

Geology without Limits' Investigation of Lithosphere Deep Structure of the Caribbean by Seismic Methods

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Abstract

The Geology Without Limits consortium conducts regional studies of large marine basins and crosses international boundaries. It includes the Department of Geology, Moscow State University, the State Geological Institute of the Russian Federation Academy of Sciences and the Schmidt Institute of Physics of the Earth. It also includes scientific institutions/organisations of countries bordering study areas; local scientists participate and share data and learnings. Finance comes from Geology Without Limits and interested petroleum companies. The group has completed projects in the Arctic and the Black Sea. Caribbean and Caspian Sea studies are in progress.

The Caribbean study will record the area's first regional seismic grid, extending from the Gulf of Mexico to the Atlantic Ocean and crossing the Caribbean Sea interior. It will include some 60,000 km of reflection and refraction seismic, plus gravity and magnetic data. A large air gun, a 12 km streamer, independently floating sonobuoys and 18 second records will provide data to 45 - 60 km depth that will be processed using state-of-art technology.

Interpretation will be a joint effort and will integrate existing geophysical and geological data. Collaboration will occur via workshops, conferences and field trips. The results will be shared cost free for non-commercial use by participating countries. They will receive copies of new data from their exclusive economic zones, along with a full, final report.

The study is expected to tie the deep geology of the southern Gulf of Mexico, the Yucatán Basin, Cayman Trough and Caribbean interior and margins. It should resolve the question of whether the Caribbean Plate has allochthonous (Pacific) oceanic or autochthonous (extended Middle America) origins and indicate hydrocarbon potential. The geological learning should have global significance, and the results will be presented at international conferences.