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Media Contacts:

Otto Rutten, UNCW - National Undersea Research Center (NURC)
515 Caribbean Drive, Key Largo, FL 33037
(305) 451-0233

AQUARIUS AQUANAUTS TRY TO SOLVE MYSTERIES ON A CORAL REEF
Six Person Crew to Spend Ten Days Living and Working on the Seafloor

Key Largo, Florida - The August mission of Aquarius gets underway today with a 6-man crew exploring the secret life of reef sponges. Many people are surprised to learn that sponges are animals. They make their living on reefs by filtering massive amounts of water to extract bacteria and other small particles for food. However, some sponges have huge populations of bacteria that live and thrive inside their tissues.

This month's Aquarius mission is part of a larger research effort to understand the role of sponges in the Florida Keys, from near shore (including Florida Bay) to the offshore coral reefs. A major focus of this work is to understand how fast sponges respire oxygen and recycle nitrogen to the reef. In other words, how fast do they breathe, how much nitrogen do they release to surrounding waters while they breathe, and what forms of nitrogen do they release?

The principal investigators for the mission are Dr. Christopher S. Martens and Dr. Niels Lindquist from the Department of Marine Sciences and Institute of Marine Sciences, University of North Carolina at Chapel Hill. They are joined in Aquarius by Meredith Kintzing and UNC-Chapel Hill graduate student Jeremy Weisz. Staff technicians Roger Garcia and Thor Dunmire will operate the underwater laboratory for the duration of the nine-day mission. Staff from the University of North Carolina at Wilmington (UNCW) provide surface-based support for all Aquarius missions.

Aquarius is owned by the National Oceanic and Atmospheric Administration (NOAA) and operated by the University of North Carolina at Wilmington (UNCW). Aquarius is a unique national asset - it is the only undersea research platform of its kind in the world. It rests 63 feet underwater and 3.5 miles offshore at Conch Reef in the Florida Keys National Marine Sanctuary. Aquarius "aquanauts" live and work on the seafloor for extended periods using a special diving technique called saturation diving.

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This month's represents an extension of topside-based research conducted over the last two years at the NOAA/UNCW National Undersea Research Center (NURC) in Key Largo. Drs. Martens and Lindquist are also working to understand how environmental factors, such as nearshore to offshore gradients in light, depth, and potentially land-based factors related to nutrient pollution, affect the carbon and nitrogen chemistry of sponges that exhibit the different feeding strategies described.

Dr. Martens and Dr. Niels Lindquist and their team of experienced students plus co-investigators Dr. Brian Popp and Jan Riechelderfer from U. Hawaii and Dr. Susanne Schmidt from Germany, will conduct experiments during their Aquarius mission to evaluate the importance of each of these different processes.

Drs. Martens and Lindquist and colleagues are working to understand how environmental factors, such as near shore to offshore gradients in light, depth, and potentially land-based factors related to nutrient pollution, affect the carbon and nitrogen chemistry of sponges that exhibit the different nitrogen cycling strategies described above. Ultimately, it is hoped that these studies will provide a means to monitor short- and long-term changes in water quality - an issue of major significance in the Florida Keys.

New approaches are needed and we expect that results from their research will help us better understand the role sponges play in the nutrient dynamics on reefs in the Florida Keys," said Dr. Brian Keller, Science Coordinator for the Florida Keys National Marine Sanctuary. Ultimately, it is hoped that these studies will provide another means to assess water quality across the seascape that is south Florida - an issue of major economic significance in the region.

Every Aquarius mission also includes a topside support team. Dr. Lindquist, who has spent many years working in Keys using NURC facilities, directed this mission's surface-based science team. "Land-based scientists can spend unlimited time living with the plants and animals they study, say in a forest or field. Marine scientists are not so lucky, but during the short periods we can stay underwater we still see amazing things doing our research. I've been a topside scientist for two Aquarius missions and I'm eager to get my chance to spend 10 straight days underwater as an aquanaut studying Florida coral reefs," said Lindquist.

During each Aquarius mission, anyone with Internet access can watch live web cameras, read expedition journals from the aquanauts, view project summaries and pictures, and much more at the NURC/UNCW Aquarius website:
www.uncw.edu/aquarius <<http://www.uncw.edu/aquarius>>.

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