Exploring the Ocean Depths

JOE NISHIZAWA

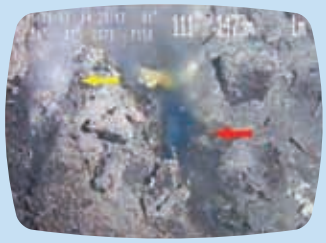
Japan's *Shinkai 6500* can dive deeper than any other manned research submersible currently operating in the world. Eighteen years after it was first launched, this vessel is still at the forefront of global deep-sea research.

Five manned research submersibles belonging to the US, France, Russia and Japan presently explore the world's oceans to depths of 6,000 meters. But only *Shinkai 6500*, operated by the Japan Agency for Marine-Earth Science and Technology (JAMSTEC), can dive to 6,500 meters.

Shinkai 6500 started work in 1990 and completed its 1,000th voyage in March 2007. Over 800 researchers have boarded the vessel, taking a total of 210,000 photographs and filling more than 3,700 tapes with video footage. Countless valuable samples have been gathered from the ocean depths.

Shinkai 6500 has explored not only the seas around Japan, but also the Pacific, Atlantic and Indian Oceans, surveying the topography and nature of the seabed and examining deep-sea fauna. In 1991 the submersible discovered a seabed fissure at a depth of 6,366 meters in the Japan Trench, which appeared to be the site of a fault formed by an earthquake. In 2005 it captured live deep-sea creatures from a depth of 1,215 meters below Sagami Bay.

A hydrothermal vent (or "chimney") discovered on the seabed 50 km northwest of Ishigaki Island in Okinawa Prefecture.



The discovery of a blue emission from this hydrothermal vent *(shown by red arrow)* was a world first. A "white smoker" is visible on the left *(shown by yellow arrow)*.

More recently, in August 2006 *Shinkai 6500* discovered a blue hydrothermal emission, known as a "blue smoker," on the seabed near Ishigaki Island in Okinawa Prefecture. Although clear, white and black hydrothermal emissions had been sighted before, this was the world's first confirmed report of a blue emission. The temperature of the "blue smoker" was measured at approximately 220°C, and its environs revealed species of shrimp and a white hydrothermal emission.

Japan has several automated deep-sea probes, including *Abismo*, the first such probe to successfully reach depths of 10,000 meters, but the ocean floor still harbors many mysteries that can only be unraveled by vessels with researchers aboard. Much valuable work still lies ahead for the world-leading deep-sea research submersible *Shinkai 6500*.

FACING: **An exterior view of *Shinkai 6500*.**

BELOW: ***Shinkai 6500* cruising over the seabed.**

JAMSTEC