Dynamac Senior Aquatic Scientist Dr. Grant Gilmore (left) checks one of JPL's Sensor Web pods. At right, NASA's Steve Van Meter and Robbie Purdy, a summer intern, install one of the pods.

Dr. Grant Gilmore is picked up from the shore by Mark Lane, who leads the Web Sensor deployment effort, and Rober Purdy, a summer intern.

The Sensor Web deployment team works on a pod near a Shuttle Launch Pad.

JPL-developed monitoring technology tested at KSC

New monitoring technology developed by scientists at NASA's Jet Propulsion Laboratory (JPL) in Pasadena, Calif., has found a research and testing home at Kennedy Space Center, thanks to a cooperative effort between the two centers.

Dr. Kevin Delin, project manager for the JPL Sensor Webs Project, said the main purpose is "to test the new technology in KSC's very unique environment and show its value for environmental monitoring."

The "pods" that make up the web are constructed of molded plastic and measure about 2.5 inches high, 4 inches wide and 6 inches deep and contain sensors, radio chips and a microcontroller.

Although the technology is being tested in other locations, including the Huntington Botanical Gardens, the Sensor Web at KSC is the first to be deployed at another NASA center and in an aquatic environment.

According to Delin, the Sensor Web technology at the Huntington Botanical Gardens measures temperature, relative humidity, light levels and soil conditions.

The plans at KSC included the installation of 14 pods atop 12-foot high poles at designated locations around Launch Pad 39A, said Mike Lane, a NASA electrical engineering technician who coordinated the deployment efforts. The pods will communicate with each other and relay information back to a primary, or "mother," pod.

Lane said the pods are spaced from 92 to 164 feet apart. Thirteen pods and the "mother" pod are now installed near the Pad 39A culvert. The web will expand as other pods are installed at selected locations in the water around the launch pad in the northern Banana River Lagoon.

"The sensor pods will allow us to look at the progression of the water going back and forth in this area, which is something we haven't been able to do with regularity. It's the beginning stage of the aquatic research project here at KSC," Lane commented.

Delin said the pods can be used to measure and record physical data 24 hours a day, including water quality and level, temperature, flow rates, salinity and dissolved oxygen levels, even during Space Shuttle launches.

According to Dr. Grant Gilmore, a senior aquatic scientist with Dynamac Corp., "We can select which pods will measure which attribute, vary the sensors, and communicate to the pods to take specific sensor readings." Gilmore became interested in the technology after attending a JPL presentation.

Cristina Guidi, a NASA advanced concepts manager at KSC, initiated and helped coordinate the joint effort, along with Gilmore, because it benefits both Centers and works towards NASA Administrator Sean O'Keefe's vision of "One NASA."

"Applying JPL Sensor Web technology to KSC ecological research efforts provides us with a continual 'virtual presence' within our ecosystem to gain a better understanding of the long-term trends while also minimizing the workload of collecting the required ecological data," Guidi said.

"KSC provides an excellent field test site for the Sensor Web so that JPL can further develop the robustness of their instrument," she continued.

Sensor Webs will be to sensors what the Internet is to computers," Delin said.

Near-term plans include uplinking the real-time, streaming Sensor Web data to the Internet as is already done at the Huntington Gardens.

"This is the way we should be monitoring environmental conditions and biological activity in the future," Gilmore concluded.