



EXPLANATION

Sedimentary Deposits, undivided
 Marine limestone, calcarenite, sandstone, shale, marl, chalk, sand, silt, and silty limestone, beach, dune, dune, marsh, and reef deposits

Sedimentary and volcanic rocks, undivided
 In Puerto Rico, Virgin Islands, and Guadalupe, largely deposited in a marine environment, may include some igneous rocks and some strata of Cretaceous age; in Virgin Islands, mainly igneous rocks and some strata of Cretaceous age

Volcanic and sedimentary rocks, undivided
 In Puerto Rico, Virgin Islands, and Guadalupe, largely deposited in a marine environment, may include some igneous rocks and some strata of Cretaceous age

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CONTACT
 Dashed where uncertain

Major fault involving basement movement
 Solid in submarine areas based on seismic data. Dashed where extrapolated, dotted where reported based on topographic and magnetic profiles and trends, covered where doubtful or inferred. D or L indicates downthrown side; U, upthrown side; arrows show direction of apparent strike-slip movement; teeth on upper plate of thrust fault

Minor fault in sedimentary cover
 Not believed to involve basement. Solid in submarine areas based on seismic data. Dashed where extrapolated, dotted where reported; covered where doubtful or inferred. This indicates downthrown side

Zone of weakness due to basin faults along insular margin of Puerto Rico Trench

Axial trace of fold
 Dashed where extrapolated, dotted where reported; covered where doubtful or inferred. Arrows denote dip of anticline; horizons away from crest

Monoclinial flexure
 Indicated trend of magnetic contour; sub-bathymetric horizons of 1000m depth along north margin of Puerto Rico Trench

Positive magnetic anomaly
 Trend of residual magnetic anomaly greater than +100 gamma

Negative magnetic anomaly
 Trend of residual magnetic anomaly less than -100 gamma

INTRODUCTION
 In its position along the junction of the Caribbean and American crustal plates, the ridge of the eastern Greater Antilles offers an excellent opportunity to examine the structural deformations caused by relative plate motion. Furthermore, the availability of new and unpublished bathymetry, extensive onland geologic mapping, and data from marine and airborne geophysical surveys provides a basis for detailing the manner, extent, and history of crustal deformation in this interplate zone. The purpose of this preliminary map, therefore, is to bring together in a generalized graphic summary some of the existing data on the structural framework of the northeastern Caribbean region and to provide a working base for future geologic studies in this area.

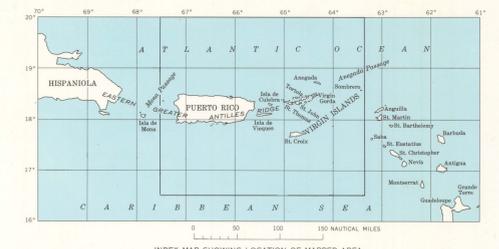
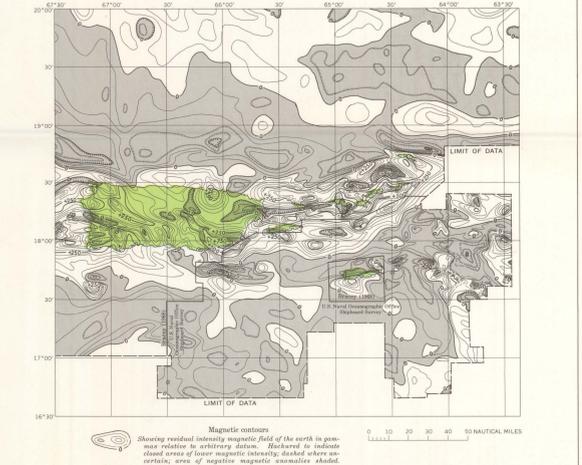
REGIONAL PHYSIOGRAPHY
 Hispaniola, Puerto Rico, and the Virgin Islands are emergent points on the crest of a great mass of rock which forms the eastern Greater Antilles Ridge. This massive feature, which rises more than 5 km above the floor of the Caribbean Sea, is a linear pile of volcanic material and associated intrusions capped locally by thick limestone sections. It branches near south-central Puerto Rico to form the St. Croix Ridge which extends eastward almost to the

SOURCES OF DATA
 The data which depict the tectonic pattern of this region have been compiled from various published and unpublished sources and reflect a variety of interpretations. This is particularly true of subsea areas where data were derived from marine geophysical surveys whose lines were widely spaced. Although the geology of onshore areas is considerably better known, there exist here numerous stratigraphic and structural complexities which, even in the broad aspects of this study, are most difficult to resolve. These complexities are particularly evident in the Virgin Islands where investigations were limited to small areas of outcrop and do not agree on stratigraphic correlation from island to island. Undoubtedly as data from new surveys are added, the structural and stratigraphic components of the region presented here will become more accurately located and better understood.

A categorized summary of data sources is as follows:
Bathymetry: North of the eastern Greater Antilles Ridge, taken from U.S. Naval Oceanographic Office bottom-contour charts; south of the ridge, compiled from unpublished data provided by the U.S. Naval Oceanographic Office, National Oceanic and Atmospheric Administration, and the U.S. Naval Research Laboratory.
Stratigraphy and igneous geology: Puerto Rico and adjacent islands modified from Briggs and Akers (1965); U.S. Virgin Islands from Donnelly (1966) and Whetten (1966); British Virgin Islands from Helley (1960); Anegada and Southern Islands from Butner (1956).
Tectonics: Puerto Rico and adjacent islands modified from Briggs and Akers (1965); U.S. and British Virgin Islands modified from Donnelly (1966), Helley (1960), and Whetten (1966); offshore areas from Donnelly (1965), Garrison (1969), Garrison and others (1971), and unpublished marine geophysical data of the U.S. Geological Survey, U.S. Naval Oceanographic Office, and U.S. Naval Research Laboratory.
Magnetic: West of 66°40' W, north of the southern margin of the Puerto Rico-Virgin Islands platform, and vicinity of St. Croix Island modified from Bracy (1968); east of 66°40' W and south of Puerto Rico and Virgin Islands, from unpublished geomagnetic data collected by the National Oceanic and Atmospheric Administration, and the U.S. Naval Oceanographic Office.

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PRELIMINARY TECTONIC MAP OF THE EASTERN GREATER ANTILLES REGION

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