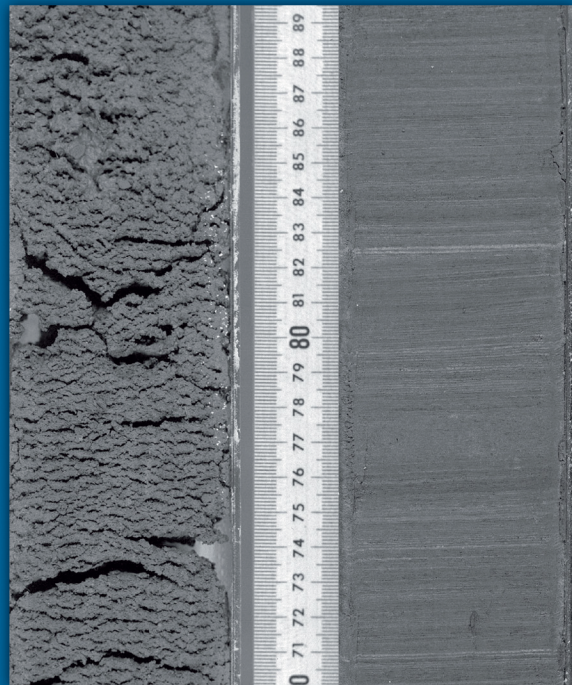


## Pioneering Research and Engineering in the Ocean

Scientific ocean drilling pioneered drilling in deep ocean basins at a time when the petroleum industry was only operating on the shallow continental shelves. Drilling in the deep ocean required engineering innovations such as development of a dynamic positioning system to maintain location over a drill site for several weeks at a time, despite wind and ocean currents. This versatile system is now regularly deployed on research vessels, commercial drillships, cable-laying ships, and even cruise ships. Over subsequent decades, scientific ocean drilling invented and refined hydraulic piston coring tools that today allow us to retrieve continuous, high-fidelity sediment cores that provide a detailed history of Earth's climate. Borehole observatories developed by scientific ocean drilling isolate the drill holes from the ocean, allowing physical, chemical, and biological conditions within the boreholes to be monitored during and after the fluids have re-equilibrated.

Comparison of sediment core quality between rotary drilling and piston coring.



**Rotary Cored**

**Piston Cored**