



The deep-sea drilling vessel Chikyu



Seabed project reveals earthquake, tsunami clues: scientists

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TOKYO (AFP) — An ambitious international project to dig deeper into the Earth's surface than ever before has made a good start with scientists saying they have gained clues about how large earthquakes and tsunami occur.

The experiment, using the Japanese government's 57,500-tonne, 60-billion-yen (550-million-dollar) deep-sea drilling vessel Chikyu, is probing a trench in waters off the Pacific coast of Japan where two tectonic plates meet.

A team of 16 scientists from six countries have been seeking clues about how seismic activity can shake the planet's foundations.

The satellite-equipped vessel has a 121-metre (400-foot) drill tower that can dig 7,000 metres (23,000 feet) below the seabed.

The first two-month expedition was completed in mid-November, the project's chief scientists said.

It was "a very big success in the form of scientific data we've obtained to know more" about the earthquake zone, said Harold Tobin, co-chief scientist from the University of Wisconsin at Madison in the United States.

Tobin said the project, known as the Nankai Trough Seismogenic Zone Experiment, could help explain huge earthquakes caused by "subduction," when two plates move towards each other with one sliding under the other.

"What we'll learn here about earthquake mechanics is of interest to all of us from the USA from Europe to around the world," Tobin said after he returned to land by helicopter from the giant ship.

"It will apply to subduction-zone earthquakes everywhere -- whether it's Sumatra, South America, the northwestern part of North America and anywhere else," he added.

The drilling area off Japan's Kii Peninsula is one of the most active quake zones on the planet and seismologists expect massive tremors within the next several decades.

Japan experiences 20 percent of the world's major quakes. A deadly quake in July shut down the world's largest nuclear plant, leading to criticism that the government here allowed the reactors to be built on a faultline.

In the first expedition, Chikyu, meaning the Earth in Japanese, drilled 12 holes that measured 400-1,400 metres (1,320-4,620 feet) below the sea floor.

It logged geophysical data to confirm stress conditions and geological structures.

The project's other co-chief scientist, Masataka Kinoshita from the Japan Agency for Marine-Earth Science and Technology, said work was going well.

"We've got big clues so we can infer more precisely which area is involved in the preparatory phase of a quake," Kinoshita said.

The scientists who joined the first expedition were from Japan, the United States, Britain, France, Spain and South Korea.

The project is expected to take five to six years to complete with more than 100 scientists from around the world participating.

The second expedition started on November 16 with a new team of scientists who are collecting the first samples from the seabed.

Eventually, researchers hope to send Chikyu's pipes down to the sea bottom 4,000 metres underwater and dig 7,000 metres from there, drilling through the boundary where the two plates actually meet.

In the final stage, they plan to install long-term observatory systems to take a direct look at activity at the plate boundary.

The researchers also hope to collect the first-ever samples of the Earth's mantle for clues on

the primitive organisms that were the forerunners of life.

The deep-sea drilling project is a part of the 21-nation Integrated Ocean Drilling Program, which is led by Japan and the United States with participation from China and 12 nations of the European Union.

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