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MISSION AQUARIUS

What Is Aquarius?

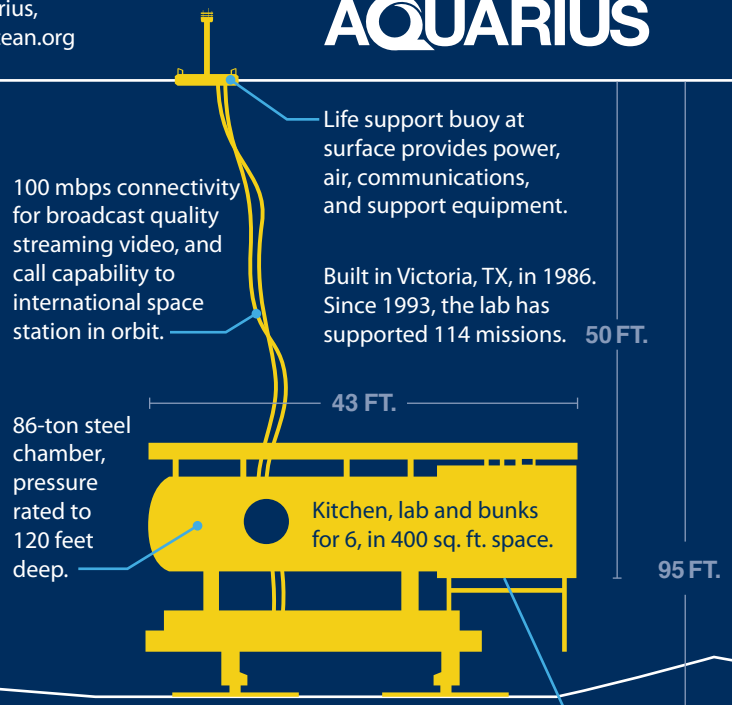
The only undersea research lab allowing scientists to live underwater for up to 2-week missions.

A diver approaches the Aquarius reef base.

Owner: National Oceanic and Atmospheric Administration (NOAA)

Operator: University of North Carolina Wilmington (UNCW)

Partners: NASA, US Navy
Participants: 1266 astronauts, scientists, and grad students from 205 institutions.



Additional air tanks on seafloor within 1000 ft.

Moon pool allows aquanauts to enter/leave without airlocks or hatches.

Located four miles from Key Largo, in a "research only" zone on Conch Reef, Florida Keys National Marine Sanctuary.

Mission aquanauts living in Aquarius can stay for 2 weeks and have 6 to 9 hours of diving down to about 95 feet each day

Houses the world's most in depth coral reef monitoring program.

A Five Fold Mission

- Scientific research: Aquarius has produced hundreds of peer-reviewed scientific papers on corel reef ecosystems, sea sponges and other topics. Sea sponge filtration significantly impacts water quality, and sea sponges are the source of cancer drugs Ara-C and Halaven.
- Coral reef & ocean observation: 20 years of in-depth research from Aquarius has provided much of what we know of shallow reef ecosystems.
- Training: NASA astronauts train here, to simulate the extreme, isolated space environment.
- Ocean education and outreach: Live broadcasts from a single 16-day mission reached 450,000 students, and two JASON expeditions reached 1 million students.
- R&D of undersea technology: Aquarius has been used for development of ocean exploration technologies like Remotely Operated Vehicles, pioneering underwater measurement of UV light, and the first underwater use of a mass spectrometer on a coral reef.

Living Underwater

- Saturation diving: Aquarius maintains the underwater pressure of 2.5 atmospheres, so divers don't have to decompress until the mission is over. This allows individual scuba dives of 9 hrs, instead of the typical 1-2 hour surface-based dives. Scientists can accomplish in 9 days what might take 6-12 months otherwise. "It's a time machine," said Aquarius veteran, Dr. Mark Patterson.
- Decompression: Before returning to the surface after a mission, aquanauts decompress inside Aquarius for 16 hours, during which they can continue working, then ascend to the surface directly.

Funding

- The annual budget has been cut from a previous high of $18million through the National Undersea Research Program, to $2.5 million for the last several years, to zero in 2013. The final mission is slated for July 2012.