

# 4 missions involving the Deep-sea Scientific Drilling Vessel *Chikyu*



## Investigating the 'Whys' of Great Earthquakes

To investigate the mechanisms behind the occurrence of great earthquakes, Chikyu directly drills into the plate boundary fault to collect and analyze core samples, measure the physical properties of the formation, and clarify the nature and fracture conditions of the fault. Installing monitoring systems in the drilled holes will not only provide good scientific data, but are hoped to help with earthquake warning systems.

## The Origin of Life

There is a world living under the seafloor of unknown microbes, different from those living on the surface. It is possible to reveal the ecology of microbes living in harsh subsea floor environments by analysis of core samples, and learn more about the mystery of life.

## Quest for the Mantle

The ultimate purpose of drilling with Chikyu is to drill into the mantle and directly collect cores. Since the dynamics of continental drift and volcanic activity are believed to be driven by mantle convection, this will help clarify how the mantle affects the structure and formation of the Earth's surface.

## Cores: History Books of the Earth's Past

The history of the earth is recorded in old strata. Cores are samples bored out from deep below the sea floor. Careful analysis of cores reveal the history of the Earth, and provides clues about the future.