The latest variation of the ARIS, especially the resolution, and phenomenal distance when compared with the older DIDSON, is amazing."

Adam Zenone, a Master's student at FIU performing his thesis on marine acoustics as well as an aquanaut who worked closely with ARIS and DIDSON during the mission also expressed his satisfaction with the technology, saying "It was absolutely intuitive to use, and I was especially impressed with the software."

Ocean enthusiasts newer to acoustic technology were also able to enjoy and learn about Sound Metrics sonars during the mission. The Aquarius residents regularly scheduled interactive sessions with school classrooms via Skype, during which they could show students their underwater surroundings and the equipment they were using. Boswell described the exciting 'aha moment' seen on young students faces as they made the mental connection between what they understood about sound waves and the application of ARIS technology.

Overall, everyone involved in Mission 31 agreed that the expedition was a huge success in ocean habitat research as well as exposing the world to the human-ocean connection within the lens of marine exploration, thanking Sound Metrics for the help of our sonars. The Mission 31 team are currently analyzing the data collected to draw more definitive results from their research aboard Aquarius. Sound Metrics looks forward to seeing the final results from their studies using the ARIS and DIDSON, and continuing to provide similar assistance to ocean explorers looking for the best technology available to keep marine habitats healthy and sustainable.