

# BASEMENT TECTONICS OF THE ATLANTIC COASTAL PLAIN

## AS SEEN FROM ERTS-1 IMAGERY

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### ABSTRACT

Lineaments seen in ERTS-1 imagery of the Atlantic Coastal Plain represent previously unrecognized structures that have been "inherited" from the underlying basement rocks through thousands of feet of unconsolidated sediments. The major lineaments have preferred orientations of about N05W and N50E, indicating, perhaps, north-south compression. The origin of most of these lineaments is not known, but it is certain that many of them are the surface traces of faults, some of which may have moved in comparatively recent times, such as that which caused the Charleston, South Carolina, earthquake of 1886. Associated with the lineaments are numerous circular depressions, some as much as 15 miles in diameter. To test the hypothesis that movement along these faults has taken place in comparatively recent times, a lineament in the eastern part of Maryland was examined. This lineament extends northward, parallel to and west of the Maryland-Delaware line, to eastern Pennsylvania, a distance of about 100 miles. Although the soil on both sides of the lineament is predominantly sandy, that on the eastern side is poorly drained, which has resulted in the accumulation of as much as 18 percent organic material in the soil. East of the lineament a bed of clay that occurs just under the B horizon of the soil contains fresh water spores that have been dated at about 12,000 years. This suggests that the area east of the lineament was down-thrown about 12,000 years ago, causing ponding of the drainage and creating an environment in which organic material could accumulate. The circular depressions are perhaps formed by piping along the fault traces.

If this lineament is indeed a fault and the date for the last movement is correct, the seismic significance should not be lost in urban planning of the Middle Atlantic Coastal Plain area.