

The Impact of Down Hole in Marine Geology

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Editorial

In recent years, the scientific application of down hole measurements in marine geology and geophysics has grown in importance. The methodologies and technologies are mostly taken from those used in oil and gas exploration and are being applied to modern scientific concerns in the seas. The goal of this study is to highlight applications of state-of-the-art down hole measurements in contemporary marine science challenges, as well as to assess both existing and novel approaches for down hole measurements in light of new scientific directions. The Deep-Sea Drilling Project and its successor, the Ocean Drilling Program, have gradually expanded the role of down hole measurements during the last 25 years.

By drilling holes in virtually all of the varied geologic settings of the world's seas, these projects have effectively completed their scientific goals. At the time of writing, 170 drilling trips, or "legs," have been successfully completed over the world's seas. Over 1000 drill holes have been cored, and many of them have been documented using down hole instrumentation. While down hole measurements were taken in fewer than 14% of the maritime holes sunk during the DSDP, they were taken in over 56% of the holes done by the ODP.

This dramatic increase in ODP's use of logging can be attributed to a number of factors, including permanent shipboard systems for routine operations, vast improvements in downhole instrumentation technology and drilling methods, and new core sample measurements that allow for one-to-one correlation with similar downhole measurements.

Numerous published discussions of the scientific aims and overviews of DSDP and ODP have included components of particular down hole measuring capabilities, as well as their triumphs and failures. The interested reader is directed to Revelle and the proceedings of the International Conference on Scientific Ocean for a broad and historical background on the DSDP and ODP.

The ODP and DSDP's Initial Reports and Scientific Results provide summaries of individual drilling locations, and the American Geophysical Union's numerous monographs include synthesis papers for sites all around the world. A number of smaller sessions highlight distinct specialised applications for a more extensive examination of specific downhole measurements.

Industry magazines also publish reviews of contemporary downhole technology on a regular basis. Downhole measurements have also been

employed effectively in continental scientific drilling missions to meet their goals. In practically every habitat and scientific area, downhole experiments assist and enhance core-related subsurface investigations. Several continental scientific drilling operations done by Germany, Japan, Sweden, the United States, Russia, and Ukraine have relied heavily on downhole observations over the previous decade.

These activities frequently complement the ODP's aims of expanding novel scientific uses of downhole measurements, and combined, these projects are propelling researchers toward a worldwide scientific exploration employing downhole equipment to monitor in situ Earth parameters. This study focuses on past, current, and future scientific applications that have utilised or will employ "short-term" investigations, or measurements that do not need equipment to be installed in the seafloor for more than a few hours or days [1-5].

Conflict of Interest

None.

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